2022

Houston's Regional Infrastructure Strategy for Electrification (RISE) Report

Prepared by:

EVOLVE | electrotempo

ABOUT EVOLVE HOUSTON

Evolve Houston is a coalition of sustainability-minded civic, business, and academic leaders who seek to accelerate clean transportation through electrification. Collaborating with government, academic, private industry, and community leaders, our goal is to improve regional air quality and reduce greenhouse gas emissions in the Greater Houston area.

Evolve Houston Working Group

EVolve Houston (Co-Chair)
Shell (Co-Chair)
NRG
CenterPoint Energy
City of Houston
University of Houston

Contributing Stakeholders

ElectroTempo
Texas A&M Transportation Institute (TTI)

Individual Contributors

Chris George
Harry Tenenbaum
Ann Xu

KEY FINDINGS

As electric vehicle (EV) adoption in Houston increases among consumers, businesses, and municipalities, so too must the distribution of EV charging infrastructure. In this report, Evolve Houston studied the rate of charging infrastructure growth as it relates to the increasing rate of EV adoption to find out 1) if the current rate of infrastructure growth can keep up with EV adoption, and 2) how much money is required to support future EV adoption forecasts. Every day, individuals, businesses, and municipalities invest in the growing EV market; the corresponding data is as dynamic as the market. This report is intended to be the first in a series reporting on the ongoing changes of EV charging infrastructure in the Greater Houston Area.

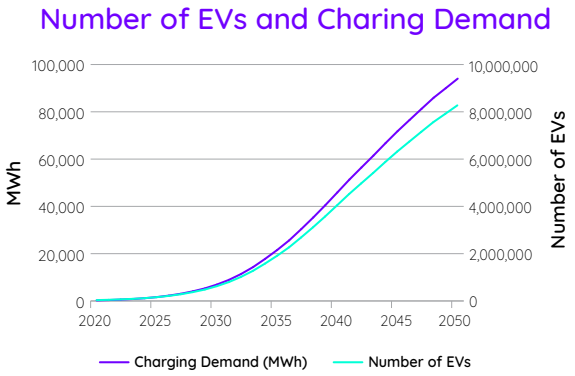


Figure 3.1: The number of EVs on the road[1], their charging demand[2], and forecasted growth. Cumulative charging demand grows as EV sales increase.

In order to accommodate the growing EV adoption rate, **$420MM** of Level 2 (L2) and DC Fast Charing (DCFC) funding may be required by 2030 to support the 50% sales goal (10% adoption)

An additional **~$200MM** investment may be required to fund multi-unit dwelling at-home charging

The existing EVSE supply can sustain the current EV adoption level: **~16,500 EVs** (0.25% adoption)

There are 460 public Level 2 and DCFC charging stations, for a total of about **1,000 public charging ports.** To date, **$6.7MM** has been invested to date in public charging

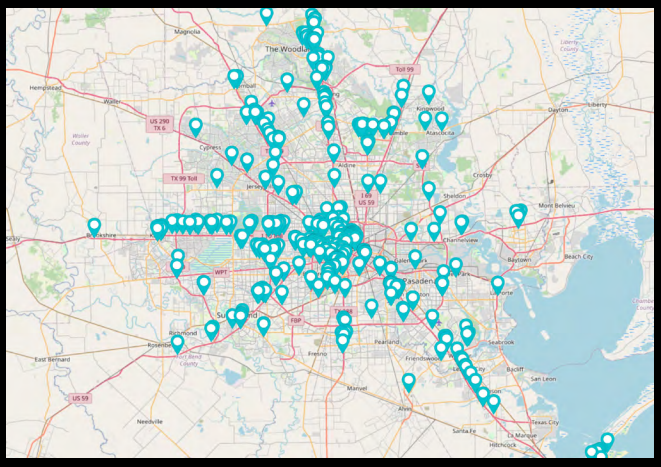


Figure 3.2: Current distribution of EVSE in the Greater Houston Area

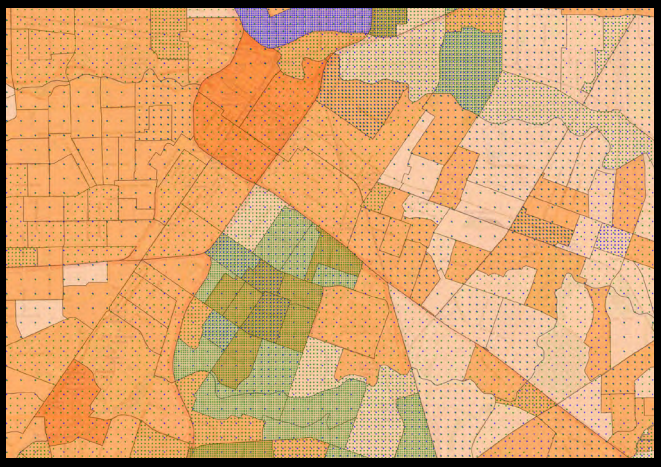
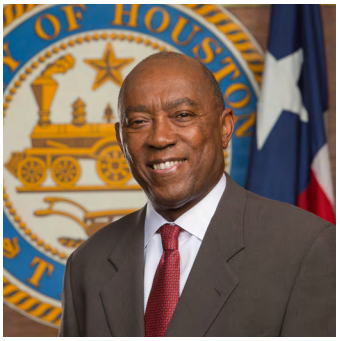


Figure 3.3: Sample workplace charging demand including economic (blue) and racial (green) demographic data
Source: HGAC, ElectroTempo

1 Spangher, L. et al. (2019). Quantifying the impact of U.S. Electric Vehicle Sales on light-duty vehicle fleet CO2 emissions using a novel agent-based simulation. Transportation Research Part D: Transport and Environment
2 Alternative Fueling Station Locator. Alternative Fuels Data Center, https://afdc.energy.gov/stations/#/analyze

EXECUTIVE SUMMARY



"We seek to be first. We do not want to be a city of two in one. We want to be one city that, no matter where you come from, or your language, religion, faith, age, or sexual orientation, in this city, we stand and RISE as one. Welcome to the new dawn of our future."

Sylvester Turner,
Mayor of Houston

By 2030, it is predicted that the population of the Greater Houston Area will reach 7-10 million inhabitants. During that time the number of vehicles on the road is expected to rise as well.

IN THE WHITE HOUSE

In August 2021, President Joe Biden announced his administration's proposition for America to drive the EV future forward. This proposal sets a new target to make half of all new vehicles sold in 2030 zero emission. Additionally, his proposition called for the investment of $15B in public charging infrastructure, which would add around 500,000 public access DCFC nation-wide.

