

State of California  
AIR RESOURCES BOARD

**STAFF ASSESSMENT OF ELECTRIFY AMERICA'S  
CYCLE 2 ZERO EMISSION VEHICLE INVESTMENT PLAN**

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This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

## EXECUTIVE SUMMARY

On October 3, 2018, Volkswagen (VW) subsidiary Electrify America submitted its proposed Cycle 2 California Zero Emission Vehicle (ZEV) Investment Plan (Cycle 2 Plan) to the California Air Resources Board (CARB or Board). This CARB staff assessment evaluates how well the proposed Cycle 2 Plan aligns with the requirements of Appendix C of the 2.0-liter Consent Decree (the ZEV Investment Commitment), as well as with the Electrify America commitments made in response to California Senate Bill (SB) 92 (June 27, 2017), codified at Health and Safety Code section 39614, and Board Resolution 17-23 (approved at the July 27, 2017, Board hearing).

As background, under the ZEV Investment Commitment, Electrify America must invest \$800 million in California over 10 years (in four consecutive \$200 million 30-month cycles) to support increased ZEV availability and use. There are four areas of allowable investments: ZEV infrastructure (including the development and maintenance of ZEV charging stations), public awareness, increasing ZEV access, and the establishment of a “Green City” with transportation electrification projects such as car sharing and zero-emission freight.

Electrify America’s proposed Cycle 2 Plan identifies three investment areas: charging infrastructure; public education, awareness and outreach activities; and efforts to drive station utilization. In aggregate, these investments are designed both to demonstrate the utility of ZEVs and increase their use. The financial breakdown is as follows:

- Approximately \$153 million on fueling infrastructure (including operations and maintenance)
  - \$95-115 million for metropolitan areas,
  - \$25-30 million for highways and regional routes,
  - \$8-12 million for residential Level 2 (240 volt) charging,
  - \$4-6 million for electrified transit buses,
  - Up to \$5 million for renewable generation,
  - \$2-4 million for autonomous vehicle charging, and
  - Approximately \$2 million for rural Level 2 charging;
- Approximately \$17 million for ZEV awareness and education;
- Approximately \$10 million for Electrify America’s efforts to drive station utilization; and
- \$20 million for allowable operational expenses.

In the proposed Cycle 2 Plan, Electrify America continues its commitment to strive to achieve a goal of at least 35 percent investment in low-income and disadvantaged communities. The proposed Cycle 2 Plan would invest in three new metropolitan areas (Riverside-San Bernardino, Santa Cruz-Watsonville, and Santa Rosa) and three rural areas (the Central, Imperial, and Coachella Valleys) with high concentrations of low-income and disadvantaged communities. Electrify America’s proposed Cycle 2 Plan also contains new investment types that benefit low-income and disadvantaged communities:

- Level 2 (240 volt) “no-money down” residential chargers for single-family residential dwellings, leading to lower costs of ZEV ownership;
- Level 2 chargers for multi-unit dwellings (MUD) where high numbers of shared mobility drivers (for example, taxi, Uber, and Lyft) reside; and
- Direct current fast charging infrastructure for electrified transit buses.

CARB staff posted the proposed Cycle 2 Plan for public review and comment on October 3, 2018. The posting initiated a public comment period that was open through October 26, 2018. CARB staff has reviewed the proposed Cycle 2 Plan and public comments, and has determined that the proposed Cycle 2 Plan conforms with the requirements of the 2.0-liter Consent Decree and the Electrify America commitments made in response to SB 92 and Board Resolution 17-23. CARB staff recommends that the Board approve the proposed Cycle 2 Plan.

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## Table of Acronyms

|               |  |
|---------------|--|
| BEV .....     | Battery Electric Vehicle                               |
| CARB .....    | California Air Resources Board or the Board            |
| CEC .....     | California Energy Commission                           |
| CPUC .....    | California Public Utilities Commission                 |
| EVSE .....    | Electric Vehicle Service Equipment                     |
| EVSP .....    | Electric Vehicle Service Provider                      |
| FCEV .....    | Fuel Cell Electric Vehicle                             |
| GO-Biz .....  | Governor's Office of Business and Economic Development |
| NOx .....     | Oxides of Nitrogen                                     |
| PEV .....     | Plug-in Electric Vehicle (includes BEVs and PHEVs)     |
| PHEV .....    | Plug-in Hybrid Electric Vehicle                        |
| U.S. EPA..... | United States Environmental Protection Agency          |
| VW.....       | Volkswagen   |
| ZEV .....     | Zero Emission Vehicle                                  |

## **I. The ZEV Investment Commitment**

### **A. The ZEV Investment Commitment**

Under the ZEV Investment Commitment, Electrify America must invest \$800 million in California over 10 years (in four consecutive \$200 million 30-month cycles). There are four areas of allowable investments: ZEV infrastructure (including the development and maintenance of ZEV charging stations), public awareness, increasing ZEV access, and the establishment of a “Green City” with emphasis on transportation electrification projects like car sharing and zero-emission freight vehicles.

### **B. The Cycle 2 ZEV Investment Plan**

On October 3, 2018, Electrify America submitted its proposed \$200 million Cycle 2 Plan to CARB. This staff assessment evaluates how well the proposed Cycle 2 Plan aligns with the requirements of the ZEV Investment Commitment, as well as with the Electrify America commitments made in response to SB 92 and Board Resolution 17-23.

Electrify America’s proposed Cycle 2 Plan identifies three investment areas: charging infrastructure; ZEV awareness and education, and efforts to drive station utilization. In aggregate, the investments described below are designed both to demonstrate the utility of ZEVs and increase their use.

#### **~ \$153 million – Fueling infrastructure (including operations/maintenance)**

##### *Metropolitan community charging – \$95-115 million*

Electrify America’s first spending priority is metropolitan community direct current fast chargers (DCFC), because this is where the vast majority of BEVs will be sold, where the vast majority of miles will be driven, and where the majority of public charging will happen.<sup>1</sup> Positioning this charging infrastructure in metropolitan areas will also better support California’s transition away from personal vehicle use/ownership toward shared mobility options like taxis and transportation network companies like Uber and Lyft.

Based on assessments of the infrastructure supply-demand gap and the relative effectiveness of the existing PEV-related policies in California metropolitan communities,<sup>2</sup> Electrify America identified nine metropolitan communities for Cycle 2 charging investments. Electrify America states that the identified communities represent approximately 80 percent of California’s population, and are projected to account for 89% of the 2022 BEV population. In addition to the six metropolitan

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<sup>1</sup> All statements given are from Electrify America’s Plan and do not reflect CARB positions or opinions.

<sup>2</sup> Electrify America used the Plug-In Electric Vehicle (PEV) Policy Tool developed by the National Association of State Energy Officials to evaluate metropolitan communities’ PEV-related policies.

communities identified for investment in Cycle 1<sup>3</sup>, Electrify America's Cycle 2 Plan identified the following metropolitan communities for investment: Riverside-San Bernardino, Santa Cruz-Watsonville, and Santa Rosa. Electrify America projects that the Cycle 2 investment could yield 65-85 more stations in the nine metropolitan communities, with each station having an average of 5 DCFCs.

