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

Petition of CenterPoint Energy

EXHIBIT D: PILOT DESCRIPTIONS

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

June 28, 2023

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Pilot A. RNG Produced from Hennepin County Organic Waste

Project Description

CenterPoint Energy proposes to buy renewable natural gas ("RNG"), including both the commodity and environmental attributes, from Hennepin County's anaerobic digestion ("AD") facility, which is currently under development. Hennepin County submitted this project as part of CenterPoint Energy's Request for Ideas ("RFI") issued in April 2022. Hennepin County is in the final development and planning stages for a new AD facility which will process source-separated food waste from Hennepin County's organics recycling program and a smaller quantity of yard waste. The project is expected to be operational in 2026 and CenterPoint Energy proposes to purchase 50 percent of the RNG produced by the facility from 2026 through 2036. It is anticipated that the facility will be directly interconnected to CenterPoint Energy's distribution system. As described further in Exhibit W, CenterPoint Energy proposes to record the environmental attributes in the M-RETS tracking system and retire the Renewable Thermal Certificates ("RTCs") associated with the purchased RNG on behalf of its customers. CenterPoint Energy has not yet entered into a contract with Hennepin County for the purchase of the RNG but has been in discussion with them and understands that they are amendable to the sale of 50 percent of their RNG provided pricing is reasonable. As discussed below, pricing will be determined closer to the time of purchase as a fair price will depend on both final verified GHG intensity of the constructed facility and the market conditions at the time.

Eligibility

This pilot does not require customer participation. All CenterPoint Energy sales customers will be attributed a small share of the RNG proportionate to their gas usage.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 1: Hennepin County Anaerobic Digestion of Organic Materials Participation Estimates

Unit of Participation	Dth				
Year	Year 1	Year 2	Year 3	Year 4	Year 5
Dth Purchased	0	0	41,440	41,440	41,440

Table 2: Hennepin County Anaerobic Digestion of Organic Materials Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$0	$10,094	$842,256	$851,634	$861,967
Advertising & Promotion	$0	$0	$0	$0	$0
Allocation of General Portfolio Costs	$119,490	$43,255	$42,273	$42,684	$43,107
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$0	$0	$0	$0
Total	$119,490	$53,349	$884,529	$894,318	$905,074
UCT Savings[1]	$0	$0	$0	$0	$0
Total Incremental Cost[2]	**$119,490**	**$53,349**	**$884,529**	**$894,318**	**$905,074**

GHG Reduction and Geologic Gas Savings

Table 3 below summarizes the forecasted greenhouse gas ("GHG") emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions reduced by implementation of the pilot including the emissions intensity of innovative resources deployed. GHG emissions reductions from RNG have a one-year life. For modeling, CenterPoint Energy has assumed a ten-year contract term and so has projected reductions for ten years. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on ICF's application of the GREET model to the project.

Table 3: Hennepin County Anaerobic Digestion of Organic Materials GHG and Natural Gas Savings

	During Five-Year Plan	Over Contract Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	8,466	28,221
Geologic Gas Savings (Dth)	124,320	414,400

Tracking and Verification

This pilot will follow the tracking and verification approach for "Renewable Natural Gas and Biogas" described in Exhibit W.

Customer Incentive Information

No customer incentives will be paid under this pilot.

[1] UCT stands for utility cost test.

[2] Total incremental cost is defined in the NGIA to be net of certain savings, most notably savings from reduced purchases of geologic natural gas, shown as UCT savings in the table.

IRA Incentives Considered

The renewable energy investment tax credit ("ITC"), as modified by the Inflation Reduction Act ("IRA"), contained in 26 U.S.C. § 48, may provide an incentive for Hennepin County or its project developer, depending on the date on which construction begins. To qualify for the ITC, the project would have to commence construction prior to January 1, 2025. The amount of the credit ranges between 6 percent and 50 percent of qualified costs, depending on whether the project satisfies certain labor and domestic manufacturing requirements, and whether the project is built in an energy community.[3] CenterPoint Energy has not identified any IRA incentives that it would be eligible for directly with respect to this pilot.

Equity, Diversity, and Community Engagement

Hennepin County is proposing to build the AD facility adjacent to the county's Brooklyn Park Transfer Station[4] at 9401 83rd Avenue. The proposed project is located in an Area of Concern for Environmental Justice.[5] The County has conducted several outreach activities related to this project with local community groups and the local neighborhood. This engagement with the local community has allowed the County to describe the project, introduce the concept of anaerobic digestion, and gather initial feedback. Additional engagement activities and events will be held as the project moves forward. To support local economic benefits, Hennepin County has confirmed that for their RNG project, all construction workers will be paid prevailing wages. To the extent that qualified persons are available, apprentices will be part of the construction teams to further develop the local qualified workforce and to the extent that qualified persons are available, the project developers will seek to hire members of the local community as facility operators. On CenterPoint Energy's part, as a proposed buyer of the project's RNG, the Company will support and participate in the County's community engagement efforts, as appropriate, and report on these activities in the Plan's annual reports.

Additional Project Information

Because CenterPoint Energy proposes to purchase RNG from this specific facility, we do not propose to subject the project to a request for proposal ("RFP"). CenterPoint Energy and

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[3] Energy community is a term used in the IRA to designate areas of the country that have been particularly negatively economically affected by the transition away from use of fossil fuels or brownfield sites as that term is defined in the Comprehensive Environmental Response, Compensation and Liability Act, otherwise known as "CERCLA" or Superfund. 26 U.S.C. 45(b)(11)(B). The United States Department of Energy has provided an interactive map of two of the three types of energy communities; brownfield sites are not shown on this mapping tool: https://energycommunities.gov/energy-community-tax-credit-bonus/.

[4] A facility that receives trash and organics deliveries from waste-hauling companies and serves as a drop-off facility for residents for household hazardous waste and problem materials. The facility is owned and operated by Hennepin County and is located in the City of Brooklyn Park.

[5] The Minnesota Pollution Control Agency ("MPCA") considers tribal areas and census tracts with higher concentrations of low-income residents and people of color as areas of increased concern for environmental justice. Environmental justice. Minnesota Pollution Control Agency. (n.d.). Retrieved April 14, 2023, from https://www.pca.state.mn.us/about-mpca/environmental-justice.

Hennepin County plan to identify a fair market price closer to the date of contracting based on verified carbon intensity and available market benchmarks. Budget estimates above are based on ICF's current estimates of the market value of the RNG.

Pilot B. RNG Produced from Ramsey & Washington Counties' Organic Waste

Project Description

CenterPoint Energy proposes to buy RNG, including both the commodity and environmental attributes, from Ramsey and Washington Counties' anaerobic digestion facility under development. Ramsey/Washington Recycling & Energy submitted this project as part of CenterPoint Energy's RFI issued in April 2022. Ramsey and Washington Counties have entered into an agreement with Dem-Con HZI Bioenergy LLC, a joint venture between Dem-Con Companies and Hitachi Zosen Inova, LLC ("Dem-Con HZI") for the development of a new AD facility, which will process source-separated food waste from Ramsey and Washington Counties' organics recycling program and a smaller quantity of yard waste.[6] The project is expected to be operational in 2026 and CenterPoint Energy proposes to purchase 80 percent of the RNG produced by the facility from 2026 through 2036. It is anticipated that the facility will be directly interconnected to CenterPoint Energy's distribution system. As described further in Exhibit W, CenterPoint Energy proposes to record the environmental attributes in the M-RETS tracking system and retire the RTCs associated with the purchased RNG on behalf of its customers. CenterPoint Energy has not yet entered into a contract with Dem-Con HZI for the purchase of the RNG but has been in discussion with them and understands that they are amendable to the sale of 80 percent of the produced RNG provided pricing is reasonable. As discussed below, pricing will be determined closer to the time of purchase as a fair price will depend on both final verified GHG intensity of the constructed facility and the market conditions at the time.

Eligibility

This pilot does not require customer participation. All CenterPoint Energy sales customers will be attributed a small share of the RNG proportionate to their gas usage.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 4: RNG Produced from Ramsey & Washington Counties' Organic Waste Participation Estimates

Unit of Participation	Dths				
Year	Year 1	Year 2	Year 3	Year 4	Year 5
Dths Purchased	0	0	152,613	152,613	152,613

[6] A small amount of yard waste is required for structural content in the digester.

Table 5: RNG Produced from Ramsey & Washington Counties' Organic Waste Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$0	$10,094	$3,001,022	$3,038,747	$3,075,939
Advertising & Promotion	$0	$0	$0	$0	$0
Allocation of General Portfolio Costs	$424,966	$153,836	$150,342	$151,803	$153,309
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$0	$0	$0	$0
Total	$424,966	$163,930	$3,151,364	$3,190,551	$3,229,248
UCT Savings	$0	$0	$0	$0	$0
Total Incremental Cost	**$424,966**	**$163,930**	**$3,151,364**	**$3,190,551**	**$3,229,248**

GHG Reduction and Geologic Gas Savings

Table 6 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions reduced by implementation of the pilot including the emissions intensity of innovative resources deployed. GHG emissions reductions from RNG have a one-year life. For modeling, CenterPoint Energy has assumed a ten-year contract term and so has projected reductions for ten years. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on ICF's application of the GREET model to the project.

Table 6: RNG Produced from Ramsey & Washington Counties' Organic Waste GHG and Geologic Gas Savings

	During Five-Year Plan	Over Contract Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	44,359	147,863
Geologic Gas Savings (Dth)	457,839	1,526,130

Tracking and Verification

This pilot will follow the tracking and verification approach for "Renewable Natural Gas and Biogas" described in Exhibit W.

Customer Incentive Information

No customer incentives will be paid under this pilot.

IRA Incentives Considered

The renewable energy ITC, as modified by the IRA, contained in 26 U.S.C. § 48, may provide an incentive for Dem-Con HZI, depending on the date on which construction begins. To qualify for the ITC, the project would have to commence construction prior to January 1, 2025. The amount of the credit ranges between 6 percent and 50 percent of qualified costs, depending on

whether the project satisfies certain labor and domestic manufacturing requirements and whether the project is built in an energy community. Dem-Con HZI expects to achieve a credit of 30-40 percent. CenterPoint Energy has not identified any IRA incentives that it would be eligible for directly with respect to this pilot.

Equity, Diversity, and Community Engagement

As part of the Minnesota Pollution Control Agency permitting process, this project will be subject to solid waste permitting, air permitting, & environmental review. This process also includes environmental justice review, State Historic Preservation Office review for any potential historic and cultural impacts, and GHG and climate change impact analysis. Additionally, both the solid waste permitting and environmental review include a 30-day public notice period where the neighbors and local community are invited to comment on the project. The Company will support and participate in the project's community engagement efforts, as appropriate, and report on these activities in the Plan's annual reports.

Additional Project Information

Because CenterPoint Energy proposes to purchase RNG from this specific facility, we do not propose to subject the project to an RFP. CenterPoint Energy and Dem-Con HZI plan to identify a fair market price closer to the date of contracting based on verified carbon intensity and available market benchmarks. Budget estimates above are based on ICF's current estimates of the market value of the RNG.

Pilot C. Renewable Natural Gas Request for Proposal ("RFP") Purchase

Project Description

CenterPoint Energy plans to issue an RFP for additional RNG to complete its portfolio. While CenterPoint Energy has heard from some developers that may be interested in responding to the RFP, CenterPoint Energy has not pre-selected any particular projects. In selecting winning proposals, CenterPoint Energy will attempt to minimize costs per ton of lifecycle CO_2e reduction while giving preference to projects in Minnesota or neighboring states. CenterPoint Energy will also prioritize projects that are eligible for the RNG additional cost cap to maximize the impact of the plan through that additional funding. CenterPoint Energy proposes to be open to investments in RNG facilities that would benefit from upfront capital provided that those investments are coupled with reduced RNG costs going forward. CenterPoint Energy also proposes to give a preference to bundled RNG (i.e. sale of both environmental attributes and commodity gas) but would consider purchasing unbundled RNG (i.e. without the commodity gas). Additional details on the RFP and CenterPoint Energy's proposed process for selecting winning projects is included in Exhibit Q. As described further in Exhibit W, CenterPoint Energy proposes to record the environmental attributes in the M-RETS tracking system and retire all of them on behalf of its customers. CenterPoint Energy proposes to be flexible as to contract length but anticipates that it will be able to secure a better price by entering into contracts of ten or more years. CenterPoint Energy plans to spend approximately $27.8M within the five-year innovation plan period on RNG selected through this RFP to satisfy the NGIA requirement that

50 percent or more of the costs in this Plan be for RNG, biogas, hydrogen produced via power-to-hydrogen, and ammonia produced via power-to-ammonia.[7]

Eligibility

This pilot does not require customer participation. All CenterPoint Energy sales customers will be attributed a small share of the RNG proportionate to their gas usage.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 7: Renewable Natural Gas Request for Proposal Purchase Participation Estimates

Unit of Participation	Dths				
Year	Year 1	Year 2	Year 3	Year 4	Year 5
Dths Purchased	0	408,750	408,750	408,750	408,750

Table 8: Renewable Natural Gas Request for Proposal Purchase Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$49,000	$7,144,213	$7,187,175	$7,292,958	$7,393,317
Advertising & Promotion	$0	$7,125	$0	$0	$0
Allocation of General Portfolio Costs	$1,353,893	$490,103	$478,972	$483,629	$488,425
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$0	$0	$0	$0
Total	$1,402,893	$7,641,441	$7,666,148	$7,776,587	$7,881,742
UCT Savings	$0	$0	$0	$0	$0
Total Incremental Cost	**$1,402,893**	**$7,641,441**	**$7,666,148**	**$7,776,587**	**$7,881,742**

GHG Reduction and Geologic Gas Savings

Table 9 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions reduced by implementation of the pilot including the emissions intensity of innovative resources deployed. GHG emissions reductions from RNG have a one-year life. For modeling, CenterPoint Energy

[7] Minn. Stat. § 216B.2427, subd. 2(d)(1).

has assumed a ten-year contract term and so has projected reductions for ten years. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on ICF's application of the GREET model to the project.

