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

Petition of CenterPoint Energy

EXHIBIT K: INTERESTED PARTIES MEETING MATERIALS

PART 1 OF 3

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

June 28, 2023

Request for Ideas

CenterPoint Energy's first Innovation Plan under the Minnesota Natural Gas Innovation Act

We request that you do not share this document with individuals outside of your organization.

Contents

Background

RFI Purpose

This Request for Ideas (RFI) seeks to gather ideas and information to assist in the development of CenterPoint Energy's first "innovation plan" under Minnesota's Natural Gas Innovation Act (NGIA, the Act). We are seeking to collect input on a broad set of potential initiatives allowed under the Act, including pilot projects, programs and services, and research & development efforts that further the development of "innovative resources". Innovative resources include renewable natural gas, biogas, power-to-hydrogen, power-to-ammonia, energy efficiency, strategic electrification, district energy, and carbon capture, and are described in more detail below. Responses to this RFI will serve as a starting point to collect ideas for further evaluation. This RFI is issued solely for information and planning purposes and does not constitute a solicitation or commitment by CenterPoint Energy, implied or otherwise, to purchase or contract. Responding to this RFI does not guarantee that submissions will be included in the innovation plan. We encourage submission of all ideas and proposed projects. We are interested in a range of responses from very specific single program ideas to broader cross-category ideas.

CenterPoint Energy Company Information

CenterPoint Energy serves nearly 7 million gas and electric metered customers across six states. **This RFI 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, as depicted in the following image. A full list of communities served is available here: https://www.centerpointenergy.com/en-us/Documents/RatesandTariffs/Minnesota/CPE-MN-Tariff-Book.pdf#page=6

Natural Gas Innovation Act

The Minnesota Natural Gas Innovation Act, 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. Key elements of NGIA relevant to this RFI are described further below.

Definition of the Innovation Plan, Pilot Projects, and Innovative Resources

NGIA allows investor-owned natural gas utilities in Minnesota to develop an "innovation plan". Innovation plans comprise a set of pilot projects that directly deploy and/or encourage the deployment of "innovative resources", which displace or reduce the use of fossil natural gas and reduce greenhouse gas emissions associated with the natural gas system. Innovation plans must be approved by the Minnesota Public Utilities Commission (MPUC) prior to implementation.

Pilot projects proposed in a plan can include a wide range of activities, including specific project development, programs and services offered to CenterPoint Energy customers, and research & development efforts.

Eight innovative resources are specifically defined in the Act and are listed in the table below.

Innovative Resource	Definition from the Natural Gas Innovation Act
Renewable natural gas (pipeline quality)	*"Renewable natural gas" means 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 (not pipeline quality)	*"Biogas" means gas produced by the anaerobic digestion of biomass, gasification of biomass, or other effective conversion processes.*
Power-to-hydrogen (green hydrogen, either for pipeline blending or dedicated hydrogen systems)	*"Power-to-hydrogen" means the use of electricity generated by a carbon-free resource to produce hydrogen.*
Power-to-ammonia	*"Power-to-ammonia" means the production of ammonia from hydrogen produced via power-to-hydrogen using a process that has a lower lifecycle greenhouse gas intensity than does natural gas produced from conventional geologic sources.*
Energy efficiency	*"Energy efficiency" means measures or programs, including energy conservation measures or programs, that: (1) target consumer behavior, equipment, processes, or devices; (2) are designed to reduce the consumption of electricity or natural gas on either an absolute or per unit of production basis; and (3) do not reduce the quality or level of service provided to an energy consumer but does not include energy conservation investments that the commissioner determines could reasonably be included in a utility's conservation improvement program.*
Strategic electrification	*"Strategic electrification" means the installation of electric end-use equipment in an existing building in which natural gas is a primary or back-up fuel source, or in a newly constructed building in which a customer receives natural gas service for one or more end-uses, provided that the electric end-use equipment:* *(1) results in a net reduction in statewide greenhouse gas emissions, as defined in section 216H.01, subdivision 2, over the life of the equipment when compared to the most efficient commercially available natural gas alternative; and* *(2) is installed and operated in a manner that improves the load factor of the customer's electric utility.* *Strategic electrification does not include investments that the commissioner determines could reasonably be included in the natural gas utility's conservation improvement program under section 216B.241.*
District energy	*"District energy" means a heating or cooling system that is solar thermal powered or that uses the constant temperature of the earth or underground aquifers as a thermal exchange medium to heat or cool multiple buildings connected through a piping network.*
Carbon capture	*"Carbon capture" means the capture of greenhouse gas emissions that would otherwise be released into the atmosphere.*

This RFI is seeking ideas for pilot projects that directly deploy and/or encourage the deployment of one (or more) of these resources.

Special Pilot Projects

While NGIA's broad definitions allow for pilot projects that cover a wide range of activities, the Act contains provisions for several specific pilot programs that CenterPoint Energy must include in its initial filing.

- Deep energy efficiency retrofits with cold-climate electric air-source heat pumps and gas heat back up
- Small-to-Medium Sized commercial GHG reduction audit program
- Program for large, hard-to-electrify industrial customers
- A program to facilitate the development, expansion, or modification of district energy systems in Minnesota (See District Energy submission category)

CenterPoint Energy is requesting ideas for each of these special pilot types through this RFI. More information on what is required for each of these specific pilots is included in the "Detailed Submission Category Descriptions and Supplemental Information Requested" section below.

Greenhouse Gas Emissions Accounting and Cost Effectiveness Frameworks

The MPUC will evaluate proposed innovation plans based on total GHG emissions reduced, as well as cost effectiveness.

Under NGIA, by June 1st, 2022 the MPUC must issue two frameworks that will be used to evaluate proposed innovation plans: 1) a lifecycle greenhouse gas accounting framework and 2) a cost effectiveness framework. Background on the development of these frameworks is available in MPUC Docket No. G-999/CI-21-566.

While the finalized frameworks that provide specific guidance on exact methodology will not be known at the time responses for this RFI are due, a few key principles should be kept in mind when providing responses:

- **Greenhouse Gas Emissions Accounting Framework**
  - GHG emissions must be **lifecycle emissions** (as opposed to limiting to scope 1 and 2 GHG emissions common in other GHG accounting protocols)
  - *"Lifecycle greenhouse gas emissions" means the aggregate greenhouse gas emissions resulting from the **production, processing, transmission, and consumption** of an energy resource."*
- **Cost Effectiveness Framework**
  - While it hasn't been finalized, CenterPoint Energy expects the cost-effectiveness framework to include a broad view of costs and benefits – both quantitative and qualitative – including the following elements:
    - **Traditional cost-benefit tests:** Similar to those used for energy efficiency programs, but with some modifications (Costs and benefits from the utility, participant, and non-participating customer perspectives)

- **Socioeconomic:** Net job creation, economic development and market development
- **Environmental:** GHG reduction, other pollution reduction, waste reduction and reuse (including reduction of water use), including any environmental justice costs and benefits
- **Energy system:** support for energy system innovation, scalability and role in a decarbonized system

To the extent possible, responses to this RFI should reflect the above definitions to provide the best estimates to easily guide us in our analysis. **However, if information is not available at this time, it should not prevent the submission of ideas; further analysis of selected projects will occur to determine final values to be used in the innovation plan.**

Commercialization

The program aims to stimulate new approaches and technologies and will consider first-of-a-kind ideas. The program aims to remove the risks and bottlenecks of the implementation of qualifying projects which, once deployed at scale, can materially impact CenterPoint Energy and the natural gas industry. To this end, ideas that include a credible commercialization strategy at scale are of particular interest.

Innovation Plan Budget and Timeline

NGIA defines a spending cap for each innovation plan. For its first innovation plan, CenterPoint Energy estimates that there will be an average annual budget of up to $20 million. NGIA further requires that utilities spend at least half of the overall plan budget on RNG, biogas, power-to-hydrogen and power-to-ammonia projects.

The development of CenterPoint Energy's first innovation plan will occur in 2022. The completed plan will be submitted to the MPUC and must be approved prior to any implementation. Innovation plans cover a 5-year implementation period, and CenterPoint Energy estimates its first plan to begin implementation in late 2023 or early 2024, dependent on plan approval by MPUC.

Submission Process

Submission Categories Overview

CenterPoint Energy seeks ideas related to the submission categories listed below. Responses can be for just one category or more than one category. All responses must specify which category (or categories) the idea is relevant to. See "Detailed Submission Category Descriptions and Supplemental Information Requested" section for more information on the types of ideas requested for each category.

Submission categories

While we are seeking a broad range of ideas, CenterPoint Energy is particularly interested in ideas that identify scalable and reproducible technological and business approaches.

Submission Instructions and Requested Response Format

- Respondents should prepare a submission document that responds to the requested information below.
- Submit your response via the RFI online form, which includes a process to submit the document(s) associated with your response. Click here to access the online form: https://forms.office.com/r/4p5ypY3F6a
- CenterPoint Energy requests separate responses for each idea; for respondents who wish to submit multiple ideas, submit a separate online form for each idea.
- Respondents can request that detailed information about their idea is kept confidential and should mark accordingly relevant pages or paragraphs in their submission. However the following information cannot be confidential:
    - Project submission category and title
    - Project abstract/brief description submitted on online form

Information to include in submission document

Please include the following information in your submission document, **as available and applicable**:

1) Submission category
2) Respondent contact information
3) Detailed description of proposed idea, project or program
4) Estimated project timeline
5) Organizations involved or suggested implementation partners
6) Description of GHG reduction potential (see GHG accounting framework described above)
    a. Include an estimate of annual lifecycle GHG emissions reductions if available, see GHG accounting framework described above
7) Description of estimated applicable costs and benefits (see cost-benefit framework described above):
    a. Total project cost; estimate separate capital costs and O&M costs as possible
    b. Expected cost to CenterPoint Energy
    c. Other available funding sources, if any
    d. Energy and cost savings, and other benefits included in the cost-benefit framework described above
    e. Environmental justice and equity costs and benefits, if any (qualitative description is acceptable)
    f. Impact for CenterPoint Energy and the State of Minnesota. This section should highlight opportunities to scale up and reproduce the proposed solution and the overall potential impact in terms of economic, environmental and social benefits
    g. Commercialization strategy, if applicable
8) Supplemental category-specific information, if requested in the detailed submission category descriptions below.

Submission Deadline

Responses are due on Wednesday, April 27th, 2022 by 5:00 PM Central Time.

Follow-up Process

This RFI is issued solely for information and planning purposes and does not constitute a solicitation or commitment by CenterPoint Energy, implied or otherwise, to purchase or contract. Responding to this RFI does not guarantee that CenterPoint Energy will pursue your idea. CenterPoint Energy will contact respondents if we desire more information or would like to further explore your idea. Any costs related to the submission of responses are the responsibility of the submitting party and will not be reimbursed.

Contact Information

Questions related to this RFI can be directed to emma.ingebretsen@centerpointenergy.com.

Detailed Submission Category Descriptions and Supplemental Information Requested

Renewable Natural Gas (RNG) – pipeline quality

Statutory definition: "Renewable natural gas" means 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.

Ideas requested:

- Specific projects expecting to produce pipeline quality RNG in 2023-2028 that would be available for purchase by CenterPoint Energy Minnesota Gas, or studies evaluating the feasibility of specific projects
    - Special consideration will be given to projects meeting the following criteria: "RNG produced from food waste diverted from a landfill, municipal wastewater treatment system, or an organic mixture that includes at least 15 percent, by volume, sustainably harvested native prairie grasses or locally appropriate cover crops"
- Programs, systems, services, research & development efforts, or other ideas that would encourage production of more pipeline quality RNG in Minnesota or neighboring states, reduce the price of RNG for CenterPoint Energy customers, or reduce the GHG intensity of RNG produced

Supplemental information to include in your submission document, if available:

1) For submissions proposing **specific** RNG projects, please provide the following information, if possible:
    a. Feedstock(s)
    b. Expected GHG intensity
    c. Approximate expected pricing
    d. Location(s) of production
    e. Start date of production
    f. Desired contract term
    g. Estimated annual Dekatherms (MMBTU), that would be available for purchase by CenterPoint Energy

Biogas – not pipeline quality

Statutory definition: "Biogas" means gas produced by the anaerobic digestion of biomass, gasification of biomass, or other effective conversion processes.

Ideas requested:

- Specific projects to develop biogas (not pipeline quality) used to displace geologic natural gas in CenterPoint Energy's Minnesota service territory, or studies evaluating the feasibility of specific projects
- Programs, systems, services, research & development efforts or other ideas that would encourage the production and use of more biogas (not pipeline quality) in the state of Minnesota to displace the use of geologic natural gas, or reduce the GHG intensity of the biogas produced

Supplemental information to include in your submission document, if available:

1) For submissions proposing **specific** biogas projects, please provide the following information, if possible:
    a. Feedstock(s)
    b. Expected GHG intensity
    c. Location(s) of production
    d. Start date of production
    e. Estimated annual energy produced
    f. Describe how the project will displace the use of geologic natural gas

Power-to-hydrogen

Statutory Definition: "Power-to-hydrogen" means the use of electricity generated by a carbon-free resource to produce hydrogen.

- Specific projects to develop **dedicated** green hydrogen systems that displace the use of geologic gas in CenterPoint Energy's Minnesota service territory, or studies evaluating the feasibility of specific projects
- Specific projects to develop green hydrogen used for **pipeline blending** in CenterPoint Energy's Minnesota service territory, or studies evaluating the feasibility of specific projects
- Programs, systems, services, research & development efforts, or other ideas that would encourage the development of green hydrogen systems (dedicated systems or for pipeline blending) in the state of Minnesota to displace the use of geologic natural gas

Supplemental information to include in your submission document, if available:

1) For submissions proposing development of **specific** hydrogen projects, please provide the following information, if possible:
    a. Source of electricity used and description of how that electricity is carbon-free
    b. Potential project locations, if known
    c. Timeline from start to production
    d. Use(s) of hydrogen (describe end use, or note if proposed project would involve pipeline blending)
    e. Describe how the project will displace the use of geologic natural gas
    f. Estimated cost $/Kg of hydrogen produced, or
    g. Estimated Capital and O&M costs of project and estimated annual Kg of Hydrogen produced.

Power-to-Ammonia

Statutory definition: "Power-to-ammonia" means the production of ammonia from hydrogen produced via power-to-hydrogen using a process that has a lower lifecycle greenhouse gas intensity than does natural gas produced from conventional geologic sources.

Ideas requested:

- Specific projects to develop dedicated ammonia systems to displace the use of geologic gas in CenterPoint Energy's Minnesota service territory, or studies evaluating the feasibility of specific projects
- Programs, systems, services, research & development efforts, or other ideas that would encourage the development of carbon-free ammonia to displace the use of geologic gas in the state of Minnesota to displace the use of geologic natural gas

Supplemental information to include in your submission document, if available:

1) For submissions proposing development of **specific** power-to-ammonia projects, please provide the following information, if possible:
    a. Source of electricity used and description of how that electricity is carbon-free
    b. Potential Project locations if known
    c. Timeline from start to production
    d. Use(s) of the ammonia
    e. Estimated cost $/pound of ammonia produced, or
    f. Estimated Capital and O&M costs of project and annual ammonia output projected
    g. Describe how the project will displace the use of geologic natural gas

Strategic Electrification

"Strategic electrification" means the installation of electric end-use equipment in an existing building in which natural gas is a primary or back-up fuel source, or in a newly constructed building in which a customer receives natural gas service for one or more end-uses, provided that the electric end-use equipment:

> *(1)results in a net reduction in statewide greenhouse gas emissions, as defined in section 216H.01, subdivision 2, over the life of the equipment when compared to the most efficient commercially available natural gas alternative; and*
>
> *(2)is installed and operated in a manner that improves the load factor of the customer's electric utility.*

Strategic electrification does not include investments that the commissioner determines could reasonably be included in the natural gas utility's conservation improvement program under section 216B.241.

Ideas requested:

- Program design proposals for electrification programs targeting any of the following sectors. Note that for all electrification programs, NGIA requires some gas to remain in the home or business – only partial electrification or electrification with gas back up.
    - Residential existing homes
    - Residential new construction
    - Low-income
    - Multi-family
    - Small/mid-size commercial
    - Industrial

Supplemental information to include in your submission document, if available:

1) Target sector
2) Detailed description of proposed program design
3) Electrification measures to be offered through program
4) Proposed incentive structure
5) Estimated energy savings and GHG emissions reductions per participant
6) Expected annual participation
7) Description of how program supplements CenterPoint Energy's existing Conservation Improvement Program

Energy Efficiency

"Energy efficiency" means measures or programs, including energy conservation measures or programs, that: (1) target consumer behavior, equipment, processes, or devices; (2) are designed to reduce the consumption of electricity or natural gas on either an absolute or per unit of production basis; and (3) do not reduce the quality or level of service provided to an energy consumer but does not include energy conservation investments that the commissioner determines could reasonably be included in a utility's conservation improvement program.

