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Industrial Clean Heat in Minnesota: An Overview of the Regulatory Landscape for Decarbonization

By Hannah Dobie and Hallie Turner

Published December, 2025 by the Great Plains Institute.



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A nonpartisan, nonprofit organization, the [Great Plains Institute](#) (GPI) accelerates the transition to net-zero carbon emissions for the benefit of people, the economy, and the environment. Working across the US, we combine a unique consensus-building approach, expert knowledge, research and analysis, and local action to find and implement lasting solutions. Our work strengthens communities and provides greater economic opportunity through the creation of higher-paying jobs, expansion of the nation's industrial base, and greater domestic energy independence while eliminating carbon emissions.

Contacts

Contact the Energy Systems program for inquiries: info_energy_systems@gpisd.net.

Introduction

Minnesota has set a statutory goal of achieving net-zero greenhouse gas (GHG) emissions by 2050,¹ which will require significant emissions reductions across all sectors of the economy. While residential and commercial buildings have played a central role in statewide discussions on decarbonization policy, the unique regulatory framework governing the industrial sector has not been explored in detail.





The purpose of this overview is to build understanding among groups that may be developing policies and programs to reduce GHG emissions from natural gas use in Minnesota's industrial sector. Unlike residential sector customers, industrial facilities purchase gas through three distinct pathways: retail service, transport service, and bypass service (direct pipeline connections that bypass local utilities altogether). This overview characterizes how these pathways overlap with state policies and programs that aim to reduce industrial GHG emissions.

Greenhouse Gas Emissions from Industrial Gas Processes in Minnesota

According to the most recent Minnesota Pollution Control Agency (MPCA) Greenhouse Gas Inventory, the industrial sector is the highest emitter of GHG emissions from natural gas consumption in the state. Table 1 shows the percentage of total GHG emissions attributable to each subsector of gas end users in Minnesota.

¹ Minn. Stat. § 216H.02.

Table 1. Sector-specific gas contributions to Minnesota GHG emissions, 2022

Gas Subsector		Included Activities	% State Emissions
	Industrial	Petroleum refining, fossil fuel combustion, taconite processing, lead recycling, manufacturing.	6.77%
	Residential	Home heating, appliances, consumer products, and carbon stored in structural materials.	6.66%
	Commercial	Buildings that house businesses, institutions, government facilities (e.g., schools, food service establishments, hospitals).	5.75%
	Electricity Generation	Burning gas to generate electricity.	3.15%

Source: Based on data from “[Sources of emissions 2022](#),” Workbook: Minnesota Greenhouse Gas Inventory, MPCA, January 2025.

While total GHG emissions from the Minnesota industrial sector have declined since a peak in 2018, industrial emissions from natural gas have increased relative to the 2005 baseline.²

Jurisdictional Considerations

Minnesota has none of its own fossil fuel resources, meaning customers rely on gas imported by several interstate pipelines (e.g., Northern Natural Gas, Viking Gas Transmission, Great Lakes Gas Transmission, Centra Pipeline).³ These interstate gas pipelines are regulated by the Federal Energy Regulatory Commission (FERC), but the pipeline operators do not own the commodity.⁴ The commodity may be owned by a range of entities, including gas marketers and producers.⁵ Pipeline operators transport gas to buyers in Minnesota, which include gas

² MPCA and Minnesota Department of Commerce, *Greenhouse gas emissions in Minnesota 2005-2022: Biennial inventory report tracking the state’s greenhouse gas emissions contributing to climate change* (MPCA and Minnesota Department of Commerce, January 2025), report to the legislature, 15.

³ Bob Eleff, *Natural Gas in Minnesota* (Minnesota House of Representatives Research Department, November 2018), information brief, 2.

⁴ Eleff, *Natural Gas In Minnesota*, 2; Megan Anderson, Mark LeBel, and Max Dupuy, *Under Pressure: Gas Utility Regulation for a Time of Transition* (Regulatory Assistance Project, May 2021), 58; see also, 15 U.S.C. § 717(b); Natural Gas Policy Act of 1978 (15 U.S.C. § 3301 et seq.); FERC Order No. 636.