#### *Highway and regional route charging – \$25-30 million*

Electrify America's Cycle 2 Plan increases charging density along those highway routes selected in Cycle 1, where warranted by anticipated growth in the PEV population. It also identifies new regional corridors for investment. Investment in these regional corridors is supported by the fact that nearly 80 percent of all long distance trips are within 300 miles of home. Together, these highway and regional route investments provide infrastructure support where both the PEV population and the PEV vehicle miles traveled dictate. Electrify America projects this investment to yield 15-19 more stations, with each station having an average of 4 DCFC.

#### *Residential Level 2 (240 volt) charging – \$8-12 million*

While more than 80 percent of PEV charging happens at home, there are instances where the incremental additional cost of residential charging and/or the complexity of identifying and applying for residential charging infrastructure incentives may be a deterrent to PEV adoption. In recognition of this impediment to adoption, Electrify America's Cycle 2 Plan budgets for 2,500-3,300 Level 2 home chargers (inclusive of installation). With customer consent, these chargers would allow charging timing and power to be adjusted in high-demand periods (demand response-capable). Electric utilities pay compensation for this ability, and this income will be shared with participating drivers. In addition to deploying chargers, Electrify America also proposes to: (1) build a user-friendly web tool to locate existing incentives, and (2) integrate it with One-Stop-Shop tools targeted toward low-income car buyers.

#### *Transit bus charging – \$4-6 million*

Electrify America will work with transit agencies and bus fleet operators to identify opportunities to install charging infrastructure, thus promoting ZEV adoption in this transportation arena while developing a long-term business (revenue) model for Electrify America.

#### *Renewable generation – Up to \$5 million*

Electrify America will look to install renewable generation at select sites. The benefits include decreased upstream emissions from the electricity used in PEVs, improved

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<sup>3</sup> In Cycle 1, Electrify America selected the following metropolitan communities for investment: Fresno, Los Angeles-Long Beach-Anaheim, Sacramento-Roseville-Arden-Arcade, San Diego, San Francisco-Oakland-Hayward, and San Jose-Sunnyvale-Santa Clara.



customer experience (solar canopies can shelter drivers from both rain and sun), and greater economic sustainability, as electricity costs can account for over 40 percent of DCFC operating costs. Electrify America expects approximately 1-2 Megawatts of renewable generation to be installed, resulting in approximately 1,600-3,800 Gigawatt-hours of electricity being produced annually.

*Autonomous vehicle charging – \$2-4 million*

This investment will see Electrify America partner with shared mobility providers using autonomous PEVs to place two stations to facilitate fueling the coming generation of autonomous PEVs.

*Rural Level 2 charging – Approximately \$2 million*

Electrify America expects its highway and regional infrastructure investments to provide connectivity to rural areas that have historically been underserved by charging infrastructure. But they additionally propose this \$2 million pilot program to invest in 35-50 Level 2 charging station sites (with each site having an average of 5 dispensers) in California's rural areas, including the Central, Imperial, and Coachella Valleys. The pilot program will provide Electrify America learnings on a potentially sustainable long-term business model to deploy Level 2 charging in rural and underserved communities.

**~ \$17 million – ZEV awareness and education**

In Cycle 2, Electrify America will continue to use traditional and social media to increase public awareness of ZEVs and their benefits, emphasizing the: (1) performance and comfort characteristics that drivers say they want, (2) range confidence (including the range of new vehicles and the convenience of public charging infrastructure), and (3) diversity of vehicle choice. As awareness levels increase, Electrify America will directly target marketing at this ZEV-aware audience, using ride and drive events and experience centers to promote even stronger ZEV consideration.

**~ \$10 million – Efforts to drive station utilization**

Electrify America will use marketing to boost station utilization. Messaging will communicate, for each charger, charger location, charging speed, acceptable payment methods, and nearby conveniences (amenities). It will also communicate affordability (subscription plans and automaker bundling).

**~ \$20 million – Allowable operational expenses**

### Disadvantaged community investment

The proposed Cycle 2 Plan highlights Electrify America's commitment to the 35 percent disadvantaged and low-income communities spending goal (for both infrastructure and education and awareness) in SB 92 and Board Resolution 17-23.

### Infrastructure investment

Electrify America's Cycle 2 Plan proposes to invest in three new metropolitan communities (Riverside-San Bernardino, Santa Cruz-Watsonville, and Santa Rosa) and three rural areas (the Central, Imperial, and Coachella Valleys) with high concentrations of low-income and disadvantaged communities. The Plan also proposes new investments that are expected to benefit low-income and disadvantaged communities:

- Level 2 (240 volt) "no-money down" residential chargers for single-family residential dwellings, portending a lower cost of ZEV ownership;
- An online incentive tool, which will be integrated with 'One-Stop-Shop' tools designed for low-income car buyers, that will make it easier for drivers to identify available incentives;
- Level 2 chargers for MUDs where high numbers of shared mobility drivers (for example, taxi, Uber, and Lyft) reside; and
- DCFC for electrified transit buses that offer mobility to low-income populations that may not be able to afford ZEVs.

### Education and awareness investment

Electrify America's Cycle 2 Plan proposes to dedicate \$2 to \$3 million to support programs offered by organizations with a track record of particular credibility and effectiveness in low-income and disadvantaged communities, to build awareness of ZEVs. Electrify America commits to strive to ensure that 35 percent of education and awareness media investments target low-income and disadvantaged communities.

### Hydrogen investment

Electrify America received 17 hydrogen submissions this year via their National Outreach website. They examined opportunities in both hydrogen production and retailing, for both light- and heavy-duty usage, and had conversations with the proposal submitters, but did not receive specific investment proposals and were not able to identify an investment opportunity that could be made during the Cycle 2 investment window that they felt would lead to a sustainable business model. Electrify America will continue to accept investment opportunities in hydrogen fueling, and, if provided a creditable and sustainable investment, will investigate it to determine its suitability for future investment consideration.

## **II. The Cycle 2 Development Process**

### **A. Electrify America's Outreach Efforts**

Electrify America, over the course of more than a year leading up to the release of the proposed Cycle 2 Plan:

- Engaged with advocacy groups, automakers, charging infrastructure providers, utilities, state and local government agencies, and academics. Stakeholder engagement took the form of community meetings, webinars, workshops, and consultations with academic experts; and
- Reviewed 700 submissions made to the National Outreach website (174 were from California) between January 2018 and late September 2018. The request for input through the National Outreach website solicited information on charging station locations, community ZEV infrastructure plans, state and local policies designed to increase ZEV adoption, the approach to brand-neutral education and appropriate events, and feedback on methodologies used in the Cycle 1 Plan.

