California ZEV Investment Plan: Cycle 3

Public Version

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List of Acronyms

Please note – further definition of select terms found in the Glossary in Appendix 1.

AADT	Average Annual Daily Traffic
BEV	Battery Electric Vehicle
BNEF	Bloomberg New Energy Finance
CARB	California Air Resources Board
CSR	Corporate Social Responsibility
CVRP	Clean Vehicle Rebate Program
DAC	Disadvantaged Community
DCFC	Direct Current Fast Charging
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
EVSE	Electric Vehicle Supply Equipment
FCEV	Fuel Cell Electric Vehicle
ICCT	The International Council on Clean Transportation
ICE	Internal Combustion Engine
KPI	Key Performance Indicator
kW	Kilowatt
kWh	Kilowatt Hour
LCFS	Low Carbon Fuel Standard
LIC	Low-Income Community
MHD	Medium- and Heavy-Duty Vehicles
MSA	Metropolitan Statistical Area
MUD	Multi-Unit Dwelling
OCPI	Open Charge Point Interface
OCPP	Open Charge Point Protocol
OEM	Original Equipment Manufacturer
PESO	Paid, Earned, Shared, and Owned
PEV	Plug-In Electric Vehicle
PHEV	Plug-In Hybrid Electric Vehicle
RFI	Request for Information
RFP	Request for Proposal
TNC	Transportation Network Company (e.g., Uber, Lyft)
VPPA	Virtual Power Purchase Agreement
ZEV	Zero Emission Vehicle

Executive Summary

Electrify America is pleased to present this California Zero Emission Vehicle (ZEV) Investment Plan for its third cycle of ZEV infrastructure, education and awareness, and access investments in the State of California. As required by Appendix C to the 2.0-Liter Partial Consent Decree entered by the U.S. District Court for the Northern District of California on October 25, 2016, Volkswagen Group of America is investing $800 million over 10 years to support the increased adoption of ZEV technology in California. This investment represents the largest commitment of its kind to date. This plan is the culmination of nearly a year of collaboration with the California Air Resources Board (CARB), and defines the investments to be made or targeted in Cycle 3, from January 2022 through June 2024.

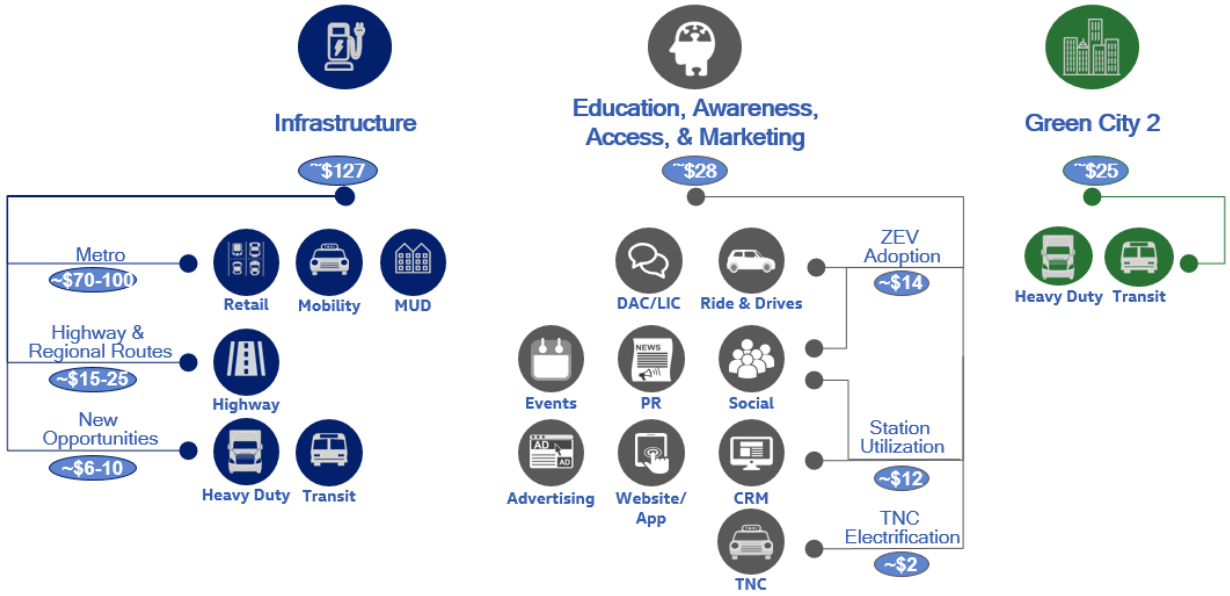
After nearly five years investing in driving ZEV adoption, Electrify America has opened more than 600 ultra-fast charging stations, deployed over 2700 Level 2 workplace and multi-unit dwelling (MUD) charging outlets, and run multiple marketing campaigns collectively garnering over one billion impressions across the U.S. We have made these investments with the primary goal of accelerating electric vehicle (EV) adoption, and we believe the EV industry is at a critical juncture. Automotive manufacturers across the globe are committing to electrification, and bringing vehicles to market with new body styles, longer ranges, and higher charging speeds. In parallel, through Executive Order N-79-20 the State of California has committed to a target that 100% of new passenger vehicles will be zero emission by 2035.

With this backdrop, Electrify America has undergone a multi-faceted planning effort to develop this Cycle 3 plan. Electrify America applied its corporate social responsibility framework of enabling electric transportation, committing to environmental sustainability, creating a positive community impact, and ensuring equality and diversity to ensure our investments are leading toward a cleaner, more equitable, and just world. As a company we have taken lessons from our experience to date. These lessons were combined with insights and perspectives from a broad outreach effort that included reviews of academic literature, dozens of phone calls with state and local government officials, and engagement with hundreds of stakeholders across the state. Each touchpoint yielded new ideas and recommendations for investment, many of which complemented our own internal thinking, and we are deeply grateful for all those who took part in this effort.

Making smart, data-driven investments that will stand the test of time remains core to our approach, and this is critical in order to overcome the barriers to EV adoption that remain. For example, consumer awareness and education of ZEVs continues to lag. According to a 2019 UC Davis study of consumers in Sacramento, the public remains unaware of state efforts to increase ZEV adoption (Hardman et. al, 2019). DC fast charging stations are more than 30 percent more expensive to construct in California than other states, and Rocky Mountain Institute's groundbreaking study recently identified soft costs, such as regulations and permitting, as a major cause of this (Nelder et al., 2019). Utility interconnection costs and demand-based rates and fees also pose a serious challenge to the long term economic viability of DC fast charging stations, while real estate acquisition continues to be a significant barrier to rapid deployment of EV charging, and in turn, more widespread ZEV adoption. Finally, driver and rider behaviors have shifted as a result of the COVID-19 pandemic, and future travel patterns, vehicle purchasing, and fueling needs are far less certain than before. Electrify America approaches each of these barriers with eyes wide open, and our planning efforts have focused on turning each challenge into an opportunity.

Electrify America's Cycle 3 investments span three categories: Infrastructure; Education, Awareness, Access, and Marketing; and Green Cities. Consistent with guidance from CARB, Electrify America will strive to ensure that 35% of Cycle 3 investments are in low-income and disadvantaged communities.[1]

Figure i: Cycle 3 California Investments



Remaining balance includes: $20M in business operations and organizational costs and $2-4M in hardware development costs

Infrastructure Investments (~$127M)

In Cycle 3, Electrify America plans to invest approximately $127 million in EV charging infrastructure to support ZEV adoption. While the work of Electrify America and others in the industry has dramatically increased the availability of charging in the state over the past five years, further investment is required to support the state's EV adoption goals (see section 4.2.3). To address this gap, Electrify America plans to make the following infrastructure investments:

- **Metro Charging ($70 – $100M):** Charging in metropolitan areas continues to be critical to ZEV adoption, with researchers from the International Council of Clean Transportation forecasting that 88% of all plug-in electric vehicles through 2025 will be concentrated within the 100 most populous metro areas (Nicholas et al., 2019). To meet this need, Electrify America will be expanding its metro infrastructure and seeking to address three primary use cases: travel in and around town, reliable fueling options for multi-unit dwelling residents, and infrastructure for taxi and transportation network company (TNC) vehicles.
- **Highway and Regional Route Charging ($15 – $25M):** Infrastructure for intrastate travel and access to top destinations throughout the state is also critical for enabling ZEV adoption. For households in which the EV is the primary or sole vehicle, highway infrastructure is key to

[1] Electrify America uses definitions for low-income and disadvantaged communities established by the State of California, which are published and mapped by CARB on its "Disadvantaged and Low-Income Communities Investments" webpage: https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm.

unlocking long distance travel. Cycle 3 investments will expand the highway network built through Cycles 1 and 2, adding density along major routes and unlocking new destinations including Joshua Tree National Park.

- **Transit and Medium-Duty/Heavy-Duty Fleet Charging ($6 - $10M):** Both the transit and medium/heavy duty sectors are poised for significant growth over the coming decade, as battery densities rise and vehicle costs fall. However, many fleet owners and operators lack the expertise, funding, or desire to develop and operate charging infrastructure for these new fleets. To fill this gap, Electrify America is committing $6-10M in infrastructure to support these emerging, but transformational, technologies.
- **Hardware Development and Capacity Building ($2 - $4M):** Through our National Outreach Process, Electrify America identified two key areas for continuous improvement, both in the industry as a whole and in our own business: customer experience and station economics. To address these areas, Electrify America plans to invest in new tools and techniques, such as site-level energy management and energy modeling, to drive down both capital and operating costs, and to ensure a fast, reliable, and customer-centric experience at all of our stations.

Public Education, Awareness, Access, and Marketing ($28M)

Over the next few years, new vehicle launches will provide consumers more options than ever, and strong policy support at the local, state, and Federal level will help make EVs even more affordable. However, to actually drive adoption, public education and marketing will be critical to informing consumers of this new era. According to 2020 research by Mark Singer of NREL, a mere 34% of consumers are familiar with existing EV tax incentives, indicating a strong need for effective communication to drive change. To address this gap, Electrify America has planned both brand neutral education, awareness, and access initiatives, as well as a branded marketing campaign to drive station utilization:

- **Brand Neutral Campaign: Boosting ZEV Adoption through Education and Awareness ($14M):** Similar to Electrify America's Cycle 2 investments, in Cycle 3 Electrify America plans to drive increased education and awareness through educational marketing, ride and drives, and other experiential marketing. The core pillars of our messaging include ZEV performance, charging availability, affordability, models, and environmental impact. Whereas in Cycle 2 we built NormalNow.com to showcase these messages, in Cycle 3 we intend to bring the messaging directly to consumers through social media and other marketing channels. By reducing the number of clicks required before learning key facts, Electrify America can ultimately have a more immediate impact on the target audience.
- **Access: Driving Education and Awareness through TNC Electrification ($2M):** Electrification of TNCs and taxis has potential to dramatically reduce greenhouse gas emissions, provide ZEV education to millions of passengers that otherwise might not have had an opportunity to experience a ZEV, and offer economic opportunity for many low-income and disadvantaged drivers. However, the upfront cost of a ZEV can often be a barrier to adoption by TNC and taxi drivers. To address this need, Electrify America will invest $2 million in incentives to help drivers obtain electric taxis and TNC vehicles, resulting in an influx of 500 – 1,000 vehicles into California markets.
- **Branded Campaign: Boosting Station Utilization through Branded Marketing ($12M):** Electrify America will also invest in driving utilization of its charging network through branded events,

promotions, and marketing. As outlined in Appendix C of the Partial Consent Decree, Electrify America must target utilization to demonstrate its investments are "addressing an existing need or supporting a reasonably anticipated need." According to focus groups conducted by Electrify America, consumers (including ZEV owners and considers) have significant knowledge gaps around charging. Many drivers are unaware of charging options around them, and are unfamiliar with terminology related to the charging experience. To address this need, Electrify America will conduct a branded marketing campaign to educate consumers and drive station utilization based on four pillars: charging speed, locations/accessibility, quality customer experience, and corporate social responsibility.

Green Cities 2 ($25M)

Pending CARB approval of this Cycle 3 ZEV Investment Plan, Electrify America is thrilled to announce our second Green City: Long Beach / Wilmington. Over the past year, Electrify America has engaged in a thorough review of investment opportunities and geographic locations throughout the state. This effort culminated in a request for proposals to finalist communities soliciting specific projects for investment. Long Beach / Wilmington put forward over a dozen potential projects, and we are excited to work hand-in-hand with local leaders to implement as many projects as possible in this initiative.

The Green City investments will focus on ZEV technologies for transit and heavy duty operations in and serving the Long Beach / Wilmington area. Electrify America's detailed, quantitative evaluation to determine where to focus Green City investments that would meet the greatest needs and most positively impact the host community, revealed that CARB's zero emission truck mandate approved in June 2020 (CARB, 2020) and CARB's Innovative Clean Transit Regulation adopted in 2018 (CARB, 2018) have spurred a significant, and serious new effort by fleet operators to electrify fleets, and charging solutions are needed in the Cycle 3 investment period. Project details for each specific investment are still being worked out with fleet partners, site hosts, transit agencies, city officials, and others, but we plan to showcase ultra-fast charging technology, storage, and energy management for these two emerging use cases.

Conclusion

Electrify America's investments are summarized in Table i below. Cycle 3 builds off of the unprecedented successes achieved through Cycles 1 and 2 – building the largest open ultra-fast network in the U.S., featuring state of the art speed, customer-centric sites, industry-leading quality, and executing at a construction pace unmatched in the industry – while also unlocking emerging areas for ZEV adoption including TNC/taxi, transit, and heavy duty. The marketing investments continue to bring awareness and consideration, and bring critical education to owners, considerers, and the mass market alike.

Table i: Cycle 3 California Budget

Category	Estimated Budget ($M)[1]
Infrastructure & Station Operating Costs	~$127
Metro Charging	$70 - $100
Highway and Regional Route Charging	$15 - $25
Transit and Medium-Duty/Heavy-Duty Fleet Charging	$6 - $10
Hardware Development and Capacity Building	$2 - 4
Brand Neutral Campaign: Boosting ZEV Adoption through Education and Awareness	~$14
Access: Driving Education and Awareness through TNC Electrification	~$2
Branded Campaign: Boosting Station Utilization through Branded Marketing	~$12
Green City 2	**~$25**
Electrify America Business Operation & Organization[2]	**$20**
TOTAL	**$200**

[1] Costs include creditable operating expenses and on site storage where appropriate.
[2] According section 5.1 of Appendix C-1 of the Partial Consent Decree, Electrify America is permitted to spend 10% of the total budget on these costs.

Cycle 3 offers a critical turning point, both for Electrify America's investments and for ZEV adoption more broadly. We are excited to help lead the way, and we look forward to collaborating with the many stakeholders across the state working to implement Governor Newsom's extraordinarily ambitious mandate that all new passenger cars and trucks be zero emission by 2035.

1. Introduction

1.1 Background on EA and Investment Cycles

As agreed to in Appendix C to the 2.0-Liter Partial Consent Decree entered by the U.S. District Court for the Northern District of California on October 25, 2016, Volkswagen Group of America is investing $2 billion over 10 years in zero emission vehicle (ZEV) infrastructure, education and awareness, and access efforts to support the increased adoption of zero emission vehicle technology in the United States.

Volkswagen Group of America created Electrify America LLC, a wholly-owned subsidiary headquartered in Reston, Virginia, to fulfill the ZEV Investment Commitment in Appendix C. The company has grown to more than 81 full-time employees with a diversity of backgrounds in automotive, utilities, electric vehicle (EV) infrastructure, technology, construction, and state and federal government, split across the Reston office, a second office in California, and on assignment across the country. All employees share a passion for helping transform and electrify the transportation sector through investments to grow the market for all zero emission drivers and stakeholders.

Of the overall $2 billion commitment, $800 million will be spent in California in $200 million increments over four 30-month cycles. This plan describes the $200 million of investment that will be made in the third 30-month cycle in California. The Cycle 3 period is from Q1 2022 through Q2 2024 (see Table 1).

Table 1: California Investment Cycles

Cycle 1 Q1 2017 – Q2 2019	Cycle 2 Q3 2019 – Q4 2021	Cycle 3 Q1 2022 –Q2 2024	Cycle 4 Q3 2024 –Q4 2026	Total
$200M	$200M	$200M	$200M	**$800M**

The Partial Consent Decree defines those investments that qualify toward Electrify America's commitment. Infrastructure investments "should support and advance the use of ZEVs in the United States by addressing an existing need or supporting a reasonably anticipated need." Brand-neutral education investment "builds or increases public awareness of ZEVs." And access investments should "increase public exposure and/or access to ZEVs without requiring the consumer to purchase or lease a ZEV at full market value."

This document outlines Electrify America's plan for the third cycle of investment. Electrify America's mission continues to be:

- Making it easier for millions of drivers to fuel their ZEVs through economically sustainable investments, and
- Promoting sustained ZEV adoption and station utilization through education, awareness, outreach, and access programs

1.2 Investment Plan Overview

This Cycle 3 California ZEV Investment Plan contains Electrify America's planned investments for Cycle 3 along with explanation and evidence supporting why each investment meets the Partial Consent Decree's requirements for investment. Chapter 1 contains background on Electrify America and the approach taken to planning the Cycle 3 investments. Chapter 2 details our commitments to corporate

social responsibility, including efforts underway and anticipated for Cycle 3. Chapter 3 describes Electrify America's National Outreach effort, including results from our submissions web portal and insights from stakeholder conversations. Chapter 4 captures planned investments in ZEV infrastructure, as well as all outreach insights leading to the selection of these investments. Chapter 5 details investment plans for brand neutral education and access programs to support ZEV adoption, as well as investments to support Electrify America station utilization. Finally, Chapter 6 describes our Green City initiative, including both the approach used to select the community and identify opportunities, as well as details on the intended investments.

The investments outlined in this Cycle 3 California ZEV Investment Plan will build on our experience and impacts in Cycles 1 and 2, and continue to unlock ZEV adoption across the state of California.

Thank you to the hundreds of stakeholders who provided input to these plans, and we look forward to implementing them together.

1.3 Cycle 3 Approach

1.3.1 Background

Each investment cycle offers Electrify America the opportunity to evaluate new information, revisit past assumptions, and consider new ideas and feedback in the planning process. In addition, Cycle 3 provides Electrify America the opportunity to learn from and build upon the investments made in Cycles 1 and 2. In this context, it is worth highlighting a few of Electrify America's largest accomplishments to date.

Through our Cycle 1 and 2 investments, the Electrify America network has become the nation's largest open direct current fast charger (DCFC) network in the U.S. By the end of Cycle 2, in December 2021, we expect to have more than 800 DCFC stations open or under development nationwide. In California alone, Electrify America will have at least 230 DCFC stations open or under development and over 900 ultra-fast chargers, providing coverage in nearly all parts of the state. Electrify America also has over 450 Level 2 workplace and multi-unit dwelling (MUD) stations, including 241 station sites and over 1,500 chargers installed in California.

Our marketing and education campaigns have also made a major impact on ZEV awareness and consideration. Our Cycle 1 mass media campaign called "The Jetstones" generated 1.1 billion impressions from viewers around the country. We followed this with a Cycle 2 campaign called "Normal Now" which has generated over 330 million impressions through the end of 2020. We also partnered with Veloz, funding half of its "Kicking Gas" video shorts that feature Arnold Schwarzenegger highlighting the benefits of ZEVs. And to help more consumers experience the benefits of driving a ZEV first hand, we have provided support for National Drive Electric Week in both 2019 and 2020.

We found that for some target populations, the best way to drive ZEV adoption is to leverage the existing programs, networks, and organizations already doing great work in these communities. To this end, we supported over 100 events in low-income and disadvantaged communities (LIC/DAC) in California supporting ZEV adoption, including 22 ride and drives. These events alone have led to the purchase of over 1,800 ZEVs. In addition to providing general ZEV education and awareness at events, Electrify America is funding over $1.6 million to support science, technology, engineering, and math (STEM) and workforce development programs that educate students and train workers through new ZEV-focused curriculums, as well as on-the-job vocational training. This investment is critical to develop a workforce of future engineers, software developers, battery technicians, energy management

specialists, construction managers, and a wide variety of additional jobs that the industry need for as it continues to grow.

Finally, we are very actively engaged with consumers on social media channels. The team regularly engages with thousands of followers across Facebook, Twitter, LinkedIn, and other platforms to share information and stories about plug-in electric vehicles (PEVs), and ultimately to build charging confidence among consumers.

1.3.2 Guiding Principles

Recognizing the contributions and lessons learned from our Cycle 1 and 2 investments, we have developed six guiding principles for our Cycle 3 investments:

- **Build on Successes to Date:** Electrify America's Cycle 1 and 2 investments have made significant impact on ZEV awareness, adoption, and usage. Nonetheless, there is plenty more to do to reach our mission. In Cycle 3, we will seek to extend the gains through continued investment in similar areas from previous cycles, and exploring new adjacent opportunities.
- **Corporate Social Responsibility (CSR):** At Electrify America, social responsibility is at the core of our mission to drive ZEV adoption. But it doesn't stop there - we are committed to enabling electric transportation, driving environmental sustainability, fostering positive community impact, and incorporating equity and diversity in everything we do.
- **Drive Customer Experience:** Through our Cycle 3 investments, we will continue to focus on providing simple, reliable, and customer-centric experiences at our stations, on our app and website, and in every touchpoint with our consumers.
- **Boost Utilization:** Electrify America will continue to focus on serving high utilization locations and high usage customers. These areas offer the highest possible impact on greenhouse gas reduction, and ultimately on PEV adoption.
- **Unlock Cost Efficiency:** Electrify America is committed to building a charging network that is self-sustaining far beyond Cycle 4. In Cycle 3, we will continue to focus on driving down capital, operating, and energy costs in the name of achieving sustainable economics and securing long-term growth potential.
- **Pursue Transformational Change:** Seek investments supporting emerging use cases including ZEV ridehail, buses, and trucks that will unlock new growth areas for the industry and drive meaningful reductions in greenhouse gas emissions.
- **Improve Perceptions of ZEVs:** Electrify America's brand neutral education and awareness efforts will continue to focus on moving customers through the purchase funnel from awareness through consideration and, ultimately, through vehicle purchase.

