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DENVER PROJECT LIVING CASE STUDY

Making the Business Case for Smart, Shared, and Sustainable Mobility Services

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ATLAS PUBLIC POLICY
WASHINGTON, DC USA

As a part of the EV Shared Mobility Project, the City and County of Denver will capitalize on statewide momentum towards transportation electrification in Colorado and draw on their advantageous contracting and permitting position to advance public EV charging deployment. Denver originally sought to leverage relationships with carshare companies to provide vehicles directly to transportation network company (TNC) drivers, but the departure of a project partner from the Denver market has led to a renewed focus on charging infrastructure expansion. The city is working with stakeholders including Xcel Energy and EVgo to strategically locate charging stations in multi-use, high traffic areas in order to increase access to fast charging for TNC drivers in Denver. This intervention will help achieve local and regional emission reductions targets and support the rollout of Lyft's EV rental service in the greater Denver region. The city has a goal to rollout a total of seven DC fast charging stations at three sites in 2020. In addition to this, the city is working with the Denver Metro Clean Cities Coalition (DMCCC) to raise EV awareness and generate demand for EVs.

CURRENT PROJECT GOALS



Deploy Charging Infrastructure

- Install 7 DC fast charging stations at 3 sites in 2020



Enhance EV Awareness

- Work with DMCCC and TNCs to engage TNC drivers directly



Incentivize EV Adoption

- Increase EV adoption among TNC drivers through the provision of convenient fast charging and direct outreach to drivers

PROJECT SUCCESSES

After addressing early challenges, Denver has made progress towards project goals. Highlights include the following:

- Partnership with EVgo has helped finalize site selection and host contracts for two sites.
- Construction initiated for first charging station site with second scheduled to begin by March 2020.
- Partnership with Denver Metro Clean Cities Coalition finalized and outreach efforts launched.
- Relationship established with Lyft to coordinate EV rental service launch with charging station deployment.

CHALLENGES AND PROJECT RESTRUCTURING

As is the case with other cities in the Shared Mobility project, Denver had to restructure their program following the departure of a key partner. Some of these challenges include:

- The withdrawal of the EV rental provider Maven Gig from the Denver market and the project.
- Contracting delays with partners and withdrawal of site hosts from the project.

CURRENT STATUS AS OF Q1 OF 2020

Denver continues to make significant progress on completing the site selection for all DC fast charging stations included in the project. Construction has begun on the first site which will host four charging stations. Partners are in the final stages of evaluation for the second site which will host two stations. Denver is in the final phases of selecting the third site where they will own a charging station. The first four stations are expected to be operational at the end of March 2020.

With the recent completion of the contract with the DMCCC, outreach work is scheduled to begin in February 2020. Denver will continue to work directly with Lyft to ensure that outreach efforts complement the company's electrification goals in the Denver region and support its planned deployment of 200 EVs in the Denver area.

PROJECT OVERVIEW

As the capital city of a state that emerged as a leader in transportation electrification in 2019, the [City and County of Denver](#) seeks to take advantage of statewide progress and ramp up efforts at the local level. The

city will test whether providing expanding public charging services can accelerate EV adoption among transportation network company (TNC) drivers.

STATE OF THE EV AND SHARED MOBILITY SPACE



Local Charging Stations

- 86 DCFC ports in the Denver metro area
- 31 ports per 1 million people
- Ranked 25th out of 50 leading metro areas
- 1,028 Level 2 ports
- 375 ports per 1 million people
- Ranked 11th out of 50 leading metro areas



Statewide EV Deployment

- 15,914 state BEV sales through June 2019
- 2.93 BEVs per 1k people
- Ranked 6th out of 50 states
- 8,392 state PHEV sales through June 2019
- 1.54 PHEVs per 1k people
- Ranked 15th out of 50 states

Source: [Atlas EV Hub EV Indicators Dashboard](#)

The City and County of Denver benefits from strong regulatory support for EVs across the state and seeks to use recent legislative momentum to drive electrification in shared mobility services. A [suite of new legislation](#) passed in 2019 that includes an extension of the statewide vehicle tax credit and a fund to offset the cost of publicly accessible charging station investment are evidence of Colorado's commitment to transportation electrification and support of projects like EV Shared Mobility.