Ideas requested:

- Program design proposals for innovative energy efficiency not currently included in CenterPoint Energy's CIP program, targeting any of the following sectors
    - Residential existing homes
    - Residential new construction
    - Low-income
    - Multi-family
    - Small/mid-size commercial
    - Industrial

- Examples of energy efficiency ideas could include, but is not limited to, the following:
    - Solar thermal collectors for domestic hot water
    - Transpired solar collectors for ventilation air
    - Natural gas heat pumps for space heating
    - Natural gas heat pumps for water heating

Supplemental information to include in your submission document, if available:

1) Target sector
2) Detailed description of proposed program design
3) Energy efficiency measures to be offered through program
4) Proposed incentive structure
5) Estimated energy savings and GHG emissions reductions per participant
6) Expected annual participation
7) Description of how program supplements CenterPoint Energy's existing Conservation Improvement Program

District Energy

Statutory definition: "District energy" means a heating or cooling system that is solar thermal powered or that uses the constant temperature of the earth or underground aquifers as a thermal exchange medium to heat or cool multiple buildings connected through a piping network.

Description of required pilot program from statute: "a pilot program to facilitate the development, expansion, or modification of district energy systems in Minnesota…does not require the utility to propose, construct, maintain, or own district energy infrastructure."

Ideas requested:

- Specific projects developing district energy (consistent with the description above) in place of geologic gas heating, in CenterPoint Energy's Minnesota service territory, or studies evaluating the feasibility of specific projects.
- Programs, systems, services, research & development efforts, or other ideas that would encourage district energy (consistent with the description above) in place of geologic gas heating, in CenterPoint Energy's Minnesota service territory.

Supplemental information to include in your submission document, if available:

1) For submissions proposing development of **specific** district energy projects, please provide the following information, if possible:
    a. System capacity
    b. Detailed description of proposed district energy system design
    c. Project location
    d. Estimated energy savings and GHG emissions reductions

Carbon Capture

Statutory definition: "Carbon capture" means the capture of greenhouse gas emissions that would otherwise be released into the atmosphere

Note that this definition is very broad and could include a wide variety of project types.

Ideas requested:

- Specific carbon capture projects, including storage and reuse, in CenterPoint Energy's Minnesota service territory, or studies evaluating the feasibility of specific projects.
- Programs, systems, services, research & development efforts, or other ideas that would encourage carbon capture in CenterPoint Energy's Minnesota service territory.

Supplemental information to include in your submission document, if available:

1) For submissions proposing development of specific carbon capture projects, please provide the following information, if possible:
    a. Description of proposed carbon capture system design
    b. Project location
    c. Estimated GHG emissions reductions

Special Projects: Commercial GHG Assessment Program

Description of required pilot program from statute: "Thermal energy audits to small- and medium-sized business in order to identify opportunities to reduce or avoid greenhouse gas emissions from natural gas use. The pilot program must provide incentives for businesses to implement recommendations made by the audit. The utility must develop criteria to identify businesses that achieve significant emissions reductions by implementing audit recommendations and must recognize the businesses as thermal energy leaders."

Ideas requested:

- Program design proposals for a small-to-medium commercial energy and greenhouse gas emissions assessment (consistent with the description above), including incentives to implement recommendations. Note that services must expand beyond what is offered through CenterPoint Energy's existing energy efficiency offerings through the Conservation Improvement Program.

Supplemental information to include in your submission document, if available:

1) Detailed description of proposed program design
2) Common GHG reduction opportunities that are likely to be identified during an assessment
3) Proposed incentive structure
4) Estimated energy savings and GHG emissions reductions per participant
5) Expected annual participation
6) Description of how program supplements CenterPoint Energy's existing Conservation Improvement Program

Special Projects: Residential Deep Energy Retrofits and Heating Electrification Program

Description of required pilot program from statute: "a pilot program that facilitates deep energy retrofits and the installation of cold climate electric air-source heat pumps in existing residential homes that have natural gas heating systems…"deep energy retrofit" means the installation of any measure or combination of measures, including air sealing and addressing thermal bridges, that under normal weather and operating conditions can reasonably be expected to reduce a building's calculated design load to ten or fewer British Thermal Units per hour per square foot of conditioned floor area. Deep energy retrofit does not include the installation of photovoltaic electric generation equipment, but may include the installation of a solar thermal energy project."

Ideas requested:

- Program design proposals aggressive residential insulation program (consistent with description above) combined with heating electrification, with gas back up.

Supplemental information to include in your submission document, if available:

1) Detailed description of proposed program design
2) Estimated energy savings and GHG emissions reductions per participant
3) Expected annual participation
4) Estimated annual natural gas use reduction in Dekatherms in total and per participant
5) Estimated increase in electricity usage in KWH in total and per participant
6) Any estimated change in peak power delivered by gas or electricity
7) Description of how program supplements CenterPoint Energy's existing Conservation Improvement Program
8) Estimated cost to deliver program per participant

Special Projects: Innovative Resources for Large Industrial Customers

Description of required pilot program from statute: "a pilot program to provide innovative resources to industrial facilities whose manufacturing processes, for technical reasons, are not amenable to electrification."

Ideas requested:

- Program design proposals (consistent with the description above) to assist CenterPoint Energy's industrial customers to decarbonize their manufacturing or other process end-uses by deploying innovative resources, such as power-to-hydrogen.

Supplemental information to include in your submission document, if available:

1) Detailed description of proposed program design
2) Estimated average GHG emissions reductions per participant
3) Expected annual participation
4) Proposed incentive structure, if any

Other Information or Ideas

Ideas requested:

- Any other information or ideas for consideration that fit under the NGIA requirements but do not fit neatly into one of the above categories.

CenterPoint Energy Innovation Plan

Stakeholder Engagement Process Overview

September 2022

Background

The Natural Gas Innovation Act (NGIA), signed into law by Governor Walz in June 2021, allows natural gas utilities to file an innovation plan with the Minnesota Public Utilities Commission (Commission) that proposes innovative resources the utility plans to implement to contribute to meeting the state's greenhouse gas (GHG) emissions reduction goals. Under NGIA, 'innovative resources' include biogas, renewable natural gas, power-to-hydrogen, power-to-ammonia, carbon capture, strategic electrification, district energy, and energy efficiency.

CenterPoint Energy intends to file its first innovation plan with the Commission in the first half of 2023. In preparation for that filing, CenterPoint Energy has engaged a stakeholder convenor, Great Plains Institute (GPI).

This document provides an overview of the planned stakeholder engagement process to inform the development of CenterPoint Energy's innovation plan.

Stakeholder Engagement Process

OBJECTIVES:

This stakeholder process has two main objectives:

- Provide an opportunity for all stakeholders to learn about and inform the development of the innovation plan in advance of CenterPoint Energy filing it with the Commission.
- Provide an opportunity for stakeholders who will participate in the formal regulatory process to identify areas of consensus and clarify disagreements, in support of a productive regulatory proceeding after the plan is submitted.

STAKEHOLDERS:

This process will solicit input from two different groups of stakeholders:

A. **All Stakeholders:** This group is open to anybody who is interested in learning about and providing feedback to CenterPoint Energy's innovation plan. The meetings will provide an opportunity for education and discussion.

B. **Regulatory Parties:** This group will focus on parties who intend to participate (through formal written comments and attendance at Commission hearings) in the Commission regulatory proceeding to consider the innovation plan. The meetings will provide an opportunity for additional discussion of specific regulatory considerations in advance of filing.

To participate in the stakeholder process, if you haven't done so already, please complete this brief interest form: https://www.surveymonkey.com/r/LM56SF7

DELIVERABLE:

After all meetings are complete, GPI will write a final summary document that describes the process that took place, identifies areas of consensus, and clarifies areas of disagreement. This summary will be attached to CenterPoint Energy's innovation plan filing.

TIMELINE

Stakeholder engagement is expected to take place from Fall 2022 to Spring 2023.

The following timeline lays out three meetings for "All Stakeholders" with anticipated timing and topics for each meeting. These meetings are expected to be 2 to 4 hours in length and will occur virtually. Meetings among the Regulatory Parties will take place on a complementary schedule and include specific regulatory topics for consideration. This timeline may be adjusted/updated as needed to ensure a productive process.

Meeting #1 for All Stakeholders (September 23, 2022; Virtual)

Stakeholders will review:

- The legislative and regulatory context for gas utility innovation plans in Minnesota
- Summary of all projects considered, including those submitted through CenterPoint Energy's request-for-ideas (RFI) process
- CenterPoint Energy's proposed/draft shortlist of approximately 25 projects that will receive full analysis
- The rationale for selecting the shortlist of project ideas
- Next steps for building an innovation plan including analysis of shortlisted projects

Discussion Topics:

- What should or should not be included in the final shortlist of innovation plan projects?
- What are stakeholders' expectations/desired outcomes for CenterPoint Energy's first innovation plan, within the bounds of the legislative and regulatory constraints?

Meeting #2 for All Stakeholders (Anticipated December 2022; Virtual)

Stakeholders will review:

- As needed, Meeting #1 input on expectations and desired outcomes
- ICF/CenterPoint will present on the analysis of shortlisted projects including expected greenhouse gas savings potential, costs, and economic costs or benefits as well as sources and assumptions
- Next steps for building an innovation plan portfolio from shortlisted projects

Discussion Topics:

- What questions do stakeholders have about the analysis completed? Does anything seem incorrect or problematic?
- What feedback do stakeholders have on the plan for next steps to develop a portfolio?

Meeting #3 for All Stakeholders (Anticipated February 2023; Virtual)

Stakeholders will review:

- CenterPoint Energy final draft of innovation plan 'preferred portfolio of projects'
- Alternatives to CenterPoint Energy's innovation plan 'preferred portfolio of projects' as required by NGIA

Discussion Topics:

- What additional feedback or questions do stakeholders have?
- Next steps for filing the innovation plan for Commission consideration

Spring 2023: CenterPoint Energy expects to file the innovation plan with the Commission.

CenterPoint Energy is open to additional discussions and engagement beyond these meetings – if you have questions or comments, please contact InnovationPlan@CenterPointEnergy.com.

If you have any questions about meeting logistics or to request accessibility accommodations, please contact Alissa Bemis, Meeting and Administrative Coordinator at the Great Plains Institute at abemis@gpisd.net.

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Summary of Minnesota Natural Gas Innovation Act Requirements for Gas Utility Innovation Plans

The Natural Gas Innovation Act (NGIA) was signed into law by Governor Walz on June 26, 2021. This summary provides basic information about the requirements for natural gas utility innovation plans, which are one component of NGIA.

The full text of the Natural Gas Innovation Act is available here

BASICS OF NATURAL GAS INNOVATION PLANS

- A natural gas utility may file an innovation plan with the Minnesota Public Utilities Commission (PUC) that proposes innovative resources the utility plans to implement to contribute to meeting the state's greenhouse gas and renewable energy goals.
- Innovative resources may include power-to-hydrogen, strategic electrification, renewable natural gas, district energy, energy efficiency, biogas, carbon capture, and power-to-ammonia.
- The commission must approve, modify, or reject a plan, based on criteria provided in NGIA (see criteria below).
- In response to a requirement in NGIA, the PUC has established a framework (in Docket 21-566) for evaluating the costs and benefits, including greenhouse gas emissions reductions, of innovation plans and the individual resources that may be included in innovation plans.
- An innovation plan has a term of five years. A subsequent innovation plan must be filed no later than four years after the previous plan was approved by the commission so that, if approved, the new plan takes effect immediately upon expiration of the previous plan.
- In seeking to recover costs under a plan approved by the commission, the utility must demonstrate to the satisfaction of the commission that the actual total incremental costs incurred to implement the approved innovation plan are reasonable. Prudently incurred costs under an approved plan may be recovered by the utility from their customers.
- Utilities submitting an innovation plan must also submit a report detailing characteristics of their current system.
- Utilities may propose green tariff programs (i.e., programs that allow customers to opt-in to purchasing lower or no carbon gaseous fuels to cover a portion of their usage) outside of an innovation plan.

INNOVATION PLAN COMPONENTS:

1. The innovative resource or resources the utility plans to implement to contribute to meeting the state's greenhouse gas and renewable energy goals
2. Research and development investments related to innovative resources the utility plans to undertake
3. Total lifecycle greenhouse gas emissions that the utility projects are reduced or avoided through implementing the plan
4. A comparison of reduced or avoided GHG emissions to total emissions from natural gas use by utility customers in 2020
5. A description of each pilot program included in the plan that is related to the development or provision of innovative resources, and an estimate of the total incremental costs to implement each pilot program
6. The cost-effectiveness of innovative resources compared to other innovative resources that could be deployed to reduce or avoid the same greenhouse gas emissions targeted for reduction by the utility's proposed innovative resource
7. For any pilot program not previously approved as part of the utility's most recent innovation plan, a third-party analysis of:
    a. the lifecycle greenhouse gas emissions intensity of the proposed innovative resources; and
    b. the forecasted lifecycle greenhouse gas emissions reduced or avoided if the proposed pilot program is implemented
8. An explanation of the methodology used by the utility to calculate the lifecycle greenhouse gas emissions avoided or reduced by each pilot program included in the plan
9. A discussion of whether the plan supports the development and use of alternative agricultural products, waste reduction, reuse, or anaerobic digestion of organic waste, and the recovery of energy from wastewater, and, if it does, a description of the geographic areas of the state in which the benefits are realized.
10. A description of third-party systems and processes the utility plans to use to:
    a. track the innovative resources included in the plan so that environmental benefits produced by the plan are not claimed for any other program; and
    b. verify the environmental attributes and greenhouse gas emissions intensity of innovative resources included in the plan;
11. Projected local job impacts resulting from implementation of the plan and a description of steps the utility and the utility's energy suppliers and contractors are taking to maximize the availability of construction employment opportunities for local workers
12. A description of how the utility proposes to recover annual total incremental costs of the plan

13. Steps the utility has taken or proposes to take to reduce the expected cost of the plan on low- and moderate-income residential customers and to ensure that low- and moderate-income residential customers benefit from innovative resources included in the plan
14. A report on the utility's progress toward implementing the utility's previously approved innovation plan, if applicable
15. A report of the utility's progress toward achieving the cost-effectiveness objectives established by the commission with respect to the utility's previously approved innovation plan, if applicable
16. Collections of pilot programs that the utility estimates would, if implemented, provide approximately 50 percent, 150 percent, and 200 percent of the greenhouse gas reduction or avoidance benefits of the utility's proposed plan.

REQUIREMENTS FOR CENTERPOINT ENERGY'S FIRST INNOVATION PLAN

NGIA stipulates that CenterPoint Energy's first innovation plan must include the following:[1]

- A pilot program to provide thermal energy audits to small- and medium-sized business in order to identify opportunities to reduce or avoid greenhouse gas emissions from natural gas use. The pilot program must provide incentives for businesses to implement recommendations made by the audit and must recognize businesses that achieve significant emissions as thermal energy leaders.
- A pilot program to provide innovative resources to industrial facilities whose manufacturing processes, for technical reasons, are not amenable to electrification.
- A pilot program that facilitates deep energy retrofits and the installation of cold climate electric air-source heat pumps in existing residential homes that have natural gas heating systems.
- A pilot program to facilitate the development, expansion, or modification of district energy systems in Minnesota.

CRITERIA FOR INNOVATION PLAN APPROVAL:

1. Produces net benefits under the cost-benefit framework established by the commission.
2. Promotes the use of renewable energy resources and reduces or avoids greenhouse gas emissions consistent with cost criteria.
3. Promotes local economic development.
4. Innovative resources included in the plan have a lower lifecycle greenhouse gas intensity than natural gas produced from conventional geologic sources.

[1] NGIA refers in several places to "a utility with more than 800,000 customers." CenterPoint Energy is the only gas utility in Minnesota that meets this criterion.

5. Systems used to track and verify the environmental attributes of the innovative resources included in the plan are reasonable, considering available third-party tracking and verification systems.
6. Costs and revenues projected under the plan are reasonable in comparison to other innovative resources the utility could deploy to reduce greenhouse gas emissions.
7. The total amount of estimated greenhouse gas emissions reduction or avoidance to be achieved under the plan is reasonable considering:
    a. The state's greenhouse gas and renewable energy goals
    b. Customer cost
    c. The total amount of greenhouse gas emissions reduction or avoidance achieved under the utility's previously approved plans, if applicable
8. Any renewable natural gas purchased by a utility under the plan that is produced from the anaerobic digestion of manure is certified as being produced at an agricultural livestock production facility that has not and will not increase the number of animal units at the facility solely or primarily to produce renewable natural gas for the plan.

