MAXIMIZING THE USE OF NORTH DAKOTA'S NATURAL GAS RESOURCE

JOINT ASSESSMENT BETWEEN THE ENERGY & ENVIRONMENTAL RESEARCH CENTER AND THE NORTH DAKOTA PIPELINE AUTHORITY

Final Report – Revision 2

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NOMENCLATURE

ACS	American Crystal Sugar
Bcf	billion cubic feet
Bcfd	billion cubic feet per day
Btu	British thermal unit
cf	cubic foot
DMR	Department of Mineral Resources
Dth	dekatherm
Dth/d	dekatherm per day
EERC	Energy & Environmental Research Center
FERC	Federal Energy Regulatory Commission
GOR	gas-to-oil ratio
LDCs	local distribution companies
Mcf	thousand cubic feet
Mcfd	thousand cubic feet per day
MMcfd	million cubic feet per day
MW	megawatts
NDPA	North Dakota Pipeline Authority
NGLs	natural gas liquids
NPN	Northern Plains Nitrogen

MAXIMIZING THE USE OF NORTH DAKOTA'S NATURAL GAS RESOURCE

EXECUTIVE SUMMARY

The Energy & Environmental Research Center (EERC), in collaboration with the North Dakota Pipeline Authority, prepared this study focused on understanding and supporting the full use of North Dakota's natural gas resources across the state, including the potential natural gas demand and pipeline infrastructure viability for delivery in northeastern North Dakota. The goal of the study was to provide information on natural gas production, delivery, and use, as well as projections and pathways to expand natural gas availability within northeastern North Dakota—home to growing economic development, the University of North Dakota, and diverse energy and agricultural resources within the state. Natural gas in North Dakota is used within a diversified energy portfolio spanning industries that include commercial, industrial, agricultural, and residential.

This study assessed the various participants and roles served along the natural gas value chain that included producers, midstream companies, transmission pipeline companies, local distribution companies, marketers and shippers, and end users. System capacities, geography, and deliverability constraints shape how decisions are made and where natural gas can ultimately be used in the state. North Dakota's regional transmission infrastructure within the Williston Basin and its production and downstream natural gas markets are supported by WBI Energy's Baker and Elk Basin storage facilities, which provide seasonal balancing and reliability for the broader Williston Basin gas system. These are critical components of the broader Williston Basin gas system that can provide an economic benefit for usage across the entire state.

As a case study, the project team identified and quantified current and forecast natural gas demand from the Grand Forks region within the foreseeable future. Grand Forks and the surrounding Red River Valley region in northeastern North Dakota are projected to have sufficient natural gas demand within the next several years to potentially capitalize on natural gas infrastructure development opportunities for industrial, commercial, and residential end users. Under a full build-out scenario that includes current, known future, and hypothetical large-load developments, natural gas demand in the case study region could exceed 800,000 dekatherms per day (Dth/d) over time.

As shown in the case study, natural gas markets in the Grand Forks metropolitan statistical area of approximately 104,000 people are served by two 6-inch pipelines from the Viking pipeline in northwestern Minnesota. The Viking pipeline supplies approximately 57,000 Dth/d of natural gas to residential, commercial, and industrial users in the study area. Based on public information and discussions with City of Grand Forks staff, additional natural gas demand more than 78,000 Dth/d is likely to exist in the near future, primarily related to development of agricultural processing and power generation for data centers. An attempt was also made to quantify hypothetical future natural gas demand which had the potential to exist in the future. These plausible users range from conversion of existing operations to natural gas use and potential new users (primarily large load data center campuses). Hypothetical natural gas demand represented a significant increase exceeding 690,000 Dth/d.

MAXIMIZING THE USE OF NORTH DAKOTA'S NATURAL GAS RESOURCE

1.0 INTRODUCTION

WBI Energy, a natural gas transportation services company, is in the commercial development stage on a significant natural gas pipeline project called the Bakken East Pipeline Project. The proposed Bakken East pipeline would operate as part of WBI's interstate pipeline system, transporting natural gas from the Williston Basin to end users across central and eastern North Dakota. In addition, the Bakken East pipeline will tie into the existing Viking pipeline in western Minnesota. While the current focus for this pipeline is delivery of natural gas to new industrial users in proximity of the proposed pipeline route, there is potential for stakeholders to enhance the availability of natural gas in other parts of the state.

This study focused on understanding and supporting the full use of North Dakota's natural gas resources across the state, including the potential natural gas demand and pipeline infrastructure viability for natural gas delivery in northeastern North Dakota. The natural gas case study focused on the Grand Forks metropolitan statistical area in northeastern North Dakota reported as approximately 104,000 people in 2024. The northeast part of North Dakota represents a significant population area of the state and stakeholders have expressed interest in bringing natural gas to this part of the state via the Bakken East pipeline. Grand Forks is the third-largest city in North Dakota with a population of over 55,000.[1]

2.0 GOALS AND OBJECTIVES

The goal of this work is to support the distribution and use of North Dakota's natural gas resources across the state. Objectives that were accomplished include assessing current and projected natural gas production in the state, mapping out the major company and service types across the natural gas value chain, and conducting a case study to document existing and forecasting potential future natural gas demand in northeastern North Dakota.

The natural gas investigation is anticipated to positively impact North Dakota in two primary ways.

First, at the case study level, if the collected data is compelling, natural gas transportation companies, such as WBI Energy, and other engaged parties will have additional evidence to consider when evaluating potential expansion of the Bakken East pipeline into northeastern North Dakota. Such an expansion could support new industrial development in the state and greatly enhance the lives of residents. While the northeast part of North Dakota will serve as the initial case study, this type of assessment could be replicated in other areas of the state.

Second, at the state level, construction of new or expansion existing pipelines allowing access to new North Dakota users could result in increased in-state use of natural gas delivered from the Williston Basin. This, in turn, would support continued oil and gas production in North Dakota, which is of critical fiscal importance to the state economy.

[1] City of Grand Forks, About Grand Forks, 2026, https://www.grandforksgov.com/our-city.

3.0 NATURAL GAS PRODUCTION, TRANSPORT, AND USE

North Dakota is a major natural gas-producing state, with production driven primarily by oil development in the Bakken and Three Forks formations. Statewide natural gas production exceeds in-state consumption; however, the availability of natural gas for specific regions and end uses is determined by infrastructure availability, pipeline configuration, and deliverability rather than an inadequate local supply of gas alone.

Natural gas access in North Dakota is governed by the physical and commercial structure of gathering, processing, and transmission systems. This section presents a life cycle-based overview of natural gas production, transport, and use, emphasizing the role of infrastructure capacity and regional constraints.

3.1 Natural Gas Production

Natural gas production in North Dakota is concentrated in western North Dakota and is almost exclusively associated gas produced as part of crude oil development (Figure 1). Production levels are therefore closely tied to oil drilling activity and increasing gas-to-oil ratio (GOR) dynamics.

Key production characteristics include:

- Gas output that scales with oil development and rising GORs rather than gas demand or gas market price signals.
- A rich gas stream with significant volumes, typically 10–12+ gallons of natural gas liquids (NGLs) per thousand cubic feet (Mcf) of natural gas.
- Marketed residue (i.e., dry) natural gas production is typically around 70% of gas plant inlet volumes after NGLs are removed.

Because associated gas production cannot be easily curtailed independently of oil production, timely development of gathering, processing, and transmission infrastructure is essential to capture and move gas to market.

Looking forward, the North Dakota Pipeline Authority's (NDPA's) production outlook anticipates continued growth in natural gas volumes over the medium and long terms, driven primarily by sustained oil development and increasing GORs in the Williston Basin (Figure 2). The forecast reflects a production trajectory that outpaces in-state demand growth and reinforces the importance of continued investment in gathering, processing, transmission, and storage infrastructure to ensure that incremental volumes can be reliably captured and transported to market. While production growth is expected to moderate over the next ten years relative to peak historical growth rates, statewide associated gas volumes are projected to remain substantial for the foreseeable future.