This legislative push includes a new law directing the state to form a mobility study policy committee. The Colorado Department of Transportation is leading the effort, which will include a specific focus on TNC electrification. The group published their [first report in November 2019](#) and argued that fees should be levied on shared mobility providers to fill transportation funding gaps and that EV TNC drivers should be assessed reduced or no fees. Around the same time, Lyft announced that their plan to add more than [200 EVs to their rental fleet in Denver](#).

In pursuit of EV adoption goals, the Colorado Department of Transportation will coordinate with local agencies in Denver and other metro areas to assess the state of shared mobility impact and electrification potential. The City and County of Denver does not currently have the regulatory authority to limit TNC activity and relies on coordination with the state. The city is also considering queue jumps for EV drivers and is referencing existing policies in Seattle as potential models.

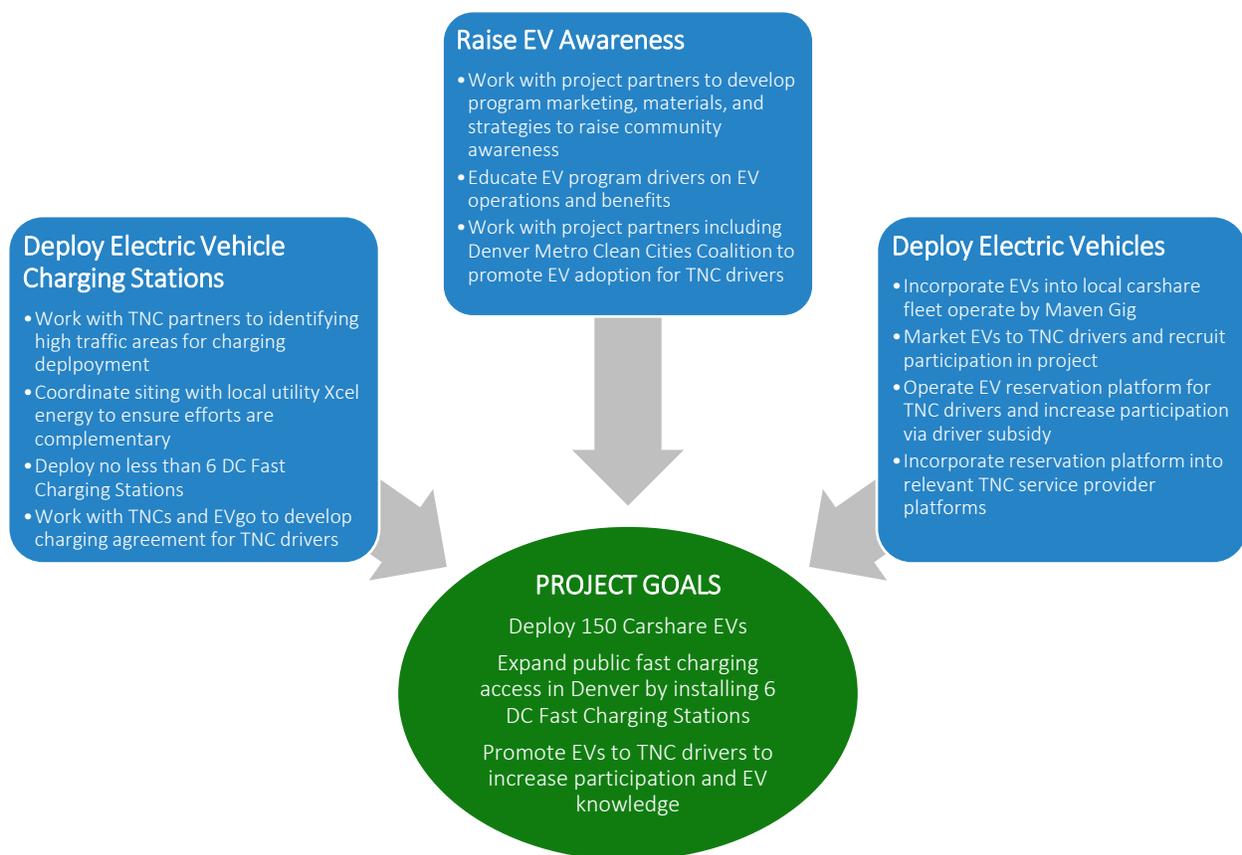
Compared to other states in the West, electric utility engagement in transportation electrification has been lower in Colorado to date. However, [new legislation](#) approved in 2019 directs utilities to develop EV