1.3.3 Good Faith Estimate

Electrify America notes that the estimated budgets represent a good faith estimate of Cycle 3 costs. Given uncertainties regarding both capital and operating costs, it is possible that total costs may exceed or fall below targeted levels. In the event that costs fall below targets, Electrify America will deploy additional investments in approved use cases, including Green Cities, to meet the Appendix C ZEV Investment commitment. If costs exceed budget forecasts, the number of investments will be reduced by a commensurate amount. In addition, given the early stage of partner discussions, availability of site locations, and/or the technology itself (e.g. heavy-duty), each new use case involves a level of

uncertainty in both cost and operational feasibility. Should investment targets in any new use case, including Green Cities, be unachievable due to practical considerations, the allocated funds will be redeployed into one or more of the other approved use cases to ensure the total investment fulfills Appendix C requirements.

2. Corporate Social Responsibility

CSR is at the heart of everything Electrify America does. Our company's mission is to enable electric transportation, and that goal frames all of our investments. From ZEV infrastructure, to education, awareness, and access campaigns, to our Green City initiatives, each project and commitment we undertake helps lead the way toward a more electrified, more sustainable future.

In addition to our focus on enabling electric transportation, we have three additional pillars that round out our CSR efforts: environmental sustainability, community impact, and equality and diversity. The activities and goals detailed below offer examples of our commitment to customers and to the larger public under each pillar. We also recognize that CSR is a journey, and that Electrify America's approach to CSR will evolve as we learn about new initiatives and seek out innovative ways to be corporate stewards.

Enabling Electric Transportation

When Electrify America began in 2016, 50 kilowatt (kW) charging was state-of-the-art technology, charging stations were limited to a few major metro areas and a handful of corridors, and Tesla was the only automotive manufacturer (OEM) selling vehicles with charging faster than 100kW. Today, in part due to Electrify America's ultra-fast 150kW and 350kW charging stations, nearly every OEM, from Ford to Hyundai to Lucid, is deploying, or has announced plans to deploy, high-powered vehicles.

Example activities for *Enabling Electric Transportation* include:

- Ultra-Fast Charging: Electrify America's network offers industry-leading 150kW and 350kW chargers[2] to reduce the time customers spend charging. This investment has led OEMs to develop higher powered, and faster charging vehicles. Nearly all battery electric vehicles (BEVs) coming to market in 2021 and beyond will have charging speeds of at least 100kW. Moreover, the availability of a 350kW charging network has inspired several OEMs to develop 800 volt (V) vehicle platforms that enable vehicles to charge up to 20 miles per minute.
- Plug & Charge: Electrify America's network features Plug & Charge capabilities at all of our DCFC stations, offering drivers with capable cars the ability to drive up, plug in, and charge. This service allows for a much faster and better customer experience, as the vehicle and charger seamlessly handle all authorization, payment, and charging steps, without additional driver interaction other than connecting and disconnecting the car from the charger.

[2] CHAdeMO charging at Electrify America stations is limited to 50kW, meeting the needs of the vast majority of CHAdeMO vehicles in operation today.

- Customer Experience: Electrify America has achieved industry-leading quality – in December 2020 Electrify America received CHARGED EV's Charging Infrastructure Best-in-Test award. In addition, our scores on PlugShare, a social application that allows users to find and rate charging stations, exceed those of all other large open DCFC networks.

- Education & Awareness: Electrify America's marketing efforts have garnered more than one billion impressions, driving awareness of ZEVs and charging options through traditional, digital, and social engagement. Recent research we have done in collaboration with Comscore showed that the Normal Now campaign has significantly decreased concerns about affordability, range anxiety, and accessibility of electric vehicles.
- Speaking Engagements: Electrify America executives and staff are frequently asked to speak at meetings, conferences, and other nationwide events regarding ZEVs, charging technology, and e-mobility. Electrify America cannot accept all invitations received, as we must focus our resources on ZEV infrastructure and investment executions. However, Electrify America participates selectively in events specifically focused on ZEV technology that are likely to grow ZEV awareness and that are consistent with Electrify America's obligations and the spirit of the National Outreach process.

As a company we are focused on helping spur the e-mobility revolution through our investments in nationwide charging infrastructure, public education, awareness, access, and marketing activities. The above advancements and activities have allowed Electrify America to increase general awareness of ZEV technology, to decrease perceived barriers to ZEV ownership, to introduce audiences to our ZEV Investment Plans, and to collaborate with an ever-growing industry focused on increased ZEV adoption.

Environmental Sustainability

Electrify America is committed to being carbon-neutral, powering our stations with renewable energy where feasible, and building infrastructure sustainably.

Example *Environmental Sustainability* activities include:

- Charging Powered by Renewable Energy: All energy delivered to customers at Electrify America's California stations is already powered by renewable energy, through the purchase of renewable energy credits (RECs) from California producers. This effort ensures that our stations' renewable energy is additional to the renewable energy generation required under California's Renewable Portfolio Standard and meets the California Air Resources Board's rules for zero-carbon electricity under the Low Carbon Fuels Standard. In parallel, we are exploring options for renewable energy procurement for the remainder of our national network. Electrify America is

also deploying solar canopies at some stations, and in 2020 Electrify America deployed 30 off-grid, solar-powered Level 2 charging stations in rural California communities.

- Building Grid Assets: We are also helping to decarbonize the grid by drawing power from renewable energy for battery storage, along with solar charging solutions at Electrify America stations. By the end of Cycle 2, Electrify America will have behind-the-meter energy storage at more than 125 of our DCFC sites, and in Cycle 3, we intend to expand this investment. Batteries, on-site solar photovoltaic (PV), and advanced technology are part of our investments to ensure that our stations are grid-friendly.

Community Impact

We seek to unlock electrification for all, including investments and education in disadvantaged, low-income and rural areas. Infrastructure and education investment in LIC/DAC areas foster widespread adoption and can lead to improved air quality. To that end, our second Green City will focus on tackling medium-duty/heavy-duty (MHD) emissions in a predominantly disadvantaged community. We will also continue our investments in rural parts of the state, including the Central Valley.

The ZEV Investment Commitment is already having a big impact on California businesses. To date, Electrify America has contracted by way of purchase order with 312 vendors, including 94 located in California, for a total contract value of $712 million. As noted in Electrify America's 2020 Annual Report to CARB, Electrify America vendors reported that nearly 8,800 people (and more than 1,000 Californians) worked professionally on Electrify America's investments in 2020, and more than 1,200 jobs were created or sustained due to Electrify America's investment.

In addition, based on figures from the Council of Economic Advisors and U.S. Department of Transportation related to highway and transit investments, the $200 million being invested in California in Cycle 3 is estimated to support up to 780 jobs over the 2.5 years of the Cycle. In total, Electrify America's Cycle 3 investments in California are estimated to generate over 1.5 million staff-hours of new work.[3]

Example activities for *Community Impact* include:

- California Community-Based Organizations (CBOs): In 2020, Electrify America committed over $3 million in investment in six California CBOs as part of its efforts to drive brand-neutral ZEV awareness and education in low-income and disadvantaged communities. The six recipients of the funding include: Breathe Southern California, Central California Asthma Collaborative, Drive Clean Bay Area, Ecology Action, Liberty Hill Foundation, and Valley Clean Air Now. This represents just one aspect of the company's commitment to equitably increasing awareness of the benefits of driving ZEVs and educating low-income and disadvantaged communities on available ZEV related rebates and incentives.

[3] The Council of Economic Advisors estimates that every $1 billion in federal highway and transit investment would support 13,000 jobs. This total count includes direct, indirect, and induced jobs. The estimate here is for the number of jobs created by infrastructure investments, and it does not include jobs created through education, awareness, and outreach or Electrify America overhead. The estimate assumes that ZEV investments create a similar number of job-hours per dollar spent as highway and transit investments.

- EVNoire: Electrify America is collaborating with EVNoire, a California-based minority-owned e-mobility group, by sponsoring a communications campaign "Drive the Future California" to help normalize zero emission transportation for diverse and underserved communities throughout California. The campaign is part of EVNoire's larger effort to increase awareness and access to educational resources on the benefits of e-mobility, and highlight equitable opportunities and resources available to facilitate EV adoption among diverse and underserved communities. Electrify America's funding helps EVNoire scale its existing work to reach even more of California's diverse and underserved communities. With the addition of this new collaboration, Electrify America will have invested $6 million in California community-based ZEV education programs over the past two years. Additionally, in November 2020, Electrify America presented at the National E-Mobility Equity Virtual Conference hosted by EVNoire and Forth. The E-Mobility Equity Conference facilitated conversations about strategies and best practices for engaging diverse communities often hit worst and first by air pollution.
- Clean Energy Access Working Group: Electrify America is a member of the Clean Energy Access Working Group, launched by Southern California Edison and The Greenlining Institute, to develop community-centric solutions for healthy air and environment, to identify barriers to ZEV adoption in disadvantages and low-income communities, and to explore viable solutions to these barriers.

Equality and Diversity

Electrify America's diversity and inclusion efforts span both internal and external activities in order to help effect a greater impact. We strive to achieve diversity and inclusion in our approach to hiring and engaging suppliers. We have an emphasis on engaging in sponsorships that support education and awareness activities focused on diverse audiences including minority groups and the LGBTQ+ community. Internally, we are strengthening corporate processes including recruiting and staffing, supplier diversity, request for proposal (RFP) evaluations, review of sponsorships, and marketing.

Example *Equality and Diversity* activities include:

- Recruiting: Electrify America believes diversity in backgrounds and experiences within our team is an important part of our cultural fabric and a key to driving ZEV adoption. To achieve this diversity, Electrify America and its parent company have implemented a set of recruiting practices that promote career openings to traditionally underrepresented groups including women, racial minorities, and members of the LGBTQ+ community.
- Diversity and Inclusion Committee (IDEA): Electrify America believes in diversity and inclusion in the workplace and has formed the IDEA (Inclusion, Diversity, Equality, Awareness) Committee to underline that commitment. This committee focuses on the support and advocacy for better and equal outcomes for all areas of diversity and inclusion, including but not limited to gender, race, sexual orientation, religion, and age. A core part of the committee's mission statement is the recognition of the intersection of environmental impact and environmental justice.
- Supplier Diversity: Electrify America is committed to ensuring that investment under its ZEV Investment Commitment reflects the rich and diverse characteristics of California and its people. To meet this commitment, Electrify America staff conducts outreach

efforts and activities to: ensure potential new suppliers and contractors are aware of RFP opportunities resulting from the ZEV Investment Commitment; to encourage greater participation by underrepresented groups and community based organizations, including certified veteran-, women-, and minority-owned businesses; and to assist applicants in understanding how to participate in the RFP process.

Electrify America's purchasing team maintains a list of potential minority-, women-, and veteran-owned vendors, and the team has established attracting diverse suppliers as a key internal goal. Electrify America includes language in all RFPs indicating our commitment to a diverse vendor base, and bidders to Electrify America RFPs are asked to include information regarding certified minority-, women-, and veteran-owned business enterprise participation along with their proposal. On a semi-annual basis, Electrify America continues to survey its vendors to assess the job creation and economic activity occurring as a result of the ZEV Investment Commitment, particularly in disadvantaged and low-income communities and among minority-, women- and veteran-owned and controlled businesses and organizations.

In summary, Electrify America embraces CSR and seeks to be a CSR leader in the ZEV industry. We believe our past, current, and future actions serving our four CSR pillars are the keys to unlocking clean and equitable transportation for everyone.

3. National Outreach Efforts

As Electrify America has learned through its first two investment cycles, driving progress on ZEV adoption requires collaboration with stakeholders across the ZEV space. To begin this call for feedback, Electrify America launched a National Outreach process to receive feedback from state, local, and tribal governments; academics; interest groups; customers; automotive companies; infrastructure suppliers; utilities; and the general public in the summer of 2020. This effort combined a public-facing submissions page on ElectrifyAmerica.com with dozens of stakeholder discussions and a review of academic literature to gather the latest insights and thinking on our investments and priorities.

Figure 1: Cycle 3 Outreach Efforts

From our webpage alone, Electrify America received over 949 unique submissions, including over 150 from California. Because COVID-19 impacted our ability to travel and meet with some stakeholders in person, we strove to create meaningful engagement through webinars, video meetings, phone calls, and emails. Electrify America is very appreciative of everyone who has taken the time to send us a submission.

Given that this was our third call for public input through the National Outreach process, we refined our approach from Cycle 2 and tailored our request for public feedback to the following seven specific submission types:

- Suggestions and Data Relevant to Cycle 3 Investments: Any suggestions that may impact our investment thinking including: unique opportunities to work with submitters in deploying impactful and financially sustainable ZEV investments, specific actions submitters are taking to support EV adoption by taxi and ridehail vehicles, anonymized usage data from existing charging stations (DCFC and Level 2) in submitters' communities, current/expected ZEV infrastructure plans or strategies for communities, and fuel cell electric vehicle (FCEV) data and/or adoption perspectives, especially with regard to MHD vehicles.
- Information Regarding ZEV Policy in Your Community: Information from governments and entities about policies and incentives available in their communities that aim to increase ZEV adoption.
- Education & Access Suggestions: Suggestions concerning Electrify America's approach to education and access or specific events they should consider for participation or sponsorship.
- Specific Site Locations: Suggestions for specific station locations for consideration in Cycle 3 infrastructure investments.

- Cycle 1 and 2 Comments and Feedback: Specific feedback on Cycle 1 and 2 National and California ZEV Investment Plans, including approaches to metro and highway charging station locations, evaluation of their use cases, and integration of new technology.
- Vendor Interest: Requests for information from vendors or subcontractors interested in working with Electrify America and learning more about Electrify America's Request for Information (RFI) and RFP process.
- Event Invitations: Suggestions for specific events Electrify America should consider for participation or sponsorship.
- Other: All other comments or submissions that relate directly to Electrify America's ZEV Investment Commitment.

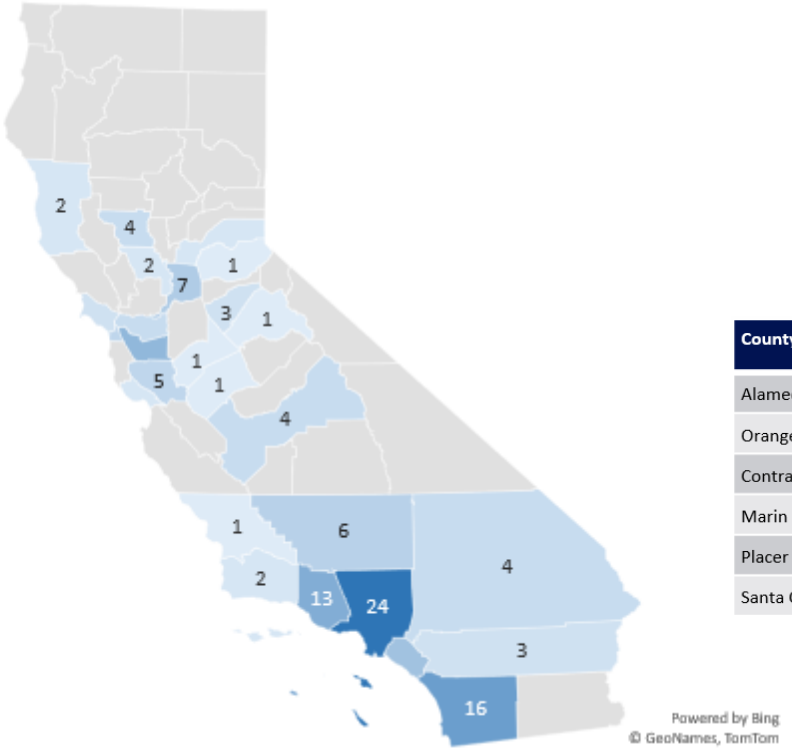
The submission portal remains open and Electrify America continues to receive, review, and respond to the submissions we receive.

3.1 Summary of National Outreach Process Responses from California Stakeholders

In June 2020, Electrify America launched a page on its website for comments, proposals, data, and recommendations to help define Cycle 3 investments. As of March 10, 2021, 949 submissions were received through the online portal, 162 from Californian submitters.[4] Submissions came in from 47 states and the District of Columbia, with the largest number of submissions from California. We received submissions from 26 California counties (Figure 2) with the most submissions coming from Los Angeles County. Across the state, individual submitters made up 54% submissions and government entities made up 12% of submissions (Figure 3).

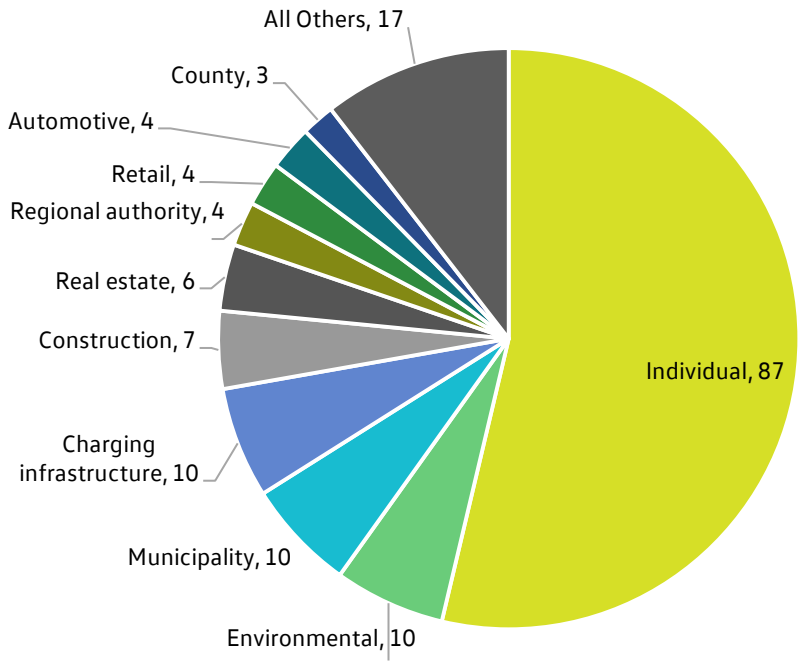
[4] The suggested window for submissions from the public ran for two and a half months from June 5, 2020 through August 14, 2020 though the submission portal remained open after that date and Electrify America continues to receive, review, and respond to submissions up to the month before this Plan is submitted.

Figure 2: Map of Californian Submissions by County



County	Count
Alameda County	11
Orange County	9
Contra Costa County	4
Marin County	3
Placer County	2
Santa Cruz County	2

Figure 3: Submissions by Stakeholder Category in California



Electrify America received submissions from a variety of stakeholders, including state, county, and local governments, private companies, and individuals (Figure 3). It is interesting to note that in Cycle 3, we received more than two-times the number of submissions from individuals than in Cycle 2. We are encouraged to see that as our station utilization grows, more customers know about our business and are motivated to offer us help in contributing to this next round of investment.

Through the National Outreach effort, four broad themes were identified. First, stakeholders expressed enthusiasm for the investments that are already underway and encouraged Electrify America to continue to focus on ultra-fast charging and customer experience. Second, many stakeholders see freight and transit as emerging opportunities for electrification and emissions reductions, and urged action in these areas. Third, many municipalities are eager to electrify the taxis and ridehail vehicles in their communities, but further investment and support is required to make the transition. And finally, as we drive forward on electrification, equity and access must remain a priority. For each of these themes, as well as additional insights from the National Outreach Process, please see Sections 4.2 and 5.2 of this document.

3.2 Ongoing Outreach Efforts

Electrify America's National Outreach effort for Cycle 3 was successful in providing us with insights on emerging industry research, data on customer preferences that will drive utilization, and potential new partnerships. Many of the insights identified are detailed in Chapters 4.2 and 5.2 of this paper.

Each month we continue to receive additional submissions to our National Outreach website and will continue to review and respond to submissions up to the month before this Plan is submitted. We will also continue our outreach throughout Cycle 3, especially as we receive more information about our proposed target metros. Within Cycle 3, Electrify America plans to conduct a similar process of outreach in order to draft our Cycle 4 ZEV Investment Plans.

4. Infrastructure Investments ($127M)

4.1 Introduction

Electrify America embarks on its third cycle of investment at a critical time in the PEV industry. With traditional and startup automotive manufacturers bringing new models (see 4.2.2 and 5.2.2) and new body styles (see 5.2.2), consumers will have unprecedented vehicle options and technology to choose from. In addition, infrastructure has improved dramatically since Electrify America first started building chargers. As just one proof point, in January 2021 a small team, using almost exclusively Electrify America stations, completed an EV Cannonball Run from New York to Los Angeles. Coming in under 45 hours, the run set a new EV cannonball record and showcased both vehicle and charging equipment technology and speeds along the way, as well as the viability of the CCS charging protocol (Loveday, 2021). However, despite these leaps forward, infrastructure remains a critical barrier to PEV adoption, with many consumers citing lack of infrastructure as a top reason they would not buy a PEV (see 5.2.4).

Cycle 3 offers Electrify America another opportunity to continue building out its network and delivering the infrastructure customers need. By the end of Cycle 3, we plan to have more than 1,000 ultra-fast charging stations nationwide, and over 300 within California alone. While this investment is certainly not large enough to address all outstanding needs for public charging infrastructure in the short-term, not to mention the long-term, we hope these investments will substantially advance the state of the industry not only with charging density and power, but helping lower barriers to entry for other private and public sector organizations through supplier alternatives, skilled construction resources, and best practices/lessons learned.

