STATE OF MINNESOTA
PUBLIC UTILITIES COMMISSION

Dan Lipschultz	Vice Chair
Mattew Schuerger	Commissioner
Katie Sieben	Commissioner
John Tuma	Commissioner

January 8, 2019

In the Matter of CenterPoint Energy's Petition to Introduce a Renewable Natural Gas Pilot Program — Docket No. G-008/M-18-547

INITIAL COMMENTS OF FRESH ENERGY, MINNESOTA CENTER FOR ENVIRONMENTAL ADVOCACY, AND THE SIERRA CLUB

Fresh Energy, Minnesota Center for Environmental Advocacy, and the Sierra Club submit these initial comments in response to CenterPoint Energy's August 23, 2018 Initial Filing.

The next few years are pivotal to shaping the future of Minnesota's energy markets. The gravity of our energy decisions is made exceedingly clear in a special report released this October by the Intergovernmental Panel on Climate Change (IPCC), which outlines the actions required to limit global warming to 1.5°C[1]. The IPCC reports that society must undertake transformative and systematic change across all sectors in order to avoid the most damaging environmental, social, and economic impacts of global climate change. This transformation must be mounted within the next 10 years if we are to ensure the best chance of staving off even higher levels of warming, and must achieve economy-wide decarbonization by mid-century. With this in mind, we urge the Commission to use the imperative for economy-wide energy transformation and our narrow window for action as important factors in evaluating CenterPoint Energy's proposed renewable natural gas pilot program.

There is broad scientific consensus that mitigating short-lived greenhouse gases – such as methane, which is 84 times more effective as a heat-trapping gas during its lifetime in earth's atmosphere as compared to carbon dioxide[2] – will play a vital role in achieving a decarbonized economy.[3,4] Capturing "biogas" – a mixture of methane, carbon dioxide, and other constituents – from agricultural and municipal waste streams as well as landfills represents a viable

[1] IPCC SR15. 2018. *Global Warming of 1.5°C – Summary for policymakers*. Link
[2] IPCC AR5. 2013. *Climate change 2013: The physical science basis – Anthropogenic and natural radiative forcing*, page 714. Link
[3] World Resources Institute. 2018. *The production and use of renewable natural gas as a climate strategy in the United States*. Link
[4] IPCC SR15. 2018. *Global Warming of 1.5°C – Summary for policymakers*. Link

mitigation strategy that diverts potent greenhouse gases that would otherwise flow freely to the atmosphere.[5] How best to utilize biogas in order to minimize life-cycle greenhouse gas emissions while also decarbonizing all of Minnesota's economic sectors is a more complicated question.

Different types of biomass "feedstocks" can be used to produce biogas, including: landfill waste; livestock waste; wastewater; municipal solid waste; wood residue; energy crops; and agricultural residue. The type of feedstock used has implications on both the production process, either anaerobic digestion or thermal gasification, and the composition of the biogas itself.[6] Biogas must be upgraded to meet the standard of pipeline grade natural gas, called "biomethane" or "renewable natural gas", by removing various impurities, water, and carbon dioxide if it is to be used for transportation fuel or end-use in buildings. As such, using biogas for renewable electricity generation and renewable natural gas for transportation fuel or end-use in buildings has different carbon footprints across the energy, transportation, and building sectors, respectively.[7] Carbon emissions further vary by feedstock type and production process.

When evaluating CenterPoint Energy's renewable natural gas pilot program, it is very important to consider the roles that biogas and/or renewable natural gas will play in Minnesota's energy portfolio and how those roles will be regulated. At this time, only one utility in the United States, Vermont Gas Systems, is running a renewable natural gas pilot project through a voluntary tariff.[8] Further, local and national markets for renewable natural gas as well as environmental accounting and attribution associated with both biogas and renewable natural gas are relatively undeveloped.[9,10] The Commission's decision comes at a formative time, and the role of low carbon fuels like biogas and renewable natural gas must be situated carefully within the global imperative to decarbonize all sectors of the economy.