Table 9: Renewable Natural Gas Request for Proposal Purchase GHG and Geologic Gas Savings

	During Five-Year Plan	Over Contract Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	143,954	359,884
Geologic Gas Savings (Dth)	1,635,000	4,087,500

Tracking and Verification

This pilot will follow the tracking and verification approach for "Renewable Natural Gas and Biogas" described in Exhibit W.

Customer Incentive Information

No customer incentives will be paid under this pilot.

IRA Incentives Considered

The renewable energy ITC, as modified by the IRA, contained in 26 U.S.C. § 48, may provide an incentive for RNG project developers depending on the date on which construction begins. To qualify for the ITC, the project would have to commence construction prior to January 1, 2025. The amount of the credit ranges between 6 and 50 percent of qualified costs depending on whether or not the project satisfies certain labor and domestic manufacturing requirements and whether the project is built in an energy community. CenterPoint Energy has not identified any IRA incentives that it would be eligible for directly with respect to this pilot.

Equity, Diversity, and Community Engagement

CenterPoint Energy proposes a process for evaluating and selecting RNG purchases that includes several criteria prioritizing local environmental and economic co-benefits as described in the draft RFP in Exhibit Q. In its RFP, CenterPoint Energy will take into consideration whether the project is in an energy community, as defined by the Inflation Reduction Act, or a Disadvantaged Community as defined by the US Department of Energy's Justice40 initiative.[8] Additionally, the RFP requests information from the bidder on how the project has or will engage the surrounding community. The Company will support and participate in selected projects' community engagement efforts, as appropriate. CenterPoint Energy will track and report local co-benefits of RNG projects and any community engagement activities in its annual reports.

[8] https://energyjustice.egs.anl.gov/

This pilot will include contracted vendor services. The Company commits to tracking and reporting on an annual basis the total and percent of Plan spending on vendor services for diverse vendors or suppliers.[9]

Additional Project Information

ICF modeled and evaluated lifecycle GHG emissions reductions for four different kinds of RNG archetype projects: food waste, dairy, wastewater treatment, and landfill. ICF also evaluated likely RNG prices that could be obtained for each archetype in the competitive RNG market assuming a ten-year contract term. Based on this analysis, ICF and CenterPoint Energy developed assumptions about what kinds of RNG would likely be selected in an RFP and in what quantities they would select. This, in turn, allowed CenterPoint Energy and ICF to create overall estimates for costs, quantities, and GHG emissions reductions for this pilot. However, CenterPoint Energy does not anticipate that the RNG projects actually selected will exactly mirror those modeled. CenterPoint Energy's purchasing choices will be guided by the RFP responses actually submitted and the Company may buy more or less RNG from a given source depending on actual project-specific pricing, GHG intensity, and other project features as described in Exhibit Q.

Pilot D. Green Hydrogen Blending into Natural Gas Distribution System

Project Description

CenterPoint Energy proposes to own and operate a 1 megawatt ("MW") green hydrogen plant at an existing Company facility in Mankato, Minnesota. CenterPoint Energy would install dedicated solar panels, an electrolyzer, a hydrogen storage system, and other necessary systems and equipment to generate and store hydrogen and blend it into the gas distribution system. The solar panels would be used to supply power to the electrolyzer. Grid electricity would also be used to increase the utilization of the electrolyzer, allowing hydrogen production at times when the solar panels are not producing sufficient (or any) electricity. Given typical solar generation capacity factors for Minnesota, it is expected that the pilot will leverage more grid electricity than on-site solar production. CenterPoint Energy plans to purchase any grid electricity under an Xcel Energy green tariff program or other independent power purchase agreement.

Eligibility

This pilot does not require customer participation. All CenterPoint Energy sales customers will be attributed a small share of the blended hydrogen proportionate to their gas usage.

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[9] CenterPoint Energy defines diverse suppliers per the guidelines of the National Minority Supplier Development Council, the Women's Business Enterprise National Council and the U.S. Small Business Administration.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 10: Green Hydrogen Blending into Natural Gas Distribution System Participation Estimates

Unit of Participation	Hydrogen Facilities Starting Operation				
Year	Year 1	Year 2	Year 3	Year 4	Year 5
Facilities	0	0	1	0	0

Table 11: Green Hydrogen Blending into Natural Gas Distribution System Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$49,800	$150,094	$152,955	$121,767	$172,088
Advertising & Promotion	$0	$0	$0	$0	$0
Allocation of General Portfolio Costs	$212,192	$76,812	$75,068	$75,798	$76,549
Electricity Purchase Costs	$0	$0	$925,710	$925,710	$925,710
Revenue Requirement for Capital Investment	$0	$0	$370,356	$589,632	$552,129
Customer Incentives	$0	$0	$0	$0	$0
Total	$261,992	$226,906	$1,524,089	$1,712,906	$1,726,476
UCT Savings	$0	$0	$133,310	$126,312	$119,680
Total Incremental Cost	**$261,992**	**$226,906**	**$1,390,778**	**$1,586,595**	**$1,606,796**

GHG Reduction and Geologic Gas Savings

Table 12 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions reduced by implementation of the pilot. GHG emissions reductions from power-to-hydrogen production have a one-year life and are counted in the year in which the hydrogen is produced. CenterPoint Energy estimates a 20-year facility life for the pilot and thus 20 years of emissions reductions. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on ICF's application of the GREET model to the proposed facility.

Table 12: Green Hydrogen Blending into Natural Gas Distribution System GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	4,199	27,993
Geologic Gas Savings (Dth)	63,481	423,204

Tracking and Verification

This pilot will follow the tracking and verification approach for "Power-to-Hydrogen" described in Exhibit W. Additional pilot-specific details include:

> *Verification:* CenterPoint Energy will engage a third party to conduct measurement and verification ("M&V") for the initial two years of operation of the hydrogen blending to monitor renewable energy generation and hydrogen production. The verifier will establish an ongoing monitoring and reporting plan to validate and report system performance.
>
> *Tracking:* CenterPoint Energy will use M-RETS to issue RTCs for environmental attributes of each Dth of hydrogen that is generated through this pilot (the heat content per kilogram of hydrogen (higher heating value or "HHV") is 0.1368 Dth/kilogram). All such RTCs will be retired on behalf of all CenterPoint Energy customers.

Customer Incentive Information

No customer incentives will be paid under this pilot.

IRA Incentives Considered

CenterPoint Energy believes that it would be eligible for an ITC for the facility under 26 U.S.C. § 48.[10] The project could be eligible for a credit of between 6 and 40 percent of costs, depending on whether the project satisfies certain labor requirements and domestic manufacturing requirements. CenterPoint Energy is committed to satisfying the IRA labor requirements, provided that appropriate workers are available, so assumes that it would achieve at least a 30 percent tax credit. CenterPoint Energy will evaluate whether it is feasible to satisfy domestic content requirements as part of the project design.

It is possible that it would be more favorable for CenterPoint Energy to claim the clean hydrogen production tax credit ("PTC") under 26 U.S.C. § 45V rather than the ITC. The proposed facility may be eligible for up to $3/kg of hydrogen production and could also likely separately claim an ITC for the solar system.[11] The Treasury Department has not yet published final rules describing eligibility for the PTC and it is unclear whether CenterPoint Energy would satisfy credit

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[10] Both the electrolyzer and the solar system are likely eligible for ITCs. For purposes of this analysis, CenterPoint Energy assumed a 30 percent ITC on both systems.

[11] The solar system ITC by itself would similarly vary between 6 and 40 percent of costs, with CenterPoint Energy likely to achieve between 30 and 40 percent. The solar system may also qualify for a PTC under 26 U.S.C. § 45, but preliminary analysis indicates that the ITC is likely more favorable.

requirements by purchasing green tariff electricity or through a power purchase agreement that the Company could reasonably obtain. In particular, it is not yet clear whether Treasury will require a demonstration that carbon-free generation is matched with hydrogen generation on an annual basis, monthly basis, hourly basis or some other time scale. While the Company plans to partially supply the electrolyzer with dedicated solar production from its own solar panels, and hydrogen generated with this electricity will likely be eligible for the hydrogen PTC, the Company plans to purchase the majority of the electricity for the electrolyzer from the grid. When final guidance is issued, CenterPoint Energy will evaluate its options for maximizing the tax benefit to its customers.

Equity, Diversity, and Community Engagement

CenterPoint Energy will engage with the City of Mankato to identify and address community questions with the proposed hydrogen blending project. CenterPoint Energy plans to contract services for the design and construction of the electrolyzer and solar panels from Minnesota-based businesses, pay prevailing wages, and satisfy IRA apprenticeship requirements. CenterPoint Energy will track and report on these efforts in its annual report. The Company commits to tracking and reporting on an annual basis the total and percent of Plan spending on vendor services for diverse vendors or suppliers.[12]

Additional Project Information

In its June 1, 2022 Order Establishing Frameworks for Implementing Minnesota's Natural Gas Innovation Act in Docket No. G-999/CI-21-566, the Minnesota Public Utilities Commission ("Commission") ordered that prior to approval of a hydrogen blending pilot, the utility shall: (a) Clearly state the learning objectives for the proposed blending pilot and metrics it will collect to achieve those learning objectives; (b) Document the utility's consultation with the Minnesota Office of Pipeline Safety regarding the specific pilot along with a discussion of why it is in compliance with state pipeline safety standards; and (c) Provide a discussion demonstrating that the utility has determined the level of hydrogen blending will ensure the safety of its system and customers' appliances. The Company provides the required information on this hydrogen blending pilot below.

The learning objectives of this pilot include:

1. Gain experience generating hydrogen with dedicated renewable energy and operation of a hydrogen system with variable power input.
2. Gain experience building and operating a hydrogen storage system.
3. Understand operational and economic considerations of storing hydrogen during periods of high renewable electricity availability for use during periods of low renewable generation availability.

[12] CenterPoint Energy defines diverse suppliers per the guidelines of the National Minority Supplier Development Council, the Women's Business Enterprise National Council and the U.S. Small Business Administration.

Metrics to be collected include:

- Hourly electricity generation profile of dedicated solar array
- Hourly electricity consumption data for the electrolyzer
- Monthly capacity utilization factor, split by solar power input vs. grid electricity
- Expected levelized cost of energy (assuming future performance is consistent with past performance), excluding cost of storage
- Operational cost of hydrogen storage system
- Operational performance of the combined electrolyzer and solar facilities

CenterPoint Energy met with the Minnesota Office of Pipeline Safety ("MNOPS") on May 9, 2023 to discuss the proposed hydrogen project in Mankato, where the Company plans to utilize an electrolyzer to produce hydrogen and blend up to 5 percent of it in the natural gas distribution system. As discussed during that meeting, the plant piping containing pure hydrogen will be governed under National Fire Protection Association ("NFPA") Code 2, Hydrogen Technologies Code, and ASME B31.12, Hydrogen Piping and Pipelines. The point at which the blending occurs on the distribution system will follow 49 CFR Part 192 and will be subject to oversight by MNOPS. MNOPS plans to visit the hydrogen installation and review jurisdictional components of the project.

Hydrogen blending into CenterPoint Energy's gas system in the proposed Mankato project will blend hydrogen between 0.5 percent up to a maximum of 5 percent. The Company has decades of experience in blending supplemental gases into its distribution system and uses industry standards to assess interchangeability of gases and their impacts on customer appliances. The most cited recent industry document on interchangeability of gases is the "White Paper on Natural Gas Interchangeability and Non-Combustion End Use" by the NGC+ Interchangeability Work Group published February 28, 2005.[13] The most important factor in determining end use appliance compatibility is the Wobbe Index of the supplied fuel mixture. The NGC+ paper provides acceptable Wobbe Index ranges of plus or minus 4 percent. The addition of 5 percent hydrogen to the current pipeline gas composition will reduce the Wobbe Index by approximately 1 percent. This small change is less than CenterPoint Energy experiences within a year across certain areas of our system in geologic gas supplies and well within the appliance compatibility range described in the NGC+ paper.

The low levels of hydrogen blending proposed in our Mankato project are not expected to cause safety issues within our gas distribution system. CenterPoint Energy has received interstate pipeline natural gas with low levels of hydrogen, (up to 0.35 percent) across its system for many years. The Company routinely sends pipe samples removed from our system to its materials laboratory in Golden Valley, Minnesota for material examination and the Company's laboratory has never seen evidence of material problems related to hydrogen exposure. The potential effects of hydrogen exposure have been correlated with the partial pressure or percentage contribution

[13] See https://www.beg.utexas.edu/files/energyecon/global-gas-and-lng/NGC_Interchangeability_Paper.pdf

of the hydrogen in the natural gas stream relative to the total pressure in the pipeline. At 5 percent hydrogen in the Mankato system, the partial pressure will be lower than the hydrogen partial pressure many of our higher-pressure systems have experienced for years. There can also be material concerns with hydrogen in high stress steels, however the Mankato project will be supplying a relatively low-pressure distribution system with correspondingly low stress levels in the pipelines. Accordingly, CenterPoint Energy is confident in the safe operation of the proposed hydrogen project at our Mankato location.

Pilot E. Industrial or Large Commercial Hydrogen and Carbon Capture Incentives

Project Description

CenterPoint Energy will identify a small number of large commercial or industrial customers interested in installing either power-to-hydrogen or carbon capture demonstration projects. CenterPoint Energy would support the projects by paying 20 percent of the costs for a feasibility study, up to $30,000, and providing a rebate for customers who move forward. Additionally, the pilot contains budget for an initial scoping study to aid with customer identification. CenterPoint Energy will not own the hydrogen or carbon capture equipment and will not take ownership of any associated environmental attributes. However, as discussed further in Exhibit W, CenterPoint Energy will require customers to agree not to resell any environmental attributes generated.[14]

This pilot satisfies Minn. Stat. § 216B.2427, subd. 7, which requires the Company to include a pilot in its first NGIA Plan which provides innovative resources to industrial facilities whose manufacturing processes, for technical reasons, are not amenable to electrification.

