

5-November-2020

Rajinder Sahota
Division Chief, Industrial Strategies Division
California Air Resources Board
1001 I St.
Sacramento CA 95814

RE: Comments on Air Resources Board Public Workshop on Potential Regulation Amendments to the Low Carbon Fuel Standard held October 14-15, 2020

Dear Ms. Sahota,

Clean Energy Systems, Inc. (CES) thanks you and the staff at the California Air Resources Board (CARB) for the opportunity to comment on the recent workshop on potential regulation amendments to the Low Carbon Fuel Standard (LCFS) of October 14-15, 2020.

CES has developed proprietary oxy-combustion technologies that lend to efficient and cost-effective carbon capture. When used with fossil fuels and proven carbon sequestration methods, these technologies enable zero-emissions power generation. When biomass-derived fuels are used, the process results in carbon-negative energy production.

We offer the following comments for CARB's consideration relating to application of carbon capture and sequestration (CCS) projects under the LCFS. If you have any questions related to the content of this response or wish to discuss these matters further, we can be reached via email at info@cleanenergysystems.com.

Sincerely,



Rebecca M. Hollis
Director of Business Development – Carbon Negative Energy

Enclosure

CC: Keith Pronske, CES President & CEO
Josh Perron, CES Director of Business Development – Carbon Reduction Solutions

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The Power to Reverse
Climate Change

ENCLOSURE

Comments on Air Resources Board Public Workshop on Potential Regulation Amendments to the Low Carbon Fuel Standard held October 14-15, 2020

Purpose

The purpose of this document is to provide suggested modification to CARB staff for inclusion into the next LCFS rulemaking process.

Request #1

Institute a mechanism to allow for a “floating CI score,” to be bounded within a calculated range, for projects which are expected to have varying cycle characteristics which can shift to a certain degree on an hourly or daily basis; a “true-up” provision can be required on a quarterly and annual basis during the reporting period to reconcile expected with actual results.

Rationale for Request #1

Projects which source feedstocks from a variety of suppliers do not always have 100% control of the day-to-day supply. A prime example are biomass projects; biomass feedstock waste is supplied from a variety of suppliers, and types and transport distances can vary widely. Biomass feedstocks also change seasonally. Attempting to obtain a fuel pathway for each type of biomass within the fuel source area would require a significant amount of efforts on the part of both producers and CARB staff. A bounded “floating CI score” with a quarterly or annual “true up” mechanism would produce the same results with much less effort and cost.

Request #2

Provide the same considerations to indirect air capture projects with no criteria pollutant emissions which are afforded to direct air capture projects.

Rationale for Request #2

Direct air capture projects use fans, filters, solvents, and other mediums for capturing GHGs from the atmosphere and permanently sequestering them. Indirect air capture projects use naturally occurring mechanisms for capturing GHGs from the atmosphere, including trees, plants, and algae, which then undergoes subsequent processing to prevent GHGs from being re-released to the atmosphere. Depending on the configuration, some indirect air capture projects include the added benefit of eliminating criteria pollutant emissions from process energy sources. A further benefit of indirect air capture projects is the generation of some sort of valuable fuel is produced as a byproduct – electricity, hydrogen, biogas, etc. Direct air capture projects do not output any type of low-carbon fuel yet receive more favorable treatment regarding program eligibility than indirect air capture projects.

Request #3

Allow for the accounting of CO₂ captured via the production of oxygen under the same provisions as direct air capture projects.

Rationale for Request #3

Direct air capture projects draw in air and separate the GHGs for permanent sequestration. Oxy-fuel projects include oxygen generating equipment, such as VPSAs or cryogenic ASUs. These technologies also draw in air and separate its constituents. The CO₂ trapped in the incoming air can be captured and sequestered as part of the oxy-fuel project; the result is a direct air capture project with a useful output (oxygen), which can be used for additional carbon capture projects.

Request #4

Include fossil natural gas under the Innovative Crude provisions.

Rationale for Request #4

Crude oil producers have several options to reduce carbon intensity under the Innovative Crude provisions, but these provisions do not extend to natural gas. Natural gas extracted and transported with process energy sourced from low-carbon sources such as solar, wind, or those which employ carbon capture would provide for a net reduction, or even complete elimination, of Scope 1 and Scope 2 emissions. These projects should be incentivized by eligibility to generate LCFS credits.

CES fully understands CARB's desire to reduce, and eventually eliminate, the use of fossil fuels. As we all work to increase the availability and reduce the cost of renewably-derived fuels, CES believes a reasonable incremental improvement should be the expansion of eligibility for LCFS credit generation for projects which CARB considers "innovative," such as CCS projects.

An example of how this modification will help reduce the carbon intensity of CA's transportation sector is with a project CES is working with a fossil natural gas producer. The producer imports approx. 16 MM SCFD of natural gas into California, and they would like to include an oxy-fuel power unit with carbon capture and permanent sequestration into their operations. However, the project is not eligible for generating LCFS credits under the current regulations. This lack of eligibility disincentivizes the producer to include carbon-reducing processes into their operations, so they continue to import gas into the state with a greater carbon intensity than what is possible today. The gas will continue to be imported into the state whether or not an eligibility solution is found; the suggested modification would reduce the Scope 1 and Scope 2 emissions of this gas without any increase in fossil natural gas utilization in the state.

