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Daryl Maas, CEO
Maas Energy Works, Inc.
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California Air Resources Board
Attn: Cheryl Laskowski
1001 I Street
Sacramento, CA 95812

RE: Comment in Response to December 7, 2021, Public Workshop: Changes to the LCFS Program

Dear Ms. Laskowski,

Maas Energy Works, Inc. ("MEW") appreciates the opportunity to provide written comments in response to CARB Staff's December 7th Public Workshop addressing potential changes to the LCFS program. As the largest developer of dairy biogas projects in California, MEW can attest that the LCFS program is critical to the continued incentivization of new of dairy biogas projects. With a strong, consistent, transparent LCFS, private funds will continue to flow into methane mitigation projects with increasing efficiency and reach.

Removal of Deemed Compete Designation

MEW appreciates CARB Staff's efforts in processing and certifying an increasingly growing number of provisional pathway applications, especially given the limited resources available at CARB. Despite staff's efforts, we are starting to notice a slowdown in pathway approval timing given the large influx of pathway applications submitted to CARB, including many dairy biomethane pathways. As a developer investing into these dairy projects, pathway certifications are critical to generating cashflow to cover operating expenses. Currently we must wait for nearly a full year to receive actual cashflow on a certified pathway, and sometimes longer. Often, we lose carbon credits by needing to use a higher temporary fuel pathway code while awaiting certification. Sometimes we lose even more credits if CARB does not grant a TFPC. Pathway certification timing is nearly 100% out of our control but one protection that we do have is the deemed complete date. The deemed complete date signifies that, as a pathway applicant, we have satisfied all submission requirements for a pathway application as required under the Regulation. Although not guaranteed, the deemed complete date has worked as a benchmark as to when credit generation can take effect, assuming the pathway can be certified in the subsequent quarter. Removing the deemed complete designation adds further uncertainty to the timeline of approval for pathway applications which will certainly extend cashflow receipt for project developers.

Although we see a lot of value to developers in keeping the "deemed complete" date, MEW agrees that removing the deemed complete could potentially help with CARB's application processing load. We want to be supportive of CARB's desire to simplify the system. MEW is in favor of removing the deemed complete designation if two corresponding changes occur. First: CARB should allow timely approval of temporary pathway applications for longer than two consecutive quarter for projects with provisional applications submitted, since these TFPC's protect us from grievous loss due to delays. Second: once a provisional pathway is certified, CARB should then true up an entity's credit generation (all credits generated under a temporary pathway) with the actual provisional CI. Timely approval of temporary pathways (longer than two quarters) will allow project developers to generate some limited cashflow soon after startup and the true up to the actual provisional CI will allow the project developer (and the LCFS program in general) to recognize the actual value of the CI reduction from their fuel dispensed in California. Most importantly though the true up will relieve the pressure from CARB Staff to complete so many time-sensitive pathway approvals, often with developers like us pushing for faster work. Giving pathway holders certainty on recognizing the full CI value for their full will take away the pressure of quickly submitting pathway applications and pushing CARB to expedite approvals. Such a plan should be subject to the current verification structure. All credits generated under a temporary pathway should be subject to annual verification with positive and negative true ups. If an entity has a provisional pathway with a CI greater than the temporary pathway, CARB should have the authority to issue a negative true up (and potential enforcement penalty) as it currently does under the existing verification program. In this same manner however, the annual verification process should allow for positive true ups when an entity's verified annual CI is less than their certified CI.

All around this concept is simple. It allows pathway holders (and the LCFS program as a whole) to recognize the immediate and actual CI benefit of the fuel dispensed in California by taking the timing pressure and constraint out of the pathway approval process. This concept allows CARB to fully review all provisional pathway applications to ensure accuracy, confirm (and recover if necessary) credit generation during verification, all while allowing developers to cashflow sooner.

Dairy Biogas to Electricity Projects- Eliminate the Benchmark Efficiency Penalty for Dairy Biogas to Electricity

In May 2019 CARB Staff implemented a 50% benchmark engine efficiency requirement through Low Carbon Fuel Standard (LCFS) Guidance 19-06: Determining Carbon Intensity of Dairy and Swine Manure Biogas to Electricity Pathways. The result of this benchmark is that all existing certified electricity generation biogas projects in California are awarded substantially fewer LCFS credits than the GREET models indicates they should receive. Rather than relying upon the science of greenhouse gas quantification methodology, the Benchmark applies a penalty to certain technologies based upon considerations outside the greenhouse gas calculations. Consequently, this benchmark efficiency requirement is contrary to the stated methane reduction goals of SB 1383 in addition to the transportation electrification goals of Executive Order N-79-20. Small to medium sized dairies have limited options for developing a cost-effective digester project, especially if they are not located near an existing dairy cluster project or near a pipeline injection point. This benchmark efficiency requirement serves to prevent construction of new stationary electricity generation projects that cannot meet an established efficiency standard. Indeed, not one has been built since the penalty was established.

CARB has maintained that solid oxide fuel cells can achieve 50% efficiency in a farm setting and thus avoid the Benchmark penalty. We hope this is achievable and are actively working to implement projects

that achieve this laudable goal. But farmers' willingness to install digesters depends on their confidence that the associated technologies are proven and can be reliably maintained in a farm setting. Most small and medium sized farms cannot afford a fuel cell, which in many cases costs more than the dairy facilities themselves. American dairies, with very few exceptions, use lean burn internal combustion engines with air-district compliant emission catalysts, which operate at 30-35% efficiency under the best possible real-world circumstances. Thus the 50% benchmark efficiency standard results in a 30-40% penalty on LCFS credits received per cow on dairies in the LCFS program in direct conflict with GREET methodology. EV charging (without the 19-06 benchmark efficiency reduction in credits) offers the first profitable opportunity for smaller dairies to the enter the digester market—especially those dairies not near a dairy pipeline "cluster," and especially for dairies that have not been able to secure the state grants that so far have tended to fund large, clustered dairies. Fuel cells may be the future. But until that future arrives at a price and reliability level acceptable to small and medium farms, we should not let the perfect be the enemy of the good. We should not miss this opportunity to encourage farmers to invest in technology to mitigate manure emissions as required by SB 1383.

