

October 6th, 2017

Sam Wade
Fuels Division Manager
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Submitted via email

RE: Comments of Smart EV Charging Group on ARB Pre-Rulemaking Public Meeting to Discuss 2018 LCFS Preliminary Draft Regulatory Amendment Text (September 22, 2017)

Dear Mr. Wade,

Electric Motor Werks, Inc. ("eMotorWerks"), ChargePoint, WattTime – a subsidiary of the Rocky Mountain Institute ("RMI"), Sonoma Clean Power ("SCP"), MCE Clean Energy ("MCE"), Lancaster Choice Energy ("LCE"), Peninsula Clean Energy ("PCE"), Silicon Valley Clean Energy ("SVCE"), American Honda Motor Co., Inc. ("Honda"), Volta Charging ("Volta"), Chanje Energy, Inc. ("Chanje"), EDF Renewable Energy, a subsidiary of EDF Energies Nouvelles ("EDF Renewable Energy"), collectively known as the "Smart EV Charging Group," appreciate the opportunity to provide specific edits to the draft regulatory amendment text issued by the Air Resources Board ("ARB") staff. These proposed amendments will help recognize various smart EV charging strategies as verifiable pathways to reducing the carbon intensity of California's transportation fuel.

Since the Smart EV Charging Group's September 5, 2017 comments on the August 7, 2017 Pre-Rulemaking Public Meeting, Volta, Chanje and EDF Renewable Energy have joined in support of the September 5, 2017 comments and the following comments on the September 22, 2017, Pre-Rulemaking Public Meeting to Discuss 2018 LCFS Preliminary Draft Regulatory Amendment Text.

Executive Summary

As set forth below, the Smart EV Charging Group proposes edits to the ARB staff's September 22, 2017 Draft Regulatory text for the Low Carbon Fuel Standard Regulation ("the Regulation") to recognize the actions of current and potential parties to reduce the carbon intensity of California's transportation fuel through EV charging. Using the draft amendments issued by ARB Staff, at least the following sections need to be examined for each of the Smart EV Charging Group's proposed enhancement to encourage smart charging and aggressive low carbon intensity procurement by Community Choice Energy Providers to reduce the carbon intensity of EV charging:

1. GHG Minimization with Intentional, Dynamic EV Charging Scheduling
 - a. § 95483 (e)(1) Regulated Parties Fuel Reporting Entity for Electricity: Residential Charging
 - b. § 95491 (d)(3) Fuel Transactions and Compliance Reporting
 - c. § 95488.1 Fuel Pathway Classifications
2. Synchronizing EV Charging with Dedicated Renewable Energy Generation
 - a. § 95483 (e)(1) Regulated Parties Fuel Reporting Entity for Electricity: Residential Charging
 - b. § 95491 (d)(3) Fuel Transactions and Compliance Reporting
 - c. § 95488.1. Fuel Pathway Classifications.
 - d. § 95488.7 Fuel Pathway Application Requirements Applying to All Classifications.
3. EV Charging from Verified Lower Carbon Intensity Electricity Supply Sources
 - a. § 95483(e)(1) Regulated Parties Fuel Reporting Entity for Electricity: Residential Charging
 - b. § 95491 (d)(3)(A) Fuel Transactions and Compliance Reporting: Specific Quarterly Reporting Parameters for Electricity used as a Transportation Fuel.
 - c. § 95488.1. Fuel Pathway Classifications.
 - d. § 95488.4. Lookup Table Fuel Pathway Application Requirements and Certification Process.

In addition, the Smart EV Charging Group submit the following supplement to its comments submitted on September 5, 2017:

1. Estimate of incremental LCFS credit generation between 2020 and 2030 arising from pathways proposed by the Smart EV Charging Group (Appendix 1 & 2)
2. Specific benefits and uses of LCFS credit proceeds by a Community Choice Energy provider (Appendix 3)
3. Statement on virtuous cycle of incentivizing smart charging to reduce carbon intensity of California's transportation system and integrate greater proportions of renewable energy on California's electricity grid. (Appendix 4)

Relevant Sections and Recommended Edits to September 22nd Draft Regulatory Text

I. GHG Minimization with Intentional, Dynamic EV Charging Scheduling

EV charging can be scheduled to minimize the amount of coincident GHG emissions resulting from each charging session. This will reduce the carbon intensity of each individual charging session. When repeated over each session across a year, material reductions in the carbon intensity of the electric grid and transportation fuel at large are achieved. Currently, the LCFS regulation does not recognize these activities, and even if it did, the regulation would not make credit generation from these activities available in the residential charging segment. Both conditions require regulatory amendments to incorporate this incrementally beneficial strategy for EV charging.