### **B. CARB Public Process**

Prior to approval of the Cycle 1 Plan, CARB committed to an extensive public process to inform decision-making on, implementation of, and oversight of Electrify America's ZEV Investment Plans. From that process, which included an early workshop, the release of a Guidance Document<sup>4</sup>, and three Board meetings,<sup>5</sup> CARB solidified reporting and disadvantaged community spending commitments.

Since that time, Electrify America has met with CARB staff on a monthly basis to discuss the implementation status of the Cycle 1 Plan and content for a proposed Cycle 2 Plan. Electrify America has also provided written quarterly update reports and submitted its first annual report on April 30, 2018.

#### Cycle 2 Plan submittal and Board meeting

On October 3, 2018, Electrify America submitted its proposed Cycle 2 Plan to CARB. That same day, CARB staff posted the proposed Cycle 2 Plan for public review and comment. The posting initiated a public comment period, which ended on October 26, 2018.

CARB staff will summarize the proposed Cycle 2 Plan and this assessment at the November 15/16, 2018, Board hearing. Prior to deciding whether to approve or disapprove, in whole or in part, the Cycle 2 Plan, the Board will receive public

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<sup>4</sup> California Air Resources Board's Guidance to Volkswagen on First 30 Month Electric Vehicle Infrastructure Investment Plan of the 2.0 Liter Diesel Engine Partial Consent Decree Settlement, February 10, 2017. ([https://www.arb.ca.gov/msprog/vw\\_info/vsi/vw-zevinvest/documents/carb\\_guidance\\_021017.pdf](https://www.arb.ca.gov/msprog/vw_info/vsi/vw-zevinvest/documents/carb_guidance_021017.pdf))

<sup>5</sup> On December 8, 2016, March 24, 2017, and July 27, 2017.

comments. A Public Agenda for the Board hearing, including the exact date, time, and location, will be released at least 10 days before the hearing, including via email to the vw-zevinvest listserv, for which you may sign up at [https://public.govdelivery.com/accounts/CARB/subscriber/new?topic\\_id=vw-zevinvest](https://public.govdelivery.com/accounts/CARB/subscriber/new?topic_id=vw-zevinvest).

### III. Assessment of the proposed Cycle 2 Plan

Section I.B. described the content of the proposed Cycle 2 Plan. This section (Table 1) assesses how well the proposed Cycle 2 Plan content responds to the requirements of the ZEV Investment Commitment, and is consistent with SB 92 and the Board Resolution 17-23.

**Table 1**

**Proposed Cycle 2 Plan Alignment with the Requirements of the ZEV Investment Commitment, SB 92, and Board Resolution 17-23**

| Requirement   | Comments   |
|---|--|
| Plan includes description of all investments<br>App C, § 3.3.2.1  | Plan meets requirement<br><br>Level of detail in Plan is acceptable at this stage<br><br>Sections 3,4,5  |
| Include description of how each investment makes progress toward and/or meets one or more of the goals identified<br>App C, § 3.3.2.2       | Plan meets requirement<br><br>Investments are organized by goal category<br><br>Sections 3,4,5   |
| That ZEV Awareness programs are automobile brand neutral<br>App C, § 3.3.2.6 & 2.5.6  | Plan meets requirement<br><br>Electrify America will present a variety of ZEVs from different automakers in their ZEV Awareness program<br><br>Section 4.2   |
| Complementary and Additional: Investments should not duplicate efforts by others already in the works<br>App C, § preamble, 1.10.1, 3.3.2.2 | Plan meets requirement <ul style="list-style-type: none"> <li>• Efforts to innovate beyond other current and planned installations</li> <li>• Plan incorporates current vehicle and infrastructure market (section 1.3) when choosing locations/performing gap analysis</li> <li>• Electrify America continues to coordinate with GO-Biz, Caltrans, CEC, and CPUC</li> </ul> |

| Requirement  | Comments   |
|--|--|
| <p>Business Competition and Conduct Considerations – Includes Self-sustaining Model<br/>App C, §§ 3.3.2., 3.3.2.11., preamble, 1.10.1, 3.3.2.2</p>   | <p>Plan meets requirement</p> <ul style="list-style-type: none"> <li>• CARB staff estimates that the investment represents less than one percent of California’s 2030 infrastructure needs</li> <li>• Electrify America is contracting with many existing EV charging infrastructure businesses, and prioritizing decisions to ensure investments are sustained beyond the 10-year ZEV Investment Commitment obligation</li> </ul>   |
| <p>EV Infrastructure should include MUD, Workplace, Public Areas, and Long-range, and be interoperable<br/>App C, § 3.3.2.5.</p>   | <p>Plan meets requirement</p> <p>This cycle also includes the addition of chargers for transit and shuttle buses, residences, shared mobility companies, rural communities, and autonomous vehicles</p> <p>Section 3</p>   |
| <p>Transformational<br/>App C, §§ preamble, 1.10.1, 3.3.2.2</p>  | <p>Plan meets requirement</p> <ul style="list-style-type: none"> <li>• Investments are focused in chosen metropolitan areas, not scattered, and will enable EV adoption; addition of 3 new metro areas (chapter 3)</li> <li>• Installed infrastructure will be future-proofed investments</li> <li>• Awareness campaigns are the largest and most far-reaching to date</li> </ul>  |
| <p>Prioritize Underserved communities, including Disadvantaged, Low-income, and Disproportionally Impacted Communities<br/>App C, §§ 3.3.2.1, 3.3.2.5, 1.10.3, 3.3.2.11, 1.10.1, 3.3.2.2</p> | <p>Plan meets requirement</p> <ul style="list-style-type: none"> <li>• Will strive to ensure that at least 35 percent of the investments are in disadvantaged or low-income communities</li> <li>• \$2-3 million from Awareness campaign is being invested in new partnerships with entities that have access to, and credibility with, disadvantaged and low-income communities (outreach will be in languages other than English where appropriate)</li> <li>• Rural Community Charging is being added (\$2 million)</li> <li>• Electrify America will outreach to their contractors with a voluntary survey for the number of minority-, women-, veteran-owned businesses and suppliers, and will report to CARB on their participation.</li> </ul> |