INNOVATION PLAN COST CRITERIA:

- Annual total incremental costs of the first innovation plan must not exceed the lesser of:
    - 1.75% of the utility’s gross operating revenues
    - $20 per nonexempt customer (annual total incremental costs for each year of the plan divided by the total number of nonexempt utility customers)
- Cost limits for the second plan increase to 2.75% gross operating revenues and $35 per nonexempt customer; cost limits for the third plan increase to 4% and $50 respectively.
- Additional costs in the first plan (beyond the limits described above) of the lesser of 0.25% of gross operating revenues or $5 per nonexempt customer may be approved exclusively for purchasing RNG from food waste diverted from a landfill, municipal wastewater treatment systems, or sustainably harvested native prairie grasses or cover crops. These limits increase to 0.75% and $10 respectively for the second plan and 1.5% and $20 respectively for the third plan.
- 10 percent of annual costs may go to research and development.
- For purposes of the cost cap, annual costs are averaged over the five-year plan so a utility may spend in excess of its cap in one year if it spends below its cap in another year.
- 50 percent or more of the utility's costs for recovery under the plan must be for the procurement and distribution of renewable natural gas, biogas, hydrogen produced via power-to-hydrogen, and ammonia produced via power-to-ammonia.
- No more than 20 percent of the utility’s costs for recovery can be to facilitate the development, expansion, or modification of district energy systems.

CenterPoint Innovation Plan
Stakeholder Meeting 1 Agenda

FRIDAY, SEPTEMBER 23, 8:30AM-12:00PM CT

Please open Zoom or navigate to www.zoom.us and enter this meeting code a few minutes before 8:30AM to join the meeting:

Zoom Meeting ID: 856 6101 0539
Passcode: 425032

Pre-reads

- Meeting agenda
- Process overview
- Summary of innovation plan requirements from NGIA
- Excel file with list of projects proposed via RFI responses

Agenda

8:30AM **Welcome, introductions, and process overview**

8:45AM **The legislative and regulatory context for gas utility innovation plans in Minnesota**

9:15AM **Presentation and Q&A on projects being considered for inclusion in CenterPoint Energy's first innovation plan and process for evaluation**

10:15AM **BREAK**

10:45AM **Facilitated discussion of stakeholder suggested considerations and desired outcomes for the innovation plan**

11:55AM **Wrap-up and next steps**

- Following today's meeting, we will be sending out a survey for additional feedback. Please submit this survey by COB, Monday, October 3.

12:00PM **ADJOURN**

CenterPoint Energy Innovation Plan Stakeholder Meeting

Friday, September 23, 2022

- Virtual Meeting -

GREAT PLAINS INSTITUTE

CenterPoint Energy

GREAT PLAINS INSTITUTE

CenterPoint Energy

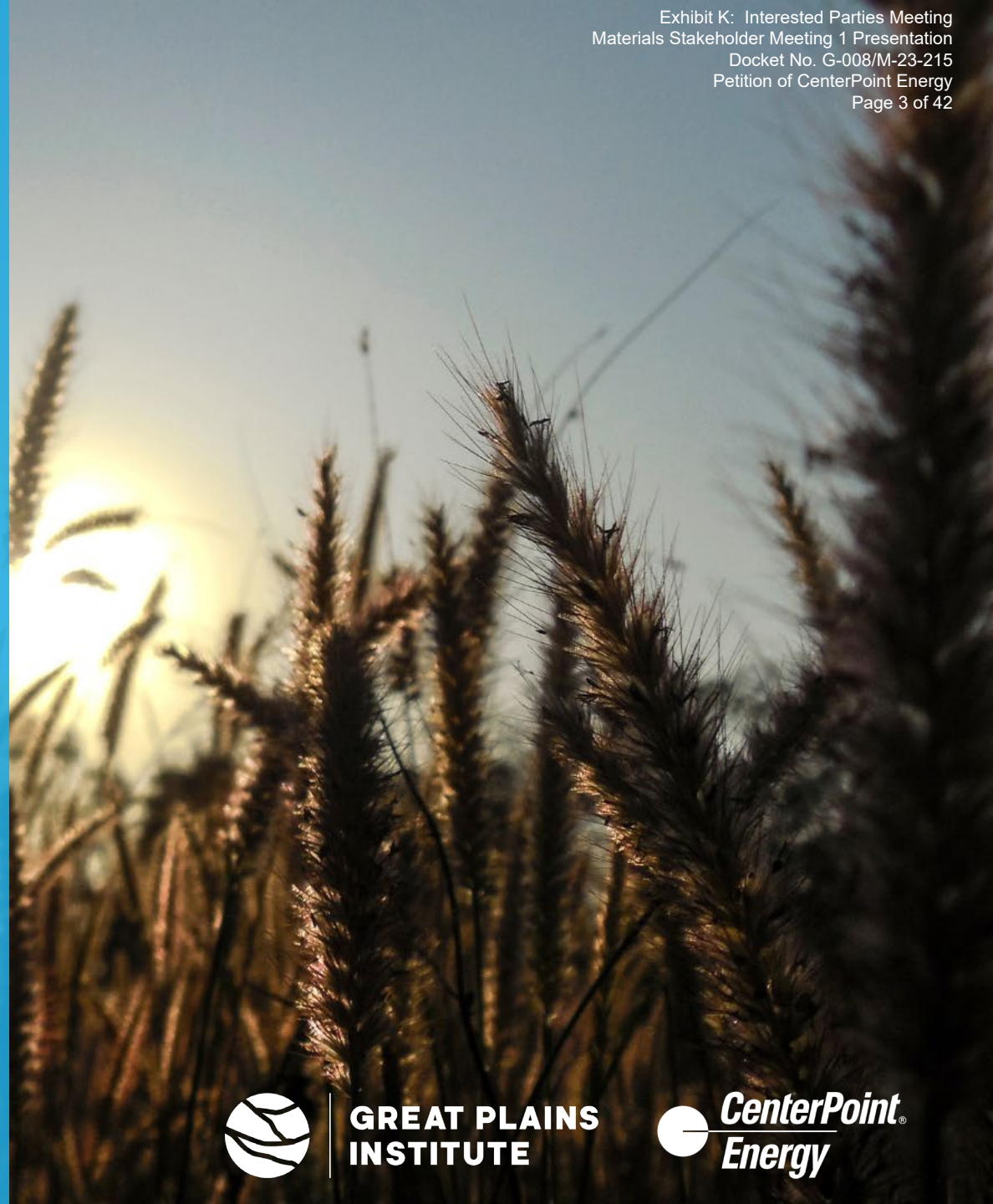
Welcome

Christe Singleton,

Vice President, Minnesota Gas, CenterPoint Energy

Welcome

Emma Ingebretsen,
Senior Project Manager,
Decarbonization Projects,
CenterPoint Energy



GREAT PLAINS INSTITUTE

CenterPoint Energy

Today's Agenda

8:30AM	Welcome, intros, process plan
8:45AM	The legislative and regulatory context for gas utility innovation plans in Minnesota
9:15AM	Presentation and Q&A: Projects being considered for inclusion in CenterPoint Energy's first innovation plan and process for evaluation
10:15AM	Break
10:45AM	Facilitated discussion: Stakeholder suggested considerations and desired outcomes for the innovation plan
11:55AM	Wrap-up and next steps
12:00PM	Adjourn

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CenterPoint Energy

Meeting Ground Rules

1. Respect the time. Our time together is limited and valuable. Please be mindful of the time and of other's opportunity to participate.
2. Please use "raise hand" feature. We have a large group this morning, to help make space to hear from as many stakeholders as possible, please use the "raise hand" feature to indicate you would like to participate in the conversation.
3. Respect each other. Help us to collectively uphold respect for each other's experiences and opinions, even in difficult conversations. We need everyone's wisdom to achieve better understanding and develop robust solutions.
4. Enable honesty through non-attribution. Outside of this group, you may share what was said and who was present, but please refrain from sharing who said what without first obtaining permission. All meeting notes and materials will also adhere to this.

Stakeholder Process Plan

This is the first of three meetings expected to take place through Spring 2023.

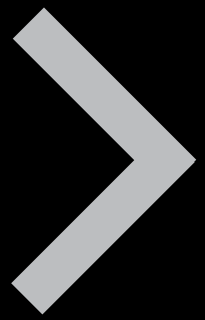
- **Meeting 1 (today):**
  - Level-set on the legislative and regulatory context for gas utility innovation plans in Minnesota
  - Summary of project considered; CenterPoint Energy's proposed/draft shortlist of projects that will receive full analysis and the rationale for selecting these
  - Hear from stakeholders the expectations/desired outcomes for CenterPoint Energy's first innovation plan
- **Meeting 2 (December 2022):**
  - ICF/CenterPoint Energy will present on the analysis of shortlisted projects
  - Discuss next steps for building an innovation plan portfolio from shortlisted projects
- **Meeting 3 (February 2023):**
  - Review CenterPoint Energy's final draft innovation plan "preferred portfolio of projects"
  - What additional feedback or questions do stakeholder have?
  - Discuss next steps for filing the innovation plan for Commission consideration

Legislative and Regulatory Context for NGIA Plans

Erica Larson
Manager, Regulatory Affairs &
Business Development

9.23.2022

Agenda



- NGIA Overview
- Legislative History
- Resources Included
- Innovation Plan Filing Contents
- Commission Approval Process
- Outcomes from the Frameworks Docket
- Cost Cap and Recovery
- Special Requirements for CenterPoint's First Plan

Overview of the NGIA

- Creates a framework for Minnesota natural gas utilities to pilot “innovative resources” which displace fossil natural gas
- Primary goals are carbon reduction and innovation
- Other goals include economic development/job creation, reduction of air and water pollution, waste reduction/recycling, agricultural sector support, and equitable distribution of costs and benefits
- Utilities that wish to participate must file innovation plans for PUC approval
- Each innovation plan has a five-year term

Legislative History

- Two-year effort started in 2020 coincided with G21 stakeholder group
- Authors: Senator Weber and Rep. Stephenson
- Passed in 1st Special Session, June 2021 as part of H.B. 6 (large omnibus)
- Partially codified at Minn. Stat. 216B.2427 & 216B.2428
- Also passed in 2021 – Energy Conservation and Optimization Act – overhaul of "traditional" energy efficiency programs

Resources Included

- Renewable Natural Gas (RNG) & Biogas
  - Must be from biomass
  - Distinction is pipeline quality or not
- District Energy
  - From solar thermal or ground-source
- Energy efficiency
  - Does not include “investments” that can reasonably be included in the Conservation Improvement Program
- Power-to-hydrogen & power-to-ammonia
  - Produced using a carbon-free power source
- Strategic electrification
  - Cannot add to electric peak
  - Customer must still use gas (partial electrification only)
- Carbon Capture
  - Very broad definition

Innovation Plan Contents

- Resources/pilots proposed
- R&D investments proposed
- Estimated lifecycle GHG reduction & comparison with 2020 utility baseline
- Resource/pilot expected costs
- Cost-effectiveness of proposals from utility, society, non-participant, and participant perspectives
- Comparison of cost-effectiveness vs. other innovative resources that could be deployed to reduce/avoid the same GHGs
- Third-party analysis of GHG emissions of any new pilots (all first plan pilots)
- Explanation of methodology used to calculate lifecycle GHG reductions
- Discussion of whether plan supports alternative agricultural products, anaerobic digestion, and recovery of energy from wastewater
- Description of proposed tracking and verification systems
- Projected local job impacts
- Cost recovery proposal
- Steps utility has taken to reduce cost impacts on low- and moderate-income customers and ensure benefits for those customers
- Collections of pilots that would reduce/avoid 50%, 150%, and 200% of estimated GHGs of proposed plan

Commission Approval Process

Expect long process– maybe 1 year of comments and reply comments prior to Commission decision

Utility will file annual reports between plan filings

Commission must find:

- Plan produces net benefits
- Plan promotes renewable energy and reduces/avoids GHGs
- Plan promotes local economic development
- All resources have a lower lifecycle GHG than fossil gas
- Tracking and verification proposal is reasonable
- Plan costs are reasonable in comparison to other innovation resources the utility could have deployed
- Plan is reasonably sized in light of MN economy-wide GHG goal (80% by 2050)
- Any RNG purchased by a utility under the plan produced via anaerobic digestion is not produced at a facility that expanded in size primarily to sell more RNG

Carbon Accounting Outcomes from Framework Docket

- Commission was required to develop a framework for GHG accounting and cost-benefit analysis by June 1, 2022
- Utilities shall file high, low, and expected GHG intensities for resources but will use expected values for determining overall plan reductions and cost-effectiveness
  - Where applicable, utilities will use the Argonne National Labs GREET Model (RNG, hydrogen)
  - Utilities will use the Minnesota Technical Reference Manual for energy efficiency and electrification
  - Utilities will use a 50/50 blend of expected annual generation and wind for GHG intensity of strategic electrification in conjunction with GREET model
  - For other resources (biogas, district energy, carbon capture) will use principles consistent with GREET
- Utilities will use actual project data where reasonably available

Cost Effectiveness and CIP/NGIA Coordination Outcomes from Framework Docket

- Will assess cost-effectiveness primarily from the societal perspective (all-in perspective)
- For most things, will borrow from Conservation Improvement Program (CIP) cost-effectiveness for items quantified in CIP (e.g. discount rates, cost assumptions)
- Will complete a chart displaying both quantitative and qualitative cost-effectiveness information
  - Cost-effectiveness does not boil down to a number
- For an EE or strategic electrification measure to be eligible for NGIA
  - Cannot currently be included in utility's CIP plan
  - Utility must discuss if plans to include in the future, provide data if previously provided in CIP
  - Utility must clearly demonstrate why the proposed investment could not reasonably be included in CIP

Cost-Effectiveness Chart

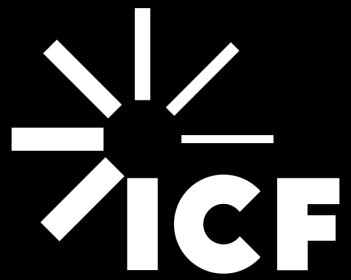
	Pilot 1	Pilot 2	Pilot 3
Perspectives			
NGIA Utility Perspective			
NGIA Participants Perspective (including specific impacts on low- and moderate-income participants)			
NGIA Nonparticipating Customers Perspective (including specific impacts on low- and moderate-income customers)			
Effects on Other Energy Systems and Energy Security			
Environment			
GHG Emissions			
Other Pollution (including any environmental justice costs or benefits)			
Waste reduction and reuse (including reduction of water use)			
Policy (e.g., natural gas throughput, renewable energy goals)			
Socioeconomic			
Net Job Creation			
Economic Development			
Public Co-Benefits			
Market Development			
Innovation			
Direct Innovation Support			
Resource Scalability and Role in a Decarbonized			

Cost Caps and Recovery

- Cost cap set as lesser of % of gross operating revenue (including gas costs) or $ amount per customer (not a limit on how much a single customer may pay)
  - Bonus money for certain kinds of RNG projects
- Increases over first-three plans if utility meets cost-effectiveness goals to be established by Commission
  - CenterPoint expects approximately $20M, $30M, $40M annually
- Costs averaged over 5-year plan
- Up to 10% can be for “research and development”
- Recovery can be through a special rider, in a rate case, or via gas cost recovery mechanism
  - Capital investments and annual adjustments will include rate of return
  - No NGIA investments are eligible for a CIP financial incentive

Special Requirements for First Plan

- All utilities
  - Costs must be 50%+ for RNG, biogas, power-to-hydrogen or power-to-ammonia (low carbon fuels)
- CenterPoint only
  - Residential deep energy retrofit + electric ASHP pilot (with gas backup)
  - Industrial hard-to-electrify pilot
  - Small/medium business GHG audit pilot
  - District energy pilot (cannot be more than 20% of plan costs)



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About ICF

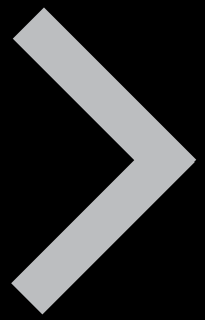
ICF (NASDAQ:ICFI) is a global consulting and digital services company with over 7,000 full- and part-time employees, but we are not your typical consultants. At ICF, business analysts and policy specialists work together with digital strategists, data scientists and creatives. We combine unmatched industry expertise with cutting-edge engagement capabilities to help organizations solve their most complex challenges. Since 1969, public and private sector clients have worked with ICF to navigate change and shape the future.

