

A large, stylized number '5' is the central graphic. It is composed of several overlapping, angular shapes in shades of teal and green. The top part is a dark teal triangle pointing up and to the right. The middle part is a white shape with a teal outline, resembling a '5' with a curved top. The bottom part is a green shape pointing down and to the left. The overall effect is a dynamic, modern logo.

National ZEV Investment Plan: Cycle 3

June 2021

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List of Acronyms

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

AADT	Average Annual Daily Traffic
BEV	Battery Electric Vehicle
BNEF	BloombergNEF
CSR	Corporate Social Responsibility
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)
ZEV	Zero Emission Vehicle

Executive Summary

Electrify America is pleased to present this National Zero Emission Vehicle (ZEV) Investment Plan for its third cycle of ZEV infrastructure, education and awareness, and access investments. 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 \$2 billion over 10 years to support the increased adoption of ZEV technology in the United States. Of this \$2 billion investment, \$1.2 billion will be spent outside of California. This investment represents the largest commitment of its kind to date. Following conference with the Environmental Protection Agency (EPA), this plan defines the National¹ 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 2,700 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, states across the U.S. are committing to clean fuels standards (such as a Low Carbon Fuel Standard) and the ZEV mandate, helping to drive vehicle sales and promote ZEV adoption.

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 Federal, state, and local government officials, and engagement with hundreds of stakeholders across the country. 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.

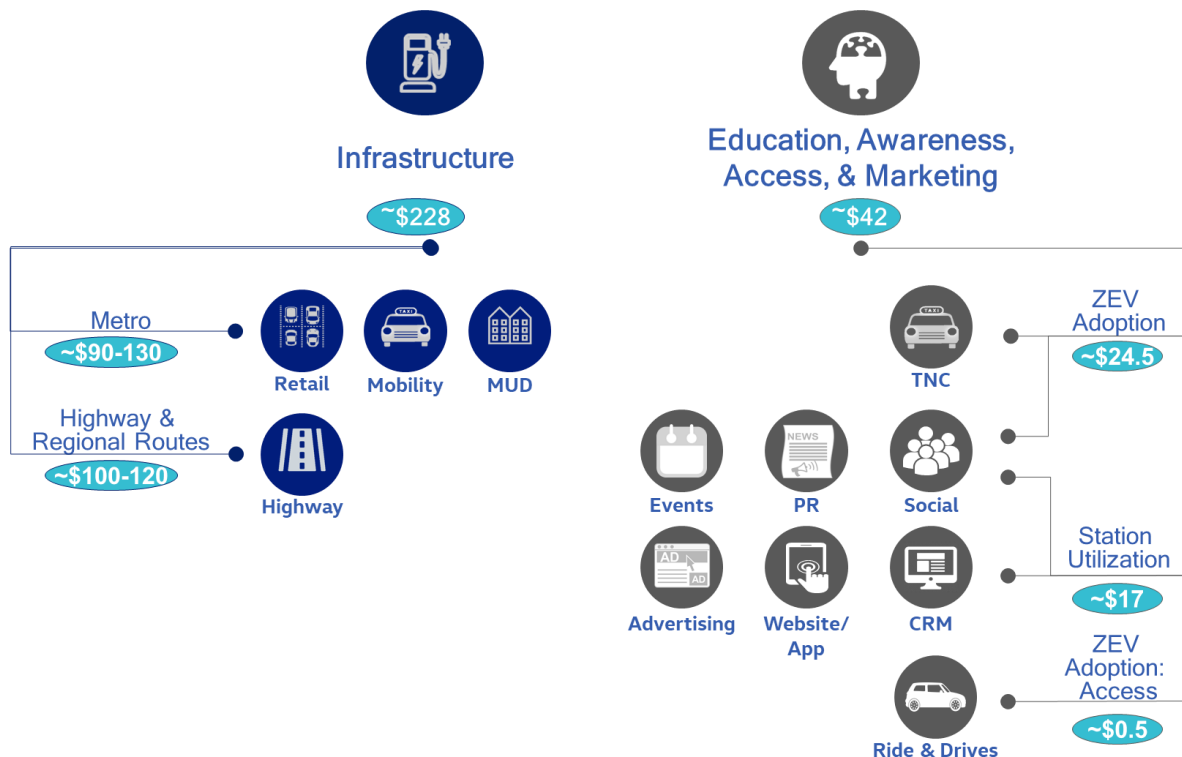
Making smart, data-driven investments that will stand the test of time remains core to our approach, and this is critical in order to overcome the barriers to EV adoption that remain. For example, consumer awareness and education on the subject of ZEVs continues to lag. According to a 2019 UC Davis study, the public remains unaware of state efforts to increase ZEV adoption (Hardman et. al, 2019). In addition, Rocky Mountain Institute's groundbreaking study recently identified soft costs, such as regulations and permitting, as a major impediment to ZEV adoption efforts (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

¹ The National ZEV Investment Plan covers investment in the United States, excluding California, pursuant to Section 1.6 of Appendix C of the Partial Consent Decree. Unless noted otherwise, National or Nationally refer to the United States, excluding California pursuant to the aforementioned reference.

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 two categories: 1) Infrastructure; and 2) Education, Awareness, Access, and Marketing.

Figure i: Cycle 3 National Investments



Remaining balance includes: \$30M in business operations and organizational costs; \$4-\$8M in hardware and capacity building

Infrastructure Investments (~\$228M)

In Cycle 3, Electrify America plans to invest approximately \$228 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 United States over the past five years, further investment is required to support the country’s EV adoption goals (see section 4.2.3). To address this gap, Electrify America plans to make the following infrastructure investments:

- Metro Charging (\$90 – \$130M):** 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 (MUD) residents, and infrastructure for taxi and transportation network company (TNC) vehicles.

- **Highway and Regional Route Charging (\$100 – \$120M):** Infrastructure for intrastate travel and access to top destinations throughout the country are also critical for enabling ZEV adoption. For households in which the EV is the primary or sole vehicle, highway infrastructure is key to 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 Badlands National Park and the White Mountains.
- **Hardware Development and Capacity Building (\$4 - \$8M):** 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 (\$42M)

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 the National Renewable Energy Laboratory (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 (\$24.5M):** Similar to Electrify America’s Cycle 2 investments, in Cycle 3 Electrify America plans to drive increased education and awareness through educational marketing and other experiential marketing. The core pillars of our messaging include ZEV performance, charging availability, affordability, vehicle 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 (\$0.5M): Boosting ZEV Awareness and Adoption through Ride and Drives:** Providing consumers exposure to ZEVs without requiring purchase or lease remains a key priority for Electrify America. In Cycle 3, we will support ride and drives that introduce the public to the ease and excitement of ZEV ownership.
- **Branded Campaign: Boosting Station Utilization through Branded Marketing (\$17M):** 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.

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. 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 National Budget

Category	Estimated Budget (\$M) ¹
Infrastructure & Station Operating Costs	~\$228
Metro Charging	\$90 - \$130
Highway and Regional Route Charging	\$100 - \$120
Hardware Development and Capacity Building	\$4 - \$8
Brand Neutral Campaign: Boosting ZEV Adoption through Education and Awareness	~\$24.5M
Access: Boosting ZEV Awareness and Adoption through Ride and Drives	~\$0.5M
Branded Campaign: Boosting Station Utilization through Branded Marketing	~\$17
Electrify America Business Operation & Organization²	\$30
TOTAL	\$300
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 country working to reduce greenhouse gas emissions in the transportation sector through ZEV adoption.

1. Introduction

1.1 Background on Electrify America 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, \$1.2 billion will be spent nationally in \$300 million increments over four 30-month cycles. This plan describes the \$300 million of investment that will be made in the third 30-month cycle nationally. The Cycle 3 period is from Q1 2022 through Q2 2024 (see Table 1).

Table 1: National 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
\$300M	\$300M	\$300M	\$300M	\$1,200M

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 National 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. Finally, 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.

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

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. Electrify America also has over 450 Level 2 workplace and multi-unit dwelling (MUD) stations and over 2,700 chargers installed.

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.

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 (GHG) 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 costs related to capital, operating, and energy expenses, 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, that will unlock new growth areas for the industry and drive meaningful reductions in GHG 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 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, each new use case involves a level of uncertainty in both cost and operational feasibility. Should investment targets in any new use case 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, 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 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.

- 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, making investments and supporting education in diverse communities across the United States.

The ZEV Investment Commitment is already having a big impact on American businesses. To date, Electrify America has contracted with 312 vendors, by way of purchase order, for a total contract value of \$712 million.

In addition, Electrify America's investment is putting Americans to work. According to our most recent survey, the 78 Electrify America vendors who replied to the survey reported that nearly 8,800 people worked professionally on Electrify America projects in the second half of 2020, and more than 1,200 jobs were either created or sustained due to Electrify America's investment. According to a study of Electrify America's economic impact in 2019 by Deloitte (2021), Electrify America's investments in 2019 accounted for 1,361 jobs and over \$113 million in payroll and benefits. The total contribution to the economy from Electrify America's investment in 2019 was \$702 million.

