Memorandum

To: ARB Staff

From: Jeff Rosenfeld, ICF

Date: May 5, 2017

Re: Comments – ARB Workshop on Fossil and Renewable Natural Gas, Including Biomethane From Dairy and Livestock Operations

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Fossil and Renewable Natural Gas Comments

Simplified CI Calculator for Landfill Gas Pathways

There are several significant methodological and calculation errors that are contained within the tool, specifically how the efficiency and fuel shares are calculated. We would appreciate a follow-up conversation to identify and describe these errors in detail.

CNG Fueling Station Energy Consumption

The 97% efficiency is based on only 24 stations where significantly more stations exist in California (171 public and 150 private stations from the Alternative Fuels Data Center). A great number of stations should be included before developing a statewide value. When analyzing the 50 stations ICF had corresponding electricity and natural gas consumption, the energy consumption was much lower and the station efficiencies were 97.4% (straight average) and 97.6% (weighted average). ICF believes these efficiencies are too low. For stations that are directly metered or the other electricity sources for that meter can be subtracted, the electricity consumption for only compression results in efficiencies closer to 98%.

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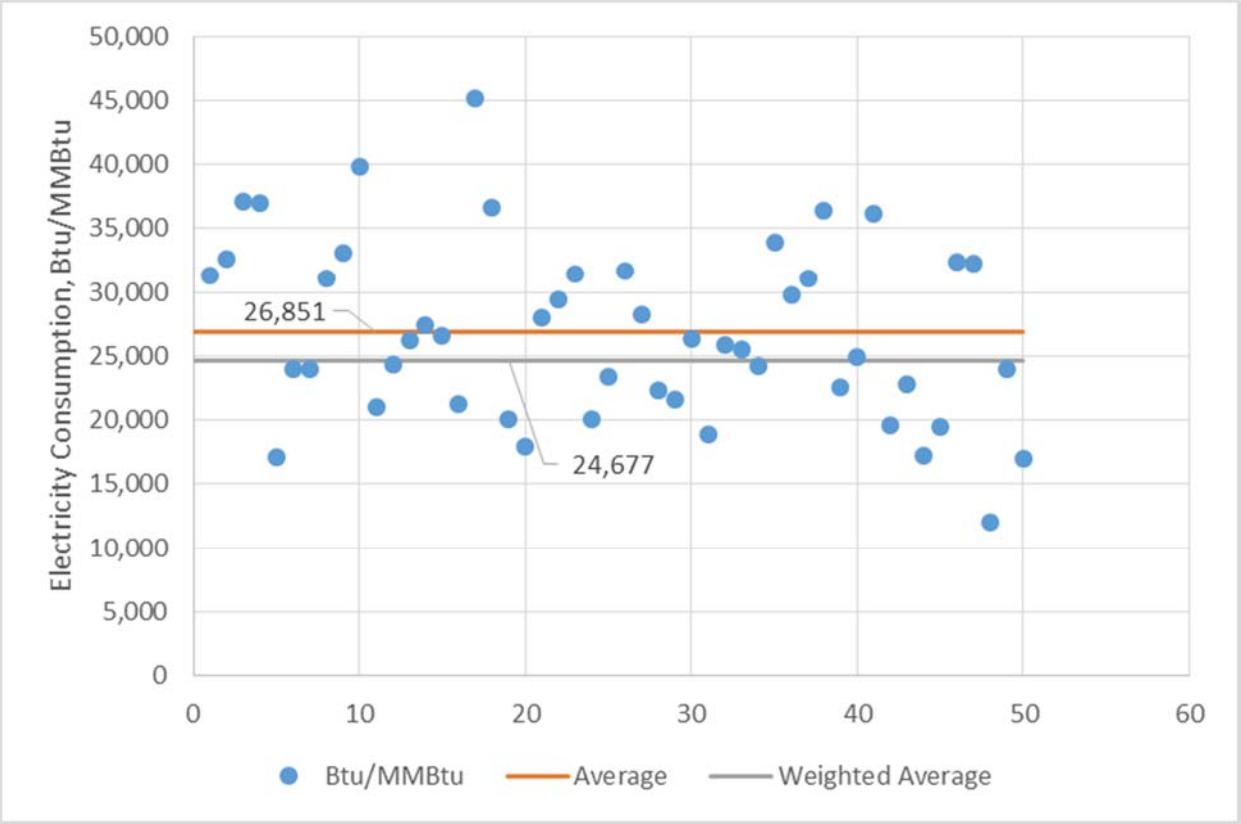

