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ENERGY COMMISSION**



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Clean Transportation Program
FINAL PROJECT REPORT

North Coast Plug-In Electric Vehicle Readiness Plan Implementation: Phase 2

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Aisha Cissna

Dana Boudreau

Sophia Valenzuela

Primary Author(s)

Redwood Coast Energy Authority

633 3rd St

Eureka, CA 95501

(707) 269-1700

www.redwoodenergy.org

Contract Number: ARV-16-012

Sharon Purewal

Project Manager

John Butler

Office Manager

ADVANCED VEHICLE INFRASTRUCTURE OFFICE

Kevin Barker

Deputy Director

FUELS AND TRANSPORTATION DIVISION

Drew Bohan

Executive Director

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Project Partners:

- City of Arcata
- City of Eureka
- City of Fortuna
- City of Rio Dell
- County of Humboldt
- Humboldt County Office of Education
- Humboldt State University

PREFACE

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007), created the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). The statute authorizes the California Energy Commission (Energy Commission) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. In this document, the terms “alternative” and “advanced” are used interchangeably to describe low-carbon fuels. AB 8 (Perea, Chapter 401, Statutes of 2013) re-authorizes the ARFVTP through January 1, 2024, and specifies that the Energy Commission allocate funds to support the purchase of low or zero emission vehicles through the use of incentives and rebates. California has also set goals to increase the number of zero emission vehicles on the road and charging stations available to the public. Executive Order B-48-18 calls for 1.5 million zero emission vehicles by 2025 and 5 million by 2030, as well as 200 hydrogen fueling stations and 250,000 battery electric vehicle chargers.

The ARFVTP has an annual budget of approximately \$100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and non-road vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

To be eligible for funding under the ARFVTP, a project must be consistent with the Energy Commission's ARFVTP Investment Plan, updated annually. The Energy Commission issued GFO-16-601 to fund grant projects that support new and existing planning efforts for plug-in electric vehicles and fuel-cell electric vehicles. In response to GFO-16-601, the recipient submitted an application which was proposed for funding in the Energy Commission's Notice of Proposed Awards March 8, 2017 and the agreement was executed as ARV-16-012 on March 24, 2017.

ABSTRACT

The *North Coast Plug-In Electric Vehicle (PEV) Readiness Plan Implementation Phase 2* carried out core elements of the *North Coast PEV Readiness Plan* in Humboldt, Del Norte, and Trinity Counties. Key tasks were to campaign for zero emission vehicle (ZEV) awareness, engage with the County-Wide 2040 Climate Action Plan, develop a group buy program plan, consult for fleets and public officials, consult for fuel station site hosts, form and facilitate a ZEV Enthusiast Group, update the current *Electric Vehicle Charger Selection Guide*, and educate dealers about ZEVs.

The Redwood Coast Energy Authority (RCEA) project team successfully executed these key tasks. The benefits of plug-in electric vehicles (hereafter referred to as “zero emission vehicles” (ZEV) unless referencing an original project title) were communicated to a wide audience through a variety of outreach methods. Substantial contributions to the Humboldt County 2040 Climate Action Plan were made across a series of sectors, including low-carbon transportation. Fleet analyses were conducted for a variety of stakeholders that were not previously engaged in RCEA's transportation program. RCEA provided technical assistance and shared best practices with local and state-wide entities on topics including Low Carbon Fuel Standard Credits, electric vehicle charging station Americans with Disabilities Act (ADA) code challenges and approaches, infrastructure siting, and more. Local entities showed increased interest in electric vehicle (EV) charging stations, and RCEA met with numerous potential stakeholders to summarize funding resources and conduct site walks. Relationships with regional dealers were also formed and strengthened through a dealer education seminar and dealership toolkits, an important step toward establishing and expanding the local ZEV market.

Keywords: Plug-in electric vehicles, *PEV Readiness Plan*, zero emission vehicles, electric vehicle charging station, permitting, codes, standards, fleet vehicles, Ride-and-Drives, outreach, education, electric vehicle infrastructure, planning, rural, hard-to-reach

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EXECUTIVE SUMMARY

The goal of the *North Coast PEV Readiness Plan Implementation Phase 2* project was to support and promote the continued growth of zero emission vehicle (ZEV) adoption in Del Norte, Humboldt and Trinity Counties. The project did this by continuing ZEV outreach and assistance implemented through ARV-14-046 in the counties of Humboldt, Del Norte, and Trinity. Specifically, the objective to support and promote ZEV adoption growth was facilitated by implementing key tasks called for in the *North Coast PEV Readiness Plan*:

- Promote ZEV adoption through public and fleet operator outreach and education campaigns. ZEV education and outreach was conducted through a variety of engagement methods, including Ride-and-Drive events, ZEV vehicle expos, presentations, and social media. Specific outreach to target fleet managers was also conducted, resulting in comprehensive fleet analyses for engaged participants. Seminars and presentations engaged a new array of stakeholders including state-level leaders, lower-income populations, students, professors, public officials, governing bodies, city staff, likely adopters, and vehicle dealers. Viewership of ZEV newsletters increased, and RCEA increased knowledge of ZEVs through television, web, and newspaper media; see Section 2.1.4.
- Create an ombudsman position to support assistance and liaison activities. A group buy program plan was developed that may, if funded, accelerate ZEV adoption. The scope of ZEV engagement broadened to include fuel cell electric vehicles (FCEVs). A variety of private and public organizations were engaged to provide detailed guidance regarding purchasing a ZEV and installing charging stations. The *Electric Vehicle Charger Selection Guide* was updated and utilized during consultations. The formation of the ZEV Enthusiast Group lead to the creation of a ZEV Ambassador Program, which has proven to expand RCEA's bandwidth to conduct EV car shows and educate the public, thanks to the dedication of community volunteers. This Ambassador Program will be sustained beyond the ARV-16-012 grant. Dealerships were educated about ZEVs, which is particularly valuable in rural regions with limited access to vehicle inventory, financing, and other challenges for new vehicle adoption.

CHAPTER 1:

Introduction

1.1 Problem Statement

In July 2014 the North Coast Plug-in Electric Vehicle Coordinating Council's (PEVCC) *North Coast PEV Readiness Plan* was completed, developed by the Redwood Coast Energy Authority (RCEA) in partnership with the Schatz Energy Research Center (SERC) and other regional stakeholders. The plan calls for a variety of implementation measures to encourage uptake of zero emission vehicles (ZEVs), such as to streamline permit and inspection processes for electric vehicle charging stations (EVCS), site and install EVCS, and conduct public outreach and education campaigns. Through ARV-14-046, the California Energy Commission (Energy Commission) funded RCEA to implement PEV Readiness Plan measures. To maintain momentum gained with ARV-14-046, bridge funding was needed to support ZEV adoption efforts until RCEA's Community Choice Aggregation program can provide sustained financial support. Energy Commission grant ARV-16-012 provided the continuity funds necessary to continue RCEA's work in bringing ZEVs to the North Coast.

1.2 Goals and Objectives

The goal of this project was to continue ZEV outreach and assistance implemented through ARV-14-046 in Humboldt, Del Norte, and Trinity counties. As the lead agency for the North Coast PEVCC, RCEA is ideally positioned to support ZEV adoption.

The objectives of this project are listed in the following table along with quantitative outcomes against which the success of the project can be measured.

Table 1: Grant Objectives and Outcomes

Objective	Measurable Outcome
Promote ZEV adoption through profile raising campaigns.	<ul style="list-style-type: none"> ▪ Conduct at least 5 Ride and Drive and ZEV expo events to promote the latest ZEVs on the market ▪ Table at 6 or more public events ▪ Develop and deliver at least 4 seminars on ZEV topics ▪ Publish at least 6 newsletter editions ▪ Achieve at least 4 media spots highlighting regional ZEV activities ▪ Make at least 6 presentations to community organizations and/or fleet operators
Create an Ombudsman position to support assistance and liaison activities.	<ul style="list-style-type: none"> ▪ Design a “group buy” of ZEVs, offering a significant discount off the Manufacturer Suggested Retail Price (MSRP) <i>[with approval from the Commission Agreement Manager (CAM), this was revised to “design” from “organize” due to funding and time constraints]</i> ▪ Provide consultation for at least 6 fleet managers and public officials ▪ Provide consultation for at least 6 ZEV fuel station site hosts ▪ Coordinate and host at least 4 meetings of a “ZEV Enthusiasts” group ▪ Update the current version of the EVCS guide ▪ Develop at least 2 dealer sales resources toolkits for area dealerships

Source: ARV-16-012 Grant Agreement

1.3 Project Team

The Redwood Coast Energy Authority was formed in 2003 to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient, and renewable resources available in the region.

RCEA is a local government Joint Powers Agency (JPA), representing the County of Humboldt, all incorporated cities in Humboldt County, and the Humboldt Bay Municipal Water District. In addition to projects related to energy and energy efficiency, RCEA has acted as the lead agency for six Alternative and Renewable Fuel and Vehicle Technology Program grants. In May 2016, RCEA became the Community Choice Aggregator (CCA) for Humboldt County and since then has provided local, clean electricity to its customers. Through the CCA, RCEA continues efforts to promote transportation electrification, demand side management integration, vehicle-to-grid, and other low-carbon vehicle initiatives.

1.4 Background

The *North Coast PEV Readiness Plan*, completed in July of 2014, contained a suite of actions necessary to support the successful introduction of PEVs and the strategic development of charging infrastructure in the region. The plan was funded by the California Energy Commission and included these key components:

- Create a Plug-in Electric Vehicle Coordinating Council (PEVCC);
- Develop an infrastructure deployment plan;

- Assess local permitting and installation requirements for electric vehicle supply equipment (EVSE) and development of a plan to support streamlining those processes;
- Develop a plan to accelerate PEV adoption in vehicle fleets;
- Develop an education and outreach program to promote PEV adoption in the community.

In addition to the *PEV Readiness Plan*, RCEA received funding from the Energy Commission through ARV-13-029 to install ten EVCS across nine locations in Humboldt County. This installation represented the first phase of the charging network defined in the *PEV Readiness Plan*, which identified a total of 41 charging sites as the minimum number required to accommodate an anticipated penetration of 3,000 PEVs by 2025. RCEA continues to manage, maintain, and expand this network and has modified its siting approach since the completion of the *PEV Readiness Plan* in 2014. Currently, site host enthusiasm and available funding have emerged as leading motivators for site selection, beyond the initially considered factors of location along travel corridors, visibility to the public, and ability to support long duration parking.

The *North Coast PEV Readiness Plan Implementation Phase 1*, completed in June of 2017, contained a suite of actions necessary to implement the *PEV Readiness Plan*. The plan was also funded by the California Energy Commission and included these key components:

- Streamline processes for the permitting and inspection of residential, commercial, and public EVCS;
- Develop streamlined EVCS installation processes and conduct detailed regional siting assessments and engagement with potential site hosts;
- Promote ZEV adoption through profile raising campaigns and installation of directional signage for existing EVCS.

To increase ZEV adoption and to continue the implementation of core elements of the *North Coast PEV Readiness Plan*, RCEA responded to the Energy Commission's solicitation GFO-16-601. In January of 2017, RCEA was awarded funding through ARV-16-012.

RCEA is an advocate for low-carbon transportation; in addition to the projects described above, the following projects have meaningfully contributed to the success of the *Implementation Phase 2* project:

- The *Northwest California Alternative Fuels Readiness Plan*.¹ The plan was completed in 2016, in collaboration with SERC and other regional governments;
- The *North Coast and Upstate Fuel Cell Electric Vehicle Readiness Plan*.² The plan was completed in 2019, in collaboration with SERC;

1 Biondini, Lori (Ed.), "Northwest California Alternative Fuels Readiness Project," Redwood Coast Energy Authority, California Energy Commission, 2016. Publication Number: CEC-ARV-13-012.

2 Boudreau, Dana, "North Coast and Upstate Fuel Cell Vehicle Readiness Project: Final Report," Redwood Coast Energy Authority, Schatz Energy Research Center, California Energy Commission, 2019. Publication Number: CEC-XX-2015-XXX.

- Comprehensive Action Plan for Energy (CAPE)³;
- Municipal climate action plans.

Elements of the *Alternative Fuels Readiness Plan* and the *Fuel Cell Electric Vehicle Readiness Plan* were integrated into this project.

The following chapter outlines the activities and results across *Implementation Phase 2* project efforts.

³ “Comprehensive Action Plan for Energy,” Planning, Redwood Coast Energy Authority, accessed October 2, 2019, <https://redwoodenergy.org/services/planning/>.

CHAPTER 2:

Project Activities and Results

2.1 ZEV Awareness

The goal of this task was to promote ZEV adoption through public and fleet operator outreach and engagement campaigns.