According to CenterPoint Energy, the proposed renewable natural gas pilot program will increase Minnesota's proportion of renewable resources, answer customer demand for renewable energy options, and develop a stronger renewable natural gas market. However, Fresh Energy, Minnesota Center for Environmental Advocacy, and the Sierra Club share the following concerns:

---

[5] World Resources Institute. 2018. *The production and use of renewable natural gas as a climate strategy in the United States*. Link
[6] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link
[7] World Resources Institute. 2018. *The production and use of renewable natural gas as a climate strategy in the United States*. Link
[8] VermontGas. 2018. *Program Manual Vermont Gas Systems*. Link
[9] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link
[10] Rocky Mountain Institute for MN Department of Commerce. 2016. *Minnesota's 2025 energy action plan*. Link

1. Minnesota has no policy framework in place to evaluate and verify the carbon intensity of renewable natural gas feedstocks;
2. The proposed pilot will not reduce Minnesota's greenhouse gas emissions or divert local waste streams;
3. The proposed pilot includes no perceptible benefits to Minnesota businesses in the short-term and only limited potential benefits in the long-term, which will require significant capital investment to realize;
4. Continued investment in natural gas infrastructure systems is implicit to growing renewable natural gas markets for end-use in buildings;
5. Growing renewable natural gas markets for end-use in buildings risks slowing the pace of building electrification; and
6. Biogas should be considered for its potential to generate renewable, dispatchable electricity.

1. Minnesota has no policy framework in place to evaluate and verify the carbon intensity of renewable natural gas feedstocks.

Established markets and policy frameworks to support renewable natural gas for end-use in buildings do not yet exist in the United States.[11] Proceeding with a renewable natural gas pilot program in the absence of environmental tracking and verification policies is of particular concern because the net impact on greenhouse gas emissions associated with any one batch of renewable natural gas varies both by feedstock-type and production process.[12,13] Proceeding with CenterPoint Energy's pilot program in its current form is especially concerning because CenterPoint Energy has proposed to purchase its renewable natural gas supply on the national market, which makes the lack of established documentation and verification of environmental attributes even more problematic.[14]

The domestic renewable natural gas market today is driven exclusively by vehicle fuels, either through the Environmental Protection Agency's Renewable Fuel Standard (RFS)[15] or California's Low Carbon Fuel Standard (LCFS).[16] Under these policy frameworks, credit

[11] DOC 035 P G-008/M-18-547, page 2-3.
[12] World Resources Institute. 2018. *The production and use of renewable natural gas as a climate strategy in the United States*. Link
[13] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link
[14] CenterPoint Energy pilot proposal, Section VI, page 13.
[15] EPA. Accessed 11-2018. *Renewable Fuel Standard Program*. Link
[16] California Air Resources Board. Accessed 11-2018. *Low Carbon Fuel Standard*. Link

values, either Renewable Identification Number (RIN) credits[17] or LCFS credits,[18] are determined based on the feedstock-type and production process of the renewable fuel.[19] Integral to these crediting systems is an evaluation of the net greenhouse gas emissions associated with each batch of renewable fuel. For the RFS, approved renewable fuels must conform to specific 'fuel pathways' that describe their feedstock, production process, and fuel type as well as a required reduction in greenhouse gases relative to a fossil fuel for which the renewable fuel will be substituted.[20] For the LCFS, renewable fuels are parsed by "carbon intensity" values, or the sum of the greenhouse gases emitted throughout each stage of a fuel's production and use, expressed as the amount of life cycle greenhouse gas emissions per unit of fuel energy.[21]

While RIN and LCFS crediting systems are fairly robust, they still require tight oversight. RIN fraud is not unknown and exemplifies the need for stringent and verifiable market standards that link the sale of renewable biofuel credits to the production of those fuels.[22,23]

In the absence of crediting and carbon accounting policy frameworks specific to renewable natural gas for end-use in buildings, it will be significantly more challenging for CenterPoint Energy to verify the authenticity of the renewable natural gas it purchases for its pilot program. It will also be nearly impossible to formally validate the associated net greenhouse gas emissions impact.

