City Transportation Electrification in the US

Produced March 2020
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FORTH
Empowering Mobility

City Transportation
Electrification in the US

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Executive Summary

Cities are critical innovators and leaders in environmental protection. Local leadership is even more important in the face of increasing global urbanization. When it comes to mobility, 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-dependent cars, and trucks. Cities are doubling down on these efforts while also increasing their focus on newer strategies like transportation electrification. Many decarbonization pathway studies indicate that meeting our carbon goals requires that we electrify everything that moves.

Cities have unique and important roles to play in transportation electrification. This report summarizes interviews with 11 municipalities and city governments covering their planning, spending, and governmental organization around transportation electrification (TE).
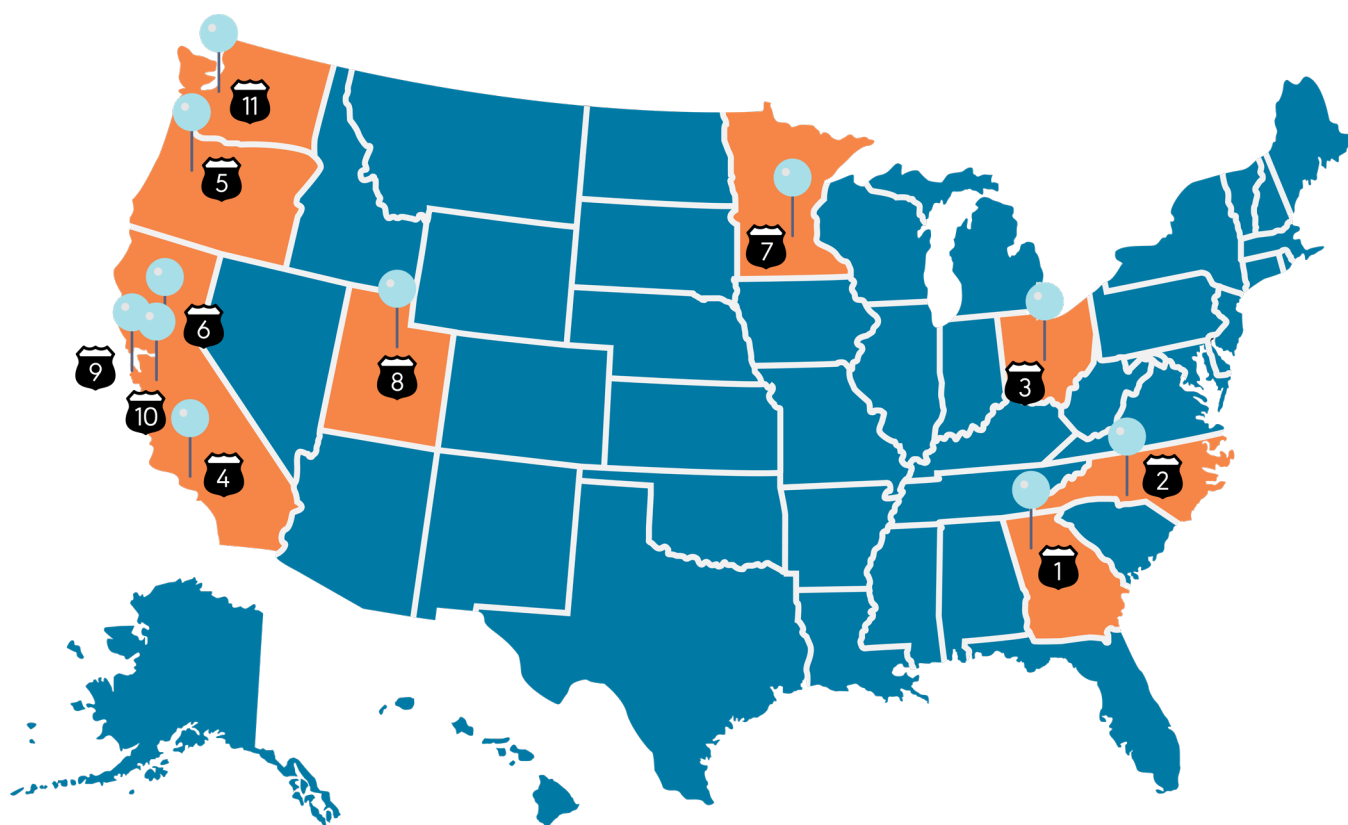

Content

The questions asked were developed and approved by Forth and the City of Denver. They can be found in Appendix A. Based on the information received in the interviews, nine areas were identified where the cities have exceptionally concentrated transportation electrification (TE) efforts. These areas are discussed below, with priority attention paid to budget and organization around electric vehicles and infrastructure to help inform future planning for the City of Denver's new Office of Sustainability. Sections include the specific questions that were posed in that subject area; some areas emerged in the interviews as a priority across a number of cities but did not have planned questions already put together.

Cities Interviewed

Cities interviewed were chosen by the City of Denver and Forth based on these cities' leadership in advancing TE plans, and also shared similarities with Denver. Some factors considered were: if they were capital cities, ZEV states, characteristics of their electric utilities, and the political landscape. The cities have a diverse sampling of approaches to transportation electrification. Cities include Atlanta, GA; Charlotte, NC; Columbus, OH; Los Angeles, CA; Portland, OR; Sacramento, CA; Saint Paul, MN; Salt Lake City, UT; San Francisco, CA; San Jose, CA; and Seattle, WA. Each city interview was held with a leading member working on TE. Interviewees participated in a one-hour interview, addressed follow-up questions, and provided relevant supporting documentation.