2.1.1 Ride-&Drives, Expos, and Tabling

The central components of RCEA's overall campaign strategy—expos and test drives—have been proven to accelerate ZEV sales.⁴ Campaign activities also sought to address barriers to consumer interest in ZEVs such as range anxiety, charging infrastructure quality and availability, environmental costs associated with battery production, affordability, limited model varieties, and general lack of awareness of ZEVs.⁵

RCEA event attendees had the opportunity to sit in a ZEV, test drive a ZEV, explore the unique aspects, and inquire about the cost and technology. The majority of events had a car dealer or EV owner present to answer questions from the public. RCEA staff were also onsite to educate consumers about vehicle range, charging station infrastructure, incentives, and the variety of available models. These hands-on experiences have been proven to address the listed barriers by showing that Battery Electric Vehicles (BEVs) can be more fun to drive than internal combustion engine (ICE) vehicles, while also tackling environmental and societal costs.

RCEA exceeded the grant requirements by organizing one Ride-and-Drive (R&D) and nine EV expo events; only a total of five R&Ds and expos were required. All additional expos were funded by RCEA.

- Expo, 4th of July Festival, July 2017 (Eureka, Humboldt County)
- Ride and Drive, Turtle Bay Exploration, August 2017 (Redding, Shasta County)
- Expo, Oyster Festival, June 2018 (Arcata, Humboldt County)
- Expo, Plant Green Sustainability, October 2018 (Arcata, Humboldt County)
- Expo, Eureka Natural Foods Earth Day, April 2018 (Eureka, Humboldt County)
- Expo, 4th of July Celebration, 2018 (Crescent City, Del Norte County)
- Expo, Humboldt State University Career and Volunteer Expo, February 2019 (Arcata, Humboldt County)
- Expo, Eureka Natural Foods Earth Day, April 2019 (Eureka, Humboldt County)
- Expo, Bayside Community Hall Alternative Transportation Fair, April 2019 (Bayside, Unincorporated Humboldt County)

4 "VELOZ Best.Drive.EVer. 2017 Ride and Drive Series Final Report," Charge Across Town, VELOZ, accessed October 2, 2019, https://www.veloz.org/wp-content/uploads/2018/03/BDE-2017-FINAL-REPORT_r1.pdf

5 Kenneth S. Kurani, Nicolette Caperello, Jennifer TyreeHageman. "New Car Buyers' Valuation of Zero-Emission Vehicles: California," *UC Davis Plug-In Hybrid & Electric Vehicle Center* (March 2016): 99.

- Expo, Humboldt State University Freshman Orientation Alternative Transportation Fair, August 2019 (Arcata, Humboldt County)

Figure 1: EV Ride and Drive at Turtle Bay, Redding 2017



Interested buyers learn about the features of a Fiat 500e from a local dealer.

Photo Credit: Redwood Coast Energy Authority

Figure 2: Eureka Natural Foods Earth Day 2018 EV Expo, Eureka 2018



Electric vehicles on display at Eureka Natural Foods Earth Day.

Photo Credit: Redwood Coast Energy Authority

RCEA exceeded the grant requirements and contributed funding to participate in 11 community (“tabling”) events over the course of the project; only six were required by the grant. By participating in a wide range of community events, the project team was able to educate a diverse cross-section of residents about the benefits of ZEVs. Events selected for this project were carefully chosen to reach the widest possible demographic. Participation in events that did not have a sustainability focus, like Pony

Express Days in McKinleyville, initiated beneficial conversations about ZEVs with residents that had never been exposed to ZEVs. The Crescent City 4th of July event was a similar experience. The transportation team had the opportunity to answer questions and hand out educational materials to an audience that lacked prior exposure to ZEVs. Although this has limited near-term impact, it helps to set the stage for future stages of electric vehicle technology adoption.

- Pony Express Days, June 2017 (McKinleyville, Unincorporated Humboldt County)
- Hybrid and Electric Races at Samoa Drag, June 2017 (Samoa, Unincorporated Humboldt County)
- Oyster Festival, June 2017 (Arcata, Humboldt County)
- Fish Festival, June 2017 (Trinidad, Humboldt County)
- Samoa Social Club RCEA Open House, March 2018 (Samoa, Unincorporated Humboldt County)
- Plaza Grill View Room RCEA Open House, March 2018 (Arcata, Humboldt County)
- North Country Fair, September 2018 (Arcata, Humboldt County)
- Sequoia Park Zoo RCEA Sponsored Free Day, October 2018 (Eureka, Humboldt County)
- Unitarian Fellowship Climate Action Event, March 2019 (Bayside, Unincorporated Humboldt County)
- 4th of July Festival, July 2019 (Eureka, Humboldt County)
- North Country Fair, September 2019 (Arcata, Humboldt County)

The following materials were distributed:

- ZEV Incentives Sheet
- ZEV Cost Comparison Sheet
- Clean Cities Vehicle Buyer's Guide
- Map of public electric vehicle charging stations
- Map of upcoming DC Fast Charging Stations
- Recent versions of RCEA's ZEV newsletter
- Information on Energy Commission-funded alternative fuels projects in the region
- RCEA promotional items, like pens and stickers
- *Electric Car Insider* Buyer's Guide

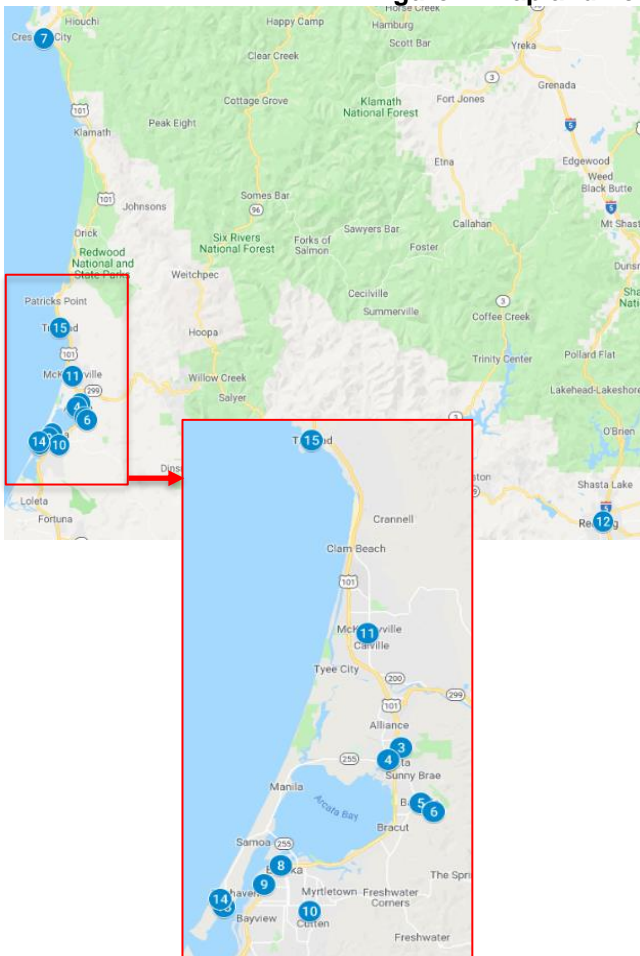
Figure 3: Hybrid and Electric Races at Samoa Drag, Samoa 2017



RCEA staff setting up an informational table.

Photo Credit: Redwood Coast Energy Authority

Figure 4: Map and Locations of Community Events



Map Number	Location Name	# of Events
1	Arcata Main Street, Arcata	2
2	Arcata Plaza, Arcata	3
3	Humboldt State University, Arcata	2
4	Plaza Grill, Arcata	1
5	Bayside Community Hall, Bayside	1
6	Unitarian Fellowship, Bayside	1
7	Beachfront Park, Crescent City	1
8	2 nd Street, Eureka	2
9	Eureka Natural Foods, Eureka	2
10	Sequoia Park Zoo, Eureka	1
11	Central Ave, McKinleyville	1
12	Turtle Bay Exploration Park, Redding	1
13	Humboldt Bay Social Club, Samoa	1
14	Samoa Drag Strip, Samoa	1
15	Trinity Street, Trinidad	1

Source: Google Maps, adapted by the Redwood Coast Energy Authority

2.1.2 ZEV Seminars

The project team completed four seminars educating the local community on ZEV topics related to sustainability, economics, and career opportunities. The completed seminars were developed to encourage the adoption and acceptance of advanced vehicle technology. Seminars included:

- Humboldt State University Career in Sciences Panel, February 2018 (Arcata)
 - RCEA staff educated college students about current ZEV technology and career options in the field.
 - ~50 attendees
- Humboldt State University Sustainable Future Speaker Series (SFSS) Panel, October 2018 (Arcata)
 - Along with several other experts, RCEA staff spoke to community members, students, and professors.
 - The SFSS Panel consisted of six experts from the ZEV field and included representatives from ChargePoint, RCEA, Schatz Energy Research Center, California Fuel Partnership, California Air Resources Board, and the Humboldt Transit Authority.
 - Each panelist shared their knowledge regarding local pathways to achieving 5 million zero emission vehicles in California by 2030. RCEA specifically spoke to ways that EVs can be feasible for lower-income drivers.
 - ~60 attendees
- Dealer Education Seminar, September 2019 (Eureka)
 - Adapting resources from similar Sac EV presentations,⁶ this seminar educated the sales staff of a local dealership about ZEV technology, the customer experience, the ZEV market, charging an EV, EV savings, EV batteries, giving successful test drives, etc.
 - As part of these dealer education efforts, dealer toolkits were created and delivered to local dealerships. These toolkits included:
 - Map of local charging stations published by the Humboldt Insider
 - EV FAQ sheet with answers to common customer questions about EVs
 - List of rebates and incentives for EV purchasers in Humboldt County
 - Copies of forms required to apply for various incentives
 - 6 attendees at seminar, 7 dealerships given toolkits
- Meet-the-Driver Seminar, October 2019 (Arcata)
 - A featured event as part of October Energy Awareness Month, several ZEV Enthusiast Group members joined RCEA at the Pastels on the Plaza! Community event in Arcata.
 - Enthusiasts answered community member questions and EV FAQ sheets were displayed at the table to help start conversation. The goal of this seminar was to give the public an opportunity to learn about EVs directly from drivers.
 - ~50 attendees

⁶ "EV Dealer Training PowerPoint," Electric Vehicle Consumer & Dealer Educational Videos, Sac EV, accessed October 23, 2019, https://drive.google.com/file/d/0B_ag0VmlLvOBnY052REU5eIVTMzQ/view.

Figure 5: Meet the Driver Seminar, Arcata 2019



RCEA staff and EV drivers answering questions from community members.

Photo Credit: Redwood Coast Energy Authority

2.1.3 Newsletters

RCEA distributed six newsletters to the general public. Newsletters were distributed using the e-mail campaign management service MailChimp, posted on the RCEA website, made available in the RCEA lobby, and hard copies were handed out at ZEV promotion events. E-mail versions of the newsletters were sent out to 937 subscribers and had an open rate of 22.4%. E-mail open rates were tracked using Mailchimp's campaign management software. Across *Implementation Phase 1* and *Phase 2* grants, 12 newsletters were received by the community.

Numerous topics were included in each newsletter, with the feature articles are listed below. Copies of these newsletters are in Appendix A.

- Spotlight on Megan Tolbert, Local EV Owner
- Spotlight on Sarah Goodwin, Northern Humboldt Union High School District Transportation Director
- EV Road Trip Tips
- EV FAQs
- Electric Bikes Spotlight
- EVCS Infrastructure Update and Tips

2.1.4 Earned Media Coverage

Over the course of the project, four earned media placements were achieved:

- BiCoastal Media
 - An announcement for the fleet conference scholarship was aired in August 2018 on several radio stations owned by BiCoastal Media, a company based in Humboldt County.
- Channel 3 news
 - RCEA hosted ZEV Expos at the annual Eureka Natural Foods Earth Day celebration in April 2018 and April 2019. In 2018, Channel 3 news interviewed staff about the benefits of driving EVs and the feasibility of purchasing a ZEV.
- KHUM
 - At the same 2018 Earth Day event, RCEA staff were interviewed by local radio station KHUM. Staff answered interviewer questions pertaining to the benefits and specifications of plug-in electric hybrids.
- Access Humboldt
 - Access Humboldt is a non-profit based in Humboldt County that shares public content via TV and radio. One Access Humboldt show, aired over radio and TV, is “Community Voices.”
 - Staff member Aisha Cissna was featured in an interview in October 2018. During the interview, Aisha and the host discussed the growing network of charging stations in the state and the various types of ZEV technologies, along with the consumer benefits of purchasing a ZEV.

Figure 6: Sustainable Futures Speaker Series Panel Discussion, Arcata 2018



Dr. Kevin Fingerman posing a question to panelists at the Sustainable Futures Speaker Series panel discussion on California ZEV mandate implementation.

Photo Credit: Redwood Coast Energy Authority

2.1.5 Online Presence

RCEA maintains and continuously updates the Advanced Fuels and Transportation webpage on the agency website: <https://redwoodenergy.org/services/transportation/>.