4.2 Insights from Our National Outreach and Cycles 1 and 2

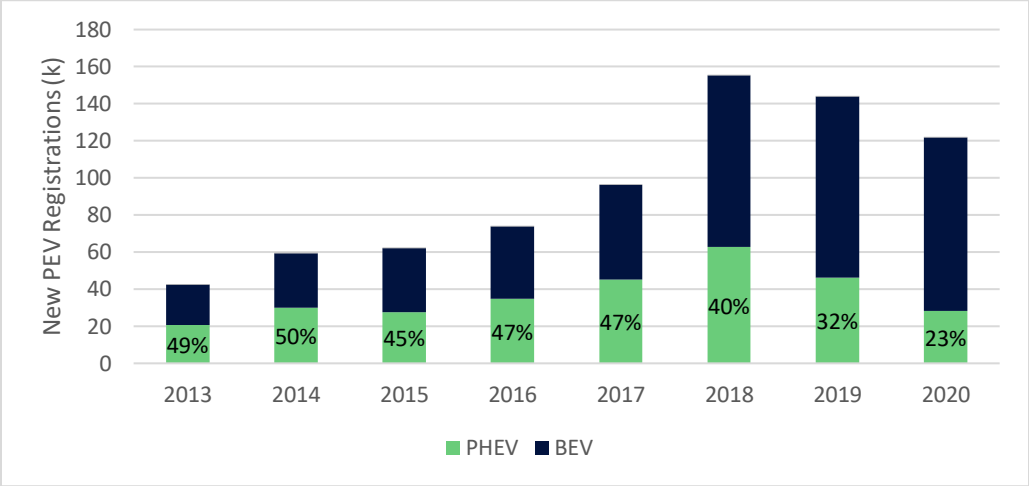
Electrify America's National Outreach process, as described in Chapter 3, provides the Electrify America planning team with a tremendous amount of data and perspectives on industry trends. These insights, in turn, help shape our investment decisions in each cycle. This section summarizes the infrastructure insights gathered through submissions to our National Outreach website, meetings with key stakeholders, and a thorough review of research by academics and other leading thinkers in our industry.

4.2.1 Light-duty PEV adoption is poised to grow significantly through 2024, with a majority BEVs

The PEV market is poised for significant growth in the coming decade. Despite slightly slower sales volumes in 2020 due to COVID-19, stakeholders across California are making significant strides toward the state goals of 1.5 million ZEVs by 2025 set forth in Executive Order B-16-12, and five million by 2030 set forth in Executive Order B-48-18. Furthermore, early analysis from the California Air Resources Board (CARB) estimates that 8 million light-duty ZEVs and 180,000 medium- and heavy-duty ZEVs will be needed in 2030 to meet Governor Newsom's Executive Order N-79-20 goals, and the State has begun implementing policies to attain these deployment targets (California Energy Commission, 2021).

Through 2020, the mix of PEVS in California has shifted heavily to BEVs, which made up nearly 80% of PEV sales in 2020 (Figure 4) (IHS Markit, 2021). In 2021, we expect this trend to continue, as nearly 90% of new PEV models coming to market are BEVs (Plug In America, 2021).

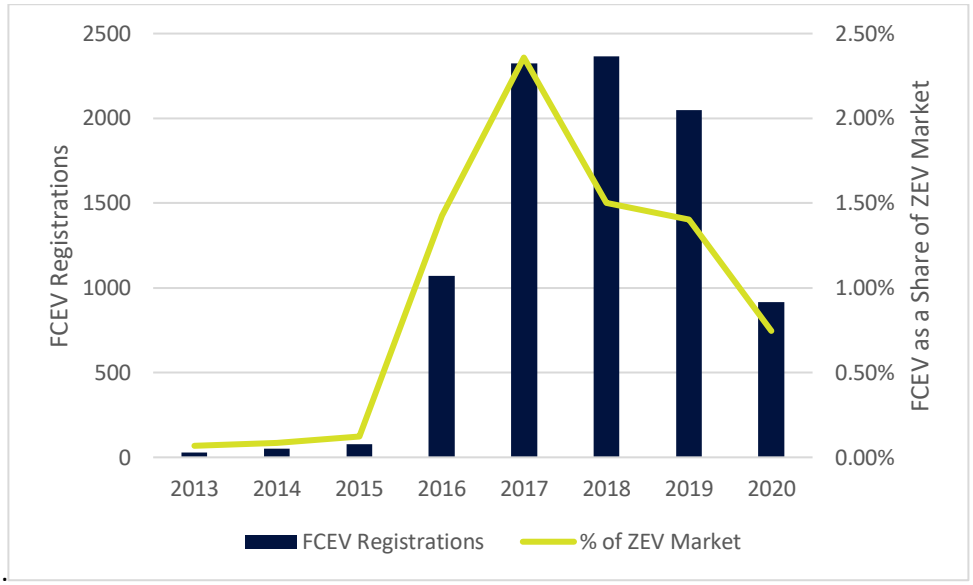
Figure 4: New PEV Registrations in California by Drivetrain



Many consumers cite purchase price as a major barrier to PEV adoption (see 5.2.4). A major reason for this difference in BEVs is the battery cost, which accounts for roughly 30% of the cost of a new BEV (Nicholas et al., 2019). According to BNEF, in 2020 lithium-ion battery pack prices averaged $137/kWh. This represents an 89% reduction from the $1,100 per kWh price in 2010, and a 13% reduction from 2019 battery costs. Looking forward to 2030, BNEF forecasts that PEV battery prices will continue to fall to $58/kWh, based on technology improvements and scaling associating with increased demand (BloombergNEF, 2020). As battery costs decrease, vehicle ranges will increase and BEV prices will become even more cost competitive with internal combustion engine (ICE) vehicles. The International Council on Clean Transportation (ICCT) predicts that, without government incentives, BEVs with a range of 200 miles will reach price parity with their ICE counterparts in 2025 (Nicholas et al., 2019). Because battery prices play a smaller role in the cost of PHEVs, ICCT does not project that PHEVs will reach price parity with ICE vehicles by 2030.

In comparison, light-duty FCEV have struggled in recent years. Registrations declined in 2019 and 2020 (Figure 5), making up 0.06% of new light-duty sales in California in 2020 (IHS Markit, 2021).

Figure 5: California FCEV Registrations

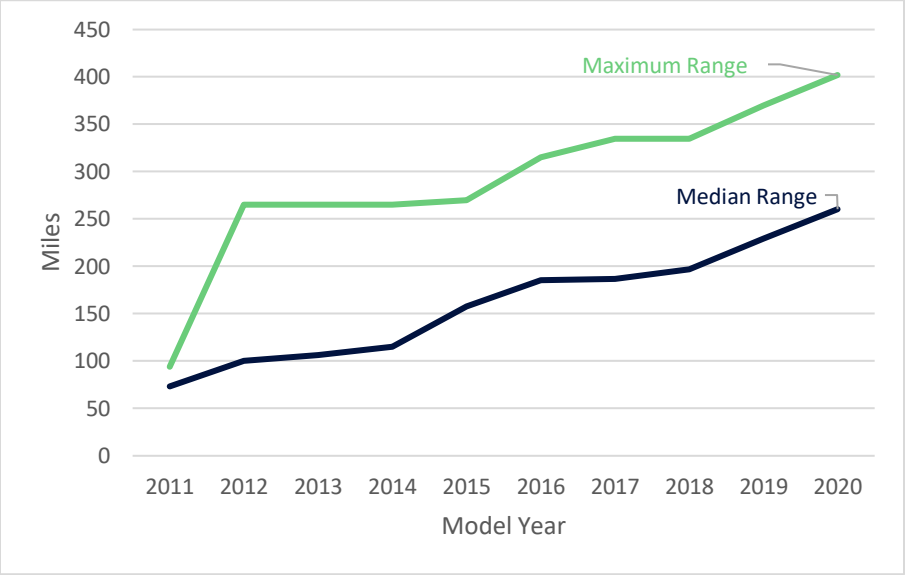


California Air Resource Board (CARB) projections, based on automaker estimates, anticipate growth in FCEVs, reaching 49,000 vehicles in 2026 (California Air Resources Board, 2020). However, this remains a small fraction of the overall projected ZEV population, less than 3.5% of the California ZEV population.

4.2.2 The coming generation of PEVs will have longer ranges and demand higher power charging, which aligns with consumer preferences

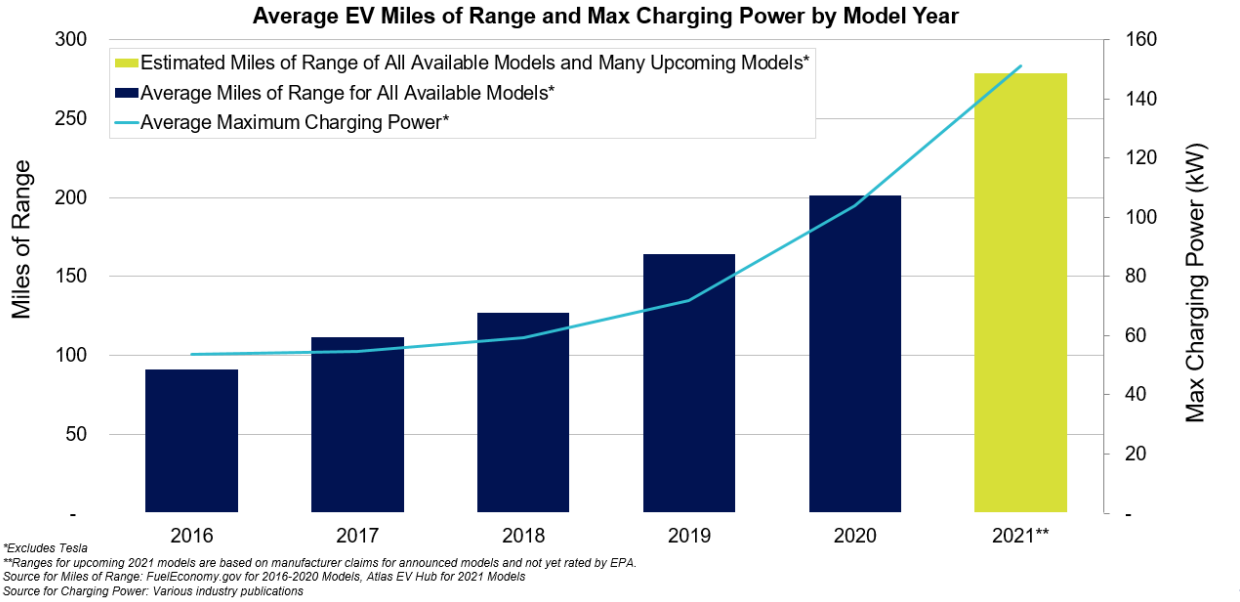
As battery costs fall, an increasing number of new BEV models are entering the U.S. market with longer range and faster charging capabilities to meet future electric vehicle owners' preferences. According to the U.S. Department of Energy (DOE), the median U.S. Environmental Protection Agency (EPA) estimated range for all BEV models in 2020 is greater than 250 miles, with the highest available maximum range exceeding 400 miles (Figure 6), up from just 73 miles in 2013 (U.S. Department of Energy, 2021).

Figure 6: Range of BEVs by Model Year



In parallel, vehicle charging speeds continue to rise, driving increased demand for charging equipment capable of meeting new fast charge capabilities (Figure 7:).

Figure 7: BEV Charging Speeds



Vehicles with faster charging speeds align with consumer preferences. Over 30% of U.S. DOE PEV Showcase ride and drive participants reported vehicle charging speed as a top three deterrent from purchasing or leasing a BEV (Singer, 2020). Similarly, in a poll conducted by Volvo Car USA and the Harris Group, 36% of respondents reported using public charging stations to be time-consuming (Volvo Car USA/The Harris Poll, 2019).

4.2.3 Despite massive growth in charging infrastructure, more investment is still required to allay consumer concerns and to match expected growth of EV units in operation

Electrify America has made significant progress in building out an extensive ultra-fast charging network, but there is still a lot more work to do to allay consumer public charging concerns. According to recent studies by J.D. Power (2020), Volvo Car USA/The Harris Poll (2019), and NREL (Singer, 2020), availability of public charging remains a top concern for consumers, and required infrastructure will need to span both metro areas and highway corridors.

Charging in metro areas is also a critical component of the charging ecosystem, and essential to broader PEV adoption. As ICCT researchers Michael Nicholas, Dale Hall, and Nic Lutsey projected in a 2019 paper, 88% of all PEVs in the U.S. through 2025 will be concentrated within the 100 most populous metro areas. Moreover, they find that as PEV adoption moves beyond early adopters with access to home charging, more public charging will be needed to serve a more diverse PEV-driving population.

In addition to the overall trend of increasing adoption, we anticipate further 'mass market' adoption of PEVs as new body styles become available and the prices of new and used PEVs fall. However, according to Nicholas, Hall, and Lutsey's 2019 study, mass market buyers are far less likely to live in single family homes than early adopters to date (Table 2). In Cycle 2, we worked to support MUD residents and others without dedicated overnight access to a plug by siting public stations in close proximity to MUDs. In our Cycle 3 outreach, we heard many statements of interest in continued deployment of DCFC to support this effort. Cool the Earth, a California-based non-profit, suggested that "[DCFC] provides important charging access for residents in MUDs and others without charging at their place of residence. As the price of EVs reaches parity with gas cars in the next few years, DC fast charging will become more critical as EV owners seek charging options where they shop, work and travel." This sentiment was echoed in submissions from Plug In America, Electric Drive 805, NESCAUM, and others.

Table 2: California Housing Characteristics

	Detached House	Attached House	Apartments and Other
CA PEV Buyers	83%	8%	9%
CA General New Vehicle Buyers	70%	15%	15%
CA Households	58%	15%	27%

National Outreach website submissions expressed a strong need for further expansion of charging in metro areas. In California alone, over 50 suggestions highlighted needs for new DCFC stations in metro areas. The most common California Cycle 1 and 2 metros suggested for additional investment in Cycle 3 were Los Angeles-Long Beach-Santa Ana and San Francisco-Oakland-Fremont. Submitters also expressed interest in investment in new metros for Cycle 3, including Oxnard-Thousand Oaks-Ventura, Santa Maria-Santa Barbara, and Bakersfield.

Twenty submitters from California also expressed needs for additional highway and regional routes to be built out, highlighting a need to unlock more destinations and increase density of stations along

heavily used routes. Multiple submitters focused on enabling travel to national and state parks, including Joshua Tree National Park. Other submissions focused on increased connectivity in major travel corridors. For example, Electric Drive 805[5] suggested increased connectivity along the Central Coast, while Charged Future submitted a recommendation to build a station in Kettleman City to improve travel along I-5 and CA-41.

4.2.4 Despite the rapid pace of growth, customer experience and cost optimization must remain at the forefront

While availability of charging infrastructure is important for ZEV adoption, the customer experience with the infrastructure is also crucial. In a 2020 study by Georgia Tech, researchers used machine learning to analyze PlugShare comments for public charging stations. The results were concerning – they found that only 56% of comments expressed a positive sentiment about the charging experience (Asensio et al., 2020). In a similar vein, a 2021 survey by Plug In America found that even among PEV owners who are highly satisfied with their vehicle, over 50% reported experiencing problems with public charging infrastructure (Ast et al., 2021). Respondents to our National Outreach process were similarly vocal, with 18 California submitters emphasizing the importance of reliability and customer experience. In addition to submissions about general quality, several submissions asked for additional amenities, such as protection from the natural elements.

Another common request was for improved wayfinding to charging sites. One element voiced was for more prominent signage for charging stations along highways. Plug In America, as part of their broader Cycle 3 investment recommendations, suggested that Electrify America add more signage up to the last 100 yards from an EV station to help users locate charging stations. Another submitter mentioned that increased signage would make the public more aware of the prevalence of stations to overcome the misconception that public charging is sparsely available. The City of Sacramento asked Electrify America to participate in a highway and street frontage signage pilot they are working on with a non-profit, Coltura and University of California, Davis staff. This feedback shows that increasing the accessibly of our stations to make it easy for all customers, even new ones, to find and use chargers will help build confidence in public charging options. Electrify America also received feedback on how to improve our mobile app to facilitate finding and navigating to stations. With over 50% of customers using our app to start a charging session, this is a critical tool for helping customers to find sites. In response to the feedback received, Electrify America launched a new and improved app in 2021, with directions for navigating to stations and an intuitive display of charging station information.

Finally, station capital and operating costs continue to be a barrier to further investment in the industry. As noted in studies by Great Plains Institute (2019), Rocky Mountain Institute (Fitzgerald, et al., 2019), and NREL (2017), commercial utility rate structures, and in particular demand charges, present serious challenges to station economics. In addition, research from the Rocky Mountain Institute highlighted that soft costs, including “permitting delays, utility interconnection requests, compliance with a balkanized framework of regulations, and the reengineering of projects because they were based on incorrect information, among others” can significantly impact the cost of installing EV charging (Nelder,

[5] Electric Drive 805 is a coalition founded by the Community Environmental Council, the Central Coast Clean Cities Coalition, and the Air Pollution Control Districts of Ventura, Santa Barbara, and San Luis Obispo

2019). Based on Electrify America's experience from Cycles 1 and 2, these soft costs are often higher in California than the rest of the nation.

As we build out our network, Electrify America will continue to focus on quality, customer experience, and cost as key drivers for where and how we install charging infrastructure. Electrify America will also continue to invest the necessary resources to participate in state and local government processes in order to advocate for changes that will reduce permitting timelines, reduce EV charging station soft costs, and reform utility rates.

4.2.5 Electrifying shared mobility is a top priority due to potential impact on emissions reduction and exposure to ZEVs

As the light-duty vehicle market electrifies, many stakeholders have expressed keen interest in electrifying a specific subset of the population: shared mobility including transportation network companies (TNCs), taxis, and car share. Electrify America's National Outreach process highlighted this focus. Twenty-nine submissions, primarily from high-level government entities or major regional interest groups, referenced this vehicle population and emphasized that electrifying shared mobility was a major policy focus for these entities.

Electrifying shared mobility offers a number of key benefits. First, Alan Jenn's 2019 paper "Emissions Benefits of Electric Vehicles in Uber and Lyft Services" finds that the emissions savings from electrifying a TNC vehicle are nearly three-times as high as electrifying an average vehicle in California (Jenn, 2019). Second, industry advocate Forth has found through their driver research that PEV TNC drivers often become evangelists for the technology. As these drivers pick up passengers, the in-vehicle chatter often includes discussions of PEVs, their benefits, how/where to charge, and other related topics. As a result, the passenger gets both a zero emission ride, and an educational experience. Third, TNC and taxi drivers often come from low-income brackets (Mishel, 2018), and electrifying their vehicles unlocks lower cost operations and greater opportunity for take-home pay. And finally, TNCs increasingly provide critical mobility solutions for low-income communities and populations with limited access to private vehicles or public transit, both in densely populated urban centers and rural areas. In 2020, 46% of Lyft rides started or ended in low-income areas, and 51% of riders used the platform to connect to public transit (Lyft, 2021).

Along with the enthusiasm about electrifying shared mobility vehicles, many industry experts and researchers note that building charging infrastructure will be critical to spurring adoption. A recent report by ICCT estimates that fewer than 44% of ridehail drivers could feasibly install Level 2 home charging (Nicholas et al., 2020).[6] A California Energy Commission 2021 staff report notes that "in 2018, ZEVs serving in TNC fleets represented fewer than 0.5 percent of the ZEV population in California but used 35 percent of non-Tesla public charging." And Rocky Mountain Institute's 2021 paper "Racing to Accelerate EV Adoption—Decarbonizing Transportation with Ridehailing" highlights that at present insufficient infrastructure and the resulting 'opportunity cost' of route diversions or queueing for charging can impact a driver's bottom line (McLane et al., 2021). NESCAUM also expressed a need for targeted infrastructure, suggesting in their National Outreach submission that Electrify America, "strategically place community charging hubs along travel corridors, at airports and train stations, and at other places that will help to accelerate electrification of TNCs and taxi fleets."

[6] ICCT notes that "this 44% could include those who can find charging off-shift near their home or at a workplace."

Electrifying shared mobility can bring both environmental benefits and increased driver and rider awareness of PEVs, and we plan to work collaboratively with the leaders in this space to make an impact.

4.2.6 Medium- and heavy-duty electrification is growing, as new vehicles and models offer increasing opportunity for emissions reduction

MHD vehicles are major sources of both greenhouse gas (GHG) and particulate emissions. Despite making up less than 7% of vehicles in California, MHD trucks are responsible for 22% of on-road GHG emissions, 70% of smog-forming pollutants, and 80% of carcinogenic diesel soot (California Air Resources Board, 2020).

In order to meet California's larger goals for reducing carbon emissions in the transportation sector, CARB instituted the Advanced Clean Truck Program that requires all new MHD vehicles sold in California to be a ZEV by 2045 (California Air Resources Board, 2020). Manufacturers in the MHD arena will be required to increases their ZEV sales in under four years and this mandate will likely lead to the creation of new fleet models and charging technologies with the collaboration of the trucking industry. This rule built on the 2018 Innovative Clean Transit Rule, which requires transit agencies to transition an estimated 14,600 buses to zero emission technology by 2040. CARB's new programs are game changers for the industry, and Electrify America anticipates it will lead to major advances in vehicle development and deployment.