Pilots Under Consideration for CenterPoint Energy's Innovation Plan

Peter Narbaitz
Director, Energy Markets & Planning, ICF

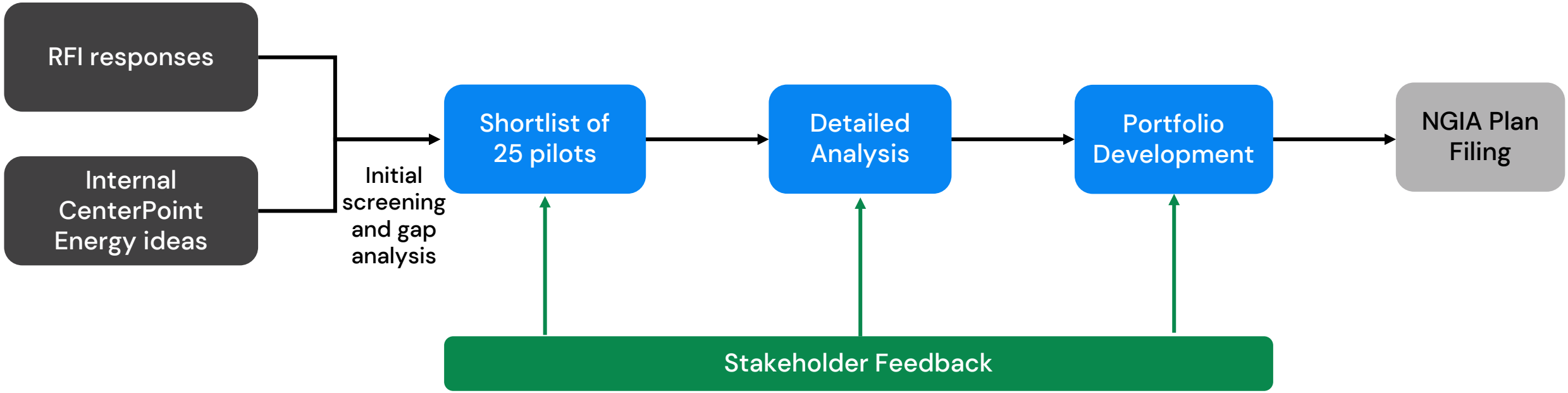
9/23/2022

Agenda



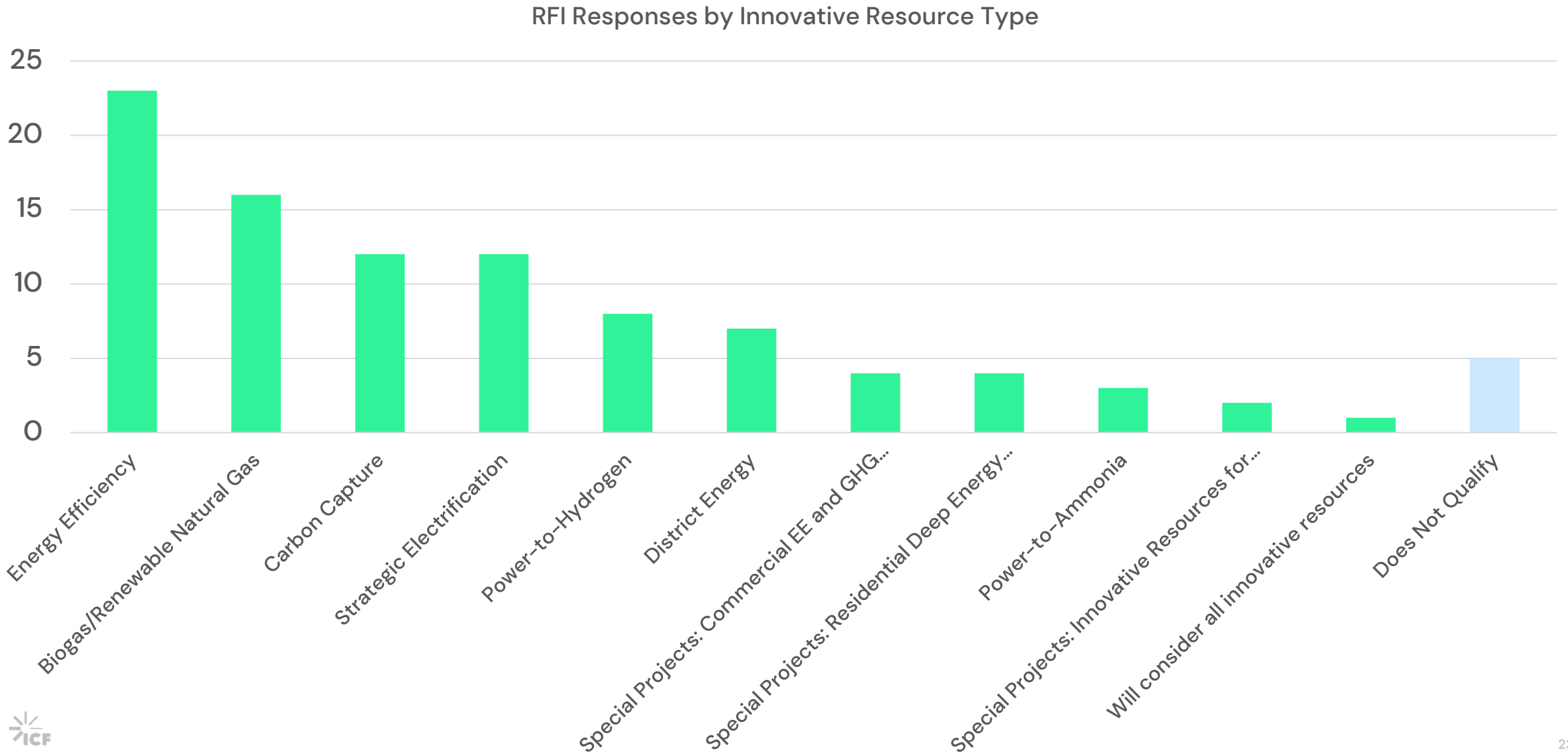
- NGIA Innovation Plan Development Process
- NGIA RFI Responses
- Summary of Pilots Included in Draft Shortlist
- Summary of R&D Projects Included for Consideration
- Next Steps

Overview of NGIA Innovation Plan Development Process



Focus of this first stakeholder meeting is the initial screening and gap analysis: have we missed anything on the shortlist of measures that will proceed to detailed analysis?

CenterPoint Energy received nearly 100 RFI responses, across all NGIA innovative resource categories



Summary spreadsheet available to all stakeholders

Submission numbers here are used to highlight which of the RFI responses are captured under different shortlisted pilots or R&D projects.

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	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.
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. Respodents 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 process with several vendors that may produce biogas, RNG and/or green hydrogen as a part of this project.	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.
District Energy	53	District Geothermal Network	Respondent supported the site selection phase for Eversource in it's 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.
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 presence and national expertise in residential new homes program design to deliver a superior customer experience. By removing barriers and creating efficiencies, we can successfully increase program engagement, attribution, and participant satisfaction while delivering a program with a strong value proposition for raters, builders and homebuyers	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.

Overview of draft pilot shortlist (to be further narrowed to 25)

#	Pilot	Innovation Category
1	RNG Proposal - Anaerobic Digestion of Organic Materials	RNG/Biogas
2	RNG Proposal -Anaerobic Digestion of East Metro Food Waste	RNG/Biogas
3	RNG Archetype – WRRF	RNG/Biogas
4	RNG Archetype - Dairy Manure	RNG/Biogas
5	RNG Archetype – Food Waste	RNG/Biogas
6	RNG Archetype - Landfill Gas	RNG/Biogas
7	RNG Archetype - Prairie Grass Blending with Swine Digesters	RNG/Biogas
8	Green Hydrogen Blending into Natural Gas Distribution System	Hydrogen/Ammonia
9	Green Hydrogen Archetype - Industrial Facility Electrolyzer Pilot	Hydrogen/Ammonia
10	Industrial Methane and Refrigerant Leak Reduction Program	Carbon Capture
11	Urban Tree Carbon Offset Program	Carbon Capture
12	Archetype Carbon Capture Project for Industrial Facility	Carbon Capture
13	Carbon Capture through Methane Pyrolysis at Industrial Facility	Carbon Capture
14	Carbon Capture for Commercial Buildings	Carbon Capture
15	New Networked Geothermal Systems Pilot	District Energy
16	Decarbonizing Existing District Energy Systems	District Energy (plus Carbon Capture, Strategic Electrification, Energy Efficiency, RNG/Biogas, Power-to-Hydrogen)
17	New District Energy System	District Energy (plus Carbon Capture, Strategic Electrification, Energy Efficiency, RNG/Biogas, Power-to-Hydrogen)
18	Industrial Electrification Incentive Program	Strategic Electrification
19	Residential and Commercial Heat Pump Water Heaters	Strategic Electrification
20	Commercial hybrid heating pilot	Strategic Electrification
21	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	Strategic Electrification (plus Energy Efficiency)
22	Small/medium business GHG audit pilot	Energy Efficiency (plus Carbon Capture, Strategic Electrification)
23	Residential Gas Heat Pump	Energy Efficiency
24	Gas Heat Pump for Commercial Buildings	Energy Efficiency
25	Neighborhood Weatherization Blitzes	Energy Efficiency
26	High Performance Building Envelope Initiative	Energy Efficiency
27	Solar Thermal Heating for C&I	Energy Efficiency
28	Industrial GHG Audit Pilot	Energy Efficiency (plus Carbon Capture, Strategic Electrification, Power-to-Hydrogen, RNG/Biogas)

- We'll review these category by category today
- Some of these pilots combine multiple RFI responses
- This is a list for more detailed analysis, not a guarantee that all of these end up in NGIA portfolio
- Research and development projects are captured in a separate category with less planned evaluation

RNG and biogas pilots on draft shortlist

#	Pilot	Brief Description	Rationale	RFI #
1	RNG Proposal - Anaerobic Digestion of Organic Materials	Respondent is proposing to build an anaerobic digestion (AD) facility that would be capable of processing at least 25,000 tons per year of organics to produce RNG and soil/agricultural products.	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.	#90
2	RNG Proposal -Anaerobic Digestion of East Metro Food Waste	Respondent is planning a system to recover organics from municipal solid waste and divert these materials to be delivered to a future anaerobic digestion facility to produce biogas or renewable natural gas.	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.	#18
3	RNG Archetype – WRRF	Archetype project using expectations for typical costs and GHG intensity of RNG from wastewater recovery facilities (WRRF), for evaluation and comparison in the shortlist.	The initial RFI did not receive many responses related to specific RNG projects. But CenterPoint would like to consider how different types of RNG would compare in its NGIA portfolio. Wastewater facilities represent a potential local source of RNG.	Gap Analysis
4	RNG Archetype - Dairy Manure	Archetype project using expectations for typical costs and GHG intensity of RNG from dairy manure, for evaluation and comparison in the shortlist.	The initial RFI did not receive many responses related to specific RNG projects. But CenterPoint would like to consider how different types of RNG would compare in its NGIA portfolio. Dairy manure represents a 'negative' carbon intensity source of RNG.	Gap Analysis
5	RNG Archetype – Food Waste	Archetype project using expectations for typical costs and GHG intensity of RNG from food waste, for evaluation and comparison in the shortlist.	The initial RFI did not receive many responses related to specific RNG projects. But CenterPoint would like to consider how different types of RNG would compare in its NGIA portfolio. Food waste represents a local source of potentially 'negative' carbon intensity of RNG, and there are expected to be additional opportunities beyond the two specific projects of this nature highlighted above.	#46 and Gap Analysis
6	RNG Archetype - Landfill Gas	Archetype project using expectations for typical costs and GHG intensity of RNG from landfill gas, for evaluation and comparison in the shortlist.	The initial RFI did not receive many responses related to specific RNG projects. But CenterPoint would like to consider how different types of RNG would compare in its NGIA portfolio. Landfills represent a potential local source of RNG.	Gap Analysis
7	RNG Archetype - Prairie Grass Blending with Swine Digesters	Archetype project using using expectations for typical costs and GHG intensity of RNG from the use of energy crops to supplement a swine manure and boost anaerobic digester's RNG production.	The initial RFI did not receive many responses related to specific RNG projects. But CenterPoint would like to consider how different types of RNG would compare in its NGIA portfolio. This represents an opportunity to boost output from RNG digesters, and was specifically mentioned as part of NGIA legislation.	Gap Analysis

Hydrogen pilots on draft shortlist (not shortlisting ammonia pilots)

#	Pilot	Brief Description	Rationale	RFI #
8	Green Hydrogen Blending into Natural Gas Distribution System	Hydrogen produced via electrolysis using renewable power would be injected into the gas distribution system. This would represent a next phase in the hydrogen blending pilot work CenterPoint has already begun.	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.	#49, 52, and Gap Analysis
9	Green Hydrogen Archetype - Industrial Facility Electrolyzer Pilot	CenterPoint could provide financial support for one or more industrial customers to install an electrolyzer and evaluate the use of green hydrogen in their facility. After pilot period, customer can keep the technology or CNP pays for it to be removed. Project may be combined with a screening study.	The initial RFI did not receive many responses related to specific hydrogen projects. But CenterPoint would like to consider how different opportunities to support 'hard to electrify' industrial customers would compare in its NGIA portfolio.	#24 and internal

Carbon capture pilots on draft shortlist

#	Pilot	Brief Description	Rationale	RFI #
10	Industrial Methane and Refrigerant Leak Reduction Program	Gas utility leak detection often stops at the site boundary, neglecting gas leaks inside the facility. An industrial leak detection and repair program could focus on these and potentially include refrigerant leaks as well.	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.	#56
11	Urban Tree Carbon Offset Program	CNP could acquire City Forest Credits (CFC) Carbon + Credits that are generated from locally planted urban trees. These also help improve air quality, reduce stormwater runoff, reduce energy costs, and cool urban heat islands.	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.	#44
12	Archetype Carbon Capture Project for Industrial Facility	Archetype project using expectations for expected costs and emission reductions for a carbon capture project at an industrial facility, for evaluation and comparison in the shortlist.	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.	#16 and 76
13	Carbon Capture through Methane Pyrolysis at Industrial Facility	Archetype project using expectations for expected costs and emission reductions for a methane pyrolosis project at an industrial facility (converting natural gas to hydrogen while capturing carbon in solid form), for evaluation and comparison in the shortlist.	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. This proposed pilot, where methane pyrolosis is conducted on-site at an industrial facility, falls under the NGIA's broad definition of carbon capture and is an approach being developed and piloted by several different companies.	Internal
14	Carbon Capture for Commercial Buildings	Incentive program that would support the roll out of CleanO2's CarbinX units for carbon capture at CenterPoint commercial customers. CenterPoint is currently piloting this technology in CIP, and this funding could supplement potential CleanO2 CIP rebates that are being considered for the next triennial plan.	This technology has shown promise through existing CIP R&D funding, however, CleanO2 rebates CIP would be designed based on the energy savings benefits, not the GHG emission impacts. CenterPoint would like to consider how NGIA funding could provide additional support for the deployment of this technology and capture the emission reduction benefits of the technology.	Gap Analysis

District energy pilots on draft shortlist

#	Pilot	Brief Description	Rationale	RFI #
15	New Networked Geothermal Systems Pilot	This involves installation of a new 'distributed' geothermal system where individual customers would have a heat pump accessing a common water loop (instead of their own geothermal loops, or ASHPs).	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.	#30, 53, 86, and 101
16	Decarbonizing Existing District Energy Systems	This is focused on existing 'centralized' district energy systems, where a central plant heats or cools the water that gets circulated to the different buildings. The concept is first to explore a wide range of decarbonization options for these existing systems, followed by implementation support for promising options.	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.	#77 and Internal
17	New District Energy System	This is focus on new 'centralized' district energy systems that are being proposed, leveraging geothermal heating and/or decarbonized gases.	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.	#36, 85, and internal

Strategic electrification pilots on draft shortlist

#	Pilot	Brief Description	Rationale	
18	Industrial Electrification Incentive Program	Pilot industrial heat pump systems to better understand potential energy and GHG reductions and engage a typically hard-to-reach sector.	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.	#23 and 84
19	Residential and Commercial Heat Pump Water Heaters	Compared to natural gas water heaters, heat pump water heaters can deliver estimated annual energy savings of 10.5 DTh per unit. This would create incentives for residential and commercial customers to adopt HPWHs	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.	#66, internal
20	Commercial hybrid heating pilot	Target small and medium-sized business with the goal of analyzing, designing, and installing hybrid heating systems.	This would be a logical extension of some of the residential hybrid heating projects, providing useful insights into a potentially scalable decarbonization measure.	#50, 74, 96, and internal
21	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	This pilot program will comprise two components: first, performing deep energy retrofits using electric cold climate air source heat pumps to supplement heating in homes that have existing natural gas furnaces (so-called hybrid heating), and second, installing a series of hybrid heating systems in homes without deep energy retrofits to better understand performance in a more standard retrofit scenario.	The NGIA legislation requires CenterPoint to incorporate this kind of pilot into its Innovation Plan.	#29, 39, 89, 97, and internal