This pilot is the combination of two similar short-listed pilot concepts: the Green Hydrogen Archetype for Industrial or Large Commercial Facility and the Carbon Capture Archetype for Industrial or Large Commercial Facility pilot. Because CenterPoint Energy wishes to pursue both pilots, they are structured similarly, and they target similar customers, the Company is proposing them as a single combined offering to streamline its portfolio.

Eligibility

This pilot is open to the following rate classes: Small Volume Dual Fuel B, Large Volume Dual Fuel, Commercial/Industrial Firm C, and Large Volume Firm.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

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[14] As described in Exhibit W, CenterPoint Energy may grant an exception to allow sale or transfer of environmental attributes if there are sufficient controls and tracking to ensure that the environmental attributes and their benefits are retired on behalf of an entity within the state of Minnesota.

Table 13: Industrial or Large Commercial Hydrogen and Carbon Capture Incentives Participation Estimates

Unit of Participation	Customers				
Year	Year 1	Year 2	Year 3	Year 4	Year 5
Customers	0	0	2	0	0

Table 14: Industrial or Large Commercial Hydrogen and Carbon Capture Incentives Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$280,800	$43,260	$178,187	$135,785	$74,189
Advertising & Promotion	$2,500	$0	$2,500	$0	$0
Allocation of General Portfolio Costs	$158,682	$57,442	$56,138	$56,683	$57,246
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$0	$3,030,000	$0	$0
Total	$441,982	$100,702	$3,266,825	$192,469	$131,435
UCT Savings	$0	$0	$119,371	$113,104	$107,167
Total Incremental Cost	**$441,982**	**$100,702**	**$3,147,453**	**$79,364**	**$24,268**

GHG Reduction and Geologic Gas Savings

Table 15 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions reduced by implementation of the pilot. GHG emissions reductions from power-to-hydrogen production and carbon capture have a one-year life. CenterPoint Energy estimates a 20-year life for both kinds of facilities and thus twenty-years of emissions reductions following installation. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions for hydrogen projects are based on ICF's application of the GREET model to the proposed facility. For carbon capture projects, CenterPoint Energy plans to require a lifecycle analysis specific to each facility, as emissions can vary based on facility characteristics and end-uses for the captured carbon. This is further discussed in Exhibits F and W.

Table 15: Industrial or Large Commercial Hydrogen and Carbon Capture Incentives GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	15,706	107,196
Geologic Gas Savings (Dth)	56,843	378,953

Tracking and Verification

This pilot will follow the tracking and verification approach for "Carbon Capture" and "Power-to-Hydrogen," as applicable, as described in Exhibit W. Additional pilot-specific details include:

Verification: All projects completed under this pilot will undergo dedicated M&V to monitor system performance. CenterPoint Energy will engage a third party to develop and implement an M&V plan for each pilot. For power-to-hydrogen, CenterPoint Energy will obtain documentation of carbon-free electricity as described in Exhibit W. For carbon capture, CenterPoint Energy will engage a third party to conduct a lifecycle assessment of avoided emissions. Results of these studies will be used to establish annual avoided emissions to be multiplied by the project life to calculate lifetime emissions reductions.

Customer Incentive Information

CenterPoint Energy plans to pay 20 percent of upfront feasibility study costs, up to a maximum of $30,000, and 100 percent of capital costs for project installation, up to a maximum of $1.5 million for a single project.

IRA Incentives Considered

For hydrogen, the customer may be eligible for either an ITC or a PTC under 26 U.S.C. § 48 or 26 U.S.C. § 45V respectively. For the ITC, amounts range between 6 percent and 50 percent of costs depending on whether the project satisfies labor requirements, whether the project meets domestic content requirements, and whether the project is located in an energy community. The clean hydrogen PTC would range between $0.60/kg produced and $3.00/kg produced for ten years, depending on whether the project satisfies certain labor requirements. For modeling, we have assumed that participants would qualify for the $3.00/kg PTC.

For carbon capture, participating customers may be eligible for a tax credit under 26 U.S.C. § 45Q. However, to qualify for a credit, customers would have to capture at least 12,500 metric tons annually. We have assumed that participating customers would not capture sufficient amounts of carbon to clear that threshold and so have assumed no tax credit.

CenterPoint Energy has not identified any IRA incentives that it would be directly eligible for under this pilot.

Equity, Diversity, and Community Engagement

No specific project locations have been identified as of the filing of this Plan. CenterPoint Energy will require pre-approval for incentives paid through this program, and as part of the pre-approval process, customers must provide a description of the land uses and demographics of the community and area surrounding the participant site - including whether the project is in an energy community, as defined by the Inflation Reduction Act, or a Disadvantaged Community as defined by the US Department of Energy's Justice40 initiative - and describe any planned community engagement activities. CenterPoint Energy will encourage and support pilot participants' community engagement efforts and will report on these efforts in annual reports.

Additional Project Information

CenterPoint Energy anticipates considerable effort to identify viable projects for this pilot. To aid in project identification and selection, CenterPoint Energy will conduct a scoping study in the first year of the Plan.

CenterPoint Energy would target sites where customers are open to hosting walk-throughs, so that contractors, design firms, and other industry participants can gain exposure to the technology.

Pilot F. Industrial Methane and Refrigerant Leak Reduction Program

Project Description

CenterPoint Energy will hire a third-party vendor to conduct surveys of participating industrial and large commercial facilities for methane and refrigerant leaks behind the customer gas meter. After leaks are identified, the third-party vendor will provide planning support to help establish a systematic leak repair program and CenterPoint Energy will offer incentives to partially offset the cost of leak repair. Participating customers will also receive follow up surveys every two years during the term of the Plan to test how well the impacts of the leak survey on reducing methane and refrigerant leakage and subsequent repairs are sustained. While CenterPoint Energy has high confidence that this pilot will result in a substantial reduction of GHG emissions, there are several open questions that would allow for a more precise estimates of GHG savings potential in different facilities and the optimal program design. Accordingly, CenterPoint Energy aims to answer two main research questions in the course of implementing this pilot:

1) What size and quantity of leaks are most likely to be identified on a first leak survey in different kinds of customer facilities (e.g. how much methane is leaking from customer sites, are the leaks distributed between customers or concentrated in just a few sites, etc.)?
2) What are the quantity and size of leaks most likely to be identified on a follow-up survey two years later and four years later (e.g. have the original leaks been repaired, were any repairs sustained, how many new leaks have occurred in a two year window)?

Answering these two questions will allow CenterPoint Energy to more accurately estimate GHG emissions reductions resulting from leak identification and repair, the best facilities to target with a program like this, and how often surveys should be repeated.

Eligibility

This pilot is open to the following rate classes: Small Volume Dual Fuel B, Large Volume Dual Fuel, Commercial/Industrial Firm C, and Large Volume Firm.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 16: Industrial Methane and Refrigerant Leak Reduction Program Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Customers Receiving Initial Survey	25	25	0	0	0

Table 17: Industrial Methane and Refrigerant Leak Reduction Program Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$374,000	$387,885	$210,904	$218,778	$226,947
Advertising & Promotion	$25,000	$25,000	$0	$0	$0
Allocation of General Portfolio Costs	$52,186	$18,891	$18,462	$18,641	$18,826
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$37,676	$37,676	$0	$0	$0
Total	$488,861	$469,452	$229,366	$237,420	$245,774
UCT Savings	$52,878	$100,204	$94,943	$89,959	$85,236
Total Incremental Cost	**$435,983**	**$369,248**	**$134,423**	**$147,461**	**$160,537**

GHG Reduction and Geologic Gas Savings

Table 18 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. CenterPoint Energy has estimated a five-year life for leak repairs, which we believe is conservative.[15] Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on estimated average Dth savings per participant multiplied by the lifecycle GHG-intensity of geologic gas. CenterPoint Energy has not attempted to quantify GHG reductions as a result of refrigerant leak repair.[16]

Table 18: Industrial Methane and Refrigerant Leak Reduction Program GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	30,387	33,763
Geologic Gas Savings (Dth)	67,816	75,351

Tracking and Verification

This pilot will follow the tracking and verification approach for "Carbon Capture" described in Exhibit W. Additional pilot-specific details include:

[15] We were not able to identify much publicly available information on likely duration of leak repairs. An RFI respondent suggesting a pilot along these lines recommended five to eight years, which ICF found to be reasonable. One of the research goals of the pilot is to determine average life of leak repairs with more accuracy.

[16] Limited information is available to estimate likely refrigerant leak quantities or sizes. One of the research goals of the pilot is to determine GHG emissions resulting from refrigerant leaks with more accuracy.

Verification: As described above, CenterPoint Energy's vendor for this pilot will revisit project sites to quantify the actual GHG emissions reduced as a result of leak identification and repair.

Customer Incentive Information

CenterPoint Energy plans to pay for the initial facility survey, the third-party vendor's planning support to help establish a systematic leak repair program, and for follow up facility surveys. CenterPoint Energy also plans to provide customer incentives of $5.00/Dth of expected annual savings for leak repairs up to the incremental cost of the repair. We estimate an average customer leak repair cost of $5,000 and an average incentive of approximately $1,500. No incentives (or GHG savings) have been included at this time for refrigerant leak repairs. CenterPoint Energy will evaluate with its selected third-party vendor whether modest incentives would be valuable and may include them in the existing budget if it is determined that modest incentives would be valuable in driving GHG reductions.

IRA Incentives Considered

CenterPoint Energy has not identified any applicable IRA incentives for this program.

Equity, Diversity, and Community Engagement

As noted above, CenterPoint Energy anticipates that this pilot will include contracted vendor services and will seek diverse and qualified vendors to participate in an RFP process to select an implementation provider. The Company commits to tracking and reporting on an annual basis the total and percent of Plan spending on vendor services for diverse vendors or suppliers.[17]

No specific project locations have been identified as of the filing of this Plan. CenterPoint Energy does not anticipate major impacts to local communities surrounding project sites for this type of project, but would support participating customers in community engagement efforts, where applicable.

Additional Project Information

None.

Pilot G. Urban Tree Carbon Offsets

Project Description

Local non-profit Green Minneapolis, which is working in partnership with local tree planting partners across the 7-county Twin Cities Metro area, is selling carbon offsets registered as City Forest Carbon+ Credits for trees planted in the community. Under this pilot, CenterPoint Energy

[17] CenterPoint Energy defines diverse suppliers per the guidelines of the National Minority Supplier Development Council, the Women's Business Enterprise National Council and the U.S. Small Business Administration.

will purchase these Carbon+ Credits and retire them on behalf of CenterPoint Energy customers. The proceeds will be used for additional tree planting and maintenance by partners, including the Minneapolis Parks and Recreation Board, Hennepin County, and other local organizations.

Eligibility

This pilot does not require customer participation.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 19: Urban Tree Carbon Offsets Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Credits Purchased	800	850	900	950	1000

Table 20: Urban Tree Offset Program Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$45,000	$50,894	$58,097	$66,759	$75,030
Advertising & Promotion	$0	$0	$0	$0	$0
Allocation of General Portfolio Costs	$13,774	$4,986	$4,873	$4,920	$4,969
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$0	$0	$0	$0
Total	$58,774	$55,880	$62,970	$71,679	$79,999
UCT Savings	$0	$0	$0	$0	$0
Total Incremental Cost	**$58,774**	**$55,880**	**$62,970**	**$71,679**	**$79,999**

GHG Reduction and Geologic Gas Savings

Table 21 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. Purchased offsets have a life of one year. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, CenterPoint Energy based its GHG reduction estimates on published guidance from the City Forest Credit program.

Table 21: Urban Tree Carbon Offsets GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	4,500	4,500
Geologic Gas Savings (Dth)	-	-

Tracking and Verification

This pilot will follow the tracking and verification approach for "Carbon Capture" described in Exhibit W. Additional pilot-specific details include:

Carbon offsets retired under this pilot will be generated following the carbon protocols established by City Forest Credits, which contains specific provisions for verification and tracking.[18] Tracking and verification requirements of this protocol are summarized below.

> *Verification:* City Forest Credits' carbon protocols requires third-party verification by a Validation and Verification Body approved by the organization.
>
> *Tracking:* City Forest Credits' carbon protocols include a requirement to track carbon offset credits through a Registry Database.

Customer Incentive Information

No customer incentives will be paid under this pilot.

IRA Incentives Considered

CenterPoint Energy has not identified any applicable IRA incentives for this program.

Equity, Diversity, and Community Engagement

Green Minneapolis targets tree planting particularly in areas of limited tree coverage which have a high correlation with areas of concentrated poverty.[19] Tree planting has multiple benefits for nearby residents as further described in Exhibit O. As a proposed buyer of the carbon offsets, the Company will support and participate in any Green Minneapolis' and/or its partner organizations' community engagement efforts, as appropriate, and report on these activities in the Plan's annual reports.

Additional Project Information

None.

Pilot H. Carbon Capture Rebates for Commercial Buildings

Project Description

CenterPoint Energy proposes to provide rebates to commercial customers that install CarbinX carbon capture systems manufactured by the Canadian company CleanO2. These units connect to existing natural gas heating equipment, capture CO_2 and convert it to a solid

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[18] City Forest Credits Standard February 22, 2023 | Version 3.0, accessed May 25, 2023, https://www.cityforestcredits.org/wp-content/uploads/2023/02/City-Forest-Credits-Standard-V3.pdf. More information on City Forest Credits is available at https://www.cityforestcredits.org/carbon-credits/carbon-protocols/.

