# PULLING THE RIGHT LEVERS:

How Cities Can Advance EV Adoption by Lowering Barriers

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# INTRODUCTION



Widespread electric-vehicle adoption is critical if the U.S. is to meet its 2025 carbon-reduction goals, as outlined in the Paris Climate Agreement. [1] Since transportation is a leading cause of greenhouse gas emissions, support for EVs should be part of every city's sustainability and transportation plans. [2]

Forth's mission is to accelerate the use of smart transportation to move people and goods in a more efficient, cleaner and equitable way. This is done through innovation, industry development, advocacy, and consumer engagement. We have a proven track record of accelerating transportation electrification and smart mobility. Barriers to EV adoption vary widely between different regions and markets. Based on our experience working with communities large and small in the Bloomberg American Cities Climate Challenge, we've identified the three areas that are most challenging for cities as they push for EV adoption in their communities:

- Market barriers: Lack of EVs, or few EV models available, at local dealerships.
- Educational barriers: Consumers are not aware of EVs and their benefits.
- Infrastructure barriers: Public charging stations aren't available, or potential EV drivers do not know that they are available, leading to "range anxiety."

Below, we highlight the many ways cities who participated in the Climate Challenge have lowered these barriers to public adoption of EVs. While there are variables unique to each city in terms of demographics, geography and community priorities, their experiences offer valuable lessons to any city as it prepares for transportation electrification.

# FORTH AND THE BLOOMBERG AMERICA CITIES CLIMATE CHALLENGE

# Since 2018, Forth has been part of the Bloomberg Philanthropies American Cities Climate Challenge,

an ambitious effort to reduce our country's greenhouse gas emissions by 2025. [3] The Climate Challenge recognizes that cities are critical innovators and leaders in environmental protection, and that local leadership is even more important in the face of increasing global urbanization. When it comes to mobility in particular, many of the most critical decisions are made at the city level.

For decades, progressive cities have led efforts to reduce dependence on private, single occupancy, gas-powered cars and trucks. Through the Climate Challenge, cities doubled down on these efforts while also increasing their focus on newer strategies like transportation electrification. To that end, Forth and other national partners led concentrated efforts in 25 cities across the country, offering assistance so that they can meet their targets under the Paris Agreement. [4]

As a partner, Forth focuses on transformational actions to reduce greenhouse gas emissions in the transportation sector. Cities vary in their needs, demographics and goals, so our work has encompassed a range of strategies and techniques to drive EV adoption. Our engagement with each city is tailored to fit its specific governmental structure, level of EV readiness, and capacity for action. As our work over the last two-and-ahalf years demonstrates, these strategies can be effective for communities to overcome challenges and accelerate citywide use of EVs.



#### FIGURE 1:

The Climate Challenge cities 02 MARKET BARRIERS

While electric transportation is critical in slowing the effects of climate change, EV adoption faces challenges in the marketplace. While EVs may be less expensive for consumers in the long run, thanks to low maintenance and fuel costs, [5] they have higher up-front costs than gas-powered vehicles, limiting their appeal to lower-income buyers. [6]

While automakers are ramping up future production, consumers today may find limited models to choose from (or none at all) at their local dealerships. Cities can lead in increasing the use of EVs by identifying the transportation needs and marketplace gaps in their communities, then implementing programs, incentives, and partnerships to fill these gaps.



### 2.1 ASSESSING YOUR COMMUNITY'S NEEDS

In order for their transportation electrification efforts to succeed, cities must understand the mobility needs, gaps, and resources available for their communities. Forth's partner cities have approached this in a number of ways. The most effective information-gathering techniques include focus groups, engagement with neighborhood and community stakeholders, and working groups that bring together mobility experts with people whose life choices (access to work, school, and basic necessities) are shaped by access to transportation.

We encourage our partners to engage low-income and communities of color in transportation electrification working groups and to give these community members the ability to influence decision-making. We also recommend that our partner cities make a concerted effort to design a transportation needs assessment for targeted communities and over sample those who have been most underserved. All participating community members should be compensated for their time and expertise.