Energy efficiency pilots on draft shortlist

#	Pilot	Brief Description	Rationale	RFI #
22	Small/medium business GHG audit pilot	Local businesses would be proactively contacted and offered an audit, resulting in a clear and concise carbon reduction plan.	The NGIA legislation requires CenterPoint to incorporate this kind of pilot into its Innovation Plan.	#19, 27, 54, and 64
23	Residential Gas Heat Pump	Four manufacturers expected to deploy residential gas heat pump systems in 2023-24. The project team will survey the market and select several space heating and "combi" systems for field tests.	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 saivngs for application in CIP.	#73 and 93
24	Gas Heat Pump for Commercial Buildings	Demonstrate a gas heat pump offering space and/or water heating for commercial buildings (particularly in cold climates).	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.	#71 and 73
25	Neighborhood Weatherization Blitzes	Engages a select local community through community-based outreach and local networking to drive deep energy savings.	Blitzes could greatly expand air sealing and insulation implementation beyond what may be possible with CIP alone (particularly in disadvantaged communities) and provide useful lessons learned and best practice data. The Grassroots Green Homes' focus on decarbonization and disadvantaged communities may make it particularly relevant for NGIA.	#12, 35, and 99
26	High Performance Building Envelope Initiative	Address barriers and create a streamlined approach to improved envelope design/integration in new construction.	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 builiding shell improvements.	#95
27	Solar Thermal Heating for C&I	Explore new opportunities for solar heating in C&I applications.	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 commercial and industrial (C&I) facilities as a custom measure.	#45 and internal
28	Industrial GHG Audit Pilot	Present different decarbonization strategies on a level basis for customers to evaluate and compare.	Intended to meet the "hard to electrify" industrial pilot requirement, this would expand beyond efficiency to also encapsulate things like carbon capture, hydrogen, RNG, or other abatement options. This could also help surface best practices in engaging these customers.	#20, 69, and 83

Research & Development Projects for Consideration

#	R&D Project	Brief Description	Rationale	RFI #
1	Studies to support RNG market development	An R&D study to support the identification of potential RNG projects or address other barriers.	Several RFI responses have been grouped here with other similar proposals under the proposed shortlist archetype called 'Studies 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.	#2, 37, 38, 47, and 80
2	Design a portal that partners potential projects with qualified developers	Allow larger commercial clients to offer to become RNG project feedstock suppliers. CNP could maintain a registry of qualified developers to assess the feasibility of volunteered projects.	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.	#100
3	RFP Prep Study for Potential CenterPoint RNG Sites	Studies to identify availability, cost, and logistics needs for potential feedstock around specific CenterPoint cites that would be well situated to receive RNG. The idea is that by providing this information as a part of a future RFP, CenterPoint could more easily attract independent developers to the sites.	The initial RFI did not receive many responses related to specific RNG projects. CenterPoint anticipates that in the future it would run a longer RFP process to gather detailed proposals for additional specific RNG projects to consider in its NGIA portfolio. The Company believes that it can increase the number and quality of RFP responses by providing additional details to potential project developers.	Internal
4	Small-scale Biodigester at Customer Site	CenterPoint believes a customer may be interested in developing a small-scale anaerobic digester. Various feedstocks could be available (organics, turkey litter, etc) to generate biogas for use on-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.	Internal
5	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.	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.	#8
6	Carbon Capture for Residential and Commercial Buildings	Program that would support roll out of CleanO2's CarbinX new version of units, which claim 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 optimization pathways.	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.	#57

Research & Development Projects for Consideration (cont'd)

#	R&D Project	Brief Description	Rationale	RFI #
7	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 actions.	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.	#87
8	Study of Decarbonizing Existing District Energy Systems	Support a feasibility study exploring different opportunities to reduce GHG emissions from existing district energy systems.	A study into this area is seen as a first step, and may be supported regardless of whether the NGIA portfolio assigns funding to support implementation in this area.	#10, 33, 77, and internal
9	Integrated Energy Systems (IES) for Self-Powered Single-family and Multifamily Residential HVAC and Water Heating	Better define opportunities and barriers associated with IESs	IESs have potential to balance energy grid supply and demand while exploiting energy resources in ways that reduce GHGs, improve operating cost and efficiencies, and provide resilient systems in the built environment.	#65
10	Electrification Qualified Service Provider (eQSP) Program	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 reduction projects.	This may be an effective way to help expand adoption of GHG-reducing measures at scale.	#67
11	CenterPoint Minnesota Net Zero Study	A study to help CenterPoint understand different pathways the Company could take for its gas utility business in Minnesota to reach net zero emissions by 2050.	As part of longer term planning, it will be important for CenterPoint to understand how different emission reduction strategies considered in the NGIA can combine to support the Company's emission reduction targets.	Gap Analysis
12	Support for Development of Thermal Gasification RNG Production Processes	Thermal gasification processes could allow for the production of RNG from additional feedstocks and significantly expand the available RNG supply. However, these processes are less established than anaerobic digestion for RNG production. CenterPoint is interested in potential opportunities to partner with other stakeholders to support research and development that advances this technology.	The main RFI response related to thermal gasification was too large in scale for this NGIA plan. Additionally, CenterPoint feels that this is an area likely best served by a coalition of interested funding partners.	Gap Analysis

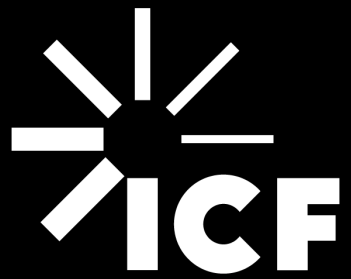
Research & Development Projects for Consideration (cont'd)

#	R&D Project	Brief Description	Rationale	RFI #
13	Emerging Technology Strategic Incentives Fund	Incentive program supporting accelerated adoption of select emerging decarbonization measures.	This would focus on supporting market transformation for a small set of innovative measures that aren't currently fits for CIP. Whereas MN Efficiency Tech Accelerator focuses on strategic engagement with the supply chain (reducing non-financial barriers), this would help promising measures actually get out into the market and create a commercialization plan. For NGIA, this could be an effective way to "try out" promising measures in the real world and support market adoption of the best options.	#17
14	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.	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.	#13
15	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 existing assets and partnering with third parties on mitigation solutions outside of CenterPoint's assets. Although this proposal is focused on CenterPoint's service area in Minnesota, this proposal could be expanded to incorporate CenterPoint's enterprise-wide assets.	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.	#63
16	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 and thermal energy storage. When properly integrated and controlled, IESs can serve to balance energy grid supply and demand while exploiting multiple energy resources in ways that reduce greenhouse gases, improve overall operating cost and efficiencies, and provide resilient systems in the built environment.	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).	#65

Next Steps

- Review the materials provided
- Complete the online survey: let us know if there are opportunities that have not been considered
- Once short-list is finalized, detailed analysis of these measures will commence

Q&A



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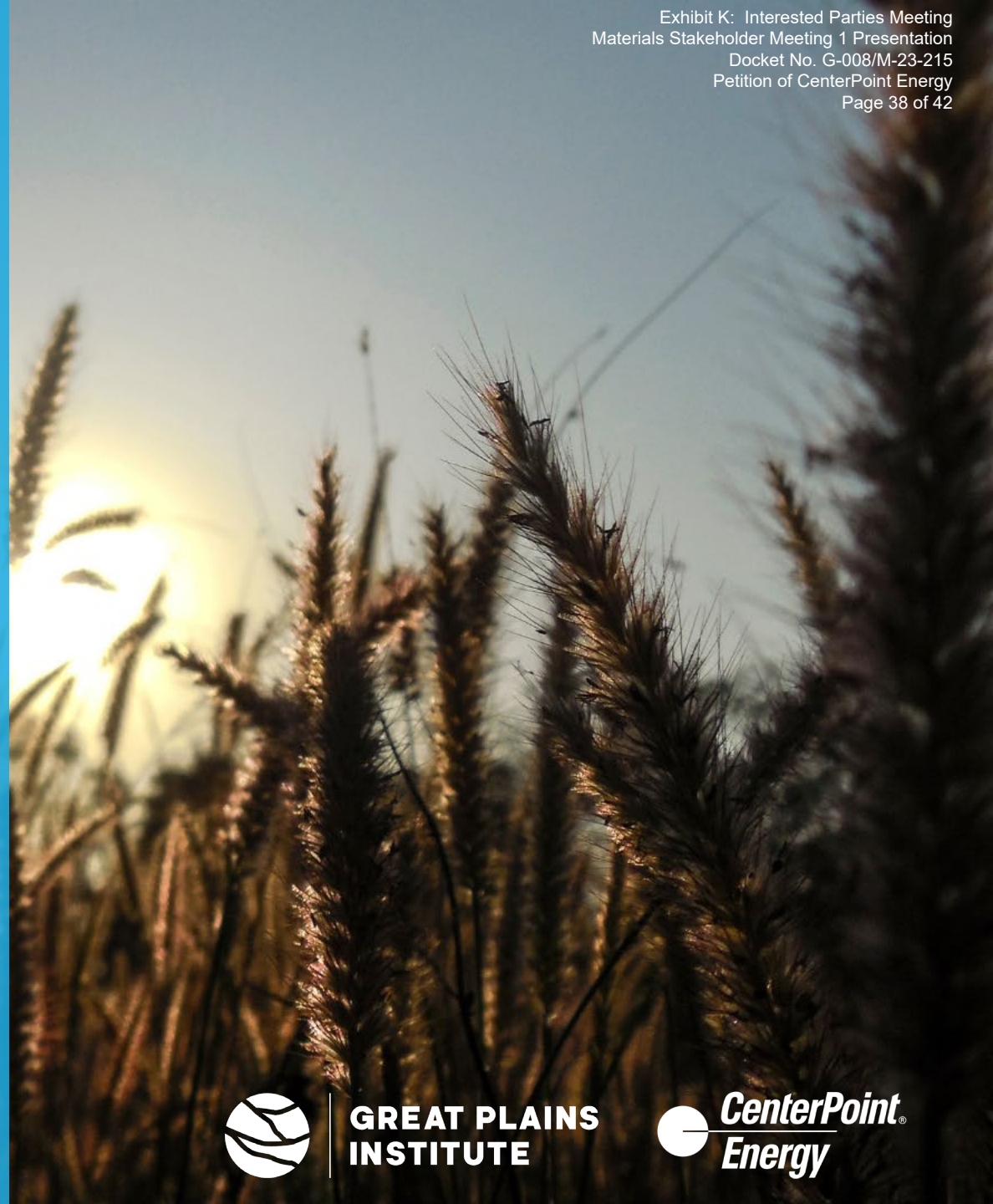
- Break -

Please return at 10:45AM



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CenterPoint Energy

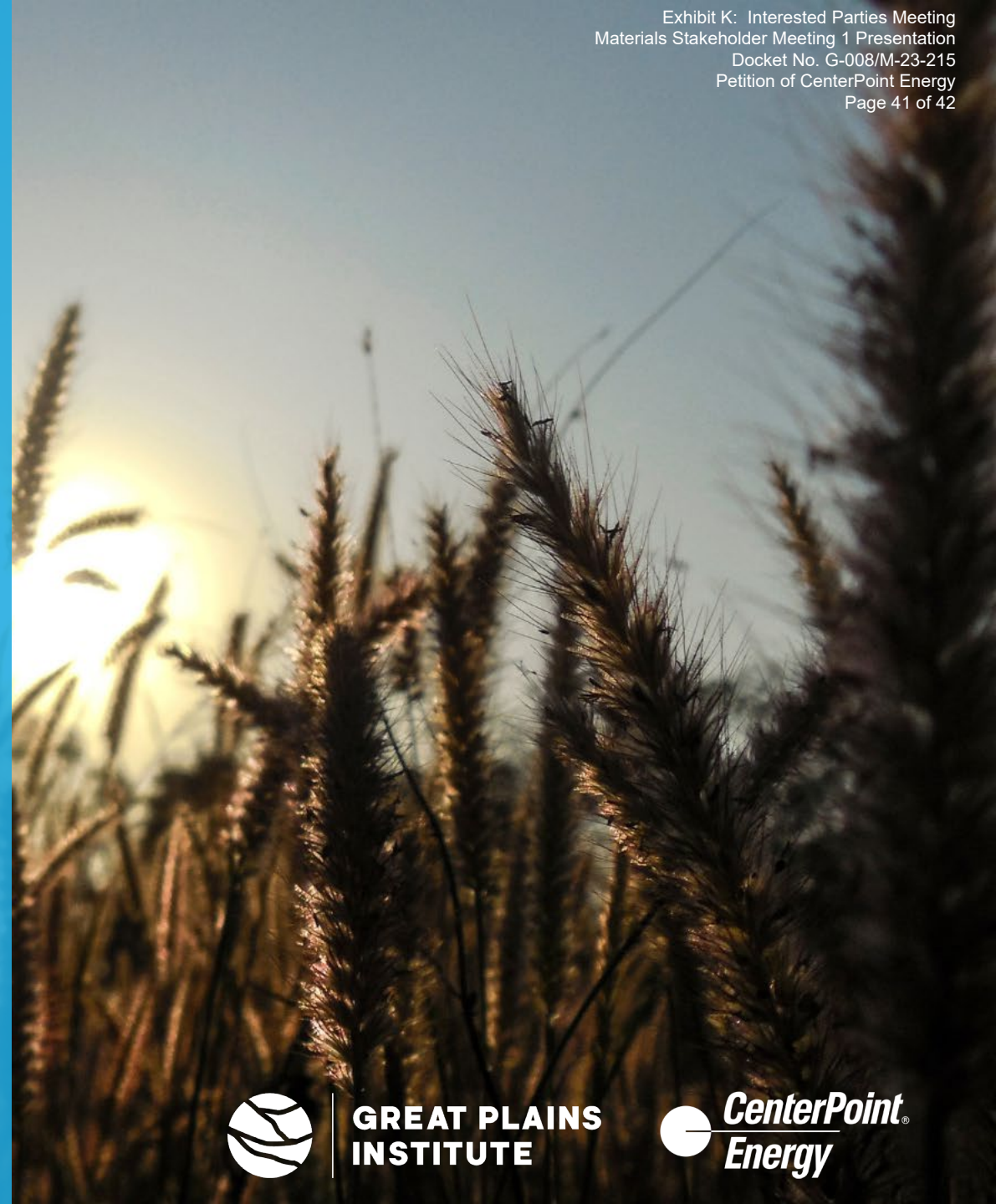
Open discussion

Questions for stakeholders

- Is any part of the process currently unclear?
- Do you have specific suggestions for consideration when evaluating particular pilots?
  - E.g. nuances that could affect expected efficacy or GHG reductions?
- Is the current shortlist missing anything?

Wrap-up and Next Steps

- Thank you for participating in today's discussions!
- The next stakeholder meeting will take place in December 2022. We will share the date once it has been determined.
- Following today's meeting, you will receive a link to a survey for sending in additional feedback. Please complete the survey by Monday, October 3.
- We will be sending out notes from today's meeting in the next week or two once we've had a chance to organize them.
- CenterPoint Energy is open to additional discussions and engagement beyond these meetings – if you have questions or comments, please contact InnovationPlan@CenterPointEnergy.com.



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Resources Included in NGIA

- Renewable Natural Gas (RNG) & Biogas
  - Must be from biomass
  - Distinction is pipeline quality or not
- District Energy
  - From solar thermal or ground-source
- Energy efficiency
  - Does not include “investments” that can reasonably be included in the Conservation Improvement Program
- Power-to-hydrogen & power-to-ammonia
  - Produced using a carbon-free power source
- Strategic electrification
  - Cannot add to electric peak
  - Customer must still use gas (partial electrification only)
- Carbon Capture
  - Very broad definition

Special Requirements for the First Plan

- All utilities
  - Costs must be 50%+ for RNG, biogas, power-to-hydrogen or power-to-ammonia (low carbon fuels)
- CenterPoint Only
  - Residential deep energy retrofit + electric ASHP pilot (with gas backup)
  - Industrial hard-to-electrify pilot
  - Small/medium business GHG audit pilot
  - District energy pilot

CenterPoint Energy Innovation Plan

STAKEHOLDER MEETING 1

Friday, September 23rd, 8:30AM-12:00 PM CT

Meeting Summary and Notes

Meeting Context and Summary

On Friday, September 23, 2022, CenterPoint Energy (CenterPoint), with technical support from ICF and facilitative support from the Great Plains Institute (GPI), hosted the first of three planned stakeholder meetings that will inform the development of CenterPoint's first innovation plan. The meeting was held in an online format via Zoom.