1. § 95483(e)(1) Regulated Parties Fuel Reporting Entity for Electricity: Residential Charging

A) Residential Charging. For on-road transportation fuel supplied through electric vehicle (EV) charging in a single- or multi-family residence,

1. the Electrical Distribution Utility is eligible to generate credits in its service territory. To receive such credits, the Electrical Distribution Utility must:
 - i. Use all credit proceeds to benefit current or future EV customers;
 - ii. Educate the public on the benefits of EV transportation (including environmental benefits and costs of EV charging, or total cost of ownership, as compared to gasoline);
 - iii. Provide rate options that encourage off-peak charging and minimize adverse impacts to the electrical grid; and
 - iv. Include in annual compliance reporting the following supplemental information: an itemized summary of efforts to meet requirements (iA) through (iiiE) above and costs associated with meeting the requirements. For investor-owned utilities, this requirement may be satisfied by supplying a copy of the annual implementation report required under Order 4 of Public Utilities Commission of California (PUC) Decision 14-12-083, or any successor PUC Decisions.

2. A Fuel Reporting Entity is eligible to generate credits, in addition to the credits generated by the Electrical Distribution Utility. To receive such credits, the Fuel Reporting Entity must:

- i. Demonstrate residential electric vehicle charging is from a renewable or low-CI energy source or an approved Tier 1 Fuel Pathway Classification
- ii. Effect residential electric vehicle charging to reduce carbon intensity
- iii. Be authorized by the electric vehicle owner or electric vehicle station owner to report fuel transactions on its behalf;
- iv. Register the Fueling Supply Equipment with a Tier 1 Fuel Classification Pathway that meets the criteria of § 95488.1(b) or (c).

2. § 95491(d)(3) Fuel Transactions and Compliance Reporting

3) Specific Quarterly Reporting Parameters for Electricity used as a Transportation Fuel.

- B. The total electricity dispensed (in kWh) to electric vehicles at residences, through the use of metering to measure the electricity directly dispensed to

all vehicles at each residence per FSE and with transaction type “EV Charging”.

3. § 95488.1. Fuel Pathway Classifications

(c) Tier 1 Classification. ... The Tier 1 classification includes, but is not limited to, the following fuel pathways:

(6) Electricity pathways for EV charging not found in the lookup table.

(d) Tier 2 Classification. ... The Tier 1 classification includes, but is not limited to, the following fuel pathways:

(4) Electricity pathways other than for EV charging not found in the lookup table;

The Smart EV Charging Group proposes that Fuel Reporting Entities seeking approval of a Fuel Pathway Classification for EV Charging that minimizes the marginal carbon intensity of such electricity consumption should be eligible for a Tier 1 Classification. Electricity as a process energy input on its own does not require a life cycle analysis to assess its carbon intensity. The carbon intensity of electricity generation are readily known variables,¹ and the Air Resources Board has extensive familiarity with studies and analyses on the carbon intensity of electricity generation units specifically and in the aggregate. Air Resources Board staff would have the requisite experience to assess the reasonable accuracy of data outputs from service providers which analyze electrical grid carbon intensity. In other words, consistent with the language in Section 95488.1 (b) and (c), (the requirements for tier 1 classifications), marginal carbon intensity can be determined through a discrete set of inputs and assumptions.

It is in the interest of the State, Board and other energy agencies² to encourage and leverage the inherent flexibility of EV charging to dynamically reduce marginal carbon intensity and increases the integration and consumption of renewable generation. A Tier 2 Classification for an EV Charging application would significantly discourage these beneficial activities within the LCFS framework. Thus § 95488.5 may require edits to appropriately handle this mode of EV Charging in the Tier 1 Fuel Pathway application process.