1 Atlanta, GA	5 Portland, OR	9 San Francisco, CA
2 Charlotte, NC	6 Sacramento, CA	10 San Jose, CA
3 Columbus, OH	7 Saint Paul, MN	11 Seattle, WA
4 Los Angeles, CA	8 Salt Lake City, UT	

Transportation Electrification Budgets

Forth focused on budgets dedicated to TE efforts and programs during the city interviews. A sampling of questions Forth asked included:

- *What budget are you working with currently?*
- *Where did that source of funding come from?*
- *How has it changed over time?*
- *What programs did you invest in? What's been the result?*

The majority of the cities that participated in interviews do not have dedicated budgets for transportation electrification (TE). Most of the cities Forth spoke with did not share specific amounts that they receive from a General Fund, as those often translate to personnel salaries. The funding numbers that were shared were generally tied to specific programs or initiatives. Most of the cities Forth spoke with said that each department is fiscally responsible for their own TE efforts – generally fleet electrification and in some cases electric vehicle supply equipment (EVSE) infrastructure.

A few cities have dedicated budgets for specific TE programs. For example, the City of Saint Paul is embarking on an ambitious carshare and charging infrastructure program, set to begin in 2021. This program has an overall budget of over $10 million, with $750,000 from the City of Saint Paul, and $4 million from Xcel Energy. Mayor Melvin Carter received $4 million in funding from the Federal Government for the program. VW Settlement funds may also be a part of the carshare budget, but some additional fundraising may be needed.

The City of Charlotte Sustainability Office receives funds for overall emissions reduction work and they are able to use those as they see fit for different projects, TE projects included.

Other cities have separate fleet or maintenance budgets, with funds earmarked for buying electric vehicles and EVSE. For example, the City of Los Angeles has specific line items in its budget for the installation of EVSE.

Cities that do not have dedicated TE budgets still dedicate staff time to TE efforts. Many cities have at least one full-time employee in a sustainability management role. This particular 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 staff time to working on TE initiatives and goals. This has been successful in cities with sustainability goals that are shared with a number of city staff, such as the City of Charlotte's Strategic Energy Action Plan.

The City of **Portland** does not have a budget dedicated to electric vehicle efforts; however, in 2017 the City issued an Electric Vehicle Strategy detailing 49 actions to be 'completed or significantly underway' by 2020. Each action is assigned to a Lead Bureau - as Portland has a commission form of city government - including the Bureau of Planning and Sustainability, Bureau of Environmental Services and Portland Bureau of Transportation.

In **Seattle, WA.**, Mayor Ed Murray launched the Drive Clean Seattle Initiative to expand TE in 2016. Drive Clean Seattle released an Implementation Strategy document the next year outlining 16 actions to be led by the Office of Sustainability and Environment, Seattle Department of Transportation, the public utility Seattle City Light, and the Finance and Administrative Services.

In lieu of dedicated budgetary funds, the majority of cities interviewed rely heavily on grant funding. California cities have access to several large in-state grants and funding sources specifically for transportation, such as California Air Resources Board (CARB). However, grant funds are often restricted to how they can be spent and the amounts organizations receive can vary greatly annually.

Portland, OR

Seattle, WA

In June 2018, the City of **Sacramento** was awarded almost $200,000 from the California Energy Commission - Alternative and Renewable Fuel and Vehicle Technology Program. With these funds, the City is developing actionable EV blueprint planning tools that will help implement the City's EV Strategy; these include community engagement tools, implementation of EV infrastructure installation and service tools, and funding solicitation tools.

The City of **Salt Lake City, UT**. has leveraged incentives from Rocky Mountain Power through the USDOE funded WestSmart EV program on EVSE and education, as well as grant funding from DERA (Diesel Emissions Reduction Act). Salt Lake City Department of Public Utilities, the City's water utility, also provides a $5,000 grant per fleet vehicle.

The City of **Los Angeles** receives rebate funds from its municipal utility, Los Angeles Department of Water and Power. In a number of cities interviewed, it was observed that cities with municipal utilities have been able to leverage support for their TE efforts.

Utilities, which arguably have a sizable financial interest in the future of TE, have formed important partnerships with many cities - some of which have already contributed funding to TE efforts, and some of which may yield very significant TE gains in the future.

Funding can come from a number of sources. We recommend a diverse funding pool, with investments that share common goals. For example, working with local utilities, building relationships across city departments, and applying for state and federal grants concurrently is an effective way to build an enduring support network. Provide tangible results to share that will promote future funding.
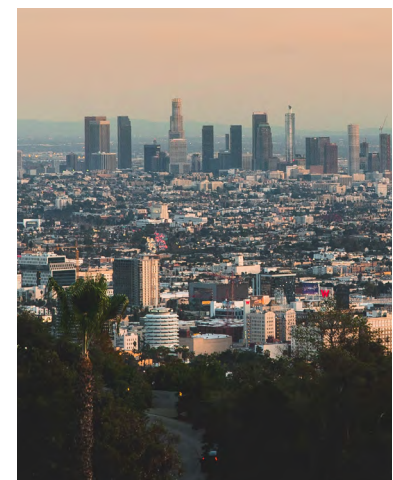
Outside of the interviews, it was extremely challenging to track down line-item budgets for TE public spending. Cities are getting creative about incorporating goals into existing programs and budgets, hiring sustainability personnel and fulfilling actions through inter-bureaucratic collaboration.
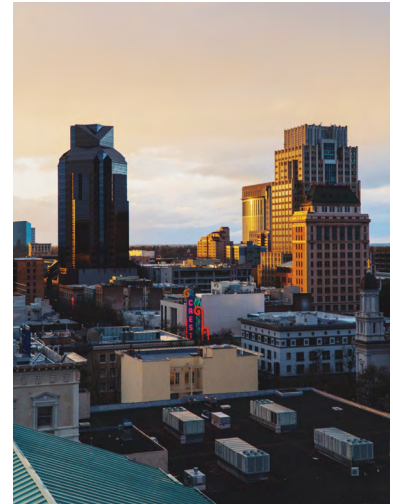
Sacramento, CA
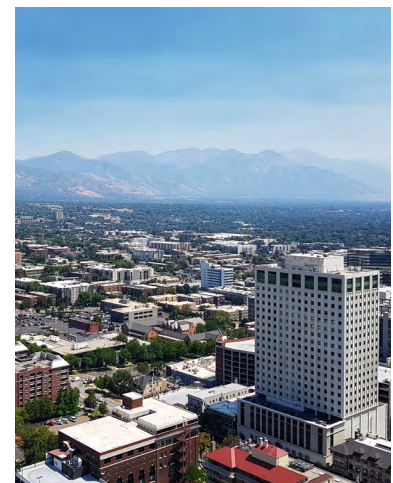
Salt Lake City, UT

