December 4, 2017

Mr. Sam Wade
Chief, Transportations Fuels Branch
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Submitted electronically to: LCFSworkshop@arb.ca.gov

RE: Comments in Response to November 6, 2017 LCFS Workshop and Draft Regulation

Dear Mr. Wade,

The California Natural Gas Vehicle Coalition, the Coalition for Renewable Natural Gas, and the Bioenergy Association of California appreciate the opportunity to jointly submit our comments in response to the draft regulatory amendment language to the Low Carbon Fuel Standard (LCFS), as recently described by Staff in the November 6, 2017 rulemaking workshop. Brief descriptions of our three organizations – with complete listings of approximately 200 member companies that we collectively represent – are provided in Appendix A of this letter.

As you know, our three organizations have provided strong support for the LCFS program since its inception. The broad NGV and fuel suppliers and stakeholders that we collectively represent have been instrumental in simultaneously developing and deploying progressively lower emitting heavy-duty vehicles powered by clean natural gas engines -- while also delivering and using increasing volumes of low-carbon renewable natural gas (RNG) to these vehicles. We have played essential, world-leading roles to commercialize and deploy heavy-duty NGVs using RNG, to dramatically reduce criteria pollutants and greenhouse gas emissions from California's large transportation sector, as needed for California to meet its highly challenging air quality and climate change goals.

The following summarizes the specific issues and concerns that our three organizations continue to have regarding the 2018 LCFS Preliminary Draft Regulatory Amendment Text. Our three organizations, as well as our individual member organizations, have separately expressed concerns about these issues, in prior workshops and through our follow-up comment letters. We will not revisit all the details of those prior letters and concerns in this letter. Instead, we summarize below the key unresolved issues, and provide specific recommendations for Staff to improve the draft regulatory language and requirements in ways that we believe are fair, defensible and equitable.

Low Carbon Intensity RNG Pathway Certification and Buffer Account

Summary of Specific Concern

As we are all aware, the scope of renewable natural gas (RNG) supply is expanding. Innovation in anaerobic digestion technology has spurred significant investment in RNG production at dairy farms, wastewater treatment plants, and other waste stream digesters. RNG produced from the waste derived from these projects has proven to have a significantly low and in many cases negative carbon intensity score. The highly negative

carbon intensity score is a pivotal component driving returns for a project owner. Digester RNG projects, especially dairies, require significant capital investment, much more than a typical landfill RNG project which underscores the importance of cash flow certainty from LCFS credits.

Our concern is that under the current amendment proposal, digester RNG producers can potentially lose significant LCFS value to the buffer account if their pathway application for a highly negative CI is not approved in a timely manner. Without an approved pathway, the digester producer will have to apply for a temporary fuel pathway (TFPC). We appreciate the addition of TFPCs for digester projects (0 g/MJ for Dairies/Green waste and 35 g/MJ for Wastewater) however the likely delta between the actual CI for one of these projects and the TFPC will be significant. For example, the most recent dairy application had a CI of -254 g/MJ which translates to an additional 0.25 credits per MMBtu of production relative to the 0 g/MJ TFPC. At current market pricing this can yield millions of dollars of lost revenue and LCFS value to the buffer account in just the first quarter of operation.

Recommendation for Staff Action

We understand that ARB Staff has committed to faster application approval timeframes but as stated before, cash flow certainty is pivotal especially in the starting months of production for these capital-intensive projects. We ask that ARB build flexibility into an LCFS retroactivity provision to allow pathway applicants to recognize the full LCFS benefit of their actual certified CI from the first date of production and inclusion in the LCFS program. This methodology serves to reward carbon negative RNG projects by incentivizing timely and accurate application submittals while mitigating any cash flow risk for the producer in the event of an administrative delay at ARB.