The Advanced Fuels and Transportation page is designed to provide ZEV resources online, with a focus on localized knowledge. Featured sections include updates, owning an EV, EV FAQs, local charging stations, owning a charging station, and fuel cell electric vehicles.

A breakdown of hits for each page is covered below. RCEA's web platform has hit counts for a 1-year period and 3-year period.

Table 2: RCEA Transportation Webpage Hit Counts

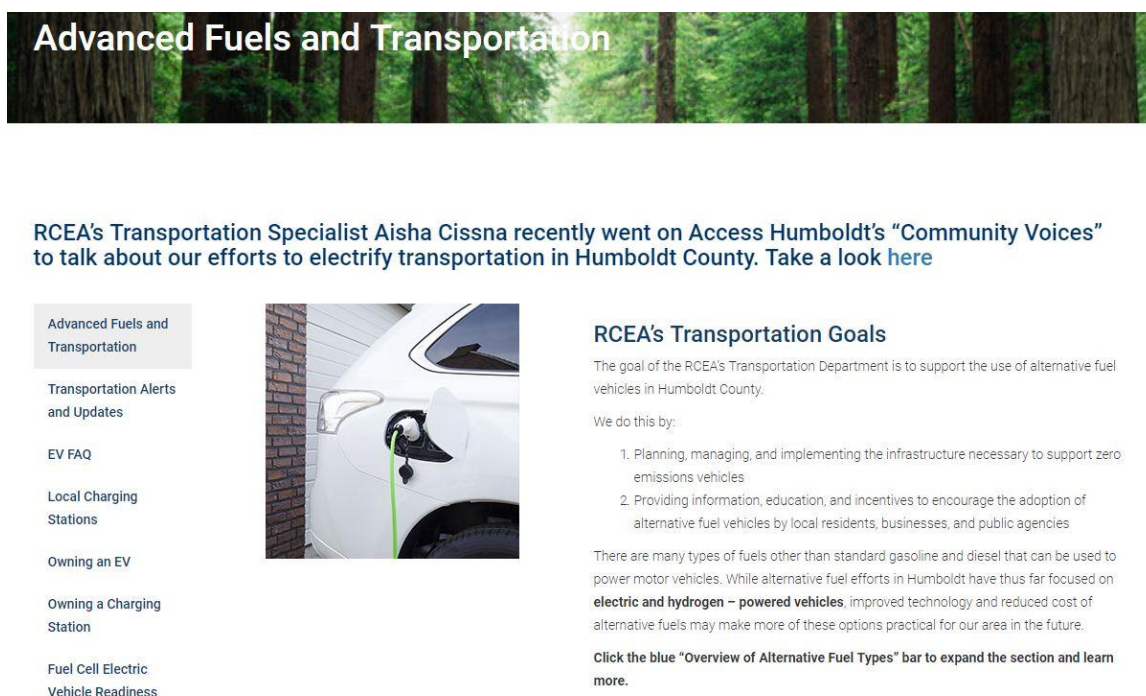
Web Page Title	August 2018 to August 2019	August 2016 to August 2019	
	1-year total	Annual average	3-year total
Landing Page (general info)	269	120	361
Local Charging Stations	403	157	470
Owning an EV	98	39	118
Fuel Cell EV Readiness	64	26	77
Owning a Charging Station	62	28	84
EV FAQ	43	14	43
Alerts and Updates	42	31	94
FCEV Resources for Emergency First Responders	32	19	58
ZEV Enthusiasts	31	10	31

Web pages in general are observing significant readership gains in the most recent year. In 2017 the RCEA website merged with a website designed to support its new Community Choice Energy program, and this changeover may have influenced readership counts. This makes comparisons to 2016 uncertain, but they are still included here because the overall upward trend is clear.

Promotional materials offered at outreach events are also available on the RCEA webpage. The following information is currently featured on the website:

- Upcoming ZEV events
- Types of ZEVs
- Advanced fuel options
- Owning an EV
- Regional charging station maps
- Information about and user tutorials for local charging stations
- Transportation projects in the community
- ZEV Enthusiast and Ambassador program features
- Past and present newsletters
- *EV Charger Selection Guide*
- ZEV Incentives
- Department of Energy's list of 2019 ZEV models
- Pacific Gas & Electric Company (PG&E) EV rates

Figure 7: RCEA Advanced Fuel and Transportation Department Homepage



A screenshot of the RCEA Advanced Fuel and Transportation Department homepage, showing the landing page and the navigation menu.

Source: Redwood Coast Energy Authority

RCEA also maintains an active social media presence covering a variety of electrified transportation topics. Past social media posts have highlighted relevant ZEV articles, community events, and other information to encourage public interest in and excitement about ZEV technology (Appendix B). Posts also promoted the regional EVCS network and ZEV efforts by RCEA's partners. RCEA provided updates on the direct current fast charger (DCFC) network currently being installed by ChargePoint and Recargo, advertised the DCFC network map on our webpage and social media, and provided information about the course of the network's construction process.

RCEA also posted a Facebook Live Recording of the "Electric Vehicle Purchasing 101" presentation to its transportation webpage. This recording is available on Facebook and the RCEA website; as of August 2019, the video has 487 views and 8 shares.

2.1.6 Presentations

The project team exceeded grant requirements and completed 9 presentations to promote ZEV awareness and encourage adoption. Presentations were given at the following events in and outside of our region:

- PG&E/Community Choice Aggregation EV Forum, August 2017 (San Francisco)
 - At this forum, RCEA staff presented information about EV readiness planning and implementation in our region, with a focus on actions PG&E could take to increase EV adoption through infrastructure and public access improvements.
- City of Arcata Planning Commission, November 2017 (Arcata)

- A summary of EV ADA requirements and new California Building Code requirements for EV infrastructure was provided. An audience of 60+ individuals were present.
- Arcata Elementary School, April 2018 (Arcata)
 - Students learned about EVs and the work RCEA is doing to promote them.
- California Energy Commission Staff Workshop: California PEV Infrastructure Projections, May 2018 (Sacramento)
 - RCEA staff presented the methodology and current approach to our electric vehicle infrastructure macro- and micro-siting efforts. The presentation was one of several that covered various modelling approaches, with the main discussion centering around the Energy Commission and National Renewable Energy Laboratory's (NREL) new EV Infrastructure Projection (EVI-Pro) Tool. RCEA's presentation was distinct from the others due to its focus on solutions to rural infrastructure challenges and needs.
- EV Purchasing 101, June 2019 (Eureka)
 - Three versions of this presentation were delivered to separate groups:
 - Eureka Old Town Rotary Club
 - Eureka Kiwanis Club
 - General public at the Eureka Chamber of Commerce
 - The presentation provided a pragmatic guide to those interested in leasing or purchasing an EV in the near future. Topics included available incentives, dealer tips, vehicle specifications, infrastructure locations, and greenhouse gas (GHG) comparisons. A copy of this presentation can be found in Appendix C.
- California Energy Commission Workshop on the "Clean Transportation Program Benefits Report and Successes for 2019 Integrated Energy Policy Report (IEPR)," July 2019 (Sacramento), followed by written comments.⁷
 - RCEA staff participated as a panelist. The workshop "solicited public comments on the Clean Transportation Program Benefits Report findings, Benefits Report methodology, funding highlights, and success stories."
 - RCEA covered best practices and lessons learned as our transportation program continues to achieve goals centered around planning, managing, and implementing infrastructure necessary to support ZEVs, and providing information, education, and incentives to encourage the adoption of low-carbon fuel vehicles by local residents, businesses, and public agencies.
 - Highlights included the development and administration of RCEA's transportation program, and management of RCEA's regional EVCS network.
- California Energy Commission Workshop on "Electric Vehicle Charging Infrastructure Permitting Workshop," August 2019 (Sacramento)
 - RCEA staff participated as a panelist, providing a rural perspective regarding ADA compliance impacts on EVCS installations.
 - Staff submitted written comments to provide feedback about readiness planning and implementation, practical realities of operating a not-for-profit

⁷ Dana Boudreau, "Redwood Coast Energy Authority – General comments on workshop topics," CEC Docket 19-IEPR-04, TN# 229186, submitted July 31, 2019.
<https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=19-IEPR-04>

charging network, and considerations for future grant design to better serve people with disabilities.⁸

Figure 8: Arcata Elementary Presentation, Arcata 2018



RCEA CivicSpark staff members present information about EVs to elementary school students.

Photo Credit: Redwood Coast Energy Authority

2.1.7 PEV FleET Assistance

Under the *North Coast PEV Readiness Plan Implementation Phase 2*, 5 analyses were completed. Through *Implementation Phase 1*, two analyses were completed. *Phase 1* analyses are indicated in italics. The project team fell short of the *Implementation Phase 2* goal of 6 fleet analyses due to lack of response from fleet managers, despite repeated attempts at contact and distribution of fleet analysis intake forms.

- Humboldt County Office of Education (HCOE)
- Redwood Energy, a local consulting firm
- City of Rio Dell
- City of Eureka
- City of Fortuna
- *County of Humboldt*
- *City of Arcata*

8 Dana Boudreau, "Redwood Coast Energy Authority – EV permitting and ADA in rural settings," CEC Docket 17-EVI-01, TN# 229767, submitted September 18, 2019.

<https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=17-EVI-01>

These analyses determined the potential cost savings and emission reductions achievable by replacing end-of-life conventional vehicles with BEVs or Plug-In Hybrid Electric Vehicles (PHEVs). The County of Humboldt represents one of the largest fleets in the region, and overall 50 fleet vehicles were analyzed as part of these 8 projects. The fleet analysis for Redwood Energy consisted of an in-depth phone conversation, while the other fleet managers did not have time for a call and instead submitted a fleet intake form and received an informational memo from RCEA.

To conduct these fleet analyses, the project team utilized an Excel tool developed by SERC as part of *North Coast PEV Readiness Plan*. This tool, called the PEV Fleet Evaluation Tool (PEV_FleET), uses a set of inputs to calculate lifetime GHG abatement and payback time on various ZEV purchases. If the PEV replacement paid for itself within ten years of purchase, it was proposed to the organization for consideration. The PEV_FleET tool can customize each of the following parameters to account for each organization's unique circumstances:

- Fuel economy
- Gasoline price
- Average trip distance
- Annual mileage
- Percentage city driving
- Organization's electricity rate, including time-of-use (TOU)
- Percentage on/off peak charging
- MSRP of ZEV replacement option(s)
- MSRP of ICE replacement option(s)
- State contract pricing
- Used ZEV pricing
- Applicable rebates, tax credits, and other incentives
- Electric vehicle supply equipment (EVSE), brand, model, and capabilities
- Number of EVSE units purchased
- EVSE unit design, engineering, and installation costs
- PHEV and BEV maintenance cost factors (as function of conventional maintenance costs)
- Real discount rate

The first step in the analysis process was finding interested fleet partners. A list of fleets in the region was compiled and the project team began making phone calls. RCEA has an agency goal of electrifying all municipal fleets by 2030. Thus, preference was given to participating local municipalities, but fleets with a large number of light duty vehicles were also engaged.

Fleets received a summary of the results following the completion of their respective fleet analysis. Several of these summaries are included in Appendix D. In some cases, RCEA provided extra support by providing charging station infrastructure siting and vehicle procurement assistance. While more budget-intensive, this additional support has been shown to make the difference between a memo that sits on the shelf and the actual purchase of an EVCS and EV.

As a result of this additional support, HCOE purchased a charging station for their fleet. Once installed, HCOE plans to purchase one of the EVs that was recommended via the fleet analysis. The City of Rio Dell intends to purchase an e-utility truck next fiscal year.

Funds associated with this grant are limited, but should additional funding arise, RCEA hopes to use these fleet analyses to increase fleet ZEV adoption. The PEV_FleET tool is also currently available upon request to any fleet managers in the area who are interested in performing their own in-house analysis.

2.1.8 Green Fleet Policies and Climate Action Plans

RCEA is working with the County of Humboldt to complete the Humboldt County 2040 Climate Action Plan. RCEA has contributed several low-carbon transportation measures to the CAP, which is scheduled for completion in December 2019.