Los Angeles, CA

Organizational Structure

The cities were also interviewed on the organizational structure of the team working on TE efforts. Forth asked the following questions:

- *How are teams focused on EV efforts organized across various departments?*
- *How big is your staff working on EV & EVSE planning and deployment?*
- *How do you envision that changing and why?*

Most of the TE work done in the interviewed cities is largely accomplished through strong mayoral support and one or two dedicated individuals from an office with a sustainability or climate title. Nearly every one of the sustainability staffers relayed that they would prefer to have more colleagues to share their workload. Staffing sustainability offices is another area where grant money is sometimes used, but this can be problematic, as positions that are funded by grants are often based on limited terms and funding. Programs led by short-term employees may lack sustainability and longevity. Fortunately, some of these offices have support from consultant organizations such as the Natural Resources Defence Council and the Electrification Coalition to provide support and capacity.

Some city TE efforts are in the form of people embedded in different departments tangentially related to TE, such as Planning or Public Works. For example, in San Jose, a team consisting of Transportation and Public Works departments, and San Jose Clean Energy (the City's Community Choice Aggregator), and others that are tangentially related to TE have formed around initiatives.

The City of Sacramento has been a part of a collaborative workgroup, which has produced several reports found in the appendices. The members of the Sacramento Area PEV Collaborative include nonprofits, stakeholders, and public agencies. The County of Sacramento, Sacramento Metropolitan Air Quality Management District, and the Sacramento Municipal Utilities District contributed personnel from Fleet, Sustainability, and Transportation departments to create a 2017 EV Readiness and Infrastructure Plan, and the EV Location Map discussed below.

Sustainability goals shared across a number of departments and from the mayor were found to be more effective than an individual person or team. Some of the most powerful resources cited at the end of this report came from cross-departmental working groups and task forces.

Electrifying City Fleets

Electrifying municipal fleets presents many benefits, many of which may be aligned with long-term strategic initiatives.

Transitioning fleets to electric can have a significant effect on meeting a city's climate goals and can serve to lead city residents by example. Transitioning municipal fleets to electric will diversify the city's fuel sources and inevitably help to reduce a city's dependence on oil for their transportation needs. Accessing the benefits of an electrified city fleet comes with considerations prior to investment. Some of these considerations include the costs of transitioning to EVs, availability of different EV models, and the need for new charging infrastructure. Specific questions regarding municipal fleet electrification were not asked during the city interviews; however, this is a topic that emerged as a key area of interest and investment for many cities.

Establishing a working group to guide the fleet electrification process proves to be a useful resource. Working groups can coordinate group buying programs and engage dealers. For example, Columbus, OH has established working groups in coordination with and comprised of subject matter experts and major partners. With the support of the working group, the City of Columbus procured and operates approximately 2,000 light-duty vehicles within its fleet. In order to aid in procurement, the City was able to leverage its size to employ "triple-net dealer invoice pricing" when purchasing conventional vehicles in order to lower vehicle acquisition costs. Triple-net dealer invoice pricing allows cities to purchase vehicles for a reduced price by bypassing any dealer incentives awarded from the Original Equipment Manufacturer (OEM) that are typically a part of the upfront cost of a vehicle. The City planned to use the same concept for EV procurement and aimed to secure either all or a portion of the federal tax credit benefit. As a non-taxable entity, the City could not claim the tax credit itself. However, the credit could be passed on through a purchase or lease deal. A provision of the EV tax credit in the federal code states the vehicle seller can be treated as the taxpayer when an EV is purchased by a tax-exempt entity. Securing a triple-net dealer invoice price, plus tax credit benefits could significantly reduce the upfront cost burden of procuring EVs for the City.

Working directly with Public Fleet Managers to analyze EV options and to prepare plans for EV acquisition and charging infrastructure is critical. Appointing an internal fleet committee consisting of a Fleet Manager and supporting staff is also an important step for fleet electrification.

Leveraging fleet electrification initiatives such as the "Climate Mayors Electric Vehicle Purchasing Collaborative" can help cities make the transition to electric. At the time of this writing, 446 mayors from across the country are listed as members. It is a turnkey, one-stop, online procurement portal providing U.S. cities equal access to competitively bid on EVs and charging infrastructure, innovative financing options, and provides materials regarding best practices and other areas of expertise.

Installing publically available EVSE for dual-use alongside City fleet vehicles can make a sustainable model for implementing city charging infrastructure. The City of Atlanta has installed public-use EVSE that the City also uses for fleet vehicles. The main motivation for this method is to make EVSE more visible to the public while encouraging general EV adoption, via the City's own fleet electrification efforts. Electrifying a City fleet by making EVSE publicly available helps provide a highly visible proof-of-concept to drive consumer adoption.

The most successful cities utilize cross-departmental collaboration to promote best practices for fleet electrification. While some cities allocate general fund money specifically for purchasing new electric vehicles, other cities require/encourage each department to electrify their fleet utilizing their existing budget for fleet turnover and infrastructure upgrades and installations. Another strong recommendation for other cities that are new to the TE space, is to determine a procurement process for EVs and EVSE before needing to use it.

Stakeholder Engagement

In alignment with the city's strategic plans, stakeholder engagement can translate the needs of greater stakeholders surrounding overall EV adoption and implementation. Connecting with stakeholders can be done in a variety of ways. Stakeholders may include both internal and external communities; additional city departments or the public.