Example activities for *Community Impact* include:

- **Science, Technology, Engineering, and Math (STEM) and Workforce Development:** Electrify America is funding STEM and workforce development programs, projects, ideas, concepts and related sponsorships to help promote ZEVs, ZEV technology, and ZEV infrastructure. As one example, Electrify America is funding the National Energy Foundation (NEF) to support development of a national STEM program promoting EV adoption that focuses on grades K – 12, community college and vocational training through virtual or live presentations, student challenges, curriculum development, post-secondary webinars, and expansion of its "rEV" program around EV education.
- **EVNoire:** Electrify America is collaborating with EVNoire, a minority-owned e-mobility group, by sponsoring its communications campaign to help normalize zero emission transportation for diverse and underserved communities. 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 communities. 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.

- Plug In America Virtual Ride & Drives: In 2020, Electrify America sponsored Plug In America to conduct virtual ride and drive events in support of National Drive Electric Week, including 17 events across the country. Virtual ride and drives, conceived in response to the COVID-19 pandemic, feature videos of EV drivers providing a tour of their vehicles and taking viewers on a ride-along, as well as informing the audience about charging, incentives and best practices for driving EVs. In some cases, the events included a live Zoom event so that audience members can directly ask EV drivers about their experience.

Equality and Diversity

Electrify America’s diversity and inclusion efforts span both internal and external activities in order to help affect 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 the United States 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; encourage greater participation by underrepresented groups and community based organizations, including certified veteran-, women-, and minority-owned businesses; and 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. 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 medium- and heavy-duty (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

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.² Submissions came in from 47 states and the District of Columbia, with the largest number of submissions from the states of California (162 submissions), Texas (86 submissions), and Arizona (58 submissions) (Figure 2). Across the country, individual submitters made up 53% of submissions and government entities made up 15% of submissions (Figure 3).

² 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 Submissions by State

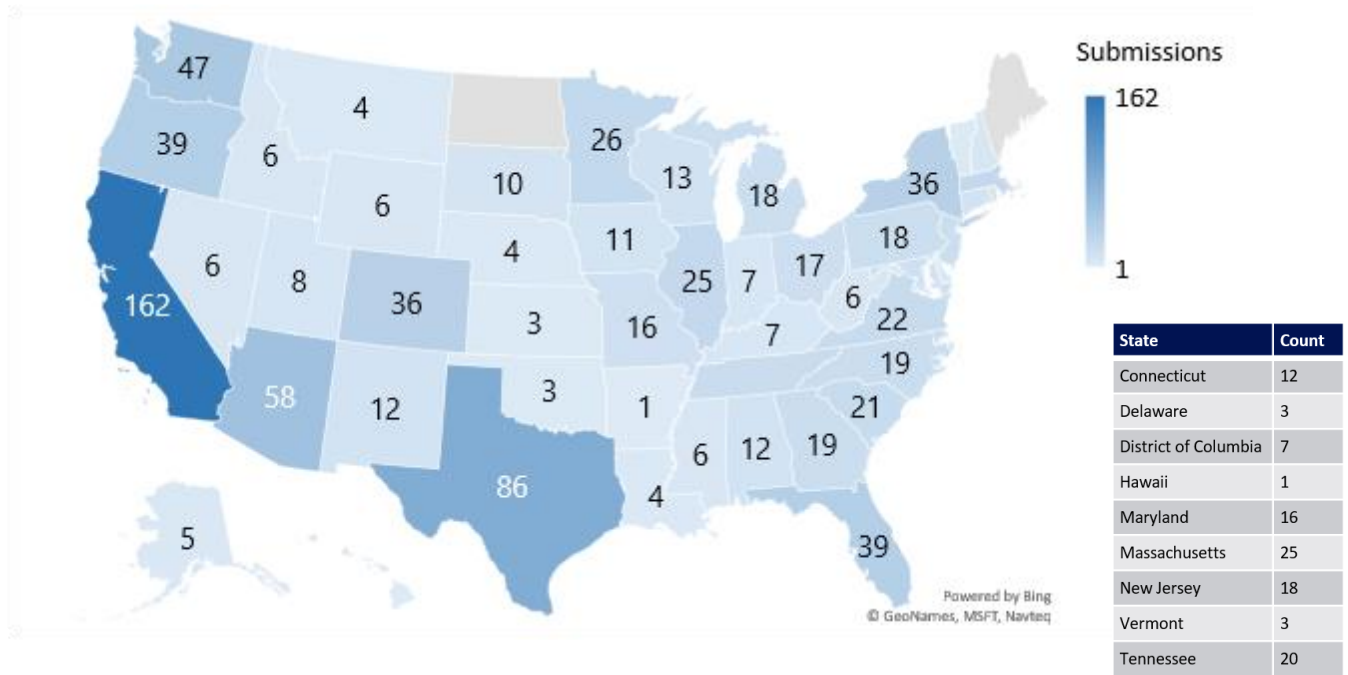
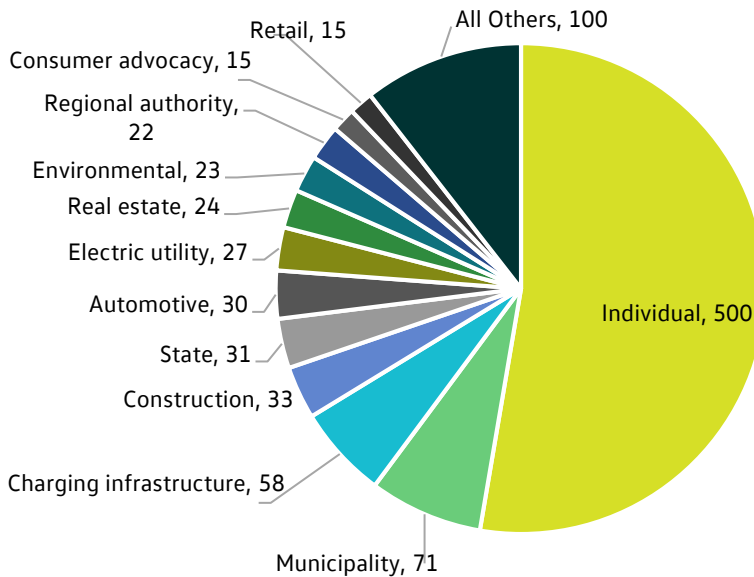


Figure 3: Submissions by Stakeholder Category



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 three-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, stakeholders noted that 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 Sections 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 (\$228M)

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. 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.

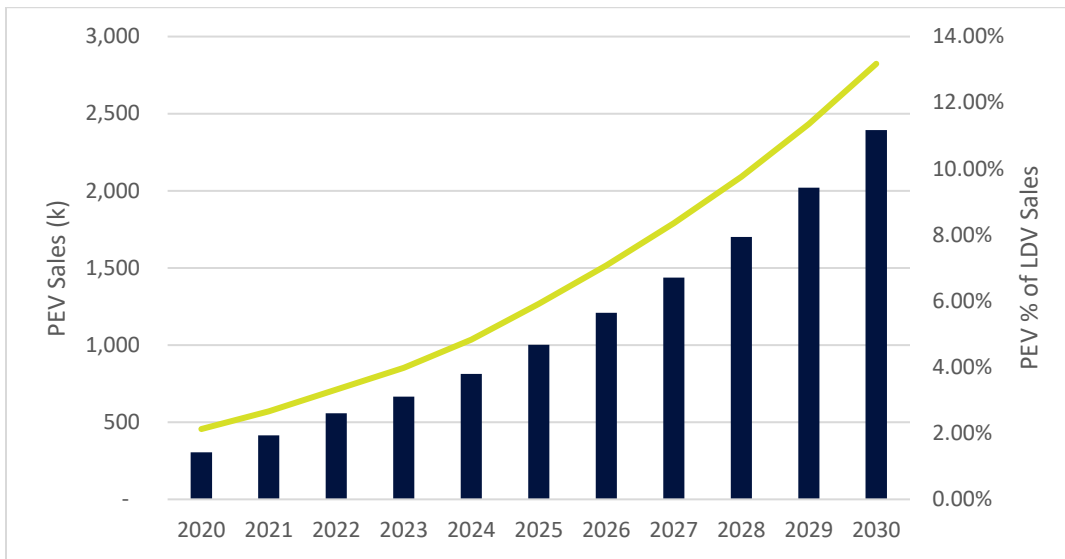
4.2 Insights from Our National Outreach and Cycles 1 and 2

