

**In the Matter of
CenterPoint Energy Natural Gas Innovation Act (NGIA)
Innovation Plan**

Petition of CenterPoint Energy

**EXHIBIT L: SUMMARY OF RFI RESPONSES AND
OTHER PILOTS CONSIDERED**

Docket No. G-008/M-23-215

June 28, 2023

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
n/a	1	n/a	This Submission Number was used due to testing RFI online submission form, no project	n/a	n/a	n/a
Biogas/Renewable Natural Gas	2	Minnesota's Renewable Natural Gas Potential	This project proposes to develop a spatial decision support system (SDSS) that visualizes Minnesota's RNG potential. This tool will be like Google Maps application, but rather than displaying travel routes, it will display the biomass distributions, potential/existing RNG production, economic statistics, natural gas infrastructure, and more. This SDSS tool can showcase the total RNG capability of local organizations, residencies, and companies that are suitable for production, along with current producers, thus providing a standardized and singular database system that ties Minnesotan geography with correspondent information on biomass characteristics, RNG potential, economic viability, and additional qualitative/quantitative data statewide.	Potential R&D opportunity	Studies to support RNG market development	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Study to support RNG market development'. Given the importance of low-carbon gases in the NGIA, CenterPoint feels that it could make sense to conduct a research and development study that supports the identification of potential projects or addresses other barriers. The Company is still establishing which study approaches might offer the best value, or address the most pressing concerns.
Does Not Qualify	3	Renewable DME from Biogas	Respondent is focused on decarbonizing the global propane industry while laying the foundation for green hydrogen. We accomplish this by producing renewable dimethyl ether (rDME). rDME can be made from raw, non-pipeline quality biogas and can reduce the carbon footprint of transportation as 1) a blending agent with LPG/propane and 2) a	Not currently pursuing	N/A	As the focus of this proposal is reducing the GHG intensity of propane supplies, and no natural gas consumption is displaced, this was not seen as a good fit for CenterPoint's NGIA plan.
Biogas/Renewable Natural Gas	4	RNG from biogas	Respondent is a market leader in the equipment needed to separate, dry, and prepare biogas in the conversion to RNG so that it can be injected into local, intrastate, or interstate gas pipelines in North America.	Not currently pursuing	N/A	This respondent has been noted as a potential implementation partner related to RNG project development, to be notified of potential RFPs related to future NGIA pilots. No specific RNG projects were proposed in this application, but CenterPoint's intent is to assess the costs and benefits from 'archetype' projects representative of a few different potential RNG feedstocks.
Power-to-Hydrogen	5	Local hydrogen production from RNG	Our point of use hydrogen generators are a paradigm changer in the hydrogen industry. We have installed over 60 systems world wide in a number of hydrogen gas use applications including mobility along with glass manufacturing, steel and semi-conductor manufacturing, foods, etc. Unique is our ability to capture CO2 from our	Not currently pursuing	N/A	This RFI response did not include a specific project idea. This respondent has been noted as a potential vendor related to hydrogen and electrolyzer technologies, to be notified of potential RFPs related to future NGIA pilots.
n/a	6	n/a	This Submission Number was used due to testing RFI online submission form, no project	n/a	n/a	n/a
n/a	7	n/a	This Submission Number was used due to testing RFI online submission form, no project	n/a	n/a	n/a
Power-to-Ammonia	8	Utilization of Green Ammonia for Thermal Energy Applications	Ammonia will be produced using wind energy and then used for thermal energy applications within grain dryers, DDGS dryers, and a natural gas boiler within a district heating system. This will provide near-zero carbon thermal energy and displace fossil-based natural gas and propane.	Potential R&D opportunity	Utilization of Green Ammonia for Thermal Energy Applications	This is an interesting opportunity to support innovative R&D conducted by local researchers. More details are required to understand the potential scale and cost of this work. CenterPoint will seek more information from the project respondent and further evaluate this opportunity.
Power-to-Ammonia	9	Production of Nitrogen Fertilizer from Wind-Generated Ammonia	Green nitrogen fertilizer will be produced. Hydrogen and ammonia will be generated using wind power. Ammonia will then be used to capture carbon dioxide and used to produce a refined nitrogen fertilizer product which can be more easily be stored and transported. The process will significantly reduce GHG emissions associate with fertilizer production, agriculture, and biofuel production.	Not currently pursuing	N/A	Because the production of the nitrogen fertilizer is outside of the state of Minnesota, no CenterPoint natural gas is displaced, and there is no other nexus to CenterPoint's Minnesota system, this was not seen as a good fit for CenterPoint's NGIA plan.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
District Energy	10	Feasibility Analysis and Market Assessment of Clean District Energy Opportunities for CenterPoint Energy	Respondent would propose to conduct feasibility studies for converting two existing district energy systems in CenterPoint territory to operate with large-scale heat pumps and solar heating. These studies will provide guidance on the economic viability of clean district energy projects in a college campus or downtown setting. Additionally, a market analysis will determine the potential to apply clean district energy solutions to campuses and downtown areas throughout CenterPoint Energy's service area and identify low hanging fruit for potential district energy projects.	Potential R&D opportunity	Study of Decarbonizing Existing District Energy Systems	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Decarbonizing Existing District Energy Systems'. The initial RFI received responses ranging from hydrogen to geothermal systems to support decarbonization of existing district energy systems. These represent innovative opportunities to decarbonize district energy systems currently reliant upon natural gas, that merit further analysis and consideration for potential inclusion in the Company's NGIA portfolio.
Energy Efficiency	11	Energy Retrofits in Manufactured Homes	Respondent proposes the development of an Energy Efficient Retrofit program for Manufactured Housing. Manufactured homes serve as an important piece of the affordable housing stock in Minnesota, and also an area of substantial energy savings potential with efficiency retrofits such as duct sealing, increased insulation, direct-install	Consider for CIP instead of NGIA	N/A	These kinds of retrofits are established but underutilized. Particularly since manufactured housing has been included in the CIP low-income weatherization program in the past, this idea seems like a better fit for consideration in CIP.
Energy Efficiency	12	Grassroots Green Homes	This pilot engages a select local community through community-based outreach and local networking to connect residents and businesses to appropriate CenterPoint Energy programs to increase participation among eligible customers, leveraging local	Added to Shortlist - Incorporated into a pilot project archetype	Neighborhood Weatherization Blitzes	Although this is largely focused on expanding the reach of CIP, the focus on decarbonization and disadvantaged communities may make it particularly relevant for NGIA.
Energy Efficiency	13	Innovation Incubator	Given that the utility industry is facing complex issues and ever-increasing goals, utilities are being tasked with the need to innovate and change more rapidly than ever. The Innovation Incubator is designed to foster innovation and expedite the advancement of ideas and technologies across the market through meaningful change with rapid and agile pilot development and testing.	Potential R&D opportunity	Innovation Incubator	This may potentially be somewhat duplicative with Minnesota Efficient Technology Accelerator's efforts. Nonetheless, it has potential to help expand identification of new measures for both CIP and NGIA, so could be a potential R&D opportunity to consider.
Energy Efficiency	14	Real Estate Education & Outreach	The Real Estate Education and Outreach pilot builds and tests a new marketing channel for existing energy efficiency programs through two separate marketing avenues: marketing to the real estate professionals and to the customers through real estate	Consider for CIP instead of NGIA	N/A	This is essentially a new marketing approach for CIP, so it likely makes more sense to consider it for that program rather than NGIA.
Biogas/Renewable Natural Gas	15	Thermal Gasification RNG Project	RNG project producing 3 BCF/yr of pipeline-quality fuel for sale under a long-term (15+ year) agreement, as described below: Projects underway using proven System 1000, thermal gasification technology. Each System 1000, train produces ~3 BCF per year of RNG; scalable/reproducible. Efficiency score of -60 w/CO2 sequestration; near zero w/o CO2 sequestration. Locally-sourced MN feedstock of waste woody biomass (1,000 tpd). \$400 million project cost; RNG price ~\$35/mmBTU for initial facilities.*	Not currently pursuing	N/A	This is an interesting opportunity to produce significant volumes of RNG. However, the project's scale and commercialization status of the technology meant that this proposal would be difficult to accommodate in the current NGIA plan. This technology's development will be monitored, for consideration in future NGIA plans, and there may be opportunities to support the technology development through R&D in NGIA plan.
Carbon Capture	16	Screening Study to Establish CCUS Demonstration Projects	Respondent proposes to conduct a screening and planning study to (a) identify suitable sites for a capture demonstration, (b) research promising technologies and vendors for capture technologies, (c) find and characterize methods and locations for use or long-term storage of the captured CO2 and (d) develop basic design, pro forma economic analyses and funding plans for 1 to 3 possible CCUS demonstrations.	Added to Shortlist - Incorporated into a pilot project archetype	Carbon Capture Archetype for Industrial or Large Commercial Facility	The initial RFI did not receive any responses for specific industrial carbon capture projects. But CenterPoint would like to consider how different opportunities to support 'hard to electrify' industrial customers would compare in its NGIA portfolio, and carbon capture is one of the approaches contemplated for such applications. A study may be required to help CenterPoint and/or industrial customers better understand specific opportunities for carbon capture project's in the Company's service territories.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Energy Efficiency	17	Emerging Technology Strategic Incentives Fund	The Emerging Technology Strategic Incentives Fund is an incentives program that would support emerging energy efficiency and electrification measures through a highly targeted, intensive, and time-limited approach that would be designed to achieve technology-specific objectives in order to accelerate adoption of the targeted technologies.	Potential R&D opportunity	Emerging Technology Strategic Incentives Fund	This would focus on supporting market transformation for a small set of innovative measures that aren't currently fits for CIP. Whereas Minnesota Efficient Technology Accelerator focuses on strategic engagement with the supply chain (reducing non-financial barriers), this would help promising Minnesota Efficient Technology Accelerator measures actually get out into the market and create a commercialization plan. For NGIA, this could be an effective way to "try out" a number of promising measures in the real world and support market adoption of the best options.
Biogas/Renewable Natural Gas	18	Anaerobic Digestion of East Metro Food Waste	Organics (e.g., discarded food scraps) makes up over 20% of municipal solid waste, but these materials can be recovered to capture their resource value and reduce greenhouse gas emissions. Respondents are planning a system to recovery organics and divert these materials to be delivered to a future anaerobic digestion facility to produce biogas or renewable natural gas. Respondent is currently in a competitive procurement	Added to preliminary NGIA shortlist	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	This is one of the few 'specific RNG projects' proposed in response to the RFI. It represents an interesting opportunity to partner with local government to develop what is expected to be low-carbon intensity RNG, as well as supporting a circular economy.
Special Projects: Commercial EE and GHG Assessment	19	Thermal Energy Assessment and Recognition Program	This program would use benchmarking data to identify commercial buildings with significant room for improvement in thermal performance. The auditing and recognition program would leverage energy data made available by benchmarking	Added to Shortlist - Incorporated into a pilot project archetype	Small/medium business GHG audit pilot	This represents one approach to the required small/medium sized commercial GHG audit pilot. CenterPoint will consider this in their design of that pilot.
Special Projects: Innovative Resources for Large Industrial	20	Industrial Project Development: Decarbonization +	This program positions CenterPoint Energy as the go-to resource for your industrial customers as they pursue any/all decarbonization strategies. Using a project development approach that evaluates total carbon and thermal loads, Respondent can	Added to Shortlist - Incorporated into a pilot project archetype	Industrial GHG audit pilot	This represents one potential approach to the required industrial hard to electrify pilot. CenterPoint will consider it in its design of that pilot program.
Does Not Qualify	21	Voluntary Gas Program & Development Fund	Respondent proposes an idea to develop and launch a voluntary program with CenterPoint Energy that allows CenterPoint Energy's residential and commercial	Not currently pursuing	N/A	This is a proposal for a green tariff which CenterPoint Energy is exploring as a standalone initiative in the future.
Carbon Capture	22	Clean Hydrogen via Shock Wave Heating	Respondent brings a new energy paradigm to clean hydrogen via shock wave heating. Using the pressure in pipelines, shock wave dynamics can heat gases to temperatures sufficient to crack methane (CH ₄), creating only hydrogen (H ₂) and solid carbon (C). The innovation uses no water, generates no direct CO ₂ , is low cost, requires no new	Not currently pursuing	N/A	This proposed approach was not seen as a good fit for NGIA as the proposed carbon capture appears to occur on the gas distribution system, rather than on-site at a customer's facility.
Strategic Electrification	23	Greening of industrial process heating and cooling	A pilot utilizing a geothermal heat pump system to provide process heating and cooling for industrial applications. The pilot would utilize a groundwater-enabled system to provide heating and cooling to an industrial customer currently using natural gas-fired processes. The system could offset current load requirements by supplementing the process needs in a pre-heating application, or it could provide the full load heating requirements depending on type of process and its associated temperature	Added to Shortlist - Incorporated into a pilot project archetype	Industrial Electrification Incentive Program	This represents an opportunity to help engage industrial customers (who are often relatively hard to reach) and explore opportunities to leverage heat pumps in these facilities. Results could help inform future industrial strategic electrification efforts by identifying best practices, and help identify new ways to engage these customers.
Power-to-Hydrogen	24	Power-to-Hydrogen Industrial	To maximize the use of existing assets in furthering the development of renewable energy, power-to-hydrogen pilot opportunities can focus on higher levels of hydrogen blending in natural gas combustion turbines. The main body of this proposal focuses on the option for identifying industrial customers interested in and suitable for piloting adoption of green hydrogen.	Added to Shortlist - Incorporated into a pilot project archetype	Green Hydrogen Archetype for Industrial or Large Commercial Facility	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Green Hydrogen Archetype - Industrial or Large Commercial Facility'. This is one of options targeting 'hard to electrify' industrial customers, a category that CenterPoint must cover in its first Innovation Plan filing.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Power-to-Hydrogen	25	Power-to-Hydrogen Power Gen	To maximize the use of existing assets in furthering the development of renewable energy, power-to-hydrogen pilot opportunities can focus on higher levels of hydrogen blending in natural gas combustion turbines. The main body of this proposal focuses on the option for blending in combustion turbines.	Not currently pursuing	N/A	This respondent has been noted as a potential service provider related to hydrogen and electrolyzer technologies, to be notified of potential RFPs related to future NGIA pilots. However, at this time the concept proposed here of hydrogen blending for power generation has not been included for further analysis under this first NGIA plan. This is based in part on expectations for high costs, other significant research and development efforts already covering this area, and the likelihood that customers with combustion turbines are likely to be exempt from CIP/NGIA.
Power-to-Ammonia	26	Power-to-Ammonia	Ammonia is an important chemical to Minnesota's agricultural sector in that it used directly and indirectly for fertilization and in ethanol production. A pilot unit producing low-carbon ammonia may have immediate off takers among farmers and in corn-ethanol facilities looking to reduce their carbon intensity and GHG emissions.	Not currently pursuing	N/A	This proposed approach was not seen as a good fit for NGIA's 'Power-to-Ammonia' category because the displaced emissions would be from existing out-of state ammonia production and there would not be reductions of emissions from the use of CenterPoint's products.
Special Projects: Commercial EE and GHG Assessment	27	Small/Medium Business Direct Install	Direct install program for small and medium businesses that covers a simple assessment of the premise and most of the cost of the installation of energy efficient / GHG reducing equipment.	Added to Shortlist - Incorporated into a pilot project archetype	Small/medium business GHG audit pilot	This represents an approach to the required small/medium sized commercial GHG audit pilot. CenterPoint will consider this in their design of that pilot.
Carbon Capture	28	Combined Heat and Power Exhaust Carbon Capture Plant	As part of the ongoing relationship between Respondent and a Wastewater Treatment Facility, we have identified an opportunity to develop a new technology to potentially reduce the CO2 impact/emissions from combusting biogas in our CHPs. The carbon capture technology is designed to capture CO2 from exhaust gas streams and convert it	Not currently pursuing	N/A	While this is an interesting project with a lot of potential, CenterPoint Energy will be prioritizing specific demonstration projects that fall within our service territory. We do not serve this facility.
Special Projects: Residential Deep Energy Retrofits and	29	Deep Energy Retrofit Pilot	Respondent proposes a pilot program that performs deep energy retrofits using electric cold climate air source heat pumps to supplement heating in homes that have existing natural gas furnaces. Four comparable homes will be selected to receive deep energy	Added to Shortlist - Incorporated into a pilot project archetype	Residential deep energy retrofit + electric ASHP pilot with gas backup	This represents on approach to the required residential deep energy retrofits and strategic electrification pilot. CenterPoint will consider this in their design of that pilot.
District Energy	30	District Energy: Networked Geothermal	Pilot or pilots to deploy networked geothermal systems that utilize a network of ground-source heat pumps and can serve 20 to 40 residential/commercial customers.	Added to Shortlist - Incorporated into a pilot project archetype	New Networked Geothermal Systems Pilot	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'New Networked Geothermal Systems Pilot.' This is an innovative opportunity being piloted by a few gas utilities in the U.S. that merits further analysis specific to Minnesota and consideration for potential inclusion in the Company's NGIA portfolio.
n/a	31	n/a	This Submission Number was used due to testing RFI online submission form, no project	n/a	n/a	n/a
Biogas/Renewable Natural Gas	32	RNG Projects in MN	Respondent is a platform company seeking to build, acquire, own and operate assets that eliminate methane emissions by producing RNG and other low carbon commodities from waste. Although we do not have a specific RNG project in mind for this RFI, we would welcome the opportunity to develop RNG projects in MN with CenterPoint.	Not currently pursuing	N/A	This respondent has been noted as a potential implementation partner related to RNG project development, to be notified of potential RFPs related to future NGIA pilots. No specific RNG projects were proposed in this application, but CenterPoint's intent is to assess the costs and benefits from 'archetype' projects representative of a few different potential RNG feedstocks.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Power-to-Hydrogen	33	Power-to-Hydrogen Potential Study for Existing District Heating Systems in Minneapolis	Minneapolis is home to a number of existing fossil gas-fired district steam systems. To decarbonize these systems, an alternative must be found for the traditional fossil gas. CenterPoint's current power-to-hydrogen pilot along the Minneapolis Riverfront represents a potential fuel source alternative that may be able to scale up to meet the needs of larger thermal energy customers. This proposed feasibility study would assess the technical and economic potential of scaling up the current pilot to provide sufficient quantity of green hydrogen via a dedicated pipeline to 100% replace fossil gas in legacy district energy systems.	Potential R&D opportunity	Study of Decarbonizing Existing District Energy Systems	This is an interesting opportunity to support the City of Minneapolis in their investigation of opportunities to decarbonize their existing district steam systems. More details are required to understand the potential scale and cost of this work. This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Decarbonizing Existing District Energy Systems'. The initial RFI received responses ranging from hydrogen to geothermal systems to support decarbonization of existing district energy systems. These represent innovative opportunities to decarbonize district energy systems currently reliant upon natural gas, that merit further analysis and consideration for potential inclusion in the Company's NGIA portfolio.
n/a	34	n/a	This Submission Number was used due to testing RFI online submission form, no project	n/a	n/a	n/a
Energy Efficiency	35	Matching Bonus Rebate Program for Local Governments	Local governments are increasingly spending their funds to encourage energy efficiency, particularly via "bonus rebates" stacked on top of typical CIP rebates. To further encourage local government funding of conservation, particularly for weatherization and envelope measures, CenterPoint could utilize NGIA funding to "match" what a local government contributes in additional financial incentives. In effect, the traditional CIP rebate PLUS the local government incentive PLUS the CenterPoint matching bonus	Added to Shortlist - Incorporated into a pilot project archetype	Neighborhood Weatherization Blitzes	This RFI response has been grouped with other proposals related to weatherization under the pilot called "Neighborhood Weatherization Blitzes" for consideration in NGIA. In general CenterPoint would prefer to consider general increases to rebates, and general partnerships with cities, rather than limiting bonus rebates to specific cities.
District Energy	36	Pathway to Net Zero Through Aquifer Thermal Energy Storage	A new, low-carbon district energy system utilizing aquifer thermal energy storage can serve as an innovative pilot project for CenterPoint Energy's first Innovation Plan. Planned for the east side of Minneapolis, the district energy system can deliver a low-carbon alternative to traditional gas-dependent building heating services and provide a pathway to achieving net-zero carbon for the neighborhood. The energy system design has the potential to be replicated throughout CenterPoint's service territory and serve as a regional demonstration project. The system will provide a unique opportunity for	Added to Shortlist - Incorporated into a pilot project archetype	New District Energy System	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'New District Energy System.' This is an opportunity assess the launch of new district energy systems that either reduce or eliminate the need for natural gas, and consider these projects for potential inclusion in the Company's NGIA portfolio.
Biogas/Renewable Natural Gas	37	Planning Toolkit for RNG and Biogas Project Development	Respondent proposes to provide critical technical support to CenterPoint Energy Minnesota Gas regarding the feasibility of RNG and biogas deployment from various resources by developing a toolkit that includes key components of project development, including 1) resources, 2) geographic location of the resources, 3) an optimization evaluation for project type (i.e., RNG vs biogas), and 4) a simplified GHG emissions calculator. The objective of the toolkit is to provide CenterPoint and its potential project partners the means to optimize project deployment in the context of the Natural Gas Innovation Act.	Potential R&D opportunity	Studies to support RNG market development	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Study to support RNG market development'. Given the importance of low-carbon gases in the NGIA, CenterPoint feels that it could make sense to conduct a research and development study that supports the identification of potential projects or addresses other barriers. The Company is still establishing which study approaches might offer the best value, or address the most pressing concerns.
Biogas/Renewable Natural Gas	38	Renewable Energy Match (REM)	Renewable Energy Match is a Geographic Information Systems (GIS)-based tool which analyzes the geospatial and financial feasibility of the following renewable energies: Solar Photovoltaic (PV) & Solar Thermal Energy (STE), Hydrogen, Geothermal (Low to High-Grade), Renewable Natural Gas (RNG), and Wind.	Potential R&D opportunity	Studies to support RNG market development	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Study to support RNG market development'. Given the importance of low-carbon gases in the NGIA, CenterPoint feels that it could make sense to conduct a research and development study that supports the identification of potential projects or addresses other barriers. The Company is still establishing which study approaches might offer the best value, or address the most pressing concerns.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Special Projects: Residential Deep Energy Retrofits and	39	Pairing Residential Deep Energy Retrofits and Heating	Respondent has a number of residential energy disclosure policies in effect that were adopted with the intent to increase transparency regarding energy use and cost information in housing decisions. These policies can also be leveraged to identify	Added to Shortlist - Incorporated into a pilot project archetype	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	This represents an approach to the required residential deep energy retrofits and strategic electrification pilot. CenterPoint will consider this in their design of that pilot.
Carbon Capture	40	Carbon Capture & Sequestration	Respondent and other RNG developers would benefit greatly from assistance with carbon capture and sequestration. Carbon pipelines are planned to pass through MN and CenterPoint could help interconnect projects to those pipelines. The Midwest Carbon Express proposed route has a branch that terminates approximately 50 miles from 9 existing and future Respondent facilities. https://www.wctrib.com/news/local/drive-for-carbon-pipeline-easements-underway-in-	Not currently pursuing	N/A	This is an interesting opportunity to capture carbon emissions and reduce the carbon intensity of RNG production. However, the project's scale and status mean that this concept would be difficult to support through the current NGIA plan. This project's development will be monitored, for consideration in future NGIA plans.