CenterPoint Energy has proposed that renewable natural gas supply for the pilot program will be sourced from producers located outside of Minnesota.[24] CenterPoint Energy will purchase directly from gas suppliers, who will in turn procure renewable natural gas directly or indirectly from various producers.[25] CenterPoint Energy will rely on the gas suppliers to verify the authenticity of the renewable natural gas associated with these producers.[26]

CenterPoint Energy cites conversations with large gas suppliers to suggest that rules ensuring the authenticity of renewable natural gas for RIN and LCFS credits associated with transportation fuels will be easy to adapt and apply to renewable natural gas for end-use in

---

[17] EPA. Accessed 11-2018. *Renewable Fuel Standard Program: Approved pathways for renewable fuel*. Link
[18] California Air Resources Board. 2015. *Low Carbon Fuel Standard Program: Current Regulation*. Link
[19] CenterPoint Energy pilot program proposal, Section III, page 9.
[20] EPA. Accessed 11-2018. *Renewable Fuel Standard Program: What is a fuel pathway?* Link
[21] California Air Resources Board. Accessed 11-2018. *LCFS Pathway Certified Carbon Intensities*. Link
[22] US EPA. 2013. *The EPA should improve monitoring of controls in the Renewable Fuel Standard program*. Link
[23] EPA. Accessed 11-2018. *Civil enforcement of the Renewable Fuel Standard Program*. Link
[24] CenterPoint Energy pilot program proposal, Section VI, page 13.
[25] CenterPoint Energy pilot program proposal, Section VI, page 13.
[26] CenterPoint Energy pilot program proposal, Section VIII, page 17.

buildings.[27] However, CenterPoint Energy neither proposes nor identifies any such process. Without a regulatory framework in place to verify this process, the arrangement between CenterPoint Energy and the gas supplier is the only standard to ensure the renewable nature of the gas. This arrangement is not well-outlined and relies on the gas suppliers' ability to provide appropriate documentation and properly vet and manage renewable natural gas producers, a portion of which the suppliers may not even interact with directly.

Verifying the renewable nature of gas is only one piece of the puzzle. Regardless of whether this can be accomplished, there will be no way to verify the net greenhouse gas impact of the renewable natural gas supply purchased for the pilot program. At this time, CenterPoint Energy does not know what feedstocks or production processes are employed by the producers that contract with potential gas suppliers. In the absence of clear and verifiable policy guidelines that quantify fuel pathways, there is no way that CenterPoint Energy can hope to conduct its pilot program in a manner that maximizes the capture of greenhouse gas emissions from feedstock and minimizes the carbon footprint of its renewable natural gas supply.[28]

2. The proposed pilot will not reduce Minnesota's greenhouse gas emissions or divert local waste streams.

The net greenhouse gas emissions impact of CenterPoint Energy's proposed pilot program will be difficult to parse and will not directly affect Minnesota's greenhouse gas emissions budget because carbon intensity metrics and/or environmental attributes associated with renewable natural gas for end-use in buildings do not yet exist.[29]

CenterPoint Energy cites conversations with the Midwest Renewable Energy Tracking System (M-Rets) regarding the "possibility of collaborating" to create a tracking system for environmental certification in Minnesota if the pilot receives Commission approval,[30] but it would likely take several years at minimum to get a robust program in place. Further, the carbon intensity metrics and/or environmental attributes to be ascribed to renewable natural gas for end-use in buildings will likely require oversight from both the Public Utility Commission and the Pollution Control Agency, as there is no fuel pathway for renewable natural gas for end-use in buildings in the RFS and the LCFS is administered in California. As such, Minnesota will not formally benefit from greenhouse gas reductions associated with CenterPoint Energy's proposed five-year pilot program.