II. Synchronizing EV Charging with Dedicated Renewable Energy Generation

¹ For example, the ARB's Mandatory GHG Reporting - Electric Power Entities and Environmental Protection Agencies' Emissions & Generation Resource Integrated Database (eGRID).

² For example, 1) The “Vehicle Grid Integration Roadmap” of the California Public Utilities Commission, California Energy Commission, and California Independent System Operator, and 2) Senate Bill 350 amendments to the PUC Code resulting in PUC Code Div 1 Part 1 Chapter 2.3 Article 17 § 400 “The commission and the Energy Commission shall do all of the following in furtherance of meeting the state’s clean energy and pollution reduction objectives: (b) Take into account the opportunities to decrease costs and increase benefits, including pollution reduction and grid integration, using renewable and nonrenewable technologies with zero or lowest feasible emissions of greenhouse gases, criteria pollutants, and toxic air contaminants onsite in proceedings associated with meeting the objectives.”

EV charging can be synchronized with renewable energy generation to maximize the use of carbon free electricity for transportation fuel. Currently, the LCFS regulation is very restrictive in allowing electricity from renewable sources to be reflected for EV charging. Even if these rules were relaxed, it would not make credit generation from these activities available in the residential charging segment, on its own. Both relaxation of the rules for use of the renewable generation Lookup Table values and the allowance for Fuel Reporting Entities to report residential EV charging are necessary regulatory amendments to incorporate this incrementally beneficial strategy for EV charging.

1. § 95483(e)(1) Regulated Parties Fuel Reporting Entity for Electricity: Residential Charging

A) Residential Charging. For on-road transportation fuel supplied through electric vehicle (EV) charging in a single- or multi-family residence,

1. the Electrical Distribution Utility is eligible to generate credits in its service territory. To receive such credits, the Electrical Distribution Utility must:

- i. Use all credit proceeds to benefit current or future EV customers;
- ii. Educate the public on the benefits of EV transportation (including environmental benefits and costs of EV charging, or total cost of ownership, as compared to gasoline);
- iii. Provide rate options that encourage off-peak charging and minimize adverse impacts to the electrical grid; and
- iv. Include in annual compliance reporting the following supplemental information: an itemized summary of efforts to meet requirements (iA) through (iiiC) above, and costs associated with meeting the requirements. For investor-owned utilities, this requirement may be satisfied by supplying a copy of the annual implementation report required under Order 4 of Public Utilities Commission of California (PUC) Decision 14-12-083, or any successor PUC Decisions.

2. A Fuel Reporting Entity is eligible to generate credits, in addition to the credits generated by the Electrical Distribution Utility. To receive such credits, the Fuel Reporting Entity must:

- i. Demonstrate residential electric vehicle charging is from a renewable or low-CI energy source or an approved Tier 1 Fuel Pathway Classification
- ii. Effect residential electric vehicle charging to reduce carbon intensity
- iii. Be authorized by the electric vehicle owner or electric vehicle station owner to report fuel transactions on its behalf;

iv. Register the Fueling Supply Equipment with a Tier 1 Fuel Classification Pathway that meets the criteria of § 95488.1(b) or (c).

2. § 95491(d)(3) Fuel Transactions and Compliance Reporting

3) Specific Quarterly Reporting Parameters for Electricity used as a Transportation Fuel.

A. The total electricity dispensed (in kWh) to electric vehicles at residences, through the use of metering to measure the electricity directly dispensed to all vehicles at each residence per FSE and with transaction type “EV Charging”.

3. § 95488.1. Fuel Pathway Classifications

(2) Lookup Table pathways that require applicant-specific CI evaluation.

Applicants seeking certification for the following Lookup Table fuel pathways must submit an application as specified in 95488.4 demonstrate they meet the criteria to report fuel sales using the Lookup Table CI:

(A) The portion of Eelectricity that is generated from 100 percent solar or wind supplied to electric vehicles in California that meets the criteria of 95488.7(i);

4. § 95488.7. Fuel Pathway Application Requirements Applying to All Classifications.