Even outside of CARB's announcement, industry stakeholders are expecting zero emission MHD vehicles to quickly become a reality. A report by ICCT identified over 125 zero emission truck and bus models that are in development, demonstration, or production, and every major truck or bus manufacturer has announced the development of or collaboration on at least one electrified model (Sharpe et al., 2020). The paper reports that industry experts expect the number of zero emission heavy duty models to double by 2023. As these vehicles become available, their unique charging needs will need to be addressed. In a survey of private fleets, the Electrification Coalition reported that 75% of respondents reported that planning for and installing charging infrastructure is a major barrier to MHD electrification (Buholtz et al., 2020).

Electrify America also observed very high levels of interest in ZEV trucks, buses, and delivery vehicles from stakeholders across the industry. Through our National Outreach website, we received 14 submissions on the topic, including many that were very excited about California's Advanced Clean Truck regulation and the 2045 target it defines for all MHD trucks to be zero emission. Specifically, Electric Drive 805 suggested "that Electrify America invest Cycle 3 funds to help build out a network of EV charging stations for MHD trucks in the Central Coast region, to support truck electrification." In particular, they recommend installing charging stations at "heavily trafficked truck stops" and funding "shared-use infrastructure for MHD ZEVs that can serve multiple users including licensed motor carriers, independent owner-operators, transit, and school buses." The Metropolitan Transportation Commission & Bay Area Air Quality Management District also referenced the Advanced Clean Trucks Rule, suggesting the "successful transition to zero emissions technologies within [these] industr[ies] is critical to reducing air pollution both regionally and locally."

To help foster this new DCFC application, in 2019 Electrify America became a member of CharIN, an association working to facilitate use of non-proprietary charging standards, which is also coordinating

the development of a new global 1 MW+ charging standard. Electrify America staff actively participates in the Megawatt Charging System (MCS) task force, together with other charging providers, automotive OEMs, utilities, and infrastructure companies from around the globe. Electrify America is committed to supporting ZEV adoption in all vehicle classes and is eager to collaborate with industry partners in this emerging field.

4.3 Metro Charging ($70 – $100M)

4.3.1 Investment Overview

As evidenced by feedback from the National Outreach process (4.2.3, 4.2.5), California's metropolitan areas need additional charging station investments in order to serve the continued growth in PEV adoption. To support this goal, Electrify America plans to invest $70 - $100 million in metropolitan area charging across California.

Within each metro, investments will seek to serve at least one of three (at times overlapping) needs:

- Supporting travel in and around town: To support intra-city travel, Electrify America will add density in our existing metro areas, and Electrify America will also add investments to new metro markets.
- Providing reliable fueling for drivers living in MUDs: Within major metro areas, Electrify America will continue to build stations in urban centers where we can support the electrification of all driver populations, including those living in MUDs.
- Enabling the electrification of TNC and taxi vehicles: Electrify America will target select stations to help drive the electrification of taxis, TNCs, and car share fleets across the state. Electrification of this critical segment of the vehicle population will require further deployment of targeted, and in some cases dedicated, DCFC stations, and therefore a portion of Cycle 3 metro stations will focus on serving the TNC market.

Based on the buildout Electrify America has been able to achieve in our first two cycles, in Cycle 3 we can now focus on building a smaller number of highly targeted stations in many of our existing metro areas. This natural evolution in our strategy allows us to serve needs of drivers for each use case identified above, achieve high levels of utilization, and expand our investment into a larger number of metro areas.

4.3.2 Investment Selection Methodology

Electrify America conducted a multi-faceted analysis to select metro areas and their respective investment sizing for Cycle 3. This methodology builds on those used in Cycles 1 and 2, employing a similar approach and many common inputs, but refining the analysis.

Our Cycle 3 methodology relies on four key inputs: an assessment of charging needs for each metropolitan statistical area (MSA) in California, a PEV policy metric, a utility metric, and a review of all submissions and feedback from our Cycle 3 National Outreach process.

Table 3: Charging Needs Assessment Inputs

Data	Category	Details
Existing BEV Population	Demand	Vehicles in operation by MSA
Forecast BEV Population through 2024	Demand	Forecast of EV and BEV populations by market (Guidehouse)
Charging Supply	Supply	Existing supply of EV charging (PlugShare)
OEM Sales Forecasts and Reservation Data	Demand	Top markets for upcoming BEV sales, based on forecasts and reservations from automotive manufacturers
Ridehail, eTaxi, PEV Car Share Data	Demand	Target markets for expansion of e-Mobility services from industry leaders
Geospatial Analysis	Demand	In-house geospatial analysis of gaps in charging network

Assessment of Charging Needs:

Electrify America's mandate, as established in Appendix C, Section 3.3.2.5 of the Partial Consent Decree, is to invest in infrastructure that "meets a reasonable need and advances the use of ZEVs." To achieve this, Electrify America analyzed the charging needs of each major metro area by examining both the demand for charging services and the supply of charging already provided in a market. Please see Table 3 for a description of each input.

Taking these inputs together, Electrify America used a proprietary algorithm to assess the 'supply-demand gap' through 2024 in charging stations in each metro area. This supply-demand gap served as the starting point for all metro selection decisions and station counts.

Policy Metric:

Some PEV and electric vehicle supply equipment (EVSE)-friendly policies have been shown to have a substantial impact on PEV adoption and on the overall sustainability of PEV charging investments. For example, California's Clean Vehicle Rebate Project (CVRP) has been successful in incentivizing the purchase of EVs across the state (Clean Vehicle Rebate Program, 2021). Similarly, California's Low Carbon Fuel Standard (LCFS) program has had a major impact on the economics of PEV infrastructure investments, spurring substantial investment both by utility and industry stakeholders (California Air Resources Board, 2019). But policy effectiveness research has shown that some EV policies have little to no impact on EV adoption.

To ensure that we are appropriately weighting EV policies based on effectiveness, Electrify America collaborated with the National Association of State Energy Officials (NASEO) and Cadmus Group to develop a metric for the impact of policies in each major metropolitan area. Cadmus performed an industry scan of all relevant PEV and EVSE policies, as well as the academic literature measuring the impacts of these policies. NASEO then led a panel of policy experts to review the policies and validate the impacts of these policies relative to one another. Finally, the impact scores for all policies in a given

jurisdiction were aggregated, providing a total policy metric score for each locality. For more information on the policy metric, see inset.

Utility Metric:

The utility environment at each location plays a major role in the overall success of the charging station. Rate structures, including demand charges, subscription fees, minimum bills, and energy costs all impact Electrify America's cost to deliver charging services to customers, and ultimately the long-term economic sustainability of our business. For utility areas with tariff structures that result in a delivered cost of energy for DCFC above the gasoline equivalent cost, Electrify America may be forced to shift investments to areas with more sustainable energy rates. In addition to cost considerations, the utility metric examines the local utility's support for private investment in EVSE. Utility support for the deployment of high powered charging stations and battery storage can speed station development and construction, reduce interconnection and commissioning timelines, and ultimately reduce both capital and ongoing operating costs. Our Cycle 3 utility metric incorporates both of these aspects to provide a comprehensive look at the utility environment in each metro area.

Submissions and Feedback from Cycle 3 National Outreach Process:

As described in Chapter 3, Electrify America has received over 160 submissions to our National Outreach website from California stakeholders. In addition, we have conducted dozens of conversations with stakeholders to capture overall market trends and specific investment opportunities in the state. And as described in Chapter 2, four corporate social responsibility pillars play a significant role in Electrify America's investment decisions. After conducting our quantitative analyses for the charging needs, the policy environment, and utility environment as described above, we also incorporated ideas and feedback received from stakeholders and CSR impacts to shape the final set of metro locations, as well as the number of stations in each.

POLICY METRIC

Electrify America commissioned NASEO, in partnership with Cadmus Group, to develop an updated Plug-In Electric Vehicle Policy Tool (the "Tool") to evaluate the impact of state and local policies on PEV adoption in states and cities across the United States. The Tool was designed for Electrify America to use when considering potential areas for Cycle 3 investment, and allows the user to evaluate the combined strengths and weaknesses of all PEV-related policies in a given metro area on a scale of 1-100 and compare the result with other metro areas.

The Tool provides a unique, evidence-based method to evaluate the ZEV investment climate of a metro area. The Tool's main feature – the Policy Evaluation Rubric – categorizes all PEV policies into 13 policy categories. Each policy category is assigned a weight, based on its strength to spur PEV adoption relative to other policies. These weightings were assigned after an exhaustive review of peer-reviewed journal articles, publications from government, non-governmental organizations (NGOs), and the National Academies of Sciences, as well as rounds of expert input from an external Technical Advisory Committee (TAC). Members of the TAC provided input on the project's Policy Tool Methodology and Policy Evaluation Rubric; however, the TAC was not shown the proposed Cycle 3 investment jurisdictions, and did not partake in reviewing the draft rankings of candidate jurisdictions. TAC members included:

- Jeff Allen, Forth
- Samantha Bingham, Chicago Department of Transportation
- Austin Lannes Brown, University of California-Davis
- JR DeShazo, University of California-Los Angeles, Luskin Center
- Sarah Garman, U.S. Department of Energy
- David Greene, University of Tennessee
- Britta Gross, Rocky Mountain Institute
- Kathy Kinsey, Northeast States for Coordinated Air Use Management
- Patricia Monahan, California Energy Commission
- Andrea Pratt, City of Seattle
- Pete Slowik, International Council on Clean Transportation
- Alexa Voytek, Tennessee Department of Environment and Conservation
- Joy Wang, Michigan Public Service Commission
- Christian Willis, Colorado Energy Office

The NASEO team assigned the highest weight to vehicle purchase incentives and vehicle mandates/targets, followed by incentives for EVSE installation, non-residential utility rates that promote EV charging, streamlined permitting processes and building/zoning codes, and transportation sector carbon pricing. While there is some debate in the literature around the relative effectiveness of these policies, it is the project team's conclusion that these six types of policies represent the most effective policies at advancing PEV adoption.

This Tool was designed for Electrify America in its Cycle 3 investment planning, but may also be used by policymakers at the state and local level to evaluate their jurisdiction's current PEV policy environment. The Tool, as well as a detailed report on the methodology behind it, are available online here: ***https://naseo.org/news-article?NewsID=3583***

4.3.3 Investment Details

Electrify America plans to spend $70 - $100 million on metro investments as part of Cycle 3. These funds account for new stations built in Cycle 3, upgrades or enhancements to existing Electrify America stations, and ongoing operations for our network of stations built in Cycles 1 and 2. In addition, Electrify America anticipates that upon fulfilling its obligations to invest $200 million consistent with the Cycle 2 California ZEV Investment Plan, there may be stations in the planning, development, or construction stages and not yet completed. Those stations will be completed using Cycle 3 funding as a part of this Cycle 3 budget, after all Cycle 2 investment obligations have been met.

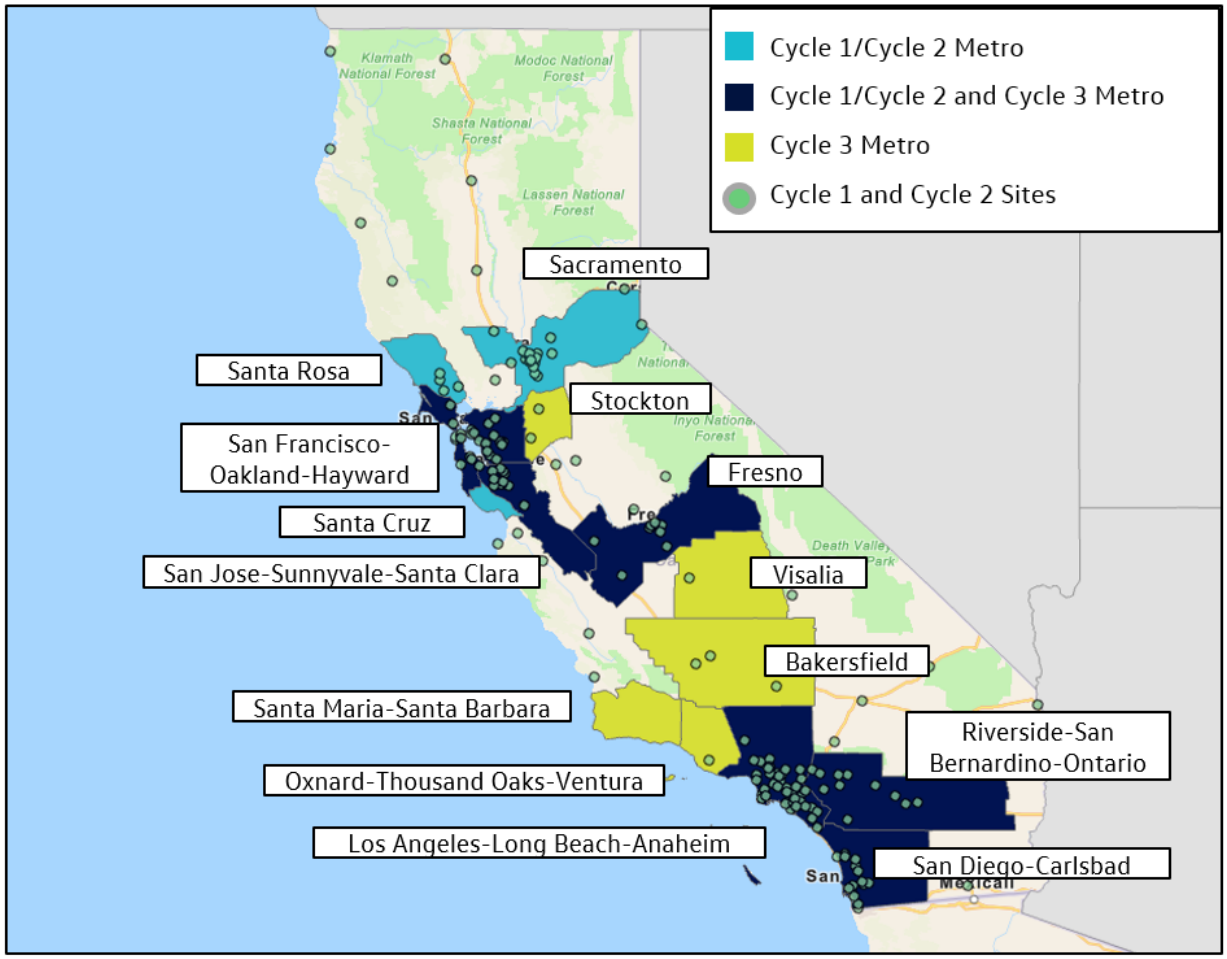
Based on the analysis described above, we plan to make the following investments in eleven California metro areas:

Table 4: California Metro Investments

Metro	Estimated Station Count[1]
Los Angeles-Long Beach-Anaheim	3-6
San Francisco-Oakland-Hayward	3-6
San Jose-Sunnyvale-Santa Clara	3-6
San Diego-Carlsbad	2-4
Riverside-San Bernardino-Ontario[2]	2-4
Oxnard-Thousand Oaks-Ventura	1-3
Fresno	1-3
Stockton	1-3
Santa Maria-Santa Barbara	1-3
Bakersfield	1-3
Visalia	1-3
SUBTOTAL	**19-44**
Station Upgrades	8-12
TOTAL	**27-56**

[1] Electrify America defines a "metro area" as an MSA, except in a limited set of circumstances where Electrify America determines that the MSA arbitrarily excludes a community that is part of the metro area or includes extremely rural areas within its border. In such cases, Electrify America exerted discretion on metro area boundaries.
[2] Riverside investment to be concentrated in "Inland Empire" region.

Figure 8: Cycle 3 California Metros



Electrify America routinely analyzes the charging landscape, including vehicle adoption, existing infrastructure, utility and policy changes, real estate availability, and changing customer needs, in an effort to ensure our investments have the largest possible impact on PEV adoption and lead to a sustainable business model. In the event that the charging landscape shifts, Electrify America may opt to increase or decrease investment in planned Cycle 3 metros, or add investments in new metros.

Station Siting Details:

As described above, Electrify America intends to build stations to serve three core use cases within metros: supporting intra-city travel, providing reliable fueling for drivers living in MUDs, and enabling the electrification of TNC vehicles. Practically speaking, these use cases often overlap, allowing a single station to serve multiple sets of drivers (e.g., MUD stations are likely to be well-situated for TNC drivers due to the proximity of stations to urban clusters and pickup/drop-off locations).

To site each location, we use a proprietary geospatial model that examines travel patterns, existing charging stations, historical utilization data, existing and expected vehicle adoption, and our CSR framework, to identify target areas within each metro. Once a target zone has been identified, Electrify America uses a combination of desktop research and local resources to identify and screen specific real

estate opportunities. A high quality charging experience is paramount to us, so we have a long list of criteria when deciding where to locate a charging station – consistent with our proven approach in Cycles 1 and 2. Several factors include: accessibility (24/7 access and year round operations), high visibility (station must be clearly visible from surrounding roads and entrances), proximity to amenities (reasonable walking distance to stores, restaurants, etc.), nearby power sources, and projected utilization.

For stations targeted at MUD residents, in addition to the above criteria we also seek locations adjacent or close to areas with a high concentration of MUDs. Where possible, we look for locations that are frequent destinations of those living in the local area, including grocery stores, banks, and shopping centers.

Stations serving shared mobility providers, including electric taxis, ridehail vehicles, and car share, can often share locations and siting criteria with both MUD stations and general retail locations. However, in certain circumstances these use cases may require unique locations. While every PEV driver wants a fast charging experience, TNC drivers are particularly sensitive to the length of charging sessions. In their 2020 paper on ridehail electrification, NESCAUM notes that because time spent charging represents lost opportunity costs, TNC drivers need DCFC conveniently located within their service areas with minimal wait times (Bomey, 2020). Electrify America's conversations with shared mobility providers further highlight these needs, with many emphasizing a need for locations near airports, downtown areas, and near where their drivers live. Electrify America aims to serve as many drivers and vehicles as possible, and will keep many of our shared mobility-focused stations fully open to the public. However, some locations serving this use case may be 'dedicated' or have restricted access to ensure sufficient availability for these critical services.

Similar to Cycles 1 and 2, we anticipate working with a variety of site hosts. We have built successful collaborations ranging from national retailers like Target and Bank of America, to small "mom and pop" shops. Through the National Outreach process, we received over 680 suggested station site locations, including interest from 107 submitters who have site control, and these leads have been referred to our real estate team. As we build our network for the long-term, station site selection and station experience remains an extremely important part of our investment strategy.

Station Design Details

Electrify America charging stations in metro areas typically include four ultra-fast PEV chargers. In locations for which we anticipate high demand, Electrify America may deploy up to 10 chargers, or even more at select "megasites" intended to serve drivers in the locations with highest demand. In areas with limited real estate, available power, or projected utilization, Electrify America may opt to build as few as two chargers in a single location.

Electrify America's ultra-fast chargers range from 150kW to 350kW of power[7] based on anticipated needs and use cases, as well as available real estate and power. Some Electrify America metro stations may include Level 2 charging where the site host prefers, and where the business case can be justified. Electrify America does not include these chargers as standard at metro sites as experience from our

[7] CHAdeMO charging at Electrify America stations is limited to 50kW, meeting the needs of the vast majority of CHAdeMO vehicles in operation today.

previous deployments shows limited usage on most L2 chargers at public sites. For Cycle 3, the decision to include Level 2 charging will be made on a site-specific basis.

In an attempt to manage utility costs, Electrify America plans to deploy energy storage and renewable generation at select stations, as well as site-level energy management tools. For storage investments, Electrify America analyzes anticipated usage and electricity tariffs at each station to determine whether an investment in storage will have a material impact on station economics. For renewable generation, we consider both the impact on station economics and the potential improvements to the customer experience such as the shade and cover provided by solar canopies.

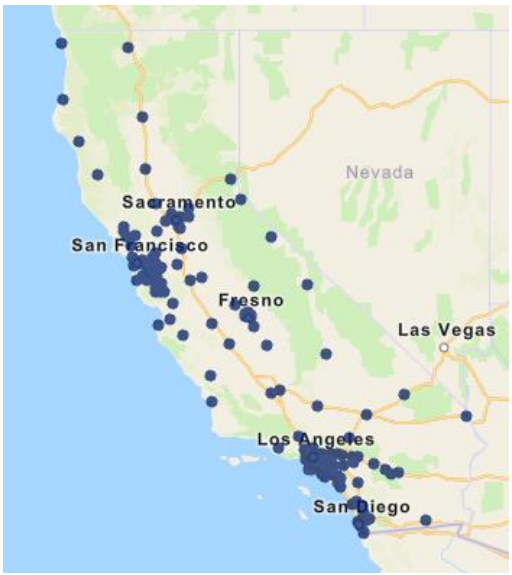
Station upgrade budgets will be used to add charging power, capacity, or enhancements at existing Electrify America stations. These investments may include, but are not limited to, adding additional dispensers, upgrading dispenser or overall site power, adding battery storage or renewable generation, or installing enhancements such as canopies for coverage from the weather or picnic tables.

4.4 Highway and Regional Route Charging ($15 – $25M)

4.4.1 Investment Overview

Through Cycles 1 and 2, Electrify America has focused on building out a network of ultra-fast DC chargers that support both intrastate and interstate travel. We have built connectivity along the major interstate highways to a huge portion of the state of California (Figure 9). With an average distance between highway sites of 43 miles, and a maximum distance of 106 miles, our continually expanding highway network supports California drivers' long distance travel.