---

[27] CenterPoint Energy pilot program proposal, Section VIII, footnote 32, page 17.
[28] DOC 034 P G-008/M-18-547, page 2-3.
[29] DOC 035 P G-008/M-18-547, page 2-3.
[30] CenterPoint Energy pilot program proposal, Section III, page 10.

As CenterPoint Energy has proposed to source all of the renewable natural gas supply for its pilot program from producers located out of state, Minnesota will also not directly benefit from the diversion of waste streams for use as renewable natural gas feedstock.[31] Any water quality improvement, reduction in air pollution, or odor avoidance associated with diverted waste streams will benefit the local communities and states where these producers are housed.[32]

3. The proposed pilot includes no perceptible benefits to Minnesota businesses in the short-term and only limited potential benefits in the long-term, which will require significant capital investment to realize.

Renewable natural gas will not be sourced within Minnesota for the proposed pilot program. CenterPoint Energy cites "operational and other challenges" associated with interconnecting directly with local producers as a barrier to in-state sourcing.[33] Interconnecting local producers requires significant capital investment, including the cost of constructing pipelines to move the renewable natural gas from the point of production to the point of injection into the local natural gas pipeline network, compressor stations, and monitoring systems to ensure that renewable natural gas continues to meet pipeline injection standards.[34,35] Dairies, poultry and swine farms, and landfills across Minnesota are often sited far from potential injection sites, which presents a cost barrier to extending utility infrastructure to connect with local renewable natural gas producers.[36,37] CenterPoint Energy has expressed interest in proposing interconnection tariffs in the future to support local sourcing.[38] However, such tariffs may prove cost prohibitive to local producers and/or ratepayers depending on how they are structured.

The technology used to upgrade and clean raw biogas to the standard of pipeline grade natural gas also requires significant capital investment, often necessitating long-term project financing to be cost effective.[39,40] The cost of installing, operating, and maintaining anaerobic digesters – which are used to produce biogas from manure, agricultural waste, food waste, and

---

[31] CenterPoint Energy pilot program proposal, Section VI, page 13.
[32] Center for Energy and Environment. 2007. *Identifying effective biomass strategies: Quantifying Minnesota's resources and evaluating future opportunity*. Link
[33] CenterPoint Energy pilot program proposal, Section VI, page 13.
[34] World Resources Institute. 2018. *The production and use of renewable natural gas as a climate strategy in the United States*. Link
[35] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link
[36] Center for Energy and Environment. 2007. *Identifying effective biomass strategies: Quantifying Minnesota's resources and evaluating future opportunity*. Link
[37] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link
[38] CenterPoint Energy pilot program proposal, Section VI, page 13.
[39] Rocky Mountain Institute for MN Department of Commerce. 2013. *Scoping an energy future study for Minnesota*. Link
[40] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link

wastewater – present additional potential barriers to adoption.[41] Capital costs for renewable natural gas projects range from hundreds of thousands to tens of millions of dollars, varying by the technologies used, the scale of production, and the location of the production site.[42,43] At sites that implement digesters, some of these costs may be offset through the sale of digestate, the material left over after biogas production in anaerobic digesters, which can be utilized for fertilizer and animal bedding.[44]

Developing locally-sourced markets within Minnesota for renewable natural gas for end-use in buildings appears complex.[45] Significant considerations around project financing will be required to support local production of renewable natural gas in the current market environment. As proposed, CenterPoint Energy's pilot program will not grow Minnesota markets or confer economic benefits to local businesses. Moreover, there is no indication or evidence that it will be viable to source from Minnesota markets after the pilot phase, when procuring renewable natural gas on the national market continues to present fewer financial barriers.

4. Continued investment in natural gas infrastructure systems is implicit to growing renewable natural gas markets for end-use in buildings.