and charging pilots and enables cost recovery from charging station investment. These developments are likely to increase electric utility investment in the sector. Denver is working with Xcel energy to make sure charging infrastructure deployed through the EV Shared Mobility Project are coordinated with wider efforts.

PROJECT STRUCTURE AND CORE GOALS

Denver’s goals have adapted to shifts in the EV market since the project proposal was approved in the fall of 2017. This section highlights the dynamic nature of the project and adaptations undertaken by Denver in order to advance transportation electrification and raise EV awareness among TNC drivers in the region.

INITIAL GOALS AND SCOPE

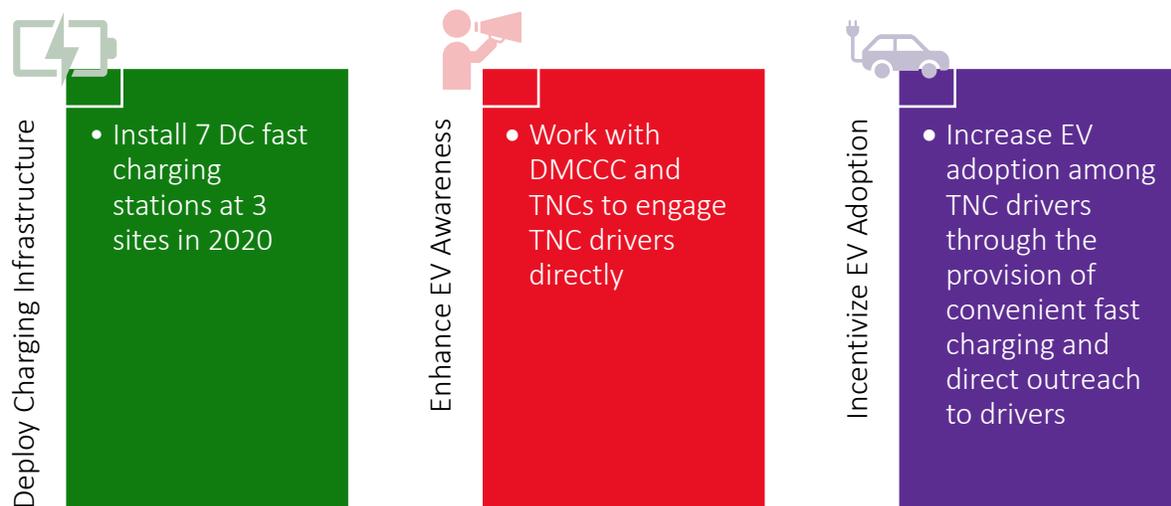


The City and County of Denver initially set out to work directly with vehicle and charging service providers to meet the project goals. This included establishing early partnerships with the EV rental service [Maven Gig](#) and the charging service provider [EVgo](#). Original project goals included the installation of six DC fast charging stations around the city and the deployment of 150 EVs via Maven. Providing access to fast charging, in particular, was identified as a core barrier to EV adoption in the region in the project proposal due to the relatively low level of deployment in the city. At the project outset, Denver had the second fewest DC fast charging and Level 2 charging stations deployed on a per capita basis out of all the cities in the project. EV Shared Mobility project.