Annual CI Verification Proposal

Summary of Specific Concern

Our three organizations view the verification proposal as a vital addition to the LCFS program. However, the proposed *annual* CI verification requirement is overreaching given that a pathway applicant must supply two years of operating data to obtain a certified CI. The verification requirement should align with the pathway certification requirements to maintain consistency in the program. Specifically, the pathway verification should occur every two years, rather than annually. Disconnecting the verification period from the period used to establish the certified CI value can lead to false determinations that the facility is operating significantly differently than the certified pathway basis. An annual CI verification provision assumes that one year of operating data is reflective of "normal" operating conditions at a facility. This is not the case. Production facilities can experience periods of planned or unplanned maintenance that can affect the annual CI score, but are otherwise captured in the two-year data used to certify the pathway. The only case in which the two-year operating CI is expected to deviate materially from the certified CI is if there is a substantial change in the production process from what was original approved. The LCFS Regulation (and RFS as well) already requires a pathway applicant to notify ARB if there are any material changes in the production process that will affect the CI score.

Pushing the CI verification out to two years eliminates the risk of modeling "atypical" operating conditions while effectively creating a rolling CI re-certification process that ensures that each pathway CI reflects the most recent two years of operating data. This two-year window of CI verification will also likely sync up with the timing of future GREET Model releases that require the pathway CI scores to be updated anyway.

Additionally, ARB staff has expressed concern regarding staff resources. Extending verification to a two year window would alleviate some of the resource concerns.

Recommendation for Staff Action

We recommend that Staff modify the currently proposed pathway verification frequency from an annual cycle to a two-year cycle.

Credit True-Up and Buffer Account

Summary of Specific Concern

ARB has proposed an annual carbon intensity verification process through which credit generators must verify if their actual operating carbon intensity over the previous year was equal to, or different than, the certified carbon intensity that was used to generate credits. If the operating carbon intensity is found to be *higher* than the certified carbon intensity, the credit generating entity will be required to forfeit or purchase the quantity of credits that were over-issued. However, no additional benefit or credits will be awarded to the credit generator if this verification process confirms that the operating carbon intensity was *lower* than the certified carbon intensity. In the most recent regulatory text, ARB proposes that these unissued credits will go into a buffer account maintained by the Executive Officer.

Our three organizations and many associated member companies (see Appendix A) believe that the far more equitable solution is for ARB to devise a full "true-up" system for credit generation, as part of the annual verification program. When the credit generator submits the Annual Fuel Pathway Report by March 31st of each year, an additional item in the report would identify the quantity of credits that were over- or under-issued using the certified carbon intensity as opposed to the actual operating carbon intensity. The third-party verifier tasked with reviewing the report would also verify the calculation of the credits. At the end of the verification schedule, a positive verification statement would result in a true-up of credits, either a deposit of credits for those under-issued or a deficit of credits for the quantity over-issued. As previously described in the draft regulatory language, an adverse verification statement would result in CARB investigation.

Allowing credit generators to true-up credits between those generated (either positively or negatively) with the certified carbon intensity and those that would have been generated using the operating carbon intensity lessens the concern of annual credit invalidation. Such a true-up process incentivizes credit generators to use a more conservative certified carbon intensity to generate credits quarterly, since any over-issued credits would be deposited into their account at the end of the verification schedule. This proposal would also result in removing the provision in draft regulatory text that stipulates over-issued credits must be sent to the buffer account.

ARB has stated that the main purpose of the buffer account is to broadly provide a safeguard against invalidation risk in the overall program, while noting the new, potentially large, risks posed by carbon capture and sequestration (CCS) projects. Our three organizations and our member companies believe that CCS projects and their developers and credit generators should fully bear this risk and that biofuel (including liquid and biogas) credit generators should be able to realize the full value of their projects.

Recommendation for Staff Action

To address the above concerns, our organizations strongly recommend that Staff make the following revisions to the draft amendments:

1. Under-issued credits should NOT be used to populate a buffer account. Instead, they should be awarded back to the credit generator.
2. The verification process should be considered sufficient to determine actual generation of credits and allow for a full true-up between generated credits and issued credits.

3. To resolve ARB's concerns about Staff resources that may be needed to arbitrate disputes (e.g., the magnitude of under-issuance of credits), ARB should add clarifying language. This would define the amount of under-issued credits available to a party as the value determined in the third-party reviewer's analysis. Any challenge to this determination would require the pathway holder to invalidate the third-party verifier's report and complete a new report using another third-party verifier.