[19] See growing shade resource and map: https://metrocouncil.org/Communities/Planning/Local-Planning-Assistance/Tree-Canopy.aspx

potassium carbonate ("K_2CO_3"). The units also work as an economizer, recapturing waste heat for use in the building (i.e., reducing natural gas consumption). The potassium carbonate byproduct of the carbon capture, also known as pearl ash, is harvested by CleanO2 periodically and sold for use in various manufacturing processes. For example, the pearl ash can be used in the manufacture of soap, detergents, fertilizer. Revenue from the resale is shared between CleanO2 and the participating customer.

Eligibility

This pilot is open to all non-residential CenterPoint Energy customers.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 22: Carbon Capture Rebates for Commercial Buildings Participation Estimates

	Units Installed				
	Year 1	Year 2	Year 3	Year 4	Year 5
Units of Participation	37	72	72	72	72

Table 23: Carbon Capture Rebates for Commercial Buildings Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$49,000	$50,470	$51,984	$53,544	$55,150
Advertising & Promotion	$5,000	$5,000	$5,000	$5,000	$5,000
Allocation of General Portfolio Costs	$54,502	$19,729	$19,281	$19,469	$19,662
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$222,000	$432,000	$432,000	$144,000	$144,000
Total	$330,502	$507,199	$508,265	$222,012	$223,812
UCT Savings	$23,188	$64,723	$101,834	$134,869	$164,155
Total Incremental Cost	**$307,314**	**$442,476**	**$406,432**	**$87,143**	**$59,656**

GHG Reduction and Geologic Gas Savings

Table 24 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. CarbinX units have an estimated 20-year life. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on GHG lifecycle assessments of the CarbinX units conducted by the University of British Columbia.

Table 24: Carbon Capture Rebates for Commercial Buildings GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	7,531	55,150
Geologic Gas Savings (Dth)	80,820	580,472

Tracking and Verification

This pilot will follow the tracking and verification approach for "Carbon Capture" described in Exhibit W. Additional pilot-specific details include:

> *Verification:* CenterPoint Energy will use the GHG savings algorithm described below to quantify annual GHG savings from CarbinX units installed. Natural gas appliance efficiency, annual firing hours of gas appliances, and expected annual potassium carbonate generated will be determined using site-specific data provided upon customer application for a rebate. Deemed inputs are shown below. The values provided are based on expected performance information provided by the manufacturer and may be updated based on M&V results from the Conservation Improvement Program ("CIP") CleanO2 pilot.

Annual GHG emissions savings will be calculated using the following algorithm:

Emissions reduced from direct capture of CO_2 molecules

+ Net upstream emissions avoided from manufacture of potassium carbonate

+ Emissions reduced from heat recovery (due to decreased natural gas use)

– Emissions increased by electricity consumption (due to increased electricity use)

Total emissions reductions (kg carbon dioxide equivalent ("kgCO2e"))

Where:

Emissions reduced from direct capture of CO_2 molecules=

[K_2CO_3 generated] * 0.319

Net upstream emissions avoided from manufacture of potassium carbonate=

[K_2CO_3 generated] * 0.319 * 2.757

Emissions reduced from heat recovery =

[annual firing hours] * [rate of heat recovery] / [appliance efficiency] * 66.14

Emissions increased by electricity consumption =

[annual firing hours] / 8760 * [electricity consumption factor] * 0.06312

And

[K_2CO_3 generated] = mass of expected annual K_2CO_3 generated (kg)

[annual firing hours]	=	annual firing hours of gas appliance (hrs)
[rate of heat recovery]	=	rate of heat recovery (MMBTU/hr)
		Deemed value: 0.010245 MMBTU/hr
[appliance efficiency]	=	natural gas appliance efficiency (%)
[elec. consumption factor]	=	annual electricity usage for units operating continuously (kWh/yr)
		Deemed value: 1489 kWh/yr
0.319	=	conversion factor ($kgCO2/kgK_2CO_3$)
		parameter is based on the following stoichiometric chemical equation and molar masses: [20]

$$1\ CO_2 + 2\ KOH \rightarrow 1\ K_2CO_3 + 1\ H_2O$$

Chemical	Molar Mass [g/mol]
KOH	56
CO_2	44
K_2CO_3	138
H_2O	18

2.757	=	GHG savings ratio, additional upstream emissions avoided per kg CO2 directly captured [21]
66.14	=	NGIA natural gas emissions factor ($kgCO_2e/MMBTU$)[22]
0.06312	=	NGIA electricity GHG emissions factor[23] ($kgCO_2e/kWh$)

[20] The balanced chemical equation says that 2*56=112 kg of KOH will react with 44 kg of CO2 to form 138 kg of K2CO3 plus 18 kg of H2O. 44 kg CO2 / 138 kg K2CO3 = 0.319 kg CO2 / kg K2CO3.

[21] These are net emission reductions based on a Life Cycle Emissions Analysis ("LCA") of CarbinX units, consistent with the verification approach for "Carbon Capture" described in Exhibit W. Ignoring the LCA components related to direct capture and reduced natural gas consumption (which are captured elsewhere in this formula), the LCA shows a net decrease in lifecycle emissions of 2,495 $kgCO_2$/year for a CarbinX unit that is capturing 905 kgCO2/year. The main components in that net lifecycle emission reductions are a reduction in emissions from the production of potassium carbonate (K_2CO_3) that would have otherwise needed to have been manufactured, which are partially offset by the amount of emissions required to produce the input chemicals (potassium hydroxide or KOH) which are fed into the CarbinX units. To summarize, CarbinX units capturing 905 kgCO2/year will displace net GHG emissions otherwise needed to manufacture the CarbinX byproduct by 2,495 kgCO2/year. To scale these savings up or down based on the actual level of by-product creation (and hence displaced upstream emissions) this is converted into a savings ratio = 2495/905 = 2.757.

[22] Emissions factor for natural gas. See Exhibit F. This will be updated annually.

[23] Represents the weighted-average calculated lifecycle GHG intensity for Minnesota's grid for 2024-2043, 63.12 gCO_2e/kWh. *See* Exhibit F. This will be updated annually to reflect updates in the GHG intensity of electricity.

8760	=	conversion factor, number of hours in 1 year (hr/year)

Customer Incentive Information

CenterPoint Energy proposes to pay an $8,000 incentive per unit for a customer's first installation, which is designed to cover a portion of installation costs. A higher incentive is offered for first installations to provide additional encouragement to customers who may be hesitant about the process of trying out a unit. If a customer chooses to install additional units at other business locations, CenterPoint Energy will pay an incentive of $3,000 per unit for subsequent installations. Additionally, CenterPoint Energy anticipates reducing this rebate in later years of the program as adoption increases and/or if an incentive for the energy efficiency component of savings is established in CIP/Energy Conservation and Optimization ("ECO"). CenterPoint Energy will include any future reduction in an annual status report filing prior to implementation. Total upfront costs are estimated to be $39,000, including the CarbinX unit and installation costs.

IRA Incentives Considered

CenterPoint Energy has not identified any applicable IRA incentives for this program.

Equity, Diversity, and Community Engagement

No specific project locations have been identified as of the filing of this Plan. CenterPoint Energy does not anticipate major impacts to local communities surrounding project sites for this type of project, but would support participating customers in community engagement efforts, where applicable.

Additional Project Information

CenterPoint Energy has been piloting CarbinX units through its CIP Analysis, Evaluation, & Project Development project. However, as discussed further in Exhibit I, the Company believes that continued investment in this technology is better done through NGIA at this time.

CleanO2 is developing a next generation of its product (version 4.0) that captures a higher proportion of carbon emissions. This product will be field tested in the "Assessing Next-Generation Micro-Carbon Capture for Commercial Buildings" research and development ("R&D") project described in Exhibit J. If results of that R&D project are favorable, CarbinX version 4.0 would be eligible for rebates through this pilot. Updated energy savings algorithms would be provided in an annual status report.

Targeted Outreach

Where available, the pilot would leverage public commercial energy benchmarking data for customer recruitment.

Pilot I. New Networked Geothermal Systems

Project Description

CenterPoint Energy proposes to develop a new networked geothermal system to provide building heat and cooling for a neighborhood currently served by the Company. 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 wells or air source heat pumps). The pilot begins with a feasibility study, planning and modeling, and site selection, prior to design and construction.

Eligibility

CenterPoint Energy will select one neighborhood currently served by CenterPoint Energy's geologic gas distribution system. Ideally, this neighborhood would include a combination of residential and commercial customers.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 25: New Networked Geothermal Systems Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Tons of Heating/Cooling Capacity Becoming Operational	0	0	200	400	400

Table 26: New Networked Geothermal Systems Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$613,378	$2,157,511	$2,157,511	$2,228,100	$2,419,276
Advertising & Promotion	$25,000	$25,000	$0	$0	$0
Allocation of General Portfolio Costs	$486,272	$176,028	$172,030	$173,703	$175,426
Revenue Requirement for Capital Investment	$0	$0	$112,447	$400,062	$743,796
Customer Incentives	$0	$0	$0	$0	$0
Total	$1,124,650	$2,358,540	$2,441,989	$2,801,864	$3,338,498
UCT Savings	$0	$0	$52,786	$150,045	$236,946
Total Incremental Cost	**$1,124,650**	**$2,358,540**	**$2,389,203**	**$2,651,820**	**$3,101,552**

GHG Reduction and Geologic Gas Savings

Table 27 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. CenterPoint Energy estimates a forty-year life for the new networked geothermal system. Exhibit G provides a third-party analysis of the lifecycle GHG emissions

calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on estimated reduction in natural gas emissions and estimated emissions from electricity consumption. Our estimates for this pilot were strongly informed by analysis completed for a similar project being undertaken by National Grid in Massachusetts, which assumes constructing a system serving 185 customers.

Table 27: New Networked Geothermal Systems Five Year Spending Estimate GHG Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	4,358	107,355
Geologic Gas Savings (Dth)	75,408	1,675,733

Tracking and Verification

This pilot will follow the tracking and verification approach for "Energy Efficiency, Strategic Electrification, and District Energy" described in Exhibit W. Additional pilot-specific details include:

> *Verification:* CenterPoint Energy will develop a verification plan during the planning and modeling phase for this pilot.
>
> *Tracking:* CenterPoint Energy will develop a tracking plan during the planning and modeling phase for this pilot.

Customer Incentive Information

Customer incentives will be determined during the planning and modeling phase of the pilot.

IRA Incentives Considered

CenterPoint Energy believes that it would be eligible for an ITC for the facility under 26 U.S.C. § 48E. The project could be eligible for a credit of between 6 and 50 percent of costs depending on whether the project satisfies labor and domestic content requirements and whether the project is located in an energy community. For purposes of its analysis, CenterPoint Energy assumed it would achieve a 30 percent credit by satisfying applicable labor requirements and has reduced estimated project costs accordingly. CenterPoint Energy will investigate the feasibility of locating the project in an energy community and/or satisfying applicable domestic content requirements as part of the initial feasibility study.

It is also possible that participants could be eligible for IRA tax incentives or rebates, However, CenterPoint Energy did not include these in its calculation of participant cost due to uncertainty about the quantity of credit or rebates available to participants.

Participants may be able to claim a credit under 26 U.S.C. § 25D up to the lesser of 30 percent of their costs (not including costs paid by CenterPoint Energy) or $3,200[24] for efficient equipment installed in conjunction with the district energy system. However, because this tax credit is non-refundable, participants may only claim it to the extent they have tax liability and a majority of U.S. households paid no income tax in 2021.[25]

In addition, participants may be eligible for rebates under IRA §§ 50121 (Home Energy Performance-Based, Whole House Rebates) and/or 50122 (High-Efficiency Electric Home Rebate Program). However, major questions about the operation of these programs are outstanding. Department of Energy guidance is expected to be issued this summer and following publication of guidance, the Minnesota Department of Commerce will develop an application including an implementation plan for the programs.

CenterPoint Energy will evaluate the likelihood of participant tax credits and/or rebates as part of the planning and modeling phase of this pilot.

Equity, Diversity, and Community Engagement

A project site has not been selected as of the filing of this Plan. However, the Company anticipates significant impacts to the community in which the project would take place. Accordingly, community engagement and outreach will be integrated into this project during all stages. The feasibility study and site selection process will include consideration of the land uses and demographics of the community and area surrounding the potential sites, an assessment of potential impacts to local communities, and will provide recommendations for community engagement. CenterPoint Energy will develop a community engagement and outreach plan as part of its planning process for this pilot, taking into consideration any recommendations received. CenterPoint Energy will track and report on community engagement efforts in annual reports. Additionally, the Company commits to tracking and reporting on an annual basis the total and percent spend of Plan vendor services on diverse vendors or suppliers used for this project.

Additional Project Information

As noted above, CenterPoint Energy plans to proceed with site identification and a feasibility study prior to beginning design or construction. CenterPoint Energy will file this study with the Commission and provide updated cost and estimated lifecycle GHG reduction information in an annual status report before proceeding to project construction.

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[24] The credit has separate limitations for heat pumps than for most efficiency measures including insulation. Participants may be able to claim up to $2,000 for the heat pump and $1,200 for efficiency measures provided that each figure exceeds 30 percent of their costs for the designated measures, adding up to a total limitation of $3,200.

[25] https://www.cnbc.com/2022/03/25/57percent-of-us-households-paid-no-federal-income-tax-in-2021-study.html

Pilot J. Decarbonizing Existing District Energy Systems

Project Description

CenterPoint Energy proposes a two-part pilot to help existing district energy systems that currently use geologic gas, to identify opportunities to reduce the lifecycle GHG impact of their systems. First, CenterPoint Energy proposes to support customers who hire expert engineering firms, or similar, to complete feasibility studies to identify decarbonization opportunities. Second, CenterPoint Energy would support customers in implementing GHG reduction projects that deploy NGIA innovative resources.