RISE HOUSTON

Evolve Houston's Regional Infrastructure Strategy for Electrification (RISE Houston) aims to understand where Electric Vehicle Supply Equipment (EVSE) deployment and investment is today and serve as a solution that helps achieve the following three goals:

- Educate the Houston Region
- Guide EVSE investment
- Investigate grid resilience

EDUCATE THE HOUSTON REGION

Investigating our region's current and planned infrastructure, and in turn educating future EV drivers on the availability of EVSE, is critical for both public and private EV consumers.

GUIDE EVSE INVESTMENT

Evolve Houston aims to invite the public and private markets to leverage our insights, maps, and data to inform where, how much, and when EVSE should be deployed, including among Houston's low-moderate income (LMI) and minority populations.

INVESTIGATE GRID RESILIENCE

Through RISE Houston we aim to fully understand the lead time it takes to deploy EVSE and set the stage for how Evolve Houston can work to make our region, and the energy providers operating within, more resilient and reliable.

TABLE OF CONTENTS

METHODOLOGY

"Our region needed a prudent response to the EV industry's projected meteoric growth over the next 10 years. **RISE Houston** is that response."

Harry Tenenbaum,
Director of Commercialization and Infrastructure, Evolve Houston

RISE Houston uses a demand-forecasting dashboard to identify EV charging demand based on various percentages of EV adoption. The project includes scientific and economic research, commercial opportunities, and consumer education and awareness. The RISE Houston Working Group includes stakeholders from academia, energy transition, retail energy, utilities, and the local municipal government.

RISE HOUSTON AND EQUITY

As an ongoing project, RISE Houston will engage diverse sets of public and private sector stakeholders to inform and comment on various outputs from the group. Further, RISE Houston will maintain compliance with Evolve Houston's commitment to equitable investment, ensuring that at least 40% of funds deployed target historically underserved communities to make sure that no one is left out of transportation electrification.

"50 BY 30"

In furtherance of Evolve Houston's mission for EVs to achieve 50% of new car sales by 2030, RISE Houston is the plan Houston needs to ensure the Houston Region is equipped with objective information when considering EVSE investment.

OUR APPROACH

In establishing a baseline understanding of our region's EVSE capacity, we are able to offer critical insights that current and future EV drivers can leverage in their decision-making process. Understanding the region's status will offer EVSE providers valuable geographic and time-specific deployment data to inform future deployment strategies. This first step will also be critical for our public entities as they develop their own public charging strategies and engagement programs.

METHODOLOGY IN ACTION

Outlined in the coming pages is Evolve Houston's methodology in action, with tools and assumptions the group used to develop a baseline understanding of EVSE in the Region.

TOOLS AND BASELINES

"ElectroTempo's platform drives large-scale vehicle electrification through our unified predictive analytics and purpose-built technology. We are honored to be the analytics engine behind RISE Houston"

Ann Xu,
Co-Founder and CEO, ElectroTempo Inc.

CAPABILITIES

ElectroTempo offers the ability to calculate home, workplace, and public charging demand of light-duty passenger vehicles for the following:

- Each of the 3001 census block groups within the 8-county Houston-Galveston Region (with options to expand the geographic coverage);
- Four market adoption levels (5, 10, 15, and 20%);
- Two HVAC usage levels (low and high, reflective of weather conditions); and
- Seasonal hour-by-hour charging demand for a typical 24-hour period.

The ElectroTempo dashboard is also capable of:

- Mapping existing charging station locations;
- Determining racial composition and poverty rate of each census block group; and
- Calculating the total cost of charging stations for the region to support 50% EVs (and as stated above, 50by30).

EVSE ADOPTION TO DATE

As of September 2021, there are over 460 Level 2 and DCFC EVSE stations in the Greater Houston Area.[3]

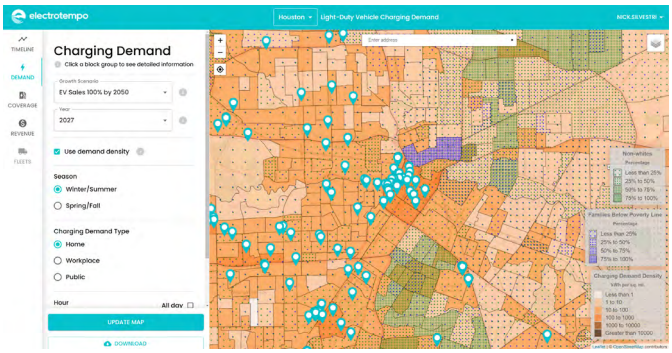


Figure 7.1: ElectroTempo Dashboard showing forecasted charging demand and existing EVSE stations.

3 Spangher, L. et al. (2019). Quantifying the impact of U.S. Electric Vehicle Sales on light-duty vehicle fleet CO2 emissions using a novel agent-based simulation. Transportation Research Part D: Transport and Environment

EVSE OVERVIEW

EVSE: WHAT IS IT?

Electric Vehicle Supply Equipment (EVSE) supplies electricity directly to EVs to recharge their batteries and provide the vehicle with more driving range. EVSEs are also known as EV charging stations, electric recharging points or just charging points.

Level 2 Charger

- 9x faster than a normal wall outlet (L1)
- Charges at approx. 20-30 miles per hour; can fully charge many EVs in ~8 hours
- Suitable for residences or workplaces
- Cost: $500 - $1,000 + plus installation
- Uses existing 240V line

DC Fast Charger

- Fastest available EV chargers
- Charges up to 100% in 60-90 minutes
- Suitable for public and business applications
- Cost: $50,000 - $100,000 + installation
- Often requires site upgrades

WHAT IS THE PLANNING PROCESS AND HOW LONG DOES IT TAKE TO DEPLOY EVSE?

As EVs continue to grow across vehicle markets, it is becoming increasingly essential to develop EVSE infrastructure for recharging vehicles at home, the workplace, and at public stations. The deployment of EVSE infrastructure consists of three main components: electricity, onsite electrical equipment and materials, and the charging stations themselves.