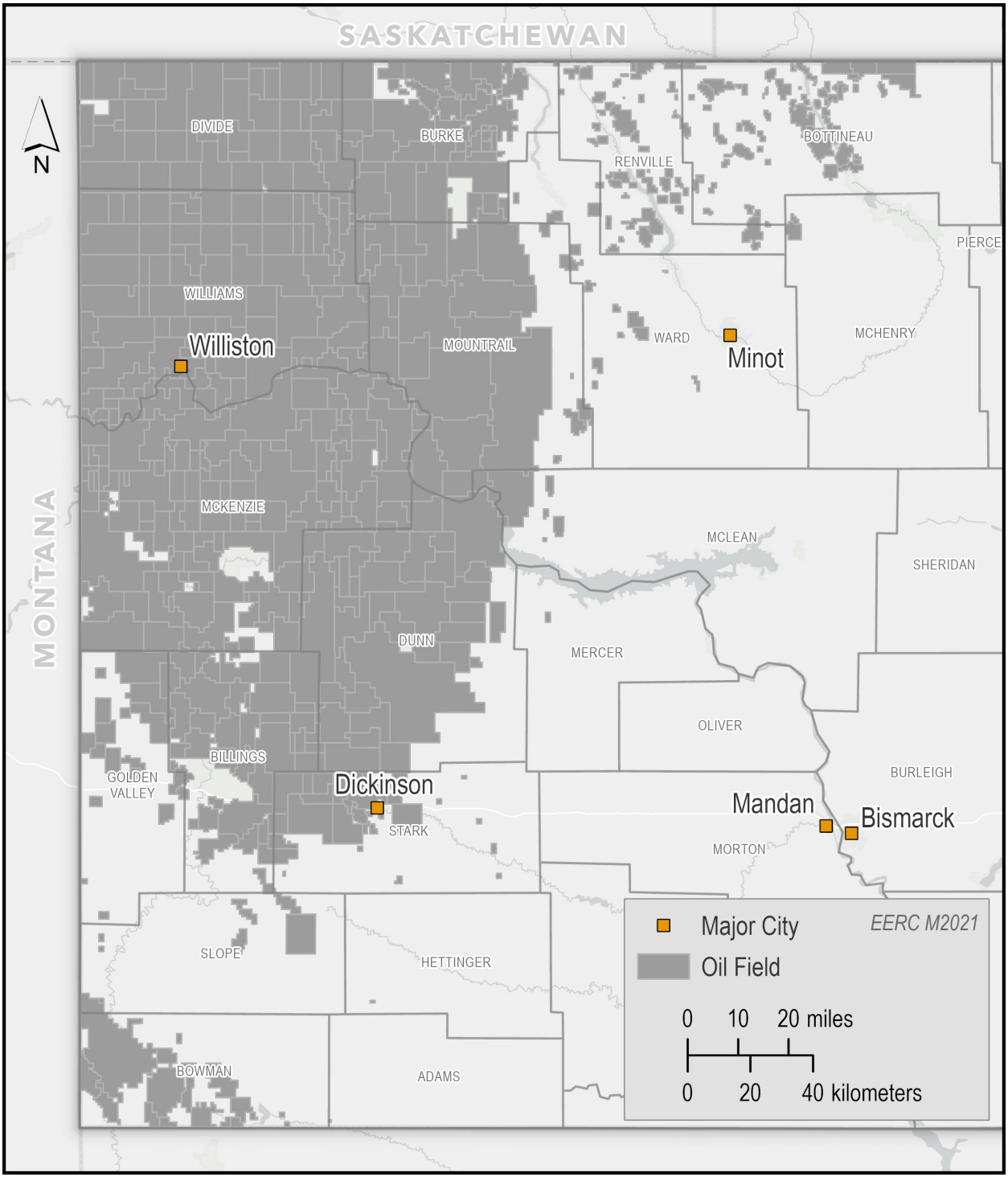

Figure 1. Oil field locations representing the prime areas of oil production in the Williston Basin.

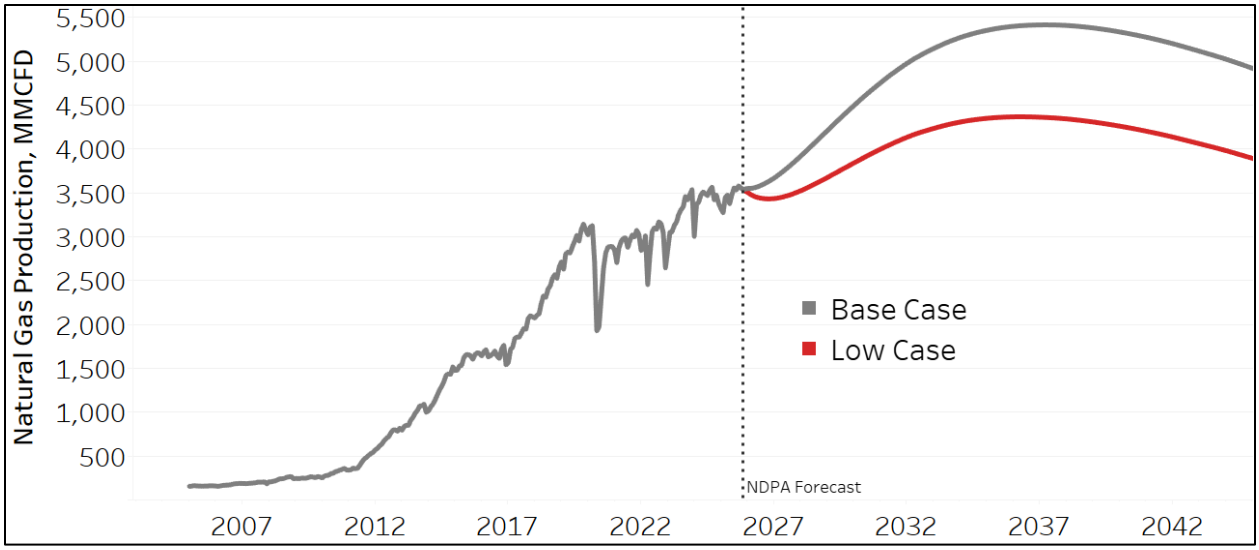

Figure 2. Historical and forecast North Dakota natural gas production (Source: North Dakota Pipeline Authority).

As of June 2025, the natural gas production rate in North Dakota was approximately 3500 million cubic feet per day (MMcfd) and forecasts by the NDPA show peak natural gas production occurring in the mid-2030s at between 4500 and 5500 MMcfd.

3.2 Gathering and Processing Infrastructure

Before entering transmission pipelines, natural gas, specifically rich natural gas, from the wellsite is transported via a gathering pipeline network to several gas plants, where the impurities are removed and the rich gas is fractionated, separating the NGLs from the residue or dry natural gas.

North Dakota's midstream operators have developed approximately 4200 MMcfd or 4.2 billion cubic feet per day (Bcfd) of aggregate gas processing capacity, concentrated in western North Dakota near production areas (Figure 3). This capacity has expanded alongside oil development, growing gas production, and gas capture requirements.

Key points regarding processing infrastructure include:

- Aggregate processing capacity is sufficient to handle current statewide production levels but is insufficient to meet forecast medium- and long-term production growth.
- Processing plants are connected to major interstate transmission pipelines.
- Processing capacity alone does not guarantee market access without downstream transmission capacity for both dry gas and NGLs.