These proposed amendments by ARB staff are positive developments. A grid connected behind the meter dedicated form of generation will in effect supply electricity for EV charging through coincidence of supply and demand, acknowledging the fungibility of electrons; however, some EV charging will be from the general grid due to lack of coincident renewable generation. As proposed by ARB staff in 95488.7(i) (1)(A)&(B), it is not clear whether the “non-grid” electricity source requirement (in the current regulation) is relieved when some proportion of electricity for EV charging will be from a renewable source and some proportion from general grid resources. To address this reality, two quarterly fuel transactions could be submitted for any FSE utilizing the Lookup Table pathways for ELCG and ELCR. As such, edits to the Fuel Pathway Classifications (§ 95488.1 (b)(2)(A)) (i.e., described above) should be adopted to resolve this issue.

The Smart EV Charging Group also finds the “unless” provision for energy storage to be intriguing. In concept, we support the idea of smart uses of energy storage, of which EV charging is a form, to reduce the carbon intensity of *all* manner of transportation fuel. It would be helpful to understand the rationale behind the ARB draft amendment

requirement that the energy storage system be located in the same EDU service territory. The following edits would adapt the Staff proposal to utilize EV charging synchronized with renewable energy generation in a similar way as proposed for energy storage synchronized with renewable energy generation.

The Smart EV Charging Group recommends the following changes to Section 95488.7(i) (Renewable or Low-CI Process Energy) to address these comments:

(i) Renewable or Low-CI Process Energy. Unless expressly provided elsewhere in this subarticle, indirect accounting mechanisms for renewable or low-CI process energy, such as the use of renewable energy certificates, cannot be used to reduce CI. In order to qualify as a low-CI process energy source, energy from that source must be directly consumed in the production process.

(1) Renewable electricity must be supplied ~~behind the meter~~ from a dedicated form of generation, such as wind turbines and photovoltaic arrays. Such renewable electricity must be able demonstrate:

(A) Any renewable electricity certificates or other renewable attributes associated with the energy are not produced, or are retired and not counted under any other program.

(B) The generation source is directly connected through a dedicated line to a production facility, which is not an EV charging facility, unless:

(i) the generation source meets the following requirements:

1. An electricity storage system is used to demonstrate electricity storage coincident with the renewable electricity generation at a facility located within the same EDU territory, and
2. The electricity storage facility was built on or after December 31, 2010, and
3. The electricity stored at the storage facility is greater than or equal to the electricity claimed to be used at the production facility, and
4. The electricity that is generated and stored generates no renewable electricity certificates or other renewable attributes associated with the energy claimed for CI reduction.

(ii) Or, the generation source is directly connected through a dedicated line to an EV charging the production facility unless:

1. An ~~EV charging electricity storage~~ system is used to demonstrate ~~EV charging electricity storage~~ coincident with the renewable electricity generation at a facility located within the same balancing authority area ~~EDU~~ territory,

2. The ~~EV charging facility electricity storage facility~~ was built on or after December 31, 2010, and
3. The electricity that is generated and stored generates no renewable electricity certificates or other renewable attributes associated with the energy claimed for CI reduction.

Regarding the proposed 95488.7(i)1(ii), only the renewable electricity generated coincident with the EV charging is eligible for use of the ELCR Lookup Table pathway. Any EV charging not coincident with renewable electricity generation is reported as a separate fuel transaction using the ELCG Lookup Table pathway. The regulation may need to be amendment to codify this reporting procedure.

III. EV Charging from Verified Lower Carbon Intensity Electricity Supply Sources

Allowing the generation of credits by Community Choice Energy Providers and Fuel Reporting Entities within Community Choice Energy Providers' customer portfolios to generate incremental credits due to a Community Choice Energy Providers' lower carbon portfolio will spur incremental adoption and investment in transportation electrification by multiple parties in the EV ecosystem. The Smart EV Charging Group recommends that the LCFS recognize through credit generation the incremental low-CI procurement by Community Choice Energy Providers that opt-in to participate in LCFS. In doing so, the ARB would not disrupt existing EDU credit generation or the CPUC-approved EV rebate programs that currently apply to bundled or unbundled customers. These changes would enable Community Choice Energy Providers to receive credit for aggressive, low-CI procurement and support existing and future CCA EV programs (such as those of Sonoma Clean Power described in Appendix 3).