Available biomass feedstocks in the United States are not sufficient to fully supplant the use of natural gas with renewable natural gas. The American Gas Foundation has found that if 100% of the Nation's available biomass feedstocks – crop residues, dedicated energy crops, landfill gas, forest and wood wastes, sludge from municipal water treatment, and animal (dairy cow, pig, and chicken) wastes – were utilized for renewable natural gas production, we would only be able to offset about 10% of the natural gas delivered to customers in 2015.[46,47] As renewable natural gas flows alongside natural gas within the same pipeline infrastructure, the original capital investment as well as operation and maintenance costs associated with that infrastructure will be supported primarily through the sustained sale of natural gas. Growing renewable natural gas markets for end-use in buildings, therefore, relies on the continued investment in and consumption of natural gas fuels.

---

[41] World Resources Institute. 2018. *The production and use of renewable natural gas as a climate strategy in the United States*. Link
[42] World Resources Institute. 2018. *The production and use of renewable natural gas as a climate strategy in the United States*. Link
[43] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link
[44] Fletcher, Katie. 2016. *Green garbage to black gold*. Biomass Magazine. Link
[45] Rocky Mountain Institute for MN Department of Commerce. 2013. *Scoping an energy future study for Minnesota*. Link
[46] American Gas Foundation. 2001. *The potential for renewable gas: Biogas derived from biomass feedstocks and upgraded to pipeline quality*. Link
[47] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link

Market growth for renewable natural gas also has the potential to further incentivize the development of emerging technologies that synthesize methane gas, rather than harvest it from finite biomass waste streams.[48,49] It is possible to synthesize methane gas from fossil fuels, like lignite coal and shale coal,[50,51] as well as through chemical conversion processes like power-to-gas/power-to-methane.[52,53] While increasing the proportion of synthesized methane in the marketplace has the potential to further displace natural gas beyond what is possible with renewable natural gas alone, utilization of synthetic methane will never achieve the net reduction in carbon emissions that harvesting biogas from diverted waste streams achieves.[54]

As the Commission considers CenterPoint Energy's proposed pilot program, it is useful to take a longer-range view of what intended and unintended impacts may result from growing renewable natural gas markets for end-use in buildings.

5. Growing renewable natural gas markets for end-use in buildings risks slowing the pace of building electrification.

Implicit to the evaluation of CenterPoint Energy's proposed renewable natural gas pilot program is the careful consideration of the role of "low carbon fuels" in Minnesota's future energy mix. Developing a stronger renewable natural gas market for end-use in buildings has the potential to draw down methane emissions from waste streams and displace a finite volume of natural gas, but it also risks slowing the pace of building electrification and the reduction of greenhouse gas emissions from Minnesota's building sector.

Achieving net zero carbon emissions by mid-century and limiting warming to 1.5°C requires the electrification of energy end-uses and decarbonization of electricity and other fuels.[55] Whole-building electrification represents a critically important opportunity to draw down significant greenhouse gas emissions in Minnesota, especially with regards to space heating,

---

[48] Wilson and Styring. 2017. *Why synthetic fuels are necessary in future energy systems*. Frontiers in Energy Research. Link
[49] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link
[50] US Department of Energy's National Energy Technology Laboratory. 2011. *Cost and performance baseline for fossil energy plants Volume 2: Coal to synthetic natural gas and ammonia*. Link
[51] The Nicholas Institute for the Environment. 2009. *Synthetic natural gas (SNG): Technology, environmental implications, and economics*. Link
[52] Southern California Gas Company. 2017. *SoCalGas and US Department of Energy's National Renewable Energy Laboratory install nation's first biomethane reactor system for power-to-gas testing*. Link
[53] M.J. Bradley & Associates. 2017. *Renewable natural gas: The RNG opportunities for natural gas utilities*. Link
[54] World Resources Institute. 2018. *The production and use of renewable natural gas as a climate strategy in the United States*. Link
[55] IPCC SR15. 2018. *Global Warming of 1.5°C: Chapter 2 – Mitigation pathways compatible with 1.5°C in the context of sustainable development*. Link

which makes up Minnesota's largest building sector energy end-use.[56,57] In 2017, 66% of Minnesotans heated their homes with natural gas, 12% with delivered fuels (fuel oil and propane), 4% with none/other, and only 18% via electricity.[58]