The goal of a needs assessment is to identify the existing gaps in mobility and services and to guide cities to invest in solutions that are informed by community stakeholders. Often conducted by third-party organizations such as local environmental justice organizations, needs assessments include qualitative and quantitative analysis of information gathered through surveys and focus groups. A thorough needs assessment can help city leaders hear the opinions of the community while also setting baseline metrics around transportation. It is the responsibility of the city to take these recommendations from the community and mold them into the city's strategic roadmap.

### 2.1.1 CASE STUDY

NEEDS ASSESSMENTS IN SAN FRANCISCO AND DENVER

San Francisco, CA, worked with an equity-focused consulting firm to conduct a needs assessment in a rapidly gentrifying neighborhood in 2018. The project compared various mobility options in an equity analysis, then gave the community the power to vote on which options to implement. During an eight-month process, 10 transportation electrification proposals were created and vetted by long-term, low-income, and minority residents. One final proposal included a subsidized carpool service to bring children to school.

Denver, CO, worked with Guidehouse to complete a comprehensive needs assessment of transportation in the Montbello neighborhood in 2020. The goal of the yearlong study was to better understand the unique mobility challenges of underserved communities and identify effective solutions to increasing EV adoption. The Montbello neighborhood was selected as the community of focus because of its low neighborhood equity index score, their active community engagement, and existing transportation disparities. Much of the study took place during COVID; however, stakeholder engagement was still conducted through compensated phone-based interviews. As a result of the study, four community-vetted pilot program proposals were developed with specific organizations in mind for who could support.

#### FIGURE 2:

Public Charging Station Locations by Denver Equity Index Map



## 2.2 PUTTING EVS IN REACH FOR ALL

One of the issues our Climate Challenge partner cities have found is the perception that EVs are only for affluent drivers. The relatively high up-front costs of ownership and lack of charging infrastructure can compound the problem, especially in underserved communities. But increasing access to EVs can lower their cost to purchase and maintain. Over time, this can also increase the market for pre-owned EVs.

At the moment, however, there's an inventory problem – even in states that have passed mandates requiring increases in EV sales. [7] Nationally, the marketplace is limited. A 2019 Sierra Club study of more than 900 dealerships, including dealerships in all 50 states, found: [8]



- Nearly 75% of dealerships don't sell electric vehicles.
- Of the dealerships that do sell EVs, more than two thirds do not display EVs prominently.
- In nearly one-third of the dealerships, salespeople provided no information about how to charge an EV.
- In one-third of the dealerships, salespeople did not provide information about state and federal incentives to reduce the cost of an EV.
- When volunteers asked to test drive an EV, the vehicle couldn't be driven 10% of the time because it was not sufficiently charged.

In cities where dealerships are neither EV-friendly nor well stocked with EV models, Forth works with local partners to organize test drives, which can be an important educational opportunity for potential EV buyers. We help consumers understand the benefits of EVs, show them how various models could meet their needs, and provide tips for how to navigate pressure from salespeople to purchase a gasoline-powered vehicle instead of an electric model. This ensures that buyers who want an EV don't end up settling for conventionally powered car simply because it's easier for a local dealer to provide.

Some of Forth's partner cities have also leveraged their assets to further address market availability and accessibility. They're using bulk-buying programs and dealership engagement efforts to make sure that their communities have a variety of EV models available locally, at a variety of prices.

### 2.2.1 CASE STUDY

BULK BUYS IN KANSAS CITY

One of the advantages cities have is their group purchasing power. When Kansas City, MO moved to electrify its fleet vehicles in 2016 and 2017, it also secured a bulk discount on Nissan Leaf EVs for consumers. By purchasing EVs for its fleet, Kansas City was able to gain a \$10,000 discount for local buyers. The program increased sales 87% in its first year – and would have done even better if Nissan dealerships in the area had more Nissan Leaf inventory in stock. [9]

### 2.2.2 CASE STUDY

DEALER ENGAGEMENT IN CHARLOTTE

Some of the Climate Challenge cities have created partnerships with auto dealers in their area to provide incentives and education about EVs. [10] Forth has found that these dealership engagement efforts are most successful when focused on a few champion dealerships, rather than trying to get all local dealers to participate. Using communications materials from the city, dealers can help educate EV owners and the public about EVs' benefits, long-term cost of ownership, and charging station technology. These campaigns may include outreach through email newsletters, social media and advertising. A few programs also include financial incentives for consumers taking electric test drives.

