

August 3, 2022

Michigan Public Service Commission  
P.O. Box 30221  
Lansing, MI  
48909



## Feedback on Draft Renewable Natural Gas Feedstock Study for Michigan

Dear Michigan Public Service Commission Staff,

The Coalition for Renewable Natural Gas (RNG Coalition), Anaergia, EDL, Enerdyne Power Systems and The Landfill Group, and Middle M Management (collectively referred to herein as Joint RNG Stakeholders) submit the following feedback in response to the draft Michigan Renewable Natural Gas Study (Draft Study)<sup>1</sup> produced by ICF in cooperation with the Michigan Public Service Commission (MPSC) and members of the Renewable Natural Gas Study Workgroup (Workgroup).

We appreciate the extensive analysis undertaken by MPSC and ICF in developing the Draft Study, as well as the dialogue between members of the Workgroup throughout this process. Once complete, the Renewable Natural Gas Study will serve as the state's most comprehensive document outlining the potential for renewable natural gas (RNG) as a decarbonization and waste management strategy in Michigan. As Michigan works to achieve the important goal of carbon neutrality by 2050, RNG has the potential to be a key contributor to this effort, as outlined within the MI Healthy Climate Plan.<sup>2</sup>

The undersigned Joint RNG Stakeholders broadly endorse the methodologies and conclusions produced by MPSC and ICF in the Draft Study. Importantly, these conclusions are largely in line with previous RNG-related work conducted by ICF and other organizations. In consideration of our comments herewithin, we urge MPSC and ICF to add discussion on key items as described below, but encourage MPSC to move forward with final publication without significant modifications to the conclusions of the Draft Study.

### I) About the RNG Coalition

---

<sup>1</sup> Michigan Public Service Commission, *Michigan Renewable Natural Gas Study: Draft Final Report V1*.  
<https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/workgroups/RenewableNaturalGas/MI-RNG-Study-Draft-Report--6-2022.pdf?rev=abfd113cf24c434d874a16bc187bae84&hash=EC2FF77C337D13929B262376B8618208>

<sup>2</sup> Michigan Department of Environment, Great Lakes, and Energy, *MI Healthy Climate Plan*.  
<https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Offices/OCE/MI-Healthy-Climite-Plan.pdf?rev=d13f4adc2b1d45909bd708cafccbffa&hash=99437BF2709B9B3471D16FC1EC692588>

The Joint RNG Stakeholders are comprised of the following organizations which represent developers and users of RNG in Michigan:<sup>3</sup>

RNG Coalition serves as the trade association for the RNG industry in the United States and Canada. Our diverse membership comprises leading companies across the RNG supply chain, including recycling and waste management companies, renewable energy project developers, engineers, financiers, investors, organized labor, manufacturers, technology and service providers, gas and power marketers, gas and power transporters, transportation fleets, fueling stations, law firms, environmental advocates, research organizations, municipalities, universities, and utilities. Together we advocate for the sustainable development, deployment, and utilization of RNG, so that present and future generations have access to domestic, renewable, clean fuel and energy in Michigan and across North America.

Anaergia Services, LLC (Anaergia) is a global leader in diverting organics from landfill-bound waste and converting them into renewable fuel and soil amendments. Based in Carlsbad, CA, Anaergia has developed, implemented, and operated a suite of turnkey solid organic waste recycling facilities and anaerobic digestion solutions for over 25 years. With a proven track record of delivering solid waste, wastewater, and beneficial reuse projects on four continents and its portfolio of proprietary technologies and vertically integrated structure, Anaergia Inc.'s solutions create value to its partners in the form of landfill diversion, renewable energy, high-quality fertilizers, and clean water. Anaergia is currently partnering with Kent County, Michigan, to develop the Kent County Sustainable Business Park, which will divert organic waste from 400,00 tons per year of landfill-bound municipal solid waste to generate 600,000 MMBTU/yr of carbon-negative RNG.

EDL is a leading global producer of sustainable distributed energy, dedicated to a world of new energy for our customers, stakeholders and communities. We understand and are prepared for the complexities associated with a decarbonising energy market. At EDL, we are committed to developing innovative, tailored solutions that deliver on our customers' expectations of reliable, cost-effective and environmentally sustainable energy. We utilise a range of generation and fuel sources and our extensive experience to exceed expectations. EDL owns and operates a global portfolio of 90 power and gas facilities in Australia, North America, and Europe.

Enerdyne Power Systems is a family-owned company founded in 1991 and is solely focused on the development of projects which convert biogas to renewable energy. Enerdyne and its affiliates have been instrumental in the development of over 60 biogas to energy projects, either as sole developer and operator or assisting a third party in the development and construction phase. These projects cover the range of end use options – high-btu pipeline renewable natural gas, electricity, and medium-btu direct end use.

---

<sup>3</sup> Included Joint RNG Stakeholders are not an exhaustive list of member organizations in Michigan represented by RNG Coalition.

Middle M Management, LLC is a management consulting firm that provides safe, practical solutions to business partners who focus on sustainability. We build our relationships and solutions around our mission of “Leave It Better Than You Found It” as a statement that underpins the essence of stewardship and our responsibilities to each other. We recognize that legacy lasts longer than tenure, care about the global transition to a decarbonized economy, and want to contribute in a meaningful way that is consistent with the values of stewardship.

## II) Summary of the Role of Renewable Gas as a Climate and Clean Jobs Strategy

Renewable gases, including RNG and renewable hydrogen, are an important near-term decarbonization strategy for all applications which currently utilize fossil-derived fuels and, in the long-term, will be necessary in some applications that require the use of gaseous fuels.<sup>4</sup>

Incorporating the use of renewable gases as part of Michigan’s climate strategy will result in compound benefits through (1) the displacement of anthropogenic carbon dioxide (CO<sub>2</sub>) emissions from the combustion of fossil fuels, (2) the critical near-term greenhouse gas (GHG) benefits of increased methane capture and destruction, and (3) additional environmental benefits that result from improved waste management and creation of bio-based products from organic waste.

To achieve these outcomes, Michigan should target the development of renewable gases in tandem with the other technologies that will be required to fully decarbonize the state.<sup>5</sup> RNG should be given significant attention in the near-term, based on both the well-proven technology readiness level of various methods of making RNG today—such as anaerobic digestion (AD)—and the flexibility provided by RNG’s fungibility with all conventional gas applications.

In the mid- to long-term, waste biomass suitable for thermochemical conversion technologies (e.g., gasification) should also be viewed as an essential feedstock in Michigan’s renewable gas mix, including for use as an input into hydrogen production. In a similar manner to AD, gasification feedstocks are poised to contribute to Michigan’s circular bioeconomy (as a pathway for recycling resources). Furthermore, the use of carbon capture and sequestration (CCS) technologies such as geologic storage or biochar will produce negative-GHG outcomes when paired with RNG and hydrogen production. These technologies will provide a necessary pathway to *remove* emissions from the atmosphere,<sup>6</sup> creating an important pathway to carbon neutrality and, ultimately, carbon negativity.

---

<sup>4</sup> Bataille et al., *A Review of Technology and Policy Deep Decarbonization Pathway Options for Making Energy-Intensive Industry Production Consistent with the Paris Agreement*.  
<https://www.sciencedirect.com/science/article/abs/pii/S0959652618307686>

<sup>5</sup> Such as those contemplated within the Draft Study.

<sup>6</sup> Sequestration of the biogenic carbon contained in waste feedstocks from RNG and biomass-derived renewable hydrogen can be a carbon-negative process that removes carbon from the atmosphere. This benefit is separate from the methane destruction potential of RNG, which can lead to additional carbon-negative outcomes on a lifecycle basis relative to existing environmental control baselines.