⁵ *Id.*

utilities (investor-owned and municipal utilities), electric utilities, and large industrial facilities. Gas utilities, also known as local distribution companies (LDCs), then distribute the gas to residential, commercial, and industrial customers.

Minnesota's industrial natural gas customers can be divided into the following three regulatory categories (defined by federal and state law) based on how they purchase gas and the transportation of that gas, also outlined in Table 2 below:

1. **Retail/sales service:** The industrial customer purchases both the gas commodity and gas transportation service from an LDC. The LDC arranges for the gas to be transported from processing plants to its distribution network by an interstate pipeline operator. The LDC then delivers the gas to the customer via its distribution infrastructure and bills the customer for a “bundled service,” including the commodity, transmission, distribution, and all other services.
2. **Transport service:** The industrial customer purchases the gas commodity from a third-party supplier and contracts with the LDC to transport that gas to the customer's facility. For example, Class 5 Transport customers of the Minnesota Energy Resources Corporation (MERC) include industries such as taconite facilities and paper mills that purchase gas from a third-party supplier, pay interstate pipelines to deliver it to the nearest town border station, and purchase local transportation under Minnesota Public Utility Commission (PUC) jurisdiction from MERC via the LDC's distribution infrastructure.⁶
3. **Bypass service:** The customer purchases gas from a marketer or producer and pays for its transportation through a direct connection to an interstate pipeline, bypassing any involvement with an LDC. For example, the Flint Hills Pine Bend Refinery, the industrial facility with the highest GHG emissions due to gas processes in the state,⁷ is an example of a FERC-regulated bypass customer that purchases gas transportation service directly from FERC-jurisdictional interstate pipeline operator Northern Natural Gas.⁸

⁶ *In the Matter of the Application of Minnesota Energy Resources Corporation for Authority to Increase Rates for Natural Gas Service in Minnesota*, Docket No. 22–504, [Direct Testimony and Schedules, Joylyn C. Hoffman Malueg](#), 35–36 (Nov. 1, 2022); *In the Matter of the Petition of Minnesota Energy Resources Corporation for Approval of a Natural Gas Extension Project (NGEP) Cost Rider Surcharge for the Recovery of 2019 Rochester Project Costs*, Docket No. 18–182, [Order Suspending GUIC Rider Surcharge for Direct Connect Customers, and Declining to Reopen NGEP Cost Rider Docket](#), 3 (Aug. 26, 2019).

⁷ “2023 Greenhouse Gas Emissions from Large Facilities, Minnesota,” US EPA Facility Level Information on GreenHouse gases Tool (FLIGHT), data reported as of August 16, 2024.

⁸ See, e.g., FERC Docket No. RP06–339. The refinery does not require odorization of gas and therefore does not receive that service from an LDC. 49 CFR § 192.625(b)(2)(iv)(A).

Table 2. Types of Gas Service Available to Industrial Customers in Minnesota

	Retail Service	Transport Service	Bypass Service
<i>Who does the customer pay for the gas commodity?</i>	LDC	Third-party supplier	Third-party supplier
<i>Who does the customer pay for the transportation of the gas commodity?</i>	LDC	LDC	Interstate pipeline operator
<i>What agency regulates rates for the gas delivery/transport service?</i>	Minnesota Public Utilities Commission (PUC)	Minnesota PUC	FERC
<i>Does the customer use the LDC distribution system?</i>	Yes	Yes (see note)	No

Sources: Eleff, *Natural Gas in Minnesota*, 4; “[Natural Gas Data Sources](#),” US Energy Information Administration (EIA), accessed September 5, 2025; “[Annual Report of Volumes, Revenues, and Customers by Company \(1997–2023\)](#),” American Gas Association, accessed September 5, 2025; 15 U.S.C. § 717(b); Natural Gas Policy Act of 1978 (15 U.S.C. § 3301 et seq.); FERC’s Order No. 636.