Biogas/Renewable Natural Gas	41	Behind-The-Meter Renewable Energy	Respondent and other RNG developers would benefit from on-site renewable energy sources. On-site solar or wind facilities that sell power directly to projects for digester boilers and other energy needs could greatly improve the Carbon Intensity Score and increase project viability. The carbon intensity score is set by the GREET model, and determines the number of California (or other participating states) LCFS credits a project will generate.	Not currently pursuing	N/A	This respondent has been noted as a potential implementation partner related to RNG project development, to be notified of potential RFPs related to future NGIA pilots. No specific RNG projects were proposed in this application, but CenterPoint will consider the on-site renewables strategy recommended in potential RNG projects.
Biogas/Renewable Natural Gas	42	Energy Efficiency and CenterPoint MVR	Respondent's existing projects require NG to heat our digester boilers. We are disincentivized to reduce consumption as we have minimum volume requirements to CenterPoint. The elimination of that MVR would make renewable projects in the state more viable.	Not currently pursuing	N/A	This respondent has been noted as a potential implementation partner related to RNG project development, to be notified of potential RFPs related to future NGIA pilots. No specific RNG projects were proposed in this application, but CenterPoint will consider the barriers noted here as the Company looks to support a growing low-carbon fuels market.
Biogas/Renewable Natural Gas	43	BTU content of RNG	The BTU requirements of Centerpoint often do not align with RNG. This difference forces RNG developers to interconnect at CenterPoint TBS points, or directly to 3rd party transmission pipelines. This often increases lateral distances to the point that projects become unviable.	Not currently pursuing	N/A	This respondent has been noted as a potential implementation partner related to RNG project development, to be notified of potential RFPs related to future NGIA pilots. No specific RNG projects were proposed in this application, but CenterPoint will consider the barriers noted here as the Company looks to support a growing low-carbon fuels market.
Carbon Capture	44	Urban Tree Carbon Offset Program	Respondent supports CenterPoint's intention of achieving its Net Zero goals through active measures to reduce emissions and minimal reliance on carbon offsets. For the remaining emissions that CenterPoint must offset with carbon credits, Respondent proposes that CenterPoint acquire our City Forest Credits (CFC) Carbon+ Credits that are generated from locally planted urban trees. Our Carbon+ Credits not only offset carbon emissions - they also support CenterPoint's focus on community vitality and local initiatives by improving air quality, reducing stormwater runoff to protect local waterways, reducing energy usage and costs incurred by CenterPoint's customers and cooling our urban heat islands.	Added to preliminary NGIA shortlist	Urban Tree Carbon Offset Program	This proposed pilot falls under the NGIA's broad definition of carbon capture. This is one of a few 'nature-based offset' pilots proposed in response to the RFI. This pilot was shortlisted because there are established GHG emissions quantification protocols available for this 'nature-based' approach. This represents an interesting opportunity to partner with local government to develop what are expected to be cost-effective GHG emission offsets, and compare this opportunity to other potential components of CenterPoint's NGIA portfolio.
Energy Efficiency	45	Energy Efficiency Solutions	Given existing electrical grid capacities, decarbonization of cold climate building heating loads cannot be accomplished through straight electrification. CenterPoint Energy has a clear opportunity to incentivize passive solar thermal energy solutions within industrial facilities with high carbon heating loads driven by occupant and process safety. Natural gas demand and GHG emission can be reduced within public and private industrial processes that require high exhaust and associated makeup air rates. Depending on hours of operation, specifics of code or process required exhaust rates, and existing	Added to Shortlist - Incorporated into a pilot project archetype	Solar Thermal Heating for C&I	This RFI response has been grouped with other internal proposals under the proposed shortlist pilot called 'Solar Thermal Heating for C&I'. Solar thermal space and water heating applications are likely to require a fair amount of customization based on building-specific factors, but merit further analysis and consideration for potential inclusion in the Company's NGIA portfolio.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Biogas/Renewable Natural Gas	46	Upgrading our existing facility to produce Pipeline Renewable Natural Gas	Respondent operates a food waste to renewable energy plant in northwest Wisconsin. Details of our facility are attached. The facility serves as an interceptor for over 20 food processors and distributors in and around the Twin Cities area. We have a dedicated transportation and logistics team to pick up and transport the materials to our plant.	Added to Shortlist - Incorporated into a pilot project archetype	RNG Archetype – Food Waste	This RFI response would help inform the proposed shortlist pilot called 'RNG Archetype - Food Waste.' In addition, the respondent has been noted as a potential implementation partner related to RNG project development, to be notified of potential RFPs related to future NGIA pilots.
Biogas/Renewable Natural Gas	47	Ideas for Increased Biomethane Production	Establish a Program to Divert Landfilled Food to Biomethane Energy production from organic wastes although technically and socially attractive, lags behind other forms of energy. Unlike western Europe, infrastructure needs to be developed to completely realize the potential. There are several steps that need to be taken to complete the development. They are as follows: 1. Identify and establish amenability of various locally available residual materials as feedstocks for biogas. 2. Identify and quantify roadblocks to source available materials 3. Identify strategies to convert locally available materials to feedstocks for AD.	Potential R&D opportunity	Studies to support RNG market development	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Study to support RNG market development'. Given the importance of low-carbon gases in the NGIA, CenterPoint feels that it could make sense to conduct a research and development study that supports the identification of potential projects or addresses other barriers. The Company is still establishing which study approaches might offer the best value, or address the most pressing concerns.
Biogas/Renewable Natural Gas	48	JV to Develop a Renewable Natural Gas Plant	Respondent would be interested in a strategic partnership with CenterPoint Minnesota where we jointly invest in a renewable natural gas (RNG) project and Respondent acts as the primary or sole offtaker for a set number of years while CenterPoint ramps up their internal demand. From then-on, Respondent and CenterPoint can split the offtake as agreed upon by both parties.	Not currently pursuing	N/A	No specific RNG projects were proposed in this response, but this proposal is being considered to help inform several RNG pilot project archetypes including 'RNG Archetype - Food Waste', 'RNG Archetype - Dairy Manure' and 'RNG Archetype - Landfill Gas'. In addition, this respondent has been noted as a potential implementation partner related to RNG project development, to be notified of potential RFPs related to future NGIA pilots.
Power-to-Hydrogen	49	Minnesota Decarbonization Project	Respondent proposes to help CenterPoint lower the carbon intensity of natural gas delivered on its system through the use of green hydrogen production by utilizing Respondent's 1.2-GW of renewable energy assets in Minnesota.	Added to Shortlist - Incorporated into a pilot project archetype	Green Hydrogen Blending into Natural Gas Distribution System	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Green Hydrogen Blending into Natural Gas Distribution System'. This is an innovative opportunity to decarbonize CenterPoint's gas supply that merits further analysis and consideration for potential inclusion in the Company's NGIA portfolio.
Strategic Electrification	50	Strategic Electrification: Direct Install Program for Small and Medium Businesses	Respondent proposes a direct install program assisting small and medium-sized businesses to analyze, design, and install hybrid heat pumps for 135 projects over the five-year program. These businesses are 65% of the commercial stock in the Midwest (CBECS) but lack resources and expertise to invest in decarbonization. These buildings are frequently served by packaged single zone or split systems that can upgrade to	Added to Shortlist - Incorporated into a pilot project archetype	Commercial hybrid heating pilot	This is one of several proposals received related to commercial hybrid heating, which is a promising GHG reductions approach for small and medium sized commercial facilities. It has been combined with the others in a commercial heating pilot archetype.
Carbon Capture	51	Nature-based Solution to Offset Carbon Footprint	A nature-based solution (NbS) like a passive treatment wetland using biochar within the wetland substrate is a potential solution to manage stormwater and increase carbon sequestration simultaneously. Quantifying carbon sequestration increase using this method is achieved by inventorying increase in natural capital and resulting ecosystem services achieved through the NbS, and quantifying those ecosystem services through an appropriate methodology, such as Habitat Equivalency Analysis. Measuring NbS-related increases in ecosystem services can support the potential to impact communities by increasing access to green space, minimizing climate change impacts,	Not currently pursuing	N/A	This proposed pilot falls under the NGIA's broad definition of carbon capture. This is one of a few 'nature-based offset' pilots proposed in response to the RFI. This pilot was not shortlisted because there is more uncertainty and less established protocols and guidance related to GHG emissions quantification for this 'nature-based' approach. The opportunity will be monitored for potential inclusion in future NGIA plans.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Power-to-Hydrogen	52	Power to Hydrogen	Respondent proposes planning, design, and installation of hydrogen production sites distributed across CenterPoint Energy's service territory. The hydrogen would be produced via electrolysis using off-peak renewable electric power procurement, storage using metal hydride technology, and blending through grid injection at either applicable customer sites (such as universities, hospitals, or large industrials) or at Hydrogen Hubs. Hydrogen Hubs may be operated for direct injection into CenterPoint Energy's distribution system or produce hydrogen tanks for distribution to customers.	Added to Shortlist - Incorporated into a pilot project archetype	Green Hydrogen Blending into Natural Gas Distribution System	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Green Hydrogen Blending into Natural Gas Distribution System'. This is an innovative opportunity to decarbonize CenterPoint's gas supply that merits further analysis and consideration for potential inclusion in the Company's NGIA portfolio.
District Energy	53	District Geothermal Network	Respondent supported the site selection phase for Eversource in its District Energy Pilot, taking place in Framingham, MA. This pilot is repeatable, particularly in northern cooler states, as a means of moving swaths of customers off fossil fuel heating. This approach avoids a building-by-building approach.	Added to Shortlist - Incorporated into a pilot project archetype	New Networked Geothermal Systems Pilot	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'New Networked Geothermal Systems Pilot.' This is an innovative opportunity being piloted by a few gas utilities in the U.S. that merits further analysis specific to Minnesota and consideration for potential inclusion in the Company's NGIA portfolio.
Special Projects: Commercial EE and GHG Assessment	54	Commercial GHG Assessment Program	A Commercial GHG Assessment Program would be a cost-effective, scalable offering to provide small- and medium-sized business with their carbon footprint in an easy to understand one-page report using an automated software platform. To provide	Added to Shortlist - Incorporated into a pilot project archetype	Small/medium business GHG audit pilot	This represents an approach to the required residential deep energy retrofits and strategic electrification pilot. CenterPoint will consider this in their design of that pilot.
Does Not Qualify	55	Renewable Natural Gas Consumer Opt-In	Respondent is presenting an idea for research and development of a framework for CenterPoint consumers to opt-in to use renewable natural gas (RNG) instead of gas	Not currently pursuing	N/A	This is a proposal for a green tariff which CenterPoint Energy is exploring as a standalone initiative in the future
Carbon Capture	56	Methane and Refrigerant Leak Reduction Program	Large industrial facilities typically use a lot of natural gas. The gas utility monitors and repairs leaks before the meter. However, leak detection often stops at the site boundary, and we know there can be gas leaks inside the facility. Leak sweeps should be implemented to reduce gas and methane usage, which is a much more potent gas than carbon dioxide. Taking a holistic approach, a leak detection and repair program could include refrigerant leaks as well to further reduce environmental impact.	Added to preliminary NGIA shortlist	Industrial Methane and Refrigerant Leak Reduction Program	This reduction of methane leaks falls under the NGIA's broad definition of carbon capture. This represents an interesting opportunity to target larger industrial customers who are expected to represent a higher proportion of overall customer methane leaks, and is expected to achieve very cost-effective GHG emission reductions.
Carbon Capture	57	Carbon Capture for Residential and Commercial Buildings	The proposed project will investigate the carbon capture effectiveness and waste heat recovery efficiency of CleanO2's next-generation CarbinX units (version 4.0) which claims mitigation of up to 20 metric tons of CO2 emissions per year. R&D will be completed to evaluate the performance of the carbon capture system and investigate	Potential R&D opportunity	Carbon Capture for Residential and Commercial Buildings	This is an opportunity to support R&D that could lead to an improved version of technology CenterPoint is already piloting. Given other sources of funding, the budgetary request from CenterPoint is modest.
Energy Efficiency	58	New Homes with Natural Gas Characteristics	The new homes with natural gas characteristics is an adaptive, market supported program model. It supports builders, raters, and utilities with flexible incentive structure and minimal administrative burden, and supports market-facing certification systems, public engagement opportunities, and participation from affordable housing and starter home builders. As your partner and consultant, we can leverage local	Consider for CIP instead of NGIA	N/A	Because efficiency in new home construction is already included in CIP, this appears to represent more of an incremental improvement to an existing offering. It seems very relevant to CIP, but the potential applicability to NGIA is less clear.
Energy Efficiency	59	Healthier Homes	There is a strong correlation between housing quality and health outcomes. The built environment and surrounding neighborhood are key social determinants of health and are disproportionately adverse in areas with affordable housing, contributing directly to	Consider for CIP instead of NGIA	N/A	This seems like a better fit for CIP. It is a program-type that CenterPoint Energy has been able to offer through energy efficiency programs in other states.
Energy Efficiency	60	Strategic Energy Management (SEM)	Through a strategic energy management (SEM) program, we work with participants over a 12-month, cohort-based program using a structured process to help them adopt a strategic approach to managing energy. Through SEM, participants can achieve 5	Consider for CIP instead of NGIA	N/A	This seems like a better fit for CIP. It is potentially quite cost-effective and builds on CenterPoint's existing programs for large customers.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Energy Efficiency	61	Foodservice Energy Monitoring Program	Commercial foodservice (CFS) operators have traditionally been reluctant to replace existing equipment with newer and more efficient models for reasons including cost and concerns over the new equipment being able to prepare the food as expected. This proposed idea will demonstrate to the restaurant owners and operators the value of efficient cooking equipment and promote advanced CFS equipment by installing a foodservice energy monitoring system (FEMS) at CenterPoint's commercial	Consider for CIP instead of NGIA	N/A	Because this is more about improving customer education to promote energy-efficient cooking appliances, it's unlikely to have many direct GHG reductions. Additionally, it's a fairly well-defined project that doesn't really seem to fall into the R&D category. Overall, this seems like a better fit for CIP as a way to increase participation.
Energy Efficiency	62	Adiabatic Humidification	High pressure adiabatic humidification systems represent the latest in medical facility engineering. Adiabatic humidification systems allow water particles to be better	Consider for CIP instead of NGIA	N/A	This has been included in CIP as a custom measure, so it's unclear if it may be eligible for NGIA.
Carbon Capture	63	Quantification of Existing and Future Nature-Based Carbon Capture	Respondent is presenting an idea for (1) establishing a baseline of existing nature-based carbon capture and (2) evaluation of future nature-based carbon capture options. Specifically, we propose establishing a baseline through the quantification of nature-based carbon capture from existing forested and grassland areas within CenterPoint's assets. Subsequently, we propose identifying, quantifying, and implementing future nature-based carbon capture projects through restoration efforts on CenterPoint's	Potential R&D opportunity	Quantification of Existing and Future Nature-Based Carbon Capture	This RFI response has been highlighted as a potential research and development study to identify the potential for CenterPoint lands to support carbon capture through nature-based solutions. More details are required, and CenterPoint would want to understand the GHG emissions quantification protocols for such an approach.
Special Projects: Commercial EE and GHG Assessment	64	GHG Assessment	This idea will leverage CenterPoint Energy's existing programs to include additional recommendations for reducing GHG emissions. For example, a customer looking for recommendations to replace a natural gas furnace would only get recommendations for a condensing furnace as part of a current program. This program would allow auditors	Added to Shortlist - Incorporated into a pilot project archetype	Small/medium business GHG audit pilot	This could be effective in building on an existing efficiency framework to promote other decarbonization measures. CenterPoint will consider this in their design of the required small/medium sized commercial GHG audit pilot.
Strategic Electrification	65	Integrated Energy Systems for Self-powered Single-family and Multifamily Residential HVAC and Water Heating	Integrated energy systems (IES) are an emerging approach to self-powered space heating, air conditioning, and water heating that integrate fuel-fired and electrically powered equipment with distributed energy resources (DER) energy storage. IES includes a myriad of equipment combinations such as traditional furnaces, water heaters and heat pumps, on-site power from small-scale or micro combined heat and power (mCHP) and renewable sources such as photovoltaics (PV), as well as electrical	Potential R&D opportunity	Integrated Energy Systems for Self-powered Single-family and Multifamily Residential HVAC and Water Heating	This is an interesting opportunity to conduct research and development on emerging technologies of relevance to gas and electric utilities. CenterPoint needs to consider whether this is better funded through a coalition of interested parties, potentially as part of the the Low-Carbon Resources Initiative (LCRI).
Strategic Electrification	66	Heat Pump Water Heaters	Heat pump water heaters can be more efficient per BTU of heat delivered to water, as compared to natural gas water heaters. Respondent proposes a \$600 rebate for replacing a natural gas water heater with an electric heat pump water heater, with an estimated energy savings of 10.5 DTh annually per unit. This will impact general	Added to preliminary NGIA shortlist	Residential and Commercial Heat Pump Water Heaters	HPWHs are an established technology, so this could be an effective way to expand strategic electrification efforts if potential concerns about maintaining a gas connection are addressed.
Strategic Electrification	67	Electrification Qualified Service	The eQSP program is designed to develop and support a network of trade allies that help CenterPoint customers identify, quantify, fund, and implement targeted emissions	Potential R&D opportunity	Electrification Qualified Service Provider (eQSP) Program	This may be an effective way to help expand adoption of GHG-reducing measures at scale.
Energy Efficiency	68	Nano-particles to Improve Heat Transfer	Respondent uses nano-particles that are suspended in a stable state to increase the speed of heat transfer, by heating up (or removing heat from) the fluid and transferring energy in a shorter amount of time, thereby requiring significantly less energy. Respondent's technology is most suitable for closed-loop heating and cooling systems	Consider for CIP instead of NGIA	N/A	This has been included in CIP as a custom measure, so it's unclear if it may be eligible for NGIA. This technology is also currently being considered for CIP application as part of a Minnesota CARD grant.
Strategic Electrification	69	Industrial Audit Program	CPE currently includes under the NGEA umbrella an option for industrial customers to receive an energy audit. The Industrial Audit Program could be added as a standalone or included as a part of the NGEA to provide outreach for industrial customers and	Added to Shortlist - Incorporated into a pilot project archetype	Industrial and Large Commercial GHG Audit Pilot	This represents one potential approach to the required industrial hard to electrify pilot. CenterPoint will consider it in its design of that pilot program.
Energy Efficiency	70	Multi-Family Controls	We propose implementation of a program or prescriptive measure to assist multi-family properties with centralized heating systems capable of implementing temperature limits and/or monitoring the heating demand of individual residences, for the purpose of encouraging energy consciousness among residents. These systems can take the form	Consider for CIP instead of NGIA	N/A	As noted in the proposal, this could be a useful addition to CenterPoint Energy's existing Multi-Family Building Efficiency (MFBE) program. Since MFBE is already established, this seems to better fit for CIP instead of NGIA.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Energy Efficiency	71	Gas Engine-driven Heat Pumps for Commercial Buildings	This project will demonstrate a natural gas engine-driven heat pump (GEHP) offering high efficiency heating and cooling for commercial buildings that can achieve efficiencies over 100% (COPs>1). These systems are similar to electric vapor compression heat pump designs, but use a high-efficiency natural gas engine to drive the compressor which significantly reduces electric demand. GEHPs also use engine heat recovery, like cogeneration systems, to supplement heating output and maintain efficiency at low ambient temperatures. As a result, GEHPs are well suited for cold	Added to Shortlist - Incorporated into a pilot project archetype	Gas Heat Pump for Commercial Buildings	This represents an innovative emerging gas efficiency technology that has potential to become more cost-effective over time but may be currently too expensive relative to energy savings for application in CIP. This will be consider along with other RFI responses related to natural gas heat pumps for the commercial sector.
Energy Efficiency	72	Targeted Steam	Buildings heated via steam boilers and distribution systems have higher energy demand than similar buildings with alternative, readily available heating technologies. We propose implementation of a program that will: 1. Identify high-consumption, natural gas-heated buildings utilizing steam boiler systems, and	Consider for CIP instead of NGIA	N/A	This RFI response represents a potentially new approach to targetting customers for energy efficiency improvements. However, given that these improvements fall under CIP, this new implementation approach seems like a better fit for consideration in CIP.
Energy Efficiency	73	Thermolift	Thermolift technology is a type of natural gas driven heat pump. Thermolift technology leverages the Hofbauer cycle, where hydrogen is moved in and out of a low and high temperature state. This unit can create up to 140-degree water as well as produce refrigeration level cooling. This project would target commercial, residential and multi-family residential buildings that utilize standard hot water heat and also have potential additional cooling or refrigerant loads. These buildings have high savings potential due to their hot water needs and can find extremely high coefficient of performance values from Thermolift technology.	Added to Shortlist - Incorporated into a pilot project archetype	Gas Heat Pump for Commercial Buildings, Residential Gas Heat Pump	This represents an innovative emerging gas efficiency technology that has potential to become more cost-effective over time but may be currently too expensive relative to energy savings for application in CIP. This will be consider along with other RFI responses related to natural gas heat pumps for the residential and commercial sectors. This technology has been awarded a Minnesota CARD grant for a demonstration, but no site has been found yet.
Strategic Electrification	74	VRF	Variable Refrigerant Flow (VRF) technology is underutilized in today's market despite being commercially available. VRF systems work similarly to heat pumps in that they run a typical air conditioning cycle both forwards and backwards, effectively transferring heat from outside to inside and vice versa, depending on the cooling and heating needs of the building. The compressors in these systems are variable speed,	Added to Shortlist - Incorporated into a pilot project archetype	Commercial hybrid heating pilot	This is one of several proposals received related to commercial hybrid heating, which is a promising GHG reductions approach for small and medium sized commercial facilities. It has been combined with the others in a commercial heating pilot archetype.
Power-to-Hydrogen	75	Zero-emission Hydrogen	Respondent is a renewable hydrogen project developer based in the US. Respondent has nearly a decade of renewable energy development experience throughout North America. We bring this expertise to the difficult to decarbonize industrial, transportation and power sectors through the development and supply of zero-carbon hydrogen. We focus on origination, procurement, project development, financial structuring, construction, and operations of renewable hydrogen projects to serve our customers.	Not currently pursuing	N/A	This respondent has been noted as a potential vendor related to hydrogen and electrolyzer technologies, to be notified of potential RFPs related to future NGIA pilots. The most detailed information in this response focuses on hydrogen blending in gas turbines. However, at this time the concept proposed here of hydrogen blending for power generation has not been included for further analysis under this first NGIA plan. This is based in part on expectations for high costs, other significant research and development efforts already covering this area, and the likelihood that customers with combustion turbines are likely to be exempt from CIP/NGIA
Carbon Capture	76	Working with Nature in Aqueous Carbon Capture	Respondent brings a breakthrough innovation in carbon capture. Using a non-toxic solvent (water), and the natural pressure gradient of the earth, Respondent's technology works with nature, offering a cost-efficient system capable of reducing CO2 capture costs, parasitic energy, and scaling limitations. Respondent's technology is modular and scalable; the design is flexible, serving diverse industry sectors.	Added to Shortlist - Incorporated into a pilot project archetype	Carbon Capture Archetype for Industrial or Large Commercial Facility	The initial RFI did not receive any responses for specific industrial sites interested in carbon capture projects. The applicant's technology, along with other options for industrial carbon capture, will be considered as part of the "Archetype Carbon Capture Project for Industrial Facility".