Eligibility

This pilot is open to CenterPoint Energy customers operating district energy systems.[26]

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 28: Table 28: Decarbonizing Existing District Energy Systems Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Systems Implementing Projects	0	1	1	0	0

Table 29: Decarbonizing Existing District Energy Systems Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$9,800	$10,094	$10,397	$10,709	$61,030
Advertising & Promotion	$0	$0	$0	$0	$0
Allocation of General Portfolio Costs	$25,009	$9,053	$8,847	$8,933	$9,022
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$30,000	$1,280,000	$1,250,000	$0	$0
Total	$64,809	$1,299,147	$1,269,244	$19,642	$70,052
UCT Savings	$0	$332,456	$630,006	$596,931	$565,593
Total Incremental Cost	**$64,809**	**$966,691**	**$639,239**	**-$577,289**	**-$495,541**

[26] See discussion of the definition of district energy in the additional information section below.

Tracking and Verification

This pilot may support the deployment of multiple innovative resources, and will follow the tracking and verification approach for a project's relevant innovative resources as described in Exhibit W.

GHG Reduction and Geologic Gas Savings

Table 30 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. CenterPoint Energy estimates a thirty-year life for existing district energy decarbonization projects. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on estimated reduction in natural gas emissions and estimated emissions from electricity consumption.

Table 30: Decarbonizing Existing District Energy Systems GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	18,902	124,030
Geologic Gas Savings (Dth)	350,000	2,000,000

Customer Incentive Information

CenterPoint Energy proposes to pay 20 percent of feasibility study costs up to $30,000. For customers implementing GHG reduction projects, CenterPoint Energy proposes to pay a rebate equal to between $10/Dth and $25/Dth of annual geologic natural gas savings for measures installed through this pilot up to $1.5 million per project. CenterPoint Energy requests some flexibility in the rebate amount as it has through its CIP Commercial & Industrial Custom Rebates project. Through that CIP project, CenterPoint Energy caps on project cost coverage generally lead to incentives that do not exceed $10/Dth with many projects receiving lower amounts if determined to be sufficient to spur action by the customer. For this pilot, the Company believes that higher rebate amounts are likely necessary to drive customer action as measures will be less cost-effective in terms of natural gas bill savings. Since this project may involve energy efficiency and strategic electrification projects, CenterPoint Energy also wants to ensure that projects that are borderline for CIP/ECO eligibility are not paid incentives that are significantly more than they would receive through CIP/ECO. For example, energy efficiency projects that are almost cost effective under the CIP/ECO societal test should not receive a windfall if they are barely in scope for NGIA. Accordingly, the Company requests a range between the upper limit for CIP/ECO custom projects and $25/Dth.

In order to coordinate incentives through this pilot with CIP/ECO incentives, the Company proposes to take the following steps for energy efficiency and strategic electrification projects:

1. CenterPoint Energy will determine whether the measure could qualify for CIP/ECO as a custom measure or otherwise. If it can, the measure will be processed through CIP/ECO and no NGIA rebate will be paid for that measure.
2. If the measure is not eligible for CIP/ECO, CenterPoint Energy will determine if the measure will cost less than $150/ton CO_2e from the NGIA utility perspective, considering only quantitative costs and benefits. Only measures that pass this screen will be eligible for an NGIA incentive.
3. Measures rebated through this pilot will be subjected to measurement and verification as further described in Exhibit W.

IRA Incentives Considered

For purposes of modeling, CenterPoint Energy did not assume that projects would be eligible for IRA incentives, however, depending on the exact measures undertaken, projects may be eligible for an ITC as an energy storage property under 26 U.S.C. § 48E, the commercial buildings energy-efficiency tax deduction under 26 U.S.C. § 179D, or other tax benefits or funded federal grant or loan programs. CenterPoint Energy has not identified any IRA benefits which it, as opposed to the facility owner, would be directly eligible for.

Equity, Diversity, and Community Engagement

No specific project locations have been identified as of the filing of this Plan. CenterPoint Energy will require pre-approval for incentives paid through this program, and as part of the pre-approval process, customers must provide a description of the land uses and demographics of the community and area surrounding the participant site - including whether the project is in an energy community, as defined by the Inflation Reduction Act, or a Disadvantaged Community as defined by the US Department of Energy's Justice40 initiative - and describe any planned community engagement activities. CenterPoint Energy will encourage and support pilot participants' community engagement efforts and will report on these efforts in annual reports.

Additional Project Information

CenterPoint Energy notes that the statutory definition of "district energy" is "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 or medium to heat or cool multiple buildings connected through a piping network."[27] The statutory definition, which specifies what kind of district energy qualifies as an innovative resource, is somewhat more limited than the common definition, which does not assume a low or no carbon energy source.[28] CenterPoint Energy intends to aim this pilot at district energy systems as that term is commonly understood. Participating systems will not satisfy the statutory definition prior to implementation of

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[27] Minn. Stat. 216B.2427, subd. 1(e).

[28] See https://www.energy.gov/eere/amo/articles/combined-heat-and-power-technology-fact-sheet-series-district-energy#:~:text=2012%20data).3-,District%20Energy%20Systems,condi%2D%20tioning%20for%20nearby%20buildings (stating that over 90 percent of district energy systems were powered by fossil fuel in 2012).

decarbonization measures and may not satisfy it after completing projects, depending on what measures they undertake.

Accordingly, depending on the specific measures implemented, this proposed pilot may not support "district energy" in the statutory sense but rather support the use of strategic electrification, energy efficiency, or other innovative resources to reduce the lifecycle GHG intensity of district energy systems, as the term is more commonly used.

As noted above, this pilot proposes to pay 20 percent of feasibility study costs up to $30,000. During the NGIA portfolio development process, CenterPoint Energy engaged with Hennepin County who was seeking funding to support a decarbonization study for their Hennepin County Energy Center. As Hennepin County Energy Center is one of the largest users on our system, this decarbonization study is aligned with the goals of NGIA and has potential to lead to projects that significantly reduce GHG emissions for this customer that would be eligible for incentives under this pilot. Accordingly, CenterPoint Energy plans to provide $30,000 in funding for this study prior to Plan approval and is requesting recovery as part of its NGIA Plan as a cost "to develop and administer programs"[29] and has counted this cost towards our estimates for this proposed pilot.

Additional detail on CIP/ECO/NGIA coordination for this pilot is included in Exhibit I.

Pilot K. New District Energy System

Project Description

CenterPoint Energy proposes a two-part pilot to help current natural gas customers considering developing district energy systems. First, CenterPoint Energy proposes to support customers who hire expert engineering firms, or similar, to complete feasibility studies for new district energy systems. Second, CenterPoint Energy would support customers in developing new district energy systems.

Eligibility

This pilot is open to CenterPoint Energy commercial and industrial customers.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 31: New District Energy System Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Systems Implementing Projects	0	1	1	0	0

29 Minn. Stat. § 216B.2427, subd. 1(r)(iv).

Table 32: New District Energy System Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$9,800	$10,094	$10,397	$10,709	$61,030
Advertising & Promotion	$0	$0	$0	$0	$0
Allocation of General Portfolio Costs	$9,020	$3,265	$3,191	$3,222	$3,254
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$261,635	$271,635	$0	$0
Total	$18,820	$274,994	$285,223	$13,931	$64,284
UCT Savings	$0	$69,090	$130,926	$124,052	$117,540
Total Incremental Cost	**$18,820**	**$205,904**	**$154,297**	**-$110,122**	**-$53,256**

GHG Reduction and Geologic Gas Savings

Table 33 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. CenterPoint Energy estimates a thirty-year life for new district energy systems. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on estimated reduction in natural gas emissions and estimated emissions from electricity consumption.

Table 33: New District Energy System GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	4,685	40,882
Geologic Gas Savings (Dth)	73,258	627,924

Tracking and Verification

This pilot will follow the tracking and verification approach for "Energy Efficiency, Strategic Electrification, and District Energy" described in Exhibit W.

Customer Incentive Information

CenterPoint Energy proposes to pay 50 percent of the cost of an engineering study, up to $10,000. CenterPoint Energy proposes to pay a rebate equal to between $10/Dth and $25/Dth of annual geologic natural gas savings for measures installed through this pilot, up to $1.5 million per project. CenterPoint Energy requests some flexibility in the rebate amount as it has through its CIP Commercial & Industrial Custom Rebates project. Through that CIP project, CenterPoint Energy caps on project cost coverage generally lead to incentives that do not exceed $10/Dth with many projects receiving lower amounts if determined to be sufficient to spur action by the customer. For this pilot, the Company believes that higher rebate amounts are likely necessary to drive customer action as measures will be less cost-effective in terms of natural gas bill savings. Since this project may involve energy efficiency and strategic

electrification projects, CenterPoint Energy also wants to ensure that projects that are borderline for CIP/ECO eligibility are not paid incentives that are significantly more than they would receive through CIP/ECO. For example, energy efficiency projects that are almost cost effective under the CIP/ECO societal test should not receive a windfall if they are barely in scope for NGIA. Accordingly, the Company requests a range between the upper limit for CIP/ECO custom projects and $25/Dth.

In order to coordinate incentives through this pilot with CIP/ECO incentives, the Company proposes to take the following steps for energy efficiency and strategic electrification projects:

1. CenterPoint Energy will determine whether the measure could qualify for CIP/ECO as a custom measure or otherwise. If it can, the measure will be processed through CIP/ECO and no NGIA rebate will be paid for that measure.
2. If the measure is not eligible for CIP/ECO, CenterPoint Energy will determine if the measure will cost less than $150/ton CO_2e from the NGIA utility perspective, considering only quantitative costs and benefits. Only measures that pass this screen will be eligible for an NGIA incentive.
3. Measures rebated through this pilot will be subjected to measurement and verification as further described in Exhibit W.

IRA Incentives Considered

CenterPoint Energy believes that customers developing new district energy systems could be eligible for an ITC for the facility under 26 U.S.C. § 48E. The project could be eligible for a credit of between 6 percent and 50 percent of costs depending on whether the project satisfies labor and domestic content requirements and whether the project is located in an energy community. For purposes of its analysis, CenterPoint Energy assumed customers would achieve a 30 percent credit by satisfying applicable labor requirements and has reduced estimated participant costs accordingly. CenterPoint Energy has not identified any IRA incentives it would be directly eligible for as a result of this pilot.

Equity, Diversity, and Community Engagement

No specific project locations have been identified as of the filing of this Plan. CenterPoint Energy will require pre-approval for incentives paid through this program, and as part of the pre-approval process, customers must provide a description of the land uses and demographics of the community and area surrounding the participant site - including whether the project is in an energy community, as defined by the Inflation Reduction Act, or a Disadvantaged Community as defined by the US Department of Energy's Justice40 initiative - and describe any planned community engagement activities. CenterPoint Energy will encourage and support pilot participants' community engagement efforts and will report on these efforts in annual reports.

Additional Project Information

CenterPoint Energy notes that the statutory definition of "district energy" is "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 or medium to heat or cool multiple buildings

connected through a piping network."[30] While the statutory definition requires the system to include multiple buildings, CenterPoint Energy would allow participation by customers that intend to use systems in a single building that would otherwise qualify as district energy systems. In these cases, the project could qualify for inclusion in the NGIA plan as a strategic electrification measure. CenterPoint Energy would work with customers to ensure the project would satisfy the statutory requirements of strategic electrification by maintaining some gas use and by improving the electric utility load factor.

CenterPoint Energy would target sites where customers are open to hosting walk-throughs, so that contractors, design firms, and other industry participants can gain exposure to the technology.

Additional detail on CIP/ECO/NGIA coordination for this pilot is included in Exhibit I.

Pilot L. Industrial Electrification Incentives

Project Description

CenterPoint Energy proposes to provide support for industrial customers to electrify low-to-medium heat processes using electric heat pump technologies. CenterPoint Energy expects to hire a third-party vendor via RFP to implement this program. This pilot would be implemented in three phases:

1) A study to look at the technical potential of various heat pump technologies and identify potential customers who could pilot heat pump technologies;
2) Installation of heat pumps at 3 facilities;
3) Measurement and verification of heat pump performance.

CenterPoint Energy will pay the full cost for the heat pumps and their installation, up to $1.5 million per facility.

Eligibility

This pilot is open to the following rate classes: Small Volume Dual Fuel B, Large Volume Dual Fuel, Commercial/Industrial Firm C, and Large Volume Firm.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 34: Industrial Electrification Incentives Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Facilities	0	3	0	0	0

[30] Minn. Stat. 216B.2427, subd. 1(e).

Table 35: Industrial Electrification Incentives Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$149,000	$500,470	$10,397	$10,709	$11,030
Advertising & Promotion	$0	$2,500	$0	$0	$0
Allocation of General Portfolio Costs	$21,073	$7,628	$7,455	$7,528	$7,602
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$0	$0	$0	$0
Total	$170,073	$510,598	$17,852	$18,236	$18,632
UCT Savings	$0	$62,577	$59,341	$56,277	$53,376
Total Incremental Cost	**$170,073**	**$448,021**	**-$41,489**	**-$38,040**	**-$34,744**

GHG Reduction and Geologic Gas Savings

Table 36 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. CenterPoint Energy estimates that the new hybrid heating systems will have a fifteen-year life. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on the estimated decrease in geologic gas usage multiplied by the lifecycle GHG-intensity of geologic gas minus estimated increase in electricity usage multiplied by the estimated lifecycle GHG-intensity of that electricity.

Table 36: Industrial Electrification Incentives GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	2,173	11,896
Geologic Gas Savings (Dth)	37,617	188,087

Tracking and Verification

This pilot will follow the tracking and verification approach for "Energy Efficiency, Strategic Electrification, and District Energy" described in Exhibit W. Additional pilot-specific details include:

> *Verification:* CenterPoint Energy will conduct M&V for each participating project, regardless of estimated natural gas use reduction. This M&V may be conducted by the selected program vendor rather than a third-party verifier.