CA GREET 3.0 Natural Gas Pipeline Leakage Assumption

Summary of Specific Concern

In October of this year, Argonne National Labs released GREET 2017, which identified an error in the 2016 methane emission assumptions for natural gas transmission and storage presented in the Burnham et al. 2016 study and used in CA GREET 3.0. The original Burnham et al. 2016 white paper lists natural gas transmission and storage leakage rates to be 74.6 g CH4/MMBtu in 2016. However, it is explained in the Burnham et al. 2017 study that this original 2016 rate was based on an EPA value that double counted compressor station emissions. The correct transmission and storage methane emissions rate for 2016 should be 46.7 g CH4/MMBtu.

Recommendation for Staff Action

The original 74.6 g CH4/MMBtu leakage rate for 2016 used in the CA GREET 3.0 Model (and corresponding lookup pathway CI's) should be updated to a value of 46.7 g CH4/MMBtu, incorporating the corrections made by Argonne National Labs

L-CNG Compression Energy Calculation

Summary of Specific Concern

Our organizations have previously noted that the L-CNG pathway incorrectly models the regasification and compression processes at a typical L-CNG station. Specifically, CA-GREET currently assumes that fuel is gasified using process heating, followed by gas compression. L-CNG stations actually function by first pumping LNG to CNG pressures before gasifying the liquid in an ambient heat exchanger.

In response to our previous comments, Staff adjusted the CA-GREET 3.0 model to remove energy consumption from the gasification portion of the station operation. We appreciate Staff's efforts to modify and correct this aspect of the model.

However, the compression energy and emissions associated with the L-CNG station remain linked to the compression energy required by a CNG station. Pumping of liquid to high pressure is significantly more efficient that compression of the gas, owing to the near incompressibility of the liquid. Consequently, the compression energy, or more accurately the pumping energy, should be a fraction of that required for compression. As an example, one L-CNG station builder notes that the specific energy requirement for an L-CNG station is 0.05 kWh/kg of CNG dispensed, or ~0.14 kWh/DGE. This is compared to CNG stations that typically demonstrated specific energy requirements of 0.8-1.2 kWh/DGE.

Recommendation for Staff Action

We request that ARB review the compression energy assumptions for the L-CNG pathway and reassess them based on high pressure pumping of LNG rather than compression of pipeline natural gas.

Double-Counting of Benefits for Demand Shifting of Electrical Loads

Summary of Specific Concern

At the November 6th workshop, Staff proposed a new approach for credit generation associated with metered EV charging. Under the proposed structure, EV charging could generate credits for the use of low-CI electricity as well as the use of Smart Charging. The provided rationale for a Smart Charging credit is that the charging load would be shifted from the "average" grid mix to a time period with a lower CI. Ostensibly, these lower CI periods occur when there is substantial PV generation contributing to the grid mix. Unfortunately, implementing the credit structure as proposed would result in double-counting carbon reductions.

Specifically, the currently proposed structure would give full credit to a charger using a Low-CI electricity supply relative to the average grid mix. It would then additionally provide credit for shifting demand to a lower-CI period. This results in a scenario where a low-CI electrical supply is utilized during a period when the grid already has a reduced CI. In this scenario, the net GHG benefit of using the Low-CI electrical supply should be calculated relative to the reduced grid CI, not the average grid mix as was proposed in the workshop.

In addition to double counting carbon reductions, the proposed structure has the unintended consequence of encouraging entities to bring on more renewable electricity resources during periods when the grid has the highest renewable mix. This exacerbates the risk of renewable power curtailment, rather than helping to alleviate it.

Recommendation for Staff Action

Our three organizations strongly recommend that ARB modify the proposed methodology for crediting the combination of Low-CI electricity supplies and Smart Charging. This should be done by calculating the credits generated from the use of Low-CI electricity supplies relative to the CI of grid mix in Smart Charging window where the charging occurs. This would then provide the greatest credit generation and economic benefit to EV charging that can utilize low-CI electricity supplies during periods where the grid CI is the highest. More importantly, it would not double count carbon reductions, which is critical to the validity of the program overall.