Importantly, RNG and other waste-derived resources are unique in their near-term ability to reduce methane—a short-lived climate pollutant that, when assessed over a 20-year timeframe, is up to 80 times as potent as a greenhouse gas as carbon dioxide<sup>7</sup>—and to serve as a catalyst for improving organic waste management practices. In discussing the environmental impacts and opportunities associated with the organic waste sector, it is important to consider that, globally, municipal solid waste is expected to grow 69% from 2.01 billion metric tons (BT) in 2018 to 3.4 BT in 2050 (around 50% of which is organic waste).<sup>8</sup> Moreover, these trends are underpinned by an expected 25% population increase of 2 billion people between now and 2050.<sup>9</sup> Considering the state’s ambitious GHG reduction goals, Michigan has a significant opportunity to help pioneer the development and commercial deployment of viable technologies to address these challenges.

Using methane from organic wastes productively as a resource, rather than flaring it, provides greater impetus toward implementing and improving methane capture and organic waste management systems. The need to target methane emissions immediately as part of any GHG reduction strategy is substantiated by leading organizations focused on climate change mitigation, including the Intergovernmental Panel on Climate Change (IPCC), as described below.

In addition to the GHG and other environmental benefits achieved through RNG production and use, it is also important to consider how renewable gas supports the growth of high-quality jobs in Michigan’s renewable energy, waste management, and manufacturing sectors. While gas industry jobs have historically fallen under the fossil fuel industry umbrella, renewable gases provide an opportunity for gas workers to transition to green jobs. As increasing amounts of clean fuel are transported in the pipeline system, and as RNG methane capture projects begin to employ skilled labor, Michigan will see significant economic benefits. A single Wastewater project creates an average of 141 total (direct and indirect) jobs, a single Livestock Waste project creates an average of 79 total jobs, a single Food Waste Project creates an average of 297 total jobs, and a single MSW project creates an average of 343 jobs.<sup>10</sup> Creating new employment opportunities in these sectors is consistent with Michigan’s climate goals, and is a primary tenet of the MI Healthy Climate Plan.<sup>11</sup>

---

<sup>7</sup> The Global Warming Potential for non-fossil methane is 27 on a 100-year basis and 80 on a 20-year basis according to the most recent IPCC assessment. See Table 7.15 directly from Chapter 7.6 of the Sixth Assessment Report (Working Group 1: The Physical Science Basis).

[https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_Chapter07.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter07.pdf)

<sup>8</sup> <https://datatopics.worldbank.org/what-a-waste/trends-in-solid-waste-management.html>

<sup>9</sup> <https://www.un.org/development/desa/en/news/population/world-population-prospects-2019.html>

<sup>10</sup>

<https://static1.squarespace.com/static/53a09c47e4b050b5ad5bf4f5/t/61ba25c889b4fb7566404e6c/1639589328432/RNG+Jobs+Study.pdf>

<sup>11</sup> Michigan Department of Environment, Great Lakes, and Energy, *MI Healthy Climate Plan*.

<https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Offices/OCE/MI-Healthy-Climate-Plan.pdf?rev=d13f4adc2b1d45909bd708cafccbfffa&hash=99437BF2709B9B3471D16FC1EC692588>

The RNG industry currently has more RNG plants under construction or substantial development than in existence. Therefore, RNG contribution to jobs and the economy will inevitably increase. This represents an important opportunity for employment in Michigan given that RNG jobs are high paying, the vast majority of which fall well above the national average personal income. In 2021, the RNG industry contributed 22,600 Jobs and \$2.6B in GDP to the U.S. economy, and could contribute 200,000 jobs by 2030 if the U.S. is on track to achieve carbon neutrality by 2050. Every \$1 million spent on RNG production in 2021 created approximately 12 jobs.<sup>12</sup>

Finally, renewable gas should be recognized for its benefits as both a domestic and local energy resource.<sup>13</sup> The ability to generate and utilize North American renewable energy resources helps to ensure energy security and can protect against price swings experienced in global energy markets. Further, using RNG from local sources is more efficient than using resources from remote conventional sources, because transportation distance is minimized.<sup>14</sup>

Navigating the complex but necessary changes needed to align Michigan's energy and waste sectors with the state's GHG reduction goals will require state agencies, utilities, and other stakeholders to fully consider all possible renewable gas end-uses in the near-term, and to develop a framework to determine what end-uses may be most appropriately targeted for renewable gas use in the mid- to long-term. The Michigan Renewable Gas Study, as drafted, provides an important analytical step pursuant to these goals.

### **III) Feedback on Draft Study**

#### **A) GHG Reduction Potential**

We agree with the Draft Study's framing of RNG as a resource which can be used to replace conventional natural gas in residential, commercial, and industrial thermal applications. The takeaway that RNG could decrease emissions from this sector by 8%-22% (3-8 Million metric tons of GHG emissions out of 36 million metric tons)<sup>15</sup> is significant, however, we note that this analysis does not take into account the potential GHG reductions associated with increased methane capture, which is a key component of RNG development and use.

---

<sup>12</sup>

<https://static1.squarespace.com/static/53a09c47e4b050b5ad5bf4f5/t/61ba25c889b4fb7566404e6c/1639589328432/RNG+Jobs+Study.pdf>

<sup>13</sup> <https://biomassmagazine.com/articles/19174/renewable-natural-gas-and-the-need-for-clean-domestic-energy>

<sup>14</sup> For example, according to the Michigan Public Services Commission, moving gas from Oklahoma or Louisiana to Michigan requires about 4-6% of the energy in the delivered gas, while gas moving from Alberta, Canada (which is farther away) requires up to 8%. [https://www.michigan.gov/-/media/Project/Websites/mpsc/regulatory/nat-gas/About\\_Natural\\_Gas.pdf?rev=eec2e486ca434cedbfdc30426680bad9](https://www.michigan.gov/-/media/Project/Websites/mpsc/regulatory/nat-gas/About_Natural_Gas.pdf?rev=eec2e486ca434cedbfdc30426680bad9)

<sup>15</sup> Pg. 6

There are two distinct GHG emission accounting approaches commonly used in regulatory programs for bioenergy today: the “point-source biogenic CO<sub>2</sub> emissions are carbon neutral” approach and the “lifecycle” approach. We agree that ICF’s use of the point-source approach is most appropriate for the Michigan Renewable Natural Gas Study given alignment with Michigan’s GHG inventory and the resulting ability to easily compare RNG with other decarbonization technologies. However, acknowledging the lifecycle GHG impact of RNG production and use is a necessary part of understanding its full potential as a decarbonization strategy.

A lifecycle approach<sup>16</sup> (LCA) accounts for GHG emissions generated from a fuel’s production through its end-use—the full life of the fuel.<sup>17</sup> The lifecycle approach for GHG emission accounting for biofuels can also be referred to as a “well-to-wheels” or “full fuel cycle” approach. This approach accounts for all the GHG emissions produced or avoided from the production, collection and processing, transmission and delivery, and ultimate use of a fuel (including upstream sinks and final point-source emissions).