1. § 95483(e)(1) Regulated Parties Fuel Reporting Entity for Electricity: Residential Charging
 - A) Residential Charging. For on-road transportation fuel supplied through electric vehicle (EV) charging in a single- or multi-family residence,
 1. the Electrical Distribution Utility is eligible to generate credits in its service territory. To receive such credits, the Electrical Distribution Utility must:
 - i. Use all credit proceeds to benefit current or future EV customers;
 - ii. Educate the public on the benefits of EV transportation (including environmental benefits and costs of EV charging, or total cost of ownership, as compared to gasoline);
 - iii. Provide rate options that encourage off-peak charging and minimize adverse impacts to the electrical grid; and

- iv. Include in annual compliance reporting the following supplemental information: an itemized summary of efforts to meet requirements (iA) through (iiiC) above and costs associated with meeting the requirements. For investor-owned utilities, this requirement may be satisfied by supplying a copy of the annual implementation report required under Order 4 of Public Utilities Commission of California (PUC) Decision 14-12-083, or any successor PUC Decisions.

2. A Community Choice Energy Provider is eligible to generate in its service territory. To receive such credits, the Community Choice Energy Provider must:

- i. Use all credit proceeds to benefit current or future EV customers;
- ii. Educate customers on the benefits of EV transportation (including environmental benefits and costs of EV charging, or total cost of ownership, as compared to gasoline);
- iii. Apply for and obtain a Lookup Table pathway that meets the criteria of § 95488.1(b).

2. § 95491 (d)(3)(A) Fuel Transactions and Compliance Reporting: Specific Quarterly Reporting Parameters for Electricity used as a Transportation Fuel.

2. for households and residences where sufficient metering is not available, the Executive Officer will annually calculate the number of credits due to any Electrical Distribution Utility or Community Choice Energy Provider that has opted into the LCFS. The Executive Officer shall use the following method:

...

Number of Vehicles^{Non-metered} is the number of non-metered residential PEV within a given Electrical Distribution Utility or Community Choice Energy Provider service area for the current compliance period;

3. On or before January 31st of each year, any Electrical Distribution Utility or Community Choice Energy Provider that has opted into the program shall provide the Executive Officer data relevant to the calculation of credits for the prior year. The Executive Officer shall use the method set forth in this section to calculate any credits generated for the prior year and place them into the Electrical Distribution Utility's or Community Choice Energy Provider's LRT-CBTS account at least 30 days prior to the annual reporting deadline.

3. § 95488.1. Fuel Pathway Classifications.

(3) Electricity that is provided by a Community Choice Energy Provider that is below the CI of ELCG.

For each Community Choice Energy Provider which establishes its CI, there will be two Lookup Table values: one for residential and one for non-residential EV charging. When the Community Choice Energy Provider generates credits from residential charging, the former Lookup Table value is used. When any Fuel Reporting Entity submits quarterly transactions for an FSE which receives its electricity from this same Community Choice Energy Provider, the latter Lookup Table value is used.

Under the current underlying assumptions for ELCG, the calculation of the Community Choice Energy Provider's credit generation value for residential charging would be the difference between its CI and ELCG. The second Lookup Table value would be the sum of the Community Choice Energy Provider's credit generation value for residential EV charging plus ELCG.

4. § 95488.4. Lookup Table Fuel Pathway Application Requirements and Certification Process.

The Quarterly Fuel Energy Report is reported pursuant to 20 Cal Code Reg Sec. 1304. This reporting requirement neither includes resources below 1 MW, nor does it include imports or exports. The ARB should continue to evaluate new data sources that account for the carbon intensity of the grid and allows a measurable basis for comparing EDU and other electricity supplier providers' carbon intensity.

APPENDIX 1

LCFS Credit Generation Estimates and Assumptions

<u>Incremental Credit Generation from Smart EV Charging Group Proposals</u>				
<i>Residential Segment</i>				Total
	2020	2025	2030	2020-2030
Smart GHG	628	13,535	51,111	204,107
Renewables (Co-Located)	883	12,853	32,802	159,276
Lower CI Sources	135,001	231,314	425,367	2,806,152
<i>Business / Workplace Segment</i>				Total
	2020	2025	2030	2020-2030
Smart GHG	84	2,570	47,015	47,015
Renewables (Co-Located)	848	12,353	31,526	153,081
	Total			3,369,630
<i>Does not include estimates for credits from fleets and public charging (with all proposals potentially applicable, but with different adoption expected).</i>				
<i>Does not include estimate credits for business / workplace (from Lower CI Sources proposal)</i>				
<i>Does not include estimate for credits from non-co-located renewables</i>				