Due to the wide availability of electricity from energy utilities, region-wide deployment of EVSE infrastructure along the existing power grid is achievable. Depending on the type of charging needed, the classification of charger (Level 1, Level 2, DCFC) can be selected and installed to safely provide adequate electricity to the EVSE. However, this sometimes requires onsite electrical upgrades. Residences and workplaces, where vehicles often dwell for multiple hours, are typically equipped with Level 1 or Level 2 chargers, which are not complicated to install and typically only require a receptacle and a charging station. However, public places are often equipped with DCFC chargers, which can be complicated and expensive to install and often require onsite electrical upgrades and additional services from the local power utility.

In addition to many EV owners having access to an at-home Level 2 charger, deployment of publicly-accessible EVSE infrastructure is necessary to reduce perceived “range anxiety” and enable higher EV adoption rates as the general public becomes more confident in accessibility to adequate charging.

EVSE OVERVIEW

EV ADOPTION TO DATE

According to vehicle registration data obtained by Evolve Houston, new EV sales in the Greater Houston Area are at roughly 2% YTD. Growth over the past 3 years has steadily increased and has more than doubled between 2020 and 2021.[4] New EV registrations are expected to increase further over the next few years as manufacturers and supply chains recover from challenges experienced during the COVID-19 pandemic. Further, Evolve Houston anticipates seeing new EV sales increase precipitously as more manufacturers commit to increasing investments in EVs. Evolve currently anticipates that Houston EV sales will make up half of all light duty vehicle sales by 2030, meeting the City's goal.

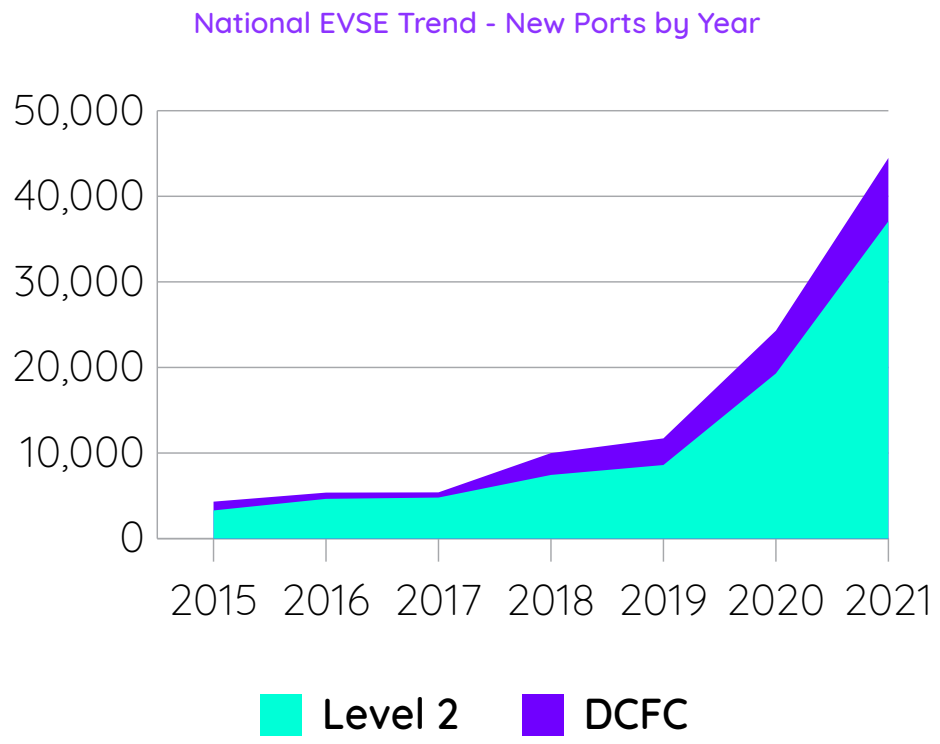
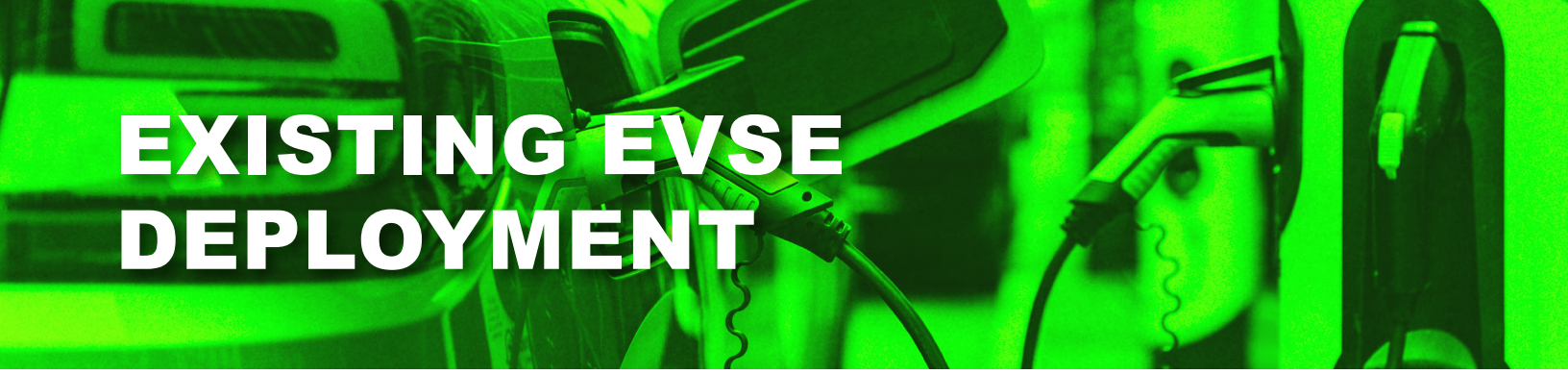


Figure: 9.1: Growth of national EVSE availability 2015 – 2021.
Source: Alternative Fuel Data Center

4 Alternative Fueling Station Locator. Alternative Fuels Data Center, https://afdc.energy.gov/stations/#/analyze



EXISTING EVSE DEPLOYMENT

CURRENT NUMBER OF CHARGING STATIONS IN HOUSTON: IS IT ADEQUATE TO SUPPORT TODAY'S CHARGING DEMAND?

According to the National Renewable Energy laboratory, as of September 2021, there are 467 charging stations in the eight-county Houston Region, with approximately 1,200 charging connections in total. These chargers can provide 305 MWh of energy over a 24-hour period if utilized at 100%.[5, 6]

As of January 2020, there were 9,300 EVs in the Houston Region. When considering 2021 EV sales data, it is estimated that the number of EVs in the Houston Region has grown to 16,500 vehicles as of December 2021. This constitutes about 0.25% of the total light-duty vehicle population in the region.[5] Based on ElectroTempo's charging demand simulation, current daily EV charging demand is about 150 MWh.[7] Given the existing trend that about 80% of all EV charging takes place at home, there is about 30 MWh of charging demand to be met at workplace and public charging stations. This means that, **at 10% utilization, the ~1,200 existing charging stations support today's EVs**. However, given the Evolve Houston and Biden Administration EV growth targets, the projected EV growth may quickly outpace the existing charging capacity provided by today's existing charging stations.