| Requirement   | Comments   |
|---|--|
| <p>Hydrogen Refueling Infrastructure<br/>App C, §§ 1.9, 1.10.2.</p> <p>Must include an evaluation of heavy-duty hydrogen opportunities in future Plan submittals to CARB</p>  | <p>Plan meets requirement</p> <ul style="list-style-type: none"> <li>• Electrify America will revisit Hydrogen infrastructure investments going forward, and remains open to new opportunities in hydrogen that may arise</li> <li>• Electrify America assessed the feasibility or profitability of hydrogen investments for both heavy and light-duty applications</li> </ul> |
| <p>Include estimated schedule for implementing each investment, in 6-month intervals<br/>App C, § 3.3.2.3</p>   | <p>Plan meets requirement</p> <ul style="list-style-type: none"> <li>• Infrastructure investments are detailed by quarter of the year</li> <li>• Awareness programs are shown in six-month intervals of time</li> </ul>  |
| <p>Include a projection of anticipated Creditable Costs associated with each investment, on an itemized basis, with costs broken down into at least 12 categories<br/>App C, § 3.3.2.4</p>  | <p>Plan meets requirement</p> <p>Electrify America provided an overview of Creditable Costs for Cycle 2 investments</p>  |
| <p>Include EV chargers' estimated geographic regions and types (which must include a variety of cities, metro-areas, types of locations), quantities of sites and chargers, costs per site, types of connectors, date of completion, operating model and utilization stats to be collected<br/>App C, § 3.3.2.5</p> | <p>Plan meets requirement</p> <p>Electrify America provided an estimate of the number of chargers and timeline of deployment for different use cases in there Cycle 2 Plan, along with 3 additional metropolitan regions</p> <p>Section 3.8</p>  |
| <p>Plan to address EV charging maintenance, toll-free number marked with live operator under VW control<br/>App C, § 3.3.2.5</p>  | <p>Plan meets requirement</p> <p>DCFC stations will have 24/7 toll-free number, L2 stations will have toll-free number</p> <p>Section 3.9</p>  |
| <p>All EV Infrastructure should be able to service all non-proprietary connectors, may have to use multiple connectors or charging protocols and approaches that anticipate evolving standards and technologies.<br/>App C, § 3.3.2.5</p>   | <p>Plan meets requirement</p> <p>Electrify America stations will have non-proprietary connectors, allowing for a variety of different vehicles to charge</p> <p>Section 3.10</p>   |

| Requirement  | Comments  |
|--|---|
| <p>A certification ensuring generally that none of the investments are otherwise already contained within VW’s plan App C, § 3.3.2.7</p>   | <p>Plan meets requirement</p> <p>Electrify America provided, within their Certification of Activities, authenticity of the Plan</p> <p>Appendix 1</p>   |
| <p>An explanation that all the ZEV investments are not concentrated in one area App C, § 3.3.2.8</p>   | <p>Plan meets requirement</p> <p>Investments span most of the State, with community investment in nine major metropolitan areas across the State</p> <p>Section 3.1.3</p>   |
| <p>ZEV investments should not include research or development App C, § 3.3.2.9</p>   | <p>Plan meets requirement</p>   |
| <p>Description of how VW will monitor and maintain each ZEV investment App C, § 3.3.2.10</p>   | <p>Plan meets requirement</p> <p>Electrify will monitor and maintain each ZEV investment by reviewing utilization of stations to assist in future investment decisions</p> <p>Section 3</p>   |
| <p>Invest in second Green City 3.0L Consent Decree</p>   | <p>CARB staff urges Electrify America to invest in the second Green City in Cycle 3</p>   |
| <p>Include job creation, and job training estimations (especially in terms of minority-, woman-, and veteran-owned businesses) as part of the criteria for awarding contracts under future cycles, and explain the process for doing so in future Plan submittals to ARB, and the Board encourages Electrify America to provide hiring opportunities for qualified residents of disadvantaged communities;</p> | <p>Plan meets requirement</p> <ul style="list-style-type: none"> <li>• For vendor RFP’s, language asks bidders to include information on minority-, woman-, and veteran-owned business employee representation</li> <li>• Plan discusses attendance at Diversity Supplier Tradeshow in California, where minority-, women-, and veteran-owned businesses are provided an opportunity to pitch their abilities to Electrify America’s California-based vendors</li> </ul> <p>Section 6</p> |

| Requirement  | Comments   |
|--|--|
| Implement its projects over the ten-year period in a transparent manner that allows for public input | <p>Plan meets the requirement</p> <p>Electrify America maintains an open web portal for submissions of comments, proposals, and recommendations</p> <p>The Electrify America team has traveled extensively to engage with governments, utilities, companies, and special interest groups.</p> <p>Section 1</p> |

#### IV. Summary of Impacts to California

Electrify America’s proposed Cycle 2 Plan, properly implemented as approved, will continue to enable the expanded deployment of ZEVs toward the State’s goals of 250,000 ZEV chargers, including 10,000 direct current fast chargers by 2025, and 5 million ZEVs by 2030, as expressed in Executive Order B-48-2018.<sup>6</sup> The following is a CARB staff high-level impact estimate of the Electrify America Cycle 2 Plan infrastructure investments with respect to these goals.

##### A. Electrify America’s Infrastructure Investment and California’s 2025 Infrastructure Gap

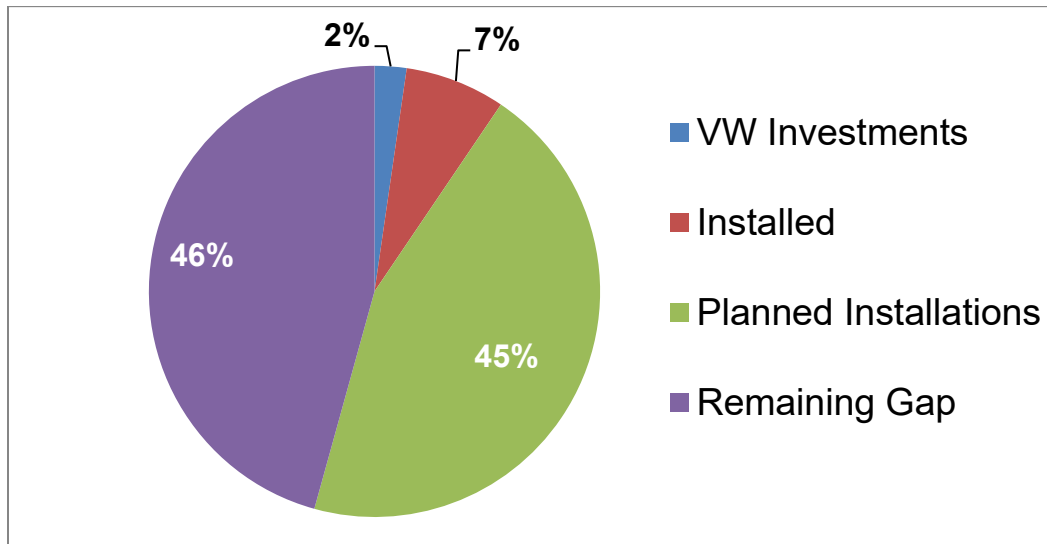
The California Energy Commission (CEC) released the “2018 California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025” report, in which they estimated 229,000 to 279,000 chargers are needed to support 1.5 million ZEVs by 2025<sup>7</sup>. As part of SB 350, charging infrastructure pilot programs, and other transportation electrification proceedings, investor owned utilities have proposed or approved PEV infrastructure projects totaling over \$1 billion. Electrify America’s anticipated infrastructure contribution, via their Cycle 1 and proposed Cycle 2 investments in the State, will account for less than 3 percent of the anticipated infrastructure. These investments are significant, but other public and private investments are still necessary to close the State’s infrastructure gap (46%). Figure 1 provides a visual representation of the estimated charger gap in California in 2025.