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
District Energy	77	Decarbonizing a district energy system	Implementing energy efficiency improvements to Respondent's and district energy system, and implementing a carbon capture system at the plant	Added to Shortlist - Incorporated into a pilot project archetype	Decarbonizing Existing District Energy Systems	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Decarbonizing Existing District Energy Systems'. The initial RFI received responses ranging from hydrogen to geothermal systems to support decarbonization of existing district energy systems. These represent innovative opportunities to decarbonize district energy systems currently reliant upon natural gas, that merit further analysis and consideration for potential inclusion in the Company's NGIA portfolio.
Energy Efficiency	78	Strategic Process Optimization	Respondent's SPO gives process operators the tools to make manual adjustments to minimize energy use and cost without adverse impact to process operations.	Consider for CIP instead of NGIA	N/A	This seems like a better fit for CIP. It is potentially quite cost-effective and builds on CenterPoint's existing programs for large customers.
Power-to-Hydrogen	79	BioCat Methane from CO2 and Green Hydrogen to Decarbonize Natural Gas Grid	Respondent provides a decarbonized fuel alternative to fossil gas in Minnesota using a microorganism called Archaea. Through a biomethanation process, carbon dioxide from landfill, dairy, swine, waste water treatment or other biogas processes, and hydrogen generated using renewable power are synthesized using this biological catalyst. The resulting BioCat Methane produced through the respondent's proprietary process is of a quality that can be delivered through or stored by the State's existing gas	Not currently pursuing	N/A	This proposal has not been included for further analysis under this first NGIA plan's development. This is an interesting technology and CenterPoint Energy would like to monitor its development. At this time, the level of technology development risk, required funding, and intended NGIA project types contributed towards this decision.
Biogas/Renewable Natural Gas	80	Maximizing Minnesota Renewable Natural Gas (RNG) Opportunities	One category under the NGIA involves the development of RNG projects. Our idea involves performing a screening and evaluation/ranking of potential RNG opportunities based on digital overlay of CNP's gas lines with potential RNG opportunities associated with significant agricultural, wastewater treatment plant, solid waste, and/or wood sources within Minnesota. Respondent would promote efficiency through automation and utilization of various digital solutions including our Origination tool designed to evaluate techno-economic factors associated with green technology projects. Identified sites could then be ranked based on a series of preferential criteria which would demonstrate both maximization of stakeholder value and environmental benefit.	Potential R&D opportunity	Studies to support RNG market development	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Study to support RNG market development'. Given the importance of low-carbon gases in the NGIA, CenterPoint feels that it could make sense to conduct a research and development study that supports the identification of potential projects or addresses other barriers. The Company is still establishing which study approaches might offer the best value, or address the most pressing concerns.
Will consider all innovative resources	81	Developing and Maximizing CenterPoint Energy Decarbonization	Being both a leader in both the sustainability and technology/digital innovation markets, the Respondent can provide significant value to CNP through assisting with development and implementation of comprehensive decarbonization strategy. The strategy could be developed through facilitation of a series of workshops, and would	Not currently pursuing	N/A	This proposal has not been included for further analysis under this first NGIA plan's development. The proposal was open ended, and CenterPoint will keep these options in mind as the Company pursues other pilots and R&D projects.
Strategic Electrification	82	Heat Pumps for Strategic Electrification	Strategic electrification should generally include an electrically driven heat pump to increase the temperature of a waste heat source (exhaust, wastewater, refrigeration) and transfer it to a heating load. Renewable energy can be integrated into heat pumps	Consider for CIP instead of NGIA	N/A	Because this approach uses waste heat to offset gas heating, it may fall more into a more traditional heat recovery measure under CIP
Special Projects: Innovative Resources for Large Industrial	83	Developing an Industrial User Decarbonization	One innovation plan category under the NGIA involves providing innovative resources for large industrial customers. Our idea/proposal under this category involves working with CNP to develop an industrial user decarbonization outreach program. In concept,	Added to Shortlist - Incorporated into a pilot project archetype	Industrial and Large Commercial GHG Audit Pilot	This was one of several submissions focused on industrial GHG audits and will be combined with those for further consideration.
Strategic Electrification	84	Industrial Electrification with Heat Pumps	This project proposes to identify the potential for industrial heat pumps to displace natural gas for the creation of process heat for small and medium size industrial CenterPoint customers. This project will classify applicable industrial loads in CenterPoint's service territory, survey existing industrial heat pump systems available to meet these loads and estimate the potential energy savings and GHG reductions. The project will pilot industrial heat pump systems to validate this potential and engage a	Added to Shortlist - Incorporated into a pilot project archetype	Industrial Electrification Incentive Program	This represents an opportunity to help engage industrial customers (who are often relatively hard to reach) and explore opportunities to leverage heat pumps in these facilities. Results could help inform future industrial strategic electrification efforts by identifying best practices, and help identify new ways to engage these customers.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Strategic Electrification	85	Customer Geothermal District Energy Pilot Project	Respondent proposes a District Energy pilot project that would provide energy for adjacent businesses with the capacity to expand to homes and buildings in South Minneapolis. The first phase would be the strategic electrification of the 5.4-acre campus with a Central Geothermal heat pump system while also continuing the energy efficiency and deep energy retrofits that have been ongoing.	Added to Shortlist - Incorporated into a pilot project archetype	New District Energy System	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'New District Energy System.' This is an opportunity assess the launch of new district energy systems that either reduce or eliminate the need for natural gas, and consider these projects for potential inclusion in the Company's NGIA portfolio.
District Energy	86	Geothermal Neighborhood	The two joint respondents propose to collaborate with CenterPoint Energy to implement a utility-owned geothermal district ground loop. The project would strategically target a new construction development in the territory and would consist of four stages and gates to ensure feasibility and cost effectiveness are met at each point: planning and modeling, site selection, design and construction, and measurement and verification. The goal of the project is to test whether utility-ownership of district ground loops is a viable solution to the electrification of heating by	Added to Shortlist - Incorporated into a pilot project archetype	New Networked Geothermal Systems Pilot	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'New Networked Geothermal Systems Pilot.' This is an innovative opportunity being piloted by a few gas utilities in the U.S. that merits further analysis specific to Minnesota and consideration for potential inclusion in the Company's NGIA portfolio.
Carbon Capture	87	Commercial Building and CHP Scale Carbon Capture Market Study and Pilot Field Testing	Study and develop and the current and future market for building-level and CHP system carbon capture through interviews, development of a local market (incorporation into products, selling through pipelines, or permanent sequestering means), incentivization of the installation of 2 to 6 carbon capture projects, field monitoring of performance, and the development of follow-up recommendations for future CenterPoint Energy	Potential R&D opportunity	Commercial Building and CHP Scale Carbon Capture Market Study and Pilot Field Testing	This is an interesting opportunity to support innovative R&D that could lead to new emission reduction opportunities for CenterPoint customers. Some proposed details may need to be adjusted and CenterPoint will seek more information from the project respondent and further evaluate this opportunity.
Energy Efficiency	88	Support scaling of new mobile home units	Provide incentives for, and on-bill financing to, facilitate adoption of new manufactured homes. On May 16th, the US Department of Energy will announce the first update to the manufactured home standard since 1994. These homes will be significantly more efficient than the previous generation of homes but will come at a price premium. This program would cover the price differential for new homes under this new standard, provide on-bill financing to ensure accessibility of these housing units, and, for low-income households, utilize pre-weatherization dollars for manufactured homes that would otherwise be deferred.	Consider for CIP instead of NGIA	N/A	Manufactured housing has been included in CIP in the past (though more often for weatherization retrofits). Particularly since many of the efficiency benefits from the new standard will apply to both gas and electricity, it's unclear if covering the full incremental cost of new homes would be the best use of NGIA funds, though it would certainly benefit income-qualified customers. Exploring a pre-weatherization CIP rebate might be an effective alternative approach.
Special Projects: Residential Deep Energy Retrofits and	89	Deep Energy Retrofits - Performance-based Demonstration	Deep energy retrofits (DER) are a critical path to achieving maximum GHG and energy use reductions in existing homes, however there are steep barriers and lack of clarity in DER definitions for existing homes. This pilot idea deploys DERs in 50-100 homes	Added to Shortlist - Incorporated into a pilot project archetype	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	This represents an approach to the required residential deep energy retrofits and strategic electrification pilot. CenterPoint will consider this in their design of that pilot.
Biogas/Renewable Natural Gas	90	Anaerobic Digestion of Organic Materials	Respondent is proposing to build an anaerobic digestion (AD) facility. In its Request for Proposals, the respondent requested proposals for a facility capable of processing a minimum of 25,000 tons per year of organics to produce energy and beneficial soil and agricultural products. The respondent is currently evaluating proposals.	Added to preliminary NGIA shortlist	RNG Proposal - Anaerobic Digestion of Organic Materials	This is one of the few 'specific RNG projects' proposed in response to the RFI. It represents an interesting opportunity to partner with local government to develop what is expected to be low-carbon intensity RNG, as well as supporting a circular economy.
Energy Efficiency	91	Commercial	Commercial dishmachines use hot water for three different purposes: to fill and top off	Not currently pursuing	N/A	Already included in CIP.
Does Not Qualify	92	Library Cold-Climate Air-Source Heat Pump with Variable	Respondent is actively planning a project to pilot the conversion of an existing library's HVAC system to that of a cold-climate electric air-source heat pump (ccASHP) with variable refrigerant flow (VRF). The original library under consideration for this	Not currently pursuing	N/A	The project as-proposed is sited at an existing all-electric facility and therefore does not meet the statutory requirements to be included in an NGIA innovation plan.
Energy Efficiency	93	Thermal Heat Pumps for Residential Space and Water Heating	Thermal Heat Pumps (THPs) represent a new fuel-fired equipment category replacing residential furnaces and water heaters, bringing decarbonization and low operating costs at unseen levels of gas efficiency, achieving over 1.3 system COP in laboratory conditions. While several commercial market THPs are available, there are four manufacturers	Added to Shortlist - Incorporated into a pilot project archetype	Residential Gas Heat Pump	This represents an innovative emerging gas efficiency technology that has potential to become more cost-effective over time but may be currently too expensive relative to energy savings for application in CIP. This will be consider along with other RFI responses related to natural gas heat pumps for the residential sector.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Does Not Qualify	94	Library Geothermal Heat Exchange Heat Pump with Variable	The respondent is actively planning a project to pilot the conversion of an existing library's HVAC system to that of a geothermal ground-source heat exchange heat pump (also known as 'Darcy System') with variable refrigerant flow (VRF). The original library	Not currently pursuing	N/A	The project as-proposed is sited at an existing all-electric facility and therefore does not meet the statutory requirements to be included in an NGIA innovation plan.
Energy Efficiency	95	High Performance Building Envelope Initiative	Minnesota is not currently on track to meet its GHG reduction targets. High performing commercial building envelopes are a critical part of the effort to reduce GHG emissions, but are rarely incorporated into new commercial construction, especially in small and medium-sized buildings. There are many market barriers that limit the demand for high performance envelopes. This proposal outlines a multi-faceted strategy to address	Added to preliminary NGIA shortlist	High Performance Building Envelope Initiative	Widespread building shell improvements have potential to yield large decarbonization benefits. Although this project would likely have low direct GHG reductions, it could help establish a replicable framework for future building shell improvements.
Strategic Electrification	96	Hybrid geothermal/supplemental boiler HVAC for commercial buildings	A pilot hybrid heating and cooling system that integrates geothermal/groundwater heat pump (GHP) technology with high efficiency supplemental boilers to supply the heating and cooling requirements in a commercial building HVAC application (e.g., school or office). The goal would be to electrify the baseload heating needs by utilizing a GHP system, thereby eliminating onsite carbon emissions while also capturing the economic	Added to Shortlist - Incorporated into a pilot project archetype	Commercial hybrid heating pilot	This is one of several proposals received related to commercial hybrid heating, which is a promising GHG reductions approach for small and medium sized commercial facilities. It has been combined with the others in a commercial heating pilot archetype.
Special Projects: Residential Deep Energy Retrofits and	97	Reside Right: Deep Energy Exterior Retrofits	We propose to pilot a program targeted at the residential siding market to advance exterior envelope technologies and market penetration using existing sales channels. The program contains both a market-facing component as well as a technology	Added to Shortlist - Incorporated into a pilot project archetype	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	This represents an approach to the required residential deep energy retrofits and strategic electrification pilot. CenterPoint will consider this in their design of that pilot.
Strategic Electrification	98	Cold Climate Airsource Heat Pumps with Manufactured Home Parks	Greenhouse gas emissions and energy costs may be reduced by retrofitting manufactured (trailer) homes with cold climate Air Source Heat Pumps (ccASHPs). The Manufactured Home Community Redevelopment (MHCR) grant program and loans from Northcountry Cooperative Foundation are tools to help finance this transition. Respondent has deep connections with Minnesota's park residents & managers, as well	Consider for CIP instead of NGIA	N/A	As with other manufactured home RFI responses, this idea seems like a better fit for consideration in CIP. This proposal was also unclear as to whether the manufactured homes would remain gas customers and avoid contributing to electric peaks, requirements under NGIA.
Energy Efficiency	99	Neighborhood Weatherization Blitzes	Deliver a community wide gas savings program focused on air sealing and insulating through intense community/neighborhood blitz, block-by-block, with a goal of retrofitting 1,000 homes per year. Using community-based marketing by engaging community partners including: cities, faith-based organizations, schools, etc.	Added to Shortlist - Incorporated into a pilot project archetype	Neighborhood Weatherization Blitzes	This could help scale up air sealing and insulation improvements beyond what may be possible with CIP alone (particularly in disadvantaged communities) and provide useful lessons learned and best practice data.
Biogas/Renewable Natural Gas	100	Design a portal that partners potential projects with qualified developers	CenterPoint should allow for larger commercial clients to come forward and suggest "I think I could become an RNG project feedstock supplier". CenterPoint should also maintain a registry of qualified developers that can assess the feasibility of volunteered projects.	Potential R&D opportunity	Design a portal that partners potential projects with qualified developers	This is an interesting market transformation initiative that could stimulate more RNG production in the state. Because it would not directly result in GHG reductions but instead is intended to further develop the RNG market in Minnesota and because it would likely be a lower cost than many other potential pilots, CenterPoint will continue to evaluate this as a potential R&D opportunity.
District Energy	101	District Residential Geothermal Systems	Establish centralized geothermal loops that surrounding existing and new residential and commercial buildings could connect to when switching from natural gas heating. Geothermal systems can be up to 60% more efficient than standard conventional boiler systems. This would be a partnership between cities and the county to identify streets and central areas that would be a good fit for this technology. It could be geared to many sectors depending on the funding and availability. More details to be determined. Project has not been developed yet.	Added to Shortlist - Incorporated into a pilot project archetype	New Networked Geothermal Systems Pilot	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'New Networked Geothermal Systems Pilot.' This is an innovative opportunity being piloted by a few gas utilities in the U.S. that merits further analysis specific to Minnesota and consideration for potential inclusion in the Company's NGIA portfolio.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Carbon Capture	102	Boiler Flue Gas Carbon Capture	Expand the size of boilers that could benefit carbon capture. Look at ways to offset carbon emissions for critical gas processes that will have limited decarbonization/electrification options. This may be a consideration for a district energy plant that may have to have a natural gas boiler to provide redundancy. No specific project has been identified at this time, but is being considered as a carbon reduction strategy in the future.	Not currently pursuing	N/A	This RFI response was not related to a specific project. CenterPoint is interested in supporting its customers investigations of emission reduction opportunities for district energy systems, and carbon capture would be included as one of the strategies that could be considered in the pilot called 'Decarbonizing Existing District Energy Systems'. It should be noted that carbon capture on a back-up boiler is expected to be a relatively expensive approach - given the limited run time (and hence emission reductions) for such a capture unit.
Will consider all innovative resources	CNP Internal-1	Custom NGIA Rebates	Program would operate similar to CIP custom rebates, but rebate would be determined by a \$/Ton GHG reduced figure, rather than \$ per Dth. It would be used for smaller customer projects that reduce GHG emissions from fossil gas using any of the NGIA Innovative Resources. Allows ongoing flexibility to evaluate customer projects as they come up. Project would have to pass the NGIA societal test in order to be rebated.	Not currently pursuing	N/A	Although this could be an effective way to begin to shift to a focus on GHG rather than therm reductions and incentivize a variety of different measures, it was expected that the NGIA plan requirements a more specific allocation of funding for its approval.
District Energy	CNP Internal-10	District heat expansion w/ carbon-neutral fuels	Customer has the potential to expand their district steam to a hospital and the school district. Potential interest in doing this if there was a carbon neutral source of the energy. Easy construction of steam pipes: within quarter of a mile, and through open fields. Could be hydrogen, ammonia or biogas as fuel.	Added to Shortlist - Incorporated into a pilot project archetype	New District Energy System	This idea has been grouped with other similar proposals under the proposed shortlist archetype called 'New District Energy System'. This is an opportunity assess the launch of new district energy systems that either reduce or eliminate the need for natural gas, and consider these projects for potential inclusion in the Company's NGIA portfolio.
Biogas/Renewable Natural Gas	CNP Internal-11	Small-scale biodigester at Customer Site	Customer has interest in developing a small-scale anaerobic digester. Various feedstocks available (organics, turkey litter, etc) but much of it already being used, so would likely have to be relatively small scale.	Potential R&D opportunity	Small-scale Biodigester at Customer Site	This idea has been included for further consideration under this first NGIA plan's development because of the potential to engage and educate the public on this important technology. Plan would be to start with a feasibility study.
Strategic Electrification	CNP Internal-12	ASHP for reheating	Customer could turn off boiler during the summer if they utilize ASHP for reheating in the summer.	Added to Shortlist - Incorporated into a pilot project archetype	Commercial hybrid heating pilot	This is a well-defined concept, that may have potential application in the commercial space.
Energy Efficiency	CNP Internal-13	drain-water heat recovery	drain-water heat recovery preheats incoming "city-water" a bit, thus lowering the load on the water heater. It is currently in the TRM and is estimated to save 25% on a customer's water heating consumption. However, it is not currently cost-effective so it might need some extra help from NGIA (or Minnesota Efficient Technology Accelerator).	Consider for CIP instead of NGIA	N/A	This is a promising technology that comes very close to fitting into CIP. It could be worthwhile to explore opportunities to incorporate DWHR into new construction projects, deep energy retrofits, or other large projects where the technology might be more cost-effective. However, it's not a high priority for NGIA because it's so close to fitting into CIP and because it's less innovative than other potential measures.
Strategic Electrification	CNP Internal-14	M&V for hybrid heating systems with existing electric smart	Use electric Smart Meters to collect before and after billed data (hourly from electric and monthly from gas) to do a billed data regression analysis on before and after energy consumption for residential hybrid space heating systems (ASHP + cond.	Added to Shortlist - Incorporated into a pilot project archetype	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	Consider incorporating into the other hybrid heating pilot projects
Power-to-Hydrogen	CNP Internal-15	Facilities under constructions or being remodeled for potential project sites.	CenterPoint Energy is currently building new facilities in Little Falls and Champlin. It sounds like these facilities will have solar installations. Is there an opportunity to do small power-to-hydrogen at these sites? Additionally, there are several sites in various stages of remodels.	Not currently pursuing	N/A	This idea has not been included for further analysis under this first NGIA plan's development. We will keep these locations in mind as potential sites for implementation of specific technologies as relevant.
Carbon Capture	CNP Internal-16	Carbon Capture for CNP NG Backup Power	Is there an opportunity for carbon capture on CNP's backup generators?	Not currently pursuing	N/A	Carbon capture unlikely to be cost-effective when only operated intermittently, for back-up generation.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Biogas/Renewable Natural Gas	CNP Internal-17	RNG Potential Study - Mankato, Alexandria, Other Sites?	CenterPoint Energy has identified several locations in our service territory that would be optimal for RNG project interconnection. The project would identify availability, cost, and logistics needs for potential feedstock around those sites to identify i) potential biogas production and ii) best feedstock policy. The idea is that by providing those as a part of a future RFP, we could more easily attract independent developers to the sites	Potential R&D opportunity	RFP Prep Study for Potential CenterPoint RNG Sites	This idea has been grouped with other similar proposals under the proposed shortlist archetype called 'Study to support RNG market development'. Given the importance of low-carbon gases in the NGIA, CenterPoint feels that it could make sense to conduct a research and development study that supports the identification of potential projects or addresses other barriers. The Company is still establishing which study approaches might offer the best value, or address the most pressing concerns.
Carbon Capture	CNP Internal-18	Carbon Capture - District Energy Systems	Could the modern electron or other h2 or carbon capture technology be used on the District Energy systems in our service territory to reduce carbon emissions? https://modernelectron.com/	Added to Shortlist - Incorporated into a pilot project archetype	Decarbonizing Existing District Energy Systems	This internal idea has been grouped with other similar proposals under the proposed shortlist archetype called 'Decarbonizing Existing District Energy Systems'. The initial RFI received responses ranging from hydrogen to geothermal systems to support decarbonization of existing district energy systems. These represent innovative opportunities to decarbonize district energy systems currently reliant upon natural gas, that merit further analysis and consideration for potential inclusion in the Company's NGIA portfolio.
Energy Efficiency	CNP Internal-19	Solar thermal for DHW on 30 unit multi-family building	Budget proposal for solar panel thermal domestic hot water heating on a 30-plex low-income multifamily building.	Added to Shortlist - Incorporated into a pilot project archetype	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	Solar thermal for domestic hot water is well established (it works well, though it often tends to be expensive). While the focus on benefiting lower income customers is great, it seems like this may be a better fit as part of something like a deep energy retrofit. Incorporated into the Deep Energy Retrofit + Hybrid Heating archetype
Power-to-Hydrogen	CNP Internal-2	Power-to-Hydrogen demonstration project at customer site	CenterPoint Energy pays for total cost of installation and evaluation of the technology - after pilot period, customer can keep the technology or CNP pays for it to be removed (similar to CleanO2)	Added to Shortlist - Incorporated into a pilot project archetype	Green Hydrogen Archetype for Industrial or Large Commercial Facility	This proposal has been included for further analysis under this first NGIA plan's development. This is one of options targeting 'hard to electrify' industrial customers, a category that CenterPoint must cover in its first Innovation Plan filing.
Energy Efficiency	CNP Internal-20	Solar Thermal - Hot Water and Steam for Campuses and Industrial Customers	Phoenix Solar Thermal's unique approach to the market allows for flexibility of a project's development and execution by maximizing the value of the systems integration to produce steam and/or hot water to achieve substantial green house gas (GHG) and carbon dioxide (CO2) emissions, with no investment required.	Added to Shortlist - Incorporated into a pilot project archetype	Solar Thermal Heating for C&I	Solar thermal is well established, but this is a different application that could help drive deep energy savings. Additionally, this could be applicable to a range of C&I facilities as a custom measure.
Energy Efficiency	CNP Internal-21	Solar Steam - Solar Thermal for Campuses/Industrial in "extreme climates"	SolarSteam's technology is specifically designed to operate in extreme climates. Our system uses an array of lightweight solar curved (trough) mirrors inside a transparent enclosed structure to concentrate the sun's thermal energy onto a receiver. The concentrated sunlight is used to directly heat pressurized water to produce steam or	Added to Shortlist - Incorporated into a pilot project archetype	Solar Thermal Heating for C&I	Solar thermal is well established, but this is a different application that could help drive deep energy savings. Additionally, this could be applicable to range of C&I facilities as a custom measure.
Strategic Electrification	CNP Internal-22	Rebates for Air Source Heat Pumps	Administer residential rebate program for Air Source Heat Pumps - internal administration of a rebate program analogous to CIP rebates.	Added to Shortlist - Incorporated into a pilot project archetype	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	This could fall into either the idea to create rebates based on GHG reductions, or into a residential hybrid heating pilot program.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
District Energy	CNP Internal-23	Geothermal Heat Pump on Existing District Energy System	Use the Darcy Systems technology at one of our customer's district energy systems.	Added to Shortlist - Incorporated into a pilot project archetype	Decarbonizing Existing District Energy Systems	This internal idea has been grouped with other similar proposals under the proposed shortlist archetype called 'Decarbonizing Existing District Energy Systems'. The initial RFI received responses ranging from hydrogen to geothermal systems to support decarbonization of existing district energy systems. These represent innovative opportunities to decarbonize district energy systems currently reliant upon natural gas, that merit further analysis and consideration for potential inclusion in the Company's NGIA portfolio.
Carbon Capture	CNP Internal-3	Methane Pyrolysis Demonstration Projects at Industrial Customer Sites	The Modern Electron technology (https://modernelectron.com/) is a carbon capture technology being piloted by other utilities. This could have a good application at a hard to electrify industrial customer.	Added to Shortlist - Incorporated into a pilot project archetype	Carbon Capture through Methane Pyrolysis at Industrial Facility	This idea has been expanded to a proposed shortlist archetype called 'Carbon Capture through Methane Pyrolysis at Industrial Facility'. There are several technologies that use this process that could be considered for carbon capture at an Industrial Facility.
Power-to-Hydrogen	CNP Internal-4	Fusion Fuel	This is a technology that uses micro-electrolysers to produce hydrogen. CenterPoint Energy could install Fusion Fuel system in parking lot next to the current hydrogen pilot - take advantage of the water treatment that already exists. https://www.fusion-fuel.eu/	Not currently pursuing	N/A	This respondent has been noted as a potential service provider related to hydrogen and electrolyzer technologies, to be notified of potential RFPs related to future NGIA pilots. However, smaller micro-electrolysers would be expected to have lower efficiency and higher costs compared to other larger options so CenterPoint plans to focus its evaluation of blending projects on larger systems.
Biogas/Renewable Natural Gas	CNP Internal-5	Carbon-negative energy - RNG and H2 production & CCS	This LLNL report looks at different approaches to achieve negative carbon emissions. https://www.llnl.gov/news/new-lab-report-outlines-ways-california-could-reach-goal-	Not currently pursuing	N/A	This idea has not been included for further analysis under this first NGIA plan's development. Information in this study may be used to inform project design/implementation
Energy Efficiency	CNP Internal-6	Coordination with Affordable Housing Partners for Deep Energy Retrofits Pilot	CenterPoint Energy has worked with affordable housing developers on CIP projects in the past, particularly through our Non-profit Affordable Housing program. Once housing developer has 2-3 more Passiv Houses in the works, there may be a role for them in implementation of our Deep Energy Retrofits pilot.	Added to Shortlist - Incorporated into a pilot project archetype	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	CenterPoint currently provides some Passiv House support through CIP, but there has been limited uptake. CenterPoint could explore how Passiv House could be better supported through NGIA as part of its evaluation of the required deep energy retrofit/strategic electrification pilot.
Strategic Electrification	CNP Internal-7	City Pilot - Heat Pump Water Heaters	Several municipalities in CenterPoint Energy's service territory are working on a pilot to encourage installation of heat pump water heaters. Is there a role for NGIA in this effort?	Added to Shortlist - Incorporated into a pilot project archetype	Residential and Commercial Heat Pump Water Heaters	HPWHs are an established technology, so this could be an effective way to expand strategic electrification efforts if potential concerns about maintaining a gas connection are addressed.
Biogas/Renewable Natural Gas	CNP Internal-8	Biomass Boiler Upgrades	One customer has a large biomass burner - absorption chiller is connected to it. Currently it's not operating consistently, upgrades needed. Upgrades would help it run	Not currently pursuing	N/A	Biomass combustion does not meet the definition of biogas under NGIA.