Note: In a limited number of cases, LDCs may operate in partnership with interstate pipeline operators to provide accessory services that are distinct from traditional transport service. MERC’s Class 5 Transport Direct Connect customers connect directly to an interstate pipeline and operate privately-owned distribution infrastructure, but receive accessory services from MERC, such as odorization, billing, and maintaining customer records. Whether these customers are “transport customers” under the Minnesota law has been debated, given that they do not use the LDC distribution infrastructure. Regardless, MERC groups these customers with its other large transport rate classes, and the PUC considers these users to be customers of MERC from a regulatory perspective. See *MERC NGEP Cost Rider*, Docket No. 18–182, [Order Suspending GUIC Rider Surcharge for Direct Connect Customers, and Declining to Reopen NGEP Cost Rider Docket](#), 3–7 (August 26, 2019).

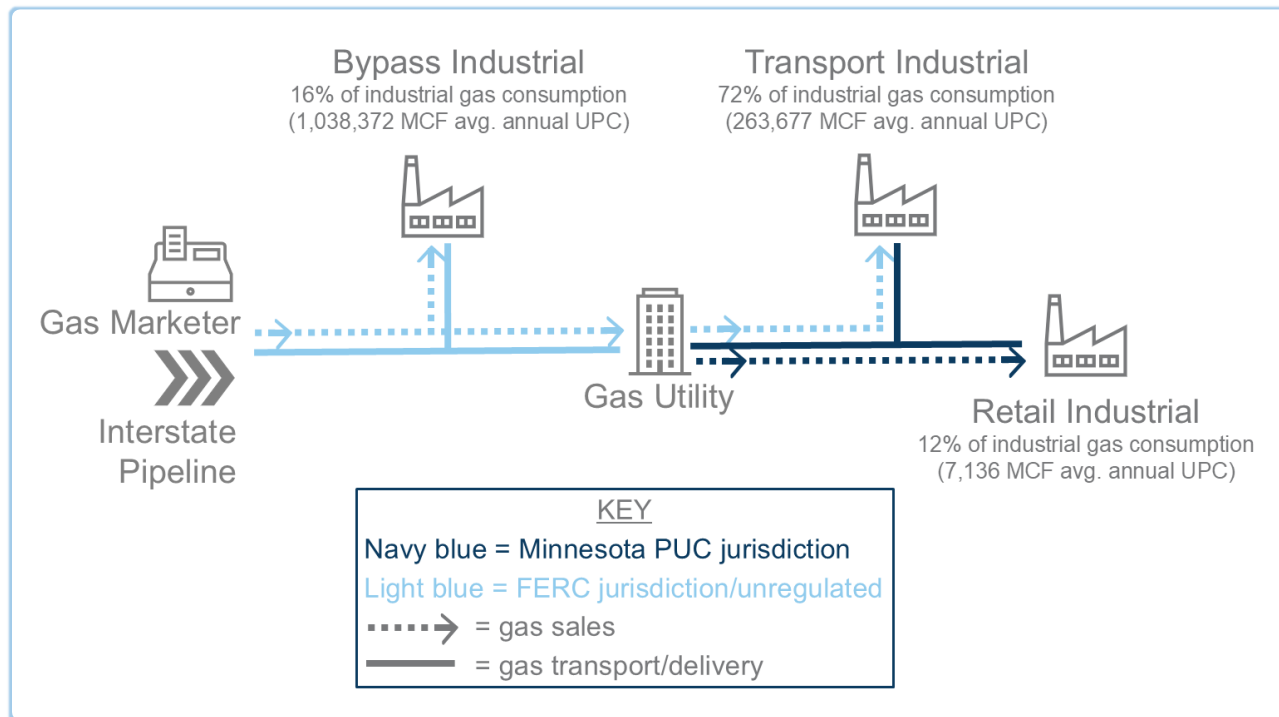
LDCs face competitive pressure from their large industrial customers who have the technical and economic capability to bypass local distribution infrastructure entirely. This is particularly true for transport customers in geographic proximity to a pipeline and those who rely on the LDC only for accessory services, such as odorization and billing, rather than transportation. This presents a risk for LDCs, which are incentivized to keep rates low to prevent existing customers from leaving their system.⁹

Figure 1 illustrates the jurisdictional distinction and average consumption for industrial gas customers in Minnesota. The largest category of industrial gas consumption is LDC transport service (72 percent), followed by bypass service (16 percent) and retail service (12 percent). Despite their relatively small share of throughput, US Energy Information Administration data shows bypass customers have high per-customer usage. In 2022, there were only 21 bypass customers in the state, but their average usage per customer (UPC) was over 1,000,000 MCF

⁹ Eleff, *Natural Gas in Minnesota*.