Customer Incentive Information

CenterPoint Energy proposes 100 percent of capital costs for project installation, up to $1.5 million per facility.

IRA Incentives Considered

Some participants may be eligible for Advanced Energy Production Credits under the IRA, 26 U.S.C. 48C. This credit allows owners of manufacturing facilities to claim a credit for re-equipping their facilities with equipment designed to reduce GHG emissions by at least 20 percent through the installation of low- or zero-carbon process heat systems, carbon capture, energy efficiency, and other industrial technologies. Because the credit is a percentage of the taxpayer's investment in the property, and CenterPoint plans to pay the full cost of the heat pumps and installation, participating customers would not be able to claim a credit if their project consists only of the new heat pump. However, it may be possible for customers to count the heat pump towards overall emissions reductions of a larger project allowing them to qualify for the credit with respect to other investments.

In addition, there are several competitive grant programs in the IRA and the 2021 Infrastructure Investment and Jobs Act ("IIJA")[31] that encourage reductions in emissions at industrial facilities such as the Advanced Industrial Facilities Deployment Program, IRA § 50161, the Future of Industry Program and Industrial Research and Assessment Centers, IIJA § 40521, and the Industrial Emissions Demonstration Projects, IIJA § 41008. CenterPoint Energy will monitor these grant program opportunities to determine if CenterPoint Energy or participating customers may be eligible.

Equity, Diversity, and Community Engagement

No specific project locations have been identified as of the filing of this Plan. CenterPoint Energy does not anticipate major impacts to local communities surrounding project sites for this type of project, but would support participating customers in community engagement efforts, where applicable.

CenterPoint Energy anticipates that this pilot will include contracted vendor services and will seek diverse and qualified vendors to participate in an RFP process to select an implementation provider. The Company commits to tracking and reporting on an annual basis the total and percent of Plan spending on vendor services for diverse vendors or suppliers.[32]

Additional Project Information

CenterPoint Energy would target sites where customers are open to hosting walk-throughs, so that contractors, design firms, and other industry participants can gain exposure to the technology.

CIP/ECO/NGIA coordination for this pilot is discussed in Exhibit I.

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[31] Pub. L. 117-58 (2021).

[32] CenterPoint Energy defines diverse suppliers per the guidelines of the National Minority Supplier Development Council, the Women's Business Enterprise National Council and the U.S. Small Business Administration.

Pilot M. Commercial Hybrid Heating

Project Description

CenterPoint Energy proposes to provide support for commercial buildings interested in replacing existing Heating, Ventilation, and Air Conditioning ("HVAC") systems with hybrid system using electric heat pumps and gas backup. The pilot would focus on dual-fuel rooftop units, but may support installation of other hybrid heating systems (e.g., split system hybrid heat pumps). CenterPoint Energy will hire a third-party vendor via RFP to implement this program. Vendor services include targeted customer outreach, technical support for project sizing and design, custom savings calculations, and direct installation of hybrid heating systems using a network of participating trade allies.

Eligibility

This pilot is open to all non-residential CenterPoint Energy customers.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 37: Commercial Hybrid Heating Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Customers	15	30	30	30	30

Table 38: Commercial Hybrid Heating Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$422,000	$569,310	$576,689	$414,140	$416,664
Advertising & Promotion	$5,000	$5,000	$5,000	$5,000	$5,000
Allocation of General Portfolio Costs	$295,603	$107,007	$104,577	$105,594	$106,641
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$486,000	$972,000	$972,000	$972,000	$972,000
Total	$1,208,603	$1,653,317	$1,658,266	$1,496,733	$1,500,305
UCT Savings	$20,842	$59,288	$93,703	$124,410	$151,711
Total Incremental Cost	**$1,187,761**	**$1,594,029**	**$1,564,563**	**$1,372,323**	**$1,348,594**

GHG Reduction and Geologic Gas Savings

Table 36 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. CenterPoint Energy estimates that the new hybrid heating systems will have a fifteen-year life. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions

are based on the estimated decrease in geologic gas usage multiplied by the lifecycle GHG-intensity of geologic gas minus estimated increase in electricity usage multiplied by the estimated lifecycle GHG-intensity of that electricity.

Table 39: Commercial Hybrid Heating GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	4,536	25,609
Geologic Gas Savings (Dth)	74,250	400,950

Tracking and Verification

This pilot will follow the tracking and verification approach for "Energy Efficiency, Strategic Electrification, and District Energy" described in Exhibit W. Additional pilot-specific details include:

> *Verification:* Project-level verification processes described in Exhibit W will be used for the initial years of the pilot. Additionally, CenterPoint Energy plans to engage a third party to develop and implement an M&V plan to analyze system performance in a variety of buildings. CenterPoint Energy may use the results of the M&V to establish a deemed-calculated savings algorithm to calculate annual energy savings and carbon reductions in subsequent years of the program. Customers or the program vendor will provide required inputs when applying for an incentive. CenterPoint Energy will propose this methodology in an annual status report prior to implementation.

Customer Incentive Information

CenterPoint Energy proposes to pay customer incentives equal to 40 percent of hybrid heating system costs, up to $100,000. CenterPoint Energy may consider higher incentives for large systems on a case-by-case basis. CenterPoint Energy estimates the total cost of the heating system conversion will be approximately $81,000 for an average participant and so the average rebate amount will be approximately $32,400.

IRA Incentives Considered

Participants may be eligible for the commercial retrofit deduction under 26 U.S.C. § 179D. To qualify for the deduction, retrofits must result in savings of 25 percent or more as compared to the pre-retrofit building energy usage. CenterPoint Energy and ICF expect the average participant to clear this threshold, but some participants may not.[33] In addition, whether or not a

[33] The modeled archetype project used to develop estimates for the pilot would achieve a 72 percent reduction in total energy usage for heating, combining gas savings with increased electricity usage. With a 72 percent reduction in space heating energy, a facility that uses 35 percent or more of its energy for space heating should clear the 25 percent reduction required for the deduction. According to the Energy

particular participant can claim the deduction and the value of the deduction to a participant depends on their tax situation. CenterPoint Energy used conservative estimates that 50 percent of participants would clear the 25 percent threshold for eligibility for the deduction and the average actual reduction in taxes for those qualifying participants would be $500.[34]

To obtain the deduction, the retrofit must be completed according to a plan prepared by a "qualified professional" and a qualified person must also verify that the plan was carried out. Final Treasury guidance for the commercial retrofit deduction is not yet available, but when it is published, CenterPoint Energy will evaluate whether it is feasible for the vendor delivering this project to serve as a qualified professional for participating customers.

CenterPoint Energy did not identify any IRA incentives that it would be eligible for directly.

Equity, Diversity, and Community Engagement

No specific project locations have been identified as of the filing of this Plan. CenterPoint Energy does not anticipate major impacts to local communities surrounding project sites for this type of project, but would support participating customers in community engagement efforts, where applicable.

CenterPoint Energy anticipates that this pilot will include contracted vendor services and will seek diverse and qualified vendors to participate in an RFP process to select an implementation provider. The Company commits to tracking and reporting on an annual basis the total and percent of Plan spending on vendor services for diverse vendors or suppliers.[35]

Additional Project Information

Targeted Outreach

Where available, the pilot would leverage public commercial energy benchmarking data for customer recruitment.

CIP/NGIACIP/ECO/NGIA Coordination

CIP/ECO/NGIA coordination for this pilot is discussed in Exhibit I.

Information Administration's Commercial Buildings Energy Consumption Survey, https://www.eia.gov/consumption/commercial/, in the West North Central region, which includes Minnesota, 40 percent of total commercial energy consumption was for space heating. It is important to note however that this figure includes both smaller buildings, which are the target of this pilot, and larger facilities. Altogether, it seems likely that many but not all participants will clear the 25 percent threshold as a result of participation in the pilot.

[34] This assumes that participants achieve only 25 percent savings, while higher savings levels would qualify for a higher deduction. It also assumes a 10 percent top marginal tax bracket, a 10,000 square foot building, and that participants would not satisfy labor requirements to achieve a bonus deduction amount.

[35] CenterPoint Energy defines diverse suppliers per the guidelines of the National Minority Supplier Development Council, the Women's Business Enterprise National Council and the U.S. Small Business Administration.

High-performance rooftop units, including dual fuel rooftop units, are included in the Minnesota Efficient Technology Accelerator's ("ETA") starter portfolio, a market transformation initiative that will work to accelerate adoption of emerging technologies. CenterPoint Energy would coordinate with ETA where appropriate.

Pilot N. Residential Deep Energy Retrofits and Electric Air Source Heat Pumps

Project Description

CenterPoint Energy proposes a three-phase pilot program to test a combination of deep energy retrofits and air-source electric heat pumps with gas back-up in a variety of residential building types. This pilot proposal satisfies the requirement in Minn. Stat. § 216B.2427, subd. 8.[36] Note that to ensure projects qualify as strategic electrification under NGIA, homes enrolling in the pilot will maintain gas back-up heat.[37]

In brief, the three pilot phases consist of:

1) Study Scoping & Program Design: Modeling of different combinations of residential building types and energy conservation strategies, including innovative and emerging weatherization measures. CenterPoint Energy anticipates completing Phase 1 in year 1 of Plan implementation.

2) Demonstration Projects: Based on the results of Phase 1 modeling, CenterPoint Energy will select single and multifamily building host sites to field test selected technologies and measure home performance. CenterPoint Energy anticipates beginning Phase 2 in year 2 of Plan implementation and completing it in Year 4.

3) Broader Deployment: Following field testing, CenterPoint Energy will shift to an ongoing incentive program considering equitable deployment to a larger number of buildings. CenterPoint Energy anticipates beginning Phase 3 in year 4 of Plan implementation and continuing it in year 5.

Eligibility

This pilot will be targeted at CenterPoint Energy residential customers and multi-family building customers.

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[36] The statute reads in part: "The first innovation plan filed under this section by a utility with more than 800,000 customers must include a pilot program that facilitates deep energy retrofits and the installation of cold climate air-source heat pumps in existing residential homes that have natural gas heating systems… ."

[37] NGIA defines "strategic electrification" in part as "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… ." Minn. Stat. §216B.2427, subd. 1(q).

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 40: Residential Deep Energy Retrofits and Electric Air Source Heat Pumps Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Buildings	-	14	14	70	140

Table 41: Residential Deep Energy Retrofits and Electric Air Source Heat Pumps Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$197,000	$2,035,070	$2,037,449	$574,140	$1,066,664
Advertising & Promotion	$0	$10,000	$10,000	$50,000	$50,000
Allocation of General Portfolio Costs	$569,540	$206,171	$201,488	$203,447	$205,465
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$0	$0	$2,165,950	$4,331,900
Total	$766,540	$2,251,241	$2,248,938	$2,993,537	$5,654,029
UCT Savings	$0	$12,568	$23,835	$79,116	$182,234
Total Incremental Cost	**$766,540**	**$2,238,673**	**$2,225,103**	**$2,914,422**	**$5,471,795**

GHG Reduction and Natural Gas Savings

Table 42 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. CenterPoint Energy estimates that projects completed through this pilot will have an approximately 32-year life.[38] The table below provides estimates for lifecycle GHG emissions and natural gas savings both during the five-year Plan period and over the life of measures expected to be installed during implementation of the five-year Plan. Additional details on these figures can be found in Exhibits F. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated lifecycle GHG emissions reduction for this pilot are based on a combination of energy efficiency and strategic electrification measures. For energy efficiency measures, lifecycle GHG emissions reduction estimates are calculated by multiplying natural gas savings by the estimated lifecycle GHG emissions intensity of geologic gas. For strategic electrification measures, GHG emissions

[38] Weatherization measures are estimated to have a 40 year life and air source heat pumps are estimated to have a 12-year life. The estimated 32-year life for pilot projects reflects the weighted average based on expected savings for each type of measure for each project.

reductions represent the difference between the estimated GHG emissions of added electricity load and reduced emissions from geologic natural gas use.

Table 42: Residential Deep Energy Retrofits and Electric Air Source Heat Pumps GHG and Natural Gas Savings

	During Five-Year Plan	Over Measure Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	3,153	66,760
Natural Gas Savings (Dth)	50,995	1,027,453
Estimated GHG Emissions Reduction per Single Family Home (metric tons CO_2e)	8[39]	135
Estimated GHG Emissions Reduction per Multi-Family Building (metric tons CO_2e)	72[40]	1,153
Estimated Gas Savings Per Single Family Home (Dth)	130[41]	2,076
Estimated Gas Savings Per Multi-Family Building (Dth)	1,110[42]	17,763

Tracking and Verification

This pilot will follow the tracking and verification approach for "Energy Efficiency, Strategic Electrification, and District Energy" described in Exhibit W. Additional pilot-specific details include:

> *Verification:* CenterPoint Energy will develop a verification plan as part of the design of Phases 2 and 3 of this pilot.
>
> *Tracking:* CenterPoint Energy will develop a tracking plan as part of the design of Phases 2 and 3 of this pilot.

Customer Incentive Information

CenterPoint Energy does not expect to incur rebate costs in Phase 1 or 2 of the pilot. In Phase 2, CenterPoint Energy expects to pay the full cost of installed measures and so classifies measure costs as a project delivery expense rather than a customer rebate expense. In Phase 3, CenterPoint Energy assumed rebates of $16,933 per single family home participant and $115,000 per multi-family building participant, which is equal to 25 percent of estimated

[39] Assumes measure installation in year 4.

[40] Assumes measure installation in year 4.

[41] Assumes measure installation in year 4.

[42] Assumes measure installation in year 4.

project cost. CenterPoint Energy plans to revisit the appropriate level of rebate per participant before launching Phase 3.