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As a part of the partnership between EVgo and Maven, Denver planned to facilitate an agreement between the two companies allowing for complementary charging by Maven EV drivers on the EVgo network. EV deployment goals would be achieved by subsidizing the rental fees for first-time EV TNC drivers to build confidence in the technology and increase demand for the Maven's EV offerings. This would be conducted on a separate reservation platform providing preferred access to TNC drivers. Outreach efforts would also be harnessed to market EVs directly to these drivers. By providing EVs directly to TNC drivers and supplying charging infrastructure, Denver sought to make the switch to EVs more attractive. Initial goals did not include a direct focus on work with Lyft and other TNCs, although these companies expressed early interest in the outcomes of the project and how they might inform future plans in the region.

CURRENT GOALS AND SCOPE



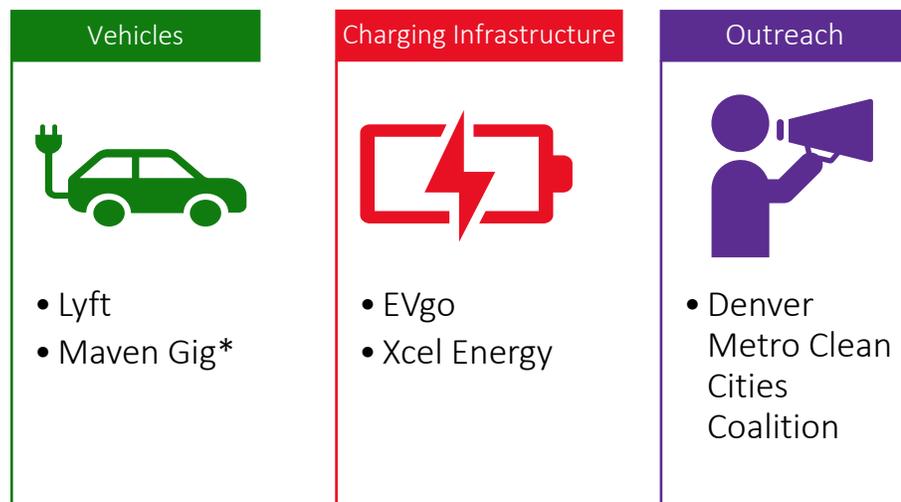
While securing vehicles for TNC drivers is no longer a core goal of the project, the city remains committed to expanding public fast charging access and supporting TNCs, Lyft in particular, with their electrification commitments. The withdrawal of Maven from the market in [Denver and seven other cities](#) led to their departure from the EV Shared Mobility project. Lyft stepped up to fill this gap by committing to expanding EV rental program, leading Denver to shift the focus of the project away from vehicle provision and towards filling remaining charging gaps and enhancing EV awareness among TNC drivers. The departure of Maven increased the project's focus on DC fast charging deployment and led to the addition of a city-owned site within the project scope. Denver has designed their program to improve the EV value proposition for TNC drivers and expand awareness of the benefits of EVs. In addition to encouraging EV adoption, this will also enhance the usage of public charging to support the growing EV charging market in Denver. EVgo, a leading charging service provider in the region, has remained a strong partner throughout the process and has facilitated progress on the infrastructure expansion component of the project.

Project partners will seek to rollout charging infrastructure at the same time that Lyft adds 200 EVs to its Denver Express Drive program, a service that allows drivers to make short term rentals through Lyft's partners. In addition to working with Lyft, Denver will engage TNC drivers in partnership with the Denver Metro Clean Cities Coalition (DMCCC) to ensure that drivers have the information and support they need to switch to an EV.

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Denver's goals were framed in a way that enables the city to be a local leader as Colorado moves quickly towards clean transportation goals. As a finalist for the federal Smart City Challenge, Denver adopted an aggressive transportation electrification plan, committing to an 80 percent reduction in greenhouse gas emissions by 2050. Like other cities in the project, Denver seeks to reduce the impact of ride-hail vehicles in the city and achieve emissions reductions in line with regional and statewide climate goals. This aligns with the policy directives from the governor's office and seeks to support a strong EV market in Colorado.