We asked the following questions to cities that were interviewed:

- *What stakeholder engagement practices have you found most useful?*

- *Was the stakeholder engagement conducted by the city? If not, was it contracted out, through RFP, etc?*

The City of Columbus, OH utilizes private sector engagement through The Columbus Partnership which is a conglomerate of partner organizations and businesses in Columbus. Partners enter into cooperative agreements with the City to bring an agreed-upon selection of goods and services to advance one or more initiatives under the Smart Columbus program.

The Cities of Atlanta and Saint Paul have utilized public forums to host stakeholders and to discuss strategic initiatives in real-time. Relationship development within different company structures may call for slightly different approaches to engagement and implementation.

In addition, designing community engagement initiatives for neighborhoods that have never had carshare or other EV forms of clean transportation access is an opportunity to ensure a better stakeholder representation. 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.

We recommend cities identify which stakeholders would be impacted based on your TE plans and determine the best way to include them in the overall process. Effective stakeholder engagement can bolster any initiatives and may provide more insight into the needs of those whom TE will directly impact.
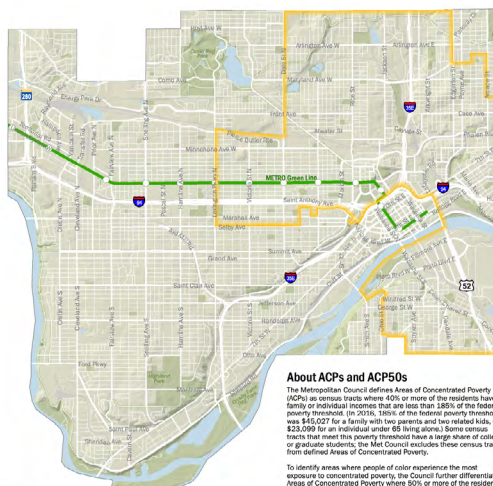
Social Equity

The most successful cities design programs, engagement or outreach, and overall goals with their constituents at the center of their TE strategies. Cities are increasingly incorporating social equity into their priorities and practices. The table below is an at-a-glance list of different approaches to programs.

During city interviews, we asked the following questions about equity assessments and programs:

- *How are you incorporating equity in your design and deployment practices?*
- *How are you serving and reaching underserved communities?*

City	Equity Assessments and Programs
Sacramento, CA	The City of Sacramento has developed a set of <u>Inclusive Economic Development Investment Funding Guidelines</u>. Under these guidelines, the City may make investments in programs that have met, among other considerations, equity and inclusion criteria that provide public benefits - such as mobility and sustainability.The City's EV Strategy has equity and access established as key goals (see goals on page 31 of the PDF).
Saint Paul, MN	The City of Saint Paul, MN started talking early and often with different internal stakeholders across the City when working on their city-wide EV carshare. A few targeted Areas of Concentrated Poverty with 50% of Residents People of Color (ACP50) neighborhoods are planned to have charging hubs and carshare. Community engagement will be done by partnering with neighborhood organizations. The City plans to compensate people for their expertise and relationships in order to reach residents effectively.

San Fransisco, CA

The City of San Francisco uses existing programs in the region, such CARB's One-Stop Shop program, which streamlines access to clean transportation incentives for low-income residents, including access to low-interest loans. The City prioritizes equity within goal and program design and many California funding programs specifically target investments in disadvantaged communities.

San Jose, CA

The City of San Jose is developing group buy programs for new and used EVs in order to increase access and affordability. The City is also exploring group buys for e-bikes to allow for a more affordable option for those with and without a driver's license, a known barrier to transportation access. The City wants to understand who is benefitting from electrification and who is not. The City intends to do extensive community engagement to better understand how to expand the benefits of transportation electrification in a way that enhances racial equity. The City plans to partner with those who can do extensive community engagement for properly integrating social equity. They constantly ask, "Are we causing harm?" and, "Who is receiving the benefits of the outreach/and transportation electrification as a whole?".

Seattle, WA

Equity is the foundation of the City of Seattle's TE work. They take community-identified priorities and design programs accordingly. As a port community, Seattle faces unique challenges and topics such as freight are on their mind. The City is tackling human health issues as well that come from having such an active port.

Leverage your stakeholder engagement practices to inform your social equity initiatives, as stakeholders that are in underserved communities can provide valuable input regarding community needs. Successful implementation of social equity is about understanding the needs of underserved communities, not prescribing solutions. These interviews highlighted gaps in our questions and answers that instigated further research. For further reading, Forth is publishing a report in March 2020 that investigates the following questions:

- *Do some cities include external stakeholders in their working groups formed to execute their TE plans?*
- *What types of stakeholders are important to engage, how, why?*
- *What are public engagement strategies cities have used for TE plans?*

EVSE and Charging Infrastructure

All the cities interviewed recognized the importance of increasing public charging infrastructure to support their goals of EV adoption; however, strategies for doing so varied. The intent of these interviews was to identify how cities were utilizing their budget to increase public charging infrastructure and how they navigated ownership of the chargers. Not surprisingly, we found a number of cities implementing ordinances, such as EV-Readiness, as a method for increasing charging infrastructure for new buildings and retrofits. Specific ordinances were not asked about as they are not often tied into needed city budgets. Rather, during city interviews, we broadly asked:

- *How have you approached charging infrastructure and different ownership models?*

A number of cities had experience with charging pilots and/or had inherited a hodgepodge of different generations of different types of EVSE installations throughout their cities. Some of these installations, while well-intentioned, were not future-proofed for eventual faster charging. Nor did they have operations and maintenance plans - often leaving staff at various locations responsible for calling electricians to troubleshoot broken EVSE.

The cities surveyed have a variety of ownership models for EVSE and charging infrastructure. The City of Sacramento owns, operates, and maintains EVSE in public parking garages and at city facilities that serve their constituents. In the coming years, the City will move to networked chargers in order to modernize its charging infrastructure. When the EVSE is part of community-serving infrastructure, such as fast charging, heavy-duty vehicle charging, and electric buses, then the City utilizes third-party vendors (EVgo and Electrify America).