CenterPoint is preparing its voluntary innovation plan in accordance with the Natural Gas Innovation Act (NGIA), which was signed into law by Governor Walz on June 26, 2021. The full text of NGIA is available here. Additional information regarding innovation plans and natural gas utility regulation changes can be found in the following two Minnesota Public Utilities Commission (Commission) dockets:

Docket No. G-999/CI-21-565	In the Matter of a Commission Evaluation of Changes to Natural Gas Utility Regulatory and Policy Structures to Meet State Greenhouse Gas Reduction Goals
Docket No. G-999/CI-21-566	In the Matter of Establishing Frameworks to Compare Lifecycle Greenhouse Gas Emissions Intensities of Various Resources, and to Measure Cost-Effectiveness of Individual Resources and of Overall Innovation Plans

The meeting began with an overview of the legislative and regulatory context for natural gas utility innovation plans in Minnesota. NGIA allows natural gas utilities to file voluntary innovation plans with the Commission for review and approval. If a utility chooses to file an innovation plan, that innovation plan must propose innovative resources that the utility will pursue to contribute to meeting Minnesota's greenhouse gas reduction and renewable energy goals. Initiatives based on the following eight innovative resources are eligible for inclusion in innovation plans so long as the initiative will result in lower lifecycle greenhouse gas emissions than its fossil fuel alternative and meet other criteria as established in NGIA:

- Renewable natural gas (RNG)
- Biogas
- District energy
- Energy efficiency
- Power-to-hydrogen
- Power-to-ammonia
- Strategic electrification
- Carbon capture

In addition to detailed descriptions of proposed pilot projects and research and development initiatives consistent with these eight innovative resources, innovation plans must also contain detailed assessments of potential effects and costs associated with implementation of the proposed plan. Because the effects that a proposed innovative resource could have are highly variable, ranging from emissions reductions to job creation, the Commission has directed that innovation plans will be primarily evaluated holistically based on their potential to have beneficial societal outcomes. Utilities may conduct qualitative and/or quantitative assessment of each proposed pilot consistent with regulatory goals and requirements to most accurately capture potential effects.

Commission-approved innovation plans have a term of five years, and a new innovation plan must be filed, prepared, and completed such that it takes effect immediately upon expiration of the previous plan. CenterPoint is currently conducting stakeholder engagement and outreach related to its first innovation plan. For additional information on NGIA, including specific NGIA requirements that CenterPoint must meet, please refer to the *Summary of Minnesota Natural Gas Innovation Act Requirements for Gas Utility Innovation Plans*, included in Attachment A to this meeting summary.

CenterPoint is currently in the process of developing a shortlist of pilot projects to evaluate for possible inclusion in their initial innovation plan. Earlier this year, CenterPoint issued a request for information for potential pilots which received nearly 100 responses. CenterPoint and its technical consultant ICF also contributed ideas for potential pilots. CenterPoint is currently working to select a shortlist of approximately 25 pilot ideas to be fully evaluated for potential inclusion in an innovation plan. This evaluation will entail estimating lifecycle greenhouse gas impacts, net job creation, direct utility costs, and other costs and benefits consistent with the NGIA regulatory framework. CenterPoint provided all meeting attendees with a spreadsheet listing all pilot ideas received so far and a draft shortlist of 28 pilot strategies to be fully evaluated for possible inclusion in CenterPoint's innovation plan.

CenterPoint also presented a list of potential research and development projects, but due to the smaller budget for research and development and greater uncertainty about the likely effects of research and development on greenhouse gas emissions reductions, CenterPoint does not plan to complete the same kind of analysis on research and development projects as it will for larger pilots. For example, one of the research and development ideas is for a study to evaluate RNG feedstocks available near the area CenterPoint serves in Minnesota. This may be a valuable

undertaking to support future RNG development, but will not have direct greenhouse gas reduction benefits, significant job creation benefits, etc. Research and development may account for up to 10 percent of innovation plan costs.

As the first of three planned stakeholder engagement meetings dedicated to innovation plan development, this meeting was intended to further inform CenterPoint's pilot project selection by conducting preliminary pilot strategy screening and a gap analysis. This will help CenterPoint ensure that it is considering a wide and diverse set of ideas before it moves forward with full evaluation of approximately 25 pilot concepts. Subsequent meetings will provide feedback on detailed analysis of the approximately 25 shortlisted projects and guide development of a final project portfolio, respectively.

CenterPoint shared that they intend to treat this initial stakeholder meeting, as well any feedback received via the meeting attendee survey, as a final opportunity for stakeholders to suggest additional pilot strategies for inclusion in CenterPoint's first innovation plan. CenterPoint emphasized that they will remain open to innovative suggestions, but suggestions received after October 3rd may instead be considered for inclusion in subsequent plan iterations.

Following this introduction to the NGIA, NGIA-eligible innovative resources, and the status of CenterPoint's initial innovation plan development, GPI facilitated an open discussion focused on identifying additional stakeholder-suggested considerations and desired outcomes for the innovation plan, as informed by the following key questions:

- Is any part of the process currently unclear?
- Do you have specific suggestions for consideration when evaluating particular pilots? (e.g. nuances that could affect expected efficacy or greenhouse gas reductions?)
- Is the current shortlist missing anything?

GPI, CenterPoint, and ICF accepted comments and provided responses related to these key questions, as well as additional clarifying or substantive questions. The summary below includes perspectives from both verbal commenters and commenters who shared their perspectives in writing via Zoom's chat function. Attendees were also encouraged to share their perspectives in the post-meeting survey and were invited to contact CenterPoint with any additional ideas or questions at InnovationPlan@centerpointenergy.com.

Meeting Notes: Open Discussion

Notes are in an alphanumeric format for reference purposes only; the numbers and letters do not indicate any prioritization or ranking.

General Discussion

1) Will research and development projects follow a similar evaluation and RFP process as pilot projects?

a. CenterPoint anticipates that research and development and pilot projects will undergo slightly different evaluation processes.
b. Proposed research and development projects will likely undergo a less-detailed analysis than proposed pilot projects, with a greater focus on what the proposed idea is, how it could support development of future pilot projects, budgetary requirements, etc. rather than a detailed cost-benefit analysis quantification.
c. Intent of research and development projects is to build an understanding of what future savings could be from a certain initiative.
    i. Research initiatives are therefore unlikely to have the same direct, quantifiable impacts on greenhouse gas reduction as some of the pilot initiatives.
d. Research and development is a much smaller portion of CenterPoint's allotted innovation plan budget (compared to pilot projects).

2) For any pilot that requires large numbers of new workers/contractors, will CenterPoint analyze the costs of the workforce development necessary to implement such pilots? Will CenterPoint consider including those costs in the pilots?
    a. Workforce development cost analyses may be pilot-specific depending on how large or new a particular initiative is.
        i. Example: A hybrid heating program will have direct program costs, administrative program costs, and potential workforce development and training costs.
    b. This is why the opportunity to provide quantitative and/or qualitative analyses is helpful.
3) When is Commission approval of the innovation plan expected, and when would CenterPoint be able to begin funding selected initiatives?
    a. CenterPoint is currently aiming to file their innovation plan in 2023 (2nd Quarter).
    b. Filing will be followed by the regulatory process (approximately 1 year)
        i. Anticipating Commission approval 2024
        ii. Following Commission approval there will be some additional steps.
    c. In preparation for innovation plan implementation, CenterPoint anticipates conducting some preliminary activities throughout 2023 that can be completed in parallel with the approval process, but some aspects cannot commence without Commission approval.
4) Has the Inflation Reduction Act (IRA) impacted how CenterPoint is approaching innovation plan development?
    a. NGIA and the innovation plan development process predate the IRA.
        i. Will need to evaluate how certain IRA funding mechanisms could affect costs, but the new legislation does not fundamentally change potential innovation opportunities.
        ii. Some strategies could become more cost-competitive due to the IRA.
    b. May affect certain cost-benefit dimensions, but unlikely to change CenterPoint's overall approach to innovation plan development

5) How does CenterPoint envision collaboratively developing and implementing proposed strategies?
    a. It is possible for various RFI respondents who proposed related strategies to collaborate on combined initiative at the implementation level.
        i. Depends on the pilot—some will require rigorous program design, and others will be more straightforward. CenterPoint needs to explore how various projects can be implemented.
        ii. CenterPoint anticipates reaching out to relevant RFI respondents at the beginning of the program design phase to gather additional input.
        iii. Where relevant, CenterPoint anticipates issuing future requests for proposals to competitively bid pilots that require external implementation.
        iv. The RFI was not intended to be a direct lead up to an RFP; it was for idea generation. Having responded to the RFI will not be a prerequisite for consideration in future RFPs.
6) Is CenterPoint considering projects in other geographies/regions (especially the Northeast) as models or examples?
    a. CenterPoint looking into pilots from other regions and included some of these for consideration.
    b. CenterPoint does not have a formal outreach plan to better understand other pilot initiatives but is in contact with some organizations in the Northeast, Northwest, and California.
        i. Open to survey responses directing CenterPoint to pilots in additional geographies/regions.
7) The estimated lifecycle greenhouse gas reduction evaluation should include a more comprehensive analysis of full value chain implications. (Ex: Distributed decarbonization of natural gas would enable continued use of existing natural gas infrastructure, compared to centralized hydrogen production that will require time and cost of additive transmission and storage infrastructure).
    a. Docket No. G-999/CI-21-566 requires that utilities use the Argonne National Labs Greenhouse Gases, Regulated Emissions, and Energy Use in Technologies (GREET) model for greenhouse gas accounting when applicable. GREET applies to renewable natural gas and hydrogen resources.
        i. CenterPoint will need to verify what GREET prescribes with respect to different hydrogen emissions pathways.
    b. There are additional cost considerations: a pilot project or a systemwide transformation targeting widespread technology adoption would have vastly different costs.
8) Will CenterPoint use any guiding principles as the shortlist continues to narrow in the coming months? Will the primary metrics that CenterPoint will consider be the components of the cost-effectiveness framework? How does CenterPoint expect to best utilize the framework given that there are qualitative/narrative elements to that framework? In other words, what are the important aspects of a potential pilot to CenterPoint that will inform its proposal?

a. CenterPoint hopes that these stakeholder meetings will help inform what it should be considering, what metrics should be considered, etc.
b. CenterPoint anticipates that costs and greenhouse gas emissions reductions will be prominent aspects but will continue engaging parties at upcoming stakeholder meetings to better understand potential qualitative and quantitative evaluation criteria and potential measure combinations and prioritizations.
c. 2nd and 3rd stakeholder meetings will focus more on this, but feedback is currently welcome.
    i. Parties are encouraged to submit feedback and perspectives via the post-meeting survey or via CenterPoint's dedicated innovation plan email address (InnovationPlan@centerpointenergy.com)

9) Under NGIA, can a research and development initiative that could lead to a full project be combined with the first phase of a commercial project? Should this be approached as a combined project or as two separate projects?
    a. There are some initiatives included on the pilot project list that may not end up in CenterPoint's final innovation plan portfolio as pilots, but that could be pursued through other approaches, such as study funding.
    b. If the initiative falls within the five-year framework, it would ideally be considered as a form of pilot project with implementation funding.
        i. When comparing measures and dedicating funding, CenterPoint will consider whether it makes the most sense to set aside pilot project implementation funding for a certain initiative during the five-year plan phase, or whether the initiative should be financed through dedicated research and development funds.
10) Where is the proposal evaluation rubric/chart? Is the "Cost-Effectiveness Chart" from the presentation the complete evaluation form?
    a. The Cost-Effectiveness Chart included in the PowerPoint for today's meeting is the full proposal evaluation form.
    b. CenterPoint included a completed hypothetical evaluation rubric as Exhibit C, *NGIA Example Framework Chart with Hypothetical Pilots*, in their Proposed Cost-Benefit Framework compliance filing on January 28, 2022 (Docket No. G-999/M-21-566). Docket filing available here.
    c. RFI is not related to the future competitive bidding process that CenterPoint will pursue for selected pilot projects.
    d. CenterPoint is required to include the results of all pilot analyses/evaluations in its innovation plan filing and may share this information in advance of plan filing.
11) Were there any types of projects/strategies that CenterPoint expected to see submitted, but that were not submitted of the 97 submitted strategies that were narrowed down to the current list of 28 strategies? Or were there any projects/strategies that CenterPoint did not expect to see, but that were submitted?
    a. In general, CenterPoint received robust coverage in responses.
    b. CenterPoint was clear throughout the RFI process that it did not want the inability to gather specific data or detail during the relatively limited response time to

reduce the potential range of responses; CenterPoint was seeking concept-level responses, rather than full-fledged project proposals.

12) Will CenterPoint be soliciting proposals for funding once its innovation plan is approved?
    a. CenterPoint is currently laying the groundwork for future implementation and does not yet have a proposal solicitation process established.
    b. CenterPoint expects to go through an RFP process in the future, but that process is not yet established, and there are additional steps to address before then.
13) Could CenterPoint provide a sense of the types of parties that responded to the RFI? Local companies, national businesses, community-driven organizations, etc.?
    a. CenterPoint conducted outreach through several avenues and received responses from a broad range of respondents. The parties that responded to the RFI reflect this level of outreach.
14) How does CenterPoint plan to incorporate community voices into pilot selection and development? How does CenterPoint see BIPOC community organizations being supported with their pilot project ideas?
    a. CenterPoint continues to seek input from community voices.
    b. CenterPoint encourages attendees to provide suggestions for additional community groups/organizations to engage with via its dedicated Innovation Plan email address (InnovationPlan@centerpointenergy.com).
15) Through what procedure(s) does CenterPoint expect costs to be passed on to customers? If the total of the plan cost averages $20 million per year, what is the estimated average bill impact for residential customers? It would be helpful if CenterPoint could provide as much information as possible about cost impacts in its plan, including calculations of impact by class.
    a. The Act allows recovery through various methods: in a rate case, through a special rider like is currently done for CIP, or through gas costs.
    b. CenterPoint believes that different approaches to cost recovery may be best suited to different kinds of pilots and innovative resources.
    c. CenterPoint will have additional information regarding cost recovery and cost impact later in innovation plan development.

Innovative Resource-Specific Discussions

Carbon Capture

1) How will the carbon intensity of carbon capture projects be evaluated? Will GREET be used for this?
    a. Though CenterPoint will use evaluative approaches consistent with GREET when possible, GREET does not have an evaluative methodology for carbon capture technologies.
    b. There are many different types of carbon capture technologies, each of which may require a different evaluation approach.
        i. CenterPoint will take a project-by-project approach.

2) Because carbon capture is broadly defined in NGIA, CenterPoint is considering a broad range of potential pilot initiatives. This is one example of why it is valuable that gas utilities can include a qualitative and/or quantitative rationale for proposed strategies.
    a. From a greenhouse gas reduction perspective, the proposed project that would reduce behind the meter methane leakage from large industrial entities will likely offer significant carbon capture potential.
    b. Comparatively, the Urban Tree Carbon Offset Program is unlikely to reduce as much carbon, but it has other kinds of benefits such as equity benefits that are not as easily quantified.
3) Can the carbon capture evaluation metrics quantify the durability or duration of carbon capture? In other words, are the evaluation metrics able to measure the actual value calculation of the technology's output, rather than just measuring the technology itself (example: carbon capture from tree planting vs. industrial-scale RNG decarbonization)?
    a. This depends on whether carbon capture durability information is widely available for a specific technology.
        i. Carbon offset programs have well-established GHG emissions protocols and standard approaches, so these types of initiatives likely have reliable durability information that can be incorporated into calculations.
    b. With respect to carbon capture approaches that could have leakage risks, CenterPoint will need to be transparent about any key assumptions in the calculations.
    c. This will need to be considered in the lifecycle analysis.
        i. Key considerations include both scale and what is being done with the captured carbon (example: industrial-scale methane pyrolysis technology producing a form of solid carbon that will be introduced into concrete as a filler vs. small-scale carbon capture on a singular building that will be recycled for use in another industry).
    d. Large-scale sequestration within the state is not likely.
        i. Minnesota does not have an ideal geology for carbon sequestration.
        ii. There are active discussions on CO_2 transport via pipelines.
        iii. Site characteristics where the CO_2 storage would occur would likely be a consideration, even if that site is not located in Minnesota.

RNG and Biogas

1) Different types of RNG have different carbon intensity values
    a. Example: Landfill gas and wastewater are common RNG sources, but their carbon intensity is closer to geologic gas than some other options, including dairy manure.
    b. This is CenterPoint's rationale for considering a variety of RNG strategies.
2) Some RNG types did not receive many RFI submittals (e.g., dairy manure). Is CenterPoint planning to seek additional RNG generation partners to propose potential projects for consideration?

a. CenterPoint suspects that few highly specific RNG projects were proposed because start-up is difficult for those projects and the project timelines may not align well with this innovation plan process.
b. CenterPoint received numerous proposals from vendors or groups interested in working with the company to identify real RNG projects with NGIA-approved funding.
c. There are no RFP response limitations for parties that did not respond to the RFI. CenterPoint is interested in receiving more information regarding different potential RNG projects that could meet NGIA requirements.

3) Does CenterPoint have a good understanding of the extent of biomass resources available in Minnesota that could be used to create biogas/RNG, and of the potential volume of RNG that those resources could supply? Or should the innovation plan include a study dedicated to this?
    a. CenterPoint is considering this an important funding area.
    b. Several biogas/RNG submittals for study funding have been collapsed into a single project under consideration for research and development funding.