PARTNERSHIP BUILDING AND CONTRACTING



* Indicates partners that have withdrawn from the project

Denver established a strong foundation for the project in the proposal by identifying EVgo as the core charging infrastructure partner for the project. After facing delays and difficulties in initial contracting with EVgo and subsequently securing site host agreements, the city established regular meetings with local regulators to expedite the permitting process. This also included securing regular communication and contribution from the local electric utility, Xcel Energy, as an important stakeholder in the site selection and design process. The robust partnership between the City and County of Denver, Xcel Energy, and EVgo has resulted in successful site selection and contracting at two sites along with expedited construction on the initial charging stations.

Denver identified DMCCC in the project proposal as the primary partner to lead on outreach efforts. While contracting with the DMCCC was initially managed under the umbrella of the American Lung Association, the coalition has since split off due to internal management challenges and Denver has established an independent contract. As a part of outreach efforts, Denver has also worked with Forth, the EV Shared Mobility lead in Portland, Oregon and an active organization in Denver, to ensure that lessons learned in other project cities can be applied in the Denver area when appropriate.

DATA COLLECTION AND ANALYSIS STRATEGY

Data collection has proven to be a similar challenge in Denver as in other project cities. At the outset of the project, the city was unaware of some of the data gaps and barriers that exist within the ride-hail

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sector. The city seeks to secure data from TNC companies on driver behavior, EV uptake, and charging station use.

In the original project outline with Maven as the vehicle partner, the city sought to restrict access to new charging stations to only TNC drivers for the first year of the program. Station access has since been made fully public and Denver will now work with Atlas Public Policy to collect data from EVgo and the city's own fast charging station on station utilization to assess the amount of electricity used and the total electric miles traveled. Denver will also work directly with the National Renewable Energy Laboratory (NREL) and Lyft to address challenges around separating TNC charging from general public use and determine if additional data on ride-hail electrification in the region can be included. Other project partners in Seattle and Portland have experienced similar difficulties in distinguishing TNC drivers from the general public and are currently coordinating on potential solutions as a part of the EV Shared Mobility project.

On the vehicles front, Denver will work to collect data from Lyft and Uber on the number of EVs operating on their platforms before and after infrastructure deployment in order to estimate the impact of the additional charging stations on EV usage by TNC drivers. Denver is also leveraging state EV registration data shared by the Colorado Energy Office to ensure vehicle deployment data is integrated into the project. Although not finalized yet, Denver is exploring the opportunity to work directly with Lyft to determine how often Lyft's newly deployed rental fleet of 200 EVs is utilizing the charging infrastructure installed as part of this project.

Denver has gained insight from talks with Forth and will work with the DMCCC to ensure that metrics from outreach campaigns are being captured, analyzed, and shared with project partners. These metrics will include data on event attendance, views or impressions from any online campaign materials, and the number of individuals engaged both in person and online. In addition to summary statistics such as event attendance, DMCCC will gauge the effect of outreach on event attendees via an attitudinal study questionnaire provided directly to drivers. This questionnaire covers topics related to EV awareness in the TNC driver community such as barriers to EV adoption, knowledge of EV benefits, and likelihood of EV adoption.

PROJECT TIMELINE

Denver has experienced early successes and challenges as their intervention in Denver for the EV Shared Mobility project has been implemented. This has revealed lessons that the city can share to inform efforts in other areas. The figure below outlines the timeline for key project milestones so far.