APPENDIX 2

Incremental Credit Generation Assumptions

Residential Charging (MWh) / EVSE	3.9					
Workplace Charging (MWh) / EVSE	1.6					
	2020	% Chg YoY	2025	% Chg YoY	2030	
CA Light Duty EVs	1,000,000	15%	1,500,695	15%	2,486,068	
<i>Residential Segment</i>						
Smart GHG						
LCFS Participation Rate	0.2%	100%-25%	2.3%	25%-6%	4.0%	
Incremental Credit / MWh	0.08	5%	0.10	5%	0.13	
Renewables (Co-Located)						
% from Solar	25%		25%		25%	
LCFS Participation Rate	0.3%	100%-25%	3.4%	25%-6%	6.0%	
Incremental Credit / MWh	0.30	-3%	0.26	-3%	0.22	
Lower CI Sources						
CCA % of EVs	33%		40%		47%	
Incremental Credit / MWh	0.14	-1%	0.13	-1%	0.12	
<i>Business / Workplace Segment</i>						
Workplace EVSE % of EVs	40%	1%	45%	1%	50%	
Smart GHG						
LCFS Participation Rate	0.2%	100%-25%	2.3%	25%-6%	4.0%	
Incremental Credit / MWh	0.07	10%	0.11	10%	0.17	
Renewables (Co-Located)						
% from Solar	60%		60%		60%	
LCFS Participation Rate	0.3%	100%-25%	3.4%	25%-6%	6.0%	
Incremental Credit / MWh	0.30	-3%	0.26	-3%	0.22	

APPENDIX 3

Specific benefits and uses of potential LCFS credit proceeds by Sonoma Clean Power

SCP is currently in its second year of offering an EV incentive pilot program. The pilot program has been successful by all accounts, but access to LCFS credits would directly contribute to increased electric vehicle purchases. SCP currently offers customers \$2,000 to offset EV purchases, with CARE/FERA customers receiving \$3,500. When coupled with targeted marketing and outreach by SCP and additional EV dealer/manufacturer price reductions, this model has proved successful at significantly boosting EV sales in the Sonoma and Mendocino territory. An independent evaluation of SCP's EV incentive pilot program by the Center for Sustainable Energy³ found the following:

- SCP customers who applied for an incentive, but did not ultimately purchase a vehicle cited 1) range anxiety and, 2) vehicle price as the two most significant barriers. These two barriers are closely linked: EVs with longer ranges and larger batteries are often more expensive. Increased incentives via LCFS credits would allow customers to purchase EVs with longer ranges and at a lower costs.
- Similarly, SCP customers who did ultimately purchase EVs cited the following as their top four reasons for doing so: 1) reducing environmental impacts; 2) increasing energy independence; 3) convenience of charging; 4) saving money.
- Those customers cited incentives, coupled with targeted marketing and outreach, as a critical factor in their decision to purchase an EV: 88% of respondents said they would not have adopted an EV without the program.
- The program proved effective at changing not just current, but future behaviors – these will have an even greater impact towards achieving state goals. Of particular note, 70% of respondents said they would “mostly (45%) or only (25%) purchase EVs in the future”.

In conclusion, SCP participants were motivated by an environmental ethos but were constrained by economic reality. Those who did participate were very likely to continue to purchase EVs in the future. LCFS credits would alleviate the financial burden of making a progressive choice to adopt an EV, which would likely lead to repeat purchases by those customers.