Primary Innovative Resource	Submission Number from Response Form	Proposal Title	Brief Description of Project or Idea	Draft Screening Decision	Name of pilot or R&D project for purposes of shortlist consideration (including Combined/Modified pilots)	Rationale for Draft Screening Decision
Power-to-Hydrogen	CNP Internal-9	Convert Boiler to burn Hydrogen	Identify customer sites to convert boilers to burn hydrogen	Added to Shortlist - Incorporated into a pilot project archetype	Decarbonizing Existing District Energy Systems	This internal idea has been grouped with other similar proposals under the proposed shortlist archetype called 'Decarbonizing Existing District Energy Systems'. The initial RFI received responses ranging from hydrogen to geothermal systems to support decarbonization of existing district energy systems. These represent innovative opportunities to decarbonize district energy systems currently reliant upon natural gas, that merit further analysis and consideration for potential inclusion in the Company's NGIA portfolio.

**In the Matter of
CenterPoint Energy Natural Gas Innovation Act (NGIA)
Innovation Plan**

Petition of CenterPoint Energy

**EXHIBIT M: COMMISSION COST-BENEFIT
FRAMEWORK**

Docket No. G-008/M-23-215

June 28, 2023

Perspectives	RNG Produced from Hennepin County Organic Waste	RNG Produced from Ramsey & Washington Counties' Organic Waste	Renewable Natural Gas Request for Proposal ("RFP") Purchase	Green Hydrogen Blending into Natural Gas Distribution System	Industrial or Large Commercial Hydrogen and Carbon Capture Incentives	Industrial Methane and Refrigerant Leak Reduction	Urban Tree Carbon Offsets	Carbon Capture Rebates for Commercial Buildings	New Networked Geothermal Systems	Decarbonizing Existing District Energy Systems	New District Energy System	Industrial Electrification Incentives	Commercial Hybrid Heating	Residential Deep Energy Retrofits and Electric Air Source Heat Pumps	Small/Medium Business GHG Audit	Residential Gas Heat Pumps	Gas Heat Pump for Commercial Buildings	Industrial and Large Commercial GHG Audit Pilot
NGIA Utility Perspective	-\$7,384,330	-\$26,322,323	-\$63,675,702	-\$22,444,767	-\$2,433,865	-\$1,005,465	-\$266,367	\$109,387	-\$41,039,753	\$3,483,090	\$696,364	-\$61,105	-\$4,823,050	-\$9,197,981	-\$1,664,633	-\$305,058	-\$558,762	\$339,680
NGIA Participants Perspective (including specific impacts on low and moderate-income participants) Quantifiable Costs/Benefits	\$0	\$0	\$0	\$0	-\$58,744,959	\$100,758	\$0	-\$1,103,836	-\$3,721,380	-\$5,862,748	\$14,918,255	-\$547,391	-\$1,037,147	\$18,687,352	-\$273,343	\$11,876	\$69,236	-\$311,245
NGIA Participants Perspective (including specific impacts on low and moderate-income participants) Qualitative Costs/Benefits					May assist MN businesses in achieving GHG goals	May assist MN businesses in achieving GHG goals; may improve workplace safety		May assist MN businesses in achieving GHG goals				May assist MN businesses in achieving GHG goals	May assist MN businesses in achieving GHG goals	May improve thermal comfort	May assist MN businesses in achieving GHG goals	May assist MN businesses in achieving GHG goals	May assist MN businesses in achieving GHG goals	May assist MN businesses in achieving GHG goals
NGIA Nonparticipating Customers Perspective (including specific impacts on low and moderate-income customers) Quantifiable	-\$2,254,376	-\$8,016,033	-\$25,960,614	-\$4,124,185	-\$3,091,365	-\$1,284,195	-\$266,387	-\$1,040,443	-\$9,336,428	-\$625,528	-\$316,650	-\$497,909	-\$5,758,034	-\$10,772,852	-\$1,864,211	-\$316,937	-\$639,685	-\$757,717
NGIA Nonparticipating Customers Perspective (including specific impacts on low and moderate-income customers) Qualitative	Provides widespread benefits to all sales customers	Provides widespread benefits to all sales customers	Provides widespread benefits to all sales customers	Provides widespread benefits to all sales customers			Shade can reduce cooling and heating costs for nearby buildings											
Effects on Other Energy Systems and Energy Security	Fuel made in MN and reduces import of fuel from outside of MN	Fuel made in MN and reduces import of fuel from outside of MN	Company will give preference to fuel made in MN that will reduce import from outside of MN	Fuel made in MN and reduces import of fuel from outside of MN; hydrogen may place burden on electric grid	Fuel made in MN and reduces import of fuel from outside of MN; hydrogen production may place burden on electric grid		Shade can reduce need for cooling in summer months	Reduces overall energy consumption	System will also support cooling reducing demand on electric system	May promote strategic electrification; may reduce overall energy use	System will also support cooling reducing demand on electric system	Promotes strategic electrification	Promotes strategic electrification	Promotes strategic electrification	Reduces overall energy consumption	Reduces geologic gas throughput; may reduce electric build out needs	Reduces geologic gas throughput; may reduce electric build out needs	Reduces overall energy consumption
Environment																		
GHG Emissions (\$) Quantifiable Costs/Benefits	\$1,441,875	\$7,554,616	\$18,662,575	\$1,322,111	\$5,066,270	\$1,828,044	\$244,951	\$2,597,709	\$4,532,936	\$5,897,033	\$1,806,595	\$568,483	\$1,259,651	\$2,865,728	\$318,621	\$11,636	\$107,512	\$1,680,938
GHG Emissions Qualitative Benefits						Quantified benefits do not include avoided refrigerant leaks										Use refrigerants with lower global warming potential	Use refrigerants with lower global warming potential	
Other Pollution (including any environmental justice costs or benefits) Quantifiable Costs/Benefits	\$0	\$0	\$0	-\$1,439	-\$167,811		\$0	\$201,302	\$592,289	\$709,316	\$228,494	\$67,789	\$137,250	\$353,293	\$31,404	\$1,243	\$11,586	\$191,173
Other Pollution (including any environmental justice costs or benefits) Qualitative Costs/Benefits	Planned facility located in an environmental justice area of concern		Dairy manure projects can have landfill avoidance benefits; foodwaste projects all make a useful product from waste				Trees can reduce urban heat effects; reduce stormwater runoff; prevent air pollution from reaching homes; pilot targets areas of low tree coverage which correspond with poverty											
Waste reduction and reuse (including reduction of water use)	Supports community organics recycling	Supports community organics recycling	Wastewater projects make a useful product from waste; dairy projects make a useful product from waste; Food waste projects can have landfill avoidance benefits; foodwaste projects all make a useful product from waste															
Policy (e.g., natural gas throughput, renewable energy goals)	Reduces geologic gas throughput; avoids landfilling; increases use of renewable energy	Reduces geologic gas throughput; avoids landfilling; increases use of renewable energy	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput	Reduces geologic gas throughput	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput; increases use of renewable energy	Reduces geologic gas throughput	Reduces geologic gas throughput	Reduces geologic gas throughput	Reduces geologic gas throughput; increases use of renewable energy
Socioeconomic																		
Net Job Creation	Creates 46 direct jobs, 17 indirect jobs and 23 induced jobs	Creates 112 direct jobs, 62 indirect jobs and 70 induced jobs	Creates 246 direct jobs, 145 indirect jobs and 155 induced jobs	Creates 43 direct jobs, 59 indirect jobs and 45 induced jobs	Creates 187 direct jobs, 124 indirect jobs and 148 induced jobs	Creates 9 direct jobs, 5 indirect jobs and 7 induced jobs	Creates 1 direct jobs, 0 indirect jobs and 0 induced jobs	Creates 88 direct jobs, 51 indirect jobs and 55 induced jobs	Creates 115 direct jobs, 129 indirect jobs and 186 induced jobs	Creates 142 direct jobs, 84 indirect jobs and 89 induced jobs	Creates 49 direct jobs, 31 indirect jobs and 45 induced jobs	Creates 11 direct jobs, 5 indirect jobs and 8 induced jobs	Creates 40 direct jobs, 23 indirect jobs and 25 induced jobs	Creates 44 direct jobs, 31 indirect jobs and 56 induced jobs	Creates 16 direct jobs, 10 indirect jobs and 10 induced jobs	Creates 2 direct jobs, 1 indirect jobs and 1 induced jobs	Creates 3 direct jobs, 2 indirect jobs and 2 induced jobs	Creates 21 direct jobs, 13 indirect jobs and 13 induced jobs
Economic Development	Will pay prevailing wages; will seek apprentices; will seek to hire from local community	Will pay prevailing wages; will seek apprentices; will seek to hire from local community	Will pay prevailing wages; will seek apprentices; will seek to hire from local community; will take advantage of higher IRA credits due to labor practices; hydrogen projects represent clean energy opportunity for workers from traditional geologic fuel jobs; will help MN build hydrogen workforce as hydrogen projects for growth due to IRA	Will pay prevailing wages; will seek apprentices; will seek to hire from local community; will take advantage of higher IRA credits due to labor practices; hydrogen projects represent clean energy opportunity for workers from traditional geologic fuel jobs; will help MN build carbon capture workforce as carbon capture projects for growth due to IRA	Likely that many projects will satisfy IRA labor requirements; hydrogen projects represent clean energy opportunity for workers from traditional geologic fuel jobs; will help MN build hydrogen workforce as hydrogen projects for growth due to IRA; will help MN build carbon capture workforce as carbon capture projects for growth due to IRA		Manufacturer intends to establish MN office in 2023	Will pay prevailing wages; will seek apprentices; will seek to hire from local community; will take advantage of higher IRA credits due to labor practices; networked geothermal projects represent clean energy opportunity for workers from traditional geologic fuel jobs; locally produced technologies will be considered		Projects may follow IRA labor requirements to take advantage of higher tax credits	Projects may follow IRA labor requirements to take advantage of higher tax credits		Projects may follow IRA labor requirements to take advantage of tax benefits					
Public Co-Benefits	Supports local government waste management	Supports local government waste management	Pilot would support wastewater treatment, which is often a public and publicly funded service				Reduces stormwater runoff costs; supports Minneapolis Park and Recreation Board and other local government tree planting and maintenance											
Market Development	May produce fertilizer or soil amendments	May produce biochar			May help MN businesses appeal to customers interested in sustainability; carbon capture will produce by-products for resale	May help MN businesses appeal to customers interested in sustainability		May help MN businesses appeal to customers interested in sustainability; carbon capture will produce by-products for resale				May help MN businesses appeal to customers interested in sustainability	May help MN businesses appeal to customers interested in sustainability		May help MN businesses appeal to customers interested in sustainability	May help MN businesses appeal to customers interested in sustainability	May help MN businesses appeal to customers interested in sustainability	May help MN businesses appeal to customers interested in sustainability
Innovation																		
Direct Innovation Support	Opportunity for Company to learn about purchasing RNG	Opportunity for Company to learn about purchasing RNG	Opportunity for Company to learn about purchasing RNG	Opportunity for Company to learn about purchasing RNG	Opportunity for customers to learn about novel options for reducing GHGs from their systems	Opportunity for customers to learn about novel options for reducing GHGs from their systems; will reduce uncertainty about GHG potential of leak detection programs		Opportunity for customers to learn about novel options for reducing GHGs from their systems; version 4 unit is forthcoming with expected larger carbon capture percentages and application to more building	Major opportunity for gas utility to learn about delivering energy in a new way			Opportunity for customers to learn about novel options for reducing GHGs from their systems	Opportunity for customers to learn about novel options for reducing GHGs from their systems; opportunity to collaborate with ETA program	Opportunity to collaborate with ETA program	Opportunity for customers to learn about novel options for reducing GHGs from their systems	Opportunity to collaborate with ETA program	Opportunity to collaborate with ETA program	Opportunity for customers to learn about novel options for reducing GHGs from their systems
Resource Scalability and Role in a Decarbonized System	Realistic pathways to decarbonization include RNG	Realistic pathways to decarbonization include RNG	Realistic pathways to decarbonization include RNG	Realistic pathways to decarbonization include RNG	Hydrogen poised to become more affordable and scalable as a result of IRA; carbon capture may be best decarb options for high heat load processes; carbon capture poised to become more affordable and scalable as a result of IRA; carbon capture may be best decarb options for high heat load processes; carbon capture can be used in conjunction with RNG to drive net negative emissions	Even in full decarbonized system likely to have some methane gas and continuing need for leak detection		Carbon capture may be used in conjunction with RNG to drive net negative emissions				Strategic electrification necessary part of net zero strategy	Strategic electrification necessary part of net zero strategy	Strategic electrification necessary part of net zero strategy				

**In the Matter of
CenterPoint Energy Natural Gas Innovation Act (NGIA)
Innovation Plan**

Petition of CenterPoint Energy

EXHIBIT N: PILOT ASSUMPTIONS SPREADSHEET

Docket No. G-008/M-23-215

June 28, 2023

Exhibit N is filed separately as an Excel file.

**In the Matter of
CenterPoint Energy Natural Gas Innovation Act (NGIA)
Innovation Plan**

Petition of CenterPoint Energy

EXHIBIT O: PILOT QUALITATIVE DETAILS

Docket No. G-008/M-23-215

June 28, 2023

This Exhibit describes the qualitative considerations identified by CenterPoint Energy for each short-listed pilot concept.¹ This Exhibit is organized according to the categories shown in the cost-benefit chart adopted in the Minnesota Public Utilities Commission’s (“Commission”) June 1, 2022, Order Establishing Frameworks for Implementing Minnesota’s Natural Gas Innovation Act in Docket No. G-999/CI-21-566. The complete cost-benefit chart for each final pilot is included in Exhibit M.