Purchasing finite but costly volumes of renewable natural gas for end-use in buildings must not come at the expense of investing in the transition to electric heating technologies. Electrification of heating systems operating on delivered fuels in Minnesota is already economically favorable. [59] However, the largest barrier to the electrification of natural gas space heating systems are operational costs, driven primarily by today's low natural gas prices.[60,61,62] Limited financial resources would therefore be better invested in building electrification incentives, rather than in costly renewable natural gas pilots of undetermined greenhouse gas reduction benefit.

Growing renewable natural gas markets for end-use in buildings relies on the continued investment in and consumption of natural gas fuels, even at the point when full market penetration is achieved for renewable natural gas. Investing in low carbon fuels that prolong the use of natural gas for end-use is concerning. Minnesota has only reduced its greenhouse gas emissions 12% relative to 2005 levels, missing the Next Generation Energy Act's goal of a 15% reduction by 2015.[63] Moreover, emissions from the residential sector in Minnesota have increased by about 0.9 million tons of carbon dioxide equivalent since 2005, rising 11% above the State's baseline in 2016.[64] It is only with significant effort to decarbonize electricity end-use and generation that Minnesota will meet its 2025 and 2050 goals of 30% and 80% reductions, respectively.[65]

---

[56] Center for Energy and Environment. 2018. *Brrrrr…! The outlook for beneficial electrification in heating dominant climates*. Link
[57] Vibrant Clean Energy, LLC for McKnight Foundation and GridLab. 2018. *Minnesota's smarter grid: Pathways toward a clean, reliable and affordable transportation and energy system*. Link
[58] EIA. 2017. *Minnesota's energy consumption & expenditures: Energy source used for home heating*. Link
[59] Center for Energy and Environment. 2018. *Brrrrr…! The outlook for beneficial electrification in heating dominant climates*. Link
[60] Rocky Mountain Institute. 2018. *The economics of electrifying buildings*. Link
[61] Center for Energy and Environment. 2018. *Brrrrr…! The outlook for beneficial electrification in heating dominant climates*. Link
[62] Lawrence Berkeley National Laboratory. 2018. *Electrification of buildings and industry in the United States: Drivers, barriers, prospects, and policy approaches*. Link
[63] MN Pollution Control Agency. 2019. *Greenhouse gas emissions in Minnesota: 1990-2016*. Link
[64] MN Pollution Control Agency. 2019. *Greenhouse gas emissions in Minnesota: 1990-2016*. Link
[65] Minnesota Statute §216H.02. Link

Beyond the greenhouse gas emission reductions associated with building electrification, electric appliances reduce overall energy use,[66] do not present the same health risks posed by diminished indoor air quality associated with direct combustion heating systems,[67] and pose no risk of explosion.[68] As natural gas commodity prices may change in unpredictable ways in the future, building electrification also limits consumer exposure to natural gas price volatility. [69]

6. Biogas should be considered for its potential to generate renewable, dispatchable electricity.

Minnesota is in the midst of a power sector transformation. There is a role for biogas captured from diverted waste streams, but the Commission and policymakers should consider how best to harness this low carbon fuel in a way that does not rely on interstate pipeline infrastructure or potentially compromise important greenhouse gas reductions to be gained in the building sector through the electrification of end-uses. Using biogas for its potential to generate renewable dispatchable electricity is one such role.