Incorporating the upstream GHG impact of RNG production facilities has a significant effect on analyses of cost-effectiveness and carbon intensity (CI) per unit of energy. For example, Figure 1 illustrates how using a LCA framework which incorporates upstream methane reductions reveals the full benefit of RNG from a cost-effectiveness standpoint according to the International Energy Agency’s (IEA).<sup>18</sup>

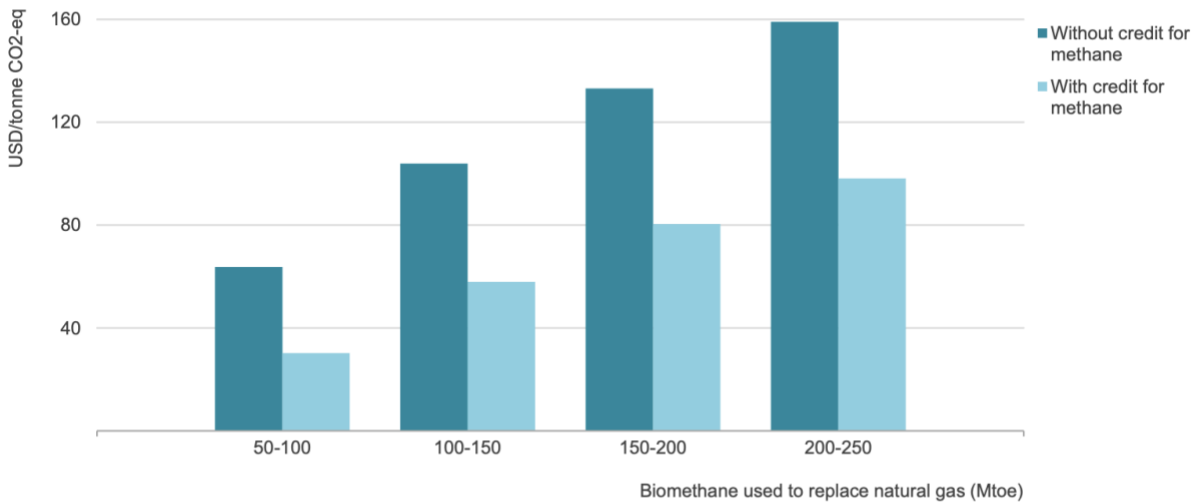
---

<sup>16</sup> Lifecycle analysis is well established as the leading way to holistically compare greenhouse gas abatement options. It is frequently used for bioenergy (inclusive of biofuels), but also has a role in comparing many other types of GHG abatement. The term “life cycle” appears 143 times in the IPCC’s *Climate Change 2022, Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. [https://report.ipcc.ch/ar6wg3/pdf/IPCC\\_AR6\\_WGIII\\_FinalDraft\\_Chapter10.pdf](https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_Chapter10.pdf)

<sup>17</sup> <https://www.epa.gov/renewable-fuel-standard-program/lifecycle-analysis-greenhouse-gas-emissions-under-renewable-fuel>

<sup>18</sup> International Energy Agency, *Outlook for Biogas and Biomethane: Prospects for Organic Growth*. [https://iea.blob.core.windows.net/assets/03aeb10c-c38c-4d10-bcec-de92e9ab815f/Outlook\\_for\\_biogas\\_and\\_biomethane.pdf](https://iea.blob.core.windows.net/assets/03aeb10c-c38c-4d10-bcec-de92e9ab815f/Outlook_for_biogas_and_biomethane.pdf)

Global marginal abatement costs for biomethane to replace natural gas, with and without credit for avoided methane emissions, 2018



Note: Chart shows the biomethane potential starting from the cheapest production options that would require a GHG price; the first 30 Mtoe of the global biomethane potential costs less than regional natural gas prices (and so should not require a GHG price to be cheaper than natural gas).

Figure 1. IEA's Biomethane Abatement Costs. Appropriately recognizing methane benefits improves cost effectiveness.

In the same vein, Figure 2 provides a visualization of existing certified CI scores in California's Low Carbon Fuel Standard program for each transportation energy type,<sup>19</sup> expressed on a gCO<sub>2</sub>e/MJ basis. Here it is important to note that biogas-to-electricity, biogas-to-hydrogen, and RNG are responsible for the lowest CI scores in the electricity, hydrogen, bio-CNG, and bio-LNG categories of the program.<sup>20</sup> Based on this information, biogas and RNG are the most carbon-beneficial energy resources on a per-unit basis when a highly carbon-negative footprint is achieved. From a policy standpoint is also important to understand that use of LCA is appropriate if the jurisdiction's goal is to create the proper incentives to reduce global emissions across an entity's entire biofuel or bioenergy supply chain.

<sup>19</sup> Id.

<sup>20</sup> Biogas and RNG are increasingly used as feedstocks to produce electricity and renewable hydrogen.

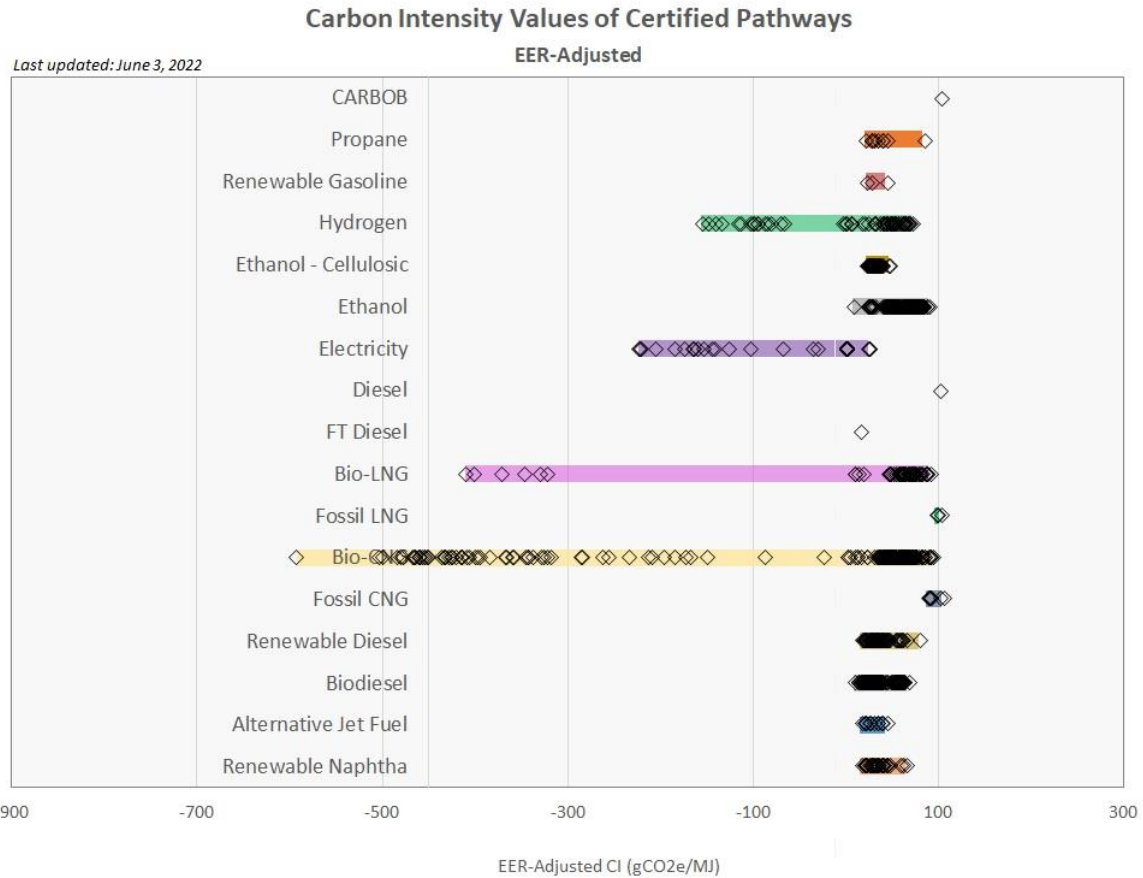


Figure 2. Current Certified Pathways Under California LCFS

The Draft Study rightfully acknowledges that valuing upstream emissions benefits is important, however, the unique ability of RNG and other-waste derived renewable gases to achieve a highly effective GHG reduction profile due to avoided methane, as well as the potential for further carbon-negative reductions when paired with CCS, should be better emphasized in the final study.