As part of the Climate Challenge, leaders in Charlotte, NC sought Forth's help to reach their goal of increased EV ownership. To do so, we focused on a series of high-profile Ride and Drive events at which Charlotte residents could test drive various EV models. However, COVID-19 impacted any plans for large Ride and Drive events, and we pivoted the program to virtual consumer and dealership engagement events.

The program included recruiting dealerships and providing dealership sales staff training to better understand how electric vehicles work and how to sell them to local consumers. Participating dealerships had to keep electric vehicles on their lot that were charged and ready for test drives. In parallel, consumer educational webinars were provided that focused on EV education and guided consumers to participating dealerships for test drives. Forth worked with the City to identify a local partner who could carry on the events and build capacity for future events outside of the Climate Challenge.

## 2.3 PREPARING FOR MARKET TRANSFORMATION

At the moment, there are an estimated 1.3 million electric vehicles on U.S. roads. In the next decade, however, sales are estimated to exceed 3.5 million per year. [11] As the market shifts from gas-driven vehicles to EVs, cities should prepare for this market transformation – even if they aren't able to leverage their resources in advance, as Kansas City and Charlotte have.

As a starting point, city leaders can bring together industry stakeholders and internal experts to form a cross-functional group that can develop strategies, brainstorm ideas, and evaluate concepts to ensure that their transportation electrification plans can adequately serve their community.



### 2.3.1 CASE STUDY

WORKPLACE CHARGING WORKSHOPS IN INDIANAPOLIS

Within the Climate Challenge, Indianapolis, IN identified a need for more charging infrastructure within the City and region. Working with Forth, we put together a virtual EV Workplace Charging Workshop. This free two-day event provided an opportunity for corporate and municipality leaders in Indiana and beyond to come together and learn from industry experts about the benefits and realities of electric vehicle charging in the workplace. Participants left with a network of peers and industry experts, as well as a toolkit to put what they learned into action.

### 2.3.2 CASE STUDY

TNC WORKING GROUPS IN LOS ANGELES

Los Angeles is the largest U.S. market for transportation network companies (TNCs) such as Uber and Lyft. These ridesharing companies account for more than 12.8 million rides annually to and from Los Angeles International Airport alone. Forth lead work with the City to bring together a working group – including rideshare drivers, fast-charging providers, utilities, TNC sustainability policy executives, equity practitioners, mobility hubs, and the California Air Resources Board – to advance TNC electrification. The working group focused on improving driver outreach and driver economics. In addition, the group worked to improve the availability of charging infrastructure for TNC drivers. OB **EDUCATIONAL BARRIERS** 

Although the benefits of EVs are well known to early adopters, electric transportation has yet to gain traction in the mind of the average consumer. Research by UC Davis' Institute of Transportation Studies has found that even in California, an early proponent of electric transportation, more than half of all drivers cannot name a single electric car model – and the situation has not improved significantly in the past six years. [12]

Forth's work with Climate Challenge cities has helped them overcome the lack of awareness of EV technology by educating residents about the incentives, costs, and operational advantages of EVs. We do so by customizing our approach based on market research and needs assessment for each city, ensuring that we meet the needs of stakeholders in each community.



## **3.1 OUTREACH TO POTENTIAL EV BUYERS**

Forth is a national leader in delivering consumer engagement campaigns that raise awareness and enthusiasm for electric vehicles. These campaigns may include educational outreach at public events, surveys to measure consumer interest in/awareness of EVs in a given community, and professional marketing materials to highlight the benefits of electric transportation.

# 3.2 RIDE AND DRIVES TO RAISE VISIBILITY AND INCREASE CONFIDENCE

Public EV Ride and Drive events, where consumers can test drive a variety of makes and models, are a proven tool to raise visibility and influence purchase decisions. [13] Often held at community fairs or at the headquarters of large employers in a community, these events introduce consumers to the benefits of EVs and can dispel myths about EVs' affordability, range and performance.

Consumers who participate in Ride and Drives also leave feeling prepared to work with local dealerships on purchasing an EV, whether by calling in advance to identify inventory or traveling a bit farther to purchase a car. In addition, after having an opportunity to drive an EV, consumers may be more open to bypassing the dealership and instead purchasing their car online, as is the case with buyers who chose Teslas.