<sup>6</sup> <https://www.gov.ca.gov/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/>

<sup>7</sup> <https://www.nrel.gov/docs/fy18osti/70893.pdf>



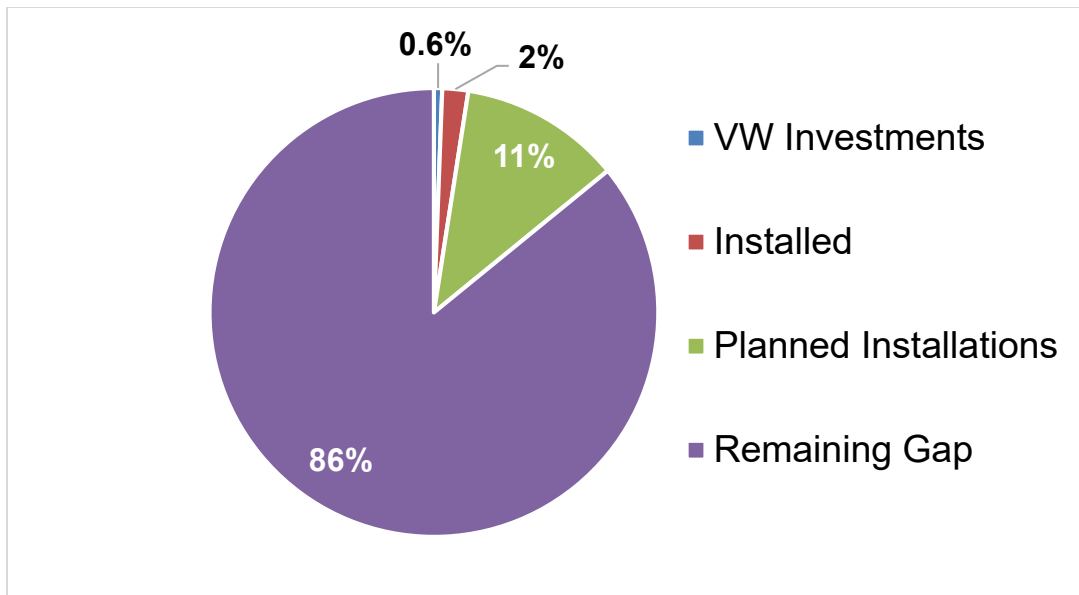
**Figure 1**  
**Planned Electrify America Investments as a Proportion of 2025 Estimated Remaining EV Chargers Need**



**B. Electrify America’s Infrastructure Investment and California’s 2030 Infrastructure Gap**

CARB staff extrapolated the 2025 charging infrastructure projections described above to estimate anticipated 2030 charging infrastructure. Electrify America’s proposed Cycle 2 Plan infrastructure investments will comprise less than 1 percent of the 2030 infrastructure projection. Further, the State’s infrastructure gap is projected to grow to approximately 86 percent. Figure 2 on the next page provides a visual representation of the estimated investments, and investment gap, in California for 2030.

**Figure 2**  
**Planned Electrify America Investments as a Proportion of 2030 Estimated Remaining**  
**EV Chargers Need**



## V. Tracking Progress

In response to Board Resolution 17-23, Electrify America has committed to provide CARB with quarterly project status updates and an annual report. Electrify America posted its third quarter report for the 2018 calendar year on October 24, 2018. Here is a summary of their progress to date:

- They have 97 sites under lease for their DC Fast Charger network (of 160 targeted);
- So far they are exceeding their target of locating 35 percent of sites in DAC/LICs;
- They have obtained 13 permits to build so far. (Permit processing time is nearly twice the national average);
- Site work is complete at 3 sites, but none of the sites have completed commissioning yet;
- The report provides a substantial discussion of their permitting challenges and their appreciation for GO-Biz intervention and a desire to see more state level engagement on implementation of AB 1236 (law that requires EV permits to be issued in a timely and cost effective manner and only denied for health and safety issues);
- Credit card and debit card payment will be available at all DCFCs;
- A total of 64 sites have been acquired for Level 2 chargers (more than 35 percent are in DAC/LICs, and 3 of the sites are operational (2 of which are in DAC/LICs);

Green city activities included:

- Contracting with GIG Car Share to provide a free-float car share service in Sacramento (the City of Sacramento took actions to support the program with establishment of car-share parking fees and dedicated spaces, and GIG has ordered 260 Chevy Bolts for the program);
- 12 infrastructure sites have been established;
- The first dual port Level 2 unit was installed at Creekside Village in Sacramento (MUD); and
- The hiring of a local firm to conduct Green city marketing efforts.

The Awareness campaign included:

- Launching of the Jetstones commercial (5<sup>th</sup> most talked about commercial on social media, other metrics provided in report – incentives website most engaged);
- \$515,600 matched at Veloz to date of their \$2M commitment (35 percent of commitment supports DACs/LICs); and
- 98 pages of documentation provided to demonstrate DAC/LIC investment locations.

Cycle 1 spending status – Electrify America expects to be late spending about \$10.5 million due to delays in acquiring battery buses for the Green City Program; we recommend approval of this delay.

As with the Cycle 1 Plan, a third party auditor will also submit annual reports evaluating Electrify America's spending for compliance with both the ZEV Investment Commitment and the approved Plan. CARB staff will continue to provide routine updates to the Board (the last one was in May 2018) and is scheduled to provide its first update to the State Legislature in March 2019. As soon as infrastructure has been commissioned, updates will include (in coordination with Electrify America) a map of Electrify America's charging station investments with census tract specificity.

## **VI. Recommendation**

The Cycle 2 Plan outlines Electrify America's proposed investments for the second 30-month investment cycle under the ZEV Investment Commitment. Cycle 2 Plan contents include:

- Creditable costs on investments in three spending categories – ZEV Infrastructure (\$153 million), ZEV Awareness and Education (\$17 million), and efforts to drive station utilization (Marketing) (\$10 million);
- Information on increased highway and metropolitan community charging infrastructure density within some regions and metropolitan areas of the state, and expansion into others;
- Information on Electrify America's low-income and disadvantaged community commitment. Electrify America has: (1) made the designation an infrastructure site selection criterion, (2) identified three metropolitan areas predominantly comprised of these communities for investment, and (3) will site infrastructure to support multi-unit dwelling and shared mobility drivers.

Staff considered stakeholder comments on the proposed Cycle 2 Plan as part of its assessment and in reaching its recommendation. Staff find that the proposed Cycle 2 Plan is responsive to the requirements of the ZEV Investment Commitment, and the Electrify America commitments made in response to SB 92 and Board Resolution 17-23, and believe that, when fully and properly implemented, it promises to grow California's ZEV refueling infrastructure, contribute to improved air quality and public health, and transform California's ZEV market. These benefits extend across California, including disadvantaged and underserved communities.