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

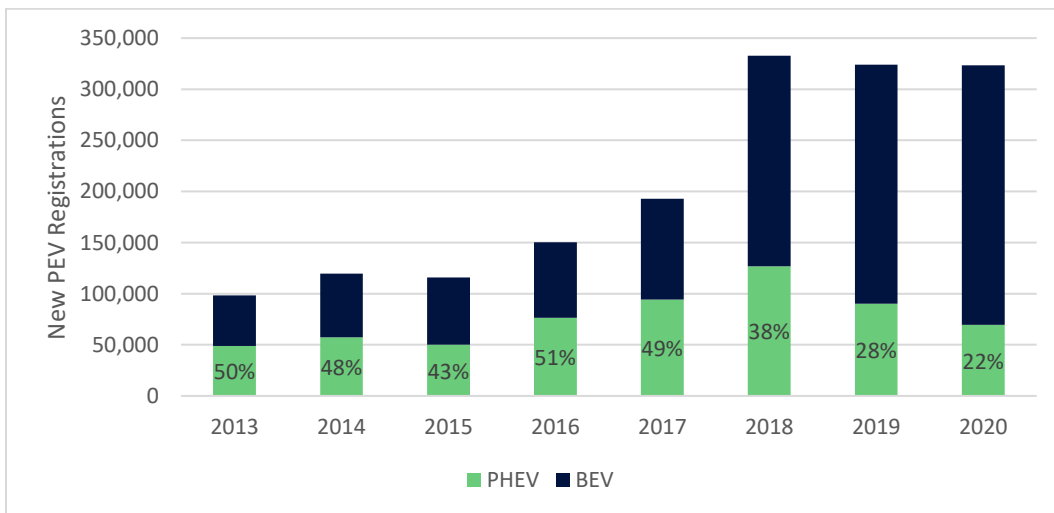
The PEV market is poised for significant growth in the coming decade. Despite slightly slower sales volumes in 2020 due to COVID-19, Guidehouse Insights forecasts PEVs will make up 6% of new U.S. light duty vehicle sales in 2025, and 13% of new sales by 2030 (Figure 4) (Guidehouse Insights, 2020).

Figure 4: Projected National PEV Sales



Through 2020, the mix of PEVs, which encompasses BEVs and PHEVs, has shifted heavily to BEVs, which made up nearly 80% of PEV sales in 2020 (Figure 5) (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). While many public forecasts anticipate plug-in hybrid electric vehicles (PHEVs) to take a slightly larger share as new models are released in 2022 and beyond, BloombergNEF (BNEF) forecasts that 22% of the U.S. PEV market will be PHEVs by 2030 (BloombergNEF, 2020).

Figure 5: New PEV Registrations by Drivetrain

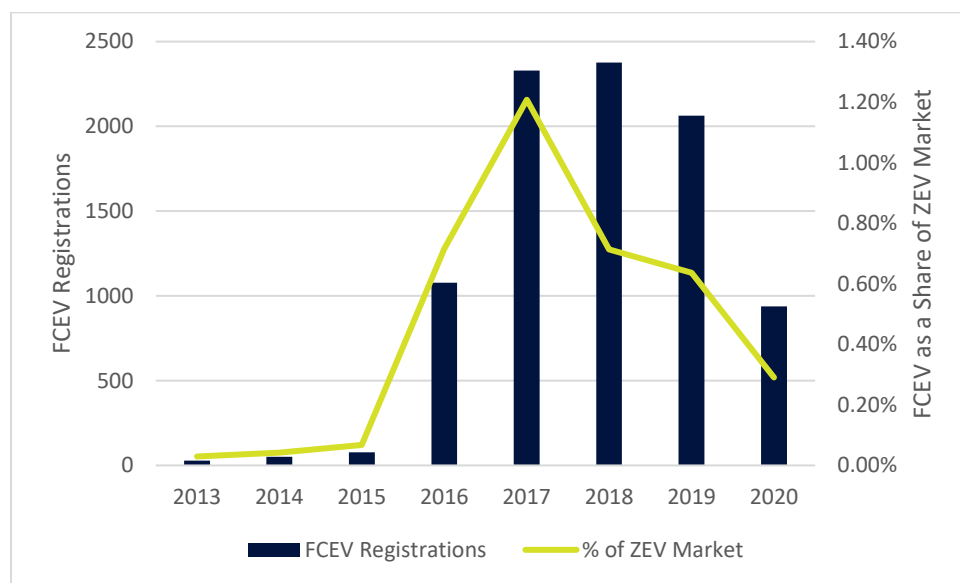


Many consumers cite purchase price as a major barrier to PEV adoption (see 5.2.4). A major reason for this difference in BEVs is the battery cost, which accounts for roughly 30% of the cost of a new BEV (Nicholas et al., 2019). According to BNEF, in 2020 lithium-ion battery pack prices averaged \$137/kilowatt hour (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 adoption has struggled in recent years. Registrations declined in 2019 and 2020 (Figure 6), making up 0.007% of new light-duty sales and less than 0.3% of ZEV sales in 2020 (IHS Markit, 2021). BNEF estimates that FCEVs will make up less than 1% of global passenger vehicles by 2040 (BloombergNEF, 2020).

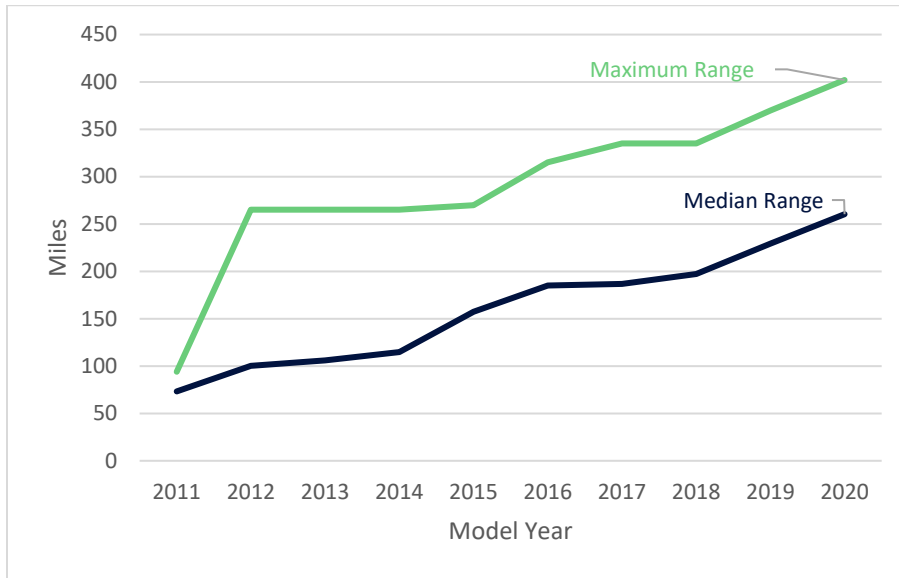
Figure 6: FCEV Registrations



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

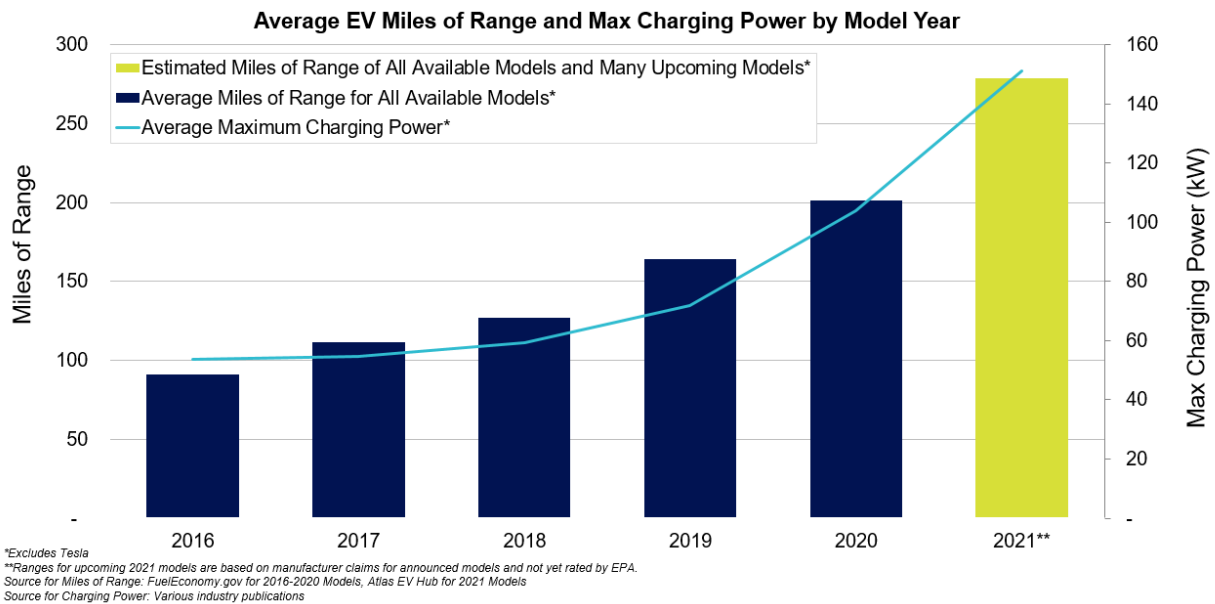
As battery costs fall, an increasing number of new BEV models are entering the U.S. market with longer range and faster charging capabilities to meet future EV owners’ preferences. According to the U.S. Department of Energy (DOE), the median U.S. Environmental Protection Agency (EPA) estimated range for all BEV models in 2020 is greater than 250 miles, with the highest available maximum range exceeding 400 miles (Figure 7), up from just 73 miles in 2013 (U.S. Department of Energy, 2021).