Power-to-Hydrogen and Power-to-Ammonia

1) Hydrogen pilot initiatives build upon CenterPoint's existing work:
    a. Blending green hydrogen into the existing natural gas system
    b. Industrial-scale hydrogen electrolysis
    c. There is some potential for IRA funding in this area and possibly Infrastructure Investment and Jobs Act (IIJA) funding related to hydrogen hubs.
        i. Investor-owned utilities have relatively limited potential funding under the IRA—much of the money is being directed towards other parties, so opportunities here also depend more largely on whether those other parties are pursuing it.
        ii. CenterPoint is likely eligible for an IRA tax credit for green hydrogen, which will likely be an important aspect of pilot project evaluation in the innovation plan development process.

District Energy

1) CenterPoint received several proposals or responses related to district energy, consideration of which is required under NGIA legislation.
    a. Massachusetts is piloting networked geothermal district energy, which is worth evaluating as an example.
    b. Some CenterPoint customers that already have district energy systems are interested in decarbonizing them, and other areas within the CenterPoint service territory could be served by new district energy systems (some have already been proposed).

Strategic Electrification

1) CenterPoint is considering strategic electrification in all sectors (industrial, residential, commercial)
    a. Interested in pursuing space and water heating for the commercial and residential sectors.
2) Hybrid heating presents an opportunity for gas and electric utilities to collaborate
    a. G21 initiative demonstrated that hybrid heating could have lower costs because it will not add to peak electric load while helping achieve emissions reduction targets.
3) With respect to water heating, is CenterPoint considered multifamily as a niche area, given that there are particular water heating considerations for multifamily buildings?
    a. As is the case under the Conservation Improvement Program (CIP), multifamily housing is included with the commercial sector.
    b. CenterPoint received several comments identifying multifamily as a potential strategic focus area for pilot initiatives.
        i. CenterPoint would be interested in additional information regarding different potential approaches (e.g., different electric solutions) for multifamily water heating
4) This could be an opportunity to upgrade some of the older natural gas water heaters that are prone to back-drafting, thus improving home safety.
    a. Important to ensure that potential recipients understand the space requirements necessary for a heat pump water heater to function properly.
        i. There needs to be sufficient space surrounding the heat pump water heater to ensure optimal performance.
        ii. Heat pump water heaters have been installed in small areas, closets, etc. in multifamily or manufactured home parks, impeding performance.
5) NGIA legislation requires that natural gas utilities filing innovation plans pursue residential deep energy retrofit pilots with a gas-backup electric air source heat pump.
    a. NGIA defines a deep energy retrofit as, "*the installation of any measure or combination of measures, including air sealing and addressing thermal bridges, that under normal weather and operating conditions can reasonably be expected to reduce a building's calculated design load to ten or fewer British Thermal Units per hour per square foot of conditioned floor area. Deep energy retrofit does not include the installation of photovoltaic electric generation equipment, but may include the installation of a solar thermal energy project*."
        i. Several possible types of improvements would meet this definition of deep energy retrofit (insulation, window improvements, etc.)
    b. Deep energy retrofits can be very intensive, have numerous steps, and often come with intensive participant requirements.
        i. Rather than only being able to fully retrofit a few homes to the design load required by NGIA (ten or fewer British Thermal Units per hour per square foot of conditioned floor area), CenterPoint is interested in offering several retrofit tiers. With this approach, some homes can receive the

highest/most intensive level of improvements, but other homes can receive more moderate improvements that make participation easier.

c. Does NGIA require some sort of weatherization, all the way to deep retrofit or something more modest (or something in between)? Or is there another row in the strategic electrification table piloting heat pump adoption without insulation?
    i. Residential air source heat pumps are more likely to fit within the bounds of the ECO Act, so CenterPoint currently has residential heat pumps without insulation/air sealing flagged for consideration in CIP initiatives.

Energy Efficiency

1) The energy efficiency pilots listed in the presentation all seem like they have significant overlap with CIP. Might some of these pilots be diverted to CIP, or have they already been screened?
    a. The list of potential energy efficiency projects was formerly much longer (as displayed in the spreadsheet provided to meeting attendees).
    b. Many potential energy efficiency pilots have been redirected for consideration during the upcoming process to develop CenterPoint's next CIP triennial plan. Those pilots are therefore not represented on the current shortlist of 28 pilot projects.
2) What will the project planning/development process look like for energy efficiency initiatives that are more aligned with CIP?
    a. The CIP Triennial Plan development/planning process will run in parallel with the innovation plan development process.
    b. CenterPoint has been conscious in its staffing decisions to account for this and its CIP and NGIA teams are communicating and coordinating where relevant.

Next Steps

1) CenterPoint requests that meeting attendees complete the Innovation Plan Stakeholder Meeting Survey. Survey link available here.
    a. Please submit any additional feedback via the survey.
    b. Consider the survey a gap analysis that will help CenterPoint identify any key gaps.
    c. Survey responses due Monday, October 3, 2022.
2) CenterPoint encourages interested parties to reach out via the email address dedicated to this initiative, InnovationPlan@CenterPointEnergy.com.
3) In October, CenterPoint will finalize the shortlist of initiatives that will undergo detailed analysis.
4) CenterPoint will be soliciting additional stakeholder feedback at the 2nd and 3rd stakeholder engagement meetings for its innovation plan.

Attachment A:

Summary of Minnesota Natural Gas Innovation Act Requirements for Gas Utility Innovation Plans

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Summary of Minnesota Natural Gas Innovation Act Requirements for Gas Utility Innovation Plans

The Natural Gas Innovation Act (NGIA) was signed into law by Governor Walz on June 26, 2021. This summary provides basic information about the requirements for natural gas utility innovation plans, which are one component of NGIA.

The full text of the Natural Gas Innovation Act is available here

BASICS OF NATURAL GAS INNOVATION PLANS

- A natural gas utility may file an innovation plan with the Minnesota Public Utilities Commission (PUC) that proposes innovative resources the utility plans to implement to contribute to meeting the state's greenhouse gas and renewable energy goals.
- Innovative resources may include power-to-hydrogen, strategic electrification, renewable natural gas, district energy, energy efficiency, biogas, carbon capture, and power-to-ammonia.
- The commission must approve, modify, or reject a plan, based on criteria provided in NGIA (see criteria below).
- In response to a requirement in NGIA, the PUC has established a framework (in Docket 21-566) for evaluating the costs and benefits, including greenhouse gas emissions reductions, of innovation plans and the individual resources that may be included in innovation plans.
- An innovation plan has a term of five years. A subsequent innovation plan must be filed no later than four years after the previous plan was approved by the commission so that, if approved, the new plan takes effect immediately upon expiration of the previous plan.
- In seeking to recover costs under a plan approved by the commission, the utility must demonstrate to the satisfaction of the commission that the actual total incremental costs incurred to implement the approved innovation plan are reasonable. Prudently incurred costs under an approved plan may be recovered by the utility from their customers.
- Utilities submitting an innovation plan must also submit a report detailing characteristics of their current system.
- Utilities may propose green tariff programs (i.e., programs that allow customers to opt-in to purchasing lower or no carbon gaseous fuels to cover a portion of their usage) outside of an innovation plan.

INNOVATION PLAN COMPONENTS:

1. The innovative resource or resources the utility plans to implement to contribute to meeting the state's greenhouse gas and renewable energy goals

2. Research and development investments related to innovative resources the utility plans to undertake
3. Total lifecycle greenhouse gas emissions that the utility projects are reduced or avoided through implementing the plan
4. A comparison of reduced or avoided GHG emissions to total emissions from natural gas use by utility customers in 2020
5. A description of each pilot program included in the plan that is related to the development or provision of innovative resources, and an estimate of the total incremental costs to implement each pilot program
6. The cost-effectiveness of innovative resources compared to other innovative resources that could be deployed to reduce or avoid the same greenhouse gas emissions targeted for reduction by the utility's proposed innovative resource
7. For any pilot program not previously approved as part of the utility's most recent innovation plan, a third-party analysis of:
    a. the lifecycle greenhouse gas emissions intensity of the proposed innovative resources; and
    b. the forecasted lifecycle greenhouse gas emissions reduced or avoided if the proposed pilot program is implemented
8. An explanation of the methodology used by the utility to calculate the lifecycle greenhouse gas emissions avoided or reduced by each pilot program included in the plan
9. A discussion of whether the plan supports the development and use of alternative agricultural products, waste reduction, reuse, or anaerobic digestion of organic waste, and the recovery of energy from wastewater, and, if it does, a description of the geographic areas of the state in which the benefits are realized.
10. A description of third-party systems and processes the utility plans to use to:
    a. track the innovative resources included in the plan so that environmental benefits produced by the plan are not claimed for any other program; and
    b. verify the environmental attributes and greenhouse gas emissions intensity of innovative resources included in the plan;
11. Projected local job impacts resulting from implementation of the plan and a description of steps the utility and the utility's energy suppliers and contractors are taking to maximize the availability of construction employment opportunities for local workers
12. A description of how the utility proposes to recover annual total incremental costs of the plan
13. Steps the utility has taken or proposes to take to reduce the expected cost of the plan on low- and moderate-income residential customers and to ensure that low- and moderate-income residential customers benefit from innovative resources included in the plan
14. A report on the utility's progress toward implementing the utility's previously approved innovation plan, if applicable
15. A report of the utility's progress toward achieving the cost-effectiveness objectives established by the commission with respect to the utility's previously approved innovation plan, if applicable

16. Collections of pilot programs that the utility estimates would, if implemented, provide approximately 50 percent, 150 percent, and 200 percent of the greenhouse gas reduction or avoidance benefits of the utility's proposed plan.

REQUIREMENTS FOR CENTERPOINT ENERGY'S FIRST INNOVATION PLAN

NGIA stipulates that CenterPoint Energy's first innovation plan must include the following:[i]

- A pilot program to provide thermal energy audits to small- and medium-sized business in order to identify opportunities to reduce or avoid greenhouse gas emissions from natural gas use. The pilot program must provide incentives for businesses to implement recommendations made by the audit and must recognize businesses that achieve significant emissions as thermal energy leaders.
- A pilot program to provide innovative resources to industrial facilities whose manufacturing processes, for technical reasons, are not amenable to electrification.
- A pilot program that facilitates deep energy retrofits and the installation of cold climate electric air-source heat pumps in existing residential homes that have natural gas heating systems.
- A pilot program to facilitate the development, expansion, or modification of district energy systems in Minnesota.

CRITERIA FOR INNOVATION PLAN APPROVAL:

1. Produces net benefits under the cost-benefit framework established by the commission.
2. Promotes the use of renewable energy resources and reduces or avoids greenhouse gas emissions consistent with cost criteria.
3. Promotes local economic development.
4. Innovative resources included in the plan have a lower lifecycle greenhouse gas intensity than natural gas produced from conventional geologic sources.
5. Systems used to track and verify the environmental attributes of the innovative resources included in the plan are reasonable, considering available third-party tracking and verification systems.
6. Costs and revenues projected under the plan are reasonable in comparison to other innovative resources the utility could deploy to reduce greenhouse gas emissions.
7. The total amount of estimated greenhouse gas emissions reduction or avoidance to be achieved under the plan is reasonable considering:
    a. The state's greenhouse gas and renewable energy goals
    b. Customer cost
    c. The total amount of greenhouse gas emissions reduction or avoidance achieved under the utility's previously approved plans, if applicable
8. Any renewable natural gas purchased by a utility under the plan that is produced from the anaerobic digestion of manure is certified as being produced at an agricultural livestock production facility that has not and will not increase the number of animal units at the facility solely or primarily to produce renewable natural gas for the plan.

INNOVATION PLAN COST CRITERIA:

- Annual total incremental costs of the first innovation plan must not exceed the lesser of:
  - 1.75% of the utility's gross operating revenues
  - $20 per nonexempt customer (annual total incremental costs for each year of the plan divided by the total number of nonexempt utility customers)
- Cost limits for the second plan increase to 2.75% gross operating revenues and $35 per nonexempt customer; cost limits for the third plan increase to 4% and $50 respectively.
- Additional costs in the first plan (beyond the limits described above) of the lesser of 0.25% of gross operating revenues or $5 per nonexempt customer may be approved exclusively for purchasing RNG from food waste diverted from a landfill, municipal wastewater treatment systems, or sustainably harvested native prairie grasses or cover crops. These limits increase to 0.75% and $10 respectively for the second plan and 1.5% and $20 respectively for the third plan.
- 10 percent of annual costs may go to research and development.
- For purposes of the cost cap, annual costs are averaged over the five-year plan so a utility may spend in excess of its cap in one year if it spends below its cap in another year.
- 50 percent or more of the utility's costs for recovery under the plan must be for the procurement and distribution of renewable natural gas, biogas, hydrogen produced via power-to-hydrogen, and ammonia produced via power-to-ammonia.
- No more than 20 percent of the utility's costs for recovery can be to facilitate the development, expansion, or modification of district energy systems.

[i] NGIA refers in several places to "a utility with more than 800,000 customers." CenterPoint Energy is the only gas utility in Minnesota that meets this criterion.

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	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.
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.
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 1000â„¢ thermal gasification technology. Each System 1000â„¢ train produces ~3 BCF per year of RNG; scalable/reproducible. CI 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.* 3 years from design to commercial operations.** Benefits to Utility Meaningful decarbonization at utility scale. Local gas supply to augment system reliability. Positive impact on tax base and employment within service territory. * RNG price to be validated upon site selection, EPC FEL3 pricing, local biomass feedstock costs, etc. ** Start of design begins at FEL 3/FEED start.	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.
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. Respodents 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 process with several vendors that may produce biogas, RNG and/or green hydrogen as a part of this project.	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.

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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. We have several RNG projects in development with feedstocks ranging from dairy manure to industrial wastewater.	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.
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.
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.

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. The feedstocks for our plant are wastes from food processing. The risks inherent in the sustainable production of biogas have all been addressed through our technical and operational experience. The facility has been in operations for the past 10 years with a full complement of competent operation and maintenance personnel. Our team is fully conversant with the intricacies of biogas production and has demonstrated conversion of 80-90% of the feed carbon to biogas with myriad variable food processing wastes. We are adding gas upgrading equipment to recover the methane as RNG, co2 for food processing and sulfides as elemental sulfur. The gas will supplant over 130,000 metric tons of CO2 from fossil fuel gas in a year.	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 to 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. 4.Establish cost benefit analyses as compared to other mitigation measures â€“ POTW disposal, composting, land disposal, incineration, landfilling.	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.

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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.
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.
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 potental R&D opportunity.
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.
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.
Biogas/Renewable Natural Gas	CNP Internal-5	Carbon-negative energy - RNG and H2 production & CCS using biogenic carbon	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-becoming-carbon-neutral-2045#:~:text=This%20groundbreaking%20study%2C%20%E2%80%9C%20Getting%20to%20Neutral%3A%20Options,energy%20programs%20work%20and%20the%20Laboratory%E2%80%99s%20Carbon%20Initiative.	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

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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 consistently to reduce other natural gas heating sources.	Not currently pursuing	N/A	Biomass combustion does not meet the definition of biogas under NGIA.
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 'Stydy of 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.
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.
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 families living in affordable and public housing to access affordable, low-carbon energy.	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	53	District Geothermal Network	Respondent supported the site selection phase for Eversource in it's 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.
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.

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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 providing savings to connected customers and benefits to CenterPoint Energy.	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.
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.
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.
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.
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 measures, and equipment replacement. Manufactured housing programs in other states deliver significant energy savings, but also provide non-energy benefits by reducing the expenditures in income-constrained households and providing additional comfort, while reducing greenhouse gas emissions. Manufactured homes are currently under-represented in other types of EE programs.	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.

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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 leaders, residents, and businesses to push each other and work together to reach uniquely designed goals that best fit the pilot site's needs.	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 professionals. The pilot will establish a network for real estate professionals that complete training to then receive marketing materials for promoting their business. Materials and promotional items will be shared with new homeowners to direct them to incentives for pursuing efficiency and electrification upgrades.	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.
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.
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 rebate with NGIA funding EQUALS a triple rebate for a homeowner, dramatically reducing the cost of a project, increasing participation, and incentivizing local government involvement.	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.

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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 facility orientation, passive solar thermal preheating of ventilation can reduce natural gas demand and GHG emission.	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.
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 presence and national expertise in residential new homes program design to deliver a superior customer experience. By removing barriers and creating efficiencies, we can successfully increase program engagement, attribution, and participant satisfaction while delivering a program with a strong value proposition for raters, builders and homebuyers.	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 the prevalence of asthma, COPD and respiratory issues, and contributing to difficulty in managing their treatment. As we have seen especially over the last two years, lower income communities are disproportionately affected by health issues; those with less are affected more. To directly address this disparity, the Healthier Homes program reaches patients with respiratory issues in low-income communities to improve their indoor environs.	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 percent or more first-year energy savings through low/no cost, behavioral, and operations and maintenance changes, while also improving other critical business objectives such as production, safety or quality. Respondent's SEM programs, while focused on helping participants save electricity and/or natural gas, measure GHG. Through these programs we have seen significant GHG savings in SEM programs that have a focus on emission reduction.	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.