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March 2017 Proposal Submitted

- Denver, along with the City of Seattle, Forth, the City of New York, and 16 other participants submitted the proposal for "Making the Case for Smart, Shared, and Sustainable Mobility Services"

September 2017 Grant Award Issued

- After reviewing the proposal, the U.S. Department of Energy awards the grant to the primary recipient the City of Seattle and work begins

May 2018 First Contract Signed

- Denver signs official contract with project lead City of Seattle

September 2018 First Project Restructuring Submitted

- To address project delays due to contracting, an amendment is submitted to U.S. Department of Energy revising the scope for Denver and updating budgets

December 2018 Contract with EVgo Finalized

- Denver completed the contracting agreement with EVgo and began identifying potential sites

May 2019 Maven Leaves Denver Market

- The carsharing service left Denver and seven other cities to focus on other markets

June 2019 Second Project Restructuring Submitted

- To address project delays and the decreased involvement or complete withdrawal of several project partners, an additional amendment is submitted to U.S. Department of Energy. Changes to Denver's program included budget modification and the removal of the vehicle provision components.

July 2019 Contracting with DMCCC Begins

- City of Denver initiates contracting with DMCCC to lead outreach efforts for the project

September 2019 Airport Withdraws as Site Host

- Lengthy contracting led Denver to focus on other site hosts

November 2019 Project Restructuring Approved and DMCCC Contract Completed

- U.S. Department of Energy approved project restructuring and project work resumed in earnest
- Denver finalized the contract with DMCCC and began designing their outreach campaign

December 2019 EV Siting Completed For First Site

- Site host contracts signed and construction set to begin on first site
- Site selection for city-owned third site initiated

January 2020 Charging Station Construction and Lyft EV Deployment Begin

- City of Denver working with EVgo to complete first station at by end of March
- Construction at second site delayed due to challenges with utility service
- Lyft launches first EVs in Denver

PROJECT SUCCESSES



Charging Infrastructure

- Construction underway at first site with second site in final stages of contracting
- City coordinating with other departments to expedite construction



Vehicles

- Lyft expressed support for the project
- EV rental service will launch in coordination with charging deployment



Outreach

- Contract with Denver Metro Clean Cities Coalition finalized
- Campaign to complement TNC initiatives

Denver's partnership with EVgo has accelerated negotiations with site hosts throughout the city. Establishing clear communication early on and engaging the region's primary electric utility, Xcel, has facilitated new agreements and allowed both entities to address their specific goals within the course of the project. This collaboration has led to the initiation of construction on the first site and the city expects construction for the second to begin in March 2020. Continued coordination with Lyft as they rollout their EV rental program has helped to ensure TNC drivers will have access to EVs following the withdrawal of Maven from the project. Although discussions are still in the early stages, Lyft has expressed support for the project and indicated a willingness to cooperate to share information on TNC driver charging use at stations installed through the project. Denver, in collaboration with Atlas Public Policy, has also partnered with NREL to better understand TNC driver charging behavior and separate it from the general public.

CHALLENGES AND PROJECT RESTRUCTURING



Charging Infrastructure

- Contracts with initial site hosts delayed due to complicated utility service agreements
- The Airport, a key focus for charging, was unable to host stations within the project timeline



Vehicles

- Maven withdrew as EV rental provider in the Denver area
- Difficulty obtaining data on EV TNC adoption and charging use



Outreach

- Organizational shifts led to delays in contracting with Denver Metro Clean Cities Coalition

Denver was pushed to adapt when Maven pulled out as a vehicle provider for the EV Shared Mobility project. This created significant challenges for the city, which had conducted a formal contracting process with the company. The outreach component of the project was also delayed as the DMCCC separated from their parent organization due to operational challenges.

On the charging front, Denver and EVgo have faced challenges securing full cooperation from several site hosts. The Denver Airport was initially considered a top candidate for site selection, but lengthy contracting procedures led to a focus on other sites. Several additional sites that were initially selected were also abandoned when it was decided they were located too closely to existing charging infrastructure. A third challenge faced in site selection has emerged in the process of securing utility approval. Construction has been delayed on the second site due to an uncommon utility service agreement with the host that must be addressed before installation can take place. The city has identified potential backup sites in case this contract does not move forward.