## B) Supply Potential

Once complete, the Michigan Renewable Natural Gas study will be the most detailed analysis of Michigan-specific RNG potential published to-date, including a more granular assessment of feedstock potential than conducted previously by ICF. Importantly, ICF has extensive experience on issues related to RNG and other decarbonization strategies, having conducted similar modeling and analyses for other jurisdictions.<sup>21</sup> On a national basis, ICF’s 2019 study assessing

<sup>21</sup> For an example of a similar study, see the New York State Energy Research and Development Authority’s recent publication, prepared by ICF, that specifically outlines the potential for RNG production in New York:

ICF, *Potential of Renewable Natural Gas in New York State*. <https://www.nyserda.ny.gov/-/media/Files/EDPPP/Energy-Prices/Energy-Statistics/RNGPotentialStudyforCAC10421.pdf>



the potential for RNG production and emission reduction throughout the U.S.<sup>22</sup> is widely regarded as the best available assessment of its kind. Given ICF's previous experience and existing publications on this topic, as well as ICF's use of reputable sources for this more granular assessment of Michigan's RNG feedstock potential,<sup>23</sup> we believe that the study contains reasonable conclusions regarding supply potential.

Specifically, the Draft Study shows that Michigan could produce 38.8 t/Btu and 66.9 t/Btu from AD feedstocks in the 'Achievable' and 'Feasible' scenarios, respectively, with a total potential of 113.3 t/Btu.<sup>24</sup> These totals would cover 6.3%, 10.8%, or 18.3% of Michigan's total 2020 natural gas demand for residential, commercial, and industrial customers (618.8 t/Btu).<sup>25</sup> Adding gasification feedstocks would increase the potential to 57.2 t/Btu and 148 t/Btu for 'Achievable' and 'Feasible' scenarios, respectively, with a total potential of 313.4 t/Btu. These totals would cover 9.24%, 23.9%, or 50.6% of Michigan's total 2020 natural gas demand from residential, commercial, and industrial customers. These are significant potentials for RNG deployment in Michigan, while only considering in-state feedstocks.

At feedstock utilization rates of 18% and 47%, respectively, the 'Achievable' and 'Feasible' scenarios likely fall short of what could ultimately be accomplished by Michigan's RNG industry. At minimum, if Michigan were to undertake serious waste diversion policies and a comprehensive policy framework surrounding RNG development and use, the 'Achievable' scenario should be viewed as conservative.

Furthermore, it is important to consider how RNG feedstocks may increasingly be aggregated (i.e., co-digestion of feedstocks such as food waste and animal manure) at centralized locations in ways which would improve production efficiency, provide an opportunity to lower costs, and allow for location of RNG production as close to the end-use as possible. These concepts should be noted in the study.

Finally, based on ICF's 2019 national supply potential study, we estimate that RNG from AD feedstocks will be able to supply at least 1,425.3 tBtu/year by 2040.<sup>26</sup> Based on U.S. natural gas consumption in 2021, this would cover approximately 30.6% of residential demand, 43.7% of commercial demand, or 17.4% of industrial demand nationally.<sup>27</sup> Although beyond the scope of the Michigan Renewable Natural Gas Study, a determination of the total potential for RNG use in Michigan should consider the population-weighted share of regional RNG resources that could be imported. This concept should also be noted in the study.

---

<sup>22</sup> ICF, *Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment*.

<https://gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf>

<sup>23</sup> Pg. 20

<sup>24</sup> Pg. 43

<sup>25</sup> [https://www.eia.gov/dnav/ng/ng\\_cons\\_sum\\_dcua\\_sml\\_a.htm](https://www.eia.gov/dnav/ng/ng_cons_sum_dcua_sml_a.htm)

<sup>26</sup> Based conservatively on the "High" production scenario, using landfill gas, animal manure, wastewater, and food waste feedstocks.

<sup>27</sup> [https://www.eia.gov/dnav/ng/ng\\_cons\\_sum\\_dcunusa.htm](https://www.eia.gov/dnav/ng/ng_cons_sum_dcunusa.htm)

### C) Comparing RNG and Other Technologies

In order to create a comprehensive decarbonization pathway for the gas sector it is important to compare RNG to other technologies for certain applications. The RNG industry does not claim to be able to decarbonize the entire natural gas sector alone, and we expect its use to evolve over the near-, mid-, and long-terms. With this in mind, we also know that clean fuels, and renewable gases in particular, will remain the best clean energy option for certain sectors.

ICF rightfully notes in the cost comparison section that, “large ranges [in abatement costs for each considered technology] reflect the unique circumstances and factors involved with the practical and detailed implementation of each emission reduction measure. Costs and emission reductions are greatly influenced by technology costs, efficiencies and availability, climate and geography, practical infrastructure constraints, whether local or system-wide, and the interconnected nature of emission reduction trends across the economy”.<sup>28</sup> This is the correct way to frame this issue and implies that technology-neutral programs that seek out the lowest cost options across a variety of strategies can help minimize total costs to decarbonize.

An important, hard to quantify, and understated aspect of waste-derived renewable gas production is the ability to help transform organic waste management in a way that maximizes circularity and sustainability. Indeed, ICF’s comparison of technologies from the standpoint of energy sector decarbonization, by nature, is not designed to holistically consider the environmental impact of RNG in the waste sector, and therefore cannot be viewed as fully inclusive of all RNG benefits. Additional analyses could be added to eventually assess RNG as a strategy for improving and circularizing organic waste management for each waste category (i.e., MSW in landfills, food waste, animal manure, etc.), including methane abatement potential, and possibly the future ability to use CCS.

We do not oppose the comparison framework included by ICF in the Draft Study, however, that RNG is a GHG and pollution abatement technology for multiple sectors, and that the included comparison does not capture these benefits, should be noted in the study. This is a key component of the industry’s environmental impact which separates waste-derived renewable gases such as RNG from other resources that are focused solely on energy sector decarbonization.

Furthermore, the complementarity of renewable gases to other decarbonization strategies—such as electrification and energy efficiency—is well-substantiated by climate change mitigation studies and strategies conducted in various states, as well as by leading universities, government entities, and environmental organizations, including the references below, largely due to (1) the long-term need for clean gaseous fuels in certain sectors, (2) the need to eliminate methane emissions as quickly as possible, (3) RNG’s ability to effectuate positive air and water quality outcomes caused by poor organic waste management, including in the

---

<sup>28</sup> Pg. 8

agricultural sector. The current cost comparison does not fully capture this fact as it assumes equal competition for each compared technology in all end-uses. With this in mind, we recommend that this section of the Draft Study be updated to better describe the fact that RNG is concluded to be a necessary component in decarbonization (i.e., that the choice between clean fuels and electrification is not applicable to all end-uses currently served by gaseous fuels).