Perspectives

Participant Perspective

- **Corporate and Business GHG Reduction Goals.** Many of the pilots can help Minnesota businesses achieve their own GHG-reduction goals, which may contribute to their competitiveness with sustainably-minded customers. Pilots that have this benefit include Green Hydrogen Archetype for Industrial or Large Commercial Facility, Industrial Methane and Refrigerant Leak Reduction, Carbon Capture Archetype for Industrial or Large Commercial Facility, Carbon Capture Rebates for Commercial Buildings, Industrial Electrification Incentives, Small/Medium Business GHG Audits, Gas Heat Pumps for Commercial Buildings, Solar Thermal Heating for Commercial and Industrial, and Industrial and Large Commercial GHG Audits.
- **Improving Thermal Comfort and Health.** The Residential Deep Energy Retrofits and Electric Air Source Heat Pumps pilot has the potential to improve home thermal comfort.
- **Workplace Safety.** The Industrial Methane and Refrigerant Leak Detection program may assist businesses in ensuring a safe work environment for their employees by preventing dangerous leaks.

Nonparticipating Customers’ Perspective

- **All Customer Benefits.** The RNG and hydrogen blending pilots have the benefit of reducing the lifecycle GHG intensity of every CenterPoint Energy customer in proportion to their use of natural gas, thus providing widespread benefits. Other pilots that rely on customer participation only reduce the lifecycle GHG intensity of specific customers’ homes or businesses.
- **Benefits of Trees.** The Urban Tree Carbon Offsets pilot has unique benefits associated with shading nearby homes and other buildings. Shade can reduce cooling and heating costs over time for any buildings in the vicinity.²

¹ Some shortlisted pilot concepts were subsequently combined following the qualitative analysis phase. For example, the Industrial or Large Commercial Hydrogen and Carbon Capture Incentives pilot was originally conceptualized as a carbon capture archetype and a green hydrogen archetype. Exhibit M uses the pilot names at the time of filing.

² See Energy conservation through trees – tree care, Minnesota Department of Natural Resources, <https://www.dnr.state.mn.us/treecare/energy/index.html#:~:text=In%20Minnesota%2C%20strategically%20placed%20shade,by%20up%20to%2020%20percent>.

Effects on Other Energy Systems and Energy Security

- **Made-in-Minnesota Fuel.** The two non-archetype RNG projects (the RNG Produced from Hennepin County Organic Waste and RNG Produced from Ramsey & Washington Counties' Organic Waste pilots) as well as the hydrogen pilots reduce dependence on imported geologic gas produced outside of Minnesota by replacing it with domestically produced fuel, thus potentially improving Minnesota's energy security. CenterPoint Energy intends to give a preference to locally-produced RNG when identifying additional RNG to complete its portfolio,³ but cannot guarantee at this time that it will source additional RNG from in-state.
- **Hydrogen Interaction with Grid.** Green hydrogen will require the development of new renewable electricity resources and may place a burden on Minnesota's electric grid.
- **Benefits of Trees.** As noted above, the Urban Tree Carbon Offsets pilot has unique benefits associated with shading nearby homes and other buildings. This may reduce the need for electricity for cooling in summer months.
- **Distributed Energy for Cooling.** The geothermal systems supported by the New Networked Geothermal Energy Systems and New District Energy Systems pilots would likely support cooling as well as heating, thus potentially reducing peak demand on the electric as well as the gas systems.
- **Strategic Electrification.** The strategic electrification pilots promote electric heating with gas back up. This model of providing energy may allow Minnesota to take advantage of the benefits of increased use of low-GHG electricity but avoid the extreme costs of overbuilding the electric system to meet winter peak demand. The G21 Report identified electrification with gas backup as the lowest cost path to full decarbonization of both energy systems by 2050.⁴
- **Conservation.** All of the energy efficiency pilots would identify opportunities to reduce overall consumption of natural gas, thus promoting Minnesota's energy security. Several of the pilots, specifically Residential Deep Energy Retrofits with Electric Air Source Heat Pumps, Small/Medium Business GHG Audits, and Industrial and Large Commercial GHG Audits, may identify opportunities to reduce demand for both natural gas and electricity. However, some energy efficiency measures identified may reduce gas while marginally increasing electricity consumption. Measures causing substantial increases in electric consumption would be classified as strategic electrification as opposed to energy efficiency. For example, the "retrofit" portion of Residential Deep Energy Retrofits with Electric Air Source Heat Pumps is classified as energy efficiency while the air source heat pump is strategic electrification.
- **Gas Heat Pump Advantages.** Similar to the strategic electrification pilots discussed above, the gas heat pump pilots would avoid shifting electric load to a potential future winter peak. This may help reduce the costs of electric build-out necessary for decarbonization.

³ See Exhibit Q, Draft RFP for RNG.

⁴ Decarbonizing Minnesota's Natural Gas End Uses at 48 (July 2021) available at <https://e21initiative.org/wp-content/uploads/2021/07/Decarbonizing-NG-End-Uses-Stakeholder-Process-Summary.pdf>.

Environment

GHG Emissions

- **Refrigerant Leak Avoidance.** While not quantified in our analysis, the Industrial Methane and Refrigerant Leak Detection pilot would endeavor to identify and prevent refrigerant leaks as well as methane leaks. Avoiding refrigerant leaks would reduce GHG emissions; however, there is substantial uncertainty about the amount of GHG emissions that will be reduced through the program. One of the goals of the proposed pilot will be to develop a better understanding of the quantity of GHG emissions that can be reduced through a methane and refrigerant leak detection program such as the one proposed.
- **Less Potent Refrigerants.** The Residential Gas Heat Pumps pilot would involve installation of units with ammonia refrigerant. Whereas most refrigerants used in electric heat pumps have extremely high GHG-lifecycle emissions if accidentally released, ammonia has a GHG-intensity of zero.⁵

Other Pollution

- **Environmental Justice Area of Concern.** Hennepin County's planned anaerobic digester (RNG production) facility is located at the site of an existing Hennepin County waste sortation facility in a Minnesota area of environmental justice concern. Although, the site is surrounded by commercial properties with the nearest residential neighborhood being located across Highway 169 from the facility location, Hennepin County has a robust community engagement plan to ensure that it hears any concerns from local residents and businesses.
- **Benefits of Dairy Manure Projects.** Dairy manure RNG projects can have benefits for local water quality by preventing runoff of manure into local water systems. Dairy RNG projects may also reduce unpleasant odors for nearby homes and businesses. Installing digesters can reduce methane emissions relative to common manure handling practices at large dairy farms. Large farming operations with high animal counts are a prevalent practice today, and Minnesota is a state with a high concentration of dairy cows.⁶
- **Benefits of Trees.** As noted above, the Urban Tree Carbon Offsets pilot has unique benefits associated with shading nearby homes and other buildings. These benefits include reducing urban heat island effects.⁷ In addition, trees reduce stormwater runoff, act as a screen to prevent particulate air pollution from streets from reaching nearby homes and afford other physical and mental health benefits for people in cities.⁸ This

⁵ A typical refrigerant used in electric air source heat pumps is R410A which has a global warming potential 2,875.5 times the global warming potential of CO₂. See California Air Resources Board, <https://ww2.arb.ca.gov/resources/documents/high-gwp-refrigerants>.

⁶ See U.S. EPA, <https://www.epa.gov/agstar/anaerobic-digestion-dairy-farms#two>

⁷ USDA Forest Service - Northern Research Station. "Cities and communities in the US losing 36 million trees a year." ScienceDaily, 18 April 2018. www.sciencedaily.com/releases/2018/04/180418141323.htm

⁸ See The Nature Conservancy https://www.nature.org/content/dam/tnc/nature/en/documents/Public_Health_Benefits_Urban_Trees_FINAL.pdf

pilot would target tree planting particularly in areas of limited tree coverage which have a high correlation with areas of concentrated poverty.

Waste Reduction and Reuse

- **Reuse of Waste.** The two non-archetype RNG projects (RNG Produced from Hennepin County Organic Waste and RNG Produced from Ramsey & Washington Counties' Organic Waste pilots) would both support the counties' efforts to reduce the amount of food waste sent to landfills. Instead of landfilling food waste, each county is seeking productive ways to recycle food waste into energy and other products. It is possible that other food waste RNG projects selected to complete the Company's portfolio would have similar landfill avoidance benefits, depending on local policy in the areas where those projects are located. Regardless, use of food waste to produce RNG turns a waste into a useful product, a benefit also shared by dairy- and wastewater treatment-derived RNG.

Policy

- **Gas Throughput Reduction.** The NGIA includes a goal to reduce throughput of geologic natural gas.⁹ Every short-listed pilot supports this goal except for the carbon capture pilots.
- **Avoiding Landfilling.** The two non-archetype RNG projects (RNG Produced from Hennepin County Organic Waste and RNG Produced from Ramsey & Washington Counties' Organic Waste pilots) would both support the counties' efforts to reduce the amount of food waste sent to landfills. This would support the state's goal for metropolitan area counties to recycle 75 percent of total solid waste generation by 2030.¹⁰
- **Renewable Energy.** Minnesota has a goal that 25 percent of all energy in the state be derived from renewable energy resources by the year 2025.¹¹ The RNG and hydrogen pilots support that goal as do the New Networked Geothermal Systems, Existing District Energy Systems, New District Energy Systems, and Solar Thermal Heating for Commercial and Industrial pilots. The strategic electrification pilots partially support the goal, however, not all electricity used for strategic electrification will be renewable.

Socioeconomic

Economic Development

- **Hennepin County, Ramsey & Washington Counties, and CenterPoint Energy Wage and Labor Commitments.** The developers for the RNG Produced from Hennepin County Organic Waste and RNG Produced from Ramsey & Washington Counties' Organic Waste pilots each have confirmed that all construction workers will be paid prevailing wages. To the extent that qualified persons are available, apprentices will be part of the construction teams to further develop the local qualified workforce and to the extent that qualified persons are available, the project developers will seek to hire

⁹ Minn. Stat. 216B.2427, subd. 10.

¹⁰ Minn. Stat. 115A.551, subd. 2a.

¹¹ Minn. Stat. §216C.05, subd. 2(3).

members of the local community as facility operators. CenterPoint Energy also commits to these labor practices with respect to the Green Hydrogen Blending into Natural Gas Distribution System and the New Networked Geothermal Systems pilots.

- **Influence of IRA Labor Requirements.** Many of the tax credits introduced or modified in the federal Inflation Reduction Act (“IRA”) reward project developers that satisfy certain labor conditions, specifically by paying prevailing wages and providing opportunities for apprentices.¹² In most cases, satisfaction of the labor requirements results in a credit that is five times higher than what would otherwise be available. Certain short-listed pilot concepts would be eligible for affected IRA tax credits. Affected pilots to be developed by CenterPoint Energy will satisfy labor requirements to take advantage of the higher tax credit amounts, to the extent labor resources are available. These pilots include Green Hydrogen Blending into the Natural Gas Distribution System and New Networked Geothermal Systems pilots. For affected pilots to be built by CenterPoint Energy customers, CenterPoint Energy does not intend to require satisfaction of the IRA labor requirements, but it is likely that many customers will nevertheless seek to satisfy them in order to maximize their own tax credits. Affected pilots that could be constructed by customers include the Green Hydrogen Archetype for Industrial or Large Commercial Facility, Carbon Capture Archetype for Industrial or Large Commercial Facility, New District Energy System, and possibly the Decarbonizing Existing District Energy Systems, Gas Heat Pumps for Commercial Buildings, Solar Thermal Heating for Commercial and Industrial, and Commercial Hybrid Heating pilots.¹³
- **Jobs for Displaced Workers.** The hydrogen pilots are likely to require a highly paid workforce with a similar skill set to workers currently employed in traditional energy industries such as coal, oil, natural gas extraction and processing, and petrochemicals.¹⁴ Thus, the hydrogen pilots represent an opportunity for workers to transition from those industries that may struggle as a result of decarbonization efforts. The U.S. Department of Energy (“DOE”) recognizes the hydrogen economy as an opportunity for workers transitioning out of conventional energy jobs and cited an expected “100,000 net new direct and indirect jobs due to the build-out of new capital projects and clean hydrogen infrastructure” by 2030 in its National Clean Hydrogen Strategy Roadmap.¹⁵ Similarly, the New Networked Geothermal Systems pilot could provide opportunities for workers in the traditional geologic natural gas industry.

¹² Information on prevailing wage requirements available here:

<https://www.dol.gov/agencies/whd/IRA#:~:text=and%20hour%20laws%3F-,To%20qualify%20for%20enhanced%20tax%20benefits%20under%20the%20Inflation%20Reduction,Davis%2DBacon%20prevailing%20wage%20rate>. Information on apprenticeship requirements available here:
<https://www.apprenticeship.gov/inflation-reduction-act-apprenticeship-resources>.

¹³Note that IRA credits would also be available to participating customers in many cases for the residential energy efficiency and strategic electrification pilots. We have quantified those impacts on participant cost but because they are not attached to labor requirements we do not include them here in the discussion of qualitative impacts. The commercial and industrial energy efficiency and strategic electrification pilots could be part of a project qualifying for a deduction under 26 U.S.C. § 179D rather than a credit.

¹⁴ See job categories here: <https://www.energy.gov/eere/fuelcells/hydrogen-and-fuel-cells-career-map>

¹⁵ <https://www.hydrogen.energy.gov/clean-hydrogen-strategy-roadmap.html>

- **Development of Hydrogen and Carbon Capture Industry.** With the passage of a new hydrogen production tax credit in the IRA, the hydrogen and carbon capture industries are both poised to experience a high levels of growth over the next decade.¹⁶ The two hydrogen pilots could help Minnesota companies gain experience in this soon-to-be booming industry, which could make them more competitive regionally. CenterPoint Energy used a local engineering firm to support its first hydrogen blending pilot and would anticipate continuing to rely on local support for future hydrogen blending projects. Similarly, the Carbon Capture Project for an Industrial or Large Commercial Facility pilot could help Minnesota workers gain experience in the carbon capture industry. Finally, CleanO2, the company that produces the CarbinX units incentivized through the Carbon Capture Rebates for Commercial Buildings pilot, intends to establish a physical presence in Minneapolis or the surrounding area in 2023. This presence will help support the increased deployment of their carbon capture product, including associated work from installation contractor partners.
- **Local Opportunities for Networked Geothermal.** While CenterPoint Energy has not made final determinations about the technology that would be used for the New Networked Geothermal Systems pilot, there are local providers of geothermal technology which could be supported by the pilot.

Public Co-Benefits

- **Local Government Waste Management.** As noted above, the two non-archetype RNG projects (the RNG Produced from Hennepin County Organic Waste and RNG Produced from Ramsey & Washington Counties' Organic Waste pilots) would both support local government waste management projects. It is also likely that any wastewater RNG purchased to complete CenterPoint Energy's portfolio would come from a public facility.
- **Benefits of Trees.** The Urban Tree Carbon Offsets pilot may reduce local government expenditures by reducing stormwater runoff and supports the Minneapolis Park and Recreation Board, Hennepin County, and other local organizations in planting and maintaining trees.

Market Development

- **Other Anaerobic Digestion Products.** Many RNG producers seek to use the leftover solid digestate in useful ways. For their RNG project, Hennepin County is evaluating the feasibility of on-site production of liquid and solid fertilizer or soil amendment products. The RNG producer for the Ramsey & Washington Counties' Organic Waste pilot is investigating the possibility of producing biochar, which can sequester additional carbon and be used to enrich nutrient impoverished soils.
- **Corporate and Business GHG Reduction Goals.** As noted above, many of the pilots could help Minnesota businesses achieve their own GHG-reduction goals, which may contribute to their competitiveness with sustainably-minded customers. Pilots that have this benefit include Green Hydrogen Archetype for Industrial or Large Commercial

¹⁶ An overview of the new hydrogen production tax credit is available here: <https://www.energy.gov/eere/fuelcells/financial-incentives-hydrogen-and-fuel-cell-projects>. A discussion of the modified carbon capture credit is available here: <https://www.irs.gov/pub/irs-drop/td-9944.pdf>.

Facility, Carbon Capture Archetype for Industrial or Large Commercial Facility, Industrial Methane and Refrigerant Leak Reduction, Carbon Capture Rebates for Commercial Buildings, Industrial Electrification Incentives, Small/Medium Business GHG Audits, Gas Heat Pumps for Commercial Buildings, Solar Thermal Heating for Commercial and Industrial, and Industrial and Large Commercial GHG Audits.

- **Carbon Capture Byproducts.** The units to be installed through the Carbon Capture Rebates for Commercial Buildings pilot will result in production of pearl ash, which will be sold for use in manufacturing of soap, glass, and other goods. This revenue will be shared with the participating customer. The Carbon Capture Project for Industrial or Large Commercial Facilities pilot may also produce byproducts that can be sold. It was assumed for modeling purposes that the captured carbon would be used in the production of concrete, but other uses are possible.

Innovation

Direct Innovation Support

- **New Experiences for Gas Utility.** Each of the short-listed pilot concepts would represent learning experiences for CenterPoint Energy, but some of the pilots represent much more significant departures from business as usual than others. CenterPoint Energy has never previously purchased RNG so all of the RNG pilots will represent learning opportunities for the Company's gas supply, legal, and peak shaving and gas control departments in how to navigate a different kind of gas purchase. While CenterPoint Energy has constructed one green hydrogen blending project, the Company is still relatively new to the hydrogen production space. In addition, the short-listed Green Hydrogen Blending into the Natural Gas System would be the first time that CenterPoint Energy has operated hydrogen production along with the source of renewable electricity generation and equipment for hydrogen storage. Perhaps the biggest departure from business as usual would be the New Networked Geothermal System Pilot, which would require CenterPoint Energy to learn about an alternative energy delivery mechanism.
- **New Experiences for Customers.** Many of the pilots would encourage CenterPoint Energy's customers to innovate and learn about decarbonization strategies that will work for their systems. Some of the pilots that would require the most innovation on the part of customers include the Green Hydrogen Archetype for Industrial or Large Commercial Facility, Industrial Methane and Refrigerant Leak Reduction, Carbon Capture Archetype for Industrial or Large Commercial Facility, New District Energy System, Industrial Electrification Incentive, Commercial Hybrid Heating, Small/Medium Business GHG Audit, Solar Thermal Heating for Commercial and Industrial, and the Industrial and Large Commercial GHG Audit pilots.
- **Leak Detection Research.** In developing assumptions for the Industrial Methane and Refrigerant Leak Reduction pilot, CenterPoint Energy and ICF were confronted with substantial uncertainty about certain elements necessary to calculate GHG emissions. For example, a key research question is how often a leak survey needs to be repeated to maintain a lower level of leakage. CenterPoint Energy is confident that the short-listed pilot would result in substantial leak reduction, but its estimated GHG emissions reduction may be conservative. Accordingly, the Company designed the pilot to include significant

evaluation to better determine the benefits and optimal design of the program. These learnings will not only inform a possible continuing program at CenterPoint Energy but may also help inform other utilities considering similar programs in Minnesota and beyond.

- **Commercial Carbon Capture Rebates Near-Term Innovation.** The company that builds the CarbinX units proposed to be installed through the Carbon Capture Rebates for Commercial Buildings pilot is currently developing a new version 4 which is expected to be applicable to a larger number of buildings and to capture a larger percentage of emissions. As with industrial carbon capture, discussed above, CarbinX units have potential to drive deeply negative lifecycle GHG intensity if combined with RNG.
- **Heat Pump Collaboration with ETA.** Residential hybrid heating, commercial hybrid heating (dual-fuel rooftop units) and residential gas heat pumps were selected for the Minnesota Efficient Technology Accelerator (“ETA”) portfolio. CenterPoint Energy has been in frequent communication with Center for Energy and Environment about their plans for the ETA portfolio and believes that the NGIA and ETA programs would complement each other well to produce a fuller body of knowledge about these technologies.

Role in a Decarbonized Energy System

- **Role of RNG in a Decarbonized Energy System.** The American Gas Foundation’s 2019 Renewable Sources of Natural Gas study, conducted by ICF, estimated national RNG potential as between 1,660 trillion Btu and 3,780 trillion Btu per year for pipeline injection by 2040. For comparison, the study states that residential consumption of natural gas is 4,846 trillion Btu nationally.¹⁷ Accordingly, while RNG cannot fully replace use of geologic natural gas, potential RNG volumes are sufficient to be a major part of an overall strategy to decarbonize the natural gas system. In addition, RNG is in some ways the simplest of the NGIA innovative resources to practically apply. RNG can substitute for geologic gas without changes to customer equipment or any action on the part of CenterPoint Energy customers. Accordingly, CenterPoint Energy believes that RNG will be an important strategy to decarbonize customer use of geologic gas in cases where the customer cannot, due to technological or financial limitations, or does not want to make changes to their own equipment or processes. CenterPoint Energy notes that every scenario explored in the G21 Report, including the high electrification scenario, modeled more RNG use than is included in the largest modeled size of all the short-listed RNG pilots combined.¹⁸
- **Role of Hydrogen in a Decarbonized Energy System.** As noted above, in the IRA, the federal government has chosen to invest heavily in low-or-no carbon hydrogen production. With this investment, the DOE plans to drive down the cost of clean hydrogen

¹⁷ Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment, American Gas Foundation (December 2019), available at <https://gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf>

¹⁸ Decarbonizing Minnesota’s Natural Gas End Uses, Great Plains Institute and Center for Energy and Environment (July 2021), available at <https://e21initiative.org/wp-content/uploads/2021/07/Decarbonizing-NG-End-Uses-Stakeholder-Process-Summary.pdf>

significantly, making the task a key part of their Hydrogen Strategy; their Hydrogen Energy Earthshot targets \$1/kg clean hydrogen within the next decade.¹⁹ Consequently, hydrogen is poised to potentially become a relatively affordable way to reduce GHG emissions. While there are limits to how much hydrogen can be blended into the current gas system, including some percentage of hydrogen can be a relatively simple solution to reducing overall emissions in the same way that RNG purchases, discussed above, are a relatively simple solution requiring no action by customers. While the Green Hydrogen Archetype for Industrial or Large Commercial Facility pilot does not share this simplicity, hydrogen may be the best solution for some large customers looking to completely decarbonize energy intensive processes after they have exhausted less expensive but incomplete solutions such as energy efficiency or partial electrification.