The new $10 million carshare program in Saint Paul, MN will include EVSE infrastructure as part of the program. There are 70 charging hubs planned throughout Minneapolis and Saint Paul with 3-4 parking spaces each. Two of the parking spaces at the charging hubs will be dedicated to carshares. The hubs will be networked with cheaper rates in the evening with the intention of using more renewable energy while it is being generated.

The City of Salt Lake City has used state grants and federal funds to install roughly 30 EVSE in parks and other city-owned locations. The City believes that more small capital investment is needed to build out the EVSE infrastructure.

A few of the cities interviewed do not own EVSE, and do not want to or plan to directly own EVSE in the future. However, there is still a role to influence the state of charging infrastructure in their cities. One option is to enable utility ownership, such as steps Portland has taken by writing letters to the Public Utility Commission. The City of Charlotte currently owns some EVSE, but are also looking into utility ownership.

A few other cities have owned charging infrastructure in the past, but are now looking to move away from it. The City of San Francisco currently owns and operates many charging stations, but aims to move forward by contracting out to EVSE companies in the future. The City is interested in new EV charging business models. More information and recommendations on EVSE ownership can be found in EVSE Ownership Models in the Appendices.

> Cities should consider their public charging infrastructure goals and what they would like their role to be; owning, operating, or taking an influencing role.

If there is mixed ownership expected, the City should investigate setting some requirements for consistency from a user experience perspective; such as ensuring chargers are interoperable and accessible to all.

Charging Infrastructure Data Mapping

Some cities have created visual maps of the existing EVSE in their cities. This has helped the cities assess what areas have the most access to EVSE. These maps also show how fast the EVSE delivers a charge (Level 1-3), if they are networked or free, and whether they are at metered parking spots, or otherwise of limited time use. A few cities have elected to overlay other types of income or demographic data. The City of Sacramento has recently worked on efforts to facilitate curbside charging in the public right-of-way. In 2019, the City produced a map of Sacramento showing sites that are suitable for public charging in the right-of-way. This map was prepared and released as part of an RFP in 2018 for curbside charging. Note that efforts were discontinued to do citywide permitting. The map was to hone in on priority locations that would then be vetted through the RFP – the map was a starting point for more site-specific analysis, to narrow down the list of opportunities.

The City of San Francisco has identified charging 'deserts' or places where public charging is not available or easily accessible. The City recently passed a commercial garage ordinance requiring publicly accessible garages to install EVSE in 10% of parking spaces by 2023. The City is also expanding charging in publicly accessible, municipally-owned garages and lots.
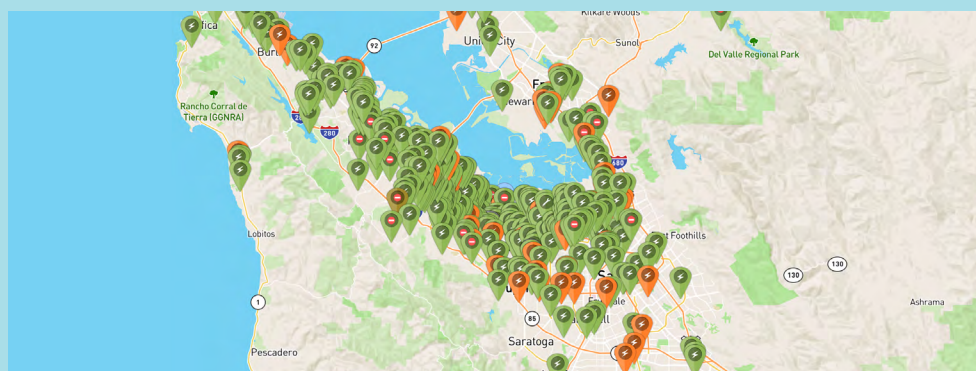
San Jose, CA

Map credit: Open Charge Map
openchargemap.org/site

The City of San Jose obtained the Department of Motor Vehicle data to map out where EVs were registered in the city and observed that thus far, EVs are concentrated in more affluent census tracts.

Geographic Information Systems (GIS) departments can be found in many city and county governments. Inter-departmental collaboration with GIS teams can produce a wide variety of information on current and potential EVSE locations, which can help inform future TE policy and resident education outreach approaches.

Navigating Right-of-Way Issues

The use of the public parking right-of-way for EVSE infrastructure is one of the most significant, and contentious, tools of a city government.

Many governments are put off by lengthy permitting processes – with undetermined outcomes – but some of the cities we spoke with have had success and can serve as a model for others. We asked the following questions to cities that were interviewed:

- *How do you incorporate policies to better distribute EVSE across the city?*

- *Do you have any permitting best practices for charging infrastructure in the right-of-way?*

City	ROW Charging and Distribution
Charlotte, NC	The City of Charlotte is using Automated Vehicle Locator (AVL) data to inform where chargers are needed for fleet use. Additionally, the city will use semi-mobile, solar-powered EV chargers to scout new areas for installation. The chargers do not need to be connected to the grid and can be moved from one neighborhood to another to test whether they will be used prior to expensive investments of charging. A local university recently approached the city to explore the possibility of installing EV charging stations on street lights. If a pilot project were approved, it would likely start in 2021.
Los Angeles, CA	For three years, the <u>City of Los Angeles Bureau of Street Lighting</u> has been installing networked low Level 2 charging stations on street lights that were upgraded to LEDs, thus providing excess electrical capacity. There are now more than 280 street light charging stations installed. The chargers are equally distributed in all 15 council districts. Each street light has the capacity for a single charging station, and each charging station can reach a single parking spot. In the past year, an ordinance was passed that allows Los Angeles' parking enforcement officers to ticket gas vehicles or EVs that are not plugged in when they park at the charging spots.
Portland, OR	Throughout 2018 and 2019, the City of Portland partnered with a local electric utility, Portland General Electric, to facilitate the opening of four <u>electric avenue hubs</u> around the metro area. Three more are planned for 2020. Each station features four DC fast chargers and two Level 2 chargers. The downtown Electric Avenue has become a staple for Portland-based EV drivers who need to charge their vehicles. Unlimited fast charging is available for $25 a month, so long as none of the charging occurs during peak hours (3-8PM) on weekdays.