These measures include:

- Measures that directly promote transportation electrification:
 - Install public Level 2 charging stations
 - Install public Level 3 charging stations
 - Install hydrogen fueling stations
 - Promote ZEV adoption
 - Replace consumption of petrol-diesel with renewable diesel
 - Promote e-bike adoption
 - Increase transit service frequency/speed
 - Require contractors of new developments to provide 1 free transit pass for each housing unit
- Measures that indirectly benefit ZEV adoption:
 - Install bike parking infrastructure
 - Integrate bike transport with public transit
 - Expand regional bike trail network
 - Require contractors of new residential, retail, office, industrial, and mixed-use projects to build within designated zones that increase density of development
 - Implement Commute Trip Reduction Program
 - Establish telecommuting program
 - Increase mixed use development
 - Implement zoning code that has block length maximums for new development, which in turn leads to pedestrian- and bike-friendly city design

In parallel with, and complementary to, CAP measure development, RCEA is also completing the Comprehensive Action Plan for Energy (CAPE). This is the primary strategic planning document for RCEA. RCEA is the leading authority on energy initiatives for Humboldt County, so the CAPE serves as an integral roadmap for achieving a decarbonized future for the region. The CAPE includes a low-carbon transportation section, including:

- Reduce vehicle miles travelled (VMT)
 - Strengthen broadband infrastructure

- Encourage transportation-efficient land use planning
 - Facilitate multi-modal transportation infrastructure
- Increase advanced fuel vehicle adoption and fuel efficiency
 - Electrify transportation (through local incentives)
 - Promote advanced, low-carbon fuels (hydrogen, biodiesel, ethanol, renewable diesel)
 - Promote efficient driving practices (idle-reduction technology, aerodynamic retrofits, low-rolling resistance tires, explore barge and rail)
- Expand fueling infrastructure
 - Develop transportation electrification infrastructure (charging stations and incentives)
 - Streamline permitting for PEV charging infrastructure
 - Promote vehicle-to-grid connection

The CAPE will be completed in late 2019, at which point it will be available to the public on RCEA's website.

2.1.9 National Association of Fleet Administrators Sustainable Fleet Training

In October 2018, the RCEA Transportation Specialist and two fleet operators from the County of Humboldt attended a fleet conference, the NorCal Clean Technology Forum & Expo, hosted by Clean Cities Sacramento, East Bay Clean Cities, the West Coast Collaborative, and the Green Transportation Summit & Expo.

Attendees learned about low emission and zero emission technologies for on- and off-road vehicles, renewable diesel fleet integration, community efforts to address air quality, funding opportunities, as well as insights from policy and regulatory leaders at the state and federal levels. The experience was a success and helped strengthen the relationship between RCEA and Humboldt County's largest fleet managers. The County fleet managers expressed great appreciation for the opportunity to attend and shared that they learned a lot.

2.1.10 Promotion of Local Green Fleet Activities

The City of Arcata purchased a Chevy Volt in September 2017. RCEA publicized this on our Facebook page. RCEA also showcased the Northern Humboldt Unified School District in a newsletter article that highlighted their renewable diesel bus fleet.

Figure 9: Northern Humboldt Unified School District Renewable Diesel-Powered Bus



Sarah Goodwin, Transportation Director for the Northern Humboldt Unified School District, smiles for a photo by one of the fleet's 30+ school buses that are fueled by renewable diesel.

Photo Credit: Redwood Coast Energy Authority

Figure 10: Renner Petroleum Sign in Front of Humboldt Unified School District Bus



Renner Petroleum is the renewable diesel supplier for Northern Humboldt Unified School District's school bus fleet.

Photo Credit: Redwood Coast Energy Authority

2.2 ZEV Ombudsman

2.2.1 Educate and Expand Public Access to Resources About ZEV Use and Infrastructure

RCEA engages with the general public and fleet owners in several capacities. In addition to the engagement activities described in the previous section, RCEA educates the general public and fleet owners through office visits, phone calls, and e-mails. Since October 2017, the project team has responded to more than 200 customer calls, consultation requests, and EVCS maintenance issues.

Frequent topics of discussion with customers include:

- Charging station locations
- How to pay for charging stations (downloading apps, RFID cards, etc.)
- Driving tips to maximize battery range
- Local availability of ZEVs at dealerships
- Ideal charging station stops for longer road trips within and outside of the North Coast region
- Information about available ZEV incentives and how to apply for them

RCEA has developed a variety of print and digital resources to help educate the public about ZEVs. Two of the most popular documents are the incentives sheet and the EV FAQ sheet. Copies of all these documents, as well as all the other materials listed in this section, can be found in Appendix E.

RCEA also shares information about local charging infrastructure, including a map of our Level 2 charging stations and a map of planned Level 3 charging stations. The Level 3 charging station map was initially created as an answer to frequent customer calls inquiring about the status of DCFC installations in the region. RCEA is not directly installing any DCFC stations but assumed the role of a liaison. RCEA believes keeping the public informed about incoming fast-charging infrastructure will encourage more drivers to go electric.

ChargePoint reached out to RCEA to serve as a liaison for ChargePoint's Energy Commission-funded DCFC project along Highway 101. As ChargePoint communicated updates on station locations and installation dates, RCEA updated the map featured on our website. As many of the projects in the funding pipeline are being installed, and are not just planned, this map is becoming obsolete.

In June 2019, RCEA issued a press release regarding upcoming DCFC stations in the region and worked with EV charger manufacturers to facilitate site selection.

RCEA has conducted a review of charging station locators that are available via phone apps and websites so we can share these resources with our customers on our website. The initial purpose of this exercise was to ensure our locations were included on all possible locators. We found several locators only include proprietary stations; given our status as a public agency and interest in accessible charging for all drivers, we will focus on promoting the locators that include stations of all brands.

2.2.2 Regional Collaboration

RCEA has a history of collaborating with other counties in the region through the *Northwest California Alternative Fuels Readiness Project* and the *North Coast and Upstate Fuel Cell Vehicle Readiness Project*.

Specifically, RCEA has relationships with the following Counties (listed roughly north to south:

- Del Norte
- Siskiyou
- Shasta
- Trinity
- Tehama
- Glenn
- Lake
- Mendocino

Over the course of the grant term, RCEA has met individually and collectively with these organizations to provide education about ZEVs (new models, pricing, government mandates, incentives, etc.) and related infrastructure (current infrastructure, upcoming infrastructure, and funding opportunities). Initial meetings took place in late November 2017 and typically lasted for one hour.

These efforts include sharing information about the progress of new charging stations in our region, sharing best practices, and advocating for support for rural regions at the state and federal level as we implement ZEV planning. Furthermore, RCEA explored opportunities for regional collaboration and educated our project partners on ZEVs and associated infrastructure.

On February 22, 2018, we presented a webinar (Appendix F) about fuel cell electric vehicles to these partners.

RCEA presented at the North State Super Region (NSSR) meeting in April 2018 (Appendix F). The NSSR is made up of regional transportation agencies from 16 counties in Northern California.⁹ The purpose of NSSR is to identify common transportation, growth, and land use issues, and formulate unified strategies that can be advocated to implementing agencies and the public. RCEA's presentation focused on the implementation of our PEV readiness plan.

Other collaboration efforts with regional entities:

- Attended the Mendocino County ZEV Advisory Group and shared best practices
- Presented at several EV-focused California Energy Commission workshops (See section 2.1.6 above for details)
- Provided best practices and charging station utilization data to the California Public Utilities Commission to inform their policy-making efforts for California residents who do not own private charging
- Informed the California Air Resources Board white paper regarding an assessment of light duty ZEV regional readiness planning

⁹ North State Super Region, accessed October 18, 2019, <http://www.superregion.org/>

- Shared best practices with other Community Choice Aggregators (CCAs) for:
 - Low Carbon Fuel Standard (LCFS) reporting; this engagement initiated with Sonoma Clean Power, but as of October 2019, at least six Community Choice Aggregators participate in a sub-committee to collaborate on LCFS topics.
 - Infrastructure siting planning and approach; Sonoma Clean Power and Valley Clean Energy.
 - Transportation Electrification: the same CCA LCFS sub-committee also collaborates on other electrification topics including EV tariffs, incentive and rebate program design, and data access and analysis.

2.2.3 ZEV Group Buy

As a Community Choice Aggregator, RCEA can use ratepayer fees to design and implement programs to benefit the ratepayers of Humboldt County. The RCEA Board of Directors has voted to dedicate \$1 million in projected revenue to design new ratepayer programs through 2022. RCEA continues to evaluate a community-wide “group buy” program to bring a greater supply of ZEVs into Humboldt County, and decrease the costs of these vehicles for community members.

Given the grant budget and time constraints, it was not feasible to implement the program during the grant term; however, RCEA received approval from the CAM to complete program design and planning for a group-buy that can be implemented in the future. The project plan can be found in Appendix G.

Peninsula Clean Energy and Sonoma Clean Power are two other CCAs that have designed and implemented group-buy programs. Both organizations were valuable resources as RCEA drafted the group-buy program design. Sonoma Clean Power (SCP)’s CCA appears to be the most comprehensive and expansive. SCP funded three cycles of a group-buy program, the first cycle serving as a pilot. SCP discontinued the group-buy program in 2019 after the organization determined that the program’s objective of accelerating the EV market had been sufficiently satisfied and ratepayer funds would be best spent on installing more public charging infrastructure. SCP hopes to collaborate with the Energy Commission to initiate a California Electric Vehicle Infrastructure Project (CALeVIP) rebate program in their service territory in the near future. RCEA is reaching similar conclusions, although we are evaluating options to make ZEVs more accessible for low-income communities. This may include increasing local used vehicle supply, developing income-qualified incentives for used vehicles, or similar mechanisms.

Other group-buy lessons learned from CCA engagement can be found in Chapter 3.

2.2.4 Infrastructure Match Funds

With allocated CCA funds for transportation-related public programs, RCEA tracked EVCS infrastructure funding opportunities during the grant duration and engaged with two programs: PG&E EV Charge Network, and CALeVIP.

The PG&E EV Charge Network was announced in Fall 2017. RCEA staff conducted the following activities:

- Joined the Program Advisory Council to represent rural communities and bring knowledge of our not-for-profit charging network. Staff presented characteristics

of a rural setting, the benefits that a utility can bring to locations otherwise underserved by providers, and encouraged PG&E to use their ubiquitous electrical distribution network to benefit hard-to-reach markets.

- Conducted local outreach to inform and serve as a liaison for potential site hosts. Staff worked to proactively develop the local market while program criteria were developed. Rural participation became infeasible mostly based on financially-driven criteria, such as a ten-port minimum per location. As a result, RCEA was unable to identify any sites before the program was fully subscribed.

In Fall 2018, RCEA staff shifted attention to the Energy Commission's CALeVIP program:

- RCEA hosted a regional CALeVIP workshop on behalf of the Energy Commission and the Center for Sustainable Energy on October 1, 2018. Staff provided logistics for the workshop and conducted regional promotion to our transportation network.
- In April 2019, RCEA management authorized redirecting match funds from the previous PG&E EV Network to CALeVIP.

At the CALeVIP regional project launch in May 2019, staff were able to submit applications requesting \$294,000 for 13 sites, before program funds were fully subscribed within 24 hours. Most applications were targeted at aging stations within our charging network, along with several new key locations where we could secure site host participation. Starting in October 2019 staff began receiving fund reservations and will conduct implementation through July 2020. Staff is also supporting the Blue Lake Rancheria with their CALeVIP application and, following successful completion of their project, RCEA plans to support the new charging stations in our existing not-for-profit regional public charging network.

2.2.5 ZEV Enthusiast Group

RCEA hosted the inaugural ZEV Enthusiast Group meeting in Spring 2018. The goal of the Enthusiast Group was to foster community awareness about ZEVs, increase the adoption of ZEVs, and support the expansion of ZEV infrastructure. Group activities included participating at outreach events, providing feedback on RCEA's ZEV program, and sharing ZEV-related resources to other residents of Humboldt County.

During the program design phase of this task, RCEA hosted an intern from Humboldt State University who developed a project plan for the Enthusiast Group. The project plan can be found in Appendix H.

During the grant term, RCEA facilitated and hosted four Enthusiast Group meetings.

At the first meeting, RCEA shared the features of our transportation program, information about state policy, and the locations of current charging station infrastructure. After priming members with this information, the group brainstormed the types of activities they wanted to tackle during their meetings.

The list of possible activities included:

- Organize seminars/roundtable meetings (for the public, dealerships, etc.)

- Advocate locally for EV-friendly policies (comment on General Plans, attend City Council meetings, submit public comment)
- Advocate/facilitate the installation of new charging stations
- Provide information about international technological developments and innovation (ex. car-share program electrification, solar/EV charging integration)

The second meeting focused on engagement with the City of Eureka 2040 General Plan and Zoning Code Update, with a discussion on comments that could be submitted to advocate for an EV-friendly community.

The key topic of the third meeting was initiating the ZEV Ambassador Program. The ZEV Ambassador Program is distinct from the ZEV Enthusiast Group because it focuses specifically on volunteer opportunities. All members of the public were invited to the ZEV Enthusiast Group meetings, but Ambassadors underwent training to become versed in RCEA resources and tools so they could share them with the general public at outreach events. The Ambassador Handbook can be found in Appendix H. Ambassadors to date have also owned EVs and thus can inform the public about EVs at community events. While Energy Commission funding is dwindling for outreach events, these volunteers greatly increase the capacity of RCEA to educate the community about EVs.