Figure 9: Commissioned California Sites[8]



As a part of Cycle 2, we are also building out routes to regional destinations, including Yosemite National Park and Lake Havasu, to support travel to Californians' favorite sites. In Cycle 3 we plan to spend $15 –

[8] Station map as of April 1, 2021

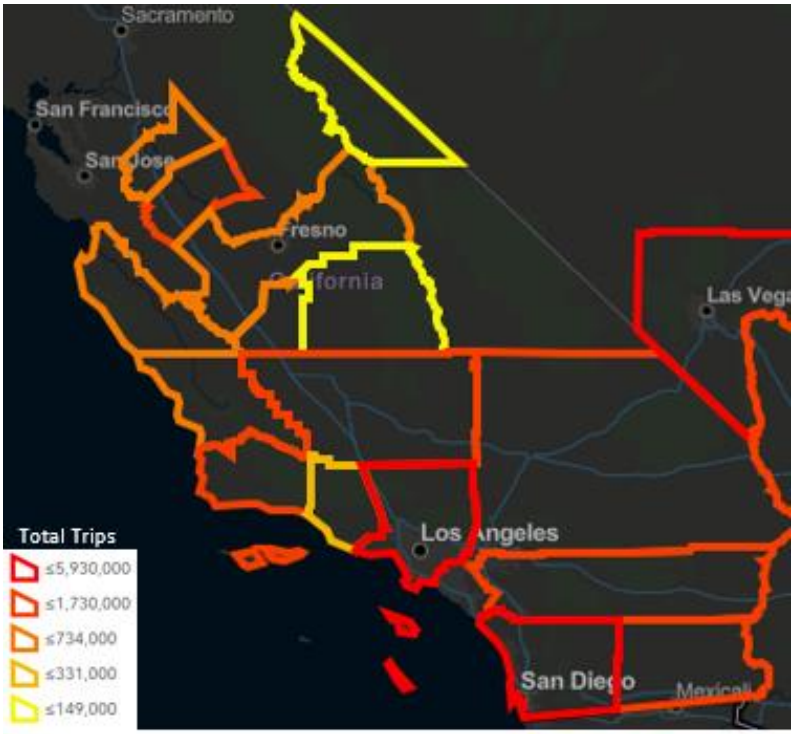
$25 million to continue building out our highway network, both adding regionally significant corridors that enable Californians to use an EV as a primary vehicle and filling in long stretches between stations on existing corridors, in order to support the ever-growing population of California EV drivers. Corridor stations provide drivers the freedom to travel to, and charge in, all parts of the state. This comprehensive coverage is particularly important in helping single vehicle households drive electric.

4.4.2 Investment Selection Methodology

Electrify America has taken a data-driven approach to identifying and prioritizing highway and regional routes in California for investment.

The first step in this process was to identify the counties and census tracts to which drivers travel from major metro areas throughout California. For each metro area in our dataset, we examined anonymized cell phone data with origins and destinations of all vehicle trips greater than 75 miles in length to identify the top 20 destination counties from each metro area. Figure 10 shows top destination counties of drivers in the Los Angeles MSA.

Figure 10: Top Destination Counties from Los Angeles, CA



In most cases, we were able to zoom in even closer and identify the top destination census tracts from each metro area. For example, Figure 11 shows destination census tracts of Riverside County, a top destination of the Los Angeles and San Diego. Trips to Riverside County are heavily concentrated in the Joshua Tree National Park area.

Figure 11: Top Destination Census Tracts within Riverside County

Next, we used ArcGIS mapping software to map the most likely route of travel from each origin metro to each top destination. We overlaid these routes with our planned station locations at the end of Cycle 2, and identified the 'gaps' in our existing network that need to be filled. In some cases, these were completely new routes, and in other cases these were existing routes that could be enhanced through additional stations.

Third, Electrify America validated these routes by incorporating the feedback of Electrify America's California-based construction field team employees, and by overlapping the sites suggested through the National Outreach process, on social media, and in calls with the contact center. While the software-generated route is often the most traveled route, there are select cases where a slightly longer route may be the preferred route (e.g., more scenic, more attractions/amenities) and this qualitative feedback helps confirm our quantitative analysis.

Finally, we examined average annual daily traffic (AADT) along each of the routes and use this data to create a ranking and prioritization (Figure 12). Our objective is to unlock new destinations for the largest number of current and future drivers, and AADT prioritizes those routes that are more frequently traveled.

Figure 12: AADT along the Western Portion of a Proposed Route from El Cajon to El Centro

4.4.3 Investment Details

Station Siting Details:

Electrify America plans to spend $15 - $25 million on regional route / highway investments in California as part of Cycle 3. These funds account for new stations built in Cycle 3, upgrades or enhancements to existing Electrify America stations, and ongoing operations for our network of stations built in Cycles 1 and 2. In addition, Electrify America anticipates that upon fulfilling its obligations to invest $200 million consistent with the Cycle 2 California ZEV Investment Plan, there may be stations in the planning, development, or construction stages and not yet completed. Those stations will be completed using Cycle 3 funding as a part of this Cycle 3 budget, after all Cycle 2 investment obligations have been met.

Table 5 lists the set of routes along which Electrify America intends to build stations in Cycle 3. The number of stations is determined based on the length of the route, location of existing Electrify America stations, and the likely origin of BEVs traveling on the routes.

Table 5: California Highway Investments

Highway	Estimated Station Count
LA to Camarillo, U.S.-101	1
Murrieta to Riverside, I-215	1
Northern Joshua Tree, CA-62	1
Northern Tahoe, CA-267, 28, 89	1
Anderson to Yreka, I-5	1
Indio to Quartzsite, I-10	1
El Cajon to El Centro, I-8	2
SUBTOTAL	**8**
Station Upgrades	2-4
TOTAL	**10 - 12**

Figure 13: Cycle 3 California Regional Routes

Throughout Cycle 3, Electrify America will continue analyzing charging needs throughout California. In the event that additional highway or regional route stations are required, or that real estate or operational challenges limit our ability to build along the proposed routes, Electrify America may opt to add or eliminate routes at its own discretion, and consistent with the methodologies established to guide investment within this plan.

Station Design Details

Electrify America charging stations along highways and regional routes typically employ four ultra-fast DC fast chargers. In locations for which we anticipate high demand, Electrify America may employ up to 10 chargers. In areas with limited real estate or available power, Electrify America may opt to build as few as two chargers in a single location.

Electrify America's ultra-fast chargers range from 150kW to 350kW of power[9] based on anticipated needs and use cases, as well as available real estate and power.

In an attempt to manage utility costs and reduce demand charges, Electrify America plans to deploy energy storage and renewable generation at select stations, as well as site-level energy management tools. For storage investments, Electrify America analyzes anticipated usage and electricity tariffs at each station site to determine whether an investment in storage will have a material impact on station economics. For renewable generation we consider station economics, permitting and zoning limitations, as well as the potential improvements to the customer experience such as shade/cover provided by solar canopies.

Station upgrade budgets will be used to add charging power, capacity, or enhancements at existing Electrify America stations. These investments may include, but are not limited to, adding additional dispensers, upgrading dispenser or overall site power, adding battery storage or renewable generation, or installing enhancements such as canopies for coverage from the weather or picnic tables.

4.5 Transit and Medium-Duty/ Heavy-Duty Fleet Charging ($6 – $10M)

4.5.1 Investment Overview

As detailed in section 4.2.6, the MHD zero emission freight and transit sector is poised for significant growth over the coming decade. To help spur conversion of these heavy polluting vehicles, Electrify America will invest $6 - $10M in infrastructure to support the adoption and deployment of PEV buses and trucks.

4.5.2 Investment Methodology

Specific investments within the transit and MHD fleet infrastructure space are highly dependent on the needs and timing of projects led by the fleet owners and disparate sources of vehicle funding. For this reason, we are unable to identify locations or investments far in advance of committing funding for these projects. To meet this investment commitment, Electrify America plans to work with transit

[9] CHAdeMO charging at Electrify America stations is limited to 50kW, meeting the needs of the vast majority of CHAdeMO vehicles in operation today.

agencies and MHD fleet operators over the course of Cycle 3 to identify charging needs, and associated infrastructure investments.

Transit

For transit related investments, Electrify America will collaborate with the relevant transit agency to develop a business model that meets all parties' needs. Electrify America's dual goals are to promote ZEV adoption and to develop a long-term sustainable business. A pure 'grant' style of funding support would fulfil the first goal, but would not represent a business investment sustainable for the long-term. To ensure both goals are addressed, Electrify America will work with our transit partners to develop an investment structure, revenue model, and station ownership structure that meets the transit agencies' needs and also achieves Electrify America's goals, consistent with the requirements of the ZEV Investment Commitment and the Creditable Cost Guidance. In those areas where funding for electrical infrastructure and make readies is available from the local utility, the California Energy Commission, or other California agencies, Electrify America will also collaborate with the transit agency to maximize overall investment impact.

MHD Fleets

MHD truck fleets require different types of infrastructure (charging speeds, technology) depending on the vehicle use case. For fleets that return back to a depot or warehouse each night, behind-the-fence dedicated infrastructure can best integrate charging into normal operations. For fleets without fixed routes, or that may not return back to a depot each night, public or semi-public (e.g., restricted access) stations may be more appropriate. Electrify America will work closely with truck OEMs, fleet owners and operators and local officials and stakeholders to identify charging needs and design infrastructure to suit.

Similar to transit, as appropriate Electrify America will work closely with fleets and operators to identify a business model that meets the fleets' needs and also and achieves Electrify America's goals, consistent with the requirements of the ZEV Investment Commitment and the Creditable Cost Guidance.

4.5.3 Investment Details

The specific details of charging equipment installed for a given project will be highly dependent on the vehicle specifications and needs, and the commercially available technology at time of deployment. At time of writing, most buses and trucks coming to market will be capable of charging between 50 and 350kW. However, Electrify America will monitor the evolving landscape and needs of customers, and in the event that new technology (including higher power charging such as 1MW+ or alternative connections such as wireless charging) becomes commercially available,[10] Electrify America will work closely with fleet owners to ensure the equipment deployed is optimized for their needs.

Given the project-based nature of this investment, costs and charger counts are difficult to estimate. However, based on information to date, a $6 - $10 million investment could look like the following in Table 6:

[10] In accordance with the ZEV Investment Commitment in 3.3.2.9 of the Partial Consent Decree, Electrify America will not use creditable funds to fund research.

Table 6: Cycle 3 Transit and MHD Fleet Investment

Charger Power Level	Estimated Charger Count[1]
150kW	25-35
350kW	10-15
TOTAL	**35-50**

[1]Given the early stage and project-based nature of this investment, the estimated number of stations is highly uncertain. To provide transparency, Electrify America has opted to present an estimated number of chargers for this use case rather than an estimated station count.

Please note: Electrification of this critical segment of the vehicle population will require deployment of targeted, and in some cases dedicated, DCFC stations for MHD fleets. In some cases, these sites may not be publicly accessible.

In addition, if for any reason Electrify America is unable to identify sufficient investments to meet the $6 - $12 million budget, any remaining funds will be redistributed to other approved use cases in order to ensure Electrify America meets the investment requirements of the ZEV Investment Commitment in the Partial Consent Decree.

4.6 Hardware Development and Capacity Building ($2 – $4M)

4.6.1 Investment Overview

Through our National Outreach process, Electrify America identified two critical areas for continuous improvement, in both our own business and in the industry as a whole: *customer experience* and *station economics*. The investments in this section all drive toward one or both of these objectives.

4.6.2 Investment Details

Energy Management Tools

As detailed in 4.2.2, vehicle charging speeds are rising and will continue to rise over the coming years. In parallel, customers are requesting charging locations in areas with increasingly complex or constrained grid configurations (e.g., urban areas, garages, remote routes). Energy management is now an essential component of charging hardware and station operations. . To support this growing need, Electrify America is securing tools to improve the energy usage at our stations. Energy tools to be developed in Cycle 3 breakdown into two main categories: energy modeling and energy management.

Energy modeling tools are software that enables Electrify America to review usage at public stations and optimize the tariffs and rate structures in which we are enrolled. For many stations in California, the decision of which tariff to choose and how to optimize operations around that tariff is complex. With the introduction of subscription-based demand pricing in both PG&E and SDG&E territory, Electrify America must be able to project likely peak demand in advance, and manage a charging station to stay under that peak demand, in order to avoid substantial demand-based penalties. Electrify America's forecasting must also account for time of use and critical peak pricing, as many California utilities have implemented rates with these dynamic structures.

Energy management tools include software and algorithms to manage real-time charging power levels at specific stations. One type of energy management tool is fleet energy management, which will help optimize the power draw from a fleet of vehicles all plugged in at once (e.g., at a transit depot), to minimize both cost and grid impact. A second type of tool is site energy management, which examines the expected load across a station, and works to drive down the energy costs at the site. As California power and grid services markets continue to evolve, these energy management tools enable Electrify America to ensure its stations are able to help modernize an increase the responsiveness of the California grid.

Infrastructure Planning Tools

In Cycle 3, Electrify America will also work to build a number of tools to aid in infrastructure planning, which will allow Electrify America to more accurately identify the future station locations most in demand, consistent with the Consent Decree mandate that Electrify America place its stations where they are most needed and will be most highly utilized. Optimal station siting (including both geographic location and amenities) is critical to the consumer experience, and we plan to work with automotive manufacturers, fleets, and other industry players to develop tools to improve station siting. We also intend to build out station cost optimization tools, which will help provide further transparency into station capital and operating costs, and ultimately allow us to drive down the overall cost of DCFC. Finally, we will use a small portion of funds to support California Outreach and stakeholder engagement for Cycle 4.

Table 7: Additional Investment Details

Investment Category	Estimated Spend ($M)[1]
Energy Management	$1-2
Infrastructure Planning	$1-2

[1]In the event that any of the Energy Management or Infrastructure Planning Tools are unable to be pursued, Electrify America will redirect all funds will be redistributed to other approved use cases in order to ensure Electrify America meets the investment requirements of the ZEV Investment Commitment in the Partial Consent Decree.

4.7 Hydrogen and Other Unanticipated Investments

Through our National Outreach process, conversations with industry stakeholders, and analysis of current trends in the hydrogen production and fueling station market, Electrify America has not identified concrete hydrogen investment opportunities that can be made during the Cycle 3 investment window that would contribute to a sustainable business model. In particular, stakeholders and industry leaders have consistently identified restrictions that prevent Electrify America investments from receiving capacity credits under the LCFS as a major barrier to the success of Electrify America investments in this segment. However, throughout Cycle 3, we will continue to review submissions and meet with stakeholders on potential hydrogen and other investment areas. If Electrify America is presented with any specific, creditable, and sustainable investments in eligible ZEV infrastructure as defined by Appendix C of the Partial Consent Decree, Electrify America will investigate the opportunity and consider it for investment in Cycle 3. Of course, any new investments would reduce the budget dedicated to the above described infrastructure use cases in favor of the new effort. Electrify America

would inform CARB staff of any reallocation of Cycle 3 funding to new ZEV infrastructure use cases not included in the Cycle 3 California ZEV Investment Plan.

4.8 Infrastructure Investment Timeline and Milestones

In Cycle 3, Electrify America will rely on our extensive experience from Cycles 1 and 2 in installing PEV charging stations across the United States efficiently. Deploying DCFC stations can be complicated since it requires substantial coordination between real estate owners, hardware vendors, construction contractors, utilities, permitting agencies, and our own internal teams. To deliver the investments detailed in this chapter, Electrify America undertakes a range of activities including:

- Ordering equipment
- Developing new property leads
- Validating the suitability of multiple property leads per station
- Negotiating and signing lease or license agreements (or, where appropriate, purchasing property)
- Developing permitting/pre-construction packages
- Filing permits
- Warehousing equipment and performing quality assurance/quality control
- Securing permit approval
- Preparing the station site for construction
- Delivering equipment to the site
- Constructing the station
- Landscaping
- Coordinating with the utility on the grid/inspection and any additional utility preparation including new transformers or upgraded substations
- Commissioning

It can be difficult to estimate a standard timeframe required to go from securing a potential DCFC station to having it ready for customer use due to major station by station differences in real estate availability, utility capacity considerations, local permitting agencies' timelines, required easements, and other often unforeseen business factors.

To aid in efficient roll outs, Electrify America has developed national commercial agreements with major real-estate holders including Target, Walmart, Simon Malls, Brixmor, Sheetz, Bank of America, and others. Partnering to install stations in the parking lots of these storefronts reduces the time spent brokering unique contract agreements, haggling over station configurations, and provides us with real estate leads in some of the most challenging charging station siting markets. Over the course of the last two Cycles, we have also focused on building constructive relationships with numerous local utilities and permitting agencies. We have learned that these business to business relationships are essential for more predictable and streamlined station deployment.

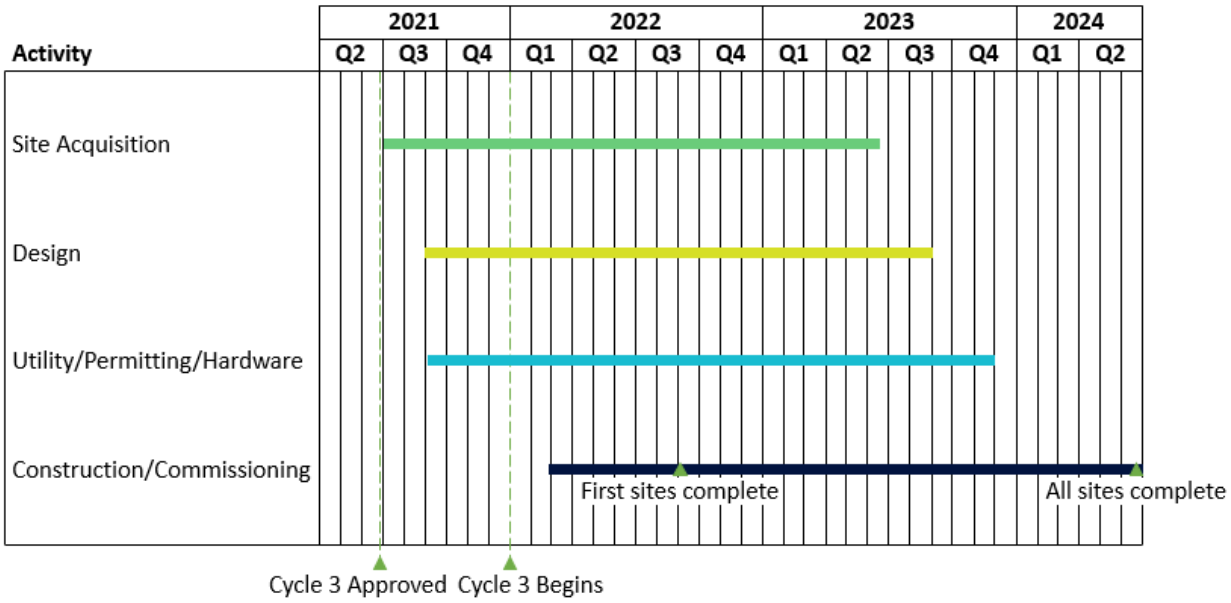
Continuing a practice already begun in Cycles 1 and 2, Electrify America will work closely with California state agencies, including the Governor's Office of Business and Economic Development, the California Department of Transportation, the California Energy Commission, and the California Public Utilities Commission, to improve charging infrastructure planning and deployment, to identify station site leads, and to improve processes such as permitting, easements, and other factors that slow down charging infrastructure installations. State agencies will play a critical role in enforcing AB 1236, which requires all

local jurisdictions to establish expedited permitting for PEV charging stations. These conversations also help identify other charging infrastructure programs or private/public funding opportunities that could be leveraged with Electrify America's investments to further increase the net funding in infrastructure.

Electrify America plans to begin development of the first Cycle 3 stations as soon as the Cycle 3 California ZEV Investment Plan is found by CARB to be consistent with the Partial Consent Decree. If this determination is made prior to the start of Cycle 3, specifically no later than six months prior, Electrify America will be able to conduct new RFPs, negotiate contracts, place orders for equipment, secure station sites, and begin other key development activities in advance of the beginning of Cycle 3. Based on this schedule, by Q3 2022 the first Cycle 3 stations are expected to be online, with many additional Cycle 3 stations well on their way through the development stage. Figure 14 illustrates the preliminary planned rollout of Cycle 3 DCFC infrastructure to support metro, highway, and regional route charging investments. Table 8 and

Table 9 illustrate the anticipated preliminary roll-out schedule for infrastructure stations across the different infrastructure use cases in Cycle 3.

Figure 14: Cycle 3 Timeline



Deployment of transit and MHD charging infrastructure will take place throughout Cycle 3. Upon plan approval, RFPs will be issued to select key vendors to support the execution of these investments, including station site design, hardware acquisition, software development, and installation partners. Electrify America will make every effort to execute these use cases in an accelerated manner in Cycle 3, while paying close attention to maintaining high quality and adhering to Electrify America's guiding principles.

Table 8: Metro Community Charging and Regional Route and Highway Site Count

Quarter	Pre-Site Selection	In Development	Operational
Q2 2022	25-30	5-15	~5
Q4 2022	20-30	5-10	5-10
Q2 2023	5-10	5-10	20-30
Q4 2023	0 - 0	5-10	25-40
Q2 2024	0 - 0	0 - 0	~50

Table 9: Cycle 3 Transit and MHD Chargers

Quarter	Pre-Site Selection	In Development	Operational
Q2 2022	0 - 30	10 - 20	0 – 0
Q4 2022	10 - 20	10 - 20	5 – 10
Q2 2023	0 - 10	10 - 20	10 - 20
Q4 2023	0 - 0	10 - 20	20 - 30
Q2 2024	-	-	35-50

Continuing off the relationships we built throughout Cycles 1 and 2, Electrify America will continue to rely upon the capabilities and innovations of an extensive group of experienced suppliers to support the deployment of charging infrastructure in Cycle 3. For each of our investments we will engage in a competitive procurement process to select vendors as necessary to meet the build-out schedules for the above Cycle 3 schedule. Our process will include conducting inclusive RFIs and RFPs to support activities such as station site identification, station development, and procurement of both current and newly designed charging equipment.

