MAAS ENERGY WORKS

3711 Meadow View Dr.
Suite 100
Redding, CA 96002
www.maasenergy.com

July 5, 2018

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

Re: Comments on Proposed Changes to LCFS Regulations Posted June 20th 2018

Dear Mr. Wade:

Maas Energy Works appreciates the opportunity to comment on the proposed changes to the Low Carbon Fuel Standard regulations.

We would like to make the following recommendations and comments to ARB's 15 Day Notice posted June 20th 2018.

1. Regarding the addition of Section 95488.9(f), Carbon Intensities that Reflect Avoided Methane Emissions from Dairy and Swine Manure or Organic Waste Diverted from Landfill Disposal:

a. We support the addition of this section since it will accurately value the avoided methane benefits of dairy digesters.

b. However, the section repeatedly uses "biomethane" to define the eligible project types. According the definitions section 95481 (a)(19), "Biomethane" is biogas…. "which has been upgraded for use in natural gas vehicles." This definition is extremely problematic since it could be interpreted to state that only biogas used in natural gas vehicles is eligible for claiming avoided methane benefits. As the rule makes clear in many places, biogas can be used to create biofuels such as biodiesel and ethanol, or hydrogen fuels. According to the proposed language, none of these uses might be eligible to claim avoided methane benefits.

c. We do not believe it was ARB's intention to only allow natural gas vehicle projects to claim avoided methane benefits, since liquid biofuel and hydrogen production are other valuable uses of dairy biogas that the Rule seeks to promote. We strongly suggest that either section 95488.9(f) remove all references to biomethane (using "biogas" instead), or else the definition of biomethane be changed in 95481 (a)(19) to a define biomethane as any

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biogas that is upgraded for use in the production of transportation fuels. We believe the latter option is superior, since "biomethane" is used throughout the Rule in contexts that do not limit themselves to natural gas vehicles only.

2. Addition of 95488.3. Calculation of Fuel Pathway Carbon Intensities.

a. We appreciate the addition of the Tier 1 Simplified Calculators in 95488.3 (b), and in particular the Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure. However, this tool appears to be designed only for use of biomethane as a compressed natural gas or liquid natural gas vehicle fuel. As we have pointed out in our first comment above, this definition of "biomethane" could greatly restrict the uses of dairy digester gas. The first 6-8 dairy digesters in the first dairy digester cluster in California are all not producing CNG vehicle fuel. Rather, they will initially supply their biomethane as an input to make low carbon ethanol at the Calgren Renewable Fuels facility near Pixley, and only later transition to CNG fueling. There are no other dairy digesters clusters anywhere in the state likely to produce CNG fuel in the next 12 months, and so it is puzzling to see ARB's focus on CNG when the near-term use of dairy digester gas is ethanol production.

b. We suggest this Tier 1 Biomethane Calculator, (or more likely a new, separate Tier 1 calculator) should account for the use of biomethane in the production of ethanol, the most likely near-term use of California dairy digester cluster biogas. In fact, ARB has already produced a Tier 1 Simplified CI Calculator for Starch and Corn-Fiber Ethanol. This tool could be modified to include an "Avoided Emissions" tab using the same manure methane emissions calculations as exist in the tab of the same name in the Simplified CI Calculator for Biomethane from Anaerobic Digestion of Dairy and Swine Manure.

c. In light of the preceding comments, we think it would be more appropriate to rename the calculator listed in 95488.3(b) (7) to be "Simplified CI Calculator for Biomethane Compressed Natural Gas/Liquid Natural Gas from Anaerobic Digestion of Dairy and Swine Manure, since various other uses of biomethane can and will be employed.

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3. Modifications to Section 95488.9. Special Circumstances for Fuel Pathway Applications.

a. We support the change in section 95488.9(b) to set a temporary pathway CI value of dairy biomethane to -150 gCO2e/MJ. This level accounts for the beneficial impact of avoided dairy manure methane emissions, while also being conservative in its estimate of the magnitude. This approach is appropriate for new facilities.

b. Many California dairy digesters are being developed in "clusters" of multiple digesters supplying biogas to one common destination. Each time a new digester is brought online in a cluster, that digester will operate under the -150 temporary pathway for at least three months, even though currently approved dairy biomethane pathways show the likely CI score for this fuel is -200 or lower. Consequently, new digesters could lose valuable CI scores each time they expand the cluster with new digesters.

c. We propose that after a dairy digester cluster has at least three active digesters with provisional or certified pathways, the temporary pathway CI value of each future digesters added to the cluster be set to the weighted average of active CIs for that cluster. The Executive Officer already may have the power to approve these new temporary pathways under 95488.9(b)(4), but we suggest making that power explicit in the case of dairy digester clusters.

d. Finally, biomethane CNG/LNG should not be the only uses of biomethane that are afforded temporary pathway CI values. Other uses such as ethanol (the most likely near-term use of dairy cluster biogas) and hydrogen (a major goal of ARB) should get the same benefit when using biomethane as an input. Any transportation fuel pathway that uses biomethane and is eligible to claim avoided methane emissions benefits should be eligible for as assumed -150 CI on all biogas used in that pathway.

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Sincerely,

Daryl Maas
CEO

Maas Energy Works, Inc.
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