³ Drive EverGreen Evaluation Report, April 2017. Available online at: <https://sonomacleanpower.org/wp-content/uploads/2017/04/Drive- EverGreen-EV- Incentive- Pilot-Evaluation- Report.pdf>

APPENDIX 4

April 19, 2017 Comments of eMotorWerks on Virtuous Cycle of Smart Charging⁴

“By creating avenues within the Regulation to explicitly incentivize intentional, dynamic EV charging scheduling which minimizes coincident emissions, the Board can not only encourage innovation but also initiate a virtuous cycle of emissions reductions. EV charging equipment that is intentionally and dynamically operated to minimize marginal emission rates does lower the CI of transportation fuel for that EV, but it also simultaneously assists with the integration of renewable energy on the electric grid, thereby enhancing the power system’s ability to increase the share of renewable energy and lower average CI. In addition, incentivizing intentional, dynamic EV charging will serve to lower the total cost of EV ownership, which can spur technology adoption across the EV value chain - EVs, smart charging infrastructure and intentional, dynamic EV charging. The cycle of more EVs charging attuned to coincident GHG emissions [and renewable energy] further enables the reduction of CI of the electric grid for transportation fuel and all other electricity end uses.”

⁴ eMotorWerks Comments to ARB Staff Discussion Paper on Electricity as a Transportation Fuel (November 23, 2016) https://www.arb.ca.gov/fuels/lcfs/workshops/04172017_emotorwerks.pdf

About eMotorWerks

eMotorWerks developed and operates JuiceNet®, the leading electric vehicle (EV) cloud-based smart charging platform, and the company is the manufacturer of best-selling and best-rated residential EV charging station, the JuiceBox Pro, through Amazon.com and its own web store, with over 25,000 charging stations sold worldwide to date. eMotorWerks embeds the JuiceNet platform in its own residential and commercial EV charging stations, as well as third-party electric vehicle supply equipment (EVSE), including models from AeroVironment, Clipper Creek, Volta, Nayax, and a growing list of other manufacturers. JuiceNet is also being integrated into automobile models for direct smart control of EV charging via vehicle telematics. eMotorWerks is an “Opt-in Party” to the Regulation for EV charging.

Contact: David Schlosberg, Director, Energy Market Operations, david@emotorwerks.com

About ChargePoint

ChargePoint is the largest electric vehicle (EV) charging network in the world, with charging solutions for every charging need and all the places EV drivers go: at home, work, around town and on the road. With more than 40,000 independently owned charging spots and more than 7,000 customers (including workplaces, cities, retailers, apartments, hospitals and fleets), ChargePoint is the only charging technology company on the market that designs, develops and manufactures hardware and software solutions across every category. Leading EV hardware makers, automakers and other partners rely on the ChargePoint network to make charging station details available in mobile apps, online and in navigation systems for popular EVs. ChargePoint drivers have completed more than 28 million charging sessions, saving upwards of 27 million gallons of gasoline and driving more than 662 million gas-free miles.

Contact: Anne Smart, Vice President, Public Policy, anne.smart@chargepoint.com

About WattTime, a subsidiary of the Rocky Mountain Institute

WattTime’s mission is to give everyone the freedom to choose the power they use. We are a non-profit subsidiary of the Rocky Mountain Institute catalyzing a movement to allow anyone to choose cleaner energy easily and automatically. Our technologies automatically detect which power plants will meet a user’s demand and how clean that power will be. With this information, WattTime makes it possible with a software update to select which power plants a device relies on. Anything connected to the internet that consumes, generates, or stores power can optimize its activity to automatically reduce its carbon and pollutant footprint and simultaneously help clean and renewable power plants compete on the grid.

Contact: Matt Evans, Managing Director, matt@watttime.org

About Sonoma Clean Power

Sonoma Clean Power (SCP) is the public electricity provider for Sonoma and Mendocino counties. We provide customers with the option of using cleaner electricity at competitive rates from sources like solar, wind, geothermal and hydropower. SCP is a not-for-profit public agency, independently run by the participating cities and counties of Sonoma and Mendocino. SCP invests locally to support Sonoma and Mendocino County renewable power and local jobs, and also around California to get the most affordable sources of clean power. SCP is helping get our customers into EVs because we can fuel them with clean, low-CI electricity. We have partnered with seven local dealerships to provide purchase credits. With additional SCP incentives, available rebates & tax credits, SCP customers save thousands when they switch to EVs.

Contact: Neal Reardon, Regulatory Affairs Manager, nreardon@sonomacleanpower.org

About Silicon Valley Clean Energy

Silicon Valley Clean Energy (SVCE) is a community choice aggregator that provides reliable, affordable, carbon-free electricity to the communities of Sunnyvale, Mountain View, Cupertino, Los Altos, Los Altos Hills, Campbell, Saratoga, Morgan Hill, Monte Sereno, Gilroy, Los Gatos, and the unincorporated areas of Santa Clara County. SVCE has been in service since April 2017.