IRA Incentives Considered

While it is likely that at least some participants in Phase 3 would be eligible for IRA tax incentives or rebates, CenterPoint Energy did not include these in its calculation of participant cost due to uncertainty about the quantity of credit or rebates available to participants. CenterPoint Energy has not identified any avenue for the Company to receive IRA support for the program directly.

Phase 3 participants may be able to claim a credit under 26 U.S.C. § 25D up to the lesser of 30 percent of their costs (not including costs paid by CenterPoint Energy) or $3,200[43] for energy efficiency and strategic electrification measures. However, because this tax credit is non-refundable, participants may only claim it to the extent they have tax liability and a majority of U.S. households paid no income tax in 2021.[44] Particularly if CenterPoint Energy targets Phase 3 at low- or moderate-income households, there is a substantial possibility that many of them will not have sufficient tax liability to benefit from the credit.

In addition, Phase 3 participants may be eligible for rebates under IRA §§ 50121 (Home Energy Performance-Based, Whole House Rebates) and/or 50122 (High-Efficiency Electric Home Rebate Program). However, major questions about the operation of these programs are outstanding. Department of Energy guidance is expected to be issued this summer and following publication of guidance, the Minnesota Department of Commerce will develop an application including an implementation plan for the programs.

CenterPoint Energy will reevaluate the likelihood of participant tax credits and/or rebates prior to launch of Phase 3 and include updated information in its first annual NGIA status report.

Equity, Diversity, and Community Engagement

In addition to the opportunity to engage through public meetings during the plan development process, CenterPoint Energy intends to host one or more public meetings during the implementation planning process to gather additional feedback from members of impacted communities, targeted customers, and other interested parties, including feedback on equity and diversity considerations for program implementation. Specifically, CenterPoint Energy will include an assessment and discussion of approaches to address equity and inclusion during the design of Phases 2 and 3, including community outreach and workshops.

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[43] The credit has separate limitations for heat pumps than for most efficiency measures including insulation. Participants may be able to claim up to $2,000 for the heat pump and $1,200 for efficiency measures provided that each figure exceeds 30 percent of their costs for the designated measures, adding up to a total limitation of $3,200.

[44] https://www.cnbc.com/2022/03/25/57percent-of-us-households-paid-no-federal-income-tax-in-2021-study.html

CenterPoint Energy will target 40 percent[45] of residential units served by the pilot qualify as low-income, as that term is defined in CIP/ECO, or are located in a disadvantaged community, as that term is defined by the federal government for the Inflation Reduction Act programs. CenterPoint Energy will track and report on these efforts in annual reports.

Additional Project Information

Phase 1 Details

CenterPoint Energy proposes to start this pilot with a study to model different combinations of building types and energy conservation strategies. The NGIA requires that this pilot facilitate deep energy retrofits which are defined as follows:

> [T]he 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 energy project.[46]

CenterPoint Energy believes that this level of retrofit may be infeasible or cost-prohibitive in many homes. Accordingly, CenterPoint Energy intends to evaluate, through Phase 1, what levels of retrofit can be accomplished in various types of housing and at what cost. Through this study, CenterPoint Energy hopes to determine:

1) What homes may be able to achieve the statutory definition of "deep energy retrofit" at a reasonable cost level?
2) What level of retrofit is reasonable for homes that cannot feasibly reach the statutory defined level of retrofit?
3) What measures are required to reach various levels of design load in different kinds of homes?

CenterPoint Energy plans to hire a qualified vendor to complete this study under its direction and plans to make the final report available to the Commission and interested parties.

Phase 2 Details

CenterPoint Energy will use the information gathered in Phase 1 to develop "Tiers" of retrofit to be field tested in Phase 2. For example, CenterPoint Energy may determine that it is reasonable to field test measures that would achieve a design load to 44 British Thermal Units (BTU)/sq ft in some homes, 22 BTU/sq ft in some homes, and the statutorily required 10 BTU/sq ft in other homes. CenterPoint Energy would then field test these various levels of retrofit along with air

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[45] Selected to align with the federal Justice40 initiative which aims to direct at least 40 percent of the benefits of certain federal investments towards disadvantaged communities.
[46] Minn. Stat. §216B.2427, subd. 8(b).

source heat pumps and gas backup in a small number of homes and collect significant data on home heating performance. CenterPoint Energy proposes to fully fund projects in field tested homes with no required participant contribution. Participants would be required to cooperate with CenterPoint Energy's field testing including by allowing CenterPoint Energy personnel into their homes periodically, with advanced notice, to access heating equipment and other areas of the home where field testing measures were installed.

Some of the key objectives of Phase 2 include:

1) Confirming or refining the results of the Phase 1 study regarding measure combinations and cost of achieving various levels of retrofit in different kinds of homes.
2) Evaluating air source heat pump performance in various kinds of homes and at various levels of retrofit. This will include evaluating how often gas backup is used in the field testing homes.
3) Understanding any real-world difficulties around coordinating air-source heat pumps and gas backup to maximize GHG reductions while ensuring the comfort of residents.

Phase 3 Details

Using the results of Phases 1 and 2, CenterPoint Energy proposes to launch a larger incentive program that will support retrofits and installation of air-source heat pumps in a larger number of single-family and multi-family homes. CenterPoint Energy may propose tiers of incentive to encourage some homes to achieve the statutory definition of deep energy retrofit but allow other homes to receive a smaller incentive for lesser levels of retrofit. As part of its incentive design, CenterPoint Energy will also consider testing rate design options that may better serve hybrid heating customers and/or an energy system with a high number of hybrid heating customers.

CenterPoint Energy proposes to finalize details of the incentive program after Phase 1 is completed and Phase 2 is underway. CenterPoint Energy proposes to provide more details on Phase 3 program design in its first annual NGIA status report anticipated to be filed during year 2 of Plan implementation.

NGIA/CIP Coordination

Please see Exhibit I for information about CIP/ECO/NGIA coordination for this project.

Pilot O. Small/Medium Business GHG Audit

Project Description

CenterPoint Energy proposes to expand its existing Natural Gas Energy Analysis ("NGEA") CIP offering, which it will propose to continue in its 2024-2026 Triennial Plan, to include identification of non-CIP/ECO GHG reducing opportunities for small and medium businesses. NGEA requires a customer copay; new services proposed under this pilot will be offered at no additional charge to customers. Measures that may be recommended include measures available under the Carbon Capture Rebates for Commercial Buildings and Commercial Hybrid Heating pilots. The Company proposes to include the incremental costs associated with this expansion in its NGIA Plan for cost recovery as well as the costs of rebates for NGIA measures customers install as a

result of GHG audits. This program will also be credited with GHG savings from NGIA measures installed (and those savings will not count towards other NGIA projects that include those measures). CenterPoint Energy proposes to continue to attribute savings and costs for CIP/ECO measures to the appropriate CIP/ECO projects.

Thermal energy leaders will be defined as businesses that either:

- Implement the top three recommendations (i.e., the three recommendations with the highest GHG/energy savings) or
- Implement one or more recommendations that reduce site GHG emissions from current natural gas end uses by at least 50 percent

Upon notification from customer that eligible projects have been completed, CenterPoint Energy proposes to recognize thermal energy leaders as follows:

- Businesses will be provided a certificate and/or window decal identifying them as a thermal energy leader which they can display.
- Businesses will be eligible to receive a bonus rebate of up to $5,000, not to exceed the amount of the rebates initially paid for the qualifying projects.
- Each year, CenterPoint Energy will select one thermal energy leader with a notable project and honor them at CenterPoint Energy's annual Energy Efficiency and Technology Conference, through social media, or through other company communications.

This pilot satisfies the NGIA requirement in Minn. Stat. § 216B.2427, subd. 6, which requires the Company to propose a pilot to provide thermal energy audits to small- and medium- sized businesses in order to identify opportunities to reduce or avoid GHG emissions from natural gas use. The pilot program is required to provide incentives for businesses to implement recommendations made by the audit. In addition, CenterPoint Energy is required to develop criteria to identify business that achieve significant emissions reduction by implementing audit recommendations and must recognize those businesses as thermal energy leaders.

Eligibility

All commercial and industrial customers are eligible for participation in the pilot. However, the Company plans to target this offering towards small and medium business customers.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 43: Small/Medium Business GHG Audit Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Audits	220	240	260	260	260

Table 44: Small/Medium Business GHG Audit Five Year Spending Estimate

Year	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$250,300	$270,070	$289,884	$291,444	$343,050
Advertising & Promotion	$5,000	$5,000	$5,000	$5,000	$5,000
Allocation of General Portfolio Costs	$95,834	$34,692	$33,904	$34,233	$34,573
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$126,720	$138,240	$149,760	$134,160	$134,160
Total	$477,854	$448,002	$478,548	$464,837	$516,783
UCT Savings	$6,653	$13,181	$19,548	$25,211	$30,224
Total Incremental Cost	**$471,201**	**$434,820**	**$459,000**	**$439,626**	**$486,558**

GHG Reduction and Natural Gas Savings

Table 45 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. Various potential measures that may be installed through this pilot have different lifetimes. For purposes of estimating lifecycle GHG reductions, CenterPoint Energy assumed a 17-year life which is the average of the life of CarbinX unit which could be installed through the Carbon Capture Rebates for Commercial Buildings pilot and a hybrid heating system which could be installed through the Commercial Hybrid Heating pilot, rounded down. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions use the same methodology as used in the other NGIA pilots through which these measures may be installed.

Table 45: Small/Medium Business GHG Audit GHG Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (tons CO_2e)	1,055	6,570
Geologic Gas Savings (Dth)	15,601	90,845

Tracking and Verification

This pilot will follow the tracking and verification approach for "Energy Efficiency, Strategic Electrification, and District Energy" described in Exhibit W. Additional pilot-specific details include:

Verification: Measures rebated through this pilot will be subject to the same M&V procedures established for those measures in other NGIA pilots.

Tracking: Measures rebated through this pilot will be subject to the same tracking procedures established for those measures in other NGIA pilots but will be counted towards this pilot's participation and GHG reductions. Additionally, CenterPoint Energy will establish a process for tracking thermal energy leaders in our NGIA tracking system.

Customer Incentive Information

CenterPoint Energy proposes to pay the same rebates through this pilot as are available through other NGIA pilots for the same measures. Specifically, for hybrid heating measures, customer incentives equal to 40 percent of hybrid heating system costs. For the CarbinX unit, CenterPoint Energy proposes an $8,000 incentive per unit for a customer's first installation, and if a customer chooses to install additional units at other business locations, CenterPoint Energy will pay an incentive of $3,000 per unit for subsequent installations.

IRA Incentives Considered

See discussion of IRA rebates in the above sections describing the Carbon Capture Rebates for Commercial Buildings and Commercial Hybrid Heating pilots.

Equity, Diversity, and Community Engagement

CenterPoint Energy will seek diverse and qualified vendors to participate in any RFP process to select an implementation provider. The Company commits to tracking and reporting on an annual basis the total and percent spend of Plan vendor services on diverse vendors or suppliers.

Additional Project Information

Targeted Outreach

Where available, the pilot would leverage public commercial energy benchmarking data for customer recruitment.

Alternative CIP Program Coordination

Small and medium business CenterPoint Energy customers participating alternative CIP programs funded by CenterPoint Energy will be eligible for Thermal Energy Leader recognition if they complete three recommended projects that receive CenterPoint Energy rebates. Customers must supply CenterPoint Energy with a copy of their alternative CIP program report for validation to be eligible to receive the bonus rebate.

CIP/ECO/NGIA Coordination

CIP/ECO/NGIA coordination for this pilot is discussed in Exhibit I.

Pilot P. Residential Gas Heat Pumps

Project Description

CenterPoint Energy proposes to fund the deployment and testing of 'combi' space and water heating gas heat pump systems in Minnesota homes to evaluate the technology's performance. An initial phase would review available market research and analysis to prioritize which gas heat pump units should be included in the field testing. Outreach would be conducted to recruit CenterPoint Energy customers to participate in the pilot, and contractors would be engaged and trained to install and maintain the heat pumps with support from equipment manufacturers. The

installations would be metered and trial data analyzed to develop reporting metrics that would better inform opportunities for gas heat pumps to be part of future CIP/ECO or NGIA programs.

Eligibility

This pilot will be open to CenterPoint Energy residential customers.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P

Table 46: Residential Gas Heat Pumps Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Units Installed	0	3	3	0	0

Table 47: Residential Gas Heat Pumps Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$19,800	$125,094	$125,397	$60,709	$11,030
Advertising & Promotion	$0	$2,500	$2,500	$0	$0
Allocation of General Portfolio Costs	$15,926	$5,765	$5,634	$5,689	$5,745
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$0	$0	$0	$0
Total	$35,726	$133,359	$133,531	$66,398	$16,775
UCT Savings	$0	$787	$1,491	$1,413	$1,339
Total Incremental Cost	**$35,726**	**$132,572**	**$132,040**	**$64,985**	**$15,436**

GHG Reduction and Natural Gas Savings

Table X below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. CenterPoint Energy estimates a 15-year life for residential gas heat pumps. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on unit efficiency levels provided by an RFI respondent in combination with CenterPoint Energy data on residential usage. Actual savings will vary depending on the specific units installed and home characteristics.

Table 48: Residential Gas Heat Pumps GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	55	235
Geologic Gas Savings (Dth)	829	3,551

Tracking and Verification

This pilot will follow the tracking and verification approach for "Energy Efficiency, Strategic Electrification, and District Energy" described in Exhibit W. Additional pilot-specific details include:

> *Verification:* Despite expected energy savings being below the 20,000 Dth threshold for custom project M&V as noted in Exhibit W, the program vendor will conduct detailed on-site M&V to validate system performance for each installation.

Customer Incentive Information

CenterPoint Energy proposes to pay the full cost of the units for participants so does not anticipate paying customer incentives.