- **Continuing Need for Leak Detection.** Even in a fully decarbonized energy system, it is likely that many industrial customers will continue to need to use some version of methane gas whether that is RNG alone or geologic gas paired with carbon capture to reduce emissions. Accordingly, limiting methane leakage in industrial facilities may continue to be an important strategy to reduce lifecycle GHG emissions.
- **Role of Industrial Carbon Capture in a Decarbonized Energy System.** For similar reasons as noted above for industrial hydrogen, industrial carbon capture systems may be the best solution for some large customers looking to completely decarbonize energy intensive processes after they have exhausted less expensive but incomplete solutions such as energy efficiency or partial electrification. As with hydrogen, the federal government is investing in carbon capture through the IRA, which may reduce costs over time.²⁰ In addition, industrial carbon capture could be used in conjunction with RNG to further reduce lifecycle emissions and potentially achieve deeply negative GHG-intensity.
- **Role of Strategic Electrification in a Decarbonized Economy.** While not a complete solution, there is widespread agreement that electrification will be an important strategy for reducing emissions from industry and buildings. As discussed above, CenterPoint Energy emphasizes the importance of *strategic* deployment of electrification to avoid significant impacts on a possible future winter electric peak and/or substantially increased customer costs. Each of the short-listed strategic electrification pilots would explore the appropriate balance between electrification and use of geologic gas or other fuels and thus further understanding about how best to balance the use of the gas and electric systems in Minnesota to maximize reduction of carbon emissions while maintaining heat to all customer during extreme cold weather. For example, CenterPoint Energy's customers alone require a peak day demand of over 70,000 Dth/hour or 20 GW of natural gas. Under a fully electrified scenario, at negative 25° F, the current electric heating technology would require well over 16 GWs of new 100 percent capacity factor power supply, transmission, and distribution just for CenterPoint Energy's customers.

¹⁹ <https://www.hydrogen.energy.gov/clean-hydrogen-strategy-roadmap.html>

²⁰ Under the modified IRA credit in 26 U.S.C. § 45Q, only rather large industrial capture systems would be eligible for a credit. For purposes of modeling quantifiable costs and benefits, CenterPoint Energy assumed that participating facilities would not capture enough carbon to qualify for the credit. However, over time, even smaller facilities could benefit from overall advancement in technology that would be encouraged by the IRA credit.

Exhibit O: Pilot Qualitative Details

Petition of CenterPoint Energy

Docket No. G-008/M-23-215

Page 10 of 10

Optimizing electrification options that include geological gas backup allows customers to maintain the ability to heat their homes during extreme cold weather events and greatly reduces gas consumption in the spring, fall and moderate winter days while not requiring the need for more than 16 GWs of additional generation resources.

**In the Matter of
CenterPoint Energy Natural Gas Innovation Act (NGIA)
Innovation Plan**

Petition of CenterPoint Energy

EXHIBIT P: PILOT QUANTITATIVE CALCULATIONS

Docket No. G-008/M-23-215

June 28, 2023

PUBLIC VERSION

A trade secret version of this exhibit has been filed separately as an Excel file. CenterPoint Energy has designated information in Exhibit P as trade secret. The information meets the definition of trade secret in Minn. Stat. § 13.37, subd. 1(b), as follows: (1) the information was supplied by CenterPoint Energy, the affected organization; (2) we have taken all reasonable efforts to maintain the secrecy of the information, including protecting it from disclosure in this proceeding; and (3) the protected information contains a complex spreadsheet calculation tool developed by ICF for CenterPoint Energy's use, which derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means, by other persons who could obtain economic value from its disclosure or use. Note that in addition to certain non-public information, there is proprietary value in the calculations in the tool and interaction between cells, so CenterPoint Energy is filing a public pdf version of this Exhibit, with certain information redacted, as public but considers the spreadsheet with links to be trade secret.



NGIA Portfolio Summary

Draft Innovation Plan Portfolio Summary										Utility Costs Towards NGIA Budget - with Portfolio Costs Split between Pilots by Cost				Lifetimes Utility Emission Reduction Cost - with Portfolio Costs		Total (Net) Pilot Cost Perspective Emission Reduction Cost -with Portfolio Costs		Upfront Equipment and Installation Costs		Share of Portfolio Costs Allocated to this Pilot		Net Lifetime Utility Costs by Pilot (includes costs outside 5 year period, as well as commodity cost savings for all years of pilot life, not just within 5 year NGIA window)		Total Lifetime Utility Costs by Pilot - with Portfolio Costs		Total Net Costs with Portfolio Costs		Equipment and Installation Costs only
Primary Innovation Category	#	Pilot	Pilot Size Selected for Portfolio	Annual GHG Emission Reductions, Cumulative Level Achieved by Year 5		Lifetime GHG Savings		Utility Costs Towards NGIA Budget without Portfolio Costs		\$	% in Portfolio	\$/tCO2e	\$/tCO2e	\$/tCO2e	\$/tCO2e	\$	% in Portfolio	\$	% in Portfolio	\$	\$	%	%	\$	\$	\$	\$	
				tCO2e/yr	% in Portfolio	tCO2e	% in Portfolio	\$	% in Portfolio																			\$
Renewable Natural Gas (RNG)	1	RNG Proposal - Anaerobic Digestion of Organic Materials	B	2,822	3%	28,221	2%	2,565,952	2%	\$	2,856,759	3%	\$272	\$221	\$261	\$	290,807	\$7,384,330	\$7,675,137	\$5,942,455	\$6,233,262	\$7,355,834						
	2	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	B	14,786	17%	147,863	12%	9,125,802	9%	\$	10,160,058	10%	\$185	\$134	\$183	\$	1,034,255	\$26,322,323	\$27,356,579	\$18,767,707	\$19,801,962	\$27,089,839						
	3	RNG Archetype - Wastewater Resource Recovery Facility	B	2,656	3%	26,556	2%	3,605,271	3%	\$	4,013,867	4%	\$313	\$261	\$291	\$	408,596	\$7,903,490	\$8,312,087	\$6,526,378	\$6,934,974	\$7,726,495						
	4	RNG Archetype - Dairy Manure	A	990	1%	9,895	1%	2,011,780	2%	\$	2,239,781	2%	\$465	\$413	\$431	\$	228,001	\$4,376,794	\$4,604,795	\$3,863,657	\$4,091,658	\$4,263,039						
	5	RNG Archetype - Food Waste	B	25,474	30%	254,739	21%	17,367,865	16%	\$	19,336,219	18%	\$157	\$105	\$158	\$	1,968,354	\$38,031,672	\$40,000,026	\$24,821,622	\$26,789,976	\$40,181,780						
	6	RNG Archetype - Landfill Gas	A	6,869	8%	68,694	6%	6,088,873	6%	\$	6,778,944	6%	\$205	\$153	\$202	\$	690,071	\$13,363,746	\$14,053,817	\$9,801,470	\$10,491,541	\$13,862,812						
Power-to-Hydrogen	7	Green Hydrogen Blending into Natural Gas Distribution System	B	1,400	2%	27,993	2%	4,556,648	4%	\$	5,073,067	5%	\$820	\$787	\$214	\$	516,419	\$22,444,767	\$22,961,186	\$21,503,054	\$22,019,473	\$5,979,326						
	8	Green Hydrogen Archetype for Industrial or Large Commercial Facility	A	2,817	3%	56,330	5%	1,038,755	1%	\$	1,156,481	1%	-\$12	\$871	\$175	\$	117,725	-\$777,702	-\$659,976	\$48,942,651	\$49,060,376	\$9,835,832						
Carbon Capture	9	Industrial Methane and Refrigerant Leak Reduction Program	A	6,753	8%	33,763	3%	1,120,645	1%	\$	1,247,651	1%	\$34	-\$24	\$17	\$	127,006	\$1,005,465	\$1,132,471	-\$949,911	-\$822,905	\$582,305						
	10	Urban Tree Carbon Offset Program	A	1,000	1%	4,500	0%	295,780	0%	\$	329,301	0%	\$67	\$12	\$49	\$	33,522	\$266,387	\$299,909	\$21,437	\$54,958	\$219,226						
	11	Carbon Capture Archetype for Industrial or Large Commercial Facility	A	2,419	3%	50,865	4%	2,368,823	2%	\$	2,637,289	2%	\$66	\$303	\$60	\$	268,466	\$3,111,567	\$3,380,033	\$15,130,076	\$15,398,543	\$3,036,224						
District Energy	13	Carbon Capture Rebates for Commercial Buildings	A	2,705	3%	55,150	5%	1,170,379	1%	\$	1,303,022	1%	\$0	-\$30	\$225	\$	132,643	-\$109,387	\$23,256	-\$1,804,562	-\$1,671,919	\$12,408,096						
	14	New Networked Geothermal Systems Pilot	C	2,421	3%	107,355	9%	10,442,305	10%	\$	11,625,764	11%	\$393	\$402	\$232	\$	1,183,459	\$41,039,753	\$42,223,212	\$41,946,338	\$43,129,796	\$24,879,156						
	15	Decarbonizing Existing District Energy Systems	B	5,401	6%	124,030	10%	537,044	1%	\$	597,909	1%	-\$28	-\$34	\$40	\$	60,865	-\$3,483,080	-\$3,422,215	-\$4,226,681	-\$4,165,816	\$4,933,706						
Strategic Electrification	16	New District Energy System	B	1,339	2%	40,882	3%	193,692	0%	\$	215,644	0%	-\$19	\$371	\$463	\$	21,952	-\$806,364	-\$784,412	\$15,148,784	\$15,170,736	\$18,932,519						
	17	Industrial Electrification Incentive Program	A	543	1%	11,896	1%	452,534	0%	\$	503,821	0%	\$9	\$2	\$32	\$	51,287	\$61,105	\$112,392	-\$27,785	\$23,502	\$374,861						
	18	Commercial hybrid heating pilot	B	1,633	2%	25,609	2%	6,347,849	6%	\$	7,067,270	7%	\$216	\$204	\$100	\$	719,421	\$4,823,050	\$5,542,472	\$4,493,721	\$5,213,143	\$2,555,827						
Energy Efficiency	19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	B	1,985	2%	66,760	6%	12,230,420	12%	\$	13,616,532	13%	\$159	\$390	\$383	\$	1,386,111	\$9,197,981	\$10,584,092	\$24,666,312	\$26,052,423	\$25,536,912						
	20	Small/medium business GHG audit pilot	B	361	0%	6,570	1%	2,057,970	2%	\$	2,291,206	2%	\$289	\$278	\$282	\$	233,236	\$1,664,533	\$1,897,769	\$1,592,063	\$1,825,299	\$1,853,228						
	21	Residential Gas Heat Pump	A	16	0%	235	0%	341,999	0%	\$	380,759	0%	\$1,464	\$1,358	\$707	\$	38,760	\$305,058	\$343,818	\$280,300	\$319,060	\$165,994						
	22	Gas Heat Pump for Commercial Buildings	A	144	0%	2,154	0%	673,152	1%	\$	749,442	1%	\$295	\$207	\$152	\$	76,290	\$558,792	\$635,083	\$370,458	\$446,748	\$328,003						
	24	Solar Thermal Heating for C&I	None	-	0%	-	0%	-	0%	\$	-	0%	\$0	\$0	\$0	\$	-	\$0	\$0	\$0	\$0	\$0						
25	Industrial and Large Commercial GHG Audit Pilot	A	1,716	2%	35,560	3%	853,550	1%	\$	950,286	1%	-\$7	-\$51	\$38	\$	96,735	-\$339,580	-\$242,844	-\$1,900,447	-\$1,803,711	\$1,362,270							
Total Pilot Portfolio				86,247	100%	1,185,620	100%	\$ 85,447,088	81%	\$	95,131,071	90%	\$157	\$206	\$180	\$	176,344,701	\$	186,028,684	\$ 234,909,097	\$	244,593,080	\$ 213,463,284					
Additional Portfolio Costs	Additional Portfolio Administrative Costs		N/A	N/A	N/A	N/A	N/A	\$	9,683,983	9%	\$	-	0%	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	
	R&D Projects - Low Carbon Fuels (15%)		15%	N/A	N/A	N/A	N/A	\$	1,585,569	2%	\$	1,585,569	1.5%	\$	1,585,569	\$	1,585,569	\$	1,585,569	\$	1,585,569	\$	1,585,569	\$	1,585,569	\$	1,585,569	
	R&D Projects - Other (85%)		85%	N/A	N/A	N/A	N/A	\$	8,984,893	9%	\$	8,984,893	8.5%	\$	8,984,893	\$	8,984,893	\$	8,984,893	\$	8,984,893	\$	8,984,893	\$	8,984,893	\$	8,984,893	
Total Portfolio (incl. R&D)				86,247		1,185,620		\$ 105,701,533	100%	\$	105,701,533	100%	\$166	\$215	\$189	\$	196,599,146	\$	255,163,542	\$	255,163,542	\$	224,033,746					

Estimated NGIA Cost Cap (including bonus money): \$105,704,618.35

Unused budget: \$3,085
 Low-Carbon Fuels Percentage: 50.33%



Results Summary

Loop ID	Program	Customer Class/Sector	Measure Code	Pilot Name	Pilot Size	Overview of Key Results							Cost-Effectiveness Calculation Results										Pilot Performance																		
						Participation	Total Utility Incremental Costs	Utility Budget Towards COP (5-Year Costs)	Lifetime GHG Savings	Total (Net) Pilot Impacts - Including environmental component	Emission Reduction Cost from Utility Perspective	Emission Reduction Cost from Total (Net) Pilot Cost Perspective	UCT Benefits	UCT Costs	UCT Net Benefit	RIM Benefits	RIM Costs	RIM Net Benefit	PCT Benefits	PCT Costs	PCT Net Benefit	UCT	RIM	PCT	UCT	RIM	PCT														
						Units Vary by Pilot	(\$)	(\$)	(tCO2e)	(\$)	(\$/tCO2e)	(\$/tCO2e)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	2024-2028	2024-2028	2024-2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028		
Do not Delete Row						Do not Delete Row						Do not Delete Row										Do not Delete Row																			
1	0	C&I & Res	CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	A	8,288	\$ 1,801,050	\$ 632,174	5,644	\$ (1,512,674)	319	268	\$ -	\$ 1,801,050	\$ (1,801,050)	\$ -	\$ 555,903	\$ (555,903)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			
2	0	C&I & Res	CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	B	41,440	\$ 7,384,330	\$ 2,565,952	28,221	\$ (5,942,455)	262	211	\$ -	\$ 7,384,330	\$ (7,384,330)	\$ -	\$ 2,254,376	\$ (2,254,376)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
3	0	C&I & Res	CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	C	82,880	\$ 14,768,660	\$ 5,131,904	56,442	\$ (11,479,680)	254	203	\$ -	\$ 14,768,660	\$ (14,768,660)	\$ -	\$ 4,508,752	\$ (4,508,752)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
4	0	C&I & Res	CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	A	18,168	\$ 3,679,719	\$ 1,283,500	17,603	\$ (2,780,360)	209	158	\$ -	\$ 3,679,719	\$ (3,679,719)	\$ -	\$ 1,127,993	\$ (1,127,993)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
5	0	C&I & Res	CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	B	152,613	\$ 26,322,323	\$ 9,125,802	147,863	\$ (18,767,707)	178	127	\$ -	\$ 26,322,323	\$ (26,322,323)	\$ -	\$ 8,016,033	\$ (8,016,033)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6	0	C&I & Res	CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	C	190,767	\$ 32,747,927	\$ 11,351,320	184,829	\$ (23,304,657)	177	126	\$ -	\$ 32,747,927	\$ (32,747,927)	\$ -	\$ 9,970,747	\$ (9,970,747)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
7	0	C&I & Res	CNP03	RNG Archetype - Wastewater Resource Recovery Facility	A	10,000	\$ 1,861,312	\$ 851,780	5,311	\$ (1,585,889)	350	299	\$ -	\$ 1,861,312	\$ (1,861,312)	\$ -	\$ 761,053	\$ (761,053)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
8	0	C&I & Res	CNP03	RNG Archetype - Wastewater Resource Recovery Facility	B	50,000	\$ 7,903,490	\$ 3,605,271	26,556	\$ (6,526,378)	298	246	\$ -	\$ 7,903,490	\$ (7,903,490)	\$ -	\$ 2,219,140	\$ (2,219,140)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
9	0	C&I & Res	CNP03	RNG Archetype - Wastewater Resource Recovery Facility	C	300,000	\$ 44,059,070	\$ 20,064,460	159,333	\$ (35,796,395)	277	225	\$ -	\$ 44,059,070	\$ (44,059,070)	\$ -	\$ 17,931,647	\$ (17,931,647)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
10	0	C&I & Res	CNP04	RNG Archetype - Dairy Manure	A	10,000	\$ 4,376,794	\$ 2,011,780	9,895	\$ (3,663,657)	442	390	\$ -	\$ 4,376,794	\$ (4,376,794)	\$ -	\$ 1,797,175	\$ (1,797,175)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
11	0	C&I & Res	CNP04	RNG Archetype - Dairy Manure	B	20,000	\$ 8,627,992	\$ 3,962,460	19,790	\$ (7,601,717)	436	384	\$ -	\$ 8,627,992	\$ (8,627,992)	\$ -	\$ 3,539,088	\$ (3,539,088)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
12	0	C&I & Res	CNP04	RNG Archetype - Dairy Manure	C	100,000	\$ 40,527,608	\$ 18,604,100	98,952	\$ (35,396,237)	410	358	\$ -	\$ 40,527,608	\$ (40,527,608)	\$ -	\$ 16,614,227	\$ (16,614,227)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
13	0	C&I & Res	CNP05	RNG Archetype - Food Waste	A	10,000	\$ 2,121,534	\$ 971,780	11,579	\$ (6,526,378)	183	131	\$ -	\$ 2,121,534	\$ (2,121,534)	\$ -	\$ 868,238	\$ (868,238)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
14	0	C&I & Res	CNP05	RNG Archetype - Food Waste	B	220,000	\$ 38,031,672	\$ 17,367,865	254,739	\$ (49,821,622)	149	97	\$ -	\$ 38,031,672	\$ (38,031,672)	\$ -	\$ 15,507,029	\$ (15,507,029)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
15	0	C&I & Res	CNP05	RNG Archetype - Food Waste	C	500,000	\$ 85,756,468	\$ 39,124,820	578,953	\$ (95,733,628)	148	96	\$ -	\$ 85,756,468	\$ (85,756,468)	\$ -	\$ 34,929,544	\$ (34,929,544)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
16	0	C&I & Res	CNP06	RNG Archetype - Landfill Gas	A	128,750	\$ 13,363,746	\$ 6,088,873	68,694	\$ (9,801,470)	195	143	\$ -	\$ 13,363,746	\$ (13,363,746)	\$ -	\$ 4,437,250	\$ (4,437,250)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
17	0	C&I & Res	CNP06	RNG Archetype - Landfill Gas	B	200,000	\$ 20,761,729	\$ 9,419,324	106,709	\$ (15,228,097)	195	143	\$ -	\$ 20,761,729	\$ (20,761,729)	\$ -	\$ 8,407,910	\$ (8,407,910)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
18	0	C&I & Res	CNP06	RNG Archetype - Landfill Gas	C	900,000	\$ 91,084,576	\$ 41,245,541	480,191	\$ (66,183,232)	150	138	\$ -	\$ 91,084,576	\$ (91,084,576)	\$ -	\$ 36,809,817	\$ (36,809,817)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
19	0	C&I & Res	CNP07	Green Hydrogen Blending into Natural Gas Distribution System	A	1	\$ 7,859,844	\$ 2,000,159	1,355	\$ (6,486,371)	1,355	240,345	\$ 240,345	\$ 7,859,844	\$ (7,859,844)	\$ 240,345	\$ 2,000,159	\$ (2,000,159)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
20	0	C&I & Res	CNP07	Green Hydrogen Blending into Natural Gas Distribution System	B	1	\$ 22,444,767	\$ 4,556,648	27,993	\$ (21,503,054)	802	768	\$ 1,201,725	\$ 23,646,492	\$ (22,444,767)	\$ 1,201,725	\$ 5,325,509	\$ (4,124,185)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
21	0	C&I & Res	CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	A	1	\$ 2,418,261	\$ 1,038,755	56,330	\$ (48,942,651)	(14)	852	\$ 2,418,261	\$ 3,442,891	\$ (924,630)	\$ 7,836,169	\$ (5,232,142)	\$ (44,485,253)	1.47	0.72	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
22	0	C&I & Res	CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	B	2	\$ 4,836,522	\$ 2,077,510	112,661	\$ (96,027,279)	(13)	852	\$ 4,836,522	\$ 6,885,782	\$ (2,049,260)	\$ 15,671,950	\$ (13,567,619)	\$ (112,661)	1.52	0.73	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
23	0	C&I & Res	CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	C	10	\$ 24,182,610	\$ 10,387,550	563,300	\$ (200,039,439)	(13)	852	\$ 24,182,610	\$ 34,428,912	\$ (10,246,302)	\$ 78,347,950	\$ (68,089,367)	\$ (1,038,755)	1.51	0.72	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
24	0	C&I & Res	CNP09	Industrial Methane and Refrigerant Leak Reduction Program	A	10	\$ 1,205,465	\$ 3,503,385	168,991	\$ (60,179,546)	30	28	\$ 6,670,963	\$ 4,045,485	\$ (2,625,478)	\$ 6,670,963	\$ (4,045,485)	\$ (2,625,478)	0.03	0.11	0.29	0.03	0.11	0.29	0.03	0.11	0.29	0.03	0.11	0.29	0.03	0.11	0.29	0.03	0.11	0.29	0.03	0.11	0.29		
25	0	C&I & Res	CNP09	Industrial Methane and Refrigerant Leak Reduction Program	B	125	\$ 187,850	\$ 2,430,083	84,408	\$ (2,867,534)	22	(34)	\$ 919,453	\$ 2,798,304	\$ (1,878,850)	\$ 919,453	\$ (2,798,304)	\$ (1,878,850)	0.33	0.27	0.29	0.33	0.27	0.29	0.33	0.27	0.29	0.33	0.27	0.29	0.33	0.27	0.29	0.33	0.27	0.29	0.33	0.27	0.29		
26	0	C&I & Res	CNP09	Industrial Methane and Refrigerant Leak Reduction Program	C	250	\$ 3,431,074	\$ 4,500,019	168,816	\$ (1,500,019)	20	(36)	\$ 1,838,907	\$ 5,369,981	\$ (3,431,074)	\$ 1,838,907	\$ (5,369,981)	\$ (3,431,074)	0.35	0.28	0.27	0.35	0.28	0.27	0.35	0.28	0.27	0.35	0.28	0.27	0.35	0.28	0.27	0.35	0.28	0.27	0.35	0.28	0.27		
27	0	C&I & Res	CNP10	Urban Tree Carbon Offset Program	A	4,500	\$ 266,387	\$ 295,780	4,500	\$ (21,437)	59	5	\$ -	\$ 266,387	\$ (266,387)	\$ -	\$ 266,387	\$ (266,387)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
28	0	C&I & Res	CNP10	Urban Tree Carbon Offset Program	B	9,000	\$ 531,774	\$ 591,560	9,000	\$ (42,874)	54	(9)	\$ -	\$ 531,774	\$ (531,774)	\$ -	\$ 531,774	\$ (531,774)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
29	0	C&I & Res	CNP10	Urban Tree Carbon Offset Program	C	18,000	\$ 924,064	\$ 1,027,140	18,000	\$ (55,729)	51	(3)	\$ -	\$ 924,064	\$ (924,064)	\$ -	\$ 924,064	\$ (924,06																							









A large, complex table with multiple columns and rows, containing various data points and text. The table is organized into several sections, with a prominent blue header bar at the top. The content includes numerical values, text descriptions, and possibly dates or identifiers. The table is very dense and spans most of the width of the page.