Examples of Ambassador engagement include:

- *Eureka Natural Foods Earth Day 2018*: Ambassadors showed a Chevrolet Bolt
- *HSU Alternative Transportation Fair 2018*: Ambassadors showed a Chevrolet Bolt
- *Crescent City 4th of July Celebration 2018*: Ambassadors showed a Chevrolet Bolt and a Tesla Model S
- *Bayside Community Hall Alternative Transportation Fair 2019*: Ambassadors showed an e-bike and a Tesla Model S
- *Eureka Natural Foods Earth Day 2019*: Ambassadors showed an e-bike and a Tesla Model S

Ambassadors have also been featured in newsletters and other educational materials.

During the final RCEA-funded ZEV Enthusiast Group meeting, members discussed the scope of the Enthusiast Group meetings going forward and their ongoing participation with the Ambassador Program. All of the meeting attendees had been trained in the Ambassador Program and were enthusiastic about continuing to work with RCEA to promote ZEVs in the community. It was decided that the Enthusiast Group and the Ambassadors would continue on as separate entities, with the Enthusiast Group meeting whenever its members decided to set a date, and the Ambassadors remaining on call for assisting with RCEA events.

2.2.6 Site Host Engagement and Support

As the operator of a regional not-for-profit EV charging network, RCEA is well suited to provide new and ongoing site host relationships. RCEA provided charging station consultations to more than ten community organizations, educational institutions, private businesses, healthcare facilities, municipalities, and state agencies who were interested in installing charging stations. Some consultations were preliminary conversations, while were in-depth analyses.

Key consultations included:

- Bayside Grange
- Humboldt State University
- Harbor Lanes Bowling Alley
- Fortuna Open Door Health Clinic
- City of Arcata Community Center
- Philippe Lapotre Architect Firm
- Northwood Auto Plaza
- Humboldt County Office of Education
- North Coast Co-Op
- Six Rivers National Forest Eureka Office
- Humboldt County Airport
- Blue Lake Rancheria

The status and outcomes of these consultations are:

- *Bayside Grange*: Discussed potential of site to host an EVCS and provided a copy of our ARV-13-029 Final Report.
- *Humboldt State University*: Provided data to assist with determining pricing structure and provided information to assist with hardware and network management services selection. We also shared information regarding ownership structures.
- *Harbor Lanes Bowling Alley*: Site host was seeking funding for hardware. We do not have current funding, but directed the site host to potential funding programs, and shared rebate/incentive information for plug-in electric vehicles.
- *Fortuna Open Door Health Clinic*: RCEA assisted this site with charging station hardware and network provider selection. We shared the *Electric Vehicle Charger Selection Guide* and offered information regarding operation and maintenance services. As a result of this assistance, Fortuna Open Door installed 7 EV charging ports that are jointly managed by RCEA and the clinic.
- *City of Arcata Community Center*: The project team conducted a site walk at the community center to conduct a load analysis to determine the proper siting for a charging station and determine the capability of this site to host numerous charging stations in the future. We are also assisting the City of Arcata with station selection, various station ownership opportunities, reserved match funds, and have helped with the purchasing process.
- *Philippe Lapotre Architect Firm*: We assisted this business by doing a site walk to determine whether a public charging station would be feasible. Specifically, we consulted on ADA considerations using an interim ADA Fact Sheet developed through ARV-14-046 (Appendix I) and determined that the parking lot would not be feasible for public charging. We also helped them review alternative charging station options and directed them to potential funding sources.
- *Northwood Auto Plaza*: This business received a preliminary consultation and was provided with information about ADA requirements and siting best practices, as well as the *EV Charger Selection Guide*.
- *Humboldt County Office of Education*: In conjunction with their fleet analysis, HCOE was provided with a consultation for charging station purchasing and

installation. As result of the resources we provided, they purchased a charging station that, once installed, will allow for a future purchase of an EV.

- *North Coast Co-Op*: This business received a preliminary consultation and was provided with the link to our *EV Charger Selection Guide*.
- *Six Rivers National Forest Eureka Office*: This office received a preliminary consultation and was provided with the link to our *EV Charger Selection Guide*.
- *Humboldt County Airport*: RCEA is partnering on a microgrid project at the regional airport, funded through the Energy Commission's Electric Program Investment Charge program.¹⁰ Part of this project will be to install EVCS that can support EV charging during power shutoffs as an integral part of onsite solar and storage equipment, and to test various demand response capabilities. Our existing EVCS at the Blue Lake Rancheria have already provided a preliminary pilot site to evaluate demand response with existing hardware and network services and prepare testing protocols for the upcoming airport microgrid.
- *Blue Lake Rancheria*: As of October 2019 the Blue Lake Rancheria successfully reserved CALeVIP funds for five new dual-port EVCs. RCEA currently provides operations and maintenance at two existing EVCs on their reservation, and is currently collaborating with the Tribe to implement their CALeVIP project and add the new chargers into our existing network.

It is worth noting that during the recent PG&E Public Safety Power Shutoff in October 2019, RCEA EVCs at the Blue Lake Rancheria stayed online as part of their microgrid and delivered 57 kWh to EVs during the outage. RCEA plans to continue promoting and testing these pioneering steps to accelerate and integrate grid resilience and transportation electrification.

2.2.7 Updated *Electric Vehicle Charger Selection Guide*

The *Electric Vehicle Charger Selection Guide* (Appendix J) was updated first in Q4 2017. The Guide was distributed to the following entities:

- Siskiyou County Economic Development Council Website
- Regional PEVCC listserv
- EV 101 Workshop attendees
- Redwood Coast Energy Authority Website
- Local Government Commission
- Statewide Energy Efficiency Collaborative
- CivicSpark
- Alliance of Regional Collaboratives for Climate Adaptation
- EECoordinator.info
- Center for Sustainable Energy
- Northern California Center for Alternative Transportation Fuels and Advanced Vehicle Technologies (NorthCAT)

¹⁰ "The Redwood Coast Airport Renewable Energy Microgrid being installed at Humboldt County's Main Airport," Airport Solar Microgrid, Redwood Coast Energy Authority, accessed October 17, 2019, <https://redwoodenergy.org/community-choice-energy/about-community-choice/power-sources/airport-solar-microgrid/>

RCEA's second set of updates to the *Guide* were done in Q3 of 2019. These more comprehensive revisions consisted of updating the list of hardware manufacturers and network vendors to include new vendors and the specifications for new products, modifying specifications for previously-included products as needed, and creating a new section to summarize information about providers of turnkey services and network-only services. A summary chart was also created to help readers determine at a glance which vendors might best suit their needs based on the features they offer.

To broaden access, RCEA will continue efforts to engage with the Clean Cities Coalition to include the material in their national network.

2.2.8 Alternative Fuel Vehicle Education

As a follow-up to the *Northwest California Alternative Fuels Readiness Plan*, RCEA shared information about alternative (synonymously referred to as “advanced” throughout this document) fuels with the public. The RCEA website features a graphic explaining the various advanced fuels including biodiesel, renewable diesel, ethanol, natural gas, propane, electricity, and hydrogen. RCEA's advanced fuel promotion efforts primarily focused on renewable diesel and hydrogen. Specifically, RCEA highlighted the application of renewable diesel in a local fleet in one of the ZEV newsletters and on Facebook. RCEA has also included renewable diesel integration as a Climate Action Plan measure.

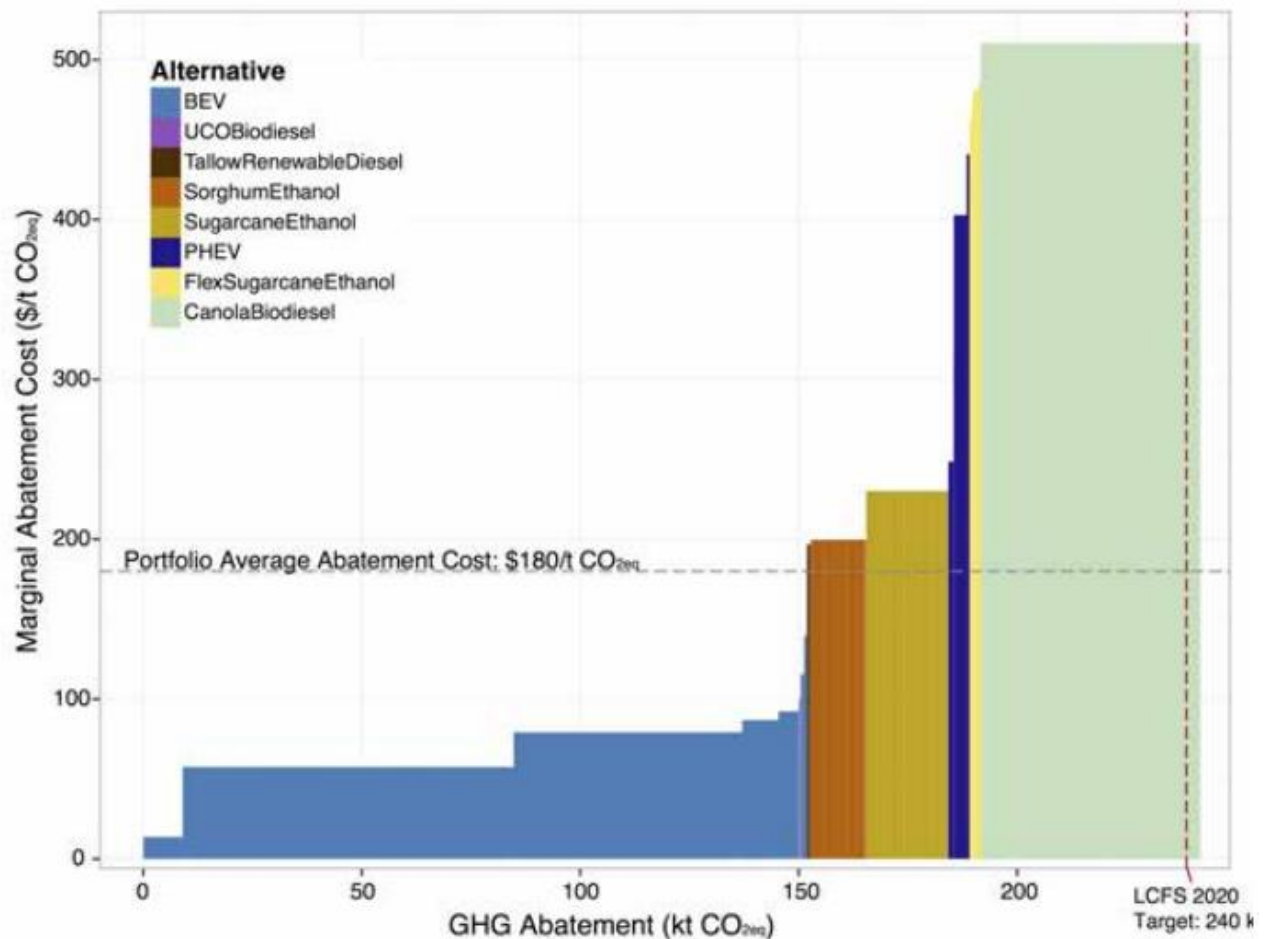
In parallel with the *Implementation Phase 2* project, RCEA managed the *North Coast and Upstate Fuel Cell Vehicle Readiness Project*. This project included an educational campaign to increase awareness of hydrogen fuel in nine rural counties. The general public did not exhibit much interest in advanced fuels outside of battery electric technology, and we surmise this is due to limited public knowledge of low-carbon fuels and their availability. The discussion of low-carbon fuels is particularly important when addressing qualms about the lack of market-ready heavy- and medium-duty EV options. A majority of Humboldt County transportation emissions come from single-passenger light-duty vehicles, and the average daily distance traveled is 40 miles. For this reason, electric vehicles are an ideal focus for advanced fuel promotion efforts with the public.

Renewable diesel promotion is a priority as it addresses consumer concerns regarding the feasibility of replacing heavy-duty vehicles (HDVs) and medium-duty vehicles (MDVs) with electric vehicles. Current all-electric sport utility vehicles (SUVs) are still expensive and limited in model variety, so are not an immediate option for many drivers. Renewable diesel doesn't fuel all MDVs and HDVs; however, due to its chemical similarity to conventional diesel, it is a relatively inexpensive drop-in fuel to reduce emissions from MDV and HDVs that aren't readily replaced with an electric model.

There are no FCEVs or hydrogen fueling stations in the project region, so the technology is not immediately available to consumers on the North Coast. However, the State of California recognizes FCEVs as a promising zero-emission option for MDV and HDV replacement. Through the *Fuel Cell Vehicle Readiness Project*, RCEA and SERC identified priority locations for station installations and educated stakeholders about the technology. However, work is still needed to show community members that hydrogen is a feasible alternative fuel choice. Fleet managers in particular have not been educated as to the benefits of low-carbon fleet vehicles. The California Air Resources Board added

Eureka and Redding to their list of FCEV station installs targeted for 2024, and hopefully this will improve awareness of alternative fuel options in the area. Generally, RCEA has not emphasized the promotion of biodiesel, ethanol, natural gas, or propane due to an organizational focus on decarbonization. The *Northwest California Alternative Fuels Readiness Plan* identifies a fuel portfolio to achieve Low Carbon Fuel Standard compliance; see Figure 10. Given the lowest marginal abatement cost, BEVs remain the top priority in the near term.