IRA Incentives Considered

While gas heat pumps generally are eligible for the energy efficient home improvement credit in 26 U.S.C. § 25C, because CenterPoint Energy proposes to pay the full unit cost, we do not expect participants to be eligible for the tax credit. CenterPoint Energy has not identified any IRA incentives for which it would be directly eligible for in relation to this pilot.

Equity, Diversity, and Community Engagement

CenterPoint Energy will seek diverse and qualified vendors to participate in any RFP process to select an implementation provider. The Company commits to tracking and reporting on an annual basis the total and percent spend of Plan vendor services on diverse vendors or suppliers.

Additional Project Information

CIP/ECO/NGIA coordination for this pilot is discussed in Exhibit I.

Pilot Q. Gas Heat Pumps for Commercial Buildings

Project Description

CenterPoint Energy proposes to fund the deployment and testing of engine-driven and/or absorption gas heat pump systems in Minnesota commercial buildings, to evaluate the technologies' performance. An initial phase will include site identification, including outreach to find CenterPoint Energy customers willing to participate in the pilot and with a site appropriate for gas heat pump application. After site identification, the demonstration equipment will be installed. The installations would be metered and trial data analyzed to develop reporting metrics that would better inform the opportunity for gas heat pumps to be part of future CIP/ECO or NGIA programs.

Eligibility

This pilot will be open to CenterPoint Energy commercial and industrial customers.

Budget and Participation

Below CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 49: Gas Heat Pumps for Commercial Buildings Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
Units Installed	0	3	0	0	0

Table 50: Gas Heat Pumps for Commercial Buildings Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$108,500	$459,130	$109,779	$22,947	$23,636
Advertising & Promotion	$0	$2,500	$0	$0	$0
Allocation of General Portfolio Costs	$31,347	$11,347	$11,090	$11,198	$11,309
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$0	$0	$0	$0	$0
Total	$139,847	$472,977	$120,869	$34,145	$34,944
UCT Savings	$0	$14,432	$13,675	$12,957	$12,277
Total Incremental Cost	**$139,847**	**$458,545**	**$107,194**	**$21,188**	**$22,668**

GHG Reduction and Natural Gas Savings

Table 51 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. CenterPoint Energy estimates a 15-year life for commercial gas heat pumps. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations. As described in more detail in Exhibit F, estimated emissions reductions are based on expected unit efficiency levels and estimated heating load for a typical commercial participant.

Table 51: Gas Heat Pumps for Commercial Buildings GHG and Geologic Gas Savings

	During Five-Year Plan	Over Lifetime
Lifecycle GHG Emissions Reduction (metric tons CO_2e)	574	2,154
Geologic Gas Savings (Dth)	8,682	32,558

Tracking and Verification

This pilot will follow the tracking and verification approach for "Energy Efficiency, Strategic Electrification, and District Energy" described in Exhibit W. Additional pilot-specific details include:

> *Verification:* Despite expected energy savings being below the 20,000 Dth threshold for custom project M&V as noted in Exhibit W, the program vendor(s) will conduct detailed on-site M&V to validate system performance for each installation.

Customer Incentive Information

CenterPoint Energy proposes to pay the full cost of the units for participants so does not anticipate paying customer incentives.

IRA Incentives Considered

Commercial gas heat pumps can contribute to eligibility for the Commercial Buildings Energy Efficiency Tax Deduction under 26 U.S.C. § 179D. However, because participants are not paying for the units installed, they would not be able to claim expenses associated with the heat pump as part of a deduction. CenterPoint Energy did not identify any IRA incentives that it would be directly eligible for as a result of this pilot.

Equity, Diversity, and Community Engagement

CenterPoint Energy will seek diverse and qualified vendors to participate in any RFP process to select an implementation provider. The Company commits to tracking and reporting on an annual basis the total and percent spend of Plan vendor services on diverse vendors or suppliers.

Additional Project Information

CenterPoint Energy would target sites where customers are open to hosting walk-throughs, so that contractors, design firms, and other industry participants can gain exposure to the technology.

CIP/ECO/NGIA coordination for this pilot is discussed in Exhibit I.

Gas absorption heat pumps are included in the Minnesota ETA starter portfolio, a market transformation initiative that will work to accelerate adoption of emerging technologies. This field demonstration will complement the strategy and planning work that will be completed within the ETA program, and CenterPoint Energy would coordinate with ETA where appropriate.

Pilot R. Industrial and Large Commercial GHG Audit

Project Description

CenterPoint Energy proposes to expand its existing Process Efficiency and Commercial Efficiency CIP offerings, which it will propose to continue in its 2024-2026 Triennial Plan, to include identification of non-CIP/ECO GHG reducing opportunities for industrial and large commercial customers. Measures that may be recommended include electric heat pumps or hybrid heating systems, CarbinX carbon capture units, industrial heat pumps, solar thermal walls, onsite biogas production/use, and energy efficiency and strategic electrification measures that are not cost-effective under the CIP/ECO societal test. The Company proposes to include the incremental costs associated with this expansion in its NGIA Plan for cost recovery as well as the costs of rebates for NGIA measures customers install as a result of GHG audits. This program will also be credited with GHG savings from NGIA measures installed (and those savings will not count towards other NGIA projects that include those measures). CenterPoint Energy proposes to continue to attribute savings and costs for CIP/ECO measures to the

appropriate CIP/ECO projects. As described further in Exhibit W, CenterPoint Energy will complete custom analysis to determine the energy savings of energy efficiency and strategic electrification measures installed through NGIA where those measures are not included in the Minnesota Technical Reference Manual.

Eligibility

This pilot is open to the following rate classes: Small Volume Dual Fuel B, Large Volume Dual Fuel, Commercial/Industrial Firm C, and Large Volume Firm.

Budget and Participation

Below, CenterPoint Energy provides estimated participation and spending. Additional details on the tables below can be found in Exhibits E and N. Overall cost-effectiveness is addressed in Exhibits M, O, and P.

Table 52: Industrial and Large Commercial GHG Audit Participation Estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
GHG Reduction Project Implemented	1	1	1	1	1
Audits Completed	10	10	10	10	10

Table 53: Industrial and Large Commercial GHG Audit Five Year Spending Estimate

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Delivery	$121,000	$121,630	$122,279	$122,947	$173,636
Advertising & Promotion	$1,600	$1,600	$1,600	$1,600	$1,600
Allocation of General Portfolio Costs	$39,748	$14,388	$14,062	$14,198	$14,339
Revenue Requirement for Capital Investment	$0	$0	$0	$0	$0
Customer Incentives	$136,838	$136,838	$136,838	$136,838	$136,838
Total	$299,185	$274,456	$274,778	$275,583	$326,412
UCT Savings	$38,411	$72,788	$103,450	$130,692	$154,789
Total Incremental Cost	**$260,775**	**$201,668**	**$171,328**	**$144,891**	**$171,624**

GHG Reduction and Natural Gas Savings

Table 54 below summarizes the forecasted GHG emissions reductions from implementation of this pilot. Exhibit F provides additional details on the forecasted GHG emissions avoided by implementation of the pilot. For purposes of estimating lifecycle GHG reductions, CenterPoint Energy assumed a 20-year life for process equipment. Exhibit G provides a third-party analysis of the lifecycle GHG emissions calculations.

Table 54: Industrial and Large Commercial GHG Audit GHG Savings

	During Five-Year Plan	Over Lifetime

Lifecycle GHG Emissions Reduction (metric tons CO_2e)	5,147	35,560
Geologic Gas Savings (Dth)	82,103	547,350

Tracking and Verification

This pilot will follow the tracking and verification approach for "Energy Efficiency, Strategic Electrification, and District Energy" described in Exhibit W. Additional pilot-specific details include:

> *Tracking*: Some of the measures identified through audits completed through this pilot are likely to be eligible for incentives through other NGIA pilots (e.g., Commercial Hybrid Heating, CarbinX). CenterPoint Energy proposes to pay incentives and count savings towards those other pilots where applicable. Where measures are identified that are not eligible for incentives through other pilots, CenterPoint Energy will pay incentives and claim savings in this pilot, as described below.

Customer Incentive Information

CenterPoint Energy proposes to pay a rebate equal to between $10/Dth and $25/Dth of annual geologic natural gas savings for measures installed through this pilot, up to $1.5 million per project. CenterPoint Energy requests some flexibility in the rebate amount as it has through its CIP Commercial & Industrial Custom Rebates project. Through that CIP project, CenterPoint Energy caps on project cost coverage generally lead to incentives that do not exceed $10/Dth with many projects receiving lower amounts if a lower amount is sufficient to spur action by the customer. For this pilot, the Company believes that higher rebate amounts are likely necessary to drive customer action as measures will be less cost-effective in terms of natural gas bill savings. Since this project may involve energy efficiency and strategic electrification projects, CenterPoint Energy also wants to ensure that projects that are borderline for CIP/ECO eligibility are not paid incentives that are significantly more than they would receive through CIP/ECO. For example, energy efficiency projects that are almost cost effective under the CIP/ECO societal test should not receive a windfall if they are barely in scope for NGIA. Accordingly, the Company requests a range between the upper limit for CIP/ECO custom projects and $25/Dth.

In order to coordinate incentives through this pilot with CIP/ECO incentives, the Company proposes to take the following steps for energy efficiency and strategic electrification projects:

1. CenterPoint Energy will determine whether the measure could qualify for CIP/ECO as a custom measure or otherwise. If it can, the measure will be processed through CIP/ECO and no NGIA rebate will be paid for that measure.
2. If the measure is not eligible for CIP/ECO, CenterPoint Energy will determine if the measure will cost less than $150/metric ton from the NGIA utility perspective, considering only quantitative costs and benefits. Only measures that pass this screen will be eligible for an NGIA incentive.
3. Measures rebated through this pilot will be subjected to measurement and verification as further described in Exhibit W.

IRA Incentives Considered

Some participants may be eligible for Advanced Energy Production Credits under the IRA, 26 U.S.C. § 48C. This credit allows owners of manufacturing facilities to claim a credit for re-equipping their facilities with equipment designed to reduce GHG emissions by at least 20 percent through the installation of low- or zero-carbon process heat systems, among other things. Due to uncertainty about whether the measures likely to be implemented could clear this threshold in the case of particular facilities, the Company did not include this credit in its modeling of participant costs.

In addition, there are several competitive grant programs in IRA and IIJA that encourage reductions in emissions at industrial facilities such as the Advanced Industrial Facilities Deployment Program, IRA § 50161, the Future of Industry Program and Industrial Research and Assessment Centers, IIJA § 40521, Industrial Emissions Demonstration Projects, IIJA § 41008, which customers could potentially be eligible for.

CenterPoint Energy is not aware of any IRA or IIJA incentives that it could be directly eligible for with respect to this pilot.

Equity, Diversity, and Community Engagement

CenterPoint Energy will seek diverse and qualified vendors to participate in any RFP process to select an implementation provider. The Company commits to tracking and reporting on an annual basis the total and percent spend of Plan vendor services on diverse vendors or suppliers.

Additional Project Information

CIP/ECO/NGIA coordination for this pilot is discussed in Exhibit I.

While this pilot is focused on customers participating in CenterPoint Energy's Commercial Efficiency and Process Efficiency programs, CenterPoint Energy will allow energy efficiency or strategic electrification projects that are evaluated for custom rebates through CIP/ECO, but do not qualify, to be referred to this pilot for evaluation for NGIA incentive eligibility, following the incentive guidelines described above.

List of Final Pilot Names with Reference to Shortlisted Concepts

The full pilot descriptions are based on shortlisted concepts from the RFI and public engagement sessions. The table below shows earlier names that appear in process documentation, along with the corresponding final pilot name used in the innovation plan.

Shortlist #	Shortlist Pilot Concept Name	Final Pilot Letter	Name of Full Pilot
1	RNG Proposal - Anaerobic Digestion of Organic Materials	A	RNG Produced from Hennepin County Organic Waste
2	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	B	RNG Produced from Ramsey & Washington Counties Organic Waste

Shortlist #	Shortlist Pilot Concept Name	Final Pilot Letter	Name of Full Pilot
3	RNG Archetype - Wastewater Resource Recovery Facility	C	Renewable Natural Gas Request for Proposal ("RFP") Purchase
4	RNG Archetype - Dairy Manure		
5	RNG Archetype - Food Waste		
6	RNG Archetype - Landfill Gas		
7	Green Hydrogen Blending into Natural Gas Distribution System	D	Green Hydrogen Blending into Natural Gas Distribution System
8	Green Hydrogen Archetype for Industrial or Large Commercial Facility	E	Industrial or Large Commercial Hydrogen and Carbon Capture Incentives
11	Carbon Capture Archetype for Industrial or Large Commercial Facility		
9	Industrial Methane and Refrigerant Leak Reduction Program	F	Industrial Methane and Refrigerant Leak Reduction
10	Urban Tree Carbon Offset Program	G	Urban Tree Carbon Offsets
13	Carbon Capture Rebates for Commercial Buildings	H	Carbon Capture Rebates for Commercial Buildings
14	New Networked Geothermal Systems Pilot	I	New Networked Geothermal Systems
15	Decarbonizing Existing District Energy Systems	J	Decarbonizing Existing District Energy Systems
16	New District Energy System	K	New District Energy System
17	Industrial Electrification Incentive Program	L	Industrial Electrification Incentives
18	Commercial hybrid heating pilot	M	Commercial Hybrid Heating
19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	N	Residential Deep Energy Retrofits and Electric Air Source Heat Pumps
20	Small/medium business GHG audit pilot	O	Small/Medium Business GHG Audit
21	Residential Gas Heat Pump	P	Residential Gas Heat Pumps
22	Gas Heat Pump for Commercial Buildings	Q	Gas Heat Pumps for Commercial Buildings
25	Industrial and Large Commercial GHG Audit Pilot	R	Industrial and Large Commercial GHG Audit