If CARB is unwilling to remove the benchmark efficiency altogether, we propose the following alternatives tools to modify the proposed 50% benchmark efficiency standard and incentivize the development of digesters on small to medium sized dairies.

1. Use a benchmark efficiency standard of 37% for digester generators below 1 MW capacity (or below a certain dairy size), and 50% for larger generators (or larger dairies)

2. Set the benchmark efficiency standard for all sites to 37%, until such time as a California dairy has demonstrated higher real-world efficiencies, with comparable up-time, for a 24-month period necessary for a certified LCFS pathway. Make the demonstrated efficiency the new standard thereafter, perhaps with a phase-in period or small-digester exemption. CARB Staff has enough data now through certified dairy biogas to electricity pathways to determine a realistic and accurate efficiency benchmark.

3. Set an escalating efficiency standard the is feasible for smaller dairies (1 MW or less) to meet. The efficiency standard should escalate such that it does not penalize existing assets that can provide immediate GHG and methane reduction benefits, but instead ratchets up efficiency on an annual basis based on the date of pathway certification and thereby incentivize progressively more efficient and cleaner generation equipment. The following efficiency standard schedule would be appropriate:

    a. Pathway certified by January 1, 2024- Efficiency Standard = 25%
    b. Pathway certified by January 1, 2025- Efficiency Standard = 30%
    c. Pathway certified by January 1, 2026- Efficiency Standard = 35%
    d. Pathway certified by January 1, 2028- Efficiency Standard = 40%
    e. Pathway certified by January 1, 2030- Efficiency Standard = 45%

The main premise of the LCFS program has been a technology neutral system quantifying lifecycle GHG emissions of fuels delivered in California through utilization of the GREET model. The purpose of the GREET model is to model actual full lifecycle emissions of each fuel without prejudice or preference. Implementing an efficiency-based penalty for electricity generation is in direct conflict with the

technology neutral foundation of the LCFS and if implemented needs to be administered in such a manner that does not disproportionately penalize one technology over another.

Temporary Fuel Pathway Code for Electric Power Generation

In addition to removing or adjusting the benchmark efficiency penalty, CARB needs to establish a temporary fuel pathway code for diary to electricity pathways similar to the diary to biomethane temporary pathway set at -150 g/MJ. As previously stated, due to pathway approval timelines, project developers must wait nearly a full year to receive cash flows on a provisional pathway. Unlike dairy to biomethane pathways who can receive early cash flow through a temporary pathway, smaller dairies do not have that ability and must wait a full year to generate any return. Even worse, due to the Three-Quarter Rule for Book-and-Claim, dairy to electricity projects are subject to losing LCFS value altogether if pathways are not certified in time before eligibility under Book-and-Claim expires. Dairy to electricity projects need the same access to early cash flow through a temporary pathway and therefore CARB must establish a new temporary pathway through this rulemaking.

SB 1383 Potential 2024 Dairy Methane Regulation

Although SB 1383 gives specific authority to CARB and CDFA to regulate dairy methane emissions on or after January 1, 2024, we strongly urge CARB not to implement any regulatory mandate on dairy methane emissions that would remove the ability of dairy producers to voluntarily implement digesters and thus gain avoided methane benefits under the LCFS. Without any certainty on further State funding for digester projects, developers must rely on private funding to finance dairy digester projects which depend on returns generated in both the RIN and LCFS markets. So far, this method has worked, and large flows of private money are flowing into California to achieve the state's methane mitigation goals at a rate faster than anywhere else in the world. All this is happening despite significant volatility, minimal liquidity, and unpredictable future pricing for LCFS and RIN commodities. But regulating dairy methane emissions will drastically reduce the LCFS credit yield for a dairy digester project due to the removal of the avoided methane benefit and as a result, dairy pathways will convert to carbon positive projects similar to landfill gas facilities. Dairy biogas costs significantly more than landfill gas to produce. Investments in dairy digester projects would be unavailable and development of digester projects in California would grind to a halt. Mandating such projects will only invite resistance, and, ultimately, the newly regulated dairy industry would leave California for less regulated jurisdictions, causing significant leakage with respect to methane emissions in other states. The best course of action would be for CARB to avoid any dairy methane regulations that would threaten farmers' ability to create voluntary LCFS credits. CARB must continue incentivizing voluntary capture of dairy methane emissions to meet the requirements of SB 1383. The system is working. California dairy families are embracing digesters. January 1, 2024 is fast approaching and the future of further dairy development is in jeopardy, especially with respect to projects commissioning beyond 2024. Even now, new project ideas cannot be confident of meeting that timeline and so our company and others have to re-evaluate project feasibility in light of this uncertainty. It is imperative that CARB give public indication that diary methane will not be regulated so investment activity in mitigating diary methane emissions can continue today.

Thank you for the opportunity to provide comments We look forward to collaborating with CARB Staff to work towards improving and strengthening the LCFS program.

Sincerely,

Daryl Maas

Chief Executive Officer