(thousand cubic feet) annually, which is equivalent to 12 times the average per-customer usage across LDC industrial customers.

Figure 1. Industrial gas customers in Minnesota by jurisdiction and usage



Sources: “Natural Gas Data Sources,” EIA; “Annual Report of Volumes, Revenues, and Customers by Company (1997–2023),” American Gas Association.

Note: This data is collected through EIA Form 176, a mandatory survey of all companies that deliver natural gas to consumers or that transport gas across state lines. Usage values are for 2022 usage and were collected in 2023.

The jurisdictional boundary is important for understanding the applicability of Minnesota’s industrial decarbonization mechanisms. Economywide state carbon reduction goals are applicable to all industrial facilities shown in this figure, while frameworks that apply to the LDCs and their customers only include transport and retail customers. Another implication of bypassing local distribution infrastructure is that FERC—rather than the PUC—is responsible for regulating bypass customers’ rates.

LDC Industrial Gas Rates and Services

The three largest gas utilities in the state (CenterPoint Energy, MERC, and Xcel Energy) define industrial classes by the nature of the customer's business:

- MERC defines industrial customers as those that are “engaged primarily in a process which creates or changes raw or unfinished materials to another form or product.”¹⁰
- CenterPoint's definition requires use of “gas in a space dedicated to the production of articles of commerce through manufacturing, processing, refining, mining, or fabricating.”¹¹
- Xcel's industrial class must be “engaged in the production of articles of commerce through manufacturing, processing, refining, mining, and fabricating.”¹²

While the gas utility tariffs define commercial customers based on separate activities, these utilities generally structure rates in a combined “C&I” format for customers. All three LDCs offer retail or transport services, as discussed above, and firm or interruptible services. Under firm rates, a customer receives a reliable supply of gas from the utility with no planned interruptions. Under interruptible rates, a customer agrees to curtail their service when called upon by the utility to do so, typically paying lower rates as compensation for their flexibility.

Each LDC also offers additional specialized services. For instance, CenterPoint offers a combined firm/interruptible service option, where a certain amount of interruptible service is provided on top of baseline firm demand.¹³ Xcel offers the option to bill firm supply based on peak day demand rather than usage and a transport class specifically for large customers who have demonstrated the ability to bypass the distribution system.¹⁴ MERC offers accessory services to customers on its Direct Connect and Farm Tap rate offerings that connect to an interstate pipeline but rely on MERC for odorization and billing.¹⁵

¹⁰ Minnesota Energy Resources Corporation, “[4th Revised Sheet No. 8.00](#),” in *Tariff and Rate Book* (Minnesota Energy Resources Corporation, Mar. 1, 2024).

¹¹ *In the Matter of the Application of CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Minnesota Gas for Authority to Increase Rates for Natural Gas Utility Service in Minnesota*, Docket No. 23–173, [Summary of Filing](#), 436 (Nov. 1, 2023).

¹² Northern States Power Company, subsidiary of Xcel Energy, “[Section No. 4, 1st Revised Sheet No. 1](#),” in *Minnesota Gas Rate Book – MPUC No. 2* (Xcel Energy, Jan. 8, 2007).

¹³ *CenterPoint Energy Gas Rate Case*, Docket No. 23–173, [Summary of Filing](#), 375 (Nov. 1, 2023).

¹⁴ *In the Matter of the Application of Northern States Power Company for Authority to Increase Rates for Natural Gas Service in Minnesota*, Docket No. 23–413, [Direct Testimony and Schedules](#), John M. Goodenough, 5–6 (Nov. 1, 2023).