Some examples of statements supporting the necessity of renewable gases in achieving gas sector decarbonization, as well as potential benefits and end-uses for RNG and other bioenergy resources, are as follows:

#### Intergovernmental Panel on Climate Change

The Intergovernmental Panel on Climate Change (IPCC) calls methane capture and recovery from solid waste management “a short-term ‘win-win’ policy that simultaneously improves air quality and limits climate change.”<sup>29</sup> Furthermore, the 2021 IPCC Working Group I report recommends that “strong, rapid, and sustained reductions in CH<sub>4</sub> emissions” should be a first priority for policymakers.<sup>30</sup>

In its most recent approved draft report on GHG mitigation, entitled *Climate Change 2022, Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*,<sup>31</sup> the IPCC states that:

*“Because some applications (e.g., aviation) are not currently amenable to electrification, it is anticipated that 100% renewable energy systems will need to include alternative fuels such as hydrogen or biofuels.”* Page TS-54

*“Scaling up bioenergy use will require advanced technologies such as gasification, Fischer-Tropsch processing, hydrothermal liquefaction (HTL), and pyrolysis. These pathways could deliver several final energy carriers starting from multiple feedstocks, including forest biomass, dedicated cellulosic feedstocks, crop residues, and wastes.”* Page 6-40, line 7

*“Most production routes for biofuels, biochemicals and biogas generate large side streams of concentrated CO<sub>2</sub> which is easily captured, and which could become a source of negative emissions.”* Page 11-32, line 12

---

<sup>29</sup> See page 6-91 of: [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_Chapter\\_06.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_06.pdf)

<sup>30</sup> [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_SPM.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf), pg. 27

<sup>31</sup> [https://report.ipcc.ch/ar6wg3/pdf/IPCC\\_AR6\\_WGIII\\_FinalDraft\\_FullReport.pdf](https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf)

## Environmental Protection Agency

The U.S. EPA has long supported biogas recovery for use as RNG under programs such as the Landfill Methane Outreach Program (LMOP),<sup>32</sup> AgSTAR,<sup>33</sup> and the Renewable Fuel Standard.<sup>34</sup> The LMOP website, for example, notes the benefits of RNG as a resource which utilizes existing infrastructure, supports local economies, provides local air quality benefits compared to fossil fuel resources such as diesel and conventional natural gas, and reduces GHG emissions through methane destruction and fossil fuel displacement. In the agricultural sector AgSTAR has, for more than 20 years, promoted covered lagoons and digesters as the top solutions for manure management.<sup>35</sup> More recently, EPA added Renewable Natural Gas as an explicit opportunity within the Methane Challenge program, noting that, “as a substitute for natural gas, RNG has many end-uses, including in thermal applications, to generate electricity, for vehicle fuel, or as a bio-product feedstock.”<sup>36</sup>

## International Energy Agency

The International Energy Agency’s (IEA) *Net Zero by 2050* report from May 2021 projects that, to reach carbon neutrality, global RNG use needs to increase seven times from 2020 levels by 2030 and over 27 times 2020 levels by 2050, leading to a blend rate in gas networks of above 80%. The report also notes that a key advantage of RNG is ability to “use existing natural gas pipelines and end-user equipment”,<sup>37</sup> continuing that “[t]he share of low-carbon gases (hydrogen, biomethane, synthetic methane) in gas distributed to buildings rises from almost zero to 10% by 2030 to above 75% by 2050”,<sup>38</sup> and that “Governments should prioritise the co-development of biogas upgrading facilities and biomethane injection sites by 2030, ensuring that particular attention is paid to minimizing fugitive biomethane emissions from the supply chain.”<sup>39</sup>

## California Energy Commission

California’s Integrated Energy Policy Report (IEPR) is the California Energy Commission’s (CEC) leading document aimed at comprehensively addressing the state’s evolving energy trends in the context of climate change and other environmental issues. CEC 2021 IEPR Volume III was

---

<sup>32</sup> <https://www.epa.gov/lmop/renewable-natural-gas>

<sup>33</sup> <https://www.epa.gov/agstar>

<sup>34</sup> <https://www.epa.gov/renewable-fuel-standard-program>

<sup>35</sup> [https://www.epa.gov/sites/default/files/2019-09/documents/epa\\_non-co2\\_greenhouse\\_gases\\_rpt-epa430r19010.pdf](https://www.epa.gov/sites/default/files/2019-09/documents/epa_non-co2_greenhouse_gases_rpt-epa430r19010.pdf)

<sup>36</sup> [https://www.epa.gov/system/files/documents/2022-05/MC\\_BMP\\_TechnicalDocument\\_2022-05.pdf](https://www.epa.gov/system/files/documents/2022-05/MC_BMP_TechnicalDocument_2022-05.pdf)

<sup>37</sup> *Id.*, pg. 78

<sup>38</sup> *Id.*, pg. 146

<sup>39</sup> *Id.*, pg. 112

entitled *Decarbonizing the State's Gas System*.<sup>40</sup> This document recognizes the role renewable gas can play in decarbonization of the gas system and encourages the use of renewable gases to achieve a variety of important environmental benefits. Notably, the report states that “there is increasing awareness that to fully decarbonize the gas system, there is a need for clean fuels or molecules in addition to clean electricity.” The hydrogen section of the report also acknowledges that renewable organic waste feedstocks can be used to produce renewable hydrogen in a beneficial manner.

### Columbia University

Columbia University’s School of International and Public Affairs Center on Global Energy Policy conducted a study<sup>41</sup> focused on the use of the existing gas system in a carbon neutral world. Notably, the authors state that:

*“[R]etrofitting and otherwise improving the existing pipeline system are not a choice between natural gas and electrification or between fossil fuels and zero-carbon fuels. Rather, these investments in existing infrastructure can support a pathway toward wider storage and delivery of cleaner and increasingly low-carbon gases while lowering the overall cost of the transition and ensuring reliability across the energy system. In the same way that the electric grid allows for increasingly low-carbon electrons to be transported, the natural gas grid should be viewed as a way to enable increasingly low-carbon molecules to be transported.”*

### World Resources Institute

The role of RNG as a decarbonization strategy was also recently examined by the World Resources Institute, who published a paper illustrating how RNG fills an important niche as part of a broader low-carbon technology portfolio.<sup>42</sup> The authors state that:

*“RNG has the potential to reduce methane emissions from organic wastes and provide fuel for applications that lack other low-carbon alternatives, such as heavy-duty freight or existing building and industrial heat sources.”*

---

<sup>40</sup> California Energy Commission, *2021 Integrated Energy Policy Report, Volume III: Decarbonizing the State's Gas System*

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=242233>

<sup>41</sup> Blanton et. Al, *Investing in the US Natural Gas Pipeline System to Support Net-Zero Targets*

[https://www.energypolicy.columbia.edu/research/report/investing-us-natural-gas-pipeline-system-support-net-zero-targets?utm\\_source=Center+on+Global+Energy+Policy+Mailing+List&utm\\_campaign=38d4ab05a7-EMAIL\\_CAMPAIGN\\_2019\\_09\\_24\\_06\\_19\\_COPY\\_01&utm\\_medium=email&utm\\_term=0\\_0773077aac-38d4ab05a7-102456873](https://www.energypolicy.columbia.edu/research/report/investing-us-natural-gas-pipeline-system-support-net-zero-targets?utm_source=Center+on+Global+Energy+Policy+Mailing+List&utm_campaign=38d4ab05a7-EMAIL_CAMPAIGN_2019_09_24_06_19_COPY_01&utm_medium=email&utm_term=0_0773077aac-38d4ab05a7-102456873)

<sup>42</sup> World Resources Institute, *Renewable Natural Gas as a Climate Strategy: Guidance for State Policymakers*.