Figure 7: 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 8:).

Figure 8: 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, the researchers found 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. 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, DCFC 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.

National Outreach website submissions expressed a strong need for further expansion of charging in metro areas. Across the country, over 140 submissions highlighted needs for new DCFC stations in metro areas. The most common Cycle 1 and 2 metros suggested for additional investment in Cycle 3 were the New York-Northern New Jersey-Long Island region and Phoenix-Mesa-Glendale.

More than 150 submitters 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 adding stations along scenic byways to enable easier travel to national and state parks. Other submissions focused on increased connectivity in major travel corridors. The most common corridor mentioned by submitters was I-90 across northern states like Montana and South Dakota.

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 51 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. This feedback shows that increasing the accessibility 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, 2019). Electrify America’s experience from Cycle 1 and 2 demonstrates that these soft costs vary from region to region and market to market, and are significantly higher in some states (e.g., New Jersey.)

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).³ 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.”

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 GHG and particulate emissions. In 2018, the transportation sector accounted for the largest portion of U.S. GHG emissions (28%). Despite making up 10% of the vehicle miles traveled in 2018, MHD trucks were responsible for 23% of transportation emissions. In addition to GHG emissions, MHD vehicles are major sources of smog-forming pollutants, which can disproportionately affect disadvantaged communities located in areas with heavy truck traffic (EPA, 2019).

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,

³ ICCT notes that “this 44% could include those who can find charging off-shift near their home or at a workplace.”

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 a submission from The West Coast Clean Transit Corridor Initiative who represent stakeholders from Washington, Oregon, and California. They submitted their study “examining the potential electrification of shipping routes for medium and heavy-duty long-haul trucks reaching our borders with Mexico and Canada.”

4.3 Metro Charging (\$90 – \$130M)

4.3.1 Investment Overview

As evidenced by feedback from the National Outreach process (4.2.3, 4.2.5), metropolitan areas across the country need additional charging station investments in order to serve the continued growth in PEV adoption. To support this goal, Electrify America plans to invest \$90 - \$130 million in metropolitan area charging across the United States.

Within each metro area, 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 country. 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), a PEV policy metric, a utility metric, and a review of all submissions and feedback from our Cycle 3 National Outreach process.

Table 2: 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 Insights)
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 2 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, ZEV mandates and adoption standards, such as those set by the 10 states that signed the State ZEV Programs Memorandum of Understanding (MOU), are particularly effective in supporting ZEV growth.⁴ Similarly, Low Carbon Fuel Standard (LCFS) programs, such as those in California and Oregon, have 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

⁴ Signatory states include California, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, and Vermont.

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 949 submissions to our National Outreach website from stakeholders across the country. In addition, we have conducted dozens of conversations with stakeholders to capture overall market trends and specific investment opportunities across the country. 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 \$90 - \$130 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 \$300 million consistent with the Cycle 2 National 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.

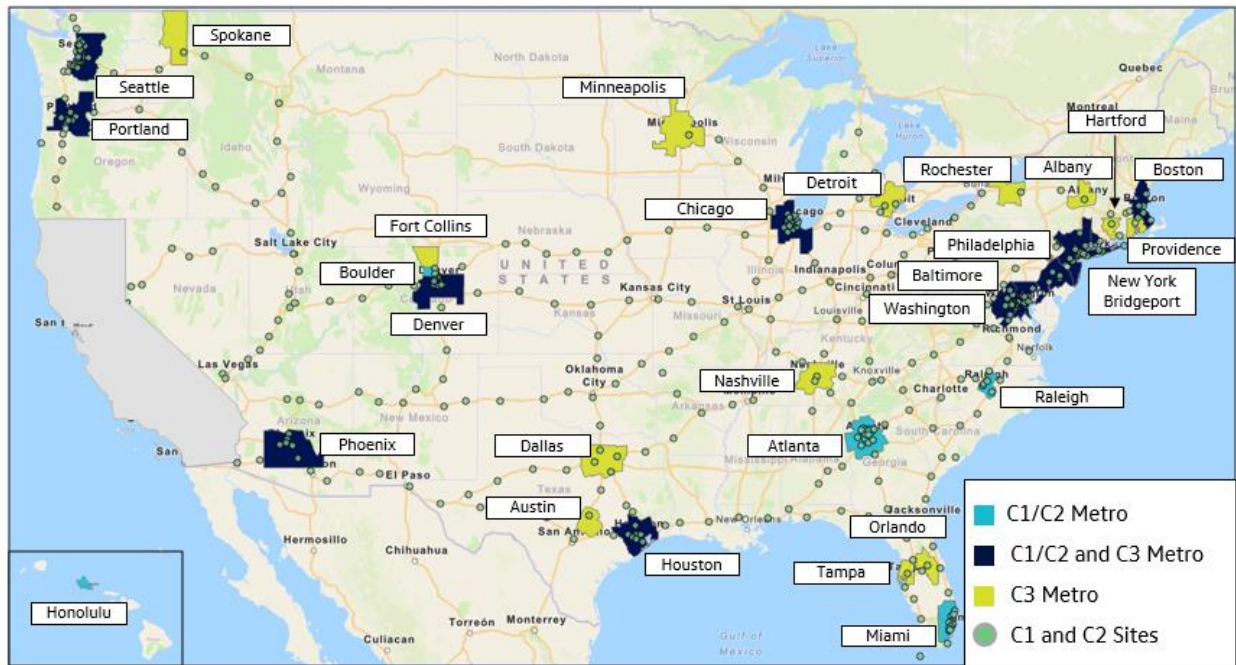
Based on the analysis described above, we plan to make the following investments in 25 metro areas in Cycle 3:

Table 3: National Metro Investments

Metro	Estimated Station Count ¹
DALLAS-FORT WORTH-ARLINGTON, TX	8-12
NEW YORK-NEWARK-JERSEY CITY, NY-NJ-PA	5-8
AUSTIN-ROUND ROCK-GEORGETOWN, TX	3-6
BOSTON-CAMBRIDGE-NEWTON, MA-NH	2-4
WASHINGTON-ARLINGTON-ALEXANDRIA, DC-VA-MD-WV	2-4
DENVER-AURORA-LAKEWOOD, CO	2-4
DETROIT-WARREN-DEARBORN, MI	2-4
MINNEAPOLIS-ST. PAUL-BLOOMINGTON, MN-WI	2-4
BALTIMORE-COLUMBIA-TOWSON, MD	1-3
SEATTLE-TACOMA-BELLEVUE, WA	1-3
BRIDGEPORT-STAMFORD-NORWALK, CT	1-3
CHICAGO-NAPERVILLE-ELGIN, IL-IN-WI	1-3
HARTFORD-EAST HARTFORD-MIDDLETOWN, CT	1-3
HOUSTON-THE WOODLANDS-SUGAR LAND, TX	1-3
NASHVILLE-DAVIDSON-MURFREESBORO-FRANKLIN, TN	1-3
ORLANDO-KISSIMMEE-SANFORD, FL	1-3
PHILADELPHIA-CAMDEN-WILMINGTON, PA-NJ-DE-MD	1-3
PHOENIX-MESA-SCOTTSDALE, AZ	1-3
PORTLAND-VANCOUVER-HILLSBORO, OR-WA	1-3
TAMPA-ST. PETERSBURG-CLEARWATER, FL	1-3
ALBANY-SCHENECTADY-TROY, NY	1-3
FORT COLLINS, CO	1-3
PROVIDENCE-WARWICK, RI-MA	1-3
ROCHESTER, NY	1-3
SPOKANE-SPOKANE VALLEY, WA	1-3
SUBTOTAL	40-80
Station Upgrades	15-20
TOTAL	55-100

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.