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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 CenterPointâ€™s commercial foodservice demonstration test kitchen. The test kitchen is managed by Ann Lovcik in Minneapolis for CenterPoint Energy. The software tool combined with gas and electric meters and temperature sensors provides the ability to cook the exact same product on multiple appliances to show live energy use of each along with estimated annual costs.	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 absorbed by the surrounding air, improving indoor air management. An adiabatic humidification system ensures water remains pure, clean and free from biological contaminants. The maintenance of optimal humidity levels has been demonstrated to improve patient comfort and wellbeing and also to significantly reduce the levels of HAIâ€™s (healthcare-associated infections). Converting from steam to adiabatic humidification can drastically improve a facilityâ€™s energy footprint through higher efficiency, along with offering the potential for free cooling which can substantially reduce operating costs.	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.
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 where efficiency is achieved by diminishing run-times of associated equipment. This process will extend the life of the HVAC equipment while keeping maintenance costs low. Respondent's technology is one of the top measures for buildings to improve energy efficiency, save on energy bills, and cost-effectively reduce greenhouse gas emissions.	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.
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 of thermostats that prevent temperatures above a specified setpoint or are connected to a central hub that logs heating time. This may be provided as a measure addition to CenterPoint Energy's existing Multi-Family Building Efficiency (MFBE) program.	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.

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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 climates. GEHPs have significant markets in Asia and Europe, but are under-utilized in the U.S. market.	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 2. Provide targeted design assistance and incentives for upgrades to higher-efficiency gas heating options or electrification via heat pumps. This program would target commercial and multi-family buildings utilizing steam systems, as they face common challenges that lead to increased use of natural gas. These buildings have high savings potential but need special assistance in identifying viable upgrade avenues.	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.
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. SPO is a data driven process that helps to establish staff ownership in the process. SPO involves four steps: 1. Data Mining 2. Selective Data Reduction (SDR) 3. Statistical Data Analysis and AI 4. Operator Desktop The SPO process will provide operators with real time process efficiency metrics and guidance to maintain optimal operation.	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.

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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.
Energy Efficiency	91	Commercial Dishmachines	Commercial dishmachines use hot water for three different purposes: to fill and top off their tanks, to rinse dishes with fresh water, and for special maintenance functions such as auto-clean and auto-delime. Energy recovery systems capture effluent waste heat and re-use the captured energy to preheat incoming cold water for its eventual use as final rinse water. Conveyor dishwashers are one of the largest consumers of water and energy in a large commercial food service and have the potential to reduce gas, electricity and water use of older legacy dishwashers by at least half by replacing legacy conveyor dish machines with advanced, energy recovery dish machines.	Not currently pursuing	N/A	Already included in CIP.
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 expected to deploy residential systems in 2023-24. The project team will survey the market and review lab and field data to analyze the systems, selecting ~2 products for residential field tests. Ten â€˜combi- space and water heating THP systems will be deployed in Minnesota homes to evaluate and prove performance.	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.
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 these barriers and start the process of creating a more focused and streamlined approach to high performance building envelope design and integration into new commercial construction in Minnesota.	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.

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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. CenterPoint Energy could review data to determine target communities/neighborhoods, create criteria to identify the type of homes that would be the best candidates, conduct on-site or virtual audits, make recommendations, and provide a list of qualified contractors. Potential for workforce development by hiring and training a team of contractors just for this.	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.
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.
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
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 (CO_2) emissions, with no investment required. https://phoenixsolarthermal.com/	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.

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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 hot water that can be utilized for industrial purposes. SolarSteam's system can accept boiler feed water and generate steam at temperatures up to 550°C and 110 bar. A transparent membrane enclosure increases efficiency by protecting the solar field from harsh weather conditions and uses innovative construction designs to keep the structures and mirrors clean, which has been a major issue for concentrated solar technology in the past. Keeping the collectors sheltered reduces capital cost by allowing for lightweight materials that don't require rigid foundations and expensive controls. SolarSteam's concentrated solar generators have been adapted to work alongside the customer's existing boilers providing supplementary renewable heat. Such plug-and-play hybrid integration will allow for a constant thermal energy supply while improving performance and saving on operational costs by reducing fuel consumption and environmental impacts.	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.
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 prorgam. 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 currenlty 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 is its evaluation of the required deep energy retrofit/strategic electrification pilot.
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	Archetype Carbon Capture Project for Industrial 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.
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 (CH4), creating only hydrogen (H2) and solid carbon (C). The innovation uses no water, generates no direct CO2, is low cost, requires no new regional infrastructure, and can move quickly to market. Respondent removes high-cost and time roadblocks, accelerating the hydrogen transition.	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.
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 to useful solid products. Establishing a closed cycle in this way distinguishes this approach from other carbon capture technologies that only separate CO2 as liquid or gas and leaves disposal unresolved.	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.

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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-west-central-minnesota	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.
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.
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 â€œgreen,â€minimizing climate change impacts, and potentially enhancing aesthetic and real estate values.	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.
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 optimization pathways by varying the flue gas stream characteristics and studying the use of alternate sorbent materials.	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.

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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 existing assets and partnering with third parties on mitigation solutions outside of CenterPoint's assets. Although this proposal is focused on CenterPoint's service area in Minnesota, this proposal could be expanded to incorporate CenterPoint's enterprise-wide assets.	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.
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. Respondent's technology's flexibility in design allows the extension of CCUS/CCS across a wide variety of industry sectors, including offshore and onshore and innovative use alternatives.	Added to Shortlist - Incorporated into a pilot project archetype	Archetype Carbon Capture Project for Industrial 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".
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 actions. Installations would include at least one large building (usage over 100,000 therms/year) and as much as one combined-heat and power (CHP) system.	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.
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.
Carbon Capture	CNP Internal-16	Carbon Capture for CNP NG Backup Power Generation	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.

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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.
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-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.
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.
Power-to-Hydrogen	5	Local hydrogen production from RNG	Our point of use hydrogen generators are a paridigm 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 process.	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.
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 - Industrial Facility Electrolyzer Pilot	This RFI response has been grouped with other similar proposals under the proposed shortlist archetype called 'Green Hydrogen Archetype - Industrial Facility Electrolyzer Pilot'. This is one of options targeting 'hard to electrify' industrial customers, a category that CenterPoint must cover in its first Innovation Plan filing.

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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-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.
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.
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.

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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
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 infrastructure, making this synthetic methane a drop-in replacement for fossil natural gas. This gas can be used as long term energy storage when curtailed renewable power is used in the process.	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.
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.
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 - Industrial Facility Electrolyzer Pilot	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.
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-electrolyzers 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.
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.

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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 ordinances (Minneapolis, Edina, and St. Louis Park) to identify buildings with high thermal energy usage per square. Those benchmarked small-to-medium businesses with high thermal EUI would be proactively contacted and offered a free or reduced cost ASHRAE Level 1 or better audit, resulting in a set of thermal efficiency recommendations. Businesses that implement recommendations and improve their efficiency would be recognized in partnership with Hennepin County's Efficient Buildings Collaborative.	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: 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.
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 direction for each siteâ€™s carbon reduction efforts, we would conduct an energy audit that results in a carbon reduction plan. This plan will include action items the site can carry out for energy efficiency, beneficial electrification, or renewable energy opportunities, to get to energy use carbon free.	Added to Shortlist - Incorporated into a pilot project archetype	Small/medium business GHG audit pilot	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.
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 to provide alternate air source heat pump recommendations and compare the GHG emissions between the two. The program would also target new customers, focusing on the largest gas users first to maximize the program's effectiveness. A Standalone GHG Assessment Program can also be offered cost-effectively.	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.
Special Projects: Innovative Resources for Large Industrial Customers	20	Industrial Project Development: Decarbonization + Electrification + Efficiency	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 present competing decarbonization strategies on a level basis for customers to evaluate and compare. Customers can choose which strategy best meets their business objects. CenterPoint can claim the impact from implementation to the program with the highest and best use (i.e. eligible efficiency to CIP, electrification to ECO, etc.).	Added to Shortlist - Incorporated into a pilot project archetype	Industrial GHG audit pilot	This represents one potential approach to the required industiral hard to electrify pilot. CenterPoint will consider it in its design of that pilot program.

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Special Projects: Innovative Resources for Large Industrial Customers	83	Developing an Industrial User Decarbonization Outreach Program	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, this program would seek to maximize the many innovative clean energy opportunities within Minnesota including use of biogas/agricultural partnerships. The program would also seek to educate users on grant programs available. Opportunities such as decarbonization incentives for decreasing reliance on natural gas would also be evaluated. Given the respondent's significant presence in the Future Energy marketplace, we are uniquely qualified to lead CNP through this program-development process.	Added to Shortlist - Incorporated into a pilot project archetype	Industrial GHG audit pilot	This was one of several submissions focused on industiral GHG audits and will be combined with those for further consideration.
Special Projects: Residential Deep Energy Retrofits and Heating Electrification	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 retrofits designed to reduce heating loads by 20%, 40%, 60%, and +80%. This data will be used to determine the cost, energy savings, and most suitable equipment required to meet each tiered reduction. Knowing these values will help inform CenterPoint Energy what levels of incentives will be needed in a commercialized program to encourage customers to make these types of improvements.	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.
Special Projects: Residential Deep Energy Retrofits and Heating Electrification	39	Pairing Residential Deep Energy Retrofits and Heating Electrification Special Project with Minneapolis Energy Disclosure Policies	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 housing within the City that has high gas use, noted envelope deficiencies, and other possible indoor air quality issues. The respondent could partner with CenterPoint Energy in helping to identify the specific housing units and addresses that meet criteria for ideal participants in the Residential Deep Energy Retrofits and Heating Electrification Program special project.	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.
Special Projects: Residential Deep Energy Retrofits and Heating Electrification	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 utilizing a performance path to meet aggressive home heating load targets and installing dual fuel ASHPs to maximize efficiency, GHG reduction and fuel flexibly. By employing this pilot, CenterPoint would be able to understand market barriers, implementation costs, energy savings, and GHG savings, while developing home-type DER packages that can be cost effectively scaled.	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.
Special Projects: Residential Deep Energy Retrofits and Heating Electrification	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 advancement component. For customers already planning an aesthetic upgrade / residing of their home, demonstrate integration of currently available technologies such as InSoFast exterior insulated wall panel to increase R-value as part of the aesthetic upgrade. Our manufacturing partner InSoFast currently offers R 7.5 and R10 exterior retrofit solutions for residential and commercial buildings, commercially available at Menard's superstores.	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.

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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 requirements. The system could also provide cooling with the inherent cooling potential of the wells. Applications range from 500 thousand Btuh to 10 MMBtuh, depending on process requirements.	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.
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 hybrid heat pumps with a one-for-one replacement. Hybrid heat pumps allow the electric heat pumps to function when they are most efficient and then use natural gas at the coldest temperatures to avoid excessive electrical costs.	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.
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 and thermal energy storage. When properly integrated and controlled, IESs can serve to balance energy grid supply and demand while exploiting multiple energy resources in ways that reduce greenhouse gases, improve overall operating cost and efficiencies, and provide resilient systems in the built environment.	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 electrification and reduce the number of fuel-burning end-use equipment in Minnesota. It would add to CenterPoint Energy's options and offerings available to both residential and commercial customers, and could potentially target low-income customers with a higher rebate.	Added to preliminary NGIA shortlist	Residential and Commerical 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 Provider (eQSP) Program	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 reduction projects.	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.

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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 deliver viable electrification recommendations to industrial customers, working in tandem with CPE's Key Account Managers. Through this program, recommendations for customers would focus on high-efficiency electric replacement options, which would result in maximum GHG emissions reductions while maintaining peak product output. Incentives could be offered to customers for any projects completed within one year of report delivery date.	Added to Shortlist - Incorporated into a pilot project archetype	Industrial GHG audit pilot	This represents one potential approach to the required industiral hard to electrify pilot. CenterPoint will consider it in its design of that pilot program.
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, resulting in more efficient heating and cooling based on actual demand required. While in full or partial heat recovery mode, the outside compressors do not have to run at full load resulting in energy savings.	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.
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 (exhuast, wastewater, refrigeration) and transfer it to a heating load. Renewable energy can be integrated into heat pumps projects as well. Industrial applications have historically been somewhat limited in the United States for economic reasons, but can provide substantial GHG and energy reduction benefits in the right application. In the context of strategic electrification, Respondent would complete an assessment focused on identifying waste heat sources that would be appropriate for use in a heat pump to offset natural gas. As a part of this assessment high level road mapping of complete natural gas elimination can be considered. Respondent can provide the engineering, design, and commissioning of any identified heat pump projects.	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
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 typically hard-to-reach sector. The project will also afford the opportunity to engage small and medium industrial customers on additional energy efficiency and emissions reduction opportunities	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.

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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.
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 benefits of GHP's much higher heating efficiency (COP 4-6). Supplemental boilers would provide the incremental heating capacity needed to meet peak demand during the highest heating loads during the year.	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.
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 as non-profit organizations, weatherization service providers and utilities that serve them. There is an excellent opportunity to create â€œblitzâ€outreach programs with manufactured home parks within CenterPoint's service territory to make meaningful energy savings with ccASHPs in predominantly the low-income sector.	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 manufacturered homes would remain gas customers and avoid contributing to electric peaks, requirements under NGIA.
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.
Strategic Electrification	CNP Internal-14	M&V for hybrid heating systems with existing electric smart meters and gas billed data	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. furnace). Keep in mind that furnaces aren't very sensitive to hourly climate fluctuations, but ASHPs certainly are. Thus, the enhanced granularity of the electric smart meters is exactly what would be useful for measuring ASHPs.	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
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
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 Commerical 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.

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Will consider all innovative resources	81	Developing and Maximizing CenterPoint Energy Decarbonization Strategy	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 consider broad green technology opportunities including hydrogen, ammonia, carbon capture and biogas/RNG. Respondent would utilize its Digital Tool developed to inform the process in identifying locations/projects/partners to maximize probability of implementation success. This tool was recently utilized to develop a comprehensive hydrogen strategy for a major U.S. gas company.	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.
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. Energy efficiency and electrification projects would have to run through CIP Custom first. They would be eligible for NGIA custom rebates if they did not pass CIP custom tests.	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.
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 hydrogen carrier to power the growing fuel-cell electric vehicle market. Respondent proposes support for a manure->biogas->rDME co-located project that can go to both end markets, displacing fossil propane that is a byproduct of natural gas processing and fossil hydrogen from natural gas reforming.	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.
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 customers to immediately address their carbon emissions from their natural gas use while also supporting the long-term reduction of greenhouse gas emissions in Minnesota. The voluntary program can be designed to intentionally complement and enhance CenterPoint Energy's Innovation Plan by raising additional funds through a per therm premium which can be used to augment the rate-base funding provided for the Innovation Plan or to establish a separate and additional Development Fund.	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.

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Does Not Qualify	55	Renewable Natural Gas Consumer Opt-In Framework Research and Development	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 from conventional geologic sources. This proposal idea includes quantification of the greenhouse gas reductions that CenterPoint would realize from sourcing natural gas from RNG facilities. Respondent would research and assist in developing a voluntary program that involves residential and commercial customers opting-in to pay a slightly higher utility fee to support offsetting GHG emissions comparable to existing utility programs such as Xcel Energy's Windsource Program, NicorGas TotalGreen Program, or Summit Utilities Voluntary RNG Program.	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
Does Not Qualify	92	Library Cold-Climate Air-Source Heat Pump with Variable Refrigerant Flow Pilot Project	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 conversion (approximately 15,000 sqft) is at present an all-electric facility. As such, this pilot would fall into the energy efficiency submission category. A final decision on target location has not yet been made however, and alternative library locations of a similar size are also currently being evaluated, and so this project could also fall under the strategic electrification submission category.	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.
Does Not Qualify	94	Library Geothermal Heat Exchange Heat Pump with Variable Refrigerant Flow Pilot Project	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 under consideration for this conversion (approximately 15,000 sqft), is at present an all-electric facility. As such, this pilot would fall into the energy efficiency submission category. A final decision on target location has not yet been made however, and alternative library locations of a similar size are also currently being evaluated, and so this project could also fall under the strategic electrification submission category.	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.
n/a	1	n/a	This Submission Number was used due to testing RFI online submission form, no project actually submitted	n/a	n/a	n/a
n/a	6	n/a	This Submission Number was used due to testing RFI online submission form, no project actually submitted	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 actually submitted	n/a	n/a	n/a
n/a	31	n/a	This Submission Number was used due to testing RFI online submission form, no project actually submitted	n/a	n/a	n/a
n/a	34	n/a	This Submission Number was used due to testing RFI online submission form, no project actually submitted	n/a	n/a	n/a