<https://www.wri.org/publication/renewable-natural-gas-guidance>

*“The report emphasizes the importance of considering RNG as a complementary fuel in applications where natural gas or other energy sources are currently used. In this way, RNG can be seen as a flexible, low-carbon fuel source that can potentially be deployed in a variety of applications, even as other vital strategies such as electrification are pursued in parallel.”*

Furthermore, WRI’s analysis *How Methane Emissions Contribute to Climate Change* identifies “improving efficiency [in agricultural production practices, including manure management]”, “separating organics and recycling”, and “capturing landfill gas and reducing energy” as key methane abatement strategies.<sup>43</sup>

#### Modeling of Pathways to Carbon Neutrality by Energy and Environmental Economics<sup>44</sup>

Analyses conducted for New York by the consulting firm Energy and Environmental Economics’ (E3) in June of 2020 identified switching to low-carbon fuels as one of the four pillars of decarbonization “critical to achieving carbon neutrality” in New York State, with scenarios including an 8-18% pipeline blend of RNG,<sup>45</sup> showing widespread RNG use across sectors. This is consistent with E3’s high-electrification scenarios conducted in other jurisdictions—including California,<sup>46</sup> Minnesota,<sup>47</sup> Oregon and Washington,<sup>48</sup> Colorado,<sup>49</sup> and Maryland,<sup>50</sup> among others—which show significant demand for gaseous fuels remaining in 2050.<sup>51</sup>

#### **D) Opportunities and Challenges**

---

<sup>43</sup> <https://www.wri.org/insights/methane-gas-emissions-climate-change>

<sup>44</sup> <https://www.ethree.com/>

<sup>45</sup> See slide 5 of E3’s “New York State Decarbonization Pathways Analysis,” presented to the Climate Action Council on June 24, 2020. <https://climate.ny.gov/-/media/Project/Climate/Files/2020-06-24-NYS-Decarbonization-Pathways-CAC-Presentation.pdf>

<sup>46</sup> *Achieving Carbon Neutrality in California*. [https://ww2.arb.ca.gov/sites/default/files/2020-10/e3\\_cn\\_final\\_report\\_oct2020\\_0.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-10/e3_cn_final_report_oct2020_0.pdf)

<sup>47</sup> Great Plains Institute & Center for Energy and Environment, *Decarbonizing Minnesota’s Natural Gas End Uses*. <https://e21initiative.org/wp-content/uploads/2021/07/Decarbonizing-NG-End-Uses-Stakeholder-Process-Summary.pdf>

<sup>48</sup> *Pacific Northwest Pathways to 2050*. [https://www.ethree.com/wp-content/uploads/2018/11/E3\\_Pacific\\_Northwest\\_Pathways\\_to\\_2050.pdf](https://www.ethree.com/wp-content/uploads/2018/11/E3_Pacific_Northwest_Pathways_to_2050.pdf)

<sup>49</sup> *Colorado GHG Reduction Roadmap Technical Appendix*. [https://drive.google.com/file/d/1215j7zfCsgE50msF\\_ZJt6ZUj0iG7Th3V/view](https://drive.google.com/file/d/1215j7zfCsgE50msF_ZJt6ZUj0iG7Th3V/view)

<sup>50</sup> *Maryland Building Decarbonization Study*. [https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MWG\\_Buildings%20Ad%20Hoc%20Group/E3%20Maryland%20Building%20Decarbonization%20Study%20-%20Final%20Report.pdf](https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MWG_Buildings%20Ad%20Hoc%20Group/E3%20Maryland%20Building%20Decarbonization%20Study%20-%20Final%20Report.pdf)

<sup>51</sup> For another example from other similar E3 work, see pg. 35 of the California Energy Commission report entitled *The Challenge of Retail Gas in California’s Low Carbon Future*, which finds that natural gas in California’s residential, commercial, and industrial sectors is still ~1,000 tBtu in 2050 in the high-building-electrification case: <https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-F.pdf>

ICF's analysis of key opportunities for RNG correctly includes general conclusions drawn for both 'Opportunities' and 'Challenges' faced by the industry. We believe the most important takeaways from this section are that (1) RNG is a carbon neutral resource (using point source/combustion GHG accounting), (2) that RNG is in a unique position to utilize the existing infrastructure as a drop-in substitute for natural gas, (3) that RNG maximizes the utilization of waste streams, and (4) that investments in RNG can yield positive environmental outcomes beyond GHG reduction.<sup>52</sup> Below we address the key opportunities and challenges described by ICF which Joint RNG Stakeholders feel deserve additional consideration, or which have been the subject of significant discussion during the Workgroup process.

### *Impact of RNG in the Agricultural Sector*

During the Workgroup process, some stakeholders have asserted that RNG exacerbates environmental issues in the agricultural sector—primarily related to dairy farming in Michigan. Joint RNG Stakeholders emphasize that drawing this connection between RNG facilities and existing environmental issues in the agricultural sector is not only misguided, but stands counter to the RNG industry's primary mission of improving environmental quality, and is contrary to programs and knowledge put forth by agencies and environmental organizations who have long promoted AD as a solution in the agricultural sector, including the following:

#### U.S. Environmental Protection Agency

As previously mentioned, U.S. EPA has promoted covered lagoons and digesters as the top solutions for manure management via their AgSTAR program for over 20 years.<sup>53</sup> U.S. EPA generally describes the environmental benefits of AD as follows:

*"Anaerobic digesters are used on livestock farms as part of an integrated manure management approach providing farmers with additional options. These systems allow farmers a way to... [r]educer methane emissions from manure lagoons, stockpiles and storage ponds; Minimize odors and pathogens; Generate products for use on the farm, such as animal bedding and high quality fertilizer; and Reduce solids content."*<sup>54</sup>

Relevant to recent Workgroup discussions, U.S. EPA notes that:

*"Implementing manure digesters on livestock facilities can... [i]mprove soil health by converting the nutrients in manure to a more accessible form for plants to use" and "Help protect the local water resources by reducing nutrient run-off and destroying pathogens".*

---

<sup>52</sup> Pg. 10-11

<sup>53</sup> [https://www.epa.gov/sites/default/files/2019-09/documents/epa\\_non-co2\\_greenhouse\\_gases\\_rpt-epa430r19010.pdf](https://www.epa.gov/sites/default/files/2019-09/documents/epa_non-co2_greenhouse_gases_rpt-epa430r19010.pdf)

<sup>54</sup> <https://www.epa.gov/anaerobic-digestion/environmental-benefits-anaerobic-digestion-ad#ManureMngmt>

## Intergovernmental Panel on Climate Change

IPCC describes the environmental benefits of AD as follows:

*“Several biomass conversion technologies can generate co-benefits for land and water. Anaerobic digestion of organic wastes (e.g., food waste, manure) produces a nutrient-rich digestate and biogas that can be utilised for heating and cooking or upgraded for use in electricity generation, industrial processes, or as transportation fuel. The digestate is a rich source of nitrogen, phosphorus and other plant nutrients, and its application to farmland returns exported nutrients as well as carbon.”* Page 12-102, line 36 (citations removed)

## World Wildlife Fund:

Similarly, in a 2021 report outlining strategies for achieving net-zero emissions in the dairy sector, World Wildlife Fund (WWF) discusses AD as a component of sustainable farming systems,<sup>55</sup> including that:

*“By focusing on enteric methane emissions, manure management and nutrient recovery, feed production and efficiency, and the generation and sale of renewable energy and byproducts, with the right policies and incentives in place, large-scale dairies can achieve net zero GHG emissions while also improving their bottom lines.”<sup>56</sup>*