Modification to EER Applicable to Electric Vehicles

Summary of Specific Concern

In prior comments to Staff, our organizations have each expressed concern over the analysis used to support increasing the EER for electric vehicles, as described in the Innovative Clean Transit (ICT) working group paper, "Battery Electric Truck and Bus Energy Efficiency Compared to Conventional Diesel Vehicles." In this paper, ARB Staff rely upon a 2015 chassis dynamometer study of Transpower electric trucks by UC Riverside to develop EER values for electric drayage trucks. In our view, this report is not a sufficient basis upon which to modify the EER for this class of vehicles. We reiterate our concerns here that the ICT report upon which ARB relies uses the least efficient diesel truck in an SCAQMD study as the basis for estimating the relative efficiency (EER) of heavy-duty electric trucks. Had the UC Riverside researchers used the fuel economy of a different, but comparable, diesel engine in the SCAQMD study, the diesel fuel economy would be substantially higher. Specifically, the Transpower study assumes a baseline diesel fuel economy of 2.69 mpg based on a 2011 Cummins ISX 11.9L engine over a local drayage duty cycle. However, in the same test group, a 2011 Mack MP8 12.8L engine achieved a fuel economy of 4.13 mpg. Consequently, the EER calculated using the least efficient diesel vehicle results in an EER of 6.7 for the EV over the local drayage cycle, or an EER of 4.4 using the higher efficiency diesel vehicle. This change in the calculated EER exceeds 50 percent, based simply on the choice of which baseline diesel vehicle was chosen.

Table 1, shown below, reproduces the Staff's analysis in the ICT working group paper but augments the table with our proposed modifications to improve the defensibility and reasonableness of the proposed updates to the EER values for EVs.

We believe it is more defensible to utilize an average fuel economy of the three tested diesel drayage trucks as the baseline for establishing the electric truck's EER, rather than selecting only one of the three tested vehicles. The resulting average fuel economies for the near-dock, local, regional, and UDDS test cycles are shown in the highlighted cells of Table 1**Error! Reference source not found.**. Using this more robust average for the diesel baseline significantly alters the calculated EV EER for these test cycles.

As ARB Staff note in their ICT working group paper, "When doing emissions analysis or total cost of ownership analysis, *charger-battery system inefficiencies must also be taken into consideration*." (Emphasis added.) We concur with this statement. Indeed, no other vehicle technology utilizes a recharging/refueling process where 10-20% of the fuel energy is lost; as is the case with EV charging. Appendix 1 of the working group paper includes a detailed analysis of charging efficiencies and identifies a figure of 85% as a conservative, but reasonable estimate of average charging efficiencies for EVs. Given the importance of charging efficiencies to the overall pathway energy usage, and the existing analysis provided by ARB Staff, we believe that the charging efficiency for EVs should be incorporated into the EER assumptions.

When these charging efficiencies are incorporated, the EER for electric vehicles decreases. The resulting values for the data points considered in the ICT paper are shown in Table 1. Plotting the corrected EER values in the same manner as done in the ICT paper shows the strong influence that both the charging efficiency and diesel drayage truck fuel economy assumptions have on the "EER curve" (see Figure 1). In fact, the updated curve suggests that, for an average vehicle speed of 12-15 mph, the EER is approximately 4.0 rather than the 5.0 proposed by Staff. This is consistent with the existing EER values for transit buses currently used in the LCFS program.

We also note that the ICT analysis was based on a limited set of test vehicles across many different vehicle types and duty cycles. Further, the EER curve was generated based on chassis dynamometer test cycles only and when the curve was compared to actual in-use data, the correlation was poor. Until more data are available in each vehicle category, ARB should adopt conservative EER values to avoid over-issuing credits.

<u>Recommendation for Staff Action</u>

To improve the defensibility of the proposed updates to EERs for heavy-duty EVs, our organizations urge Staff to:

1. Utilize an average fuel economy of the three tested diesel goods movement trucks in the SCAQMD study as the baseline for establishing the electric truck's EER and adopting the average fuel economies for the near-dock, local, regional, and UDDS test cycles shown in Table 1.
2. Incorporate charging efficiencies into the EER assumptions for EVs.
3. Reevaluate the EER curve calculated by Staff and select an EER of approximately 4.0 for EVs with an average vehicle speed of 12-15 mph.