Figure 9: Cycle 3 National Metro Map



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 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 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 to meet business needs or regulatory requirements. These investments may

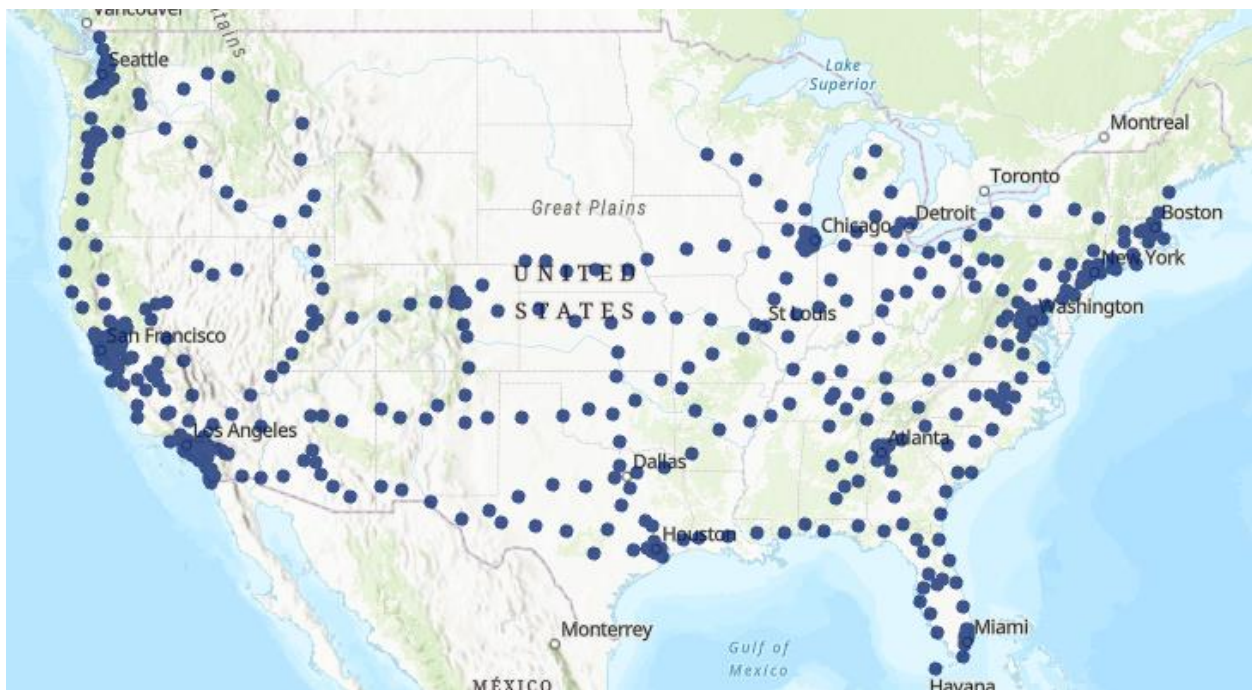
include, but are not limited to, adding additional dispensers, upgrading dispenser or overall site power, adding battery storage or renewable generation, or installing enhancements such as canopies for coverage from the weather or picnic tables.

4.4 Highway and Regional Route Charging (\$100 – \$120M)

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 nation (*Figure 10: Commissioned Sites*Figure 10)

*Figure 10: Commissioned Sites*⁵



As a part of Cycle 2, we are also building out routes to regional destinations to support long distance travel. In Cycle 3 we plan to spend \$100 – \$120 million to continue building out our highway network, both adding regionally significant corridors that enable Americans 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 EV drivers. Corridor stations provide drivers the freedom to travel to, and charge in, more parts of the country. Building comprehensive coverage is particularly important in helping single vehicle households, which also tend to be low and moderate income, drive electric (U.S. Department of Transportation, 2020).

⁵ Station map as of April 1, 2021

4.4.2 Investment Selection Methodology

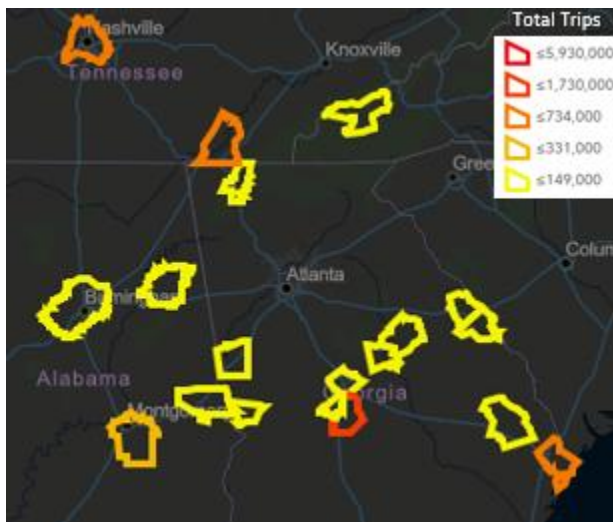
Electrify America considered two types of highway routes: major interstates that increase network connectivity, and regional routes that serve major metros.

To increase network connectivity, we used geospatial analysis of network gaps, average annual daily traffic (AADT), and stakeholder suggestions to identify major highway corridors that are currently not served by Electrify America. For example, I-90 and I-94 address current gaps across Montana, Wyoming, Minnesota, North Dakota and South Dakota, and I-20 bridges the gap between Dallas and Birmingham, AL. Building these routes will unlock long distance travel in these areas, as well as serve local communities that have not been able to connect to Electrify America’s network to date.

To identify and prioritize regional routes, Electrify America has taken a data-driven approach to identifying and prioritizing highway and regional routes for investment.

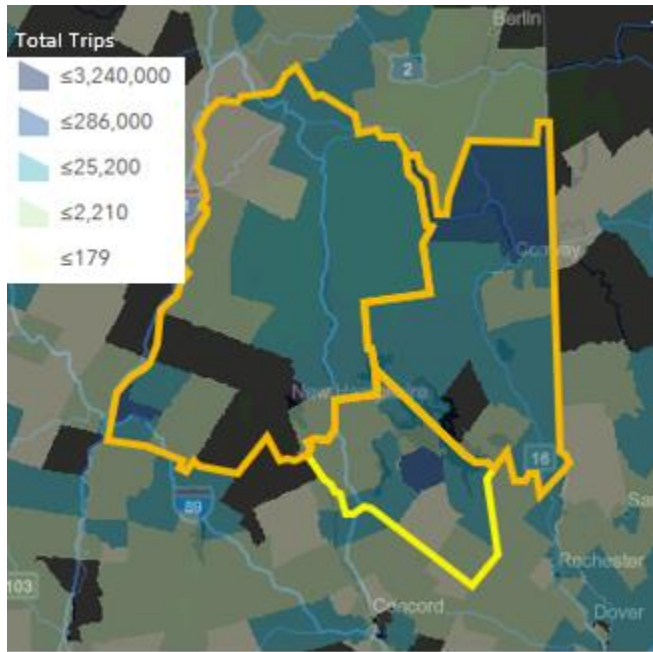
The first step in this process was to identify the counties and census tracts to which drivers travel from major metro areas throughout the United States. For each metro area in our dataset, we examined anonymized cell phone data with origins and destinations of all vehicle trips greater than 75 miles in length to identify the top 20 destination counties from each metro area. **Error! Reference source not found.** shows top destination counties of drivers in the Atlanta MSA.

Figure 11: Top Destination Counties from Atlanta, GA



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 12 shows destination census tracts of Grafton, Carroll, and Belknap Counties in New Hampshire, which are top destinations of Boston. Trips to this region are concentrated around recreational areas of Lake Winnepesaukee, White Mountains National Forest, and Mount Washington.

Figure 12: Top Destination Census Tracts within Grafton, Carroll, and Belknap Counties

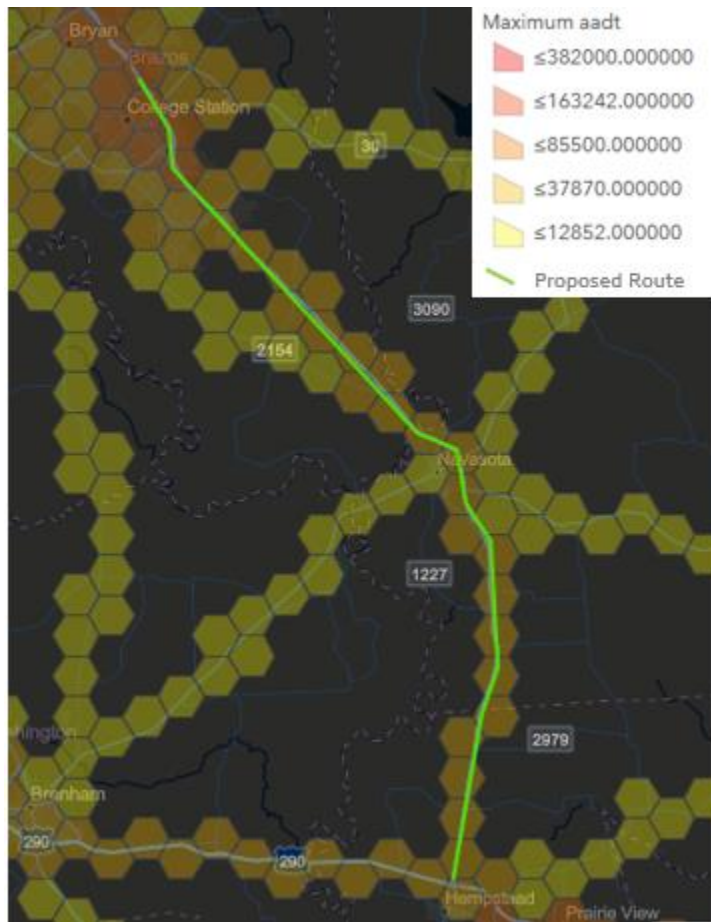


Next, we used ArcGIS mapping software to map the most likely route of travel from each origin metro to each top destination. We overlaid these routes with our planned station locations at the end of Cycle 2, and identified the ‘gaps’ in our existing network that need to be filled. In some cases, these 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 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 AADT along each of the routes and use this data to create a ranking and prioritization (Figure 13). 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 13: AADT along a Proposed Route from Houston to College Station, TX