Sacramento, CA

The City of Sacramento has recently worked on efforts to facilitate curbside charging in the public right-of-way. The City partnered with EVgo for the first pilot curbside charging plaza, which was completed in 2019 with three 50-kW fast chargers and three 150-kW high power chargers (six chargers in total).

In 2019, the City also released draft permit guidance for citywide permitting of curbside charging projects. As part of the guidance program, the City developed a useful flowchart guide showing how future applicants were anticipated to go through the right-of-way permitting process. However, after encountering too many challenges when attempting to create a universal citywide permitting process, as well as challenges with the construction of the first curbside process, the City changed their approach. Rather than establish a citywide permitting process, the City released a targeted RFP seeking partnership with an owner-operator to construct fast chargers in the right-of-way at no cost to the City. Following a collaborative siting and engagement process, only two entities responded, and the City entered into an agreement with EVgo to operate exclusively in the right-of-way.

Saint Paul, MN

The City of Saint Paul is embarking on a $10 million pilot project to bring EV charging infrastructure and carsharing to their constituents. This project is ambitious: 80 feet of curb space is needed at each of the 70 program locations. Despite the seemingly large amount of ROW space required, no ordinance changes will be needed; rather the City will utilize workgroups to facilitate the right-of-way projects.

Seattle, WA

From 2017 to 2019, the City of Seattle operated an Electric Vehicle Charging in the Right-of-Way Permit Pilot. The pilot supported how the city assessed the permitting process, equipment installation and associated challenges, and equity considerations.

The evaluation process for permit applications includes a diverse group of stakeholders and staff; it also included the Seattle Department of Transportation's Human Centered Design Study on Equitably Expanding the EV Charging Network.

It is essential for a city to be engaged to enable charging in the right-of-way. However, there are a number of considerations when deciding whether or not the right-of-way is best used as a charging site. Cities should understand whether right-of-way charging is a priority over other uses, and if so, it is important to develop a process to streamline decision making and permitting. For further reading, Forth published a report in February 2020 outlining best practices of navigating right-of-way charging.

Shared Mobility

Several municipalities have experimented with various forms of EV carshare programs. **The most noteworthy, high-impact examples are city programs that focus on low-income areas.** Cities were not specifically interviewed about carsharing and other shared mobility; however, it was found that an increasing number of cities are building partnerships to enhance shared mobility programs. Forth is producing a best practices report on low-income carshare programs that includes and spans outside of the 11 cities interviewed that will be available in March 2020.

Conclusion

Forth and interviewees discussed how spending effectiveness is measured. **While some cities have climate action goals or strategies they're working toward, it is more important to focus on being prioritized and evaluated. Interviewees did not share significant examples of cities having accountability around the goals that they've set, other than from the reports that they've produced.** Instead, the goals serve more as a means of creating direction on teams than as a tool for establishing and meeting goals.

Much is still experimental for cities at this time in TE development. The EV industry as a whole is evolving rapidly, and TE is only beginning to be invested in by cities. There are many variables unique to each city for areas of policy, incentives, infrastructure, demographics, geography and community priorities. Because of this, it is difficult to measure success to date in a way that is transferable to all spaces. Rather, in these early stages, the strategies cities are working toward, and which specific actions are taken, within flexible timelines that accommodate the unknown.

Goals tend to be generalized. The City of Charlotte has goals based on greenhouse gas emission reduction. Policy is being implemented to shape further action, including City fleet investments. The City of Saint Paul is evaluating transportation options to create alternatives to car ownership to reduce the impact of driving. In Seattle, the City measures the success of their outreach by conducting surveys to community leaders, and the success of EV implementation by tracking monthly registrations, which they then tie to their greenhouse gas inventory.

Collaboration and an equity focus are common themes of well-run programs. Maintaining good relationships with stakeholders can promote longevity of continuing these oftentimes, first steps. Public space can be utilized for the City to lead by example and prioritize EVSE that will help all residents in the long-term. Understanding the implications of TE, especially the need for strategic EVSE placement, is important in the transition period.

Forth will be conducting ongoing work in areas across the country as a resource to help Cities determine best practices, provide findings from ongoing demonstration projects, and as a committed partner in the progressive TE landscape.

Acknowledgments

The bulk of this information was gathered from interviews from these city leaders in TE. We appreciate their time and the insights into their work within the complex systems in which they're working:

Andrea Pratt, City of Seattle
Michael Samulon, City of Los Angeles
Laura Stuchinsky, City of San Jose
Kevin Meehan, City of San Jose
Jennifer Venema, City of Sacramento
Travis Buholtz, Electrification Coalition (formerly with the City of Atlanta's Sustainability division)
Erika Ruane, City of Charlotte
Samantha Henningson, City of Saint Paul
Debbie Lyons, City of Salt Lake City
Suzanne Loosen, City of San Francisco
Ingrid Fish, City of Portland
Bud Braughton, City of Columbus

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Appendix A:
ACCC City Questions for Denver

<u>EV & EVSE investments:</u>
1. Budget:
    a. What budget are you working with currently?
    b. Where did that source of funding come from?
    c. How has it changed over time?
2. What programs did you invest in? What's been the result?
3. What programs have you facilitated with external partners to deploy? (i.e. utility, private sector initiatives)
4. How is the city defining success around its spending?
5. How have you approached ownership models around charging infrastructure?
6. How do you incorporate policies to better distribute EVSE across the city?
7. Do you have any permitting best practices for charging infrastructure in the Right-of-Way?