*“In addition to the gas harvested from anaerobic digesters, the slurry (digestate) left over can be processed via other technologies to harvest nutrients (e.g. nitrogen (N), phosphorous (P), and potassium (K)), as well as aqueous ammonia, which can be applied as fertilizer. These products can then either be used by the dairy or sold, creating both economic and environmental value. Clean water can also be processed from the slurry and used directly on farm or safely discharged into the environment.”<sup>57</sup>*

*“Industrial thermal energy is responsible for around 11% of US emissions; if further incentives are developed that would make it feasible to use biogas from digesters to reduce industrial GHG emissions, which require the higher heat produced from natural gas (versus electricity), this would reduce that sector’s emissions along with those of the dairy”.<sup>58</sup>*

## California Air Resources Board

---

<sup>55</sup>

[https://files.worldwildlife.org/wwfmsprod/files/Publication/file/570hr7ghl5\\_Net\\_Zero\\_Dairy\\_Business\\_Case\\_v10.pdf?\\_ga=2.161113717.974528113.1658260193-717584158.1658260193](https://files.worldwildlife.org/wwfmsprod/files/Publication/file/570hr7ghl5_Net_Zero_Dairy_Business_Case_v10.pdf?_ga=2.161113717.974528113.1658260193-717584158.1658260193)

<sup>56</sup> Id., pg. 2

<sup>57</sup> Id., pg. 6

<sup>58</sup> Id., pg. 5



Studies from both U.S. EPA<sup>59</sup> CARB<sup>60</sup> have shown that pipeline injection of biomethane reduces criteria air pollutants both on site (relative to a case where the biogas is flared or used in most on-site power generation equipment) and on a lifecycle basis (with additional emission reductions possible depending on end use).<sup>61</sup>

In line with the information provided in these studies, RNG production through anaerobic digestion of materials such as food waste, animal manure, and wastewater yields valuable by-products. After the elimination of pathogens, digested solids can be recycled for productive uses such as animal bedding,<sup>62</sup> and AD converts nutrients into a form more accessible by plants than raw manure, allowing for an effective organic fertilizer<sup>63</sup> which can replace the demand for synthetic fertilizers. Processing digestate using pyrolysis and other technologies to create biochar is also an option, resulting in a soil amendment which supports plant growth, can eliminate harmful perfluoroalkyl and polyfluoroalkyl substances (PFAS), and can achieve carbon-negative outcomes. Overall, recycling and using the by-products of waste through AD for RNG production processes creates a more circular and sustainable economy, and should be viewed as a catalyst to improving air and water quality issues where they do exist in the agricultural sector.

Consistent with this information, ICF correctly notes within the Draft Study that “Investments in RNG production can yield positive environmental impacts beyond GHG emissions, including helping to... [support] sustainable management practices in the agriculture and forestry sectors, and reduce the environmental impacts of CAFOs (emphasis added)”.<sup>64</sup> Notably, under the ‘Challenges’ section, ICF accurately notes that “[a]t present, there is no clear indication that RNG policies or RNG production will impact industry trends related to [concentrated animal feeding operations] or contribute to the expansion of [concentrated animal feeding operations] in Michigan. To the contrary, the use of anaerobic digesters at farms is more likely to mitigate environmental harms at existing concentrated animal feeding operations than exacerbate them”.<sup>65</sup> These are important facts which must remain in the final report as key reasons for promoting AD and RNG as an environmental strategy.

The RNG industry’s existence and long-term promotion by environmental stakeholders such as U.S. EPA, IPCC, WWF, CARB and others is predicated on its environmental benefits. Simply put, it is our industry’s goal to improve organic waste management and any harms which would otherwise occur. Therefore, we agree with the statement that “it is important that there are

---

<sup>59</sup> <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100QCXZ.PDF?Dockey=P100QCXZ.PDF>

<sup>60</sup> <https://ww2.arb.ca.gov/sites/default/files/2020-07/dairy-emissions-matrix-113018.pdf>

<sup>61</sup> For example, when low-NOx natural gas vehicles displace emissions from diesel vehicles.

<sup>62</sup> U.S. EPA. *The Benefits of Anaerobic Digestion* (2020, August 18) <https://www.epa.gov/agstar/benefits-anaerobic-digestion>

<sup>63</sup> Id.

<sup>64</sup> Pg. 99

<sup>65</sup> Pg. 11, 100

controls put in place to ensure that RNG development would not lead to increased environmental harms or increase the risk of exposure to environmental injustices in at risk communities”.<sup>66</sup> We look forward to discussing how such assurances can be provided for Michigan projects with all interested stakeholders.

### *RNG is a Primary Solution for Reducing Methane Emissions in the Organic Waste Sector*

As mentioned above, there is no significant discussion of the fact that RNG is designed to address methane emissions within the ‘Opportunities’ section of the study. Our industry’s ability to reduce methane emissions from hard-to-abate organic waste sectors is one of the key reasons for promoting AD and RNG as part of any strategy to address climate change and broader pollution issues.

A good description of the importance of RNG as a methane reduction strategy can be found in the California Air Resources Board (CARB) recent Draft 2022 Scoping Plan,<sup>67</sup> which outlines the state’s pathway to carbon neutrality by 2045—one of the most ambitious GHG reduction targets put forth by any jurisdiction in the world. The plan identifies increasing methane capture at landfills and dairy digesters as a key GHG abatement strategy. Specifically, strategies for the dairy and livestock sector include, “[installing] state of the art anaerobic digesters that maximize air and water quality protection, [maximizing] biomethane capture, and [directing] biomethane to sectors that are hard to decarbonize or as a feedstock for energy”.<sup>68</sup> Strategies for reducing methane emissions include, “[maximizing] existing infrastructure and [expanding] it to reduce landfill disposal, with strategies including composting, anaerobic digestion, co-digestion at wastewater treatment plants, and other non-combustion conversion technologies.”<sup>69</sup>

The idea of AD as a methane reduction strategy is central to our industry’s existence and, alongside clean fuel production, is perhaps the largest opportunity related to RNG development and deployment in Michigan. With this in mind, ICF and MPSC should more fully explore methane reduction as an opportunity in the final version of the study.

### *Expanding RNG Markets*

Market constraints are identified in the report as a potential challenge for RNG development, including the fact that policies designed to promote RNG are not uniform, and that those beyond the transportation fuel market are nascent.<sup>70</sup> We agree with this analysis, but emphasize that there are a growing number of programs which are successfully being used to

---

<sup>66</sup> Pg. 11

<sup>67</sup> <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>

<sup>68</sup> Id., pg. 214

<sup>69</sup> Id., pg. 216

<sup>70</sup> Pg. 11

promote RNG in both transportation and non-transportation applications (which is reflected by ICF in Appendix C).

This challenge underscores the need for Michigan to develop thoughtful policies which promote RNG development as part of the state’s strategy for addressing GHG emissions and improving organic waste management. It also highlights the potential benefits of regional collaboration toward a broad North American market for RNG.

Jurisdictions focused on gas sector decarbonization have employed two primary types of policies aimed at incenting clean energy supply and infrastructure—a Renewable Gas Standard (RGS) or a Clean Heat Standard (CHS). Further, multiple jurisdictions now rely on Clean Fuel Standards (CFS) to decarbonize their transportation sectors. Based on knowledge of the key strategies needed to reach carbon neutrality promoted in other jurisdictions, and experience with the most successful policies designed to achieve gas sector decarbonization, we believe that a RGS (or CHS) covering the thermal sector, and a CFS covering the transportation sector, are the most effective strategies.