Figure 1. Comparison of "original" and "corrected" EER curves

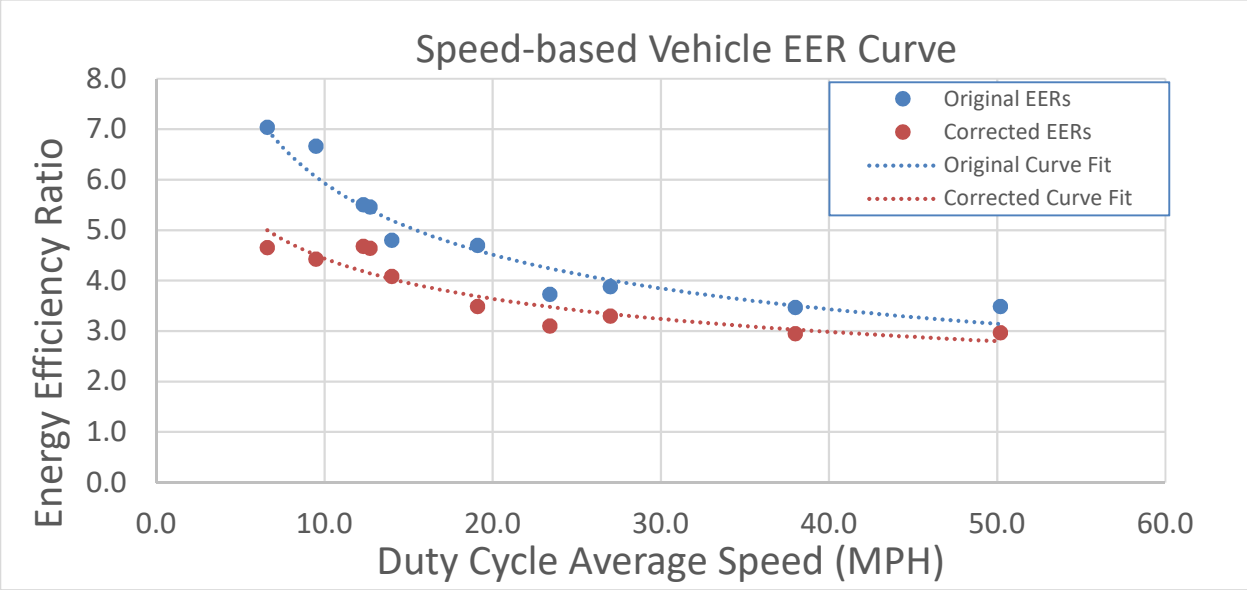

Table 1. EER values at different average speeds

Data Source	Route/Cycle Name	Average Speed (mph)	Conv. F.E. (mpdge)	Electric F.E. (kWh/mi)	Electric F.E. (mpdge)	EER (Calc.)	Corrected Conventional F.E. (mpdge)	Charging Efficiency	EV F.E. Charging Losses Included (mpdge)	Corrected EER
UCR - Class 8 Drayage Tractor	Drayage Near dock	6.6	2.6	2.1	18.3	7.0	3.3	85%	15.6	4.7
UCR - Class 8 Drayage Tractor	Drayage Local	9.5	2.7	2.1	18	6.7	3.5	85%	15.3	4.4
CalHEAT - Class 5 Step Van	OCBC	12.3	9.5	0.7	52.3	5.5	9.5	85%	44.5	4.7
Altoona - Class 8 40' Bus	Bus CBD	12.7	3.9	1.8	21.3	5.5	3.9	85%	18.1	4.6
CalHEAT - Class 5 Step Van	HTUF4	14	11.7	0.7	56.2	4.8	11.7	85%	47.8	4.1
UCR - Class 8 Drayage Tractor	UDDS	19.1	3.3	2.4	15.5	4.7	3.8	85%	13.2	3.5
UCR - Class 8 Drayage Tractor	Drayage Regional	23.4	4.8	2.1	17.9	3.7	4.9	85%	15.2	3.1
Altoona - Class 8 40' Bus	Arterial	27	4.2	2.3	16.3	3.9	4.2	85%	13.9	3.3
Altoona - Class 8 40' Bus	Commuter	38	7.5	1.5	26	3.5	7.5	85%	22.1	2.9
UCR - Class 8 Drayage Tractor	Drayage Cruise	50.2	5.5	2	19.2	3.5	5.5	85%	16.3	3.0
TransPower - Class 8 Yard Tractor	Port of LA In-Use Route	3	2.4 gal/hr	NA	.345 DGE/hr	7	2.4	85%	0.41	5.9
NREL - Class 8 Proterra 35' Transit Bus	Foothill Transit Line 291	7	2.1	2.2	17.5	8.3	2.3	85%	14.9	6.4
TransPower - Class 8 Yard Tractor	IKEA Warehouse In-Use Route	9	2.4 gal/hr	NA	.45 DGE/hr	5.3	2.4	85%	0.53	4.5
SD Airport - Class 3 V6 Shuttle Van	SD Airport Shuttle In-Use Route	19.2	17.9	0.5	80.6	4.5	17.9	85%	68.5	3.8
SD Airport - Class 3 V4 Shuttle Van	SD Airport Shuttle In-Use Route	19.2	26.6	0.5	80.6	3.0	26.6	85%	68.5	2.6
UCR - Class 8 Drayage Tractor	7% Grade - Test Cycle	34.4	1.7	7	5.4	3.2	1.7	85%	4.6	2.7
CalHEAT - Class 3 Sprinter Van	Navistar eStar In-Use Route	18.2	11.2	0.5	76.8	6.9	11.2	85%	65.3	5.8