¹⁵ *MERC NGEF Cost Rider*, Docket No. 18–182, [Order Suspending GUIC Rider Surcharge for Direct Connect Customers, and Declining to Reopen NGEF Cost Rider Docket](#), 3 (Aug. 26, 2019); *In the Matter of a Petition by the*

The utilities distinguish the C&I rate classes by different quantitative thresholds, or breakpoints:

- MERC offers classes 1–5 based on therms per year
- CenterPoint offers small or large class rates determined by therms per peak day
- Xcel offers small, medium, and large service rates based on dekatherms per year or dekatherms per peak day

This variety of service options and rate structures reflects the diverse operational needs and gas consumption patterns of Minnesota’s industrial customer base.

State Mechanisms for Industrial Decarbonization

Minnesota’s net-zero target is supported by the state’s broader 2022 Climate Action Framework, the 2021 Energy Conservation and Optimization (ECO) Act, the 2021 Natural Gas Innovation Act (NGIA), and the requirement for the three largest gas utilities to develop long-term integrated resource plans (IRPs), among other policies and programs. NGIA and the ECO Act direct utility funds toward efficiency improvements, and NGIA allows for innovative technology pilots, but both programs also allow exemptions for large industrial customers. These mechanisms are discussed further below.

Energy Conservation and Optimization Act

The ECO Act expands the statewide energy savings goal to 2.5 percent annually, requires gas investor-owned utilities to reach an energy savings goal of 1 percent of gross annual retail sales, and requires electric investor-owned utilities to reach an energy savings goal of 1.75 percent of gross annual retail sales. For gas LDCs, this includes both retail and transport-only gas customers.¹⁶ The ECO Act allows for efficient fuel switching, and industrial customers are eligible for energy efficiency program benefits under gas and electric utilities’ ECO plans, unless they receive an exemption through the process described below.

Gas and electric utilities’ ECO plans include programs such as rebates for high-efficiency boilers and manufacturing process improvements to reduce energy intensity.¹⁷ Several of these incentives are prescriptive rebates designed to involve a partnership between electric and gas utilities in cases where service territories overlap. For example, when a customer

Minnesota Energy Resources Corporation for Approval of Farm Tap Customer-Owned Fuel Line Replacement Plan, Tariff Amendments, and Deferred Accounting, Docket No. 17–409, Order Approving Phase II of Farm Tap Replacement Project with Conditions, 9 (Oct. 6, 2021).

¹⁶ Minn. Stat. § 216B.2401; Minn. Stat. § 216B.241, subd. 1c.

¹⁷ “[Energy Conservation and Optimization](#),” Minnesota Department of Commerce, accessed October 14, 2025; see, e.g., [2024–2026 MERC CIP Triennial Plan](#), Docket No. 23–98, 94–106 (June 30, 2023).

receives electricity from Xcel and gas from CenterPoint, the two utilities offer coordinated energy audits on a case-by-case basis, depending on customer preferences. This allows site visits and report results from each utility’s respective auditing service to be combined into a single coordinated, dual-fuel audit.¹⁸ Some rebates that target industrial customers only apply to small and medium commercial and industrial users, limiting their applicability for large industrial processes (e.g., Xcel business energy assessment, MERC C&I energy audits).¹⁹

Recognizing that prescriptive rebates may not be able to address all unique, process-specific needs of industrial customers, several gas and electric utilities, including Otter Tail Power and MERC, offer custom rebate and grant programs designed for large customers. Grants or rebates for custom energy efficiency improvements are calculated on a project-by-project basis, offering flexibility and versatility for larger users whose analyses or equipment may not be covered under standardized rebates.²⁰ Opportunities for efficient fuel switching for industrial customers have been limited in the 2024–2025 ECO plans due to concerns about statutory eligibility requirements, including cost-effectiveness.²¹

Notably, certain “large customer facilities” consuming more than 500 million cubic feet annually can petition for exemption from the costs and benefits associated with these offerings.²² The petition must include a description of competitive economic pressures facing the owner of the facility or evidence that the facility could bypass the LDC’s gas distribution system by obtaining natural gas directly from an interstate gas pipeline. In 2023, CenterPoint reported 15 large customer facilities exempt from ECO,²³ and Xcel reported three exemptions.²⁴ MERC did not provide a number but stated that exempt customers make up over 49 percent of the company’s total weather-normalized natural gas sales and described this as a “key challenge” regarding the market potential of energy efficiency.²⁵ ECO

¹⁸ CenterPoint’s 2024–2026 ECO Plan, Docket No. 23–95, 153 (June 30, 2023).