4.4.3 Investment Details

Station Siting Details:

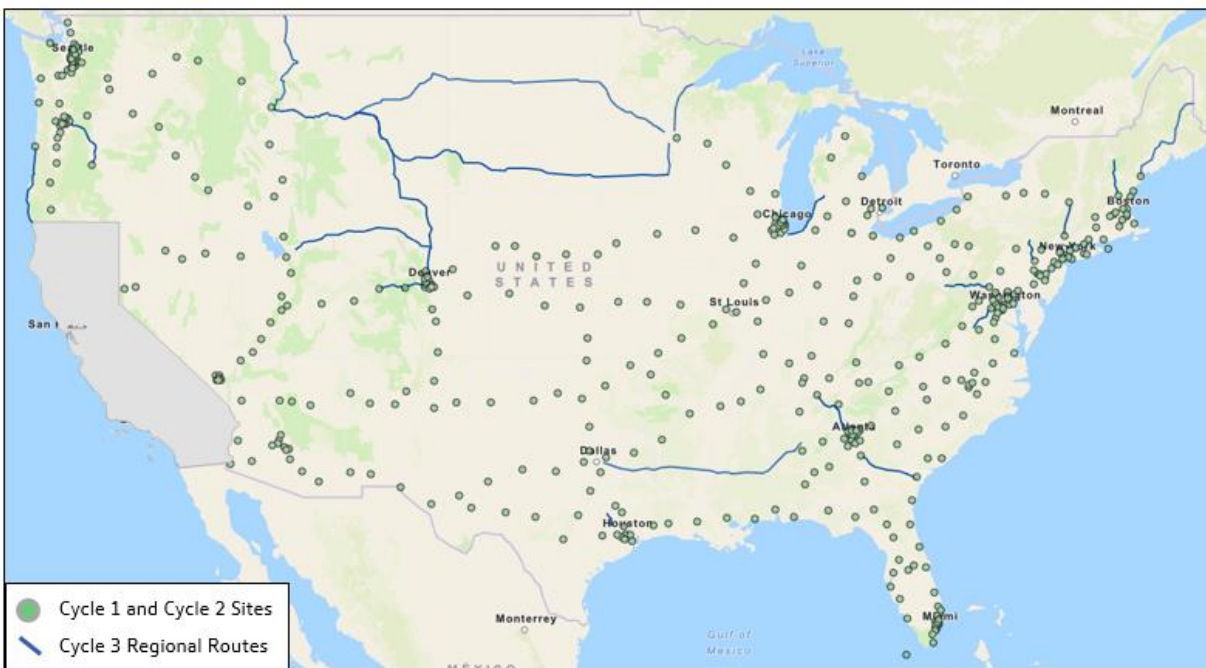
Electrify America plans to spend \$100 - \$120 million on regional route / highway investments as part of Cycle 3. These funds account for new stations built in Cycle 3, upgrades or enhancements to existing Electrify America stations, and ongoing operations for our network of stations built in Cycles 1 and 2. In addition, Electrify America anticipates that upon fulfilling its obligations to invest \$300 million consistent with the Cycle 2 National 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 4 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 4: National Highway Investments

Highway	Estimated Station Count
Albert Lea, MN to Butte, MT, I-90	11
Minneapolis, MN to Billings, MT, I-94	9
Dallas, TX to Birmingham, AL, I-20	6
Cheyenne, WY to Salt Lake City, UT, I-80	3
Chicago, IL to Grand Rapids, MI, I-94, I-196	3
Denver, CO to Billings, MT, I-25	3
Portland, ME to Holton, ME, I-95	3
Denver, CO to Glenwood Springs, CO, I-70	2
Houston, TX to College Station, TX, SR-6, US-290	2
Washington, DC to Morgantown, WV, I-70, I-68	2
Minneapolis, MN to Duluth, MN, I-35	2
Butte, MT to Great Falls, MT, I-15	2
Allentown, PA to Scranton, PA, I-476	1
Atlanta, GA to Nashville, TN, I-75/ I-24	1
Atlanta, GA to Savannah, GA, I-16	1
Boston, MA to White Mountains, I-93	1
New York, NY to Albany, NY, I-84	1
Newport, OR to Crescent City, CA, US-101	1
Portland, OR to Bend, OR, US-26, US-97	1
Rockland, NY to White Plains, NY, I-87 / I-287	1
Washington, DC to Charlottesville, VA, US-29	1
SUBTOTAL	57
Station Upgrades	15-20
TOTAL	72 – 77

Figure 14: Cycle 3 National Highway Map



Throughout Cycle 3, Electrify America will continue analyzing charging needs throughout the United States. 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 DCFC. 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.

Stations along highway corridors are each individually designed to meet site-specific needs, and all stations will be able to charge light-duty EVs using the CCS charging standard. Where appropriate and feasible, highway stations may be designed to accommodate charging by larger vehicles as well, including light duty trucks and trailers. Due to the size and maneuverability of these vehicles, Electrify America must take additional considerations to ensure the safety of both drivers and equipment.

Electrify America's ultra-fast chargers range from 150kW to 350kW of power 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 to meet business needs or regulatory requirements. 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 Hardware and Capacity Building (\$4 – \$8M)

4.5.1 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.

4.5.2 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, the decision of which tariff to choose and how to optimize operations around that tariff is complex.

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 power and grid services markets continue to evolve, these energy management tools enable Electrify America to ensure its stations are able to help modernize and increase the responsiveness of the 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 the National Outreach process for Cycle 4.

Table 5: Additional Investment Details

Investment Category	Estimated Spend (\$M) ¹
Energy Management	\$2-4
Infrastructure Planning	\$2-4
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.	

4.6 Other Unanticipated Investments

Throughout Cycle 3, Electrify America will continue to review submissions and meet with stakeholders on potential ZEV Infrastructure 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 EPA staff of any reallocation of Cycle 3 funding to new ZEV infrastructure use cases not included in the Cycle 3 ZEV Investment Plan.

4.7 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, negotiating 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 federal departments, state agencies, and local governments 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 the United States reaching President Biden's proposed goal of 500,000 charging stations by 2030. 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 EPA determines the Cycle 3 National ZEV Investment Plan 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 15 illustrates the preliminary planned rollout of Cycle 3 DCFC infrastructure to support metro, highway, and regional route charging investments. Table 6 illustrates the anticipated preliminary roll-out schedule for infrastructure stations in Cycle 3.

Figure 15: Cycle 3 Timeline

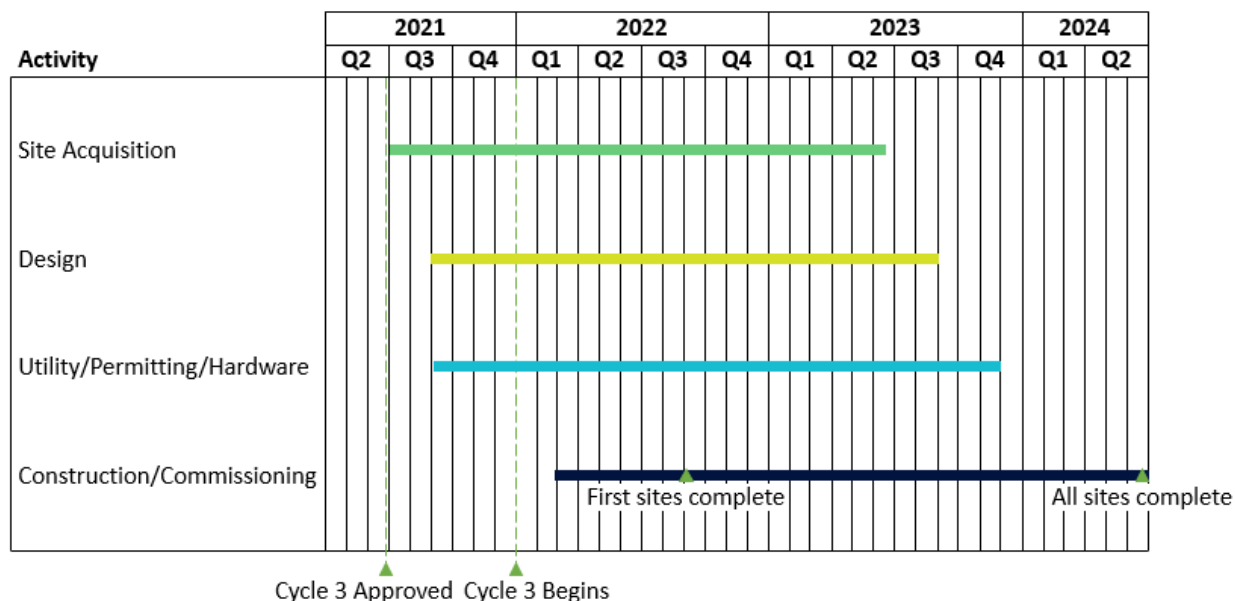


Table 6: Metro Community Charging and Regional Route and Highway Site Count

Quarter	Pre-Site Selection	In Development	Operational
Q2 2022	70-110	30-50	0-30
Q4 2022	40-80	30-50	30-60
Q2 2023	0-20	30-50	60-90
Q4 2023	0	30-50	90-120
Q2 2024	0	0	~160

Building off the relationships we fostered 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.