Under current market conditions, the value of RIN credits drives the production of renewable natural gas for transportation fuel over the use of biogas to generate electricity. However, because biogas does not need to be upgraded to the standard of pipeline grade natural gas nor does it require gas pipeline interconnection infrastructure, the capital costs of generating renewable electricity are far lower than producing renewable natural gas. Despite lower capital costs, however, Minnesotan farmers need a swine herd of at least 12,000 or a dairy cow herd of at least 500 to support an anaerobic digester paired with an electrical generator.[70] Key to reducing the barrier to adoption for smaller farms are policies that address up-front biogas project costs and/or financing and increase the market value of electricity generated from renewable biogas in order to be competitive with RIN credits.[71]

---

[66] Center for Energy and Environment. 2018. *Brrrrr…! The outlook for beneficial electrification in heating dominant climates*. Link

[67] Belanger K, et al. 2013. *Household levels of nitrogen dioxide and pediatric asthma severity*. Epidemiology 24(2):320-330. Link

[68] PHMSA. Updated 11-2018. *Pipeline incidents 20 year trends*. Link

[69] Rocky Mountain Institute. 2018. *The economics of electrifying buildings*. Link

[70] Center for Energy and Environment. 2007. *Identifying effective biomass strategies: Quantifying Minnesota's resources and evaluating future opportunity*. Link

[71] While electricity generated from biogas qualifies for Minnesota's renewable electricity standard (Minnesota Statute §216B.1691. Link), state-level policy tools that focus specifically on increasing the use of biogas for electricity generation through competitive pricing do not yet exist. In 2014, the EPA created a RFS pathway to allow parties to generate RIN credits for qualifying biogas-based electricity used for charging electric vehicles (40 CFR §80.1426(f)(11)(i). Link). However, the EPA has not taken action on pending facility registration requests and pathway petitions, citing "regulatory and technical issues" around implementing a biogas-to-electricity pathway (EPA. 2018. *Renewable Fuel Standard Program – Standards for 2019 and biomass-based diesel volume for 2020: Response to comments*. page 36-37. Link). Since proposing a Renewables Enhancement and Growth Support rule in 2016 (EPA.

Renewable biogas electricity generation would maximize the capture of greenhouse gas emissions from waste feedstocks and minimize the carbon footprint of utilizing biogas fuels. Distributed fuels, by comparison, are known to produce significant fugitive emissions, which increase the lifecycle greenhouse gas emissions of even the cleanest burning carbon-based fuels.[72] Onsite generation creates a tighter loop between biogas production and electricity generation and would provide an important additional source of renewable, dispatchable electricity.

Conclusion

For the above reasons, Fresh Energy, Minnesota Center for Environmental Advocacy, and the Sierra Club do not recommend approval of CenterPoint's petition as filed.

We also urge the Commission and stakeholders to consider how best to grow biogas and renewable natural gas markets in Minnesota for the future. In particular, harnessing biogas for renewable electricity generation presents an important pathway to mitigate potent greenhouse gases from diverted waste streams, improve air and water quality, and open new revenue streams for Minnesotan farmers.

/s/ Margaret Cherne-Hendrick
Fresh Energy
408 Saint Peter Street, Suite 220
St. Paul, MN 55102
651.294.7143
cherne-hendrick@fresh-energy.org

/s/ Carolyn Berninger
Minnesota Center for Environmental Advocacy
1919 University Avenue West, Suite 515
St. Paul, MN 55104
651.287.4878
cberninger@mncenter.org

/s/ Laurie Williams
Sierra Club
Campaign Representative
1536 Wynkoop Street, Suite 200
Denver, CO 80202
303.454.3358
laurie.williams@sierraclub.org

Accessed 11-2018. *Renewable Fuel Standard Program – Proposed Renewables Enhancement and Growth Support (REGS) Rule*. Link), the EPA has been processing public comments in order to inform the design of a verifiable biogas-to-electricity pathway.

[72] Alvarez et al. 2018. *Assessment of methane emissions from the US oil and gas supply chain*. Science. 361(6398):186-188. Link