Figure 11: Estimated Lowest Incremental Societal Cost Low Carbon Fuel Portfolio for the Region, Associated Marginal Costs, and Total Offset Emissions.



Source: *Northwest California Alternative Fuels Readiness Plan*¹¹

2.2.9 Local Government Assistance

In January 2017, RCEA worked with the City of Arcata to finalize and distribute the City of Arcata Permitting Guide (Appendix K) that provides instructions to residents regarding installing charging stations at their residence. This was initially drafted as part of ARV-14-046, but not finalized until *Implementation Phase 2*.

¹¹ "Northwest California Alternative Fuels Readiness Plan," Redwood Coast Energy Authority, Schatz Energy Research Center, California Energy Commission, 2016. (ARV-13-012): 23.

RCEA conducted regulatory research to determine low carbon fuel standard credit opportunities for Community Choice Aggregators. RCEA is currently collaborating with other CCAs to identify regulatory and policy pathways to better align LCFS benefits with those agencies directly involved with purchasing low-carbon electricity and promoting ZEVs in their communities.

As mentioned in Section 2.1.6, we presented information specific to ADA compliance and promoted electric vehicle charging infrastructure by commenting at a City of Arcata Planning Commission meeting when they were considering a new construction project that included 12 electric vehicle charging spaces. We also submitted written comment (Appendix K).

RCEA assisted the City of Eureka and City of Arcata; specifically, we assisted with ADA code considerations as the jurisdictions considered purchasing EVCs. We helped with determining site suitability for new charging stations, and provided price quotes for the charging stations and necessary electrical work to install these stations. The results of these efforts are two new dual-head charging stations; one in Arcata and one in Eureka. The project team is also planning to work with other local governments to install new charging stations and upgrade currently-operating stations approaching end of life.

We provided CalGreen Code make-ready code updates to the City of Eureka planning department for inclusion in their building permit guide. We also prepared memos on infrastructure siting strategy and fleet analyses to the City of Eureka Energy Committee. The infrastructure siting strategy memo can be found in Appendix K.

RCEA staff is also serving on the PG&E EV Charge Network Program Advisory Council (PAC) to promote alignment and coordination between local government and investor-owned utility EVCS infrastructure planning and deployment within our region. Examples of RCEA goals are to reduce duplication, improve overall distribution, promote equitable access to all community sectors, achieve planning goals, maintain a consistent and reliable driver experience, and so on.

2.2.10 Dealer Education

One barrier to electric vehicle adoption is a lack of knowledge and promotion of ZEVs by car dealerships.¹² Paired with low consumer knowledge about ZEVs, this leads to slowed market growth.¹³

For this reason, RCEA hosted a dealer education seminar in September 2019 at a local dealership in Eureka, and also developed a toolkit with helpful resources for dealers. As of August 2019, there are 28 dealerships in Humboldt County; 17 of those dealerships sell used cars exclusively. There are six dealerships in Del Norte and Trinity Counties, with no confirmed split between used and new vehicle offerings. Seven dealerships in Humboldt County that regularly carry new electric vehicles were called and visited to gauge interest in an RCEA seminar provided on-location to cover topics related to effectively selling EVs. These dealerships were then visited a second time and provided

12 Gerardo Zarazua de Rubens, Lance Noel, & Benjamin K. Sovacool, "Dismissive and deceptive car dealerships create barriers to electric vehicle adoption at the point of sale," *Nature Energy* 3 (2018): 501-507. <https://doi.org/10.1038/s41560-018-0152-x>

13 Kurani, "New Car Buyer's Valuation of ZEVs," 99.

with toolkits and another invitation to learn about EVs from an RCEA seminar. Dealers had a favorable response to the toolkit materials, especially the charging station maps, although all but one ultimately declined the offer of an RCEA seminar. Several sales managers cited issues with gathering the sales staff in one room, given their duties and varied work schedules, while others stated that they already trained their employees thoroughly on EVs and thus did not require any more information.

The presentation (Appendix L) given at the dealership synthesized resources from Plug-In America, Sonoma Clean Power, and Sac EV to discuss ZEV technology, the customer experience, the ZEV market, charging an EV, EV savings, EV batteries, and giving successful test drives, among other topics.

For dealers who declined the seminar, toolkits were delivered in-person to sales managers. The toolkit materials included (Appendix E):

- A large poster featuring a map of charging stations in the region
- A list of available EV incentives, and applications for said incentives
- An EV FAQ document to assist with answering customer questions

As EVCS locations continue to expand, RCEA plans to update location maps roughly every six months. Distributing these posters will provide an opportunity to engage dealers periodically.

2.2.11 Clean Cities Coalition

The *Northwest California Alternative Fuels Readiness Project* identified participation in the U.S. Department of Energy's Clean Cities Program as a way to advance alternative fuels vehicle integration in the project region. The Clean Cities Coalition Program website states that it provides a framework for businesses and governments to work together as a Coalition to enhance markets, coordinate activities, identify mutual interests, develop regional economic opportunities, and improve air quality.

On meeting with the Clean Cities Coordinator for California, it was determined that achieving Clean Cities designation is currently infeasible for our region. To successfully apply for the designation, a local coalition needs to offset at least 250,000 gallons of gas annually. We could potentially collaborate with Caltrans and other large fleets in the region, but these collaborations will take time to develop. Initial contact was made by engaging with Caltrans during the development of the *Fuel Cell EV Readiness Plan*, but further attempts to build a relationship by providing the local Caltrans fleet with a fleet analysis have stalled. RCEA collaborated with the Siskiyou Economic Development Council to write the *Northern California Clean Cities Coalition 2017-2020 3-year Program Plan: Application for Designation as a Clean Cities Program* (Appendix M).

RCEA will provide Clean Cities Coalition with the updated version of our *Electric Vehicle Charger Selection Guide* with the goal of national distribution through their network.

CHAPTER 3:

Conclusions and Recommendations

3.1 Assessment of Project Success

The set of bullet points that follow evaluate project success based on the set of objectives and measurable outcomes described in Table 2, Section 1.2 of this report.

Promote ZEV adoption through profile-raising campaigns.

- **Conduct at least 5 Ride-and-Drive and ZEV Expo events to promote the latest ZEVs on the market.** RCEA exceeded the grant requirements by organizing one Ride-and-Drive and nine EV Expo events. By attending such a wide array of events, the project team was able to educate a diverse cross-section of residents about the benefits of ZEVs and answer questions from community members who lacked prior exposure to ZEVs, thus increasing local interest.
- **Develop and deliver at least 4 seminars on ZEV topics.** The project team developed four separate seminars intended to encourage ZEV adoption and educate the community on ZEV-related topics. The two seminars at Humboldt State University provided students with opportunities to learn about current ZEV technology and career options in the field, as well as gain a broader understanding of California's goals for EV adoption and pathways to achieve these goals, particularly by engaging lower-income drivers. The Meet-the-Driver seminar allowed community members to directly interact with EV drivers, asking questions to learn about the real-world benefits and costs of owning an EV. Finally, the project team conducted a Dealer Education seminar at local car dealerships, providing sales staff with information to help them better understand how EVs differ from conventional cars, improve the EV buying experience for customers, and encourage buyers to purchase electric vehicles.
- **Table at 6 or more public events.** As mentioned above, the project team conducted 9 EV Expos, all of which included tabling at major community events, handing out information such as a ZEV incentives sheet, ZEV cost comparison sheet, Clean Cities Vehicle Buyer's Guide, RCEA ZEV newsletters, and a map of public electric vehicle charging stations, among others.
- **Publish at least 6 newsletter editions.** RCEA distributed 6 newsletters to the general public—electronically through MailChimp and on the RCEA website, as well as in hard copy at ZEV promotional events. 937 subscribers received the email version of the newsletter. Newsletters spotlighted a local EV owner and a school district official involved in transportation, provided ZEV road trip tips and information about electric bikes, answered frequently asked questions about ZEVs, and provided a summary of the *Electric Vehicle Charger Selection Guide*.
- **Achieve at least 4 media spots highlighting regional ZEV activities.** The project team achieved 4 earned media placements with local news organizations

including interviews with Channel 3 News, local radio station KHUM, and Access Humboldt, and an announcement on BiCoastal Media's radio stations in the area.

- **Make at least 6 presentations to community organizations and/or fleet operators.** The project team exceeded grant requirements and completed 9 presentations to promote ZEVs and encourage their adoption. Presentations were given to students at Arcata Elementary School, community members at the City of Arcata Planning Commission meeting, Eureka Old Town Rotary Club members, Eureka Kiwanis Club members, and the general public at the Eureka Chamber of Commerce. Presentations were also given at three different California Energy Commission Workshops, as well as at a PG&E community forum focusing on EV readiness planning and implementation in the region. These presentations served both to highlight RCEA's transportation programs and to educate on EV infrastructure planning, EV purchasing, and general benefits of EVs.

Create an Ombudsman position to support assistance and liaison activities.

- **Design a "group buy" of ZEVs, offering a significant discount off the MSRP** [*with approval from the CAM, this was revised to "design" from "organize" due to funding and time constraints*]. The RCEA Board of Directors has voted to dedicate \$1 million in revenue to design new ratepayer programs through 2022, and the project team designed a community-wide "group buy" program that could be implemented in the future using these funds. The "group buy" will bring a greater supply of ZEVs into Humboldt County and bring down their price for local community members. Given grant time and budget constraints the "group buy" program could not be implemented, but having the program fully developed should make it easier for a "group buy" to take place in the future.
- **Provide consultation for at least six fleet managers and public officials.** Five fleet analyses were completed to assist fleet managers and public officials from the Humboldt County Office of Education, Redwood Energy (a local consulting firm), the City of Rio Dell, the City of Eureka, and the City of Fortuna. RCEA also provided extra support by providing charging station infrastructure siting and vehicle procurement assistance to increase the impact of the analyses. As a result of these fleet analyses and extra assistance, HCOE has purchased a charging station for their fleet and intends to purchase a recommended EV once the EVCs is installed. The City of Rio Dell also intends to purchase an e-utility truck next fiscal year. The sixth fleet analysis was unable to be completed due to insufficient response from fleet managers.
- **Provide consultation for at least six ZEV fuel station site hosts.** RCEA provided more than 10 charging station consultations to agencies and businesses including Humboldt State University, Harbor Lanes Bowling Alley, Fortuna Open Door Health Clinic, Bayside Grange, the City of Arcata Community Center, Philippe Lapotre Architect Firm, Northwood Auto Plaza, Humboldt County Office of Education, North Coast Co-Op, Six Rivers National Forest Eureka Office, and the

Humboldt County Airport. These consultations varied in depth of study, some involving preliminary conversations and others resulting in in-depth analyses.

- **Coordinate and host at least four meetings of a “ZEV Enthusiasts” group.** The ZEV Enthusiasts group was launched in Spring 2018 and since then has had four meetings focusing on fostering community awareness of ZEVs, increasing the adoption of ZEVs, and supporting the expansion of ZEV infrastructure. Group activities included participating at outreach events, providing feedback on RCEA’s ZEV program, and sharing ZEV-related resources to other Humboldt County residents. Some of the ZEV Enthusiast group members were formally trained as ZEV Ambassadors and became well-versed in RCEA resources and tools regarding ZEVs, thereby becoming prepared to share information with the general public at outreach events. Once grant funding has ended, the ZEV Enthusiasts group will continue as an independent entity, while the ZEV Ambassadors will continue to be supported by RCEA staff and will assist with RCEA outreach at events.
- **Update the current version of the *EV Charger Selection Guide*.** The *EV Charger Selection Guide* was updated to reflect changes in vendors as well as increased availability of DC Fast Chargers from companies that had previously only sold Level 1 or Level 2 chargers. Sections were added to help customers find vendors that provide turnkey services, including permitting, electrician assistance, and charger installation. These updates allow interested EV owners to choose a charger and a vendor that work best for them and business owners to decide what type of charger will best suit their needs and the needs of their customers and staff. The charging guide now also provides updated information about network options for those interested in connecting their charging stations to various software modules to allow for tracking, payment, and other features. A summary table was also created and added to the guide, to allow readers to determine at a glance what vendors might work well for them based on the features they desire from their chargers.
- **Develop at least 2 dealer sales resources toolkits for area dealerships.** A dealer seminar took place at a local dealership and provided salespeople with information about the benefits of EVs, why customers like EVs, and how to encourage EV sales. As part of these seminars, dealer sales resources toolkits were developed and delivered both to the dealership where the seminar took place and to six other local dealerships that carry EVs. These toolkits included a large map of local charging stations and several handouts generated by the project team including a list of incentives, both national and local, for ZEV drivers and an FAQ sheet listing answers to questions commonly asked about EVs by community members.