<u>Integrating equity:</u>
1. How are you incorporating equity in your design and deployment practices?
2. How are you serving and reaching underserved communities?

<u>Stakeholder engagement:</u>
1. What stakeholder engagement practices have you found most useful?
2. Was the stakeholder engagement conducted by the city? If not, was it contracted out, through RFP, etc?

<u>Organizational development:</u>
1. How are teams on EV efforts organized across various departments?
2. How big is your staff working on EV & EVSE planning and deployment? How do you envision that changing and why?

<u>Marketing & Communications:</u>
1. How do you activate marketing and communications (staff, internal or external) in your work?

<u>Wrap Up:</u>
1. Do you have any advice you think another city should know for planning purposes?
2. Do you have any resources or materials that you'd be willing to share with other cities?

Appendix B:
Recommended References

City of Atlanta	• City of Atlanta EV Readiness Workbook • City of Atlanta EV Suitability Assessment, conducted by Sawatch
City of Charlotte	• Strategic Energy Action Plan
City of Columbus	• Smart Columbus Electrification Plan • Columbus Yellow Cab Fleet Electrification • 2019 Mobility Ambassador Toolkit
City of Los Angeles	• Inter-departmental correspondence on BlueLA can be provided upon request • BlueLA: https://www.eenews.net/stories/1061603873 • Bonds where the city gets funding for capital projects (not salaries): http://cao.lacity.org/debt/index.htm • Streetlight charging: https://ww.electrek.co/2019/11/13/la-adds-hundreds-of-ev-chargers-to-streetlights-giving-renters-a-place-to-plug-in/
City of Portland	• 2017 City of Portland Electric Vehicle Strategy https://beta.portland.gov/sites/default/files/2019-07/final_electric-vehicle_report2016_web.pdf

City of Sacramento	• Sacramento Area PEV Collaborative - EV Readiness and Infrastructure Plan http://www.cityofsacramento.org/-/media/Corporate/Files/Public-Works/Electric-Vehicles/Sac-County-EV-Inf-Plan.pdf?la=en
	• Sacramento EVSE Permit Flowchart
	• EV Strategy available here http://www.cityofsacramento.org/Public-Works/Electric-Vehicle-Initiatives/EV-Strategy
	• Fleet Strategy with EV targets and ZEV first commitment https://www.cityofsacramento.org/-/media/Corporate/Files/Public-Works/Fleet/FleetSustainabilityPolicy-00-Policy-Procedure-Cover.pdf?la=en
	• Curbside charging
	    - http://www.cityofsacramento.org/Public-Works/Electric-Vehicle-Initiatives/Curbside-Charging
	• Inclusive Economic Development Investment Funding Guidelines
	• Franklin Boulevard - micro shuttle program
	    - RT's website https://www.sacrt.com/apps/smart-ride/
	    - Also refer to Electrify America progress reports , under "Green City" or "Sac to Zero"
	    https://ww2.arb. ca.gov/resources/documents/electrify-america-reports
	    - https://www.cityofsacramento.org/Green-City
	• Low-income EV: Our Community CarShare
	    - http://www.airquality.org/our-community-carshare
	• Electrify America investment
	    - See an overview and check their progress reports here
	    https://ww2.arb.ca.gov/resources/documents/electrify-america-reports
	• Organization chart http://www.cityofsacramento.org/-/media/Corporate/Files/CMO/Resources/CoSOrganizationChart.pdf

City of Salt Lake City	• Clean Energy Implementation Plan (TE referenced on pages 2,5,8,10,11) Many links embedded in the document to other resources, including the Electrified Transportation Roadmap and details about EVs for internal fleet and Salt Lake City's collaboration with Rocky Mountain Power on WestSmart EV. • Sustainability Website on Electrified Transportation • Sustainability Department 2018 Year In Review (2019 will be released next week – visit their website at slcgreen.com) • GIVE (nonprofit in Salt Lake City)

Appendix C: Additional Interview Information

EVSE Deployment by City

City of Atlanta
- 30 non-networked EVSE owned by the city were deployed for a program that began in 2015, EVSE deployment schedule not stated; likely 2016-2017.
- Six new Chargepoint stations installed.
- Some Center for Transportation and Environment funding has been extended to the end of 2020 that could provide matching funds for EVSE or EVs.
- Departments paying for fleet required EVSE out of existing budgets.

City of Charlotte
- City currently owns EVSE, but is likely to move toward other options, including utility ownership.
- Automated vehicle locators being utilized to identify where future EVSE should be located for fleet purposes.
- Four mobile level-2 EV Arcs from Envision were paid for by Charlotte-Mecklenburg Aging Coalition (CMAC) funding. Projects are 80/20 funding split, and must benefit seniors in some way. The grant amount was not stated. These chargers will be used to scope out future locations for permanent chargers.

City of Los Angeles
- Significant investment in infrastructure for both public and fleet purposes.
- LA Police Department (LAPD) received $6-10 million in the last 3-4 years, $3-6 million for infrastructure. This includes some public and employee parking as well as fleet admin vehicles. This money is focused primarily on admin vehicles, not pursuit vehicles. There are a few level 2 EVSE as well as DC fast chargers at each station.
- General Services Department also received $7-8 million for infrastructure over the past 3-4 years, but no funding this year. The prior budget had a $4.5 million dollar line item for infrastructure.
- $1.5 million was included for the Bureau of Street Lighting to install over 300 streetlight-attached EVSE.

City of Portland
- Focused on supporting utility ownership of EVSE, including writing support letters to the electric utility regulatory body for Oregon when PGE began installing EVSE.

City of Saint Paul
- Existing public charging infrastructure is aging (from 2009 federal stimulus bill) and needs replacing.

City of Salt Lake City
- The City owns over 30 level-2 EVSE at city properties including parks.
- ~75% of those 30 chargers are not metered and do not require payment to park, however, most chargers are in 4-hour parking limits. When fees were added, usage dropped significantly.
- 40 EVSE total currently at the airport.