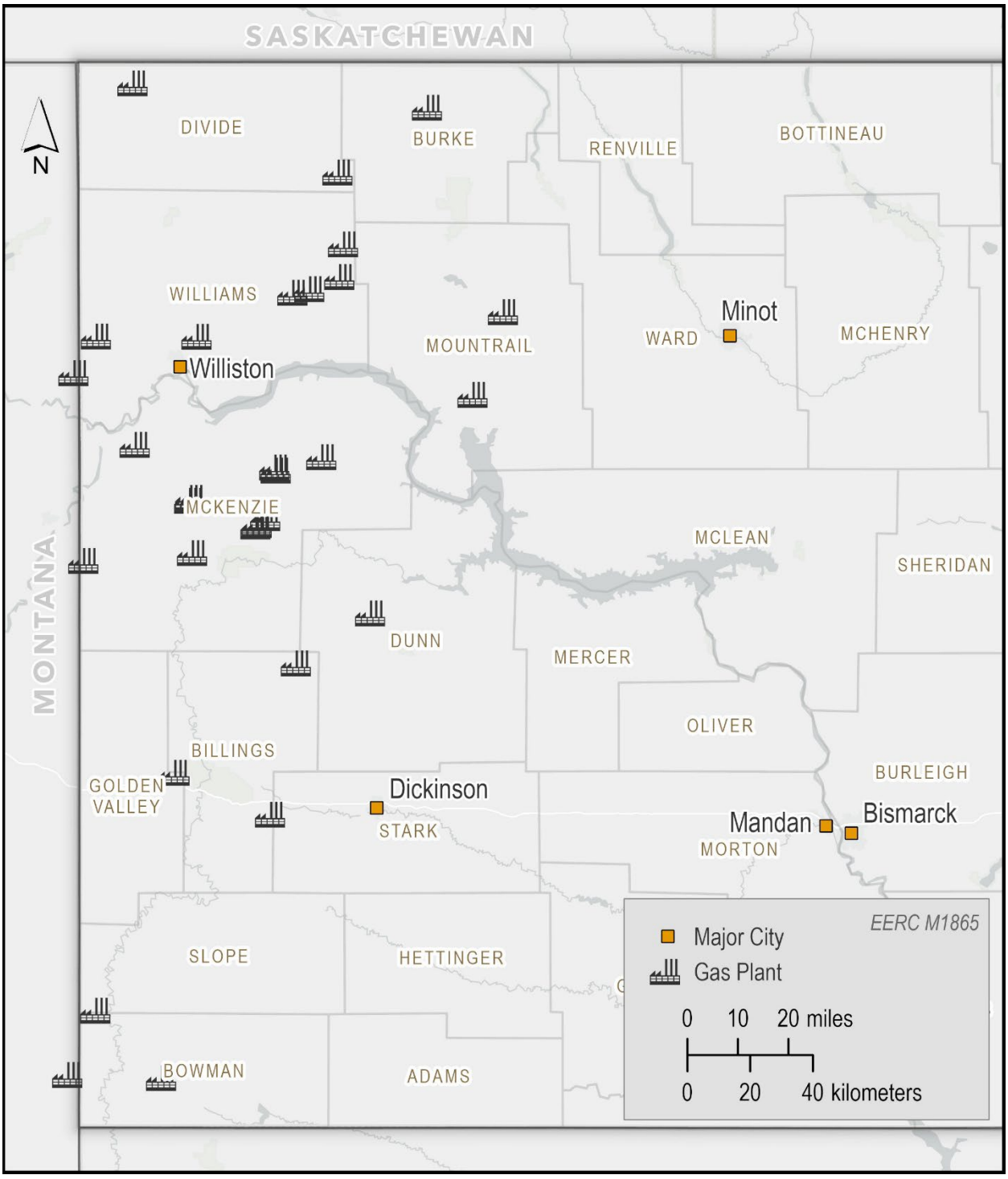

Figure 3. Natural gas processing plants in western North Dakota.

Forecasts of future natural gas production indicate that existing gas processing capacity will become increasingly constrained as associated gas volumes continue to grow (Figure 4). Incremental gas processing expansions of more than 1 Bcfd are forecast to be required over time to accommodate higher inlet volumes, manage richer gas streams, and support compliance with gas capture requirements. Future processing investments will need to be coordinated with downstream transmission and NGL takeaway capacity to ensure that additional processing capacity translates into effective market access.

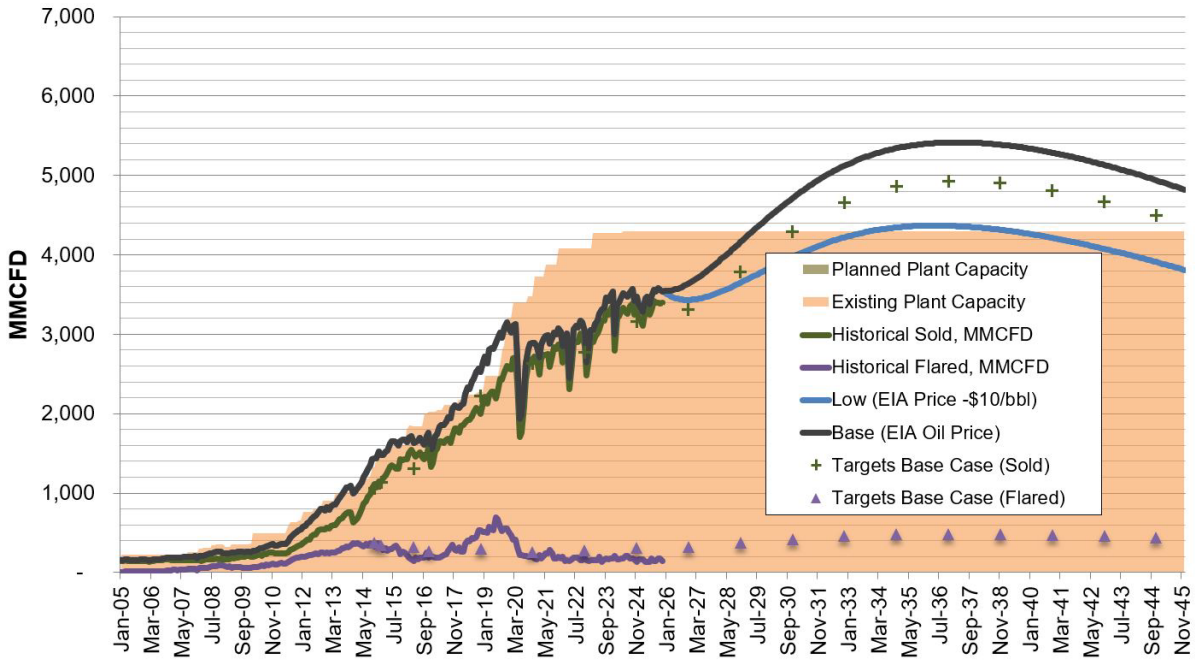

Figure 4. Natural gas production and processing capacity.

3.3 Transmission Pipelines and Transportation

Interstate transmission pipelines transport large volumes of natural gas from western North Dakota to downstream markets (Figure 5). Major systems serving or originating in North Dakota include:

- Northern Border Pipeline – approximately 2.4 Bcfd
- Alliance Pipeline – approximately 1.5 Bcfd
- Bison Pipeline – approximately 0.4 Bcfd, expandable to 1.0 Bcfd
- Viking Gas Transmission – approximately 0.5 Bcfd
- Aux Sable/Prairie Rose interconnect – greater than 120 MMcfd
- Alliance Tioga Lateral – approximately 126 MMcfd
- WBI North Bakken Expansion Project – 250 MMcfd initial, expandable to 600 MMcfd
- WBI Grasslands expansion/reversal – approximately 94 MMcfd
- WBI Southeast North Dakota expansion (Mapleton–Wahpeton) – approximately 20.6 MMcfd

