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Re: Clean Fuel Standard Rulemaking – WA-GREET 4.0 Biogas-to-Electricity Efficiency Benchmark

The RNG COALITION appreciates the opportunity to comment on the Washington Department of Ecology's proposed updates to WA-GREET 4.0. Our comments focus specifically on the proposed 50 percent electric generation efficiency benchmark for biogas-to-electricity pathways.

Under the proposed calculator, projects operating below 50 percent efficiency would receive a proportional reduction in the carbon intensity benefits associated with avoided methane emissions and diverted carbon dioxide. We recommend that Ecology instead use a 40 percent efficiency benchmark**.**

A 40 percent benchmark would better reflect the performance of high-efficiency generation equipment actually available to biogas projects. Conventional reciprocating engines, which are widely used at anaerobic digestion facilities, generally operate well below 50 percent electrical efficiency, with the most efficient systems approaching approximately 40 percent. Newer technologies such as linear generators also operate around this level in real-world applications. [1]

Reaching or exceeding 50 percent generally requires substantially different technologies, such as solid oxide fuel cells, or generation equipment designed for applications at a scale far larger than most agricultural digesters. While those technologies may be appropriate for certain projects, they should not establish the baseline against which the broader biogas-to-electricity market is measured.

Setting the benchmark at 40 percent would still create an incentive to use efficient generation equipment without penalizing projects simply because commercially practical technologies cannot reach the proposed 50 percent level.

[1] https://wrrfdata.org/NBP/Newsletter/wp-content/uploads/2017/01/EPA_600_R-16_099_Evaluating-the-Air-Quality-Climate-and-Economic-Impacts-of-Biogas-Management-Systems.pdf?utm_source=chatgpt.com

We are also concerned that applying this adjustment to avoided methane benefits does not accurately reflect the emissions reductions occurring at the project. Methane is avoided when gas that otherwise would have been emitted under the applicable baseline is captured and destroyed. A generator operating at 40 percent rather than 50 percent efficiency does not necessarily capture or destroy less methane. Yet under the proposed calculation, a project operating at 40 percent efficiency would receive only 80 percent of the otherwise applicable avoided methane and diverted CO2 benefit.

The existing calculator already accounts for the amount of biogas directed to the generator. We therefore question whether an additional efficiency adjustment to the avoided methane portion of the pathway is necessary, particularly when that adjustment can reduce recognition of methane reductions that have occurred.

Finally, electrical efficiency alone does not always capture the full useful energy output of a biogas-to-electricity project. Many reciprocating engine projects recover waste heat for digester heating or other thermal uses. That energy provides a useful project benefit but is not reflected when performance is evaluated solely on electrical generation efficiency.

As an alternative to our recommendation, we recommend that Ecology consider a tiered approach for dairy derived biogas-to-electricity. Under this approach, dairies with 5,000 or fewer milking cows would be subject to a 40% benchmark, while dairies with more than 5,000 would be subject to the proposed 50% benchmark.

In conclusion, the RNG COALITION recommends that Ecology adopt a 40 percent efficiency benchmark for the biogas-to-electricity calculator. This level would maintain an incentive for efficient generation while better reflecting commercially available equipment and avoiding unintended disadvantages for projects that use electricity as the most practical pathway for beneficially using captured biogas.

The RNG COALITION appreciates Ecology's consideration of these comments and looks forward to continuing to participate in the development of WA-GREET 4.0.

Respectfully,

/s/

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