WHAT IS THE HISTORY OF CHARGER DEPLOYMENT IN HOUSTON?

Historically, EVSE deployment in Houston has followed an exponential trend, with the largest growth in public charging supply, so far, happening during the time period between 2019 and today.[5] The distribution of existing Level 2 and DCFC charging ports are highlighted in figure 10.1:

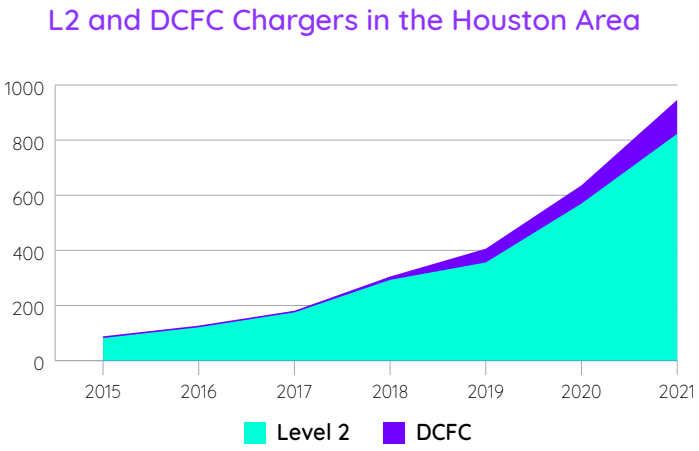
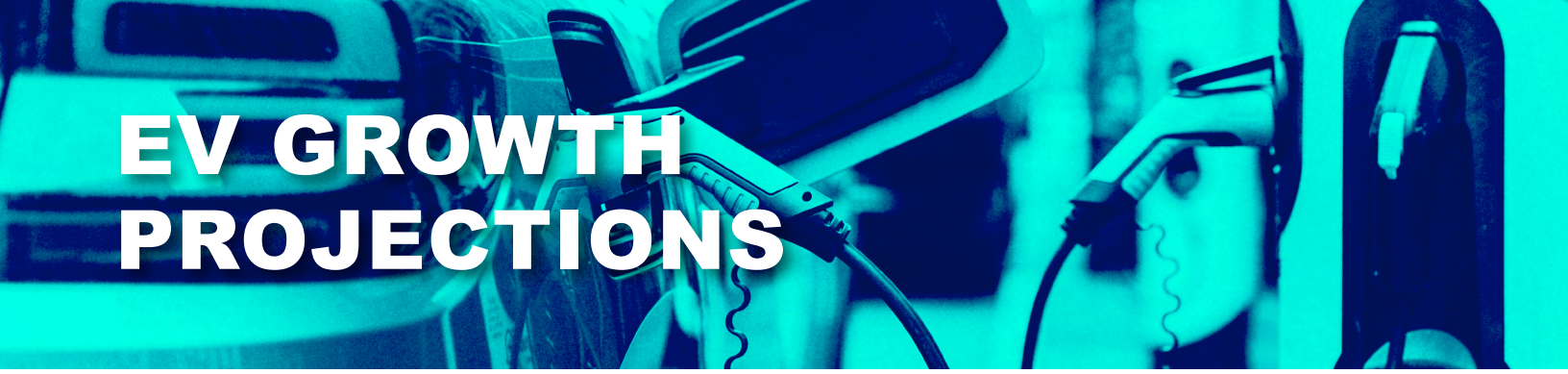


Figure 10.1: Historic public L2 and DCFC deployment in the Houston Region.

5 Wert, J.L., et al (2021). Coupled infrastructure simulation of Electric Grid and Transportation Networks. 2021 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT)
6 Alternative Fueling Station Locator. Alternative Fuels Data Center, https://afdc.energy.gov/stations/#/analyze
7 Spangher, L. et al. (2019). Quantifying the impact of U.S. Electric Vehicle Sales on light-duty vehicle fleet CO2 emissions using a novel agent-based simulation. Transportation Research Part D: Transport and Environment



EV GROWTH PROJECTIONS

POPULATION AND VEHICLE EXPECTED GROWTH THROUGH 2030

As consumers continue to warm to the idea of EVs, and as the Houston automotive market continues to increase in size, so too will the number of EVs on the road and the percentage of EV sales in the market. As of the end of 2021, there are an estimated 16,500 EVs on Houston's roads,[8] an impressive number despite recent reductions in the overall automotive market due to pandemic-related reduction in consumer spending and supply chain constraints. Additionally, as range anxiety is alleviated (through adequate accessible public charging and battery range improvements), vehicles become more affordable, and OEMs increase EV offerings and meet customer demand, the number of EVs on Houston's roads is projected to continue to increase. According to projections based on current consumer data, EV sales are likely to reach ~30% of total new vehicle sales in 2030, ~50% in 2033, and over 99% by 2049.[8] However, this data is subject to change based on dynamic nature of the EV market.

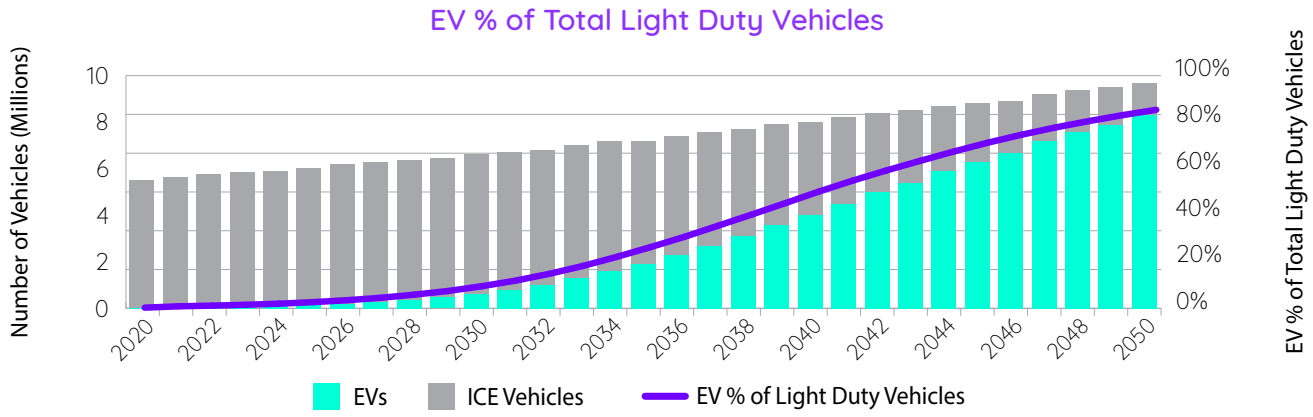


Figure 11.1: The EV and ICE shares of all light duty vehicles on Houston's roads. The trendline indicates the EV portion as a percentage of the total number of light duty vehicles.