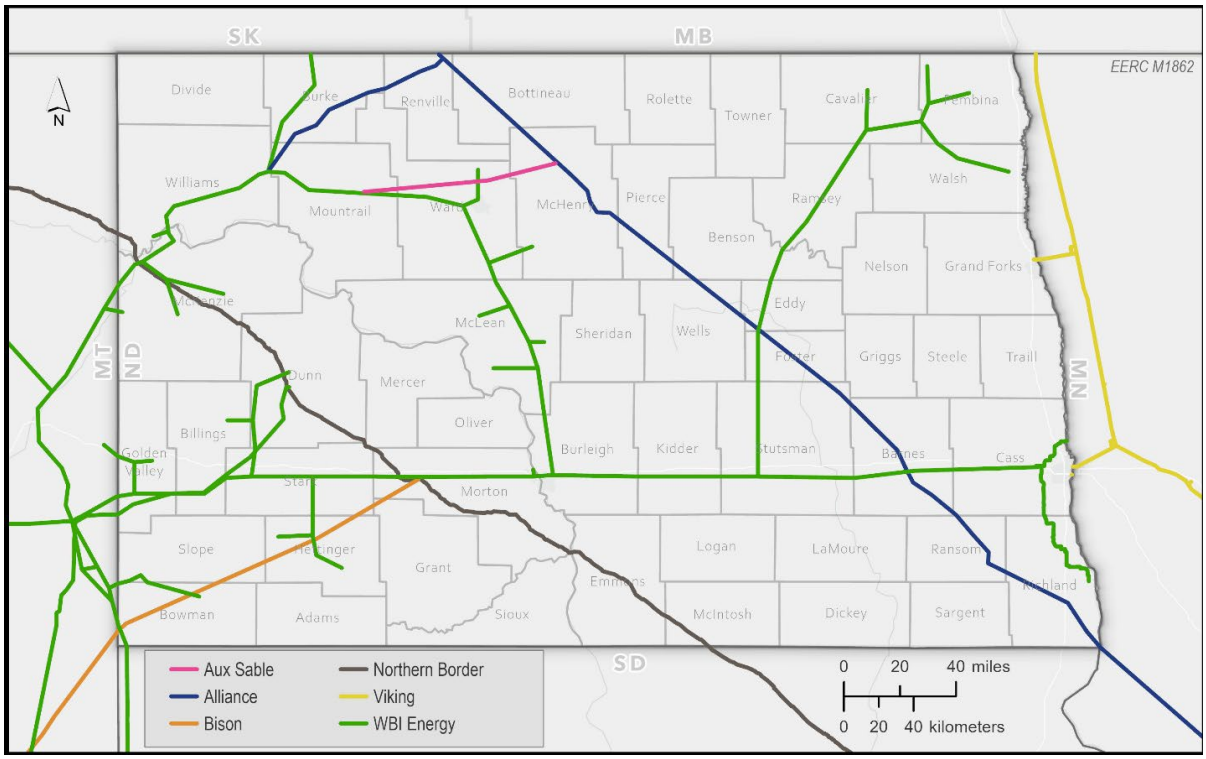

Figure 5. Interstate natural gas transmission pipelines.

These pipelines were developed for specific flow directions and market objectives. Legacy flow orientation and segment-specific constraints limit flexibility without additional infrastructure such as looping, compression, or bidirectional capabilities.

Although statewide transmission capacity exists at the Bcfd scale, capacity is not uniformly accessible across regions. Eastern North Dakota is, for all practical purposes, physically removed from western production corridors and depends on Alberta production delivered via the Viking pipeline in western Minnesota.

3.4 Storage and System Balancing

Natural gas storage plays a critical role in the efficient and reliable operation of the Williston Basin natural gas transportation network. Storage provides both seasonal and operational balancing by allowing gas to be injected during periods of lower demand and withdrawn during peak usage periods, helping to manage short-term variability in production, transportation, and demand.

While North Dakota does not host large in-state underground natural gas storage facilities, WBI Energy's Baker Storage Field in eastern Montana is a critical component of the broader Williston Basin gas system (Figure 6). The Baker Storage Field provides total working gas capacity of 164 billion cubic feet (Bcf). This storage system is directly interconnected with regional transmission infrastructure serving North Dakota production as well as downstream markets.

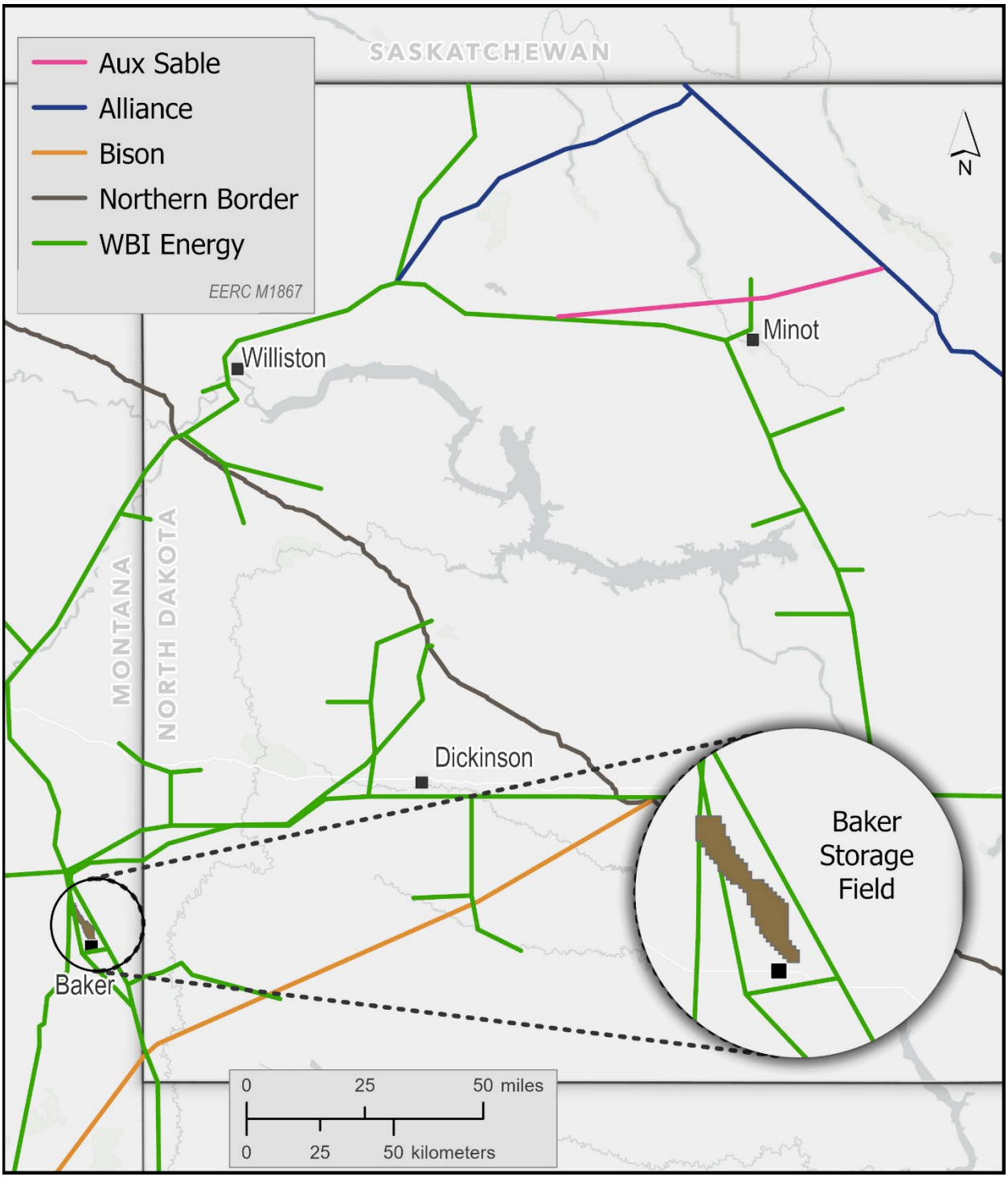

Figure 6. Interstate transmission natural gas pipelines in relation to the Baker Storage Field in eastern Montana.

The WBI Energy storage network supports the Williston Basin system by:

- Providing seasonal balancing for production-driven gas flows.
- Enhancing operational flexibility for interstate and regional transmission pipelines.
- Supporting winter reliability for downstream markets.
- Improving overall system efficiency by smoothing short-term supply and demand mismatches.

From a system perspective, WBI Energy's storage functions as an extension of the Williston Basin gas transportation network rather than a stand-alone regional asset. Its availability reduces stress on transmission infrastructure during peak demand periods and enhances the ability of pipelines and shippers to manage variability inherent in oil-driven associated gas production.

Storage enhances system reliability and efficiency but does not substitute for adequate pipeline deliverability into constrained markets, particularly in eastern North Dakota.

3.5 End Use of Natural Gas

Natural gas consumption in North Dakota includes residential and commercial heating, industrial and agricultural operations, electric power generation, and institutional and public sector facilities (Figure 7). Residential and commercial demand are highly seasonal, with peak consumption occurring during winter months and driven by space-heating requirements, while industrial and power generation demand tends to be more stable throughout the year.

Data from the U.S. Energy Information Administration indicates pronounced seasonal demand swings in North Dakota, with winter consumption levels significantly exceeding summer usage. Figure 8 highlights the seasonal demand swings for non-oilfield and midstream-related consumption. These seasonal patterns place added importance on firm transportation, system balancing, and access to storage to maintain reliable service during peak demand periods, particularly for local distribution companies and large institutional users.