City of San Fransisco
- 60 EV chargers in Municipal lots from EV corridor grant in 2012.
- 100% grant-funded TE efforts.
- Plans to move toward a third-party owned-and-operated EVSE ownership model instead of city-owned and third-party operated.
- Significant EV-ready ordinances in place requiring 100% EV-ready wiring, with 10% equipped with EVSE.

City of San Jose
- Facilitating approximately $10-14 million for private investment in level-2 EVSE at workplaces, DC fast chargers available to the public and at MUDs. California EVIPP and CEC funding.

City of Seattle
- Due to Seattle's electric fleet growing rapidly, around 400 EVSE are expected to be installed for fleet use by 2023.

Fleet Electrification

City of Atlanta
- Atlanta has been working on fleet electrification since 2015 with help from the Electrification Coalition.
- 35 Nissan Leafs and 25 Chevy Volts in City fleet currently. Began as a leasing program, and vehicles were purchased after the lease ended.
- Office of Fleet Services, Department of Public Works, Department of Aviation, Department of Watershed Management are all either already actively electrifying their fleet, or are engaged in discussions surrounding fleet electrification.
- The budget for fleet electrification comes from the existing vehicle budget.
- Georgia Power donated two Nissan Leafs in the Police Department/Department of Corrections before 2015.
- Five neighborhood EVs (generally low-speed, low range) for use by the Parks, Fire,
- and Police departments on the Atlanta BeltLine corridor.

City of Charlotte
- One of Charlotte's Strategic Energy Action Plan (SEAP) goals is for all light-duty fleet to be carbon-free by 2030.
- Utilizing automated vehicle locators to identify which vehicles could easily be electrified.
- Establishing an MOU with Duke (local utility) to work together on TE (TE), including Fleet electrification, system-wide TE efforts, sponsorships, microgrid-resiliency projects, community engagement, and more.

City of Los Angeles
- 300-400 EVs from the past few years from $27 million allocated to TE. $10 million was granted this year. The aim is to build fleets back up from the recession.
- Fleet requirements are extensive; "from gardening equipment to helicopters".
- Fleet replacement and electrification is looked at as, "what needs to be replaced this year?'"
- Five years ago there was almost no funding.

City of Portland
- The City already owns many EVs and has plans for electrifying many more vehicles in the coming years.
- "Electric First" rule where if there is a compatible electric vehicle that could be purchased when considering the purchase of a vehicle.

City of Sacramento
- There is a budget for replacing old vehicles with Zero-Emission Vehicles (light-duty) that includes funds for infrastructure in addition to covering the upfront cost differential between ZEVs and ICE vehicles.
- Over 50% of the fleet was zero emissions as of April 2019.

City of Saint Paul
- Some fleet vehicles purchased using 2009 stimulus bill funds. No mention of whether those vehicles, unspecified, are still in use or not, nor when they were purchased.

City of Salt Lake City
- Utilizing a general fleet budget and utility grants that offered $5,000 per vehicle, electric fleet vehicles have been purchased starting in 2016 with the previous mayor.
- While there is a commitment to fleet electrification, departments pay for O&M, plus fuel (infrastructure). The general fund can help pay for fleet replacement, now creating a split incentive at the department level. This issue is being addressed.

City of San Fransisco
- Fleet Ordinance: only buying 100% ZEVs by 2022, 100% light-duty and all other vehicles as they become available.
- 100% of TE efforts have been grant-funded.

City of Seattle
- The city has a target of 400 EVs by 2023, which is 100% of the light-duty fleet.
- A significant number of EVs already in their fleet, over 150.

Stakeholder Engagement

City of Atlanta
- The city used a total cost of ownership calculations (TCO) to convince internal stakeholders to participate in fleet electrification.
- For public input, standard forums were used and existing organizations of property owners were invited, specifically with regards to the 20% EV-ready ordinance for new construction/development.

City of Charlotte
- A transportation-focused working group consisting of community members has been one of the most effective tools for external stakeholder engagement. The volunteers are primarily from neighborhood associations or academia.
- Most external stakeholder engagement is conducted by the city with minimal outreach to Community Based Organizations (CBOs).

City of Los Angeles
- The City of Los Angeles does external stakeholder engagement through third party outreach firms and an existing Electrify America contract.

City of Sacramento
- The City of Sacramento has been a part of a collaborative workgroup. For more information, refer to the report content above or links in the appendix.

City of Saint Paul
- The City of Saint Paul has utilized public forums to host stakeholders and to discuss strategic initiatives.
- External community engagement has involved compensating community members for their expertise and relationships in order to reach residents.

City of Salt Lake City
- A local nonprofit, GIVE (see appendix for link), has helped facilitate some external social-equity focused community engagement.
- Internal stakeholder engagement has been needed to make sure city employees are current on sustainability and TE.
- Transportation Division (made up of a few different department heads and the sustainability program) meets once a month.
- Fleet Committee meets quarterly. All departments are invited; usually, the Mayor's Chief of staff, a City Council liaison, and representatives from the departments of Public Services, Airport, Sustainability, and Public utilities are in attendance.
- "Pilot programs are easy, institutionalizing [sustainability and TE] is tricky."
- The City is figuring out who is going to pay for what, before the EVSE and EVs are purchased, is critical.

City of San Fransisco
- For external stakeholder engagement, partner organizations and CBOs are used to help engage with underserved communities.

City of San Jose
- The City and a partner organization, San Jose Clean Energy, utilizes three different activities to engage external stakeholders, (the public): community advisory committee, a series of online surveys with incentives to take the survey, and focus groups, (in multiple languages). Providing food, childcare, and translators help engage with underserved communities.
- Bi-weekly or monthly meetings bring together internal stakeholders and ensure climate action plans are being thought of for future department planning. The departments of transportation, public works, environment services, planning, and airport (not official department titles).

City of Seattle
- The City of Seattle partners with CBOs and other organizations to effectively reach underserved communities.