3.2 Conclusions and Lessons Learned

The *North Coast PEV Readiness Plan Implementation Phase 2 Project* successfully increased community awareness of ZEVs and provided community members,

businesses, local governments, and other facilities with information to help them with EV purchasing as well as infrastructure development. While several projects will require continued funding and time to achieve full implementation, they created momentum for future ZEV adoption in the community.

Below is a summary of some lessons learned during the project.

Community Outreach and Consultations

- The community responded positively to ZEV Expo and Meet-the-Driver events where local EV owners could directly answer questions, address concerns, and demonstrate features of their vehicles. Local residents appreciated the opportunity to speak with people who had a comprehensive understanding of community-specific, state, and federal EV promotion programs, as well as the ways those programs interact and how they can be navigated to arrive at the most economical EV purchase.
- Attending events outside of the tri-city Humboldt Bay region, particularly events that did not have a sustainability focus, allowed for beneficial conversations with residents that had otherwise never had exposure to ZEVs. Particularly in rural communities, it's important to find venues for engaging with community members that may skip events related to ZEVs but are interested in learning about them when presented with the information in a neutral setting.
- Energy Commission funding was vital in enabling a strong social media presence for RCEA to showcase ZEVs. Social media presence allows for greater community engagement by providing customers with another opportunity to view materials, without requiring them to visit the RCEA website or obtain hard copies of informational flyers in-office.
- Charging station consultations proved to be a vital service RCEA could offer to the community—by the end of the grant term, requests for consultations had almost outpaced questions about ZEV rebate programs. RCEA fills an important niche in this charging station space: we have knowledge of the majority of EVCS resources that currently exist, and can provide information about choosing stations, siting, permitting, and installation. Customer service centers for state or network programs are typically highly specific, and so customers look to RCEA to provide a comprehensive approach.
- RCEA's ADA Fact Sheet was passed before final regulations were adopted, although it was reviewed afterwards and found to be consistent with the new regulations. Two ADA specialists reviewed the fact sheet: one found it sufficient, while the other believed it needed to be more thorough. Due to the potential legal implications, and the fact that building code interpretation is legally delegated to the Authority Having Jurisdiction (AHJ) in the place where the charging station is installed, RCEA has decided to direct those with inquiries about the code to the original text. Because AHJs, and their respective jurisdictions, ultimately have liability for enforcement (or lack thereof) of ADA EVCS code, RCEA will not give advice on code interpretation. The permitting guide published by the Governor's

Office of Business and Economic Development¹⁴ will be shared going forward with those wishing to gain further clarity on ADA requirements.

- In October 2019, the north coast region was affected by the largest public safety power shutoff in PG&E history. One positive outcome was the continued availability of EVCS operating within the Blue Lake Rancheria microgrid. This provided a real-world demonstration of how integrating EVCS into a microgrid can improve resilience with a robust low-carbon renewable energy fueling infrastructure, and how ZEVs can serve as mobile power supplies within the surrounding community. The upcoming Redwood Coast Airport Renewable Energy Microgrid project will further underscore this concept, particularly for sites that support essential community services.

Fleet Collaboration and Analysis

- Fleet analyses are a good first step for local governments interested in purchasing ZEVs, but further follow-up is required to push those purchases forward. Most small governments don't have the staff required to champion EV purchases, so having outside groups assist with charging station infrastructure siting and vehicle procurement is vital in bridging the gap between analyses and actual fleet vehicle replacement.
- Attempts were made to provide fleet analyses to several school districts, including Eureka City Schools and Northern Humboldt Unified School District. However, many of these rural districts rely solely on medium-duty vehicles, particularly vans, for transporting goods and food. If longer trips are necessary, light-duty vehicles are rented rather than purchased and maintained. Since currently there aren't any medium duty electric vehicles that can economically be substituted for school district vans, this limits the number of local fleets that can be easily electrified in the coming years. There may be opportunities to work with auto rental agencies to support ZEV rentals in selected markets.
- The project team considered incorporating alternative fuel vehicles into the PEV_FleET tool use for fleet analyses but, when attempted, the payback periods for such vehicles were not feasible. RCEA will continue working to bring alternative low-carbon fuels to Humboldt County, but in the short term the emphasis is to focus on vehicle electrification.
- Small fleet operators have limited time to evaluate new technologies. ZEV uptake may be accelerated by providing services such as charging station infrastructure siting, onsite electrical analysis, and vehicle procurement assistance.
- Even though several local fleets were offered the opportunity to attend the National Association of Fleet Administrators' Sustainable Fleet Training fully funded by RCEA, it was difficult to get a response from most fleet managers. It

14 Tyson Eckerle & Gia Brazil Vacin, "Electric Vehicle Charging Station Permitting Guidebook," *California Governor's Office of Business and Economic Development*, July 2019, <http://businessportal.ca.gov/wp-content/uploads/2019/07/GoBIZ-EVCharging-Guidebook.pdf>.

seems likely that unless there is support from senior staff or administration, fleet managers are uninterested in taking time away from their schedules to attend trainings. Developing relationships with leadership at different companies and organizations can be difficult, but ultimately results in higher uptake. Board and council-level initiatives such as climate action plans may help motivate change within risk-adverse departments or disciplines. Realistic appraisal of staff workloads and targeted funding may also be needed to avoid unfunded mandates and help teams reach beyond existing tasks.

Group Buy Program

- For group buy programs, automobile manufacturing inventory practices may be a major barrier to accelerating ZEV adoption. Manufacturers allocate monthly vehicles through complex dealership relationships that are difficult to adjust.
- Emerging EV manufacturers, specifically Tesla, may employ disruptive sales models that threaten traditional sales channels. This can cause resistance among legacy distribution networks.
- After speaking with representatives from organizations like the Electric Auto Association that have helped facilitate group buy programs or short-term deep discounts for ZEVs, it appears that a group buy program might not be the most cost-effective way to bring electric vehicles to Humboldt County. Even in more highly populated counties in California, group buys proved to only marginally increase the number of ZEVs purchased, and so the high overhead costs associated with pursuing them might prevent a group buy from being a good option for a more rural area like Humboldt.
- As an economically poor region, used vehicles represent a large market share. Since electric vehicles are still in their early adoption phase, this limits available inventory. One dealership in southern Oregon chose to specialize in used EVs and built up inventory from a national pool. These vehicles sold well into the northern California region to price-sensitive but informed buyers, and interregional shipping costs were easily offset by a high depreciation rate observed with older EVs. However, sensitivity is necessary to balance interests of local dealers with out-of-area vehicle suppliers.

Funding and Incentives

- Continuity funds are vital for ensuring that ZEV adoption efforts do not diminish in rural areas that lack the community drive found in urban centers. For example, without ongoing funding, the North Coast PEV Coordinating Council that developed the *North Coast PEV Readiness Plan* ceased operation, and although RCEA continued to coordinate with several previously-involved decision-makers and stakeholders, efforts were impeded by the inability to continue council meetings.
- Local champions greatly improve program success in isolated communities. Based in Humboldt County, RCEA gained a substantial advantage in the

neighboring counties of Crescent City and Trinity when community-based stakeholders were willing and available to participate. However, rural stakeholders are scarce, chronically over-tasked, and often only available as consultants hired to address state mandated activities. A PEVCC may provide a mechanism to establish and sustain an advanced transportation communication and decision network, particularly if stipends are available for under-funded agencies to engage in state-level initiatives.

- Existing incentive program design causes barriers to entry for some rural regions:
 - Communities deserve heightened funding to address environmental justice. However, it shouldn't come at the expense of low-income communities that meet clean air attainment targets. This can be addressed by continuing efforts to support both disadvantaged and low-income communities.
 - Our experience with the PG&E EV Charge Network program reinforces that investor-driven programs emphasize profitability. This favors locations and business relationships with the highest potential rate of return. An unintentional consequence is that this increases the infrastructure gap between urban and rural settings, and large versus small businesses. A solution is to channel state-level funding into sectors most likely to be bypassed by private enterprise. This is happening to some degree through income criteria, but more could be done around population density, ADA populations, site host size, and so on.
- Travelling technical specialists, such as seen historically for municipal energy audits and pump testing, could boost technical expertise for regions lacking enough ongoing business to support local specialists.
- Numerous disruptions are forecasted in the automotive industry. A 2016 McKinsey and Company report describes four: diverse mobility, autonomous driving, electrification, and connectivity.¹⁵ The report also concludes that “Sales penetration will be slower in small towns and rural areas with lower levels of charging infrastructure and higher dependency on driving range.” Historically, outdated vehicles migrate toward economically poor regions. These factors suggest that as EVs gain popularity in affluent areas with robust charging infrastructure, outdated internal combustion inventory will migrate into poor rural regions. A program similar to the 2009 Car Allowance Rebate System¹⁶ may be one mechanism that counters potential economic inequity and removes high-carbon vehicle from vehicle supplies. The incentive design could tackle economic inequity issues with tiered income qualifiers, and fund enabling technology such as residential charging.
- Multiple enabling policies can indirectly accelerate ZEV vehicle and infrastructure adoption, and in some cases may be more effective than focusing directly on ZEV concepts. For example, climate action plans and low-carbon initiatives can include

15 “Automotive revolution – perspective towards 2030,” McKinsey & Company, last modified January 2016, <https://www.mckinsey.com/~media/mckinsey/industries/high%20tech/our%20insights/disruptive%20trends%20that%20will%20transform%20the%20auto%20industry/auto%202030%20report%20jan%202016.ashx>

16 Christina Romer & Christopher Carroll, “Did ‘Cash-for-Clunkers’ work as intended?,” *Obama White House Archives*, last modified April 5, 2010, <https://obamawhitehouse.archives.gov/blog/2010/04/05/did-cash-clunkers-work-intended#targetText=On%20June%2024%2C%202009%2C%20President,at%20low%20net%20economic%20cost>

measures such as infill development, multi-modal transportation, bicycle corridors, safe street initiatives, and so on. These initiatives improve the overall ecosystem where electrified transportation can emerge and thrive in a community and become a preferred mode of travel.

3.3 Recommendations

The following recommendations are made based on the results of this project to increase regional ZEV adoption and infrastructure development.

Of special note: During the multiple PG&E Public Safety Power Shutoffs in Fall 2019, RCEA EV charging stations at the Blue Lake Rancheria remained online as part of a solar + storage microgrid and actively charged EVs during the outages. EV drivers quickly realized the opportunity to use the EVs as mobile power sources to assist people with critical electric requirements in their community, with the ability to indefinitely recharge at the nearby microgrid. RCEA sees this as a compelling model to combine goals of low-carbon transportation electrification, microgrids, and community resilience. To accelerate this and similar concepts, we encourage the CEC to coordinate with other state agencies to develop programs that buffer communities most at risk to grid instability. For example, create a dedicated program to fund EVCS in all new microgrids with public access, or develop a critical-facility microgrid initiative with EV charging capacity for emergency response vehicles and community members who could be certified via a process similar to the one modeled by the Community Emergency Response Team program run by the Department of Homeland Security.¹⁷

- Continue enhancing or promoting the allocation of Community Choice Aggregation program funds towards ZEV-related programs such as rebates for EVs or EVCS, e-bike rebates, ancillary costs such as electric panel upgrades and ADA compliance, and so on. CCAs are likely to continue striving toward transportation electrification, and state programs will find this a valuable source of ongoing local match funds. Recent CALeVIP regional programs are a good demonstration of distributing state funds and securing match dollars through CCAs. Small CCAs may not have the staff or discretionary funds to engage at scale but can still reach key community decision-makers and target audiences.
- Consider a group buy program based on the plan detailed in Section 2.2.3, considering the limitations discussed in Section 3.2. The next step will be to arrange meetings with original equipment manufacturers to discuss the viability of entering into a group buy agreement for Humboldt County dealerships. In parallel, assess other opportunities in the used vehicle market to determine if these are more cost-effective avenues for rural communities.
- Encourage the organization of more ZEV expos and the inclusion of ZEV information at RCEA outreach events to continue to educate the community. As

¹⁷ “Community Emergency Response Team,” Get Involved, Ready.gov, accessed October 29, 2019, <https://www.ready.gov/cert>.

we move further into the technology adoption curve, larger volumes of less-informed consumers will need support to make the transition to ZEVs.