CARB staff recommends that the Board approve the proposed Cycle 2 Plan, ensuring that Electrify America can continue to invest in ZEV refueling infrastructure, public awareness, and expanded access in California in a timely manner.

## Appendix 1 – ZEV Investment Plan Comment Summaries

This section summarizes the comments received electronically via the public comment period that commenced with posting of the proposed Cycle 2 Plan on October 3, 2018, and ended at 11:59 PM on October 26, 2018. The Representative Comments section of each comment area reflects the direct thoughts of commenters, but is paraphrased when conveying similar thoughts from multiple commenters.

### I. General support

Approximately 60 percent of all comments received were supportive of the Plan. The vast majority of these comments were from cities and counties, legislators, EVSE manufacturers, EVSPs, infrastructure site hosts, automakers, transit agencies, utilities, or organizations advocating and working for clean air, decreased greenhouse gases, and EV adoption. Supporters identified benefits, including benefits in and to disadvantaged communities, such as growth toward the State’s 2020 and 2025 ZEV goals, concomitant improvements in air quality and public health, advancement toward climate change goals, and job and skilled workforce creation.

Commenters additionally called out aspects of the Plan that they supported (especially as they related to disadvantaged communities), including ZEV car share and transit service, the new metro area investments in primarily low-income and disadvantaged communities, new Level 2 charging investments in rural areas and residential and MUD housing, continued investment in education and awareness (especially through community-based organizations), and progress on social equity issues that would result from the proposed investments.

#### Representative Comments

- The Electrify America Cycle 2 Plan will:
  - Result in continued investment in businesses, workers, and communities across California.
  - Positively support businesses, workers, and communities across California.
  - Increase awareness of and access to ZEVs particularly in low-income and disadvantaged communities.
  - Expand charging opportunities and facilitate shared use.
  - Help communities meet their climate strategies/goals.
  - Through investments like EV car share and EV transit service, make significant changes in communities.
  - Be a compelling strategic step toward spanning the infrastructure gap.
  - Invest in a DCFC network that is critical to meeting our climate change/criteria pollutant reduction goals and have a dramatic impact on encouraging ZEV adoption.

- We support the progress on social equity and welcome the increased emphasis on rural charging, fast charging (for shared mobility services), home charging assistance for low-income drivers, charging support for electrified transit, and the addition of the three primarily low-income and disadvantaged community metro areas.
- We support an emphasis on customer education (especially rural and disadvantaged communities), incorporating renewable energy/storage to decrease demand charges.
- SemaConnect strongly supports Electrify America's Cycle 2 investment plan as submitted, and respectfully urges ARB to expeditiously move it forward and allow Electrify America's much-needed investment in EV charging infrastructure to continue.

## **II. Timely approval**

Several supporters recommended that the Plan be implemented without delay or that they look forward to timely and positive approval of the Cycle 2 Plan.

### Representative Comments

- Timely approval shows a concerted commitment by the State of California to transportation electrification and ZEV adoption.
- Implement without delay so this tremendous opportunity to promote ZEV adoption continues unabated.
- Delays in approving the Cycle 2 Plan could adversely impact:
  - my business and related industry businesses;
  - Californians whose health and livelihoods are aligned with the successful implementation of the Plan and transportation electrification.

## **III. Job creation**

Commenters expressed that the ZEV Investment Commitment was already creating good paying jobs (including blue collar jobs) for Californians. They also commented that the Cycle 2 Plan would mean continued investment in businesses and workers, and would generate new job opportunities and hundreds of thousands of hours of work.

## **IV. Disadvantaged and low-income communities**

Electrify America has committed to strive to ensure that at least 35 percent of its investment benefit disadvantaged communities. Commenters speaking to this topic were supportive of additional investments for: (1) infrastructure in disadvantaged communities, and (2) education and awareness programs (especially those involving community-based organizations) directed at disadvantaged communities. Others noted

that 35 percent was a spending floor and requested that disadvantaged community investment be greater and that CARB ensure investments actually serve disadvantaged community residents rather than simply be located in those areas. Finally, others expressed that the spending amounts allocated to rural Level 2 charging, renewable energy, and transit infrastructure were insufficient and they requested that funding be reallocated from other areas such as awareness spending on media.

### Representative Comments

- The Electrify America team has thoughtfully responded to stakeholder input, specifically in the development of the low-income and disadvantaged communities element.
- Their data-driven approach has the potential to produce both an equitable distribution of resources to these impacted communities and identify those tactics that are most effective in delivering clean transportation incentives to low-income and disadvantaged community residents.
- We support Electrify America's efforts to deploy chargers in disadvantaged communities, particularly rural disadvantaged communities.
- We appreciate the increased focus on disadvantaged and rural communities.
- Locating investments in low-income and disadvantaged communities does not ensure that residents of these communities can partake of zero-emission mobility. We encourage Electrify America to take steps to ensure investments are not only accessible to, but also used by, these residents.
- Need more effort to ensure that Cycle 2 investments specifically target and benefit residents in these areas.
- We appreciate the compensated inclusion of community-based organizations (CBO) in targeting outreach to disadvantaged communities. Funding of CBOs is essential to improve long-term outreach efforts, and thus air quality benefits, to disadvantaged communities.
- Electrify America should collaborate with CBOs for Discover and Drive events in these communities, and should post information about them on its website map.
- Electrify America should make low-income and disadvantaged communities a metric for site location and should share the criteria publicly.
- Recommend Electrify America identify the percentage of residential chargers that will be needed to be offered to low-income and disadvantaged communities and conduct multi-lingual outreach for the program in those communities.
- Encourage Electrify America's online incentive tool to include resources for purchasing residential chargers and solar systems and to release aggregated data collected through the tool as well as the metric used to track the progress of the tool.
- The Cycle 2 Plan did not release the Second Green City, which could have been in a low-income and disadvantaged community in the San Joaquin or Coachella Valley.
- Recommend that Electrify America investments in Fresno County be in the top 5 percent of the low-income and disadvantaged communities identified in the CalEnviroScreen Tool.

- Recommend creating a map that outlines the low-income and disadvantaged communities' census tracts in California as well as the census tracts aimed for investments.

## **V. Increasing ZEV Access**

Commenters generally supported Electrify America's plan to include DCFC stations designed to serve shared mobility drivers in its metro community charging portfolio and charging equipment for buses and shuttles. Both elements were expected to advance progress on social equity and deliver air quality and climate benefits to residents of low-income and disadvantaged communities.

A couple of commenters cautioned that: (1) those DCFC specifically designed to serve shared mobility drivers should still be open to all drivers and not favor an individual transportation network company (TNC); and (2) funds should support TNCs that are community based or non-profit, sustainable, integrated into the larger transportation network serving disadvantaged communities, and that improve the efficiency of transit, especially in rural areas before supporting commercial/for-profit TNCs. One EVSP expressed concern that TNC contracts represent the greatest opportunity for charging network providers to have guaranteed and predictable utilization. Other commenters expressed that the investment in bus and shuttle charging was too small. There was also a request to support vanpooling.