### 3.2.1 CASE STUDY

### RIDE AND DRIVE EVENTS IN OREGON

Forth engaged with communities across Oregon to offer Ride and Drives as a way to increase awareness of the many available models of EVs in 2019. Forth worked with site hosts and leveraged partnerships with community organizations to get the word out. Often times, the Ride and Drive was planned alongside a larger event that brings in thousands of event-goers. In addition, Forth developed partnerships with local dealers to bring vehicles to the events for residents to test drive.

FIGURE 3:

Consumers get to test drive and take a look around multiple EV models at Ride and Drives

Consumers who test drove vehicles were prompted to answer a few brief survey questions before and after the test drive. Following the test drive, over 80% of drivers shared that they expect to buy or lease an EV in the future.



### 3.3 INCENTIVES AS A PROMOTIONAL TOOL

Consumer incentives such as rebates, tax credits and free parking spaces can be an effective way to address concerns about whether EVs are an affordable option for the average driver. Furthermore, studies by the International Council on Clean Transportation have shown that "stacking" multiple incentives (using a combination of federal tax credits, local rebates, utility incentives, an ability to charge at work, etc.) can significantly boost EV sales. [14]

Financial constraints mean that cities often can't offer as compelling rebates or tax incentives as the state or federal government. [15] Cities can instead focus on low-cost incentives such as free or discounted parking, free or discounted tolls for EV drivers, and preferential access to bus or carpool lanes. We also recommend that cities take stock of incentives that exist at the state, regional and federal levels, then make this information available online and at public libraries and other community locations. [16]

# INFRASTRUCTURE BARRIERS

One of the major challenges to transportation electrification is "charging anxiety" – drivers' concern about access to convenient, affordable and highly visible charging. [17] Fast charging, workplace charging and solutions for people who live in apartment buildings are especially important.

Not surprisingly, there's a correlation between the strength of a community's charging infrastructure and EV adoption. San Jose, for example, has six times the national per capita average number of charging stations and a 21% electric vehicle share. [18]

Forth takes a multipronged approach to help its partner cities expand their EV charging capabilities. We support policy and permitting changes; engage public and private stakeholders to boost investment; and show Climate Challenge cities how they can leverage existing assets such as streetlights and parking lots to make public charging stations as easy to find as gas stations.



# 4.1 USE POLICY TO SUPPORT EV ADOPTION

City leadership and vision can set the tone for EV adoption in any community, but time is of the essence. A recent analysis of public charging infrastructure by the management consulting firm McKinsey found that EV adoption is outpacing EV infrastructure investment. [19] Policy changes in support of EVs may be sweeping and ambitious, or narrowly focused. In our work with Climate Challenge partners, Forth has seen both approaches succeed with the help of the right champions.

### 4.1.1 CASE STUDY

EV-READY ORDINANCES IN BOSTON AND HONOLULU

Working with Forth, Boston, MA introduced an unprecedented EV readiness ordinance in 2019. One of the most ambitious measures in the country, the ordinance supports Boston's goal to increase electric vehicle purchases five-fold. Forth worked with local leaders to develop the policy and its implementation guidance, including crafting a point system to enable flexible compliance.

Forth supported similar legislation in Honolulu, Hawaii, that includes an EV readiness component. Known as Bill 25, this update to the code directly supports the state's commitment to transform all ground transportation to renewable fuels by 2035. [20] As the City and County of Honolulu developed their legislation, Forth provided expert testimony in support of EV adoption as well as educational resources and a proposed point system for technology flexibility. Many ambitious and progressive bills have a history of originating in Honolulu and spreading through the rest of the Hawaiian islands. Honolulu leaders hope this will be the case for Bill 25. [21]



FIGURE 4:

In Boston, large new developments must equip 25% of their total parking spaces to be EV charger installed and the remaining 75% EV ready. Image courtesy of www.boston.gov

### 4.1.2 CASE STUDY

"RIGHT TO CHARGE" ORDINANCES FOR MULTI-UNIT DWELLINGS IN BOSTON Forth's partner cities have helped reduce apartment and condominium dwellers' worries about whether they'll be able to charge EVs at home by passing "right to charge" laws. These city ordinances require landlords, homeowners associations, and other common ownership associations to allow tenants to install EV charging stations if they wish to do so. Boston's ordinance specifies that condo owners can install EV charging at their own expense in or near their individual parking spaces, provided they follow certain requirements for installation, safety and zoning. [22]

### 4.1.3 CASE STUDY

STREAMLINED PERMITTING IN SEATTLE

Burdensome permitting costs and long timeframes from permit application to project execution can deter both public and private investment in EV charging infrastructure. The good news is that cities have the power to address both of these barriers.