Contact: Hilary Staver, Regulatory and Legislative Analyst, hilary.staver@svcleanenergy.org

About MCE Clean Energy

MCE is the first CCA program in California. MCE currently serves over 250,000 customer accounts in the counties of Marin and Napa, the cities of Richmond, San Pablo, El Cerrito, Benicia, Walnut Creek, and Lafayette. In 2018, MCE will expand its service to unincorporated County of Contra Costa, the cities of Concord, Martinez, Oakley, Pinole, Pittsburg, San Ramon, Danville, and Moraga. The expansion will approximately double the customer accounts served by MCE.

MCE's mission is to reduce GHG emissions through renewable energy resources and energy efficiency programs. MCE's default electricity product is 55% renewable, and MCE also offers two additional 100% renewable electricity products. Since 2013, MCE has been administering CPUC-approved Energy Efficiency programs, particularly focusing on low-income and multi-family housing, and is exploring other customer programs, including electric vehicles.

Contact: C.C. Song, Senior Policy Analyst, csong@mceCleanEnergy.org

About Peninsula Clean Energy

PCE is the fifth CCA program formed in the State of California. PCE serves the County of San Mateo and each of the twenty incorporated cities therein. PCE commenced service in October 2016 and, as of April 2017, PCE supplies electricity to all of its approximately 300,000 customers. PCE is committed to serving all of its customers clean affordable electricity with the goal of our energy supply being 100% GHG-free by 2021 and sourced from 100% RPS-eligible resources by 2025. While PCE is still exploring program options to drive climate mitigation strategies in partnership with state programs, PCE is keenly interested in vehicle electrification and developing programs similar to those at Sonoma Clean Power which drive electric vehicle adoption and provide other benefits to our communities.

Contact: Joe Wiedman, Director of Regulatory & Legislative Affairs, jwiedman@peninsulacleanenergy.com

About Lancaster Choice Energy

Lancaster Choice Energy (LCE) is Lancaster's, locally operated, locally controlled electrical power provider. LCE began serving customers May 2015 and offers residents and businesses within the City of Lancaster a greener and affordable alternative to traditional investor-owned utilities. Lancaster has prioritized developing and maintaining a sustainable community for the enhancement and longevity of quality of life for residents and local stakeholders. Because higher electric vehicle adoption by residents and inbound commuters will result in fewer carbon emissions, thus contributing to the City's Zero Net Energy goal, LCE is expanding its electric vehicle charging station infrastructure citywide to encourage community adoption of electric vehicles. Additionally, Lancaster, in partnership with Antelope Valley Transit Authority, will soon be home to the first 100% all-electric public transit bus fleet in North America, expected to be completed in 2018.

Contact: Kathy Wells, Energy Projects Assistant, kwells@cityoflancasterca.org

Volta Charging

San Francisco-based Volta has developed and is scaling up a uniquely innovative approach to Electric Vehicles charging. Partnering with brands that focus on off-the-chart engagement around causes that matter, Volta deploys networked EV chargers at prominent and convenient venues like shopping centers and civic entertainment districts, and provides free charging to drivers and free installation and maintenance for life to site owners. The strategic locations of Volta community charging amenities drive both high utilization and high visibility, establishing Volta as an incredibly effective catalyst for EV adoption. To learn more visit www.voltacharging.com.

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About Chanje Energy, Inc.

Chanje Energy is a California-based OEM delivering [medium duty electric vehicles](#) and turnkey [energy infrastructure services](#) for the last mile industry. We're focused on creating sustainable solutions that improve how companies move people and packages from transportation hubs to their final destinations.

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About EDF Renewable Energy

EDF Renewable Energy, a subsidiary of EDF Energies Nouvelles, is a leading U.S. independent power producer boasting over 30 years of experience across a broad spectrum of services. Our core competencies in Project Development, Operations and Maintenance, and Asset Management enable us to ensure each project we touch performs at the highest level possible. Our mission is turning innovative renewable energy ideas and long-term relationships into an ethical, high value sustainable business.

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American Honda Motor Co., Inc.

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