Item	Value
Year	2025
Scenario	Base Case
Model	Chesapeake Energy
Version	1.0
Created By	ICF
Created Date	10/26/2024
Last Modified By	ICF
Last Modified Date	10/26/2024

Item	Value
Year	2025
Scenario	Base Case
Model	Chesapeake Energy
Version	1.0

Item	Value
Year	2025
Scenario	Base Case
Model	Chesapeake Energy
Version	1.0

Item	Value
Year	2025
Scenario	Base Case
Model	Chesapeake Energy
Version	1.0

Item	Value
Year	2025
Scenario	Base Case
Model	Chesapeake Energy
Version	1.0

Item	Value
Year	2025
Scenario	Base Case
Model	Chesapeake Energy
Version	1.0

Item	Value
Year	2025
Scenario	Base Case
Model	Chesapeake Energy
Version	1.0

Item	Value
Year	2025
Scenario	Base Case
Model	Chesapeake Energy
Version	1.0

Item	Value
Year	2025
Scenario	Base Case
Model	Chesapeake Energy
Version	1.0

--	--	--	--

--	--	--	--	--

	2024	2023	2022	2021	2020
Revenue	1,234,567	1,123,456	1,012,345	901,234	890,123
Expenses	(876,543)	(765,432)	(654,321)	(543,210)	(432,109)
Net Income	358,024	358,024	358,024	358,024	358,024

Metal Rates Forecast-Duplicate of Above Table					Gas Metal Rate (2/2024)				
Year	Electricity Retail Rate(\$/kWh)			Peak Demand Cost (\$/MWh-yr)	Residential	C&I & Res	C&I		
	Residential	C&I & Res	C&I						
2020	5	0.181258	0.177351	5	0.249739	\$11.41	\$0.32	\$9.44	\$0.88
2021	5	0.181818	0.177883	5	0.249739	\$11.44	\$0.32	\$9.44	\$0.88
2022	5	0.181510	0.178257	5	0.250137	\$11.04	\$0.47	\$9.30	\$0.84
2023	5	0.181801	0.180111	5	0.250279	\$11.11	\$0.48	\$9.37	\$0.87
2024	5	0.181802	0.179997	5	0.250007	\$11.42	\$0.49	\$9.35	\$0.89
2025	5	0.180540	0.180018	5	0.249934	\$11.77	\$0.40	\$9.13	\$0.79
2026	5	0.179214	0.180001	5	0.249251	\$11.11	\$0.39	\$9.11	\$0.77
2027	5	0.179821	0.181135	5	0.249280	\$10.57	\$0.36	\$8.30	\$0.74
2028	5	0.180700	0.181700	5	0.249000	\$10.03	\$0.34	\$8.39	\$0.74
2029	5	0.180900	0.182000	5	0.249000	\$9.99	\$0.34	\$8.39	\$0.74
2030	5	0.182200	0.182100	5	0.250100	\$9.99	\$0.30	\$8.25	\$0.73
2031	5	0.181000	0.182601	5	0.249700	\$10.54	\$0.29	\$8.24	\$0.73
2032	5	0.181001	0.181001	5	0.249901	\$10.07	\$0.27	\$8.21	\$0.70
2033	5	0.180800	0.180700	5	0.249800	\$10.00	\$0.27	\$8.19	\$0.70
2034	5	0.181801	0.182401	5	0.249701	\$10.24	\$0.28	\$8.20	\$0.71
2035	5	0.181700	0.183001	5	0.249500	\$10.00	\$0.23	\$8.10	\$0.71
2036	5	0.181700	0.183001	5	0.249500	\$10.00	\$0.23	\$8.10	\$0.71
2037	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.21	\$8.17	\$0.71
2038	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.22	\$8.18	\$0.71
2039	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2040	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2041	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2042	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2043	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2044	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2045	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2046	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2047	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2048	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2049	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71
2050	5	0.181000	0.183700	5	0.249300	\$10.16	\$0.23	\$8.18	\$0.71

Tables for calculating Discounted Participant Discount Rate separately when customer class is C&I

2023													2024													2025													2026													2027													2028												
Measure Life	Electricity Retail Rate(\$/kWh)			Peak Demand Cost (\$/MWh-yr)	Gas Retail Rate (\$/GJ)			Measure Life	Electricity Retail Rate(\$/kWh)			Peak Demand Cost (\$/MWh-yr)	Gas Retail Rate (\$/GJ)			Measure Life	Electricity Retail Rate(\$/kWh)			Peak Demand Cost (\$/MWh-yr)	Gas Retail Rate (\$/GJ)			Measure Life	Electricity Retail Rate(\$/kWh)			Peak Demand Cost (\$/MWh-yr)	Gas Retail Rate (\$/GJ)			Measure Life	Electricity Retail Rate(\$/kWh)			Peak Demand Cost (\$/MWh-yr)	Gas Retail Rate (\$/GJ)			Measure Life	Electricity Retail Rate(\$/kWh)			Peak Demand Cost (\$/MWh-yr)	Gas Retail Rate (\$/GJ)																																
	Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I		Residential	C&I & Res	C&I																														
48	54.89	54.90	52.02	51.3143	577.78	585.23	582.87	48	54.91	54.93	52.06	51.1907	578.69	586.06	583.62	48	55.01	54.93	52.16	51.0759	580.82	588.01	585.47	48	55.11	54.89	52.14	51.0615	584.10	591.04	588.47	48	55.21	54.87	52.18	51.0471	587.89	594.62	591.91	48	55.31	54.86	52.22	51.0327	592.09	600.00	597.20																														
49	54.89	54.90	52.02	51.3143	577.78	585.23	582.87	49	54.91	54.93	52.06	51.1907	578.69	586.06	583.62	49	55.01	54.93	52.16	51.0759	580.82	588.01	585.47	49	55.11	54.89	52.14	51.0615	584.10	591.04	588.47	49	55.21	54.87	52.18	51.0471	587.89	594.62	591.91	49	55.31	54.86	52.22	51.0327	592.09	600.00	597.20																														
50	54.90	54.91	52.03	51.3171	577.97	585.46	583.01	50	54.92	54.94	52.07	51.1935	578.88	587.29	584.85	50	55.02	54.94	52.17	51.0787	581.03	589.22	586.51	50	55.12	54.90	52.15	51.0643	585.39	592.33	589.80	50	55.22	54.88	52.19	51.0499	589.68	596.62	593.91	50	55.32	54.87	52.23	51.0315	594.97	602.00	599.30																														
51	55.01	54.93	52.05	51.3199	578.20	585.69	583.24	51	55.02	54.94	52.08	51.1963	579.07	587.48	585.04	51	55.12	54.95	52.18	51.0819	581.24	589.43	586.72	51	55.22	54.91	52.17	51.0675	585.75	592.69	590.16	51	55.32	54.89	52.21	51.0451	591.26	598.00	595.30	51	55.42	54.88	52.25	51.0277	596.95	603.00	600.30																														
52	55.10	54.95	52.06	51.3227	578.44	585.92	583.47	52	55.11	54.95	52.09	51.2000	579.26	587.67	585.23	52	55.21	54.96	52.19	51.0865	581.45	589.64	586.93	52	55.31	54.92	52.18	51.0721	586.36	593.44	590.91	52	55.41	54.90	52.22	51.0527	592.75	600.00	597.30	52	55.51	54.89	52.26	51.0353	598.95	605.00	602.30																														
53	55.17	54.96	52.07	51.3254	578.67	586.16	583.71	53	55.22	54.96	52.10	51.2037	579.45	588.00	585.56	53	55.32	54.97	52.20	51.0921	581.66	590.05	587.34	53	55.42	54.93	52.19	51.0777	586.47	593.53	591.00	53	55.52	54.91	52.23	51.0573	593.14	601.00	598.30	53	55.62	54.90	52.27	51.0429	599.53	606.00	603.30																														
54	55.26	54.98	52.08	51.3282	578.91	586.39	583.96	54	55.33	54.98	52.11	51.2074	579.64	588.33	585.89	54	55.43	54.99	52.21	51.1005	581.87	590.44	587.72	54	55.53	54.94	52.19	51.0833	587.28	594.60	592.07	54	55.63	54.93	52.24	51.0629	594.01	602.00	599.30	54	55.73	54.92	52.28	51.0485	600.41	607.00	604.30																														
55	55.30	54.99	52.09	51.3308	579.14	586.62	584.19	55	55.40	54.99	52.12	51.2111	579.83	588.60	586.16	55	55.51	54.99	52.22	51.1036	582.08	590.73	588.01	55	55.61	54.94	52.21	51.0881	587.69	594.67	592.14	55	55.71	54.93	52.25	51.0677	594.82	603.00	600.30	55	55.81	54.92	52.29	51.0541	601.21	608.00	605.50																														
56	55.37	54.99	52.10	51.3335	579.38	586.85	584.42	56	55.47	54.99	52.13	51.2148	580.02	588.87	586.43	56	55.58	54.99	52.23	51.1067	582.30	591.08	588.36	56	55.68	54.94	52.22	51.0922	588.30	595.64	593.11	56	55.78	54.93	52.26	51.0718	595.21	604.00	601.50	56	55.88	54.92	52.30	51.0582	601.60	609.00	606.50																														
57	55.41	54.99	52.11	51.3361	579.61	587.08	584.65	57	55.47	54.99	52.14	51.2185	580.21	589.14	586.70	57	55.58	54.99	52.24	51.1096	582.52	591.37	588.65	57	55.68	54.94	52.23	51.0957	588.59	595.83	593.30	57	55.78	54.93	52.27	51.0753	596.22	605.00	602.50	57	55.88	54.92	52.31	51.0617	602.00	610.00	607.50																														
58	55.49	54.93	52.12	51.3389	579.85	587.30	584.88	58	55.56	54.99	52.15	51.2222	580.40	589.47	587.03	58	55.71	54.98	52.25	51.1125	582.74	591.70	588.98	58	55.81	54.98	52.24	51.1000	588.88	596.07	593.54	58	55.91	54.96	52.28	51.0806	602.61	606.00	603.50	58	56.01	54.95	52.32	51.0671	603.00	610.00	607.50																														
59	55.59	54.96	52.13	51.3417	579.94	587.50	585.09	59	55.66	54.99	52.17	51.2259	580.59	589.67	587.23	59	55.77	54.94	52.21	51.1157	583.07	591.91	589.19	59	55.87	54.91	52.20	51.1031	589.17	596.26	593.73	59	55.97	54.94	52.25	51.0847	603.00	610.00	607.50	59	56.07	54.93	52.29	51.0716	603.00	610.00	607.50																														
60	55.67	54.93	52.14	51.3445	579.98	587.67	585.26	60	55.74	54.99	52.18	51.2297	580.78	589.84	587.40	60	55.84	54.98	52.22	51.1189	583.35	592.04	589.26	60	55.94	54.98	52.21	51.1062	589.26	596.45	593.92	60	56.04	54.96	52.26	51.0872	603.00	610.00	607.50	60	56.14	54.95	52.30	51.0751	603.00	610.00	607.50																														
61	55.69	54.96	52.14	51.3473	579.98	587.67	585.26	61	55.76	54.99	52.19	51.2334	580.97	589.99	587.55	61	55.90	54.98	52.23	51.1221	583.63	592.13	589.35	61	56.00	54.98	52.22	51.1095	589.35	596.64	594.11	61	56.10	54.97	52.26	51.0905	603.00	610.00	607.50	61	56.20	54.95	52.30	51.0784	603.00	610.00	607.50																														
62	55.74	54.93	52.15	51.3501	579.95	587.83	585.43	62	55.80	54.99	52.20	51.2371	581.16	590.16	587.72	62	55.96	54.99	52.24	51.1253	583.91	592.22	589.44	62	56.06	54.99	52.23	51.1128	589.44	596.93	594.40	62	56.16	54.98	52.27	51.0938	603.00	610.00	607.50	62	56.26	54.96	52.31	51.0827	603.00	610.00	607.50																														
63	55.80	54.96	52.16	51.3529	579.90	587.99	585.61	63	55.86	54.99	52.21	51.2408	581.35	590.34	587.90	63	56.02	54.98	52.25	51.1285	584.19	592.31	589.52	63	56.12	54.98	52.24	51.1163	589.52	597.02	594.49	63	56.22	54.97	52.28	51.0977	603.00	610.00	607.50	63	56.32	54.96	52.32	51.0866	603.00	610.00	607.50																														
64																																																																													

**In the Matter of
CenterPoint Energy Natural Gas Innovation Act (NGIA)
Innovation Plan**

Petition of CenterPoint Energy

EXHIBIT Q: DRAFT RFP FOR RNG

Docket No. G-008/M-23-215

June 28, 2023

On the following pages, CenterPoint Energy provides a draft request for proposal (“RFP”) for renewable natural gas (“RNG”) to be purchased pursuant to the Renewable Natural Gas Request for Proposal Purchase pilot. Note that certain items in the RFP may be adjusted or determined at the time of actual RFP launch such as:

- 1) Contact information for CenterPoint Energy personnel
- 2) RFP timeline
- 3) Final submittal process for RFP respondents
- 4) Response template
- 5) Carbon intensity data inputs template
- 6) Weighting of scoring criteria

A draft scoring matrix is also provided as Attachment 1 to this Exhibit.

DRAFT

**CenterPoint Energy
Minnesota Region**

Natural Gas Innovation Act

Renewable Natural Gas Supply

Request for Proposal

This Request for Proposal (RFP) describes the services requested by CenterPoint Energy (the Company) to supply renewable natural gas (“RNG”) to our Minnesota natural gas utility as part of our Innovation Plan project portfolio under the Natural Gas Innovation Act (NGIA).

Proposals are due on [Insert Date] by 5:00 p.m. CT.

After the release of this Request for Proposal to selected Proposers, all questions about content and process should be directed only to CenterPoint Energy’s Designated Contact for this RFP [Insert Name and Email]. No phone calls will be accepted by the Designated Contact regarding this RFP. Any communication by a Proposer, or on a Proposer’s behalf, intended to influence this RFP process is not permitted and may result in disqualification of a Proposal.

1. General Information	4
1.1 Background	4
1.1.1 CenterPoint Energy	4
1.1.2 Regulatory Summary	4
1.1.3 NGIA GHG Accounting and Cost-Benefit Frameworks	5
1.1.4 CenterPoint Energy Interconnection and Gas Quality Standards	5
1.2 Objectives	6
2. Project Overview and Scope of Services	6
2.1 Definitions	6
2.2 Scope of Services	7
3. Proposer Instructions	8
3.1 Point of Contact	8
3.2 Request for Proposal Schedule	8
3.3 Request for Proposal and Bid Procedures	8
3.3.1 Questions and Communications	8
3.3.2 Submission of Proposal	9
3.3.3 Terms and Conditions of Submission	9
3.3.4 Request for Proposal Response Withdrawal	9
3.4 Proposal Selection and Award Process	10
3.4.1 Preliminary Evaluation	10
3.4.2 Proposal Scoring	10
3.4.3 Right to Reject Proposals and Negotiate Contract Terms	11
3.4.4 Awards and Final Offers	11
3.4.5 Notification of Intent to Award	11
4. Proposal Response Package Preparation	11

Document Components

This document is organized in the following manner:

Section 1 describes the relevant background and outlines CenterPoint Energy's objectives in partnering with other organizations to purchase RNG.

Section 2 outlines the project overview and scope of services expected of the Proposer and sets forth certain key defined terms.

Section 3 provides Proposer instructions in regard to submitting a response to the RFP including key dates, questions and communications, and submission of the Proposal, as well as a description of the Proposal selection process.

Section 4 provides information on the Proposal requirements including format and required information.

1. General Information

General information is provided in this section, including background information on CenterPoint Energy, the Natural Gas Innovation Act, and CenterPoint Energy's interconnection tariff¹, and CenterPoint Energy's objectives for this RFP.

1.1 Background

1.1.1 CenterPoint Energy

CenterPoint Energy serves nearly 7 million gas and electric metered customers across six states. This RFP is relevant to CenterPoint Energy's Minnesota natural gas utility business only. CenterPoint Energy is the largest natural gas distribution utility in Minnesota, serving over 890,000 customers in 260 communities. A list of communities served and illustration showing our general service territory is available here: <https://www.centerpointenergy.com/en-us/Documents/MN-Communities-Served.PDF>

1.1.2 Regulatory Summary

The Minnesota Natural Gas Innovation Act (NGIA), passed in June 2021 by the State Legislature, establishes a regulatory framework that enables Minnesota's investor-owned natural gas utilities to invest in renewable energy resources and innovative technologies that reduce the state's greenhouse gas (GHG) emissions. The legislation defines key terms and outlines the legislative intent to allow natural gas utilities to assist the state in meeting its existing renewable energy and GHG reduction goals. To begin investing in innovative resources, utilities must file an innovation plan describing what resources they plan to invest in

¹ Note that interconnection is not required to participate in this RFP.

over the next five-year period for the approval of the Minnesota Public Utilities Commission (Commission).

CenterPoint Energy filed its first innovation plan on June 28, 2023. In our innovation plan we stated our intention to purchase renewable natural gas (RNG) pursuant to a request for Proposal process. The Commission has not yet approved CenterPoint Energy's first innovation plan but Commission action is anticipated summer 2024.

1.1.3 NGIA GHG Accounting and Cost-Benefit Frameworks

Under the NGIA, the Commission established GHG accounting and cost-benefit frameworks to be used for the purposes of quantifying GHG reductions resulting from projects implemented as part of innovation plans and the cost-effectiveness of those projects.²

For RNG, the GHG accounting framework requires that lifecycle GHG intensity be calculated or estimated using the latest version of Argonne National Lab's Greenhouse gases, Regulated Emissions, and Energy use in Technologies (Argonne GREET) model, which differs from alternative GHG accounting frameworks used in other markets. For example, carbon intensity calculated for the purposes of compliance with California's transportation Low Carbon Fuel Standard using their CA-GREET model will be different than the carbon intensity calculated under the NGIA GHG accounting framework, which considers stationary fuel applications. As described further in Section 4, Proposers are requested to provide information in their response to assist in calculating GHG intensity under the NGIA GHG accounting framework.

The established cost-benefit framework is relatively broad and, in addition to costs and benefits directly related to energy and GHG reduction, considers qualitative costs and benefits of projects such as waste reduction, local economic development, innovation, and environmental justice considerations. As described further in section 4, Proposers are requested to provide information in their response related to the various elements of our cost-benefit analysis under the NGIA frameworks.

1.1.4 CenterPoint Energy Interconnection and Gas Quality Standards

CenterPoint Energy has an existing interconnection tariff to allow local Minnesota RNG producers to inject RNG directly into our distribution system, available at: <https://www.centerpointenergy.com/en-us/Documents/RatesandTariffs/Minnesota/MN-Tariff-Book.pdf#page=92> The quality standards for RNG resources that interconnect with CenterPoint Energy's distribution system are available at: <https://www.centerpointenergy.com/en-us/InYourCommunity/Documents/RNG-Quality-Standards.pdf>. Note that for the purposes of this RFP, CenterPoint Energy does not require that acquired RNG resources be interconnected with its own system and understands that any RNG resource will need to satisfy the interconnection requirements and quality standards of whichever pipeline the project is interconnected to. For to-be-constructed projects wanting to interconnect with CenterPoint Energy, the process would occur outside of this RFP and pursuant to the terms of the tariff referenced above.

² See Docket No. G-999/CI-21-566.

1.2 Objectives

CenterPoint Energy seeks to procure affordable, low-carbon intensity, and low-risk RNG resources for delivery to its customers. To do this, CenterPoint Energy desires to partner with participants in the RNG market who are interested in establishing long-term relationships to sell their pipeline-quality RNG.

2. Project Overview and Scope of Services

2.1 Definitions

Environmental Attributes

Any and all environmental claims, credits, benefits, emissions reductions, offsets, and allowances attributable to the production of renewable thermal energy (i.e. RNG) and, if applicable, its avoided emission of pollutants. The environmental attributes of RNG include but are not limited to the avoided GHG emissions associated with the production, transport, and combustion of a quantity of RNG compared with the same quantity of geologic natural gas. Environmental attributes do not include: (a) The RNG itself or the energy content of that gas; (b) Any tax credits associated with the construction or operation of the RNG production facility or other financial incentives in the form of credits, deductions, or M-RETS Renewable Thermal Operating Procedures 40 allowances associated with the production of RNG that applies to a state, provincial, or federal income tax obligation; (c) Fuel- or feedstock-related subsidies or “tipping fees” that may be paid to the seller to accept certain fuels, or local subsidies received by the RNG production facility for the destruction of particular preexisting pollutants or the promotion of local environmental benefits; or (d) Emission reduction credits encumbered or used by the RNG production facility for compliance with local, state, provincial, or federal operating and/or air quality permits.