4.9 Maintenance Plan for Infrastructure

Electrify America recognizes that customer experience is a critical element to PEV adoption and is committed to industry-leading customer service and station maintenance and repair. To this end, Electrify America has established contractual requirements to reasonably resolve critical issues with all stations within a maximum of 72 hours.

At Electrify America, maintenance and customer experience actually starts long before chargers and technology are deployed in the public. Our Center of Excellence lab allows our team to test new hardware and software releases before they roll out nationwide. In addition, we work closely with partners from nearly all automotive manufacturers to test upcoming vehicles before they hit the market, and ensure any charging related bugs are addressed prior to a customer reaching our station.

Electrify America also invests significant resources in training our staff and the staff of our vendors. We have developed a curriculum to teach technicians how to safely and effectively perform both routine preventative and emergent maintenance. While the specific details of this program are proprietary, this program is a critical element in providing industry-leading service.

All routine preventative, campaign, and emergency maintenance is conducted by a contractor we selected through a competitive bid process. Prior to the conclusion of the contract, or as necessary, Electrify America will solicit competitive bids to ensure no lapses in maintenance coverage for 10 years from the Partial Consent Decree effective date. In addition, all public Cycle 3 stations will be marked with a toll-free customer service hotline. Since our inception in 2017, our Contact Center has received repeated praise from consumers for its customer service, and should any customers encounter issues charging at an Electrify America station, the contact center will be able to provide support. Agents and operators have access to real-time station status information and can perform tasks such as reviewing unit performance history, initiating a charge, resetting a charger, or other issue resolution tasks. The Contact Center is able to resolve the majority of customer-related issues by receiving and triaging phone calls from customers. In 2020, the Contact Center answered 98.5% of the calls in 30 seconds or less. For non-English speaking customers, a translation line 3-way service is available to agents to translate between the customer and the agent.

For customer issues that require further technical assistance, Contact Center agents work with Electrify America's Network Operations Center (NOC) to identify a solution for the customer. The NOC team conducts root-cause analysis of customer issues, develops solutions with hardware manufacturers, functionally operates and monitors charging assets, supports maintenance service personnel, manages field maintenance deliverables, drives key performance metrics, reports network trends, and works to maximize the value of equipment and service warranties.

4.10 Pricing, Interoperability, and Open Access

Electrify America plans to own and operate the vast majority of PEV infrastructure investments proposed in this Cycle 3 ZEV Investment Plan, though select investments may be handled under different ownership/operating structures as required for specific locations and use case needs. At stations for which Electrify America owns and operates the infrastructure, pricing will be a function of inputs including utility costs, station capital and operating costs, competitor pricing for subscription and rack rate products, and gasoline equivalent prices. Electrify America will set and adjust prices as required to reflect these inputs and drive toward a sustainable business model that always offers fair and reasonable value to consumers.

To maximize public access to its network of charging stations, Electrify America stations in California have the ability to service all PEVs using non-proprietary connectors as the field evolves, including both CHAdeMO and Combined Charging System (CCS). As of the time of writing this plan, the industry appears to be converging on CCS as the non-proprietary standard of choice for vehicles in the US. Nissan, the last BEV manufacturer producing CHAdeMO vehicles, has announced that the upcoming Ariya will use CCS charging (Goodwin, 2020). As sales of all new BEVs shifts to CCS, Electrify America forecasts that over 90% of the non-Tesla BEVs in operation will use CCS by 2025. Electrify America is already seeing this shift at our stations. CHAdeMO usage (including Tesla via CHAdeMO adapter) accounts for just 7% of station usage, down from 15% in 2019, despite CHAdeMO chargers making up over 20% of all DCFC equipment at our stations. Throughout Cycle 3, Electrify America will continue to monitor the evolving field to determine the best mix of connectors and technology to deploy.

Automotive Manufacturers That Have Adopted CCS

Aston Martin
Audi
Bentley
BMW
Bollinger
Byton
Cadillac
Chevrolet
Chrysler
Energica
Faraday Future
Fisker
Ford
Genesis
GMC
Harley-Davidson
Honda
Kia
Lucid Motors
Mazda
Mercedes-Benz
Mini
Nissan
Polestar
Porsche
Rimac
Rivian
SF Motors
Volkswagen
Volvo
Zero

Electrify America operates a truly open network – open to vehicles from all automakers, open to multiple payment methods, and built on open and non-proprietary standards. Electrify America's public DCFC stations are all equipped with credit/debit card readers, and Electrify America believes that open access to charging stations is best guaranteed through credit card readers. Electrify America's network of ultra-fast chargers will also have the ability to accept multiple payment methods, including a user-friendly app, apps developed by other automakers, and even payment by phone. Most importantly, Electrify America's stations are the first in the United States to be deployed with "Plug & Charge" capabilities under the IEC/ISO 15118 standard, which allows a customer with a capable CCS vehicle to simply plug the vehicle into the charger and initiate a charge – an experience even more simple than a gas station.

Electrify America will also support open protocols including Open Charge Point Protocol (OCPP) that allow more standardized communication between different chargers and networks. Electrify America will work to maintain OCPP compliance and other measures to help maximize interoperability, a term that describes the ease of communication between the charger and the network it is on. In addition, Electrify America's public stations will be equipped with back end systems that can use Open Charge Point Interface (OCPI) 2.1 to communicate with other networks, when a business agreement is secured. Electrify America supports CARB's regulations focusing on a common, non-proprietary communication interface that does not require use of any particular firm's intellectual property or mandate contractual terms among private sector actors.

Through the support of multiple charging standards, the ability to accept multiple payment methods, and a strong focus on publicly-accessible infrastructure, Electrify America will be building a highly interoperable network that provides access to as many consumers as possible.

5. Public Education, Awareness, Access, and Marketing Activities (~28M)

5.1 Introduction

As Electrify America embarks on building our Education, Awareness, Access, and Marketing campaigns, the ZEV marketplace is changing. For the first time in many years, there is excitement and political will at the federal, state, and local levels, and significant progress within the automotive industry. Demographics and consumer attitudes are catching up with the wave of innovation. At the same time, the industry's growth trajectory is weighed down by tired myths and inaccuracies which continue to cloud public perceptions and discourage consumers from making the switch to ZEVs. More work is needed in awareness and education.

As we look ahead to Cycle 3, our marketing activities will seek to correct misconceptions while building off of the success and lessons learned from Cycle 2.

5.2 Insights from Our National Outreach and Experience in Cycles 1 and 2

Some of history's most successful marketing campaigns are those that not only highlight the core attributes of the product or service itself, but also draw upon the broader context and climate of the world at that moment. Electrify America's National Outreach process, as described in Chapter 3, provides some of this macro context, offering varied perspectives to complement the marketing research Electrify America conducts for our day-to-day business. This section summarizes the marketing insights gathered through this effort from our National Outreach website; meetings with key stakeholders, reporters, bloggers, and social media influencers; and a thorough review of research by academics and other leading thinkers in our industry. It also contains insights and lessons learned from our ZEV investments to date, which have informed our thinking regarding investments in Cycle 3.

5.2.1 Insights on Brand-Neutral Messaging

Awareness of Incentive Programs Must Increase Through Education

According to the Plug-In Electric Vehicle Policy Tool developed by NASEO and Cadmus (see 4.3.1), financial incentives are the single most effective mechanism for driving EV adoption. This is especially true in California, where incentives often make EV adoption a financially beneficial decision – according to an Auto Alliance analysis, the total cost of three year leases advertised in California for three models of BEVs was lower or nearly the same as California's incentive for low-income residents to lease a ZEV (Alliance for Automotive Innovation, 2019).

However, to ensure these incentives have maximum impact, consumers need to know about them. Unfortunately, a 2019 UC Davis study of consumers in Sacramento found that "Californians are largely unaware of the state's efforts to dramatically increase ZEV adoption" (Hardman et al., 2019). Similarly, NREL's PEV Showcases report notes just 34% of consumers are familiar with EV tax incentives (Singer, 2020), and a 2019 study by Morning Consult found 84% of adults said they were unsure about whether their state offers incentives to electric vehicle buyers . While legislators and policy makers in California have created the most robust set of vehicle and EV charging infrastructure incentives in the United States, a myriad of programs with different qualification rules and applications make both awareness and simplification efforts essential. This is especially true in low-income and disadvantaged communities.

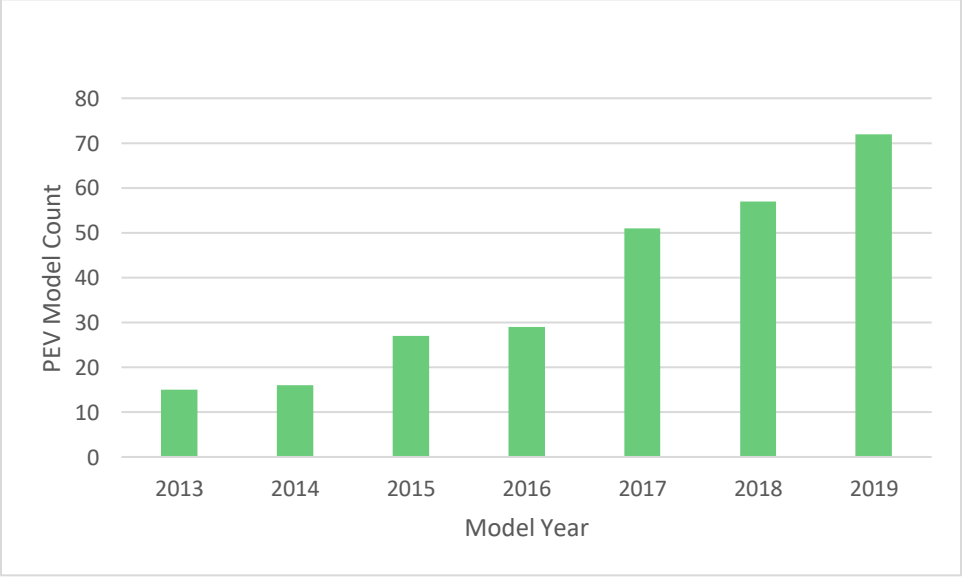
In our Brand Neutral Cycle 3 campaign planning, we are preparing for an influx in public interest regarding incentives and other key information about buying an EV. As policies change and new incentives are introduced, awareness campaigns are able to inform the public of these changes and share new opportunities.

New EV Model Releases Expand Potential Buyer Segments

Historically, customers have had limited EV choices, and many cited a lack of model options as a barrier to adoption. However, EV model availability continues to grow, with over 80 light-duty EV models available in 2019 (Figure 15) (Alternative Fuels Data Center, 2020). As more vehicle models become available – particularly crossovers, SUVs, and pickups – customers who were previously limited by low model availability can find EVs that fit their vehicle needs. We heard this sentiment from a number of submitters to our National Outreach website, including multiple who noted that the SUVs, CUVs, and trucks coming to market will unlock travel to destinations such as National Parks, Forests, or Monuments.

Google Analytics website data from NormalNow.com shows our target audience is excited about the new models and hungry for more information: "EV Models" was the second-most clicked call-to-action button on NormalNow.com during Cycle 2. However, despite ever growing models and body styles of PEVs, there continues to be confusion and misperceptions around offerings and model variety. Some commenters on our social media channels write to us that they still believe EVs are "clown cars," "dodo birds," or "glorified golf carts." In Cycle 3, we hope to make education and awareness investments to address these misconceptions head on.

Figure 15: PEV Model Availability by Model Year



Consumers Continue to Show Concerns about Vehicle Functionality, Even As Awareness Increases

Despite recent growth in EV models, ranges, affordability, and available charging infrastructure, consumers continue to express concerns about whether an EV is right for them. Concerns persist across a number of areas including:

Performance and range:

According to research by Bo MacInnis and Jon A. Krosnick at Resources for the Future, only 26% of surveyed Americans believed that all-electric cars have better acceleration than gasoline-powered cars, while almost as many (25%) believe that all-electric cars have poorer acceleration than gasoline-powered cars. The research further showed that the perception that EVs have better acceleration than gasoline-powered cars was a statistically significant predictor of openness to purchasing all-electric cars. As these people are more motivated to buy EVs than others and superior acceleration is in fact an EV attribute, this study demonstrates that performance-based messaging is likely to be very effective. (MacInnis et al., 2020). Similarly, a 2020 survey of 1000 Americans on attitudes toward electric vehicles found that 26% of Americans think that range is the most important factor in choosing whether to drive an EV or ICE vehicle (Archer, 2020).

Charging Anxiety and Accessibility:

MacInnis and Krosnick's research also found that 78% of Americans perceive charging EV batteries to be difficult, with 22% of Americans believe that charging EV batteries is extremely difficult, 24% think it is very difficult, and 32% perceive it to be moderately difficult. The study also showed that those who believe charging EV batteries to be difficult are also more likely to be reluctant to buy EVs than those who believe battery charging is slightly difficult or not difficult at all) (MacInnis et al., 2020).

A Comscore study of Electrify America's Normal Now Cycle 2: Flight 1 campaign found additional evidence of charging anxiety. According to the findings, as our target audience became more familiar with EVs, there was also an increase in common concerns around charging (+4.4% increase in concern around charge time). This might seem counterintuitive, but as people become more aware of EVs, they have more nuanced questions about their functionality. For example they become more concerned about things like range, which they might not have thought of before. This suggests a need for additional complementary messaging to assuage these concerns.

Affordability

On consumer perceptions of affordability, MacInnis and Krosnick found 22% of Americans believe that driving EVs is more costly than driving gasoline-powered cars, and that a perceived higher cost of maintaining an EV was a predictor of purchasing reluctance (MacInnis et al., 2020).

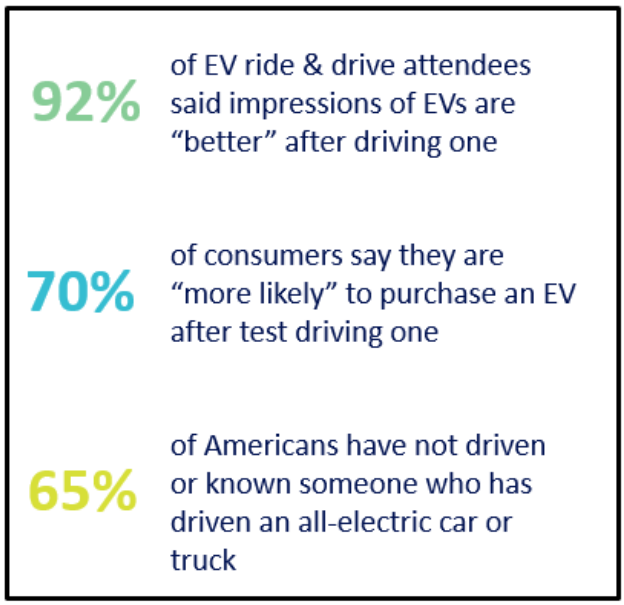
Environmentalism

Finally, MacInnis and Krosnick found more than one-quarter (28%) of Americans believe that driving an EV will not help the environment at all or that it will help the environment "a little." Furthermore, these buyers are approximately 40% more likely to

resist purchasing an EV than those who perceive a great deal of environmental benefits from EVs (MacInnis et al., 2020)."

Access to ZEVs Is Critical to Combat Misconceptions

Many of the misconceptions about EVs can be addressed, but consumer education is critical. Respondents with firsthand exposure to EVs were more likely to at least expect to consider a PEV (PHEV 70% and BEV 72%) than those with no prior exposure (PHEV 49% and BEV 44%), according to a 2020 report by the National Renewable Energy Laboratory (Singer, 2020). Ride and drives, riding in an electric taxi, and similar experiences that 'put butts in seats' and give otherwise unfamiliar consumers the opportunity to experience a ZEV have proven to be particularly successful. While 65% of Americans have not driven (or do not know someone who has driven) an all-electric car or truck (MacInnis et al., 2020), a 2016 report from the Center for Sustainable Energy found that approximately 70% of consumers surveyed said they were more likely to purchase an EV after test-driving one (Center for Sustainable Energy, 2016). Plug In America found similar results in their ride and drives sponsored by Electrify America - 92% Of EV ride & drive attendees said their impression of EVs is "better" after driving one.



In addition to traditional ride and drives, there is increasing evidence of the power of electrified shared mobility in driving ZEV awareness and adoption. As detailed in section 4.2.5, electric TNC drivers are often evangelists for EV adoption, sharing details on the benefits of EV ownership with their passengers. Through our partnership with Lyft in Denver, CO, we have begun to see the positive impact first hand. To date, approximately 200 Lyft Flexdrive EVs in Denver have provided over 300,000 rides. Moreover, Lyft riders are 38% more likely to say that they would consider purchasing an electric vehicle if they have previously taken a ride in an EV, as compared to those who have never ridden in one (Lyft, 2021B).[11]

Given the above data, we are prioritizing firsthand experience with ZEVs in both access investments and our brand-neutral education and awareness activities. We expect that this will be a challenge in light of the pandemic, which has been limiting access to test-drives for the past year, but as in-person activity begins to pick back up again, we hope to conduct more test-drive and ride and drive activities and support access to ZEVs.

5.2.2 Insights on Branded Messaging

Current BEV Owners Lack Understanding of How to Best Utilize Public DC Fast Chargers

In conducting qualitative focus groups in 2020 among BEV owners, Electrify America found that many BEV drivers do not regularly charge in public and therefore do not understand how to utilize public DCFC. We also found there is a significant knowledge gap in terminology associated with charging (e.g.

[11] Figure excludes riders who already own EVs

'State of Charge'). There are many nuances to optimal use of public DCFC that are not being communicated by OEMs and must be addressed by charging companies like Electrify America.

Customers Care about Charging Speed, Range, the Customer Experience, and Innovation

Through our social listening, qualitative analysis, and third-party research, we have gained vital insights into the wants and needs of EV drivers and car buyers that will inform our Cycle 3 strategy. These important takeaways have pointed us to areas for improvement and focus our branded marketing moving forward.

- *Charging Speed:* We have found that many EV owners continue to believe that charging is slow or difficult, likely due to a lack of experience using DCFC.
- *Locations/Accessibility:* Range anxiety among our audience is tightly tied to charger accessibility. We receive frequent feedback on social media channels from customers requesting more station sites. We must instill range confidence.
- *Quality Customer Experience:* Our customers continue to seek out reliable charging and a high-functioning app experience, both of which we continue to optimize and communicate against accordingly. Additionally, many customer complaints stem from user error at the charging station (e.g., credit card issues), indicating an increased need for educational content around using charging stations.
- *Industry Innovation and Corporate Social Responsibility:* The environmental impact of BEV charging at public ultra-fast charging stations continues to be a topic of conversation among drivers. We plan to address these concerns via our Innovation and CSR communications, including renewable energy initiatives and a carbon offset program.

5.2.3 Insights on Channels and Strategy for Both Brand Neutral and Branded Communications

Digital Channels Are Increasingly Important

Similar to the evolution occurring in the broader marketing and advertising space, digital advertising and social media are becoming increasingly important channels for reaching consumers. According to a 2020 Google/C-Space survey and interviews of American and European consumers, new car buyers (consumers who do not currently have their own car and COVID-19 has influenced their decision to consider purchasing a new car) were 1.2x more likely to turn to YouTube in their research process and 1.5x more likely than the typical car buyer (consumers who currently own a car and would like to purchase a new car to replace it) to use social media for information about vehicles (Google, 2020). Electrify America's National Outreach Process submissions also highlighted a similar trend, with state agencies in Tennessee and New York noting the importance and opportunity of digital campaigns to tailor and target brand neutral education and awareness to local audiences.

In light of the demographics mentioned above, YouTube and other social channels are increasingly important channels for both our brand neutral and branded marketing initiatives.

Social Media Enables Customer Success

For Electrify America, social media has become an extension of our call center, providing real-time, one-on-one communication and improving the customer experience. Research shows that 63% of customers expect companies to offer customer service via their social media channels, and 90% of social media users have already used social media as a way to communicate with a brand or business (Mangles,

2017). Social media is faster than traditional telephone outreach, can be more responsive, and is available on the platforms where people are increasingly spending their time (Amaresan, 2020).

EV drivers love to communicate, especially on social media. Through our monitoring of social conversations, we have found that drivers today on social media have many questions on station locations, charger availability, amenities, and Plug & Charge. In our Cycle 3 branded marketing strategy, and to a more limited extent in our brand neutral strategy, we plan to continue engagement with consumers through social media.

Workforce Training and Development Is Key to Growing Institutional Industry Knowledge

Through our National Outreach Process, we heard a number of calls for workforce training related to ZEV maintenance and EVSE maintenance and installation. Submissions suggested partnership with either trade schools, local colleges, or high schools. The West Virginia University National Alternative Fuels Training Consortium wrote to "encourage the inclusion of funding in the development and deployment of standardized EV technician training curricula." The North Central Texas Council of Governments called for investments in technician and dealer training, and The Lion Electrify Co. suggested investment in training activities for heavy-duty electric vehicle technicians. Electrify America recognizes the need for further workforce training and is committed to helping educate the future leaders and workers of the EV industry.

New Opportunities as Buyer Demographics Evolve

As the EV market matures, and the national landscape evolves from Covid-19 and other major events, buyer demographics are shifting. In some cases, new customer segments are considering EVs that might not have considered them in the past. For example, according to a 2020 EV Model Launch Survey conducted by Google, as a result of COVID-19 a segment of consumers who do not currently own a car is now considering purchase, as they opt for personal vehicles instead of public transportation. According to the survey, relative to a typical new car buyer, these new considerers are younger, more urban, and more open to BEVs and PHEVs.

Electrify America monitors evolving purchase behavior on a monthly basis to keep a close assessment on how the customer set is evolving. As we craft marketing campaigns and messaging for Cycle 3, we will optimize our media campaigns to the evolving base of both EV adopters and intenders alike.