4.8 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 on ZEVs. 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 Customer Support Center handled 47,477 calls, a 79% increase from the call volume in 2019, and the average wait time to speak with a Charging Specialist was just five seconds. In 2020, the average call length was just under nine minutes. 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.

4.9 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.

In recent years, the automotive industry has converged on CCS as the non-proprietary standard of choice for vehicles in the U.S. Nissan, the last BEV manufacturer producing CHAdeMO vehicles for the North American market, has announced that the upcoming Ariya will use CCS charging (Goodwin, 2020). As sales of all new BEVs shift 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) accounted for just 9% of station usage in the first quarter of 2021, down from 15% in 2019, despite CHAdeMO chargers making up over 20% of all DCFC equipment at our stations. In addition, whereas historically a CHAdeMO adapter was the only way to fast charge Tesla vehicles outside of the Supercharger network, in late-2020 Setec Power released a CCS to Tesla adapter (Moloughney, 2020), thereby unlocking CCS chargers to interested Tesla drivers.

Through Cycles 1 and 2, Electrify America will have built over 800 CHAdeMO stations across the country. Together with nearly 5,000 chargers built by other networks, legacy CHAdeMO drivers have access to a robust charging network. At the time of writing, the ratio of CHAdeMO vehicles in operation to CHAdeMO DCFC is just 22:1. Given this, Electrify America will focus its Cycle 3 investment on the future of electrification and deploy CCS as the non-proprietary standard at our stations. This action helps to reinforce the automotive manufacturers' convergence on a single standard, reduces customer confusion, reduces capital and operating costs, and ultimately is expected to lead to increased EV adoption.

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.

Automotive Manufacturers That Have Adopted CCS

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

Electrify America supports use of 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 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 (~\$42M)

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

5.2.1.1 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.

However, to ensure these incentives have maximum impact, consumers need to know about them. Unfortunately, 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. Even in California, the nation’s most developed BEV market, a 2019 UC Davis study of consumers found that “Californians are largely unaware of the state’s efforts to dramatically increase ZEV adoption” (Hardman et al., 2019).

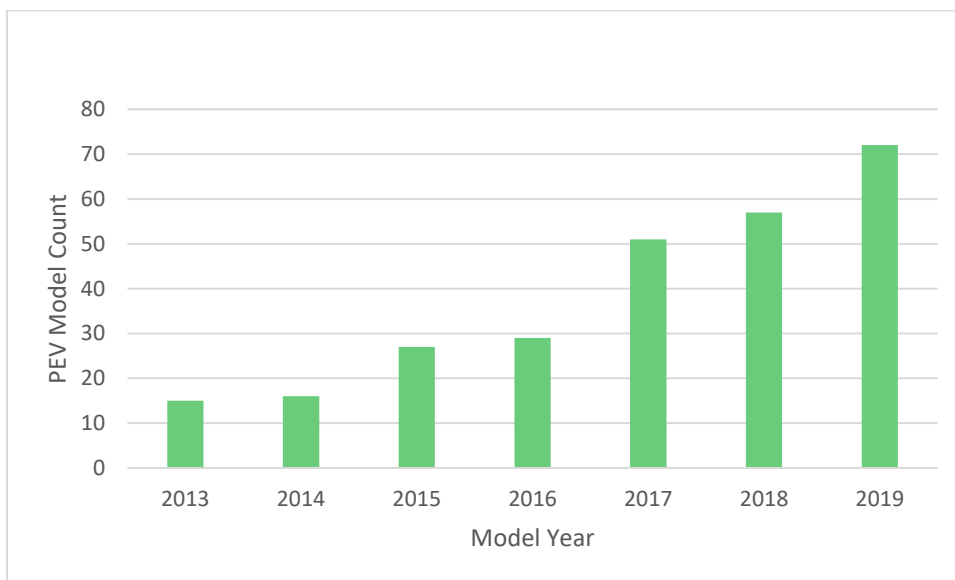
In our Brand Neutral Cycle 3 campaign planning, we are preparing for an influx in public interest regarding incentives and other key information about buying an EV. As policies change and new incentives are introduced, awareness campaigns are able to inform the public of these changes and share new opportunities.

5.1.1.2 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 16) (Alternative Fuels Data Center, 2020). As more vehicle models become available – particularly crossovers (CUVs), 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 16: PEV Model Availability by Model Year



5.1.1.3 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 BEVs have better acceleration than gasoline-powered cars, while almost as many (25%) believe that BEVs 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 them. 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 1,000 Americans on attitudes toward EVs 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

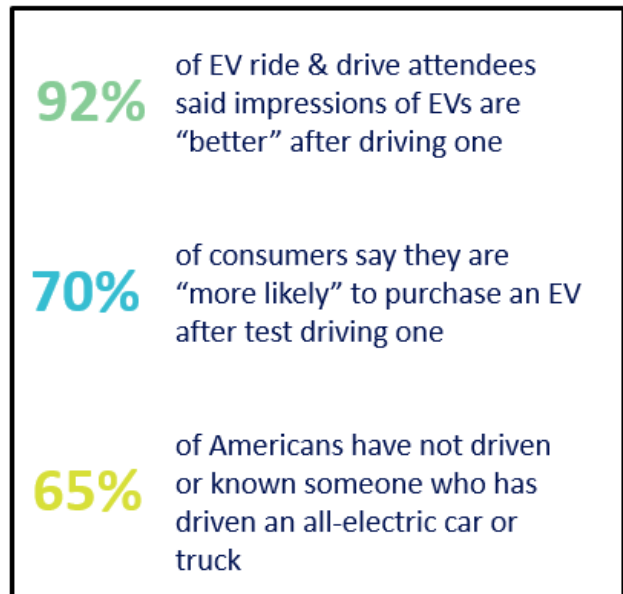
On consumer perceptions of affordability, MacInnis and Krosnick found 22% of Americans believe that driving EVs is more costly than driving gasoline-powered cars, and that a perceived higher cost of maintaining an EV was a predictor of purchasing reluctance (MacInnis et al., 2020).

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).

5.1.1.4 Access to ZEVs is critical to combat misconceptions

Many of the misconceptions about EVs can be addressed through marketing and communications, but providing consumers with access to PEVs is an equally essential strategy. 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 NREL (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 and 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 EV if they have previously taken a ride in an EV, as compared to those who have never ridden in one (Lyft, 2021B).⁶

Given the above data, we are prioritizing firsthand experience with ZEVs in both access investments and our brand-neutral education and awareness activities. While the COVID-19 pandemic has limited this activity since early 2020, we hope to conduct or sponsor more test-drive and ride and drive activities and support access to ZEVs in Cycle 3.

5.2.2 Insights on Branded Messaging

5.2.2.1 Current BEV owners lack understanding of how to best utilize public DCFC

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. ‘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.

⁶ Figure excludes riders who already own EVs

5.2.2.2 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

5.2.3.1 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.

5.2.3.2 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 (Amasesan, 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.

5.2.3.3 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.