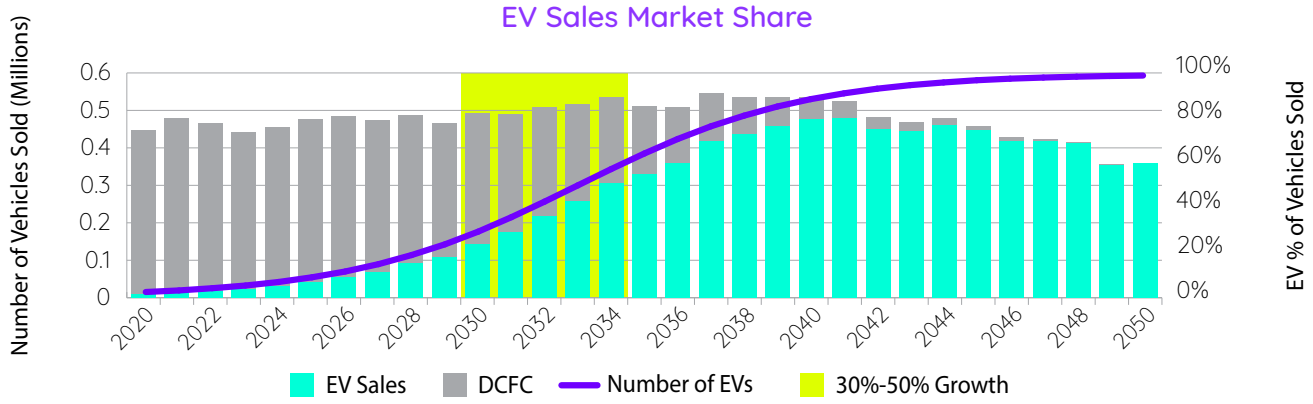


Figure 11.2: The EV and ICE shares of all light duty vehicles sold in Houston. The trendline indicates the EV portion as a percentage of the total number of light duty vehicles sold. Note that the market share increases from 30% to 50% between 2030 and 2034.

8 Spangher, L. et al. (2019). Quantifying the impact of U.S. Electric Vehicle Sales on light-duty vehicle fleet CO2 emissions using a novel agent-based simulation. Transportation Research Part D: Transport and Environment

STATE AND FEDERAL EV INITIATIVES

BIDEN ADMINISTRATION EV AND EVSE GOALS

The Biden Administration has planned to accelerate the deployment of EVs and public EVSEs, create good-paying union jobs, and enabling a clean transportation future by signing the $1 trillion Infrastructure Bill into law. In Q1 2021, the Biden administration announced the American Jobs Plan, which aims to build a national public charging network of 500,000 EVSE charging stations by 2030. In March 2021, the US Department of Energy (DOE) Alternative Fueling Station Locator reached the milestone of 100,000 public EVSE charging stations.

> With the passing of the Bipartisan Bill, $7.5 billion will go to building out a network of electric vehicle chargers across the country. **"We're going to build out the first-ever national network of charging stations all across the country — over 500,000 of them,"** said President Biden, **"So, you'll be able to go across the whole darn country, from East Coast to West Coast, just like you'd stop at a gas station now."**

Evolve Houston and The White House's goals are for EVs to consist of 50% of all new-light duty vehicle sales by 2030 and to build an infrastructure that can support that many EVs on the road. It is critical to reduce range anxiety, a main contributing factor preventing consumers from deciding to purchase an electric vehicle; these new actions will accelerate EVSE deployment and make driving an EV convenient in every part of the country.

The federal statute outlines the distribution of federal funding to be controlled at the state level by TxDOT. It is critical to establish a comprehensive statewide plan that sets requirements to create appropriate distribution of funds.

STATE AND FEDERAL EV INITIATIVES

STATE-LEVEL EV PROGRAMS

With the signing of the Bipartisan Bill, we expect to see funding for grant programs for EV charging infrastructure, fleet electrification, as well EV battery technology development trickle down from the federal- to state-level. Furthermore, the Texas Commission on Environmental Equity (TCEQ) has existing state-level programs that provide grant funding for EV and EVSE adoption. Currently, TCEQ offers a grant for Level 2 EVSE in shared parking locations such as workplaces and apartment complexes.

Additionally, TCEQ recently offered a grant that provided $20.9MM in funding for DCFC projects with the intention of improving commuter and interstate-adjacent EV charging.[9]

Figure 13.1: Funding for state and local EV initiatives is typically distributed by state-level programs.

9 1TCEQ (2021). Light-Duty Zero Emission Vehicle Supply Equipment: Direct Current Fast Charge & Hydrogen Dispensing Equipment [Webinar]. TxVEMP

MAPPING EV CHARGING DEMAND

WHAT IS THE CURRENT CHARGING DEMAND?

The table below summarizes the anticipated home, workplace, and public charging demand under various EV percentage levels across all light-duty vehicles (LDVs). At 5%, which the region is expected to reach between 2025 and 2030 (under aggressive sales goals), the daily home, office, and public charging demand may be as much as 2,195 MWh, 663 MWh, and 210 MWh respectively.[10] For reference, the average US residential utility customer uses 10.7 MWh annually, or 0.03 MWh daily.[11] This is in line with current estimates, such as the National Renewable Energy Laboratory, which project that at least ~80% of EV charging will be done at home with low voltage, not using public DCFC EVSE.[12, 13]