5.3 Investment Overview

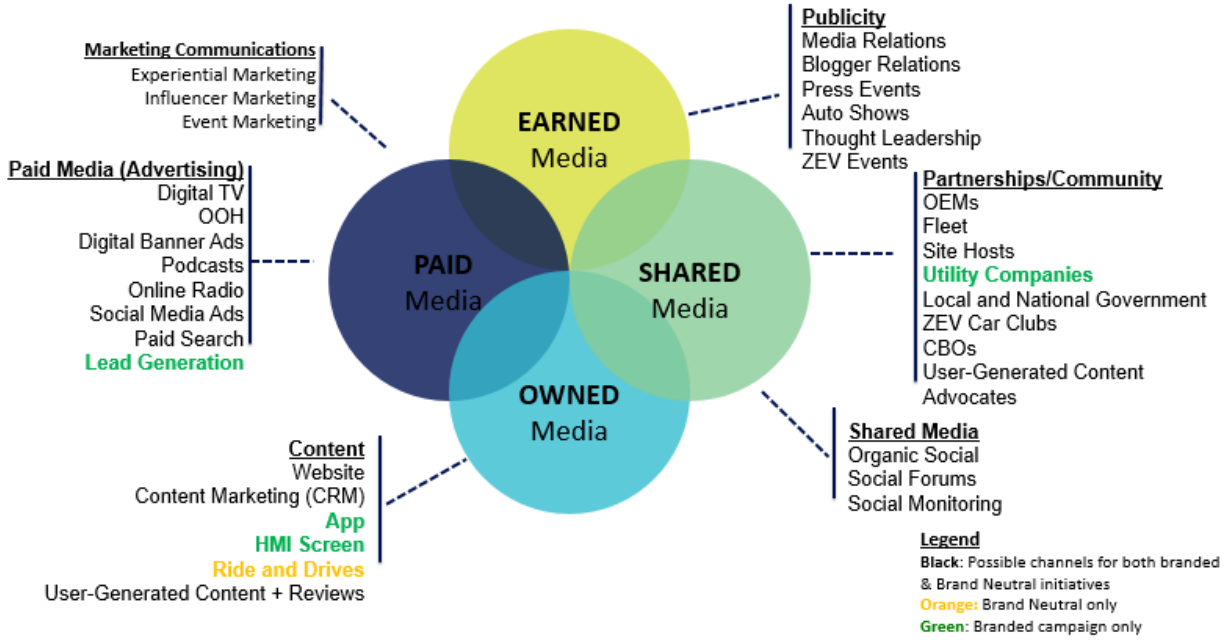
5.3.1 Marketing Framework

The framework Electrify America plans to use for both its brand neutral education and awareness and branded marketing efforts in Cycle 3 follows the same Paid, Earned, Shared, and Owned (PESO) model used in Cycle 2. As its name implies, the PESO model relies on four distinct and complementary media channels. These categories (described below) work in concert to maximize the effectiveness and consistency of marketing efforts. The PESO model is comprehensive but also provides enough flexibility to support a wide range of channel messaging. Given this, Electrify America plans to use PESO for both its Education and Awareness and Station Utilization campaigns.

- *Paid Media* - Content methodically distributed based on financial compensation to place the message and control its distribution. This includes traditional TV, radio, digital banner ads, out-of-home (billboard) advertising, and sponsored content on social media.

- *Earned Media* - The published coverage of a company, cause, or individual's message by a credible third party, such as a journalist, blogger, trade analyst, or industry influencer. An example of includes press release content published in newspapers or magazines.
- *Shared Media* - The practice of distributing content through an entity's own loyal user base or audience. An example includes shared media posts on Twitter, LinkedIn, and Instagram.
- *Owned Media* - The aggregation and dissemination of content from loyal customers and followers for redistribution as a marketing asset. Examples include customer/employee stories and testimonials published on a company's website.

Figure 16: Cycle 3 Brand Neutral Education & Awareness and Branded Marketing Framework



5.3.2 Media Approach

As we look to build our both our brand neutral and branded Cycle 3 marketing campaigns, we are approaching our investments with three core principles: communicating at the right moment, communicating in the right places, and data-informed optimization of media.

Communicating at the Right Moment: Prioritize Nimbleness in Media Planning

To maximize impact, our media buy must be able to adapt quickly to cultural changes and act on what our data is telling us about what is and/or is not performing. In Cycle 2, periods of political unrest, the California wildfires,[12] and other macro events drove us to shift media buys on nearly a moment's notice. In some cases, we went in and out of market within hours to ensure our message was appropriate and timely, and to avoid any backlash from messaging that might be perceived to be deaf to the current moment. In Cycle 2, this flexibility and nimbleness enabled us to maximize our available funds and meet

[12] During the California wildfires, Electrify America put chargers in emergency areas in free-vend mode to support access and driver safety

the consumer at the right moment. In Cycle 3, Electrify America will continue this approach, leveraging all available data and prioritizing flexible media buys.

Communicating in the Right Places: from Mass Media to Targeted Emerging Media

In Cycle 1, our primary messaging tactic was mass media, leveraging TV ads. In Cycle 2, "cord cutting," known as cancelling or forgoing a cable television subscription, hit record numbers, in part due to shelter in place from COVID-19. According to new research from eMarketer, the cable, satellite and telecom TV industry is on track to lose the most subscribers ever. In 2020, over 6 million U.S. households will cut the cord with pay TV, bringing the total number of cord-cutter households to 31.2 million. The analysis showed that by 2024, the number will grow even further, reaching 46.6 million total cord-cutter households, or more than a third of all U.S. households that no longer have pay TV (Perez, 2020). Reflecting this broader shift, we adjusted our advertising efforts to emerging media (digitization of traditional media) such as podcasts, streaming audio, and digital TV (i.e., Hulu, Roku, and Sling TV).

In addition to audience growth, there are many benefits of using emerging media platforms, which are outlined in the below sections. In Cycle 3, we will continue our emerging media efforts, building on Cycle 2 insights.

Data-Informed Optimization of Media

A key element of Electrify America's success in Cycle 2 was our ability to gather data in real time (or near real time) about the impacts of our campaigns and shift channels or messaging as necessary to maximize impact. In Cycle 3, we plan to use similar third party measurement mechanisms, such as:

- **Comscore:** Comscore studies lifts in campaign key performance indicators (KPIs) (e.g., awareness, familiarity, purchase consideration) as measured by comparing results between audiences who saw our campaign vs. those who did not (control group). These insights inform overall campaign strategy, goalsetting, and optimization.
- **Facebook:** Facebook studies measure paid media performance and brand lift (awareness, favorability, and intent). This information is used to optimize Facebook campaigns for video completions, ad recall, reach, or impressions.
- **Twitter:** Twitter studies measure paid media performance and brand lift (awareness, favorability, intent, and brand imagery). This information is used to optimize Twitter campaigns for impressions, video views, and swipe-ups.
- **Creative Testing:** We will commission quantitative and qualitative research to study the creative work's likeability and clarity of message. For example, in Cycle 2, we commissioned two quantitative surveys that reached 1,679 individuals, as well as two rounds of qualitative focus groups including 34 individuals. These types of creative studies are used to inform campaign concept, tagline choice, and visual approach.
- **Website Testing and Analytics:** We will analyze the campaign website's Google Analytics performance monthly, measuring total sessions, percent of new sessions, bounce rate, average session duration, traffic sources, page visits, and on-site actions. This data will be used to indicate areas of audience interest and overall website performance. We may also conduct website creative testing on an as-needed basis, such as A/B testing different landing pages to optimize for best audience engagement.

- **Paid Media Performance:** We will analyze paid media performance on a monthly basis, measuring impressions, click-through rates, video completion rates, total video views, engaged visits, and on-site actions. This data will be used to remove lower-performing ad units from rotation to focus spend on effective units; track performance to inform new creative.
- **Paid Social Media Sentiment Analysis:** We will continue to analyze comments related to our social media on a daily basis, including both paid social ads and organic social posts. In Cycle 2, we reviewed 4,849 comments on our social channels.
- **Google Audience Insights:** Through Google's Audience Insights tool, we are able to access information about website audience demographics, passion points, top interests, auto in-market shopping, and geographic region. Leveraging these insights–such as passion points (e.g., value shoppers)–allows us to optimize our messaging and media placements to meet our audience with the right message in the right place.

5.4 Brand Neutral Campaign: Boosting ZEV Adoption through Education and Awareness (~$14M)

5.4.1 Brand Neutral Campaign: Strategy & Audience

Similar to Cycle 2, this cycle we intend to increase public awareness and interest in ZEVs in California through educational marketing, ride and drives, and other experiential marketing. However, we will be shifting the focus of our attention from a 'pull' strategy of bringing customers to our brand neutral campaign page to a 'push' strategy in which we are pushing educational content directly to the consumer through their existing media channels.

In Cycle 2, we launched NormalNow.com to help inform consumers about ZEVs, dispel common consumer myths, and provide tools for consumers to research and ultimately purchase ZEVs. The website has been quite successful, garnering over two million website visitors in Cycle 2. While we have been successful in driving our target audience to learn more through NormalNow.com, we see an opportunity to increase our reach and impact by surfacing educational content directly on both emerging and traditional media outlets.

With this in mind, in Cycle 3 we look to include more educational content and culturally relevant communications in our emerging omni-channel media marketing. The goal is to counter common misconceptions without requiring our target audience to visit a website. While an educational microsite will remain active, we believe that surfacing the educational messaging in the paid marketing communications will reduce the number of clicks required before learning key facts, and ultimately have a more immediate impact on the audience.

With respect to our target audience, in Cycle 3 we aim to increase awareness among Americans who are unfamiliar with ZEVs, and promote adoption among those considering purchasing a new vehicle. We plan to utilize Google Audience Insights and NormalNow.com performance analytics to ensure we are delivering our message in a manner that meets the media habits and content interests of our audience. We also plan to deliver content in languages other than English to ensure our message can reach as broad an audience as possible.

5.4.2 Brand Neutral Campaign: Communication Pillars

Electrify America's communication pillars will remain relatively consistent between Cycles 2 and 3. Despite campaigns from Electrify America and dozens of other players across the industry, past

campaign performance and research indicate that these pillars remain essential to overcoming EV misconceptions (see Section 5.2.1). Additionally, Electrify America feels that Cycle 2 was not able to fully tackle each pillar due to the complications caused by the COVID-19 pandemic, which halted ride and drives, canceled auto shows, and pushed back OEM model launches. In Cycle 3, Electrify America plans to use the PESO model as the basis for our communication tactics in this campaign. See Section 5.3.1 for details.

The campaign will feature the following pillars:

- **Performance:**
    a. Range: Most BEVs can drive over 200 miles on a single charge—with some up to 500.
    b. Fun to Drive: EVs are fun to drive with instant torque, a silent motor, and great handling resulting from the low center of gravity. Handling remains a key factor in purchasing decisions among car buyers.
- **Charging Availability:** With a home charger, you just plug in your EV overnight and wake up to a full charge in the morning. When you need to charge away from home, public fast-charging stations are located all across the country.
- **Affordability:** On average, BEV fuel costs are about half as much as fuel for an ICE vehicle, and federal, state, and local incentives can help make the initial vehicle purchase more affordable, especially for those of low and moderate income.
- **Models:** With many new EV models that include SUVs, sedans, hatchbacks, trucks, and luxury vehicles, it's easy to find one that's right for you.
- **Environmental Impact**: New to Cycle 3's communication pillars is environmental impact — a subject of recurring conversation among our audience on social.
    a. PEVs can help keep your town and your world clean. In general, PEVs produce fewer emissions that contribute to climate change and smog than conventional vehicles (U.S. Department of Energy, 2020).
    b. All vehicles produce substantial life cycle emissions, and calculating them is complex. However, EVs typically produce fewer life cycle emissions than conventional vehicles because most emissions are lower for electricity generation than burning gasoline or diesel (U.S. Department of Energy, 2020).

More than 35% of the California media buy will continue to be targeted in LIC/DAC zip codes. Organizations that request funding with a mission to drive ZEV adoption in LIC/DAC census tracts will be considered additional investments to our community-based commitment.

In addition to our standard media campaigns, Electrify America's Cycle 1 and Cycle 2 experience has demonstrated that local organizations, community groups, and other non-profit organizations are often the best communicators of the messaging pillars identified above within their communities, and they are able to reach populations that a larger campaign would struggle to reach. Therefore, in Cycle 3 Electrify America will also continue to sponsor the great and effective work of other organizations.

- Membership and Sponsorship of Local Activities, Education, Training, and Ride and Drives: Electrify America will again support organizations that facilitate ZEV adoption in low-income and

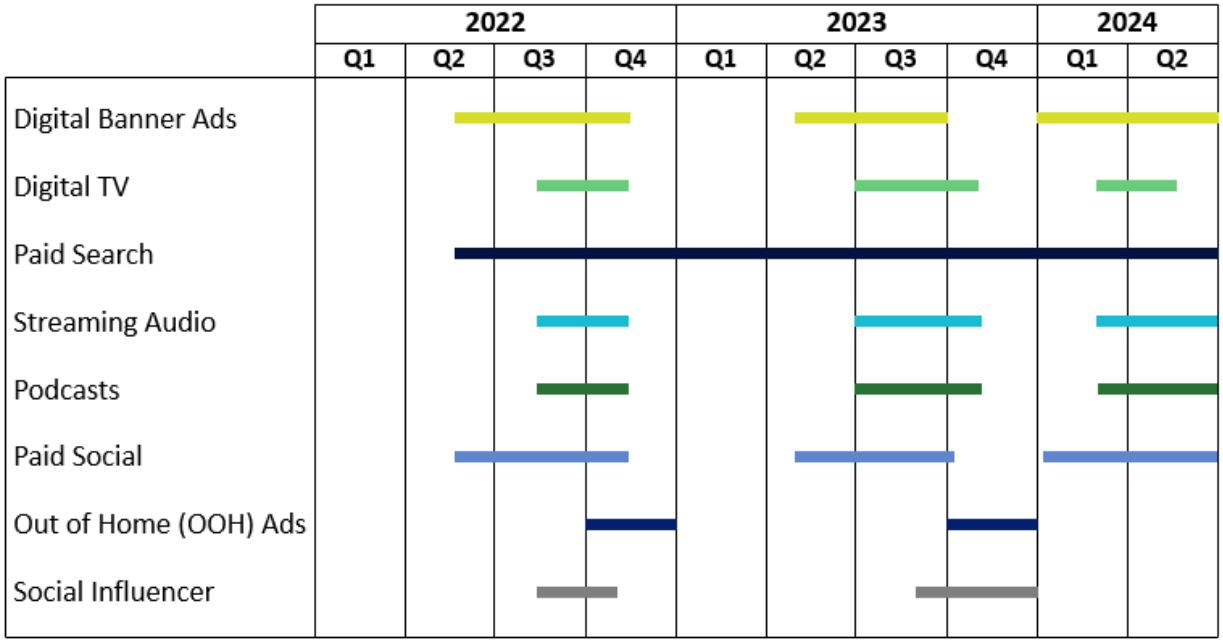
disadvantaged communities, and otherwise advance EV adoption, though solicitations and sponsorship, particularly of activities that help target populations to access incentives, conduct Ride and Drive activities, train and educate youth and workers regarding ZEV technology. This will be considered additional investments to our community-based commitment.

5.4.3 Brand Neutral Campaign: Media Flight Plan

Electrify America's Cycle 3 media strategy will be broken into three paid media flights with an omni-channel media buy. After each paid media flight, we will conduct an in depth paid media performance analysis and leverage the results to optimize our future media buys and creative content for the subsequent paid media flights.

This media plan is subject to informed revision, based on market impacts and evidence of effectiveness.[13] Electrify America may make adjustments to maximize impact on ZEV adoption as necessary and appropriate during Cycle 3.

Figure 17: Cycle 3 Brand Neutral Sample Media Plan



5.4.4 Brand Neutral Campaign: Budget

For Cycle 3, Electrify America will invest $14M in brand neutral education and awareness activities in California.

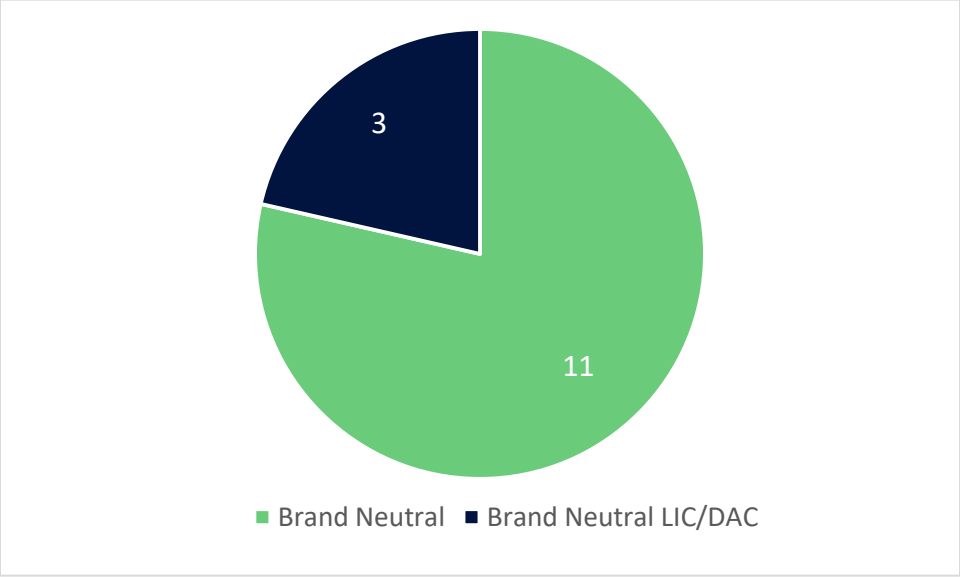
The omni-channel marketing campaigns and sponsored activities described above will have an $11 million budget, and Electrify America will strive to achieve at least 35% of all media bought within this investment will be geo-targeted specifically at low-income and disadvantaged zip codes, using the geo-targeting methods previously used and approved by CARB. Approximately $500,000 of this budget is

[13] This plan reflects Electrify America's best projection of a Cycle 3 flight during the drafting of the Cycle 3 plan. Due to economic, political, and societal shifts in the market, media costs of each component may change, and therefore shift the optimal mix of investments. Electrify America will work with a competitively-selected media agency to optimize media spending for maximum impact on ZEV adoption.

expected to be invested in Electrify America's second Green City, described in Section 6, to showcase the impacts and benefits from the Green City programs.

Electrify America will also budget $3 million to collaborate with organizations working specifically within California's low-income and disadvantaged communities, a substantive budget increase from Cycle 2. This investment will be in addition to the sponsorship of training, education, and ride and drive activities and organizations described above. Approximately $500,000 of this funding (combined with the above $500,000 for a total of $1 million) will be dedicated to the second Green City to support education and awareness activities in disadvantaged and low-income communities, workforce development, and similar programs.

Figure 18: Cycle 3 Brand Neutral Marketing Budget



5.5 Access: Driving Education and Awareness through TNC Electrification (~$2M)

5.5.1 Investment Overview

In dozens of conversations for our National Outreach process, Electrify America repeatedly heard from industry, government, and academic stakeholders about the importance of electrifying shared mobility vehicles. As detailed in section 4.2.5 and 5.2.7, electrification of shared mobility vehicles offer a combination of benefits, including greater environmental benefits than electrified private vehicles, and lower vehicle operating costs for a driver population that tends to fall into low-income brackets (Mishel, 2018). Crucially, electric shared mobility vehicles offer significant education and awareness benefits, as riders can experience a ZEV without having to purchase one. Although functionally similar to ride-and-drives, which have been proven to increase ZEV adoption (see section 5.2.7), electrified TNC trips have the added benefit of reaching a larger, broader audience than targeted ride-and-drive events.

However, despite interest in electrifying this sector, cost remains a significant barrier to further adoption. In Cycle 2, Electrify America has been working closely with TNC and car share partners across the United States, and has found that to date, public incentives and private efforts are not adequate to address the cost barrier and spur adoption in most markets. As a result, deployment of PEVs in TNC and shared mobility fleets has slowed. Rocky Mountain Institute's 2021 paper came to a similar conclusion –

in many markets across the country, BEVs are not yet cost competitive options for TNC drivers (McLane et al., 2021). While vehicle prices are falling, and will continue to fall over the coming decade, action is needed in order to kick start this critical segment of the industry.

The second barrier to adoption by TNC and taxi drivers is limited infrastructure. According to a 2020 study by Angela Sanguinetti and Ken Kurani at UC Davis, over 50% of existing PEV TNC drivers cited more charger locations as one of their top three choices for how to improve the experience of driving a PEV for TNC. This sentiment is echoed in Rocky Mountain Institute's 2021 paper, as well as in the experiences of the electric taxis in Washington, DC which lost out on substantial earnings opportunity due to insufficient charging locations (Di Caro, 2017).

To address this gap, Electrify America is planning to invest $2 million in funds to incentivize the purchase and deployment of electric taxis and TNC vehicles in fleets that provide access to sufficient and adequate charging. Electrify America estimated that this funding will reduce the costs of EVs sufficiently to enable between 500 – 1,000 vehicles into California markets. Based on estimates from deployment of EVs in the Lyft ExpressDrive program in Denver, these additional EVs could provide one to three million EV rides per year.

5.5.2 Investment Details

To deploy the $2 million as effectively and efficiently as possible, Electrify America plans to conduct an RFP to major TNC leasing and taxi companies to solicit proposals for use of the funds. Respondents will be asked to propose the number and type of vehicles that will be deployed,[14] the specific metros for deployment, and the expected pricing for drivers to use the vehicles. In addition, respondents will be asked to propose a mechanism for passenger education.

Electrify America aims to deploy this capital quickly, and we intend to issue the RFP in the first year of Cycle 3. We believe that the faster we can deploy the vehicles, the faster we can boost exposure to ZEVs and drive ZEV adoption.