Biomethane from Dairy and Livestock Operations Comments

ROC Allocation to Product RNG

The current methodology in the livestock tool is to proportionally allocate the ROCs between the gas end uses (product RNG, fugitive, flare) for raw digester gas that flows to the gas upgrading system. No matter the efficiency of the system, some volume will go the flare and/or be lost as fugitive gas. This means that ROCs will need to be retired through two different programs or some amount will be lost. Also, a flaw of this methodology is that it does not take into account the amount methane reduced/offset (i.e. quantity of ROCs) compared to the quantity of product RNG. If the quantity of product RNG exceeds the amount of methane offset, all of the ROCs should be allocated to the product gas. Also, there is the potential of the amount of ROCs (MTCH4) allocated RNG exceeding the amount of RNG produced (as MTCH4).

ICF recommends a ROCs allocation methodology based on priority, not proportionality. This priority methodology would allocate methane or CO2 offsets (CO2 offsets are from decreased CO2 emissions from increased methane production over the baseline) to biogas end uses at the gas upgrading system (product RNG, vent, flare). The priority allocation of the methane offsets are 1) product RNG, 2) venting, 3) flaring. Also, by allocating methane offsets to vented gas, whose emissions are accounted for in the process emissions, this results in a net zero for that

gas. The remaining gas is allocated CO2 offsets. Also, it is recommended in this analysis that non-CO2 portions of the flaring combustion emissions should be included. An additional benefit of this methodology is that it would allow for the potential of all credits and offsets to be maintained in one regulation. ICF has performed example calculations showing the benefits of this methodology and potential drawbacks of the existing methodology. We would like a follow-up conversation with ARB to further discuss this methodology.

Credit Generation

The timeline for quantifying and verifying ROCs through the Livestock Offset Protocol (annual calculations + 5-6 months for full verification) makes it impossible to coordinate directly with the quarterly timeline for LCFS credit generation. Facilities generating RNG from livestock manure need to be able to generate credits on quarterly basis to fulfill necessary investment obligations. The ability to generate credits quarterly using a CI reflective of the actual CI is necessary to incentivize new projects to be built. The process has additional difficulties when ROCs have not previously been awarded for the facility.

For facilities with operating data that overlaps with the awarding of ROCs, the carbon intensity should be determined based on the overlapping data. LCFS credits should be generated quarterly moving forward with the approved CI. After ROCs are awarded for the period overlapping the credit generation period, as described in the draft concept paper, ARB staff should work with the applicant to ensure the accurate number of LCFS were generated. If credits were under-generated, the applicant should receive a one-time allocation for the net credits. If credits were over-generated, the applicant should make-up these credits via future generation of credits. A balance should be issued and the applicant can either purchase credits or subtract from future credit generation to make up for the negative balance. This allows credit trades to be assured and maintain confidence in the credit market space.

For new facilities that have not been awarded ROCs, ICF proposes two different methodologies:

1. If data is available, applicant submits the results of calculations and formulas contained within the Livestock Offset protocol to estimate the ROCs that would have been awarded during the overlapping time period for the operating data submitted. A provisional carbon intensity could estimate from these calculations and the same methodology for reconciling credits described above could be applied.
2. ARB, with consultation from industry and stakeholders, develops a livestock manure temporary fuel pathway code for these projects while they are going through their initial Livestock Offset Protocol process. This carbon intensity should be sufficiently low to incentivize investment and the same process for reconciling credits should be employed once ROCs are awarded.