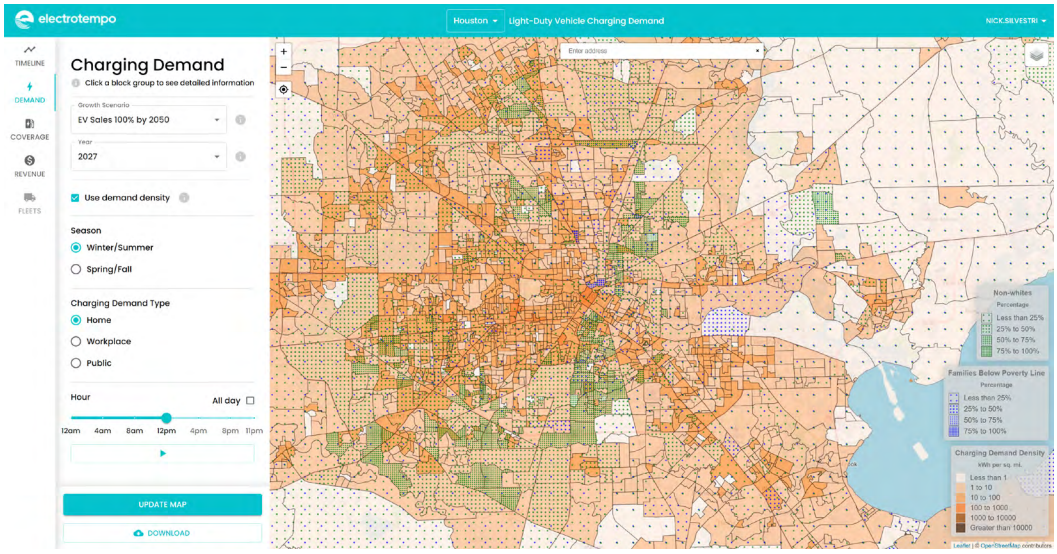


Figure 14.1: This screenshot of the ElectroTempo dashboard shows charging demand at a census-block level based on the scenario defined as: 5% EV market share, high HVAC use, at-home charging, at 3 AM.

10 Wert, J.L., et al. (2021). Coupled infrastructure simulation of Electric Grid and Transportation Networks. 2021 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT)
11 US Energy Information Administration. 2020 Average Monthly Bill – Residential, 2021, https://www.eia.gov/electricy/sales_revenue_price/pdf/table5_a.pdf
12 Engel, H., et al. (2018). Charging Ahead: Electric-Vehicle Infrastructure Demand. McKinsey Center for Future Mobility
13 Electric Vehicle Infrastructure Projection Tool Lite. Alternative Fuels Data Center, https://afdc.energy.gov/evi-pro-lite/load profile

MAPPING EV CHARGING DEMAND

HOW MUCH MONEY IS REQUIRED TO REACH EVSE GOALS? HOW MUCH DEMAND WILL IT SUPPORT?

Existing charging stations provide 305 MWh of energy over 24 hours if utilized at 100%.[14] This means that the existing chargers can fill about 3.5% of total office and public charging demand at a 10% utilization rate around year 2028. At that time, 843 MWh of non-home charging demand will not be filled. This translates to 35 MW of power if spread evenly across 24 hours. Assuming such power is provided by chargers utilized at 10%, the region will need as much as 350 MW of available power from chargers. If all of these chargers are 150kW DCFC chargers, an additional 2,340 DCFC chargers are needed. At $100,000 per DC fast charger, the required investment is $234MM. This investment requirement will almost double by 2030 and more than quadruple by 2034, as EV sales reaches the inflection point in 2030.

		Daily Charging Demand by Type (MWh)			Chargers Needed (Cumulative)		
EV % Among all LDVs	Projected Year	Home	Workplace	Public	Home	Workplace[15]	Public DCFC
5%	2028	2,195	663	210	71,479	17,760	776
10%	2031	5,346	1,615	512	156,627	38,917	1,699
15%	2033	8,155	2,463	781	251,184	62,412	2,725
20%	2034	11,581	3,498	1,109	312,224	77,578	3,388

Figure 15.1: The daily home, workplace, and public charging demand (MWh) and number of home, workplace, and public chargers needed at various EV adoption rates.

14 Alternative Fueling Station Locator. Alternative Fuels Data Center, https://afdc.energy.gov/stations/#/analyze
15 Note: 80% of workplace charging filled by L2 (0.017 MW); 20% of workplace charging filled by DCFC (0.15 MW)

EXISTING EVSE SUPPLY AND PROJECTED EVSE DEMAND

WHAT IS THE EXISTING INFRASTRUCTURE IN HOUSTON? WHERE ARE THESE CHARGERS LOCATED?

The distribution of existing public charging infrastructure in Houston is most dense around the city's center. The density of public charging infrastructure decreases away from the city's center, but still exists along Interstates 69, 45, and 10. Figure 16.1 shows the existing charging stations in Houston:

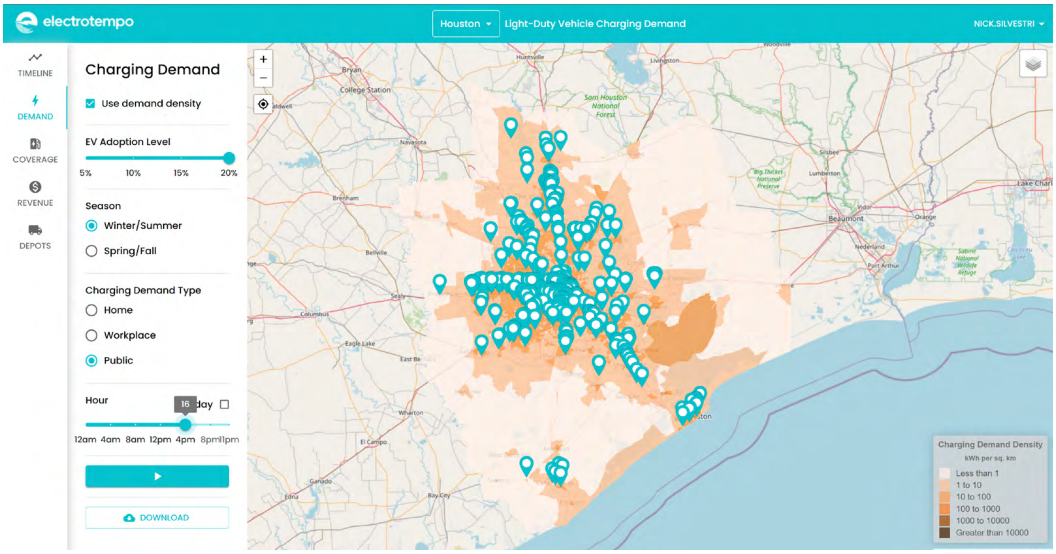


Figure 16.1: Existing public EVSE deployed throughout Houston.