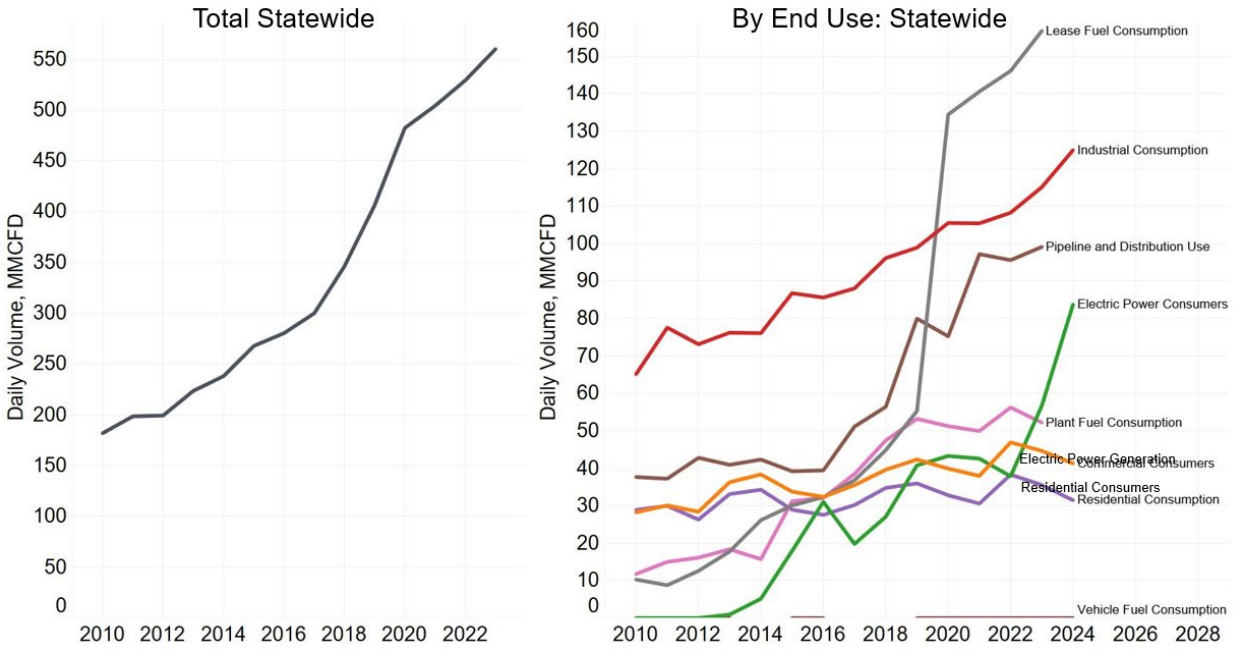

Figure 7. Annual North Dakota natural gas consumption.

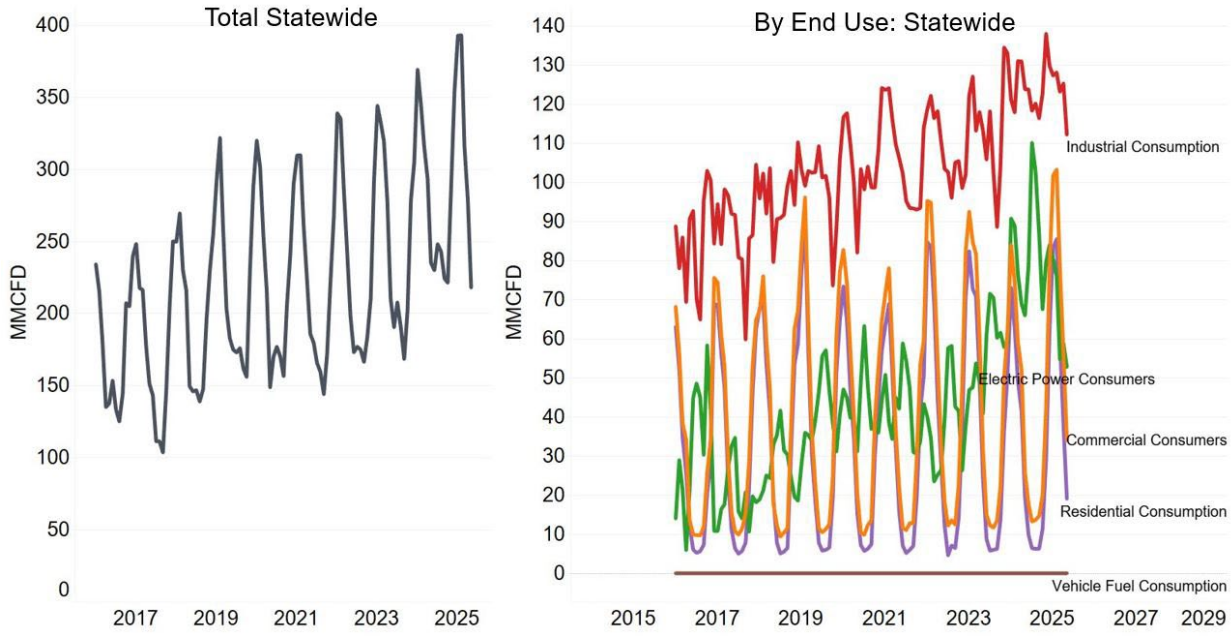

Figure 8. Natural gas consumption with oilfield and midstream consumption removed.

3.6 Geographic Considerations Within North Dakota

North Dakota's natural gas system is characterized by a pronounced geographic imbalance, with upstream production, gathering, processing, and most transmission interconnections concentrated in western North Dakota, while population centers and growing industrial and institutional demand are increasingly located in central and eastern North Dakota. This east–west separation creates structural challenges for the reliable and cost-effective delivery of natural gas to expanding load centers across the state.

Bridging this geographic gap requires long-haul transmission infrastructure. Without new or expanded pipelines, certain regions cannot access additional natural gas regardless of statewide production levels or upstream gas processing capacity.

Historically, eastern North Dakota has relied on natural gas delivered from western Canada through north-to-south-oriented transmission systems. As a result, eastern North Dakota is, for practical purposes, physically removed from Williston Basin production corridors.

Looking forward, the Bakken East Pipeline, which is currently in development, represents a potential structural change to this dynamic. Bakken East is designed to transport Williston Basin-sourced natural gas eastward, creating a new transmission pathway connecting western North Dakota production to eastern North Dakota and downstream markets.

If constructed, Bakken East would provide a direct supply corridor from the Williston Basin to eastern North Dakota, reduce reliance on a single predominant supply direction, improve deliverability and optionality for industrial and institutional demand, and enhance long-term system resiliency and market access.

In addition to Bakken East, Intensity Infrastructure Partners and Rainbow Energy Center are advancing a proposed 36-inch natural gas pipeline with an initial design capacity of approximately 1.1 Bcfd, supported by firm transportation commitments. The project is structured as a scalable, east-leaning system with connections to interstate pipelines, WBI Energy's transmission and storage network, and Bakken gas processing facilities, and it could enhance long-term supply flexibility for power generation and industrial development in central North Dakota.

3.7 Connectivity to External Supply Basins and Market Access

North Dakota benefits from strong interconnection with external supply basins and markets, which enhances supply security and system resiliency for end users. The state is well-connected to Alberta and Western Canadian supply through major interstate transmission pipelines, including the Northern Border Pipeline and the Alliance Pipeline, both of which provide high-capacity, long-haul access to Canadian production and downstream markets.

In addition to north–south connectivity, North Dakota is linked to Rocky Mountain and broader western markets through such systems as the Bison Pipeline and WBI Energy's Grasslands pipeline network. These pipelines provide connectivity to alternative supply basins and market

outlets and could support bidirectional flows for increased flexibility under changing market conditions.

This combination of basin interconnectivity allows natural gas delivered to North Dakota markets to be sourced from multiple regions, including the Williston Basin, Western Canada, and the Rockies. For end users, this diversity of supply pathways enhances reliability, mitigates dependence on any single production area or flow direction, and supports long-term supply security for industrial, institutional, and utility customers.