### Renewable Gas Standard

Specific to gas supply only, a Renewable Gas Standard establishes targets for total renewable gas throughput, potentially including both RNG and renewable hydrogen, which increase over time. For example, as part of California’s gas sector decarbonization strategy, the California Public Utilities Commission (CPUC) voted unanimously to adopt a RGS in early 2022. Establishing a 12.2% procurement mandate for utilities’ core gas customers by 2030, with a smaller mid-term target in 2025, this program is also viewed by the state as an important component of their methane reduction and landfill diversion strategies, with the near-term RNG requirement being largely based on potential from organic waste diversion projects.<sup>71</sup>

In addition to reducing methane emissions and replacing fossil-derived natural gas, the program is designed to facilitate the broader environmental benefits of RNG development. This is accomplished by prioritizing facilities which include carbon sequestration to further reduce emissions and achieve carbon negativity; prioritizing facilities which use their waste byproduct to create soil amendments such as a compost and biochar; and requiring the buildout of pilot facilities which use wood waste feedstocks in gasification applications to reduce forest fire risk. These provisions exemplify the potential of RNG to contribute to broader environmental goals, including strengthening and circularizing the state’s bioeconomy.

### Clean Heat Standard

A Clean Heat Standard can be used to incentivize clean heat resources more broadly, often including electrification and geothermal infrastructure alongside renewable gases.

---

<sup>71</sup> <https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-sets-biomethane-targets-for-utilities>

For example, in May of 2022, the Minnesota Public Utilities Commission (MPUC) voted unanimously to adopt a carbon intensity (CI) and cost-benefit analysis (CBA) framework pursuant to the *Natural Gas Innovation Act*—a first-of-its-kind Clean Heat Standard in North America.<sup>72</sup> This program allows the state’s gas utilities to propose investments in a variety of clean energy resources and infrastructure, including RNG, renewable hydrogen, electrification, geothermal, and energy efficiency, among others. Each resource mix must be compared based on cost-effectiveness, which includes lifecycle CI scoring for RNG and renewable hydrogen. Clean Heat policies such as this are significant because of their ability to incent the full spectrum of resources that are likely to be necessary for gas sector decarbonization.

Jurisdictions which have adopted either a RGS or CHS include British Columbia,<sup>73</sup> California, Colorado,<sup>74</sup> Minnesota, New Hampshire,<sup>75</sup> Oregon,<sup>76</sup> and Quebec.<sup>77</sup>

### Clean Fuel Standard

A Low Carbon Fuel Standard or Clean Fuel Standard is the leading transportation “fuel switching” policy which holistically addresses the need to both decarbonize existing transportation modalities and build the infrastructure for the transportation energy carriers of the future. While many climate-focused states have prioritized funding zero emission vehicles (ZEVs) fueled by electricity and hydrogen, combustion fuels will remain a part of the transportation mix for the foreseeable future, and should also be decarbonized expediently, using clean fuels, to the fullest extent possible. Establishing a Clean Fuel Standard will incentivize the production of clean fuels in conventional vehicles while also directly financing the buildout of infrastructure for ZEVs.

Jurisdictions leading on climate change—California, Oregon, Washington, British Columbia, and the Canadian Federal Government—have implemented or are in the process of implementing Clean Fuel Standards as a primary means of decarbonizing their transportation sectors. Such programs are technology neutral and provide credits relative to a declining benchmark that requires improvements relative to the lifecycle carbon intensity (CI) of the closest fossil fuel alternative. Entities which supply fossil fuels are required to purchase an amount of credits proportional to the GHG impact of the fossil fuels they sell. The amount of this requirement

---

<sup>72</sup>

[https://www.revisor.mn.gov/bills/text.php?number=SF0421&session=ls92&version=latest&session\\_number=0&session\\_year=2021](https://www.revisor.mn.gov/bills/text.php?number=SF0421&session=ls92&version=latest&session_number=0&session_year=2021)

<sup>73</sup> <https://news.gov.bc.ca/releases/2021EMLI0046-001286>

<sup>74</sup> [https://leg.colorado.gov/sites/default/files/2021a\\_264\\_signed.pdf](https://leg.colorado.gov/sites/default/files/2021a_264_signed.pdf)

<sup>75</sup>

[https://legiscan.com/NH/text/SB424/id/2528713#:~:text=New%20Hampshire%20Senate%20Bill%20424&text=Bill%20Title%3A%20Relative%20to%20renewable%20energy%20and%20natural%20gas.&text=AN%20ACT%20relative%20to%20renewable%20energy%20and%20natural%20gas.&text=This%20bill%20authorizes%20the%20recovery\\_of%20the%20public%20utilities%20commission.](https://legiscan.com/NH/text/SB424/id/2528713#:~:text=New%20Hampshire%20Senate%20Bill%20424&text=Bill%20Title%3A%20Relative%20to%20renewable%20energy%20and%20natural%20gas.&text=AN%20ACT%20relative%20to%20renewable%20energy%20and%20natural%20gas.&text=This%20bill%20authorizes%20the%20recovery_of%20the%20public%20utilities%20commission.)

<sup>76</sup> <https://olis.oregonlegislature.gov/liz/2019R1/Measures/Overview/SB98>

<sup>77</sup> <https://www.legisquebec.gouv.qc.ca/en/pdf/cr/R-6.01,%20R.%204.3.pdf>

increases over time based on the total GHG reduction goal, making this a form of performance standard with a revenue-neutral funding mechanism. For clean energy technology providers, revenue generated from credit sales is spread throughout their energy and infrastructure supply chains, resulting in additional investment in, for example, EV charging infrastructure.

#### **IV) Conclusion**

We support the methodologies and conclusions of the Draft Study as presented by ICF, and do not request any significant changes to its content. However, we urge MPSC and ICF to include the following additional information within the final publication:

- The ability of RNG to reduce methane emissions as a distinct opportunity within the ‘Opportunities and Challenges’ section
- An acknowledgement of the importance of considering lifecycles impacts related to RNG—particularly given the unique potential for methane reduction, as well as the carbon sequestration potential of bioenergy and CCS—and that incorporating these concepts into future cost effectiveness analyses
- A note that RNG is a GHG and pollution abatement technology for multiple sectors and that non-energy-sector benefits are not captured in the cost comparison
- A note that RNG is concluded to be a necessary component in decarbonization, which means that the cost comparison is only applicable for certain end-uses
- The fact that RNG feedstocks can be aggregated and mixed to increase waste processing efficiency and improve the likelihood of optimizing siting of RNG production based on proximity of pipeline or end-use.
- A note explaining that additional supply potential can potentially be achieved through RNG from imported gas or feedstocks.

It is our hope that the Joint RNG Stakeholders’ comments will supporting a more complete discussion of RNG in the final version of the study, ultimately enabling Michigan to outline a comprehensive vision for the near- and long-term sustainable production and use of renewable gases.

Our industry stands ready to deploy renewable gas technologies which will reduce methane emissions, displace fossil fuel supply, improve organic waste management, produce useful soil amendments, and ultimately sequester carbon in Michigan. We commend the MPSC, ICF, and members of the Workgroup for your significant work throughout this process and look forward to continued collaboration toward the state’s GHG reduction goals.

Sincerely,

**Sam Lehr**

Manager of Sustainability and Markets Policy  
Coalition for Renewable Natural Gas  
(302) 757-0866  
[sam.lehr@rngcoalition.com](mailto:sam.lehr@rngcoalition.com)

**Yaniv Sherson**

COO  
Anaergia

**Richard M. DiGia**

CEO, North America  
EDL

**Mike Fenton**

Director of Sales and Project Delivery  
Enerdyne Power Systems and The Landfill Group

**Jim Grant, PE**

Managing Director  
Middle M Management, LLC