HOW MUCH MONEY HAS BEEN INVESTED TO DATE IN PUBLIC CHARGING STATIONS/INFRASTRUCTURE?

About 8% of all charging ports are DC fast chargers; the rest are Level 2 chargers; Level 1 chargers are negligible. According to industry reports, the cost of installing a public Level 2 charger is around $7,000; the cost of installing a DCFC charger is around $100,000.[16] As such, estimates show that about $6.7 million has been invested to date, of which $3 million went toward Level 2 chargers, and $3.7 million went toward DCFC chargers.

16 Nelder, C, et al. (2021). Reducing EV Charging Infrastructure Costs. RMI, https://rmi.org/instight/reducing-ev-charging-infrastructure-costs/

EXISTING EVSE SUPPLY AND PROJECTED EVSE DEMAND

WHAT IS THE GAP IN SUPPLY? CAN WE SUPPORT EXISTING DEMAND? HOW MUCH MORE DEMAND CAN WE SUPPORT?

The scenario-built map below shows the fraction of filled non-home charging demand (including office and public) in the region according to the following formula:

$$\text{Fraction of Filled Demand} = \frac{\text{24 Hrs x Available Charging Connection Power x Utilization}}{\text{Total 24 Hrs Office and Public Charging Demand}}$$

Figure 17.1 indicates that, in the scenario described by 5% EV adoption and a 10% charger utilization level, only a few areas within the region have adequate EVSE deployment (up to and exceeding 100%). The map therefor indicates that most of the region's public and office charging demand is less than 25% served.[16] This scenario is just one of many that Evolve Houston is studying to determine the practical and equitable distribution of met charging demand in the Greater Houston Area.

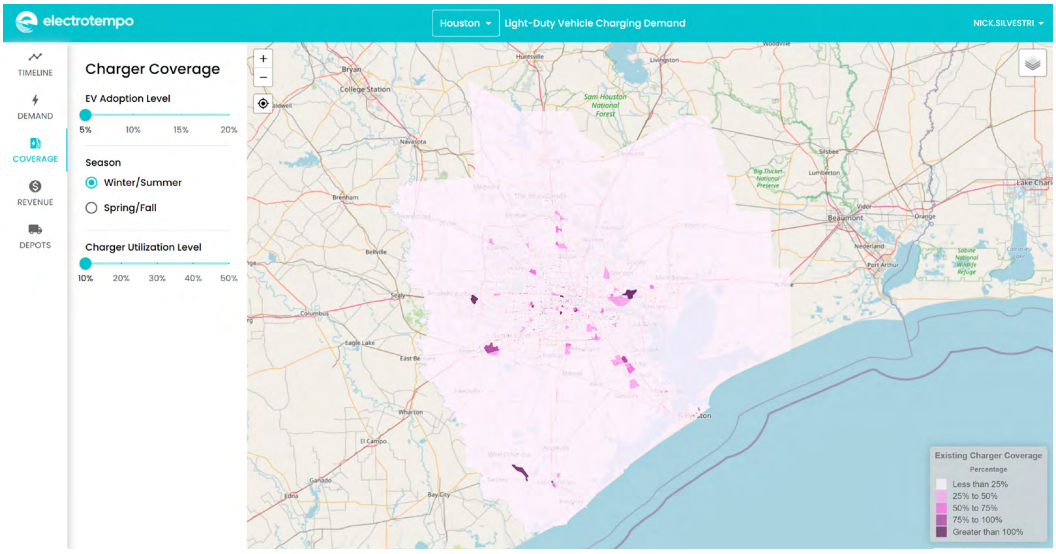
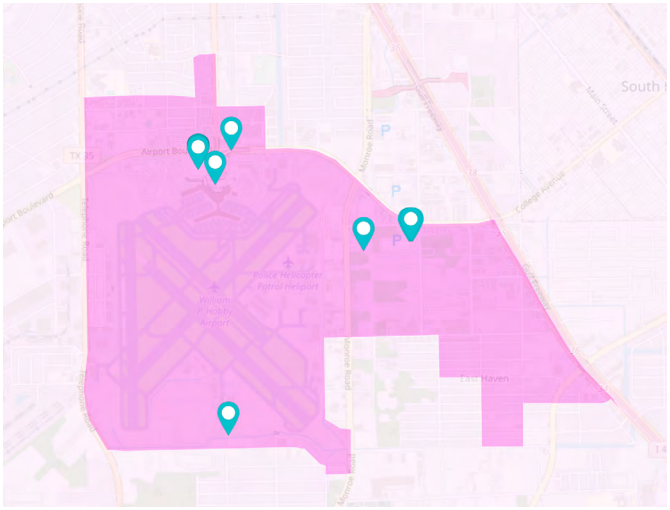


Figure 17.1: The gap between charging demand (5% EV adoption rate) and existing public EVSE. Note: the dark spots on the map are anomalous instances of closed EV charging network EVSE.

THE EVSE SUPPLY GAP

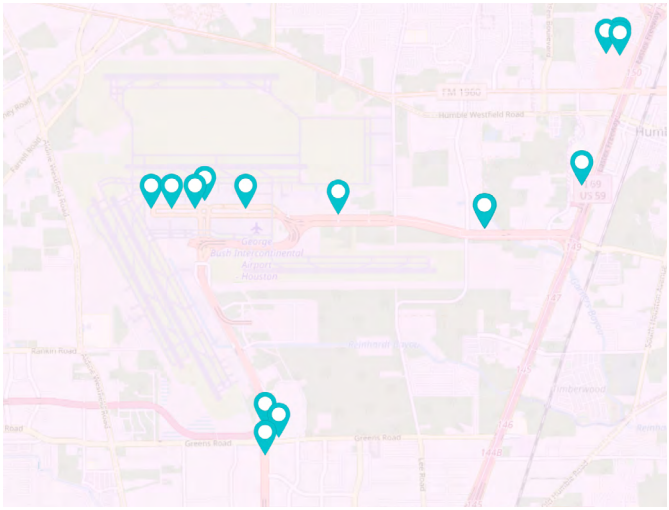
WHAT IS THE GAP IN SUPPLY? HOW MUCH MORE DEMAND CAN WE SUPPORT? CAN WE SUPPORT EXISTING DEMAND? CONT.