3.8 Summary

North Dakota produces significant volumes of natural gas and has extensive gathering, processing, and transmission infrastructure. However, access to that gas is constrained by pipeline connectivity, system capacity, and geographic considerations. Parties interested in securing incremental natural gas deliveries should work directly with NDPA and regional pipeline operators to fully understand available expansion options.

4.0 NATURAL GAS PARTICIPANTS AND THEIR ROLES

The natural gas system in North Dakota depends on coordinated actions among multiple participant types. Each participant operates within the constraints of existing infrastructure capacity and market access, shaping how gas is produced, transported, and ultimately used. Natural gas participants along the value chain include producers, midstream companies, transmission pipeline companies, local distribution companies, marketers and shippers, and end users. System capacities, geography, and deliverability constraints shape how decisions are made and where natural gas can ultimately be used.

4.1 Market Participant Interfaces and the Natural Gas Value Chain

The natural gas system in North Dakota functions through a series of interconnected market participants, each performing a distinct role in moving natural gas from production to end use. Rich gas is produced at the wellhead, primarily as associated gas from oil development, and is delivered into gathering systems operated by midstream companies. These gathering systems transport raw gas to processing facilities, where NGLs and impurities are removed and pipeline-quality gas is produced.

Once processed, natural gas enters high-pressure transmission pipelines operated by interstate or intrastate pipeline companies. Transportation on these systems is governed by contractual arrangements held by shippers or marketers, who manage supply portfolios and capacity rights on behalf of producers, utilities, and large end users. Local distribution companies then receive gas at designated interconnection points and deliver it through lower-pressure distribution systems to residential, commercial, and smaller industrial customers.

At each stage, physical infrastructure and commercial arrangements must align. Producers, midstream operators, pipelines, marketers, utilities, and end users interface through contracts,

tariffs, and operational coordination to ensure that gas flows reliably from the wellhead to the burner tip. Disruptions or constraints at any point in this chain—whether gathering, processing, transmission, or local delivery—can affect downstream availability, underscoring the importance of integrated system planning.

4.2 Producers

Nearly all of North Dakota's natural gas is produced as associated gas from oil development in the Bakken and Three Forks formations. Because most natural gas production in North Dakota is associated with oil, producer drilling programs and GOR trends are primary drivers of statewide gas volumes. In other words, changes in natural gas production volumes are not a direct result of market signals for natural gas demand.

Major producers active in North Dakota at the time of this work include companies such as Chord Energy, Continental Resources, Chevron, ConocoPhillips, Devon, and dozens of smaller operators. These producers rely on midstream gathering and processing infrastructure to capture, process, and transport natural gas and NGLs to market.

Producer considerations include availability of gathering systems, access to gas processing capacity, and connectivity to interstate pipeline takeaway. Constraints at any of these stages can affect the ability to fully market associated gas production.

4.3 Midstream Companies

Midstream companies operate gathering and processing systems designed to handle associated natural gas production. Their assets include low- and high-pressure gathering pipelines, compressor stations, gas processing plants, and interconnections to interstate transmission systems.

Major gathering and processing operators active in North Dakota at the time of this work include ONEOK, Hess Midstream, Kinder Morgan, and Energy Transfer Partners. These companies have invested in significant gas processing capacity—approximately 4.2 Bcfd statewide—to support production growth and gas capture requirements.

Midstream investment decisions are driven by expected production volumes, long-term commitments from producers, and connectivity to downstream transmission pipelines with sufficient capacity. While gathering and processing capacity may be expanded incrementally, downstream transmission constraints can limit the effectiveness of new midstream infrastructure unless coordinated expansions occur across the value chain.

4.4 Transmission Pipeline Companies

Transmission pipeline companies operate higher-pressure, large-diameter systems that move natural gas from the tailgate of processing plants to downstream markets. These systems typically have capacities measured in hundreds of MMcfd to multiple Bcfd and are capital-intensive, long-lived assets.

Major interstate transmission systems serving North Dakota include the Northern Border Pipeline, several WBI Energy pipelines, Alliance Pipeline, Bison Pipeline, and Viking Gas Transmission. WBI Energy operates a regional transmission system that connects production areas in western North Dakota to interstate markets and provides service to major communities and end users throughout a five-state area. A map of the major transmission pipeline systems in North Dakota can be seen in Figure 5.

Pipeline development and expansion efforts rely on long-term shipper commitments and incremental capacity additions through looping, compression, or new laterals. Although aggregate system capacity across North Dakota is substantial, the availability of deliverable capacity to a specific location depends on segment-level constraints, contracted volumes, and interconnection design.

4.5 Local Distribution Companies

Local distribution companies (LDCs) deliver natural gas to residential, commercial, and smaller industrial customers and serve as the final link between transmission infrastructure and end users. In North Dakota, LDCs are responsible for managing city gate interconnections, operating distribution networks, and ensuring reliable service, particularly during peak winter demand periods.

The primary LDCs serving North Dakota at the time of this work include Montana-Dakota Utilities, Xcel Energy, and Dakota Natural Gas.

4.6 Marketers and Shippers

Marketers and shippers manage contractual access to pipeline capacity and supply portfolios. They hold firm or interruptible transportation rights on one or more transmission pipelines and allocate natural gas volumes across markets in accordance with commercial agreements and tariff provisions. While shippers control contractual capacity, they do not create additional physical pipeline capacity where none exists.

Shippers on interstate and intrastate transmission systems in North Dakota fall into several categories:

- Marketers and trading companies – Aggregate supply and transportation capacity, manage portfolio risk, and transact gas between producers and end users.
- LDCs – Secure firm transportation and upstream supply to serve residential, commercial, and typically smaller industrial customers within their service territories.
- Industrial end users – Large manufacturing, processing, or agricultural facilities that contract directly for firm transportation and supply to support operational reliability.
- Commercial and institutional customers – Universities, hospitals, and large commercial operations that may hold direct transportation contracts or rely on LDC arrangements.

- Electric power generation – Power plants that secure transportation capacity to ensure fuel availability for baseload or peaking generation.

Each shipper category has different risk tolerances, load characteristics, and contractual structures. LDCs and power generators often require firm, peak-day deliverability, while marketers and some industrial users may balance firm and interruptible service based on price and operational flexibility. The mix of shipper types on a pipeline influence how capacity is allocated, expanded, and utilized.

4.7 End Users

End users represent the final point of natural gas consumption and ultimately drive long-term infrastructure development. In North Dakota, end use demand spans several major categories, each with distinct load characteristics, reliability requirements, and contractual arrangements.

Major end user categories include:

- Residential customers – Primarily space-heating demand served through local distribution companies. Load is highly seasonal, with significant winter peak requirements.

- Commercial customers – Retail, office, healthcare, and service sector facilities that typically rely on LDC-delivered gas and exhibit winter-driven seasonal demand.

- Industrial users – Manufacturing plants, agricultural processors, food processors, and other energy-intensive operations. Industrial demand may be steady year-round and often requires firm transportation service for operational reliability.

- Institutional and public sector facilities – Universities, hospitals, and public buildings that may contract directly for natural gas supply or rely on LDC service, depending on size and configuration.

- Electric power generators – natural gas-fired power plants that use gas as a primary fuel source for baseload, intermediate, or peaking generation. Power sector demand may fluctuate based on electricity market conditions, weather, and renewable generation output.

- Large industrial and power-generation users may contract directly for interstate or intrastate transportation service, while smaller customers are typically served through LDC distribution systems. Regardless of structure, the ability of end users to expand operations or site new facilities is directly dependent on available upstream transmission capacity and deliverability at specific interconnection points.

End user demand profiles, particularly winter-driven residential peaks and high-load industrial or power generation requirements, are a primary driver of firm transportation contracting and infrastructure expansion decisions across the natural gas value chain.

4.8 Public Sector Participants

In North Dakota, the NDPA supports the development of natural gas infrastructure by identifying capacity constraints, coordinating stakeholders, and providing planning and analytical support. To advance pipeline development, the NDPA is authorized to provide financial assistance, including grants and loans; borrow funds; issue up to $800 million in revenue bonds; enter into lease-purchase or lease-sale agreements; acquire, hold, lease, or dispose of pipeline facilities or capacity rights within or outside the state; and contract for the construction, operation, and maintenance of pipeline infrastructure.