¹⁹ 2024–2026 Xcel Energy CIP Triennial Plan, Docket No. 23–92, 106–107 (June 29, 2023); 2024–2026 MERC CIP Triennial Plan, Docket No. 23–98, 88–89 (June 30, 2023).

²⁰ 2024–2026 Otter Tail Power Company CIP Triennial Plan, Docket No. 23–94, 76 (June 30, 2023); 2024–2026 MERC CIP Triennial Plan, Docket No. 23–98, 99–100 (June 30, 2023).

²¹ 2024–2026 MERC CIP Triennial Plan, Docket No. 23–98, 10 (June 30, 2023); CenterPoint’s 2024–2026 ECO Plan, Docket No. 23–95, 164 (June 30, 2023); Minnesota Power’s 2024–2026 Triennial ECO Plan, Docket No. 23–93, 15 (June 30, 2023).

²² Minn. Stat. § 216B.241, subd. 1a; Minn. Stat. § 216B.2402 Subd. 12. There are similar ECO program exemptions for smaller commercial customers who do not fit the definition of a large customer facility.

²³ *In the Matter of CenterPoint Energy’s Natural Gas Innovation Plan*, Docket No. 23–215, *Petition by CenterPoint Energy for Approval of its First Natural Gas Innovation Plan*, 18 (June 28, 2023).

²⁴ *In the Matter of Northern States Power d/b/a Xcel Energy’s Natural Gas Innovation Plan*, Docket No. 23–518, *2023 NGIA Plan Petition*, 28 (Dec. 15, 2023).

²⁵ 2024–2026 MERC CIP Triennial Plan, Docket No. 23–98, 16, 87 (June 30, 2023).

exemptions also provide exemptions for industrial participation in programs offered by electric utilities; 69 percent of Minnesota Power’s total electricity sales are exempt.²⁶

Natural Gas Innovation Act

The Minnesota Legislature also passed the NGIA in 2021, which establishes a goal for the state’s natural gas utilities to “reduce the overall amount of natural gas produced from conventional geologic sources delivered to customers.”²⁷ This throughput goal applies to regulated LDCs that provide natural gas sales or natural gas transportation services to at least 25 customers in Minnesota.²⁸

NGIA also allows LDCs to develop natural gas utility innovation plans that outline pilot programs incorporating innovative resources to help reduce GHG emissions. If the Public Utilities Commission approves the LDC’s innovation plan, the LDC may recover prudently incurred costs associated with its implementation.²⁹ NGIA requires that the first innovation plan filed by a utility with more than 800,000 customers include “a pilot program to provide innovative resources to industrial facilities whose manufacturing processes, for technical reasons, are not amenable to electrification.”³⁰ Like the ECO Act, NGIA also allows large industrial facilities that the Minnesota Department of Commerce Commissioner has exempted from an LDC’s ECO plan—based on bypass potential—to be exempt from NGIA plan charges and offerings, unless they request otherwise.³¹

CenterPoint is the only Minnesota LDC with more than 800,000 gas customers and is thus the only utility required to include an industrial pilot in its first innovation plan. CenterPoint’s approved 2024 plan included the following pilots:³²

- Provide incentives for industrial and large commercial power-to-hydrogen and carbon capture projects to help offset upfront capital costs and accelerate deployment of technologies that reduce GHG emissions.
- Support electrification of low-to-medium industrial processes by funding feasibility assessments and equipment upgrades for heat pump technologies that can displace fossil gas use.

²⁶ [Minnesota Power’s 2024–2026 Triennial ECO Plan](#), Docket No. 23–93, 5 (June 30, 2023).

²⁷ Minn. Stat. § 216B.2427, subd. 10.

²⁸ Minn. Stat. § 216B.02, subd. 4.

²⁹ Minn. Stat. § 216B.2427, subd. 2(c).

³⁰ *Id.* subd. 7.