The “Fraction of filled demand” layer enables an evidence-based view as stakeholders identify high-priority areas. For example, based on Figures 18.1 and 18.2, the EV charging demand at the Hobby Airport is better met than at the Bush Airport, even though there are multiple existing charging stations at both airports. This is because the projected future charging demand at Bush Airport is much higher than the existing charging stations are capable of handling; Hobby Airport, on the other hand, is much closer to its projected target charging demand.



Hobby Airport

Figure 18.1 Existing EVSE deployment and unmet charging demand at Hobby Airport



Bush Airport

Figure 18.2 Existing EVSE deployment and unmet charging demand at Bush Airport

Highlighted gaps in charging demand and EVSE distribution present clearly-identified opportunities of commercial opportunity. Additionally, evaluating the socioeconomic landscape of high-demand, low-distribution areas creates an opportunity to lower the barriers to entry for EVs in some of our LMI communities, furthering accessibility to transportation electrification across the region.

ELECTRIFYING OUR MINORITY AND LMI COMMUNITIES

IS EXISTING SUPPLY ADEQUATE FOR COMPLETE COMMUNITIES, LIVABLE CENTERS, ETC.?

Figure 19.1 shows existing charging stations in relation to non-white population density in Houston. The denser the green dots, the higher the percentage of non-whites in a census block group. The map shows a lack of charging stations in non-white areas.

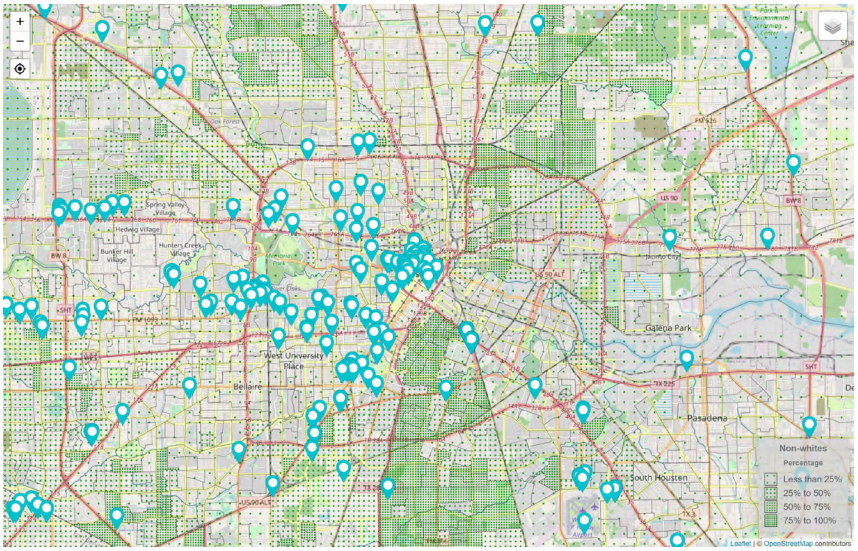


Figure 19.1: The ElectroTempo dashboard showing EVSE deployment among census blocks with varying levels of minority population density (dot distribution).

Figure 19.2 shows the same view of Houston but with blue dots indicating families below the federal poverty line. The denser the blue dots, the higher the percentage of families below poverty line in a census block group. The map shows that charging stations do not currently exist in areas with higher percentages of low-income families.

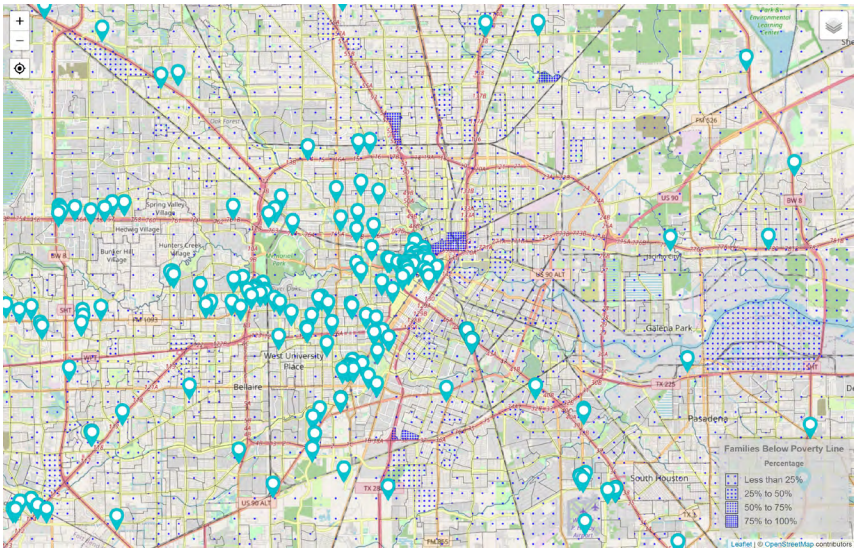


Figure 19.2: The ElectroTempo dashboard showing EVSE deployment among census blocks with varying levels of families living below the poverty line (dot distribution).

KEY FINDINGS

KEY FINDINGS

The Greater Houston Area currently has enough public charging infrastructure to support the existing EV demand at a 10% utilization rate.

Current estimates point towards at least ~80% of charging taking place at home on L1/L2 chargers. Public and DCFC charging is projected to be supplemental or for individuals without access to at-home charging.

$6.7MM has been invested to date, of which $3MM went towards Level 2 chargers, and $3.7MM went towards DCFC Chargers.

As the demand for EVs increases, so will the need for an expansion in charging infrastructure; more than $400MM in funding is required to provide adequate public and workplace charging to support the 50% by 2030 goal (10% total adoption).

FUTURE QUESTIONS TO INVESTIGATE

Can current infrastructure and future investments keep up with EV adoption trends? What needs to be done to keep up with demand?

What are the venues for feedback? How can we track the public's perception of Houston's EV Charging Infrastructure?

What role will the private market play beyond market adoption (planning, workforce, capital projects, etc.)? What role will the public market/government/ municipalities play?

Multi-family unit housing and its latent-demand may be an over-weighted future determinant of public infrastructure demand. How can RISE Houston address this comprehensively?

Who are the players in this space? Who will be future players in this space? What does the general EVSE infrastructure ecosystem look like?

With opportunities for public funding on the horizon, how do we guarantee that the private market continues to take risks and invest in EVSE infrastructure?

What role will the private market play beyond market adoption (planning, workforce, capital projects, etc.)? What role will the public market/government/ municipalities play?

Looking forward, what role will RISE Houston play in investigating Houston's EV Charging Infrastructure and guiding investments.

EVOLVE

Have feedback?
Submit your comment here.