LESSONS LEARNED

Denver has been able to adapt to challenges faced throughout the course of the project and has modified their approach based on lessons learned through the process. Throughout the entire project, the Denver team has found:

- Informal contracting can reduce time lost as a result of time and resource-intensive requests for proposals (RFPs) that do not guarantee partner commitment to the project.
- The fast evolution of the shared mobility space requires responsiveness from the project teams in order to integrate these shifts within the confines of the grant requirements and goals.

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- Altering the project scope can be difficult given the requirements of the U.S. Department of Energy grant.
- Early coordination with electric utilities can identify sites with complicated service agreements and save time on station installation.
- Project partners more open to agreements where site access is not exclusive to TNC drivers.
- Considerable lead time, up to six months, needs to be built in to allow for site selection and host contracting.

The city identifies the move away from formal contracting and RFP processes as a key factor in the success of this new relationship with Lyft. Delays in site host selection process have also led to the development of new resources and strategies to identify risk and accelerate permitting. This learning process led EVgo to prepare a risk assessment for the project to inform later efforts. This assessment considered the worst-case scenario for site hosts where redevelopment happens in two years and EVgo would be forced to pull out their chargers and forfeit their ability to recoup investment. The company determined that in almost no scenario would a two-year horizon be enough for a worthwhile investment and that an investment horizon of at least five years is preferable. In addition, the investment proposition is further improved by the entry of Lyft into the EV market and EVgo urged the city to accelerate contracting to ensure mutual benefit. Denver continues to address and adapt to these challenges as is outlined in the following section.

CURRENT STATUS AS OF Q1 OF 2020

Denver continues to make significant progress on completing the site selection for all DC fast charging stations included in the project. Progress includes:

- The initiation of construction for the first site including four charging stations. These will be operational by the end of March 2020.
- Site selection and contracting in final stages at the second site which will host two charging stations. Backup site selected if utility service agreement does not go through.
- Site walks ongoing for third site where the charger will be owned and operated by Denver.
- Launch of outreach campaign by DMCCC.

In addition to this progress, Denver will continue to work directly with Lyft to ensure that outreach efforts complement the company's electrification goals in the Denver region. All project partners have finalized agreements removing restrictions on charging station use. The stations will now be fully accessible to both TNC drivers and the general public and have the potential to be some of the highest use stations in the city's network.

Denver continues to face data challenges related to the decision to make all stations fully public from the outset. By opening the stations to the public, all usage data will be combined. EVgo will continue to provide data to Denver and they will work collaboratively with Atlas, NREL, and other partner cities to separate out TNC drivers' usage and apply new analysis strategies. Discussions on data sharing with Lyft are also ongoing.

NEXT STEPS

The next phase of work for Denver will focus on expediting charging station construction now that initial site host agreements have been finalized and all site assessments have been completed.

- Complete installation at the first two sites and operationalize six DC fast chargers.
- Finalize third site for city-owned charging stations by February 2020.
- Identify the first engagement and awareness campaign activities.
- Oversee the expansion of Lyft's EV rental service in Denver.

Site selection for the third location is underway and is expected to be finalized in February 2020. The city plans to own and operate the charging infrastructure installed at this location. As station deployment advances, data collection will continue to be a priority for project partners and Denver will focus on analyzing usage behavior at their station.

Future data constraints will be addressed by strengthening partnerships with Lyft and other TNCs like Uber. Currently, TNCs are regulated through the Public Utilities Commission and Denver is required to submit a Freedom of Information Act request to access data on TNC activity and EV adoption. It is unclear what the current state of data is at the commission level.

Denver will work to launch the outreach efforts now that the contract with the Denver Metro Clean Cities Coalition has been completed. This effort will draw on the experience of Forth and other partners in the EV Shared Mobility Project that have successfully engaged TNC drivers in their respective cities. These programs will continue to build towards station installations in March 2020 with the goal of generating strong user awareness. Lyft will also be a partner on this outreach.

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