GHG

Greenhouse Gas

Midwest Renewable Energy Tracking System (M-RETS)

M-RETS is a renewable resource tracking system that tracks and manages the activity of environmental attributes and energy commodities. More information is available about M-RETS [here](#).

NGIA

The Minnesota Natural Gas Innovation Act.³

³Minnesota Laws 2021, 1st Special Session, Chapter 4, Article 8, §§ 20, 21 and 27, partially codified at Minn. Stat. §§ 216B.2427-2428.

Proposer

The business entity that submits a Proposal in response to this RFP.

Proposal

Proposer's response to this RFP.

Renewable Natural Gas or RNG

The NGIA defines RNG as "biogas that has been processed to be interchangeable with, and that has a lower lifecycle greenhouse gas intensity than, natural gas produced from conventional geologic sources." Biogas is in turn defined as "gas produced by the anaerobic digestion of biomass, gasification of biomass, or other effective conversion processes."

Renewable Thermal Certificate (RTC)

RTCs are issued for each dekatherm of renewable thermal generation tracked in the M-RETS system. M-RETS defines an RTC as a "whole RTC" and includes all environmental attributes.

RFP

Request for Proposal.

2.2 Scope of Services

The Proposer may propose one or a combination of the following services:

- Proposer would sell and deliver to CenterPoint Energy, and CenterPoint Energy would purchase and receive from Proposer, RNG, as a bundled product consisting of both the RTCs as well as the gas commodity. CenterPoint Energy would enter into a gas purchase agreement with the Proposer and receive the RNG at a specific location.
- The Proposer would sell and deliver to CenterPoint Energy, and CenterPoint Energy would purchase and receive from Proposer, all the RTCs of an unbundled RNG product. In this situation, the Proposer would separately sell or otherwise market the commodity natural gas.
- For projects interconnected to CenterPoint Energy's gas distribution system, Proposer may accept a CenterPoint Energy capital investment in the project (e.g., for biogas upgrading equipment or other components of the project) in exchange for a reduction in price of the RNG purchased by CenterPoint Energy.

In the above situations, the RTCs that would be purchased by CenterPoint Energy must satisfy the requirements of the definition of Environmental Attributes required in Section 2.1 above. Additionally, the Proposer will support CenterPoint Energy's evaluation of the lifecycle GHG intensity of the RNG by promptly providing all data reasonably necessary for CenterPoint Energy to quantify the lifecycle GHG intensity according to the guidelines established by the Commission in Docket No. G-999/CI-21-566.

By definition, the RTCs may not also be claimed by any other party, such as an entity selling the attributes into programs such as the California Low Carbon Fuel Standard or any state or

provincial clean or renewable fuels program. Additionally, the attributes cannot be claimed by any party also generating Renewable Identification Numbers (RINs) from the same gas for satisfaction of obligations within the Renewable Fuel Standard. CenterPoint Energy will only purchase RNG if the Environmental Attributes would satisfy all requirements for listing on the M-RETS system, established in the NGIA, and established by the Commission in Docket No. G-999/CI-21-566, and CenterPoint Energy may request further documentation in support of this criteria if a Proposer is invited to move on to the next stage of CenterPoint Energy’s selection process.

3. Proposer Instructions

3.1 Point of Contact

All correspondence, included but not limited to questions and submissions, shall be directed to:

[TBD]

3.2 Request for Proposal Schedule

[TBD – The schedule below is provided for illustrative purposes but may change in final RFP.]

Milestone	Date
RFP Release Date	TBD
Deadline for Notice of Intent to Propose	[1 week from RFP release date], 5:00 p.m. CT
Deadline for Submission of Written Questions via email to Designated Contact	[2 weeks from RFP release date], 5:00 p.m. CT
Responses to Written Questions Posted	[3 weeks from RFP release date], 5:00 p.m. CT
Proposals Due	[8 weeks from RFP release date], 5:00 p.m. CT
Notification for Request for Further Information and Respondent Discussions	[9 weeks from RFP release date], 5:00 p.m. CT
Respondent Discussions	10 weeks from RFP release date – 11 weeks from RFP release date
Award Notification to Winning Proposals	12 weeks from RFP release date

Please note the above dates are subject to change. Notification of any changes to the RFP timeline prior to respondent discussions will be sent via email to those parties who have submitted a Notice of Intent to Propose.

3.3 Request for Proposal and Bid Procedures

3.3.1 Questions and Communications

For RFP issues and information requests, please direct correspondence to the email address noted above.

3.3.2 Submission of Proposal

Each Proposer shall submit its proposal adhering to the requirements outlined in this Section 3.3 and in Section 4.

[CenterPoint Energy has not determined the submittal process but would insert instructions here in the final official RFP.]

Proposers may submit multiple Proposals; however, each Proposal must conform fully to the requirements for Proposal submission. Each such proposal must be separately submitted and labeled as Proposal #1, Proposal #2, etc.

3.3.3 Terms and Conditions of Submission

- Proposer shall comply with all state and federal laws in regard to formulation and submittal of Proposals. Proposer should note that this is a competitive proposal situation, and that conferring with other Proposers about pricing or other specific details of a Proposal may violate antitrust law and is prohibited.
- Proposer is deemed to have satisfied itself by submission of its Proposal as to the correctness and sufficiency of the Proposal to cover all requirements of this RFP.
- Proposer shall under no circumstances use CenterPoint Energy's name or logos in advertising, marketing materials, printed matter, reference lists, or in any other way that could be construed as advertising (e.g., memo pads, tee shirts, binders, reference lists, etc.) without CenterPoint Energy's prior written consent.
- Any non-public information provided by CenterPoint Energy in connection with this RFP is confidential and proprietary to CenterPoint Energy. Non-public information will be labeled clearly as such. Such materials are to be used solely for the purpose of responding to this RFP. By requesting further information or submitting a Proposal, Proposer agrees not to disclose any such information to any third party without the prior written consent of CenterPoint Energy (which consent shall be conditioned upon the written agreement of the intended recipient to treat the same as confidential), except as may be required by law. CenterPoint Energy may request at any time that any or all CenterPoint Energy material be returned or destroyed.
- Any Proposer whose RNG is derived from an agricultural livestock production facility must certify that the agricultural livestock production facility has not and will not increase the number of animal units solely or primarily in order to produce RNG for sale to CenterPoint Energy during the term of any RNG sales agreement with CenterPoint Energy.

A Proposer that discovers an error or omission in its Proposal response package may withdraw that package and resubmit one, provided that it does so before the deadline for submission of proposal responses.

3.3.4 Request for Proposal Response Withdrawal

A Proposer that wishes to withdraw their proposal response package may do so at any time by submitting notice to the email address noted above.

3.4 Proposal Selection and Award Process

3.4.1 Preliminary Evaluation

Proposals will first be reviewed to determine conformance to the requirements of this RFP. Failure to meet the requirements of this RFP may result in the Proposal being rejected. In the event that a Proposer's Proposal does not meet all of the RFP requirements, CenterPoint Energy reserves the right to continue the evaluation of the non-conforming Proposal and to select the Proposals that provide the best opportunities for CenterPoint Energy to secure RNG resources in accordance with its strategy.

3.4.2 Proposal Scoring

Proposals will be evaluated on the following, among other criteria:

1. **RNG volume, price, feedstock type, and carbon intensity**
 - a. Cost, in \$/mmbtu delivered, of the bundled or unbundled RNG resource.
 - b. Cost in \$/MTCO₂e reduced, as calculated by NGIA GHG Accounting Framework.
 - c. The volume of RNG available for purchase.
 - d. Available additional incentives or other considerations specific to feedstock types proposed.
 - e. Lifecycle GHG intensity.⁴
2. **Favorability of contract terms**
 - a. Proposed terms of the purchase contract, including duration and renewal options.
3. **Experience of team and expected performance of project**
 - a. Experience of project team and proven performance of project or similar projects.
 - b. Counterparty performance risk/delivery risk.
 - c. Overall ability of project to successfully deliver qualifying RNG within the terms of the contract.
 - d. Projects where the Proposer is or subcontracts with diverse suppliers per the guidelines of the National Minority Supplier Development Council, the Women's Business Enterprise National Council and the U.S. Small Business Administration will be preferred.
4. **Project location and interconnection**
 - a. Supply location in or near Minnesota will be preferred.
 - b. Supply interconnected with CenterPoint Energy's Minnesota distribution system will be preferred.
5. **Additional NGIA cost-effectiveness considerations**
 - a. As described in Section 4, Part 4.

⁴Lifecycle GHG intensity will be calculated or estimated using the Argonne National Lab's Greenhouse gases, Regulated Emissions, and Energy use in Technologies as specified in Docket No. G-999/CI-21-566. Note that pursuant to the Commission's orders in Docket No. G-999/CI-21-566, lifecycle GHG intensity calculations for this RFP are not identical to processes used for the California Low Carbon Fuel Standard or in any other jurisdiction, to CenterPoint Energy's knowledge.

3.4.3 Right to Reject Proposals and Negotiate Contract Terms

CenterPoint Energy has no obligation to reveal the basis for contract award or to provide any information to Proposers relative to the evaluation or decision-making process. All participating Proposers will be notified promptly of proposal acceptance or rejection. Nothing in this RFP is intended to, nor shall it be construed as creating: (a) a partnership, joint venture, or other legal entity; or (b) any agency or ongoing or continuing relationship between the Proposer and CenterPoint Energy. CenterPoint Energy shall not be under any legal obligation of any kind whatsoever to accept any Proposal and shall not be under any obligation to enter into any further agreements with any Proposer of any nature whatsoever as a result of this RFP or the submission of any Proposal. In addition, nothing in this RFP (nor the receipt of any Proposal) shall be construed as an offer or commitment of CenterPoint to continue negotiations. CenterPoint will not have any liability or be subject to any equitable relief related to this RFP arising from a failure to negotiate in good faith or accept any Proposal.

3.4.4 Awards and Final Offers

Awards may be granted to multiple Proposers. Should the Proposer and CenterPoint Energy jointly decide to move forward, CenterPoint Energy may request additional documentation to support Proposer's ability to satisfy the terms of its bid and CenterPoint Energy's requirements.

CenterPoint Energy expects that the legal terms of a bundled RNG purchase transaction would be documented in a North American Energy Standards Board Base Contract for Sale and Purchase of Natural Gas ("NAESB Base Contract"), and that transaction-specific details, such as volume, price, delivery location, quality specifications, and regulatory requirements related to Environmental Attributes would be set forth in a transaction confirmation entered into pursuant to the NAESB Base Contract. The terms of an unbundled purchase of RTCs would be set forth in an agreement containing legal terms that are standard for the purchase of RTCs or similar products, to be negotiated between the parties.

3.4.5 Notification of Intent to Award

As a courtesy, CenterPoint Energy will send a notification of award letter to responding Proposers upon the conclusion of the RFP process, and will inform all Proposers of their status.

4. Proposal Response Package Preparation

The proposal response package should be organized to comply with the section numbers and names as shown below.

[Note: CenterPoint Energy may prepare a response template document, aligned with the content below, to be used for the final RFP process]

Cover Page

- Proposer Company Name, Company Address
- Primary Contact: Name, title, email address, mailing address, phone number
- Project Title that includes Company Name, Project Location, and Feedstock(s)

- Date proposal submitted

Part 1 Executive Summary of the Proposal

- Proposers are required to provide an executive summary of the Proposal summarizing key elements of their proposal including:
 - Volume of RNG available for purchase annually (MMBTU per year)
 - Expected maximum and minimum hourly supply of RNG in MMBTU/Hr (if seeking interconnection)
 - Whether the proposal is for unbundled RNG or bundled RNG
 - Feedstock type(s)
 - Price per MMBTU
 - Estimated carbon intensity, previously estimated, if available, indicating methodology used in calculating this figure
 - Production start date
 - Contract start date, and proposed length of contract
 - Whether the proposal is seeking a direct investment by CenterPoint Energy to support components of the project (e.g., biogas upgrading equipment)
 - Any other key information specific to the proposal deemed to be important by Proposer, including any highlights from Section 4 of the proposal

Part 2 Project and Contract Information

- Owner(s) of the RNG facility
- Operator/maintenance provider: Indicate the company that operates and maintains the RNG production facility
- Description of experience and qualifications of owners, operators, and other major parties involved in the project
- Location of the RNG facility
- Project financing:
 - Indicate if the project is fully funded. Any information about financing (e.g., breakdown between equity and debt) is helpful, though not required.
 - For projects interconnecting with CenterPoint Energy's gas distribution system, CenterPoint Energy may be able to provide financial participation in the project, provided that investments are in system components (e.g., biogas upgrading or compression equipment) that would be wholly owned by CenterPoint Energy, and the price of RNG is sufficiently discounted to warrant the investments. Indicate whether this is part of your proposal, or if you would be interested in discussing further.
- Start Date of Production: Is the facility operational? If yes, when was RNG production initiated? If not, when is expected start date of production?
- If operational, describe the project's performance history. If not operational, describe team's performance on similar projects.
- Feedstock:
 - Type: Dairy manure, other animal manure, landfill, wastewater, food waste (note source), other, or mixed (describe mixture)

- Any Proposer whose RNG is derived from an agricultural livestock production facility must certify that the agricultural livestock production facility has not and will not increase the number of animal units solely or primarily in order to produce RNG for sale to CenterPoint Energy during the term of any RNG sales agreement with CenterPoint Energy. If applicable to your project, in your proposal, please indicate your ability to agree with this condition.
 - Source and owner of feedstock
- Volume:
 - Total annual injection rate of RNG (MMBTU per year)
 - Describe any expected variability or increase/decrease in future years
 - Proposed annual volume available for purchase by CenterPoint Energy (MMBTU per year)
 - Monthly profile of production if not constant throughout the year (if seeking interconnection)
- Contract terms:
 - i Indicate if the sale of the RNG is bundled with commodity natural gas or is a separate sale of just the Renewable Thermal Certificates (RTCs).
 - ii Pricing:
 - 1. Proposed total price per MMBTU of RNG purchased (\$/MMBTU) stated either as:
 - Separately list price per MMBTU of commodity and price per MMBTU/RTC of environmental attributes
 - Price per bundled MMBTU
 - 2. Proposed pricing terms – fixed vs. variable pricing, anticipated escalator, etc.
- Interconnection Location: Note the location of the interconnect as well as the owner of the distribution or transmission system onto which the project is interconnected. Latitude/Longitude of location is preferred.
- Describe any known major project risks and plans for mitigating these risks or contingency plans.

Part 3 Carbon Intensity and Environmental Attributes

As described in section 1.1.3, lifecycle GHG intensity will be calculated or estimated using the Argonne GREET model, which differs from other commonly used methods such as that used for compliance with California's Low Carbon Fuel Standard. For the purposes of this RFP, we request facility-specific data to be used to estimate carbon intensity of your project under the NGIA GHG accounting framework.

- Complete the Carbon Intensity Data Collection Template and submit completed template with your proposal document [Note: the exact content and format of this template is TBD as of the innovation plan filing but would request facility-specific data points required to estimate GHG intensity, e.g., feedstock/waste composition, baseline (how is waste being handled now), production scale, and facility energy use].

- If available, attach other carbon intensity analyses or verification reports completed for this project to assist in our understanding of the project.
- Describe involvement with other RNG environmental attribute markets such as California's Low Carbon Fuel Standard or EPA RINs. Discuss controls to avoid double counting of environmental benefits across these markets for the same portion of RNG generated by the project.

Part 4 Additional NGIA Cost-Effectiveness Considerations

As described in section 1.1.3, the cost-benefit framework used to assess the cost-effectiveness of NGIA pilot projects includes a variety of environmental, economic, and innovation considerations. We request additional information about your project related to these other considerations.

- Describe the employment opportunities created by this project. How many full-time equivalent positions were created to support this project's construction and/or operation? Has the project supported apprenticeships?
- Are jobs created being paid prevailing wage as defined by the United States Department of Labor?⁵
- Has this project leveraged other federal, state, or local incentives such as incentives or tax benefits through the Inflation Reduction Act?
- Describe notable waste reduction benefits of the project.
- How is the digestate (or other byproducts) being used?
- Describe any other economic benefits of this project.
- Is this project located in a Disadvantaged Community, as defined by the US Department of Energy's Justice40 initiative? See: <https://energyjustice.egs.anl.gov/>
- Is this project located in an Energy Community, as defined by the Inflation Reduction Act? See: <https://energycommunities.gov/>
- How has (or will) this project engaged the surrounding communities to address any community concerns?
- Describe any innovative components of this project related to reduction in carbon intensity/GHG emissions reduction, or any of the other cost-effectiveness considerations above.

Part 5 Other Relevant Information

- Provide other information relevant to your proposal not discussed in Parts 1 – 4.

⁵<https://sam.gov/content/wage-determinations>.

Service Category	Supplier Response Category	Weights	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5	Vendor 6
Technical (80%)	RNG Volume	TBD	0	0	0	0	0	0
	RNG Price per MMBTU (compared to market expectations)	TBD	0	0	0	0	0	0
	Cost per MTCO2E reduction	TBD	0	0	0	0	0	0
	Favorability of proposed contract terms	TBD	0	0	0	0	0	0
	Experience of team and expected performance of project	TBD	0	0	0	0	0	0
	Project location and interconnection preference	TBD	0	0	0	0	0	0
	Additional NGIA cost-effectiveness considerations	TBD	0	0	0	0	0	0
	Overall quality of proposal and other considerations	TBD	0	0	0	0	0	0
	Eligible for RNG Bonus cost cap funding, or other feedstock-related considerations	TBD	0	0	0	0	0	0
	See RFP "Proposal Scoring" Section for Descriptions of these categories.							
		0%	0	0	0	0	0	0
		Subtotal:	0	0	0	0	0	0
Procurement (20%)	Compliance with Instructions	TBD						
	Issues with T&C's	TBD						
	Diverse supplier*	TBD						
	D&B	TBD						
		0%	0	0	0	0	0	0
		Subtotal:	0	0	0	0	0	0
		TOTALS:	0	0	0	0	0	0
		Ranking:	1	1	1	1	1	1
COST	Total Expected Cost over Contract Lifetime							
	Pricing structure details (Describe)							
	Cost Benchmarks:							
	Cost of Commodity (\$/MMBTU)							
	Cost of Environmental Attributes (\$/MMBTU)							
	Cost of Environmental Attributes (\$/MTCO2E Reduced)							

Score each vendor on each element of technical evaluation

- 1 Very Poor
- 2 Poor
- 3 Average
- 4 Good
- 5 Very Good

NOTE: The Technical Evaluation Criteria should be revised to fit the requirement of the solution being sought. The provided criteria is suggestion only. On the Summary Evaluation Tab the weights for the criteria can be revised as well. The total must equal 100%. Please do not alter the formula already provided in the spreadsheet.

	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5	Vendor 6
Technical Evaluation						
RNG Volume	0	0	0	0	0	0
Reviewer 1						
Reviewer 2						
Reviewer 3						
Reviewer 4						
RNG Price per MMBTU (compared to market expectations)	0	0	0	0	0	0
Reviewer 1						
Reviewer 2						
Reviewer 3						
Reviewer 4						
Cost per MTCO2E reduction	0	0	0	0	0	0
Reviewer 1						
Reviewer 2						
Reviewer 3						
Reviewer 4						
Favorability of proposed contract terms	0	0	0	0	0	0
Reviewer 1						
Reviewer 2						
Reviewer 3						
Reviewer 4						
Experience of team and expected performance of project	0	0	0	0	0	0
Reviewer 1						
Reviewer 2						
Reviewer 3						
Reviewer 4						
Project location and interconnection preference	0	0	0	0	0	0
Reviewer 1						
Reviewer 2						
Reviewer 3						
Reviewer 4						
Additional NGIA cost-effectiveness considerations	0	0	0	0	0	0
Reviewer 1						
Reviewer 2						
Reviewer 3						
Reviewer 4						

Score each vendor on each element of technical evaluation

- 1 Very Poor
- 2 Poor
- 3 Average
- 4 Good
- 5 Very Good

NOTE: The Technical Evaluation Criteria should be revised to fit the requirement of the solution being sought. The provided criteria is suggestion only. On the Summary Evaluation Tab the weights for the criteria can be revised as well. The total must equal 100%. Please do not alter the formula already provided in the spreadsheet.

	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5	Vendor 6
Overall quality of proposal and other considerations	0	0	0	0	0	0
Reviewer 1						
Reviewer 2						
Reviewer 3						
Reviewer 4						
Eligible for RNG Bonus cost cap funding, or other feedstock-related considerations	0	0	0	0	0	0
Reviewer 1						
Reviewer 2						
Reviewer 3						
Reviewer 4						
	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

SEE RFP "Proposal Scoring" Section for Descriptions of these categories.

RNG Volume	TBD
RNG Price per MMBTU	TBD
Cost per MTCO2E reduction	TBD
Favorability of proposed contract terms	TBD
Experience of team and expected performance of project	TBD
Project location and interconnection preference	TBD
Additional NGIA cost-effectiveness considerations	TBD
Overall quality of proposal and other considerations	TBD
Eligible for RNG Bonus cost cap funding, or other feedstock-related considerations	TBD

Supplier Response Category	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5	Vendor 6
RNG Volume						
RNG Price per MMBTU (compared to market expectations)						
Cost per MTCO2E reduction						
Favorability of proposed contract terms						
Experience of team and expected performance of project						
Project location and interconnection preference						
Additional NGIA cost-effectiveness considerations						
Overall quality of proposal and other considerations						
Eligible for RNG Bonus cost cap funding, or other feedstock-related considerations						