## **VI. ZEV Infrastructure**

Within the proposed Cycle 2 Plan, Electrify America repeatedly commits to striving to achieve or exceed 35 percent of their investments in disadvantaged and low-income communities. This commitment is made for all of their infrastructure investments. Electrify America also describes their \$2 million dollar investment in rural communities as a pilot and has said that it would be willing to expand its rural communities investment if it makes economic sense in future cycles. In addition, proposed new residential infrastructure funding for low-income/disadvantaged community single-family residences complements the MUD investments Electrify America is already making under the Cycle 1 Plan and planning to make under the proposed metro area investment within the Cycle 2 Plan.

The ZEV infrastructure topic received a significant number of comments. General themes included: (1) PEV infrastructure type and placement – commenters discussed minimum disadvantaged community placement targets and appropriate charging rates for rural and residential chargers, (2) hydrogen – commenters emphasized that California should support ZEV technology neutrality by requiring both PEV and FCEV refueling, (3) MUDs – commenters expressed that Level 2 charging and hydrogen fueling could each support MUD drivers, and (4) medium- and heavy-duty ZEVs.



## Representative comments – PEV infrastructure type and placement:

- Support residential charging proposal as this is where most charging does and will occur.
- Residential installation focus should be on homes and apartments built post 7/1/2015 as these buildings are “EV Ready” and thus, the installations will be more cost effective. Additionally, many of these projects were built in jurisdictions requiring a percentage of units be made available for below-market rate buyers/renters.
- Support an awareness tool; it should be coordinated with existing education efforts including One-Stop-Shop for low-income car buyers.
- Focus on MUDs and workplaces.
- In addition to DCFCs near MUDs, there needs to be Level 2 charging at MUDs.
- Electrify America should: (1) allocate additional funds to rural community Level 2 charging, and (2) consider siting DCFC between rural and metro areas or in cities within rural areas.
- Focus on MUDs and workplaces.
- 35 location goal seems reasonable (with effort) in the 30-month timeframe.
- There is a need to address home charging challenges, but workplace charging investments can be a significant driver of EV adoption. We suggest the funding for home charging be reallocated to workplace charging.
- Shared mobility metro stations must still support all drivers. CARB should ensure that any dedicated shared mobility chargers benefit all fleet and commercial operators and not an individual company.
- Continue to share ZEV Investments data and progress with CARB but also make an effort to share this data with state agencies as well as make public anonymous data.
- More information about charging needs should be gathered before allocating too much to DCFCs in residences when that money might be better spent on Level 2 charging.
- Electrify America should add Level 2 charging to all DCFC stations, both in metro areas and along regional routes, to support plug-in hybrid and non-fast charge capable battery electric vehicles.
- Electrify America should invest more directly (reallocate metro area and regional funding) into cities in more rural areas and should include DCFC in those areas.
- Electrify America should scale back its metro/community charging investment and move to underserved markets (disadvantaged communities and rural areas).
- Remove single-family residential charging from the Plan as it is unclear what barrier Electrify America would be overcoming by offering to own a station in someone’s personal home instead of providing a rebate for a station of the customer’s choice for the customer to own and operate.
- Low-income customers as a segment are more likely to be unable to cover the up-front costs of, and have the highest barriers to, home charging. As such, the ARB should adopt a low income target for residential no-money-down investments greater than the overall 35% target for Cycle 2 investments in DACs / LICs.

- We encourage CARB to consider directing Electrify America toward investing resources in multi-family residential locations.
- We believe that MUD residents (or owners) should still have a pathway to access Electrify America’s no-money-down financing option for L2 charging purchase and install; thus, ARB should strike the requirement listed in Footnote 18 of the Cycle 2 Plan for residential applicants to have a dedicated panel, meter, and parking spot to be eligible, and should also direct a material portion of the residential budget for the MUD segment of residential customers.

Representative comments – medium- and heavy-duty vehicles:

- Need to focus more on this infrastructure as they are responsible for substantial part of harmful pollution.
- Support heavy-duty applications in addition to transit, e.g., school buses.

Representative comments – permitting:

- Encourage Electrify America to work with local authorities for permitting issues.
- Recommend Electrify America use education and outreach funds to educate permitting officials.

Representative comments – other:

- Electrify America and CARB should work with utilities and the CPUC to develop rates that integrate renewable energy, incentivize off-peak charging, and decrease fuel costs.
- Electrify America should use the Open Vehicle-Grid Integration Platform (OVGIP) as the means of communication between home chargers and utilities to support demand response requests.
- Electrify America should discuss language in the Cycle 2 Plan regarding EV station rates in the San Diego-Carlsbad metropolitan area.
- Increase investments in San Diego-Carlsbad. SDG&E is engaging stakeholders for feedback on rate options that promote transportation electrification that address current rates as a barrier to ZEV adoption.
- SCE’s efforts only address one-third of the projected incremental market need over the next 10 years, meaning there is room for all other stakeholders to contribute to fill the infrastructure gaps.
- Electrify America’s autonomous vehicle station should be built in the San Diego region.
- Autonomous vehicle charging funding should be reallocated to other investments.
- Deployment of Electrify America funds much be based upon a standards-based and open architecture which promotes inter-operability among all EV charging providers.

## **VII. Other transportation fuels**

CARB believes that hydrogen is an important transportation fuel to California because it promotes technology diversity, is scalable to medium- and heavy-duty vehicles, and has refueling ranges and speeds commensurate with other liquid fuels like gasoline and diesel. Commenters expressed that hydrogen could represent a possible solution for MUD residents without the ability to charge vehicles conveniently.

### Representative comments:

- A few commenters, fuel providers, station developers, associations, and others, expressed concern and displeasure that the Cycle 2 ZEV Investment Plan did not commit to investing in hydrogen production, distribution, or refueling infrastructure.
- Electrify America funds could also pay for CNG school buses as the particular district is located in the remote mountains of California and the shorter range BEV buses will not do the proper job.

### Representative comments:

- Electrify America should not be required to invest in hydrogen fueling, but could set aside funds in Cycle 3 or 4 once the market direction is clearer.
- Electrify America's characterization of hydrogen light-duty fueling as "sufficient in capacity and coverage until 2025" is no longer correct since the Legislature did not approve the additional \$72 million needed as assumed.
- We urge Electrify America to revisit light-, but especially medium- and heavy-duty transport investment opportunities for both freight and passenger services; these larger FCEVs can positively impact DACs more quickly than battery versions that are slow to develop.
- The States' investments in hydrogen versus EV Charging are grossly unequal.
- Hydrogen investments will be needed in both the on- and off-road sectors for California to meet its air quality goals
- Hydrogen transportation systems don't have: (1) the massive waste associated with battery systems that may also disproportionately impact DACs, and (2) the same lithium availability requirements that are dependent on unstable governments as are battery systems.
- Electrify America should have to go back and reevaluate hydrogen investment economics in light of the new LCFS capacity credits.
- Hydrogen fuel cell vehicles can be used effectively for MUDs.