Conclusions

Our three organizations collectively represent nearly the entirety of NGV and RNG industry stakeholders in the United States. We will continue to support the LCFS. However, we strongly believe that these recommended changes are essential to help ensure that the LCFS program continues to be a fuel-neutral program that does not create competitive advantages for certain fuels. Significant progress has been made over the years in the LCFS program, and we frankly are concerned that such progress is in jeopardy. The best path forward is for ARB staff to revise the draft amendments by removing all inequitable or unsubstantiated competitive advantages for any specific fuel pathway. This will ensure the integrity of the program is maintained and guarantee greater success of the program moving forward.

We would like to thank ARB staff for allowing us the opportunity to provide comments and share our concerns about the proposed amendment language. Please feel free to reach out to us if you have any questions, by email or phone. We would like to set up a meeting as soon as possible between Staff and our experts, to discuss ways that ARB can accommodate our recommended changes in ways that are mutually acceptable.

Sincerely,

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Appendix A: Organization Descriptions and List of Member Organizations

The California Natural Gas Vehicle Coalition (CNGVC) represents the state's natural gas vehicle industry and includes major automobile manufacturers, utilities, heavy-duty engine manufacturers, fueling station providers, equipment manufacturers, and fleet users of natural gas vehicles. We are working together to advance natural gas as the alternative transportation fuel in the heavy-duty truck sector.

Table 2. Membership of the **California Natural Gas Vehicle Coalition**

Charter Members	• Clean Energy • Southern California Gas Co.
Sustaining Members	• UPS • Agility Fuel Solutions • American Honda • American Power Group • ampCNG • Chart Inc. • Cosmodyne • CR&R Inc. • Cummins Westport • Ford Motor Co. • Freightliner Trucks Inc. • Gladstein, Neandross & Associates • Momentum Fuel Technologies • Pacific Gas & Electric Co. • Penske Truck Leasing • ReFuel • San Diego Gas & Electric Co. • Trillium CNG • TruStar Energy • Waste Management Inc. • WEH Technologies Inc. • Westport Innovations Inc.

The Coalition for Renewable Natural Gas (RNGC) is a non-profit organization based in California that represents and provides public policy advocacy on behalf of the renewable natural gas industry in North America. Our membership is comprised of leading companies operating in each sector of the industry, including but not limited to producers of greater than 90% of all the RNG produced in the United States and Canada - and nearly 100% of the RNG participating under the LCFS program.