- Continue to support volunteer groups, such as the RCEA ZEV Ambassadors, on upcoming outreach events and invite them to attend and leverage their personal experience when it comes to owning and operating an electric vehicle to answer community questions. The ZEV Ambassadors can bridge the gap between RCEA and the public when RCEA staff time and funds are limited.
- Maintain relationships with local fleet managers and cultivate new ones as funding allows. The most effective technique for recruiting fleet partners is by phone; either cold calling or scheduling a time to speak at greater lengths. Other communication techniques are proving less successful since emails tend to get lost and people are less available for in-person visits.
- Continue to assist and engage with local municipal fleets for ZEV adoption.
- Continue to review and update documents including the EV Incentives sheet, the EV FAQ sheet, the EV Charger Selection Guide, and the Humboldt County EV Charging Stations Map to ensure that they are still current.
- Support EVCS installation at suitable sites through site consultations and by making resources accessible on the RCEA website for those interested in installing charging stations.
- Continue work aimed at streamlining EVCS permitting and improving local jurisdictions' understanding of EVCS-related code. Energy Commission grant ARV-14-046 focused heavily on permitting for electric vehicle charging stations, and so the work for this project placed less emphasis on that area. But in the future, it is important that the permitting and code-related efforts of both the 046 and 012 projects continue. Part of this work will involve referring interested parties to the *Electric Vehicle Charging Station Permitting Guidebook*.¹⁸
- Support continued research into the impact of EVCS accessibility requirements on rural EVCS development. RCEA recently submitted comments¹⁹ to the Energy Commission providing insight into permitting challenges for EVCS in rural settings, and such findings need to be further developed and acted upon.
- Complete review of all-inclusive EVCS location portals and determine which have phone applications as well as websites that can be recommended by RCEA.
- Increase public education campaigns focusing on non-electric ZEVs as funding allows. Hydrogen, for example, has increasingly become a focus of the California state government as an alternative for natural gas-powered light duty vehicles, but there is still strong public mistrust and misunderstanding of hydrogen-powered vehicles and hydrogen infrastructure.

¹⁸ Eckerle, "Permitting Guidebook."

¹⁹ Boudreau, "EV permitting and ADA."

- Support programming targeted specifically at youth, as they are the next generation of car consumers and providing them with opportunities to learn about ZEVs will encourage them to see ZEVs as a viable option for future purchases. Local school vocational curriculum can be an excellent avenue to both inform students and establish a trained workforce.
- Consider partnering with CarMax (nearest dealership located in Santa Rosa, CA) to bring an alternative source of electric vehicles to Humboldt County. There could be some dealer pushback to bringing a competitor into the area, but it would also stimulate more dealerships to offer used electric vehicles to interested customers.
- Continue to work towards achieving Clean Cities Designation by partnering with large fleets in the area and growing RCEA's Community Choice Energy program to offset larger amounts of gas annually.
- Consider designating funds to assist small businesses with the proportionately higher overhead to meet ADA compliance requirements. For example, establish incentive tiers based on parking space count or lot size.
- Continue to identify and standardize generic processes and tools for rebates, approvals, permitting, and implementation. Focus first on government-imposed requirements. For example, certify technology through the California General Services Administration, or have suppliers offer bulk discounts on specified configurations to gain economy of scale.
- Explicitly fund new technology risk through government channels. An example of this lesson is the initial biodiesel rollout, where storage facilities bore the cost of expensive tank leakage and repairs resulting from fuel distribution practices and cross-contamination. Selected fuel distribution and storage participants are now averse to other state initiatives. This early adoption risk can be partially addressed through information clearinghouses, certification, and standards.
- Our goal is to emphasize persistent, reliable locations to support a confident, active community of EV drivers. Without maintenance funds we foresee heightened levels of attrition and driver frustration, so reliable operating funds are important. An initiative like the Department of Energy's SunShot program, which sought to reduce solar installation costs, could be designed to help drive down both installation but also routine operation and maintenance costs.
- CALeVIP looks to be a promising mechanism to accelerate regional funding deployment, but care must be taken so that state-level funding doesn't get siloed into specific sectors, such as hotels, where EVSE may become more of an amenity rather than a public asset. One potential solution is to explicitly designate funds for public-sector projects.
- To reach disadvantaged communities in clean environments, continue to support low-income qualifiers along with CalEnviroScreen.
- Design state EVCS funding models so that communities with the highest ADA populations receive a proportionate share of funds. The National Institute on Disability, Independent Living, and Rehabilitation Research provides county-level

disability statistics.²⁰ An August 2019 Humboldt County report²¹ indicates that 70% of people can't afford median-priced houses in Humboldt County. By correlation, people with disabilities will have a higher need for public, multi-family, and workplace charging given limited access to home charging.

- Support access to a state data clearinghouse, particularly for vehicle registration and vehicle miles travelled, to lower program evaluation and monitoring costs and allow more universal regional tracking. More granular data will better improve targeted activities to influence and place stations where they best mirror EV ownership patterns.
- Credit card payment systems, while ubiquitous, come with layers of recurring fees. Look for opportunities to support emerging digital mobility payment systems that can reduce payment transaction costs.
- Encourage EVCS manufactures to develop mechanical designs with fewer moving parts to reduce maintenance, repairs, and downtime. In parallel, improve network management and dashboards, robust electronic diagnostics, accurate error codes, and remote reset capability to minimize field visits and station downtime. This is particularly important for site hosts with limited availability and technical knowledge.
- To pre-qualify EVCS siting, consider a tool similar to PG&E's Solar Photovoltaic and Renewable Auction Mechanism (PVRAM) tool²² to identify potential grid congestion before engaging with potential site hosts. This is particularly valuable for larger projects with substantial new electrical load and increased probability for onsite electrical upgrades including utility distribution equipment.
- Following the lead of various planning associations,²³ assess potential consequences of emerging technologies, such as the sharing economy and autonomous vehicles, on near-term ZEV usage patterns and probable impact on parking and roadway infrastructure projects.

20 Rehabilitation Research and Training Center on Disability Statistics and Demographics (StatsRRTC), "2015 California Report for County-level Data: Prevalence," Institute on Disability, University of New Hampshire, accessed October 29, 2019, <https://disabilitycompendium.org/compendium/overall-prevalence-report/CA>.

21 Shomik Mukherjee, "Housing report: 70% of unincorporated Humboldt County residents can't afford median-priced houses," *Times Standard*, August 21, 2019, <https://www.times-standard.com/2019/08/20/housing-report-70-of-unincorporated-humboldt-county-residents-cant-afford-median-priced-houses/>.

22 "Distribution Resource Planning Data Portal," Distribution Resource Planning, Pacific Gas and Electric Company, accessed October 29, 2019, https://www.pge.com/en_US/for-our-business-partners/distribution-resource-planning/distribution-resource-planning-data-portal.page.

23 "Autonomous Vehicles," Research KnowledgeBase, American Planning Association, accessed October 29, 2019, <https://www.planning.org/knowledgebase/autonomousvehicles/>.

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GLOSSARY

Table 3: Acronyms

Acronym	Phrase	Definition
ADA	Americans with Disabilities Act	A civil rights law that prohibits discrimination based on disability.
AFV	Alternative Fuel Vehicle	A vehicle that uses a form of fuel besides conventional gasoline or diesel.
AHJ	Authority Having Jurisdiction	An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.
ARFVTP	Alternative and Renewable Fuels and Vehicle Technology Program	A California Energy Commission program that invests up to \$100 million annually in a broad portfolio of transportation and fuel transportation projects throughout California.
BEV	Battery Electric Vehicle	A type of electric vehicle that uses energy stored in rechargeable battery packs to power an electric motor.
CALeVIP	California Electric Vehicle Infrastructure Project	A California Energy Commission project that offers incentives for the purchase and installation of electric vehicle charging infrastructure at publicly accessible sites throughout California.
CCA	Community Choice Aggregator	Programs that allow local governments to procure power on behalf of their residents, businesses, and municipal accounts from an alternative supplier while still receiving transmission and distribution service from their existing utility. Synonymous with “community choice energy” or “CCE” in this document.
CCE	Community Choice Energy	Programs that allow local governments to contract with a licensed energy service provider to purchase energy in bulk, build renewable energy generating facilities, and implement energy efficiency programs. Synonymous with “community choice aggregation” or “CCA” in this document.
CCR	California Code of Regulations	The codification of the general and permanent rules and regulations announced in the California

		Regulatory Notice Register by California state agencies.
CEQA	California Environmental Quality Act	A statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.
CAM	Commission Agreement Manager	The manager of contracts and grants administered by the California Energy Commission.
DCFC	Direct Current Fast Charger	An electric vehicle charging station that provides direct current power directly to the electric vehicle battery, allowing for fast charging speeds.
EV	Electric Vehicle	A vehicle that uses one or more electric motors for propulsion. Synonymous with “zero emission vehicle” or “plug-in electric vehicle” in this document.
EVCS	Electric Vehicle Charging Station	A station that provides electricity to an electric car to charge its battery. Synonymous with “electric vehicle supply equipment” or “EVSE” in this document.
EVSE	Electric Vehicle Supply Equipment	An element that supplies electrical energy for the recharging of electric vehicles. Synonymous with “electric vehicle charging station” or “EVCS” in this document.
FCEV	Fuel Cell Electric Vehicle	A type of electric vehicle that uses a fuel cell, instead of a battery, or in combination with a battery or supercapacitor to power its on-board electric motor.
GHG	Greenhouse Gas	A gas that absorbs and emits radiant energy within the thermal infrared range. The primary greenhouse gases in Earth’s atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone.
HDV	Heavy Duty Vehicle	A vehicle designed for heavy work (bus or truck), with a weight limit of more than 26,000 pounds.
ICE	Internal Combustion Engine	A heat engine where the combustion of a fuel occurs with an oxidizer in a combustion chamber that is an integral part of the working flue flow circuit.
JPA	Joint Powers Authority	An entity permitted under the laws of some U.S. states, whereby two or more public authorities, not

		necessarily located in the same state, may jointly exercise any power common to all of them.
LDV	Light Duty Vehicle	A vehicle designed for light work (passenger car), with a weight limit of up to 8,500 pounds.
LCFS	Low Carbon Fuel Standard	One of a group of programs designed to reduce greenhouse gas emissions enacted through Assembly Bill 32. Applies to fuels used for transportation, including gasoline, diesel, and alternatives.
MSRP	Manufacturer Suggested Retail Price	The recommended selling price that automakers give a new car.
MDV	Medium Duty Vehicle	A vehicle designed for medium work (bus or truck), with a weight limit of 8,500-26,000 pounds.
NREL	National Renewable Energy Lab	A government-owned, contractor-operated facility funded through the US Department of Energy and located in Golden, CO, that specializes in renewable energy and energy efficiency research and development.
PG&E	Pacific Gas & Electric	An American investor-owned utility with publicly traded stock that is headquartered in San Francisco, CA, and provides natural gas and electric service to approximately 16 million people in a 70,000-square mile service area in Northern/Central California.
PEV	Plug-in Electric Vehicle	Electric vehicle that must be plugged into an electrical power source to charge. Synonymous with “zero emission vehicle” or “ZEV” in this document.
PHEV	Plug-In Hybrid Electric Vehicle	A hybrid electric vehicle whose battery can be recharged by plugging it into an external source of electric power, as well as by its on-board combustion engine and generator.
PEV_FleET	Plug-in Electric Vehicle Fleet Evaluation Tool	A fleet evaluation tool developed by the Schatz Energy Research Center that takes in various inputs and returns information about rate of return for electric vehicle replacements of conventional cars.
R&D	Ride & Drive	An event hosted in conjunction with local car dealerships where residents are allowed to test drive electric cars while learning about their features from sales staff.

RCEA	Redwood Coast Energy Authority	A local joint powers agency founded in 2003 whose members include the County of Humboldt, the cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, and Trinidad, and the Humboldt Bay Municipal Water District.
SERC	Schatz Energy Research Center	A research center affiliated with Humboldt State University's Environmental Resources Engineering program with a mission to promote the use of clean and renewable energy.
SCP	Sonoma Clean Power	A not-for-profit public agency that generates cleaner energy for customers at about the same price as PG&E. It is d by the Cities of Cloverdale, Cotati, Fort Bragg, Petaluma, Point Arena, Rohnert Park, Santa Rosa, Sebastopol, Sonoma, Willits, and the Town of Windsor, and the counties of Sonoma and Mendocino.
SUV	Sport Utility Vehicle	A category of motor vehicles that combine elements of road-going passenger cars with features from off-road vehicles, such as raised ground clearance and four-wheel drive.
TOU	Time of Use	A rate plan that typically applies to usage over broad blocks of hours (e.g. on peak and off peak) where the price for each period is predetermined and constant.
U.S. EPA	United States Environmental Protection Agency	An independent agency of the United States federal government for environmental protection. It has the responsibility of maintaining and enforcing national standards under a variety of environmental laws, in consultation with state, tribal, and local governments.
ZEV	Zero Emission Vehicle	A vehicle that emits no exhaust gas from the onboard source of power. Synonymous with “plug-in electric vehicle” or “PEV” in this document.

APPENDICES

Appendix A: ZEV Newsletters

Appendix B: Social Media Content

**Appendix C: EV Purchasing 101
Presentation**

Appendix D: Fleet Analysis Memos

Appendix E: Public Outreach Resources

Appendix F: Regional Collaboration

Appendix G: Group Buy Plan

Appendix H: ZEV Enthusiast Group

Appendix I: ADA Fact Sheet

Appendix J: EV Charger Selection Guide

Appendix K: Local Government Assistance

Appendix L: Dealer Outreach Presentation

Appendix M: Clean Cities Coalition Plan