## **VIII. Competitive marketplace**

Electrify America's investments should not interfere with or undermine established and emerging businesses. CEC's proposed investment areas and charging corridors are publicly available. CARB staff is in the process of mapping Electrify America's proposed

sites compared to CEC's sites to demonstrate compliance with this commitment.

Comments submitted by the Electric Vehicle Charging Association (EVCA) and two of its members expressed concern about competition for charging sites. Other EVCA members expressed that the association letter was drafted without their knowledge, their concurrence with statements made, and approval.

Representative comments:

- Site hosts have broken existing contracts.
- Using settlement funding to install Electrify America-branded and owned charging stations at no cost to site hosts is anti-competitive and not additional or incremental to the private and public investments underway in California.
- Electrify America is targeting parking lots where other EVSPs have already deployed charging infrastructure and plan to place infrastructure in areas selected by the California Energy Commission's CALeVIP program for investment.
- Any form of commitment with a site host, a letter of intent, an option agreement, a memorandum of understanding, or a contract should require the location to be posted on a designated, publicly viewable CARB website.
- CARB should limit creditable costs for site host payments to those investments made within three months of installing a charging station.
- EV Connect has direct experience with the process of securing site host locations through its participation in the Energy Commission's Electrified Highway programs, and can attest to the fact that this process takes a considerable amount of time. As such, we disagree with the EVCA's position that "CARB limits Electrify America to only leasing property up to three months prior to installing stations...".
- Electrify America and its vendors such as SemaConnect have every incentive to move a leased site into permitting, construction and operation as quickly as possible. When there is a delay, it is often related to local permitting issues and is outside of Electrify America's or SemaConnect's direct control.
- BTCPower was not aware of, and not involved in drafting or reviewing, the letter from EVCA, and "we strongly disagree with the position taken in that letter".
- The comments submitted by the Electric Vehicle Charging Association (EVCA) emphatically do not represent the views of SemaConnect. EVCA opposes Electrify America's Investment Plan; SemaConnect strongly supports it.
- Recargo has submitted comments that they are aware of the allegations of impropriety and want to report that their "site developers have encountered none of the problems reported...by other companies".
- EVCA is narrowly representing a select few companies and their proprietary business models.
- Electrify America held a competitive and open solicitation. SemaConnect competed with other providers and earned Electrify America's business fairly and squarely. It is ironic that some companies who competed unsuccessfully for Electrify America's

business are now seeking to conduct an end run around that very process by appealing to ARB for government intervention.

- It is EVCA and its desire for ARB to change course or even prolong approval of Electrify America's Investment Plan that would, if followed, disrupt the marketplace and stifle investment.
- Instead of spending marketing funds to increase station utilization, Electrify America should put those dollars into education and awareness.
- All Cycle 2 marketing, education, and awareness funding should be redirected to Veloz' U.S. awareness and education campaign.
- Electrify America's investments leave room for significantly more private- and public-sector investment, but should complement planned and existing infrastructure.
- EV Connect supports the position of encouraging CARB to work closely with other California agencies, such as the Energy Commission, to ensure that various incentive programs do not conflict with one another and are supportive, on a unified basis, of California's statewide EV goals. However, we do not feel that, generally speaking, the Electrify America investment plans are materially causing conflicts with other statewide programs.
- CARB should convene a stakeholder working group that meets at least twice a year to review the competitive impacts of the ZEV Investment Plan.
- We support a firewall between Electrify America and Volkswagen to address data privacy (protect automaker and consumer data) and competitiveness issues. VW vehicles must not be favored via preferential infrastructure pricing.
- CARB should evaluate membership spending to ensure funds are not being used for political purposes such as sponsoring legislation or resolutions that are not strictly related to education and outreach.
- If the term "memberships" used by Electrify America includes memberships in an industry-wide program to support interoperability and a relatively seamless experience by EV drivers, EV Connect supports such participation in this effort.

## **IX. Oversight and coordination**

Oversight includes the aspects of transparency and accountability, which are the cornerstones of the ZEV Investment Commitment. It, as well as coordination with transportation electrification stakeholders, is critical to the success of the ZEV Investment Commitment. CARB and Electrify America have not coordinated meetings with all stakeholders concurrently, but CARB staff have facilitated introductions, and Electrify America has met with, a number of stakeholders on issues pertaining to implementation of the Cycle 1 Plan. CARB engagement with CEC on charger siting issues began prior to approval of the Cycle 1 Plan and is ongoing. In the last 12 months, Electrify America has engaged with government, academic, utility, automaker, advocacy, environmental justice, and community-based organization stakeholders via workshops, webinars, consultations, and conversations. They have also collaborated

with industry stakeholders including equipment providers, installers, and other EVSPs.

CARB staff have not convened a workgroup with EVSPs on implementation issues primarily because issues had not been brought to our attention that demonstrated a need for additional collaboration. However, staff are open to conducting such meetings as needed and reporting on findings as warranted.

Several commenters requested that Electrify America place a firewall so that their data is not available to VW. But they also asked that Electrify America share more of their data with EVSPs and other stakeholders.

Representative comments:

- We need assurance that infrastructure investments are additive to other planned investments, which will require cooperating to enable other networks to flourish.
- Electrify America's investments leave room for significantly more private- and public-sector investment, but should complement planned and existing infrastructure.
- We support a firewall between Electrify America and Volkswagen to address data privacy (protect automaker and consumer data) and competitiveness issues. VW vehicles must not be favored via preferential infrastructure pricing.
- Continue to share ZEV Investments data and progress with CARB but also make an effort to share this data with state agencies as well as make public anonymous data.
- Electrify America should post coordination activities on their website. Also, with charging sites being available on a map on their website, additional data regarding the station be presented.
- EV Connect agrees that Electrify America should provide more transparency about which sites they have contracted with so that other providers don't waste time and resources considering the same locations.
- CARB should convene a stakeholder working group that meets at least twice a year to review the competitive impacts of the ZEV Investment Plan.

## **X. Medium- and heavy-duty vehicles**

Commenters stated that medium- and heavy-duty vehicle investments should be prioritized above light-duty vehicle investments, in part because they promise greater emissions reductions or serve a greater number of low-income and disadvantaged community residents. One commenter said that, in addition to zero emission transit, investments should support zero emission school buses. Bus and shuttle charging pilots should be in low-income and disadvantaged communities.

## **XI. Green City**

Several commenters requested Green City emphasis in the San Joaquin Valley, and another in San Diego. One commented suggested allowing coalitions of small cities to work together to compete for future “Green City” funds.