Request #5

Update the definition of "physical delivery" to include fuels and process energy products delivered via contracted capacity on a common carrier pipeline.

Rationale for Request #5

The LCFS regulation includes a variety of eligibility requirements regarding delivery, depending on the type of fuel or process energy and its end uses. Virtually all energy products, with the exception of low-CI fossil natural gas, are eligible for credit generation when these products are physically delivered to the end user.

Assuming CARB staff is amenable to including low-CI fossil natural gas produced with innovative methods into the LCFS program, CES believes it is important to allow for the most efficient, lowest carbon method for delivering that natural gas to the end user. Standard practice is for a producer to contract for capacity on a common carrier pipeline from the point of origin to the destination. If no available volume exists on that pipeline, the producer is unable to sell its gas to the offtaker. This concept of contracted capacity should be included under the definition of physical delivery because there is a true accounting of the molecules entering and exiting that pipeline system. While the actual molecules injected at the producer's site cannot be traced to the extraction location at the offtaker's site, there is a full accounting of all the gas entering the system and getting used in California.

For products such as RNG/biogas and renewable electricity, the LCFS regulations allow for book-and-claim accounting, which further removes physical molecule utilization requirements by the offtaker. As CES understands this accounting mechanism, a biogas producer in Iowa can inject 10 MM SCFD of biogas into the local gas grid, and an offtaker in California can claim the use of that gas for credit generation via the book-and-claim accounting mechanisms. However, no consideration is given to the physical capacity of the pipelines between producer and offtaker. Extrapolating this scenario, it's foreseeable that 10 biogas projects, each injecting into the local grid (100 MM SCFD in total), can use book-and-claim accounting to get their gas to offtakers in California even if the pipeline system between the projects and offtakers might have a capacity limit of 50 MM SCFD, and potentially no physical capacity availability due to contracts with other gas suppliers. CES is not proposing to allow fossil natural gas eligibility under book-and-claim accounting, but we're providing this example to illustrate how contracted capacity on a common carrier pipeline is fundamentally different than book-and-claim accounting.

Request #6

Suggested modifications or clarifications to the CCS Protocol:

Third Party Review

The Protocol requires third-party review of both plans and as-built projects. However, some of the details of the third-party review program around eligibility and competencies have created difficulties in assembling independent teams with appropriate expertise. In particular, requiring a professional geologist and engineer to certify legal and financial aspects of a project goes against those professionals' ethical code of conduct and is clearly outside their area of expertise. Adjustments could be made to the requirements for third-party reviewers so that their competencies more closely match Protocol requirements and need for credibility and transparency.

Post-Injection Site Care and Site Closure

The Protocol requires operators to monitor the sequestration site for 100 years with methods that may not adequately demonstrate storage security or permanence. This requirement could be modified to allow more definitive demonstration of secure geologic storage in less time, enhancing environmental integrity while reducing ongoing obligations on project developers that do not contribute to reducing risk.

Invalidation and Buffer Account

The Protocol requires an 8-17% contribution of credits into a buffer account to protect against CO₂ leakage, but based on the information in the previous rulemaking it is not clear how the various portions of this contribution were scientifically supported or how they are tied to project risk or the risk of leakage. Additionally, there are also much more economically efficient means to protect against CO₂ leakage. We understand that building a buffer into the system is essential for environmental integrity and public trust, but it could be done in a pooled manner that more accurately maps to specific project risks, with significant positive impacts to project economics.

Legal Understanding, Contracts, and Post-Closure Care

The Protocol prohibits penetrations of other wellbores into the storage complex, but that situation is often legally impossible to enforce because of property law. California and most, if not all, oil and gas producing states have rules and regulations designed to ensure that penetrations are effectively controlled at all times, all usable-quality water zones are isolated and sealed off to effectively prevent contamination or harm, and all formations, potential flow zones, and zones with corrosive formation fluids are isolated and sealed off to prevent vertical migration of fluids, including gases. This protects the integrity of the storage complex including the confining layers. In some cases, a storage complex may have multiple confining layers providing redundant protection against the release of stored CO₂ from a project. The Protocol could be revised to accommodate this eventuality in a safe and protective manner that does not compromise the storage complex and confining layer or layers or increase the risk of CO₂ leakage.

Rationale for Request #6

Since becoming effective in 2019, the CCS Protocol has already generated significant interest from the project developer and lender community both inside and outside of California, though no projects have yet been certified under the program and several implementation challenges are cited repeatedly. We believe that a small number of technically sound improvements to the Protocol would both enhance the environmental integrity of the program and facilitate additional credit generation potential.

Given the short timeframe for California to achieve its low carbon objectives and the lengthy time horizons for planning, permitting and implementing CCS projects, we encourage CARB to include CCS protocol revisions in its planned LCFS rulemakings as soon as possible or to explore other avenues for amendment, or clarification through guidance. Timely changes to the Protocol would avoid limiting the potential for CCS to contribute to a lower carbon future for California in the long term.