4.9 Regulatory Oversight and Jurisdiction

Natural gas infrastructure in North Dakota is regulated at both the state and federal levels, depending on whether facilities operate on an intrastate or interstate basis. Regulatory jurisdiction affects permitting requirements, project timelines, and the applicable approval process.

4.9.1 State Jurisdiction – Intrastate Facilities

The North Dakota Public Service Commission (NDPSC) has regulatory authority over intrastate natural gas pipelines and distribution systems located entirely within North Dakota. This includes oversight of pipeline siting, construction, and operation, as well as regulation of natural gas utilities providing service within the state. For intrastate projects, the NDPSC serves as the primary regulatory authority and administers state-level permitting, safety oversight, and utility regulation.

4.9.2 State Jurisdiction – Gathering Pipeline Facilities

The North Dakota Department of Mineral Resources (DMR), through its Oil and Gas Division, is responsible for oversight of gathering pipelines within the state. Under state law and administrative rules, DMR oversees the construction, operation, maintenance, and abandonment of underground gathering systems that transport crude oil, produced water, or natural gas from production facilities for disposal, storage, or sale. Pipeline operators are required to submit organizational and construction notifications, including design specifications and integrity testing plans, to the Oil and Gas Division prior to installation.

4.9.3 Federal Jurisdiction – Interstate Facilities

The Federal Energy Regulatory Commission (FERC) regulates interstate natural gas pipelines that transport gas across state boundaries. FERC jurisdiction includes approval of pipeline construction and expansion, regulation of interstate transportation rates and tariffs, and oversight of capacity allocation and open-access service.

Interstate pipeline projects typically require a Certificate of Public Convenience and Necessity under the Natural Gas Act and are subject to federal environmental review and tariff-based regulation.

4.9.4 Federal Jurisdiction – Pipeline Safety

Pipeline safety oversight is provided at the federal level by the Pipeline and Hazardous Materials Safety Administration, which establishes and enforces national pipeline safety standards covering the design, construction, operation, and maintenance of natural gas gathering, transmission, and distribution systems. In North Dakota, pipeline safety regulation is implemented through a combination of federal authority and state pipeline safety programs.

5.0 NATURAL GAS DEMAND CASE STUDY IN NORTHEASTERN NORTH DAKOTA

A case study was conducted to understand current and potential natural gas demand and viability for natural gas delivery in northeastern North Dakota. The Red River Valley currently lacks a high-capacity natural gas transmission line delivering supply directly from western North Dakota. As a result, the region relies almost exclusively on Canadian-sourced natural gas delivered through the TransCanada mainline at Emerson, Manitoba and transported southbound on the Viking Gas Transmission system (Figure 9).

Physical flows into Grand Forks are predominantly southbound from the Emerson Hub in Manitoba. While some transportation contracts allow for limited displacement backhaul from downstream markets, these arrangements provide contractual flexibility only and do not alter the underlying physical flow patterns.

Today, the Grand Forks and East Grand Forks markets are served by two 6-inch natural gas transmission pipelines shown in Figure 9 as a single lateral from the Viking pipeline. Firm contracted transportation volumes on Viking into these markets total approximately 57,000 Mcfd, illustrating the scale of existing base-load demand already utilizing the available infrastructure. When describing natural gas volume flows in this section, the authors are using the units Mcfd and Dth/d are used interchangeably. At a heat content of 1,000 Btu/cf, 1 Mcf is equal to 1 Dth.

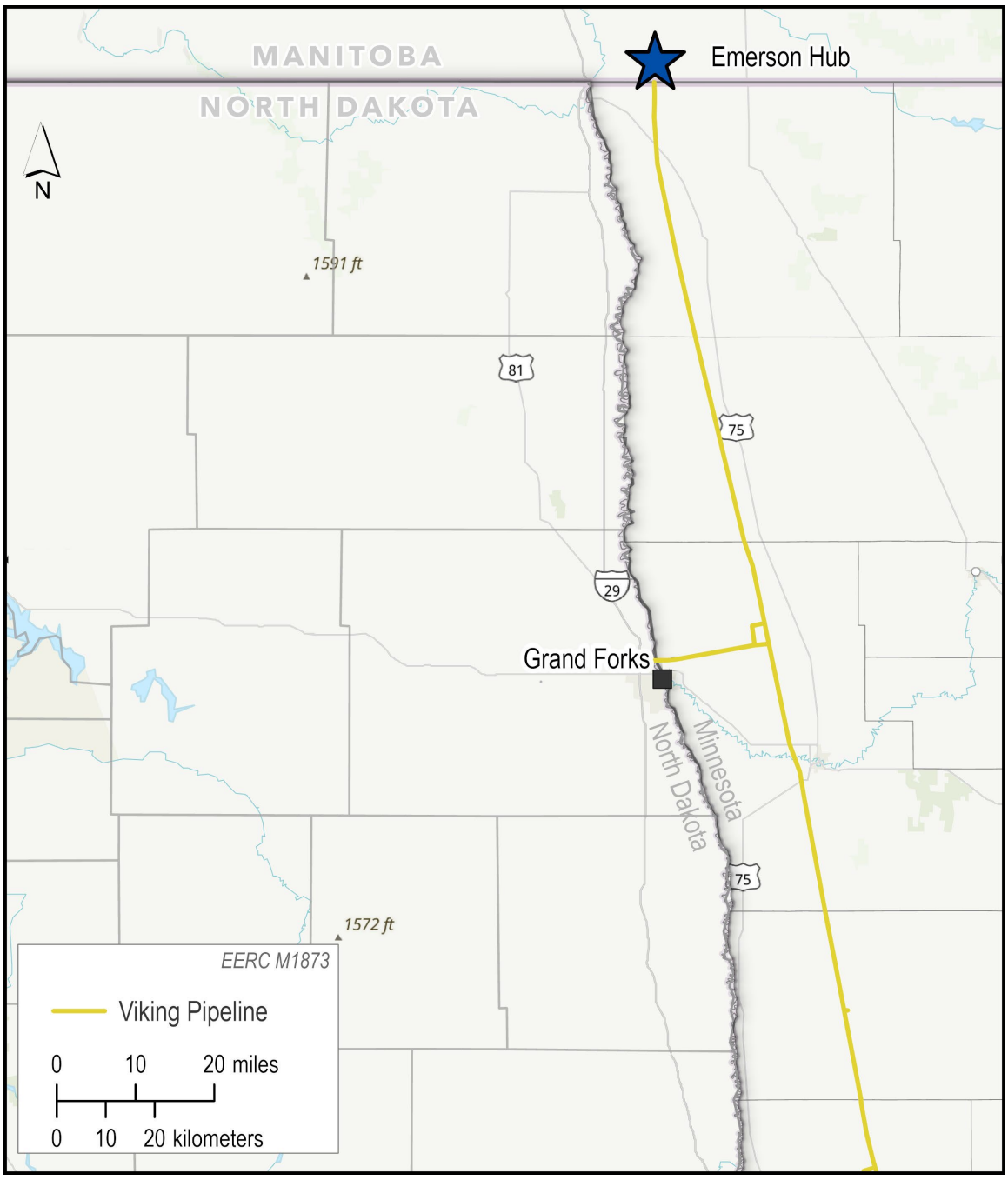

Figure 9. Viking pipeline with the Emerson Hub highlighted.

5.1 Natural Gas Demand Opportunities

The northeast part of North Dakota represents a significant population area of the state with strong economic development. As such, demand for natural gas has increased to support regional and prospective activity in proximity to Grand Forks, the third-largest city in North Dakota, with a population of over 55,000 and a metropolitan statistical area population of approximately 104,000 (Figure 10). Grand Forks local stakeholders have expressed interest and foresee an increase in natural gas demand to support regional economic activity in the Grand Forks and surrounding communities. One promising option to meet this demand growth is transporting natural gas from western North Dakota via the Bakken East pipeline.