5.2.3.4 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

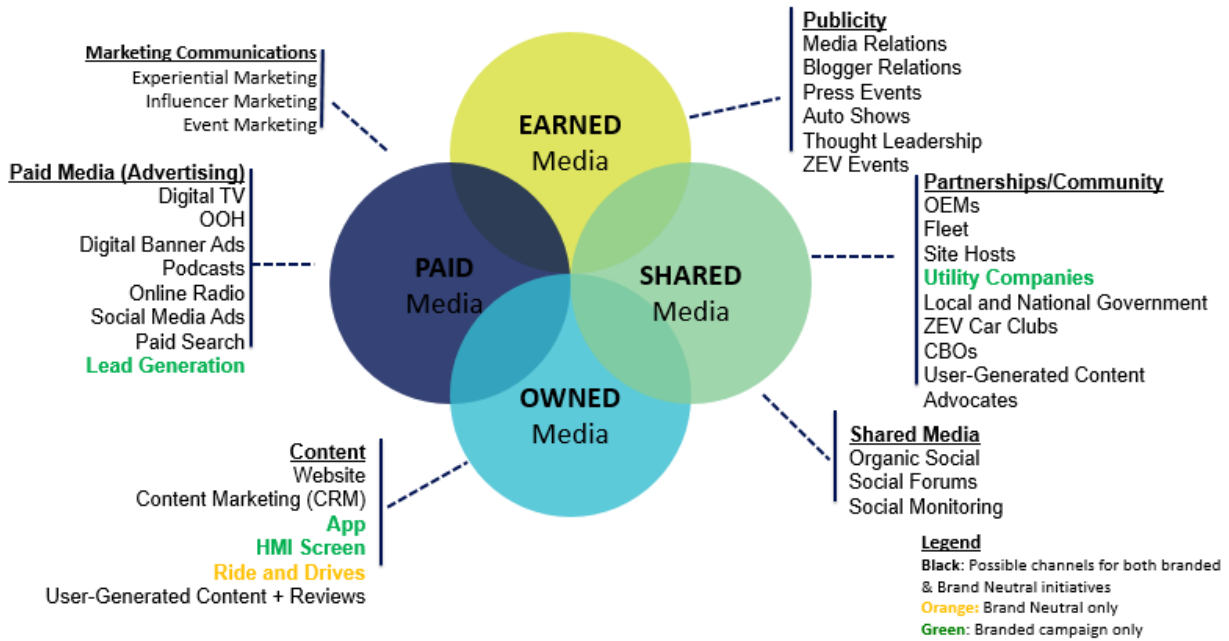
5.3.1 Marketing Framework

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 17: 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, Hurricane Dorian,⁷ 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 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

⁷ During Hurricane Dorian, Electrify America put chargers in emergency areas in free-vend mode to support access and driver safety

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, as well as 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 (~\$24.5M)

5.4.1 Brand Neutral Campaign: Strategy & Audience

Similar to Cycle 2, in Cycle 3 we intend to increase public awareness and interest in ZEVs through educational marketing 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).

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, and Training:** Electrify America will again support organizations that advance EV adoption, through solicitations, sponsorship, and memberships, particularly of activities that help target populations to access incentives. In addition, we will sponsor the development and execution of ZEV and ZEV infrastructure training programs to educate youth and workers on ZEV technology. Where feasible, Electrify America will seek to make all training materials publically available.

5.4.3 Brand Neutral Campaign: Media Channels

Electrify America leverages data from both our own media campaigns, as well as from third party work, to optimize our media spend and ensure the highest return for our investments. In Cycle 2, this data led

us to focus investment heavily in digital media, and given the data we are seeing at the time of writing, we anticipate Cycle 3 to have a similar digital focus.

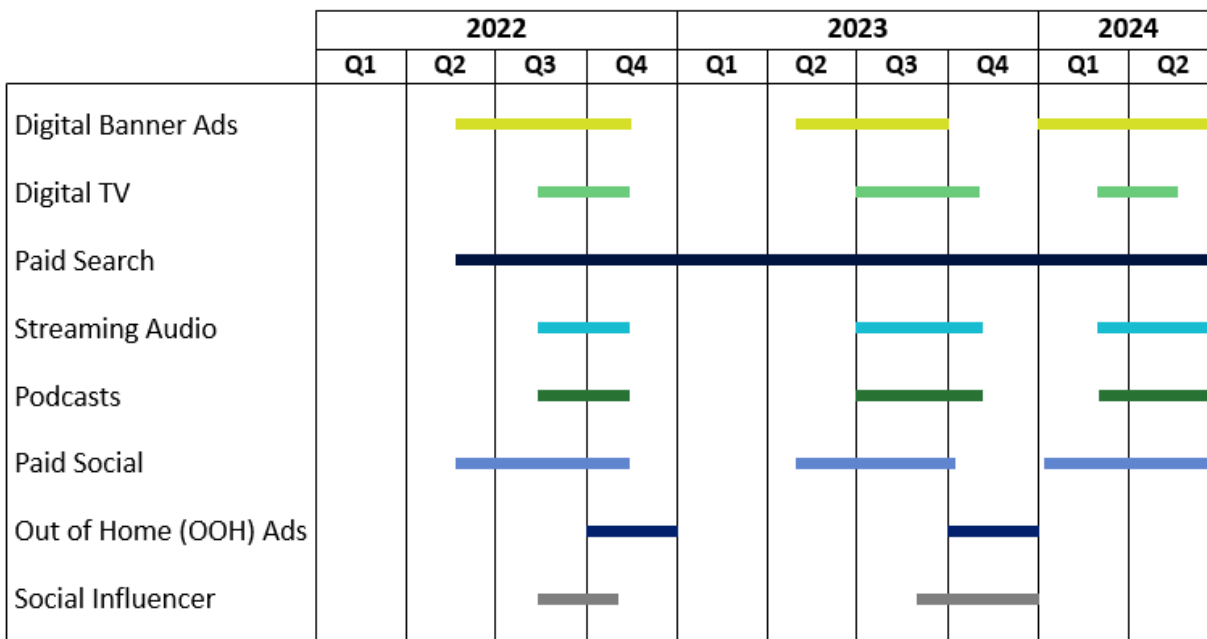
Within digital, we have a wide range of investment options including, but not limited to: paid social media banner ads, programmatic banner ads, streaming audio banner ads, paid search, native banner ads, video banner ads, and direct website digital banner ads. As the way online customers consume media evolves, Electrify America will innovate and deliver brand neutral content to our online target audience the way they want to engage online. We also plan to invest in supplementary non-digital media advertising including but not limited to: out of home ads, radio ads, TV ads, and highway signage to maximize our messaging reach.

5.4.4 Brand Neutral Campaign: Media Flight Plan

Electrify America’s Cycle 3 media strategy will be broken into three paid media flights with an omnichannel 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.⁸ Electrify America may make adjustments to maximize impact on ZEV adoption as necessary and appropriate during Cycle 3.

Figure 18: Cycle 3 Brand Neutral Sample Media Plan



⁸ 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.

5.4.5 Brand Neutral Campaign: Budget

For Cycle 3, Electrify America will invest \$24.5M in brand neutral education and awareness activities.

5.5 Access: Boosting ZEV Awareness and Adoption through Ride and Drives (~\$0.5M)

5.4.1 Access Campaign: Strategy & Audience

In Cycle 3, Electrify America plans to continue supporting ride and drive programs. As outlined in Section 5.2.1, providing access to ZEVs greatly increases a customer's perception of EVs and destigmatizes the barriers around ZEVs. As such, these programs are a reliable mechanism for driving ZEV adoption.

Based on our experience in previous cycles, working together with local organizations, community groups, and other non-profit organizations is the most effective way to engage target populations. These groups understand their community segments and their concerns around ZEV adoption, and are already working to bring ZEVs to underrepresented markets. We will continue to build ties to a diversity of organizations dedicated to ZEV education, and work alongside these partners to bring ride and drives to the American public.

5.4.2 Access Campaign: Budget

Electrify America plans to spend \$0.5M on ride and drive programs in Cycle 3.

In the event that Electrify America is unable to fund, or chooses not to fund, ride and drives at the specified budget amount, Electrify America will redirect the respective funds to brand neutral education and awareness activities.

5.6 Branded Campaign: Boosting Station Utilization through Branded Marketing (\$17M)

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.

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 those of tomorrow as well.

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 & 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. 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. Certification of Activities

Electrify America certifies that none of the activities described in the ZEV investment plan described above was/is:

- approved by the Board of Management prior to September 18, 2015
- required by a contract entered prior to the date of lodging of the Partial Consent Decree
- a part of a joint effort with other automobile manufacturers to create ZEV infrastructure
- required to be performed by any federal, state, or local law, or anticipate will be required to perform during the planned 30-month period

II. 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.

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.

III. Request for Exception to Education and Awareness Requirement

According to Section 2.5.6 of Appendix C, “Unless otherwise agreed to in writing by EPA, Settling Defendants shall spend no less than \$25 million and no more than \$50 million on such activities during each 30-month investment cycle....” For this Cycle 3 National ZEV Investment Plan, Electrify America formally requests an exception to this clause that would allow \$24.5 million to be spent on Education and Awareness activities and \$0.5 million to be spent on ride and drive events.

Under Section 2.5.5 of Appendix C, ‘Ride and Drive’ events are classified as Access investments. However, these events are highly educational in nature and are shown to have a high impact on ZEV awareness. As a result, Electrify America requests this amendment to allow for the funding of National ride and drive events.

In the event that Electrify America is unable to fund, or chooses not to fund, ride and drives at the specified budget amount, Electrify America will redirect the respective funds to brand neutral education and awareness activities, such that the \$25M minimum spend is honored.