In Seattle, the city's push for EV adoption includes a transparent, streamlined permitting process for EV charging stations. From 2017 to 2019, Seattle ran a pilot program to determine how the city assessed the permitting process, equipment installation and associated challenges, and equity considerations. The evaluation process included a diverse group of stakeholders and city staff. As a result, Seattle's new process for charging station infrastructure permits cuts the timeline for these projects down to just five months, from the initial permit application to the start of construction. [23]

### 4.2 INVESTMENT CAN TAKE MANY FORMS

Many cities do not have dedicated budgets for EV initiatives. In our experience with the Climate Challenge cities, this need not slow cities' efforts to prepare for transportation electrification.

Our partner cities have come to recognize that funding can come from any number of sources, and they're getting creative. They've begun working with local utilities, building relationships across city departments, making use of existing city-owned assets, and applying for state and federal grants concurrently. All of these efforts can be effective ways to support EV initiatives even without significant city funding. The most successful draw from a diverse funding pool, with investments that share common goals.

Cities that do not have dedicated budgets can also still dedicate staff time to transportation electrification. Many cities have at least one full-time employee in a sustainability management role. This employee often is responsible for organizing task forces or committees that have representatives from departments such as public works or transportation. Together, they contribute their time to working on EV-readiness initiatives and goals.

### 4.2.1 CASE STUDY

SAN ANTONIO CREATES PUBLIC-PRIVATE PARTNERSHIP FOR CHARGING ON CITY LOTS Municipal parking lots are a city asset that Forth's partner cities have leveraged as an effective way to showcase EV charging infrastructure and set the tone for their communities. Installing EV charging stations in these high-traffic public spaces shows local government support for EVs. Municipal chargers can also serve as demonstration projects, demystifying the process of installing EV chargers for privately owned parking lots and garages.

Forth supported the City of San Antonio in developing an RFP for public charging on city lots at no cost to the City. The vendors who responded had to bear the cost of charging equipment, installation, and operation. With the City partnership, they could leverage free sites, and access to the VW settlement funds available in Texas. The first phase of the EV San Antonio program will include up to 140 Blink Owned Level 2 Charging Ports and 3 DC Fast Chargers.

#### FIGURE 5:

In San Antonio, Blink will install 140 Level 2 public charging stations at no cost to the City.



### 4.2.2 CASE STUDY

DENVER BALLOT MEASURE FUNDS TRANSPORTATION ELECTRIFICATION PROGRAMS The City of the Denver, CO, added a ballot measure in 2020 that would increase sales tax by 0.25%, this will raise an estimated \$40 million annually to reduce the carbon pollution that exacerbates climate change. Over 50% is dedicated to maximizing investments in vulnerable, underserved communities and strengthening the fight against environmental injustice. The ballot measure passed and will fund investments in solar power, battery storage and other renewable energy technology, new jobs in the clean energy sector with career training, and more affordable, clean, safe and reliable transportation choices.

Forth worked with the City to identify priority programs to fund within the first year of passing. The programs recommended were derived from the Denver EV Action Plan as well as the Denver Climate Action Recommendations Report, which included extensive community feedback. An electric bike incentive program tiered for different income brackets is one of the first programs to be implemented with this new funding.

### 4.2.3 CASE STUDY

DEVELOPING A CITYWIDE RFP IN LOS ANGELES

For three years, the City of Los Angeles, CA, has been installing EV charging stations on street lights that were upgraded to LEDs, which provide excess electrical capacity. This effort helps provide convenient charging stations for renters who don't have access to home-charging technology. There are now more than 280 street light charging stations installed. To ensure equitable access, the chargers are equally distributed across LA's 15 city council districts. [24] Los Angeles used a citywide RFP to engage charging technology providers for the project. Flo and Greenlots are a few of the providers that were awarded contracts as result of the RFP.