³¹ *Id.* subd. 3(f); Minn. Stat. § 216B.241, Subd. 1a, paragraph (b).

³² [CenterPoint Energy’s Natural Gas Innovation Plan](#), Docket No. 23–215, [Petition by CenterPoint Energy for Approval of its First Natural Gas Innovation Plan](#), 86–87 (June 28, 2023) & [Order Approving Natural Gas Innovation Plan with Modifications](#), 10–11, 17–18, 22–24 (Oct. 9, 2024).

- Audit and analyze GHG emissions from industrial customers and implement site-specific efficiency improvements that go beyond measures covered under existing energy conservation legislation.
- Detect and reduce behind-the-meter methane and refrigerant leaks from industrial processes through installation of monitoring equipment and adoption of advanced leak-detection technologies and operational improvements.
- Conduct R&D pilots focused on the production and use of green ammonia as a low-carbon fuel, including evaluation of potential applications in industrial settings.

Though not required to include industrial pilots, Xcel's NGIA plan included several pilots addressing industrial sector decarbonization:³³

- Conduct detailed energy modeling through a custom energy efficiency and electrification pilot for large customers to determine the potential GHG emissions impact of custom energy measures. Like CenterPoint's GHG audit pilot, this initiative targets projects that reduce GHG emissions without yielding Btu (British thermal unit) energy savings, since these projects are ineligible for ECO funding.
- Pilot green hydrogen production via electrolysis and blend up to 10 percent hydrogen into natural gas boilers at the company's Sherco coal-fired power plant.
- Carry out R&D pilots to demonstrate an industrial heat pump field trial for low-temperature industrial processes.

Through these pilots, NGIA serves as a critical testing ground for industrial decarbonization strategies that extend beyond efficiency measures, focusing instead on innovation and emissions reduction potential.

Gas Integrated Resource Plans

In October 2024, the PUC finalized requirements for the state's three largest gas utilities to develop IRPs for the first time. The plan due dates are staggered, with the first being Xcel's, due July 1, 2026.³⁴ CenterPoint's first gas IRP is due July 1, 2027, and MERC's is due July 1, 2028. The PUC order to develop a gas IRP framework stemmed from an investigation into

³³ Xcel Energy's *Natural Gas Innovation Plan*, Docket No. 23-518, [2023 NGIA Plan Petition](#), 76, 114, 146 (Dec. 15, 2023).

³⁴ Hannah Dobie and Trevor Drake, "Minnesota Adopts Gas Utility Integrated Resource Planning," Great Plains Institute, November 7, 2024; *In the Matter of a Commission Investigation into Gas Utility Resource Planning*, Docket No. 23-117, Order Clarifying and Expanding Framework for Natural Gas Integrated Resource Planning (Oct. 28, 2024).

high rates caused by Winter Storm Uri and a need to proactively plan the gas system to maintain reliability and affordability.

The gas IRPs must assess various future gas scenarios, evaluate expansion alternative analyses, consider the state's GHG goals, and include emissions forecasts. The framework also requires the gas utilities to work with electric utilities in overlapping service territories to understand how electrification may impact the gas system. Developing the IRPs will require more comprehensive forecasting of how gas LDCs contribute to the state's GHG goals, which will include contributions from industrial customers.

Taken together, these state policies establish a multi-pronged approach to industrial decarbonization through efficiency, innovation, and integrated resource planning, while highlighting the ongoing challenge of balancing emission reductions with industrial competitiveness.

Conclusion

Minnesota's industrial facilities access natural gas through three distinct pathways, each governed by different agencies and subject to different policy mechanisms. Retail and transport customers receive some or all aspects of their service from LDCs regulated by the Minnesota PUC, while bypass customers receive services entirely outside of PUC jurisdiction. The reach of existing state programs that apply to LDCs, such as ECO and NGIA, is limited by exemptions available to large industrial facilities. Understanding how Minnesota's industrial customers purchase natural gas, which regulatory frameworks govern those transactions, and where current policy opportunities exist is essential for developing effective strategies that can support the state's highest-emitting industrial facilities in contributing to Minnesota's goal of net-zero emissions economywide by 2050.