Table 3. Membership of the **Coalition for Renewable Natural Gas**

• AGPower Field Processing • Air Liquide • Akin Gump • Alabama Clean Fuels Coalition • Ameresco • ARI • Aria Energy • Berq RNG • BioCNG • Big Ox Energy • BP Energy • CA State Council of Laborers • Calysta • Cambrian Energy • Canadian Gas Association • CenterPoint Energy • Central Oklahoma Clean Cities • City of Tacoma • Clean Energy / CE Renewables • Clean Fuels Ohio • Clean Source Capital • Comerica Bank • Constellation Energy • Crenshaw, Ware & Martin • Cummins Westport • Cynthia Obadia Consulting • Dallas Fort Worth Clean Cities • Darling Transportation • Denver Metro Clean Cities Coalition / American Lung Association in Colorado • DMT Clear Gas Solutions • DriveGreen • DTE Biomass • Duke Energy • Earth Day Coalition • East Tennessee Clean Fuels • Energy Power Partners • Eversheds Sutherland • Energy Vision •	• Ecoengineers • ECOTEC • Element Markets • Enerdyne Power Systems • Energyneering • Evonik Industries • Ewing Bemiss & Co. • FC Gas Intelligence • First Environment • Fortistar • Gas Technology Institute • Genscape • Greater Washington (DC) Clean Cities Coalition • Houston-Galveston Clean Cities Coalition • Haldor Topsoe • IGRS (Integrated Gas Recovery Services) • INGENCO • International Union of Operating Engineers • Iogen • Kinetrex Energy • Law Office of Jeremy Weinstein • Lego-V • Lightbeam • Loci Controls • Lone Star Clean Fuels Alliance • Louisiana Clean Fuels • Mas Energy • McGuireWoods LLP • Middle-West Tennessee Clean Fuels • Montauk Energy • Morrow Renewables • N1 Energy • Nacelle Solutions • NGVAmerica	• New Phase Energy • NW Natural • National Grid • No Coast Biofuels • Renergy • Renewco • Renewable Dairy Fuels / ampCNG / ampRENEW • Republic Services • River Birch • Roeslein Alternative Energy • Rogue Environmental Industries • SCS Engineers / SCS Energy • Shell Energy North America • SoCalGas / Sempra Energy • Specialized Biogas • Terix Envirogaz • The Energy Authority • Toro Energy • Triangle Clean Cities • Trillium CNG • Tulsa Clean Cities • Union Gas • Valley of the Sun Clean Cities Coalition • Vilter Manufacturing / Emerson • U.S. Gain • Virginia Clean Cities • Waste Management • Weaver • Westhoff, Cone & Holmstedt • Western Washington Clean Cities • Xebec • Xergi

The Bioenergy Association of California (BAC) was established in 2013 to promote sustainable bioenergy development. Bioenergy includes renewable electricity, low carbon transportation fuels and pipeline biogas generated from organic waste such as dairy and agricultural waste, food and yard waste, wastewater treatment, organic waste diverted from landfills, and forest biomass . BAC's members include private companies, public agencies, local governments, investors, consultants, nonprofits, individuals and others interested in promoting community-scale bioenergy generation. BAC focuses on policy advocacy, public education and outreach, research, and industry best practices.

Table 4. Membership of the **Bioenergy Coalition of California**

• All Power Labs • American Biogas Council • Anaergia Services • Atlas ReFuel • Belco – Elecnor Group • BioFuels Energy • Biogas Energy • Blue Sphere • Brownstein Hyatt Farber Schreck • California Association of Sanitation Agencies • California Bioenergy • California Refuse Recycling Council • Caterpillar • City of Fresno • City of San Diego, Public Utilities Department • City of San Jose • Clean Energy Renewable Fuels • The Climate Trust • Cortus Energy • CR&R Waste and Recycling • Delta Diablo • East Bay Municipal Utility District • Eisenmann • Encina Wastewater Authority	• Gas Technology Institute • Gladstein, Neandross & Associates • The Grant Farm • Greenlane Biogas • Gussing Renewable Energy • Harvest Power • Hitachi-Zosen Inova • Irvine Ranch Water District • J. R. Miller & Associates • Las Gallinas Valley Sanitary District • Lawrence Berkeley National Lab • Los Angeles County Sanitation Districts • Los Angeles Department of Public Works • Monterey Regional Waste Mgmt District • Orange County Waste & Recycling	• Organic Waste Solutions • Phoenix Energy • Placer County Air Pollution Control District • Puregas Solutions • Sacramento Municipal Utility District • Salinas Valley Solid Waste Agency • Sea Hold / Team Biogas • Sierra Energy • Sierra Institute for Community and Environment • Southern California Gas Company • Stoel Rives • StormFisher Biogas • TSS Consultants • Tuolomne County Economic Development Authority • Victor Valley Wastewater • W. M. Lyles Company • Wastewater Capital Management • The Watershed Center • West Biofuels • Western Energy Systems / GE Jenbacher • Westhoff, Cone & Holmstedt • Xergi • Zero Waste Energy