## 4.3 ENGAGE KEY STAKEHOLDERS FOR LONG-TERM SUCCESS

Transportation electrification cannot, and should not, proceed in a vacuum. Stakeholders in transportation electrifications plans may include community-based organizations, trade associations, government agencies, nonprofit organizations and coalitions. Effective stakeholder engagement can bolster any initiatives a city is considering and provide insight into the needs of those affected by a city's move to accelerate EV adoption. It is important to include a wide cross-section of external and internal stakeholders not just in the early formation of transportation electrification plans, but rather throughout the process. [25]

In Forth's experience with our Climate Challenge partners, involving neighborhood groups and compensating people for their expertise and relationships are proven means of achieving insight into the needs of various communities and the various impacts of EV adoption. Connecting with these stakeholders can be done in a variety of ways, depending on your audience. We recommend cities identify key stakeholders based on the impact transportation electrification plans may have in your community, then determine the best way to include them in the overall process.

### 4.3.1 CASE STUDY

### COMMUNITY ENGAGEMENT IN ST. LOUIS



In St. Louis, MO, Forth has been working with the City, senior service centers, and community-based organizations to bring fleet EVs to be used for meal delivery and as shuttles for senior centers. Part of the program goals are to increase senior ridership with the expanded capacity of the fleet as well as increased EV awareness by seniors and the greater community.

After a series of meetings and interviews where participants were compensated for their time, participants suggested distributing a flyer with the meal boxes delivered by the new EV fleet. This channel would not have been one that would have been apparent to organizers of the education events; it only surfaced because time and space were made to hear from the audience for the marketing materials.

FIGURE 6:

A senior center volunteer driver loads home-delivery meals for seniors.

### 4.3.2 CASE STUDY

TNC DRIVER FOCUS GROUPS IN LOS ANGELES AND SAN JOSE Forth worked with the Cities of Los Angeles and San Jose, CA to host TNC drive focus groups. The Transportation Network Company (TNC) focus groups' design included five ICE drivers and five EV drivers with questions from a wide variety of stakeholders. All drivers were compensated for their participation. Key qualitative findings included that EV TNC drivers have adapted quickly to charging needs, have high satisfaction driving electric, and have much fewer worries about operating costs than gas-driving counterparts. ICE TNC drivers are keen on learning more about EVs and generally seek baseline education. Drivers spoke with each other about the topics of cost, charging, maintenance, range, models and more; their comments help influence the Cities' decisions on charging policies, investments and more.

### 4.3.3 CASE STUDY

WORKING GROUPS FOR CARSHARING IN LOS ANGELES

Los Angeles, CA has a strong record of engaging local stakeholders in decision-making for transportation electrification. One recent example is BlueLA, a one-way car-sharing service launched in 2017 as a key component of Central LA's mobility strategy. BlueLA stations are on-street charging "pods," consisting of one self-service kiosk and five parking spots, each with an electric charger where users can pick up and drop off their vehicles. The Los Angeles Mayor's Office led the project design and included a community coalition as co-designers. The Mayor's Office worked with LA THRIVES, a local nonprofit, to convene meetings with community organizations and advise on the outreach components of the service. [26]

# CONCLUSION

Cities have unique and important roles to play in transportation electrification. Over the last two and a half years, cities in the Bloomberg American Cities Climate Challenge have become market leaders in this arena. While each city may have different goals based on its community's specific needs, geography, and funding, the communities we work with are developing flexible strategies and nimble responses to ensure they take the lead on transportation electrification.

Each city has learned that there are many levers they can pull to lower barriers in their communities. They can electrify their own fleets; support and encourage the development of robust EV charging networks on city-owned and private property; update municipal codes to accelerate EV readiness; educate their residents and businesses about the benefits of electric vehicles; use their buying power to ensure electric vehicles are available to local consumers, and ensure that disadvantaged communities benefit from these new technologies.

Working together, Forth and its partners have accomplished great things in many cities, creating national models and are bending the curve on greenhouse gas emissions in transportation.

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