As this is primarily an education and awareness activity, if for any reason Electrify America is unable to deploy all or part of the funding as part of this program, we will redirect this budget to approved brand neutral education and awareness investments.

5.6 Branded Campaign: Boosting Station Utilization through Branded Marketing (~$12M)

As part of Cycle 3, Electrify America will engage in a branded marketing campaign intended to drive station utilization. High utilization is a key objective of the Partial Consent Decree and helps ensure sustainability of the infrastructure and network beyond the 10-year ZEV Investment Commitment. The branded campaign is built on communication pillars captured directly from the voice of the EV driver. In Cycle 2, we have leveraged voice of the customer data by the way of PlugShare comments, social media sentiment (over 80,000 comments), focus groups (over met with 330 EV driver & Intenders), and third party research to shape our communication pillars. The communication pillars are tailored to drive station utilization.

[14] Vendors will have the ability to select a desired vehicle make or model, assuming vehicle range and charging speed are sufficient for use as a taxi or TNC vehicle and vehicle cost after incorporating the incentive is competitive with an internal combustion alternative.

5.6.1 Branded Campaign: Strategy & Audience

Electrify America's branded marketing campaign will drive station utilization by easing range anxiety and instilling charger confidence in the network with messaging based on relevant Communication Pillars. Inspiring this "range confidence" in Electrify America's charging infrastructure will increase public belief in the feasibility of EV ownership, thereby positively impacting EV adoption.

The Cycle 3 branded marketing campaign will aim to increase station utilization among three core audiences: current Electrify America customers, EV owners who are not yet Electrify America customers, and EV intenders who are showing purchase intent for an EV in the next 1-2 years. Electrify America is focused not only on the EV drivers and fleet operators of today, but the light-duty, medium-duty, and heavy-duty EV drivers and fleet operators of tomorrow.

5.6.2 Branded Campaign: Communication Pillars

In Cycle 2, we learned that there are key areas of customer interest that must be addressed to support the ZEV drivers of tomorrow and existing customer retention/loyalty (see Section 5.2.7). These will serve as the basis for our communication pillars during Cycle 3.

Figure 19: Cycle 3 Communication Pillars and Proof Points

Speed

- Ultra-fast 350kW chargers capable of providing the fastest possible charging speed for your vehicle

Locations/Accessibility

- A nationwide network with two coast-to-coast routes
- Stations at popular and diverse locations
- Stations along strategic high-traffic routes

Quality Customer Experience

- Highest quality ratings of all public DCFC network on PlugShare
- Compatibility with all nonproprietary charging types
- Digital connectivity with convenient app features
- Flexible payments, now with Plug and Charge technology
- Manufacturer agreements/OEM partnership plans

CSR

- Mission of electrified transportation
- Environmental sustainability efforts, including renewable energy and carbon offset projects
- Community impact initiatives

These pillars will be featured in Electrify America advertising and media to educate consumers and drive incremental EV adoption and usage.

6. Green Cities 2 ($25M)

6.1 Green Cities Background

As part of Volkswagen's agreement in the Partial Consent Decree entered by the U.S. District Court for the Northern District of California on October 25, 2016, and in the Second California Partial Consent Decree entered by the U.S. District Court for the Northern District of California on May 17, 2017, Electrify America is committed to delivering two Green City efforts in California over the 10 year settlement term.

The Green City is defined in Second California Partial Consent Decree as an initiative "including, but not limited to: the operation of ZEV car sharing services, zero emission transit applications, and zero emission freight transport projects." Moreover, the second of the two Green City initiatives is to be in a community "with a population of approximately 500,000 that predominately consists of Disadvantaged Communities […]."

CARB's February 2017 guidance to Electrify America further highlights that "The 'Green City' initiative in California includes investments that promote a broad conceptual transformation of transportation systems to ZEVs within a given city using ZEV car share, zero emission transit, zero emission freight, and other innovative strategies such as a fully electrified public parking garage within a concentrated area to showcase the benefits of ZEVs" (California Air Resources Board, 2017).

Under this guidance, Electrify America successfully implemented its first Green City initiative in Sacramento as part of Cycle 1. Investments in Sacramento included three ZEV car share programs (Envoy, GIG Car Share, and AAA Car Subscription), a zero emission bus service, a ZEV on-demand shuttle program, and 13 public DCFC stations supporting local travel in and around the city. These investments have already had a major impact on the Sacramento region, resulting in more than three million EV miles traveled collectively between the car share services, and a strong focus on ZEV mobility access in low-income and disadvantaged communities.

Through our Green City 1 initiative we learned a tremendous amount about how to successfully implement such an enormous initiative, and are excited to bring these lessons into our Green City 2 plans. In particular, as Sacramento noted in its National Outreach submission, Electrify America's "provision of a dedicated Green City team with technical expertise, commitment, passion, and significant ongoing collaboration with the City, vendors, and local partners during all phases of the investment" was a key to the success of the initiative. The City also detailed other factors they believe were critical for success including strong political leadership, a streamlined regulatory environment, supportive policies, involvement of city staff and leadership in decision-making, and funding local outreach.

6.2 Approach to City and Investment Type Selection

In planning our second Green City, we have taken a multi-step approach to identify both the specific types of investment and the geographic area. The first step was to identify which of the allowable Green City investments types had the greatest potential to transform the community, meet a substantial and concrete need, demonstrate innovation, and have the economic sustainability necessary to serve the community for many years to come. Following this, we identified those geographic areas in California that both meet the minimum criteria for a Green City, and also have the relevant facilities, industries, and services that would benefit most from the investments Electrify America planned to make. Our

geographic analysis resulted in three finalist communities for consideration. Each finalist community was invited, via a request for proposal, to provide details on specific, actionable projects that could be undertaken during the course of Cycle 3. Finally, RFP responses were reviewed and scored based on a predetermined rubric, and a winning Green City community was selected.

Identifying Target Investment Types:

Based on CARB's 2017 guidance referenced above, Electrify America began by evaluating the different types of Green City investments to identify the greatest needs and greatest opportunity for impact. In particular, Electrify America's evaluation sought to identify transformational projects that can showcase "what is possible with a holistic EV integrated society." We identified a wide range of investment types across light-duty, medium-duty, heavy-duty freight, and transit vehicles. A selection of these investment types can be found in Table 10.

Table 10: Target Investment Types

Category	Investment Type
Light-Duty	Metro DCFC charging
	Workplace / MUD charging
	Ridehail / eTaxi hubs
	Hotels & Destination
	Autonomous Charging
	Vehicle-to-Grid
Heavy-Duty	Delivery Van Charging Hubs
	School Bus Charging
Transit	Public Charging Stations
	Truck Charging Depots
	Transit Bus Charging Depots

Each investment type was then assessed based on attractiveness and feasibility. Investment type attractiveness included the potential impact to both the host community and the overall ZEV marketplace, the unique nature of the opportunity, the fit within the spirit of the Green City initiative, and the long-term sustainability of such an investment. Investment type feasibility assessed resources and considerations for execution and delivery. All investment types were scored on a 4-point scale for each metric, scores were tallied, and the resulting set of scores were ranked from highest to lowest.[15]

Based on our analysis, the charging needs of transit and freight (including both medium-duty and heavy-duty) emerged as the greatest Cycle 3 Green City investment opportunities, and these two investment types fall directly in the Partial Consent Decree definition of activities within a Green City.

[15] It should be noted that Electrify America's scoring of attractiveness and feasibility for the Green City project is exclusively for this project and is not an indicator of the company's perspectives on these investment types or potential projects outside of the Green City context. The unique nature of the Green City initiative makes certain projects far more/less attractive and feasible than may be the case outside of this effort.

Identifying Potential Green City Communities Combining Geospatial Analysis and Transit and Freight Needs:

Based on the guidance provided in the Second Partial Consent Decree that a Green City should be in a community "with a population of approximately 500,000 that predominately consists of Disadvantaged Communities," Electrify America conducted geospatial analysis to identify all geographies in the state meeting these criteria. Five types of communities were evaluated on the basis of population: municipal cities (450-550k pop.), metro areas (450-550k pop.), neighboring cities (250 – 500k pop.), neighborhood sub-units of major cities,[16] and cities adjacent to a neighborhood sub-unit of the largest four cities.[17] This initial list can be found in Table 11.

Table 11: Cities that Meeting Green City Demographic Requirements

Category	City
Municipal Cities	Long Beach
	Fresno
	Sacramento
Metropolitan Areas	Visalia-Porterville
Neighboring Cities	Oakland-Berkeley
	Oakland-Alameda
	Long Beach-Lakewood
	Anaheim-Fullerton
	Anaheim-Orange
	Anaheim-Garden Grove
	Garden Grove-Santa Ana
	Orange-Santa Ana
Subunits of Major Cities	South San Jose and Alum Rock
City and Sub-Unit of Top 4 Cities	Long Beach-Wilmington (LA Sub-Unit)

Electrify America evaluated each of these communities to determine those that are predominantly disadvantaged. Electrify America calculated the percentage of census tracts in each community that were disadvantaged and low-income. Those communities with a majority percentage disadvantaged and low-income advanced for further consideration.

[16] The four largest cities (Los Angeles, San Diego, San Francisco, San Jose) cover large geographies with populations far exceeding the 500,000 person limit. Electrify America concluded that it would be arbitrary to exclude sub-units within these cities from consideration, if they have a population of approximately 500,000 people and are predominantly disadvantaged and low-income. Each of these four cities have different ways of naming their sub-units. Electrify America has identified a sub-unit system established and published by each of these city governments themselves, including "Neighborhoods Council Boundaries" in Los Angeles and "Community Planning Areas" in San Diego.

[17] Electrify America also considered cities that borders a sub-unit of the four large cities to reach the population threshold of 450-550K

After identifying the communities that fit the population and disadvantaged community criteria, Electrify America evaluated each community to determine those likely to have the greatest need for charging electric transit and freight vehicles as well as the highest concentrations of low-income and disadvantaged communities. Electrify America assembled data on the size of transit fleets and the freight traffic in each community. Freight and transit opportunity details are listed in Table 12. From this data set, three finalist communities with the greatest needs for transit and freight vehicle charging emerged.

Table 12: Freight and Transit Opportunity Details

Data	Variable Used	Method	Source
Freight	Freight Long Distance Truck Volume based on origin-destination truck tonnage	Summed total truck volume for routes within the geographic location	• Freight Analysis Framework • Federal Highway Administration
Transit	Total number of buses	Summed total number of buses for the jurisdiction. For those without a value provided in the National Transit Database, the number of buses were allocated using a calculation based off of population for that geography.	• National Transit Database • American Public Transportation Association

Finalist RFP:

In October 2020, Electrify America sent a request to each of the three finalist communities inviting them to describe the transit and freight charging needs in their communities, and asking them in particular to identify specific MHD electric fleets and locations that anticipated needing third party investment in charging infrastructure. Following the selection of finalist communities from a data-driven approach, the RFP process gave each community the opportunity to present to Electrify America the true needs and opportunities for near term investment and collaboration.

Finalist communities were invited to propose two types of opportunities for investment by Electrify America: transit charging, and delivery and/or freight charging. Charging needs would qualify if a facility for charging was proposed, and/or a commitment to vehicle procurement was demonstrated. Respondents were asked to provide details about each opportunity. Electrify America sought information regarding the proposed station sites, applicable fleets, technology, and operations and maintenance plans. All RFP responses were due in mid-January of 2021.

Table 13: Green City RFP Submission Details

Category	Select Details Requested[18]
Site Information	• Address • Site control details • Is the site located in an LIC/DAC census tract? • Do the vehicles at the site serve LIC/DAC census tracts? • Utility feasibility analyses • Proposed project model (e.g., depot charging, en route charging)

Fleet Information	• For all fleet vehicles dependent on the site's charging equipment:
	  ○ Number of vehicles
	  ○ Schedule of deliveries
	  ○ Status of procurement
	  ○ Source(s) of funding
	  ○ Make and model
	  ○ Maximum power level for charging
	  ○ Charging protocol (e.g. CCS, proprietary)
	  ○ Percentage of the fleet's fueling needs met by charging at the site identified

Operations and Maintenance Commitment	• Commitment to be responsible for operational and maintenance costs (including utility electricity costs) of the station built at the site

6.3 Green City 2: Long Beach / Wilmington

6.3.1 Selection of Second Green City – Long Beach / Wilmington:

Electrify America is thrilled to announce that, pending CARB approval of the Cycle 3 plan, the next Green City Initiative will be in the community of Long Beach / Wilmington. Long Beach / Wilmington is in an area designated under the Clean Air Act for "Extreme" non-attainment of health based air quality standards, and the Cities of both Long Beach and Los Angeles are determined to reduce emissions in the freight transportation and transit service space.

The City of Long Beach and the Los Angeles neighborhood of Wilmington together incorporate the entire San Pedro ports complex, accounting for 40% of all American imported freight and 25% of all U.S. exports (The Port of Los Angeles, 2020). The Ports of LA and Long Beach are at the forefront of medium/heavy-duty electrification, with the Clean Air Action Plan and Clean Trucks Program providing aggressive electrification goals, including the full phase-out of non-ZEV harbor trucks by 2035. In his February 17th, 2021, media briefing, Port of Los Angeles Executive Director Gene Seroka highlighted that "public-private partnership" is required to achieve the goals of the Clean Air Action Plan and drive down the cost of ZEV equipment and trucks.

The communities are served by two of California's largest transit bus systems, both of which are established leaders in the electrification of transit buses. In 2020 Los Angeles Mayor Eric Garcetti signed an Executive Directive titled "L.A.'s Green New Deal: Leading By Example", which includes measures to

[18] Full set of details requested considered Confidential Business Information

make LADOT's bus fleet entirely emissions-free in time for the 2028 Olympic and Paralympic Games. Long Beach Transit is also aiming to rapidly grow its ZEV bus fleet, with plans for a nearly full transition to ZEV by 2030.

The selection of Long Beach / Wilmington is the result of the charging investment opportunities identified by both Long Beach and the City of Los Angeles through the RFP process. Together they identified more than a dozen potentially viable investment opportunities with project scopes ranging from transit, MHD freight, drayage, and refuse. Potential projects were all either directly located in Long Beach / Wilmington, or actively serve these areas.

6.3.2 Investment Details:

Electrify America has its second Green City initiative in the Long Beach / Wilmington community. The first stage of this investment will include due diligence, scoping and contracting for each potential charging station investment identified in the Long Beach / Wilmington proposals. Electrify America anticipates making multiple significant charging station infrastructure investments, but Electrify America has not yet determined which of the many potential investments identified thus far will be economically and technologically viable. The due diligence and contracting process, which must proceed confidentially due to its commercial nature, will enable the finalization of investments in service of the Long Beach/Wilmington community.

Based on the projects put forward and Electrify America's vision for the second Green City, investments will feature the following:

- DCFC charging equipment, ranging from 150 – 350kW, though charging powers may exceed 350kW should a higher power standard become available, or be lower than 150kW if required to meet the needs of the project partners
- All chargers are expected to use the CCS standard, as is typical for MHD trucks and transit buses, unless a new, higher-power standard is developed and ready for commercial deployment
- Many projects require 10+ chargers deployed for use by one or more fleets. As a result, these projects will feature large utility interconnections far in excess of 1MW
- To manage interconnection size, as well as overall energy costs at the stations, Electrify America will seek to implement site-level energy management tools. Tools are station and use-case specific, but may include load management and charge scheduling
- As appropriate based on investment type, operational, and economic considerations, we will seek to deploy storage assets, renewable generation, and energy management software. These assets will be used primarily to manage energy loads for the project, but may also be used as a grid resource should excess energy and resources be available

It is important to note that delivery of projects like those identified in the Long Beach / Wilmington submission require collaboration with a large, diverse set of stakeholders including fleet owners, property owners, utilities, automotive OEMs, and government/regulatory entities. Electrify America is fully committed to delivering these projects as quickly as possible to support the ZEV goals of our second Green City, but we acknowledge that some of the required inputs are beyond our control. In some cases, projects may require additional time to complete, including extending beyond the end of Cycle 3 in June of 2024. In the event that Electrify America is unable to complete $25M of Green City projects during the Cycle 3 period, we will invest in additional creditable investment types to meet our $200M

Cycle 3 commitment under the Partial Consent Decree. Electrify America will then complete and fund any outstanding Green City projects as part of Cycle 4.

As we learned in Cycle 1 in Sacramento, the Green City initiative requires a strong partnership, planning, and coordination, and has the ability to make a major impact on the city's economic opportunities, pollution and emissions, and overall transportation landscape. We are thrilled to be taking this journey with the Cities of Long Beach and Wilmington (and Los Angeles by association) and excited to help transform two key transportation sectors in the region.

7. Closing

After nearly five years of investing in non-proprietary charging infrastructure and brand neutral marketing, there are clear indications Electrify America's efforts are helping to increase ZEV adoption. OEMs are bringing new models to market with longer ranges, higher charging powers, and larger body styles. Coupled with Electrify America's robust highway network and ultra-fast charging, these vehicles finally are unlocking the promise of EVs as a household's primary vehicle.

In addition to driving ZEV adoption, Electrify America has secured major achievements in its first two investment cycles. We have built the largest and most powerful open DCFC network in the U.S. by acquiring, building, and commissioning sites at an unprecedented construction pace. In spite of this rapid growth, our network leads the industry in quality as well, as judged by PlugShare scores and Charged EV. And we have implemented a site acquisition approach that puts the customer first, and ensures a great charging experience each and every visit.

However, significant work still remains. Consumers demand more stations and faster charging to continue adopting ZEVs, and station economics and quality must also improve dramatically. On the education side, more work is needed to familiarize consumers with ZEVs, their benefits, and the many incentives available for adopters. Finally, corporate sustainability and responsibility will be critical to ensuring that efforts bring about the promises of environmental sustainability and equity for all as we transition to a zero emission future.

Our sincere thanks must be extended to those outside of Electrify America, including the California Air Resources Board and Environmental Protection Agency. Their guidance has been instrumental in nearly five years of collective effort to determine the right approach to investing in ZEV infrastructure and to communicating education and awareness messaging. We are also grateful to all those who have engaged in the National Outreach Process and California public hearings. Your valuable insights, alternative views, and confirmation of key strategies are critical to the success of this unprecedented effort.

Our Electrify America team remains inspired by challenges and opportunities ahead to create a better pathway to ZEV adoption for the United States. We trust these efforts will not only be enjoyed by drivers for many generations to come but also become an example of successful private and public sector cooperation within the U.S., if not globally.

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Appendix

I. ZEV Glossary

AC Charging

The majority of PEV charging is done with alternating current (AC) Level 1 (120 volts or normal household current) or Level 2 (240 volts or an electric dryer power equivalent). AC charging is typically a more cost effective solution, with lower equipment and installation costs. As it takes advantage of longer dwell times to provide lower power to a ZEV, AC charging is an excellent solution for residential, workplace, multiunit dwelling, and other longer-term parking situations like hotels and municipal or airport parking garages.

Disadvantaged Communities/Low-income Communities

Electrify America uses definitions for low-income and disadvantaged communities established by the State of California, which are published and mapped by CARB on its "Disadvantaged and Low-income Communities Investments" webpage: https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm.

DC Fast Charging (DCFC)

Direct current (DC) charging for electric vehicles allows for higher charging speeds, as DC current can be supplied directly to the electric vehicle's battery at power levels normally higher than AC charging. The higher the DC power supplied, the faster the EV can be charged, provided the vehicle is designed to handle such power. To illustrate the charging power difference between Level 2 AC and DC fast charging, a Level 2 7.2kW AC charger will deliver about 27 miles of ZEV range per hour of charging, whereas a 150kW or 350kW DC fast charger can deliver 90 or 200 miles of electric range per 10 minutes respectively.

OCPP and OCPI

Open Charge Point Protocol (OCPP) and Open Charge Point Interface (OCPI) are communications standards that have been developed by numerous public and private ZEV infrastructure leaders. OCPP enables standardized communication between charging hardware and the charging station networks that support them, while OCPI enables communication between different charging station networks. OCPP makes it possible to change the network supporting an individual charging station at some future time if desired. OCPI, on the other hand, is the communications standard that enables commercial entities such as charging networks or automotive OEMs to transfer charging station data between each other, such as charger availability or customer information, to enable roaming.

Plug & Charge

Plug & Charge is part of the latest revision of the CCS standard, featuring the IEC/ISO 15118 standard which prescribes the means by which a charger and network can identify and authenticate a specific vehicle. This allows for a charging session to begin automatically by simply "plugging in," without the need for supplemental membership cards or fobs.

Zero Emission Vehicle (ZEV)

Under Appendix C, the following three vehicle types are considered Zero Emission Vehicles:

1. An on-road passenger car or light duty vehicle, light duty truck, medium duty vehicle, or heavy duty vehicle that produces zero exhaust emissions of all of the following pollutants: non-methane organic gases, carbon monoxide, particulate matter, carbon dioxide, methane, formaldehyde, oxides of nitrogen, or nitrous oxide, including, but not limited to, battery electric vehicles ("BEV") and fuel cell vehicles ("FEV");
2. An on-road plug-in hybrid electric vehicle ("PHEV") with zero emission range greater than 35 miles as measured on the federal Urban Dynamometer Driving Schedule ("UDDS") in the case of passenger cars, light duty vehicles and light duty trucks, and 10 miles as measured on the federal UDDS in the case of medium- and heavy-duty vehicles; or
3. An on-road heavy-duty vehicle with an electric powered takeoff. ZEVs do not include: zero emission off-road equipment and vehicles; zero emission light rail; additions to transit bus fleets utilizing existing catenary electric power; or any vehicle not capable of being licensed for use on public roads.