Natural gas demand opportunities within the case study region were identified, in coordination with Grand Forks region stakeholders and the NDPA. These were parsed into three categories:

- **Category 1:** current natural gas demand
- **Category 2:** known future demand
- **Category 3:** hypothetical future demand

5.1.1 Category 1: Current Natural Gas Demand

In Category 1 (Table 1), the total natural gas usage from current customers in the case study region is reflected from what is delivered from the Viking pipeline, at 57,000 Dth/d (57,000 Mcfd). The largest current natural gas customers are residential and commercial users from the greater Grand Forks and East Grand Forks communities supplied from Northern States Power (NSP). The next largest natural gas users are the University of North Dakota, American Crystal Sugar in East Grand Forks, and the JR Simplot Grand Forks agribusiness facility. Finally, Dakota Natural Gas provides natural gas services to rural communities surrounding Grand Forks, Emerado, and Arvilla.

Table 1. Category 1: Current Natural Gas Consumers

Description	Natural Gas Usage, Dth/d[a]
NSP – Grand Forks	36,788
NSP – East Grand Forks	5,670
University of North Dakota – Grand Forks	6,000
American Crystal Sugar – East Grand Forks	4,680
JR Simplot – Grand Forks	3,500
Dakota Natural Gas – Grand Forks, Emerado, and Arvilla	500
Total	**57,138**

[a] 1 Dth/d ≈ 1 Mcfd.

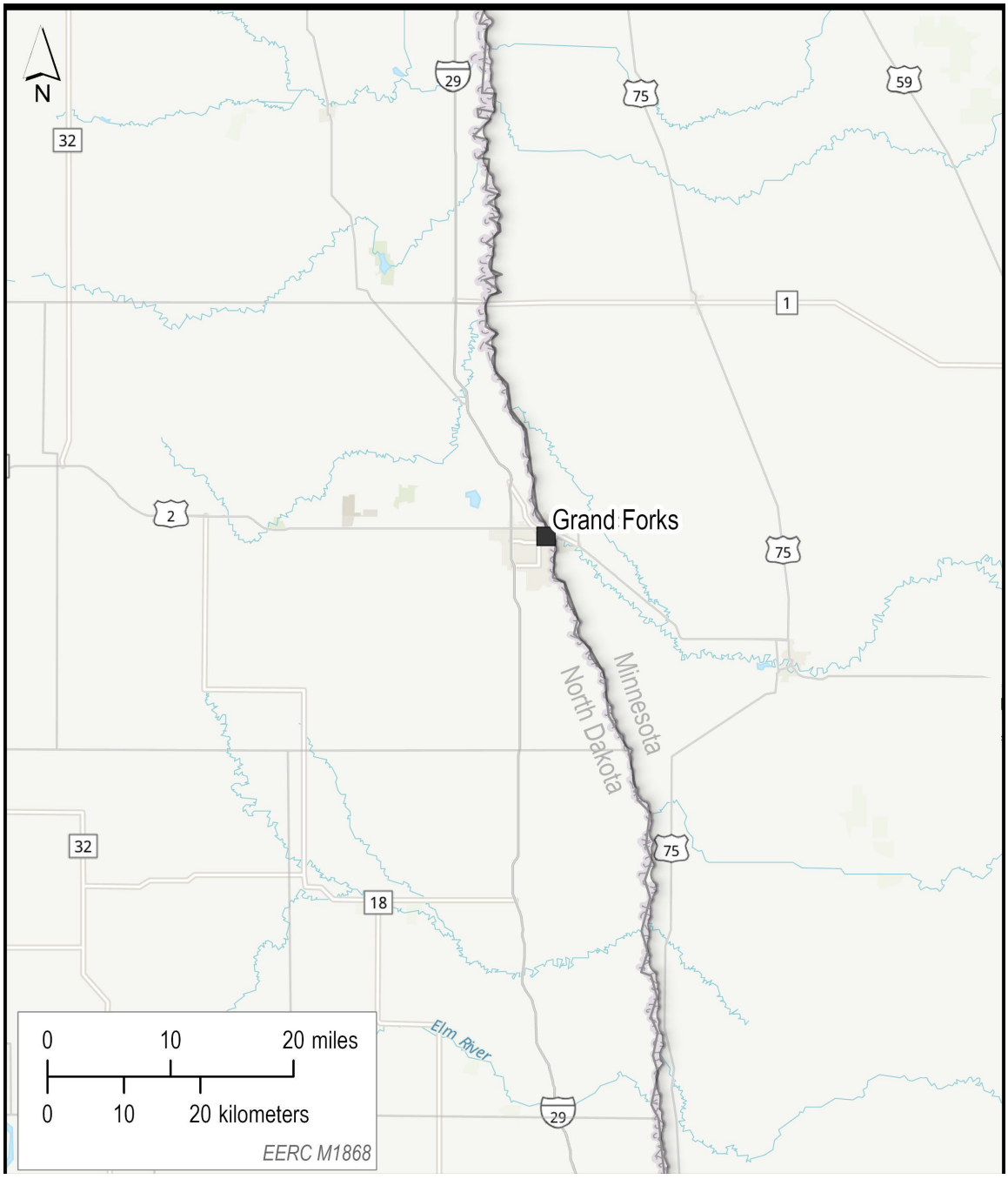

Figure 10. Natural gas demand assessment case study region in northeastern North Dakota.

5.1.2 Category 2: Known Future Natural Gas Demand

Category 2 entails a variety of industries that are either currently being constructed or are formally planned soon (Table 2). The natural gas usage for known future usage will be greater than 78,000 Dth/d (78,000 Mcfd). The major natural gas demand associated with future Minnkota and Xcel power generation facilities are currently unknown but are anticipated to require a substantial amount of natural gas to provide heat and electrical demand for the plants.

Table 2. Category 2: Known Future Natural Gas Consumers

Description	Forecast Natural Gas Usage, Dth/d[a]
Agristo	15,000
Northern Plains Nitrogen	60,000
Epitome Energy	3,200
Total (estimated)	**>78,000**

[a] 1 Dth/d ≈ 1 Mcfd.

The Northern Plains Nitrogen (NPN) plant is a major industrial project taking shape in Grand Forks, and its development is expected to have significant economic impact across the Red River Valley region. NPN will require natural gas usage at 60,000 Dth/d (60,000 Mcfd). NPN, a company backed by regional cooperatives, investors, and industry veterans, has plans to build a world-scale ammonia production facility just outside Grand Forks. Situated near abundant natural gas resources and already equipped with rail infrastructure, this site could soon become one of the most strategically important fertilizer hubs in the Upper Midwest.[2] As of June 2025, NPN has secured all key permits, finalized site plans, and is actively advancing offtake and natural gas supply agreements for its $2.2 billion nitrogen fertilizer facility. Assuming key financing milestones are met, the plant would be on track for production startup in 2030.

Agristo is a 350-acre, $450-million potato processing facility currently under construction. This facility would require natural gas usage at 15,000 Dth/d (15,000 Mcfd). Grand Forks city officials have called it the biggest agricultural processing investment in Grand Forks for more than 50 years.[3] Company officials expect to begin production trials in June 2027 and to be fully operational by 2028. When completed, Agristo is expected to bring around 300 jobs to the area and will process some 275,000 tons of potatoes annually[3].

The Epitome facility is estimated to require 3200 Dth/d (3200 Mcfd) of natural gas to process 42 million bushels of soybeans a year into soybean oil, meal, and hulls. The facility will keep more of the soybean processing from northeast North Dakota and northwest Minnesota in the region instead of it being hauled long distances for processing.[4]

[2] https://www.linkedin.com/pulse/north-dakotas-fertilizer-future-how-npns-grand-forks-plant-snyder-ez0yc/
[3] https://www.grandforksherald.com/business/grand-forks-area-farmers-excited-for-agristo-to-put-a-spark-back-in-potato-business
[4] www.grandforksherald.com/news/local/epitome-energy-sets-sights-on-2025-soybean-crush-plant-construction

5.1.3 Category 3: Hypothetical Future Natural Gas Demand

For Category 3, hypothetical future users entail facilities that are 1) existing and are using other fuels but could convert to natural gas, 2) infrastructure in development with potential to use natural gas for operations, and 3) proposed development that have potential for expansion and natural gas use. Table 3 summarizes the scenarios of the hypothetical users of natural gas within the study region along with a forecast estimate of natural gas demand to operate facilities. In total, the forecast natural gas usage for all current hypothetical natural gas users in the case study is greater than 690,000 Dth/d (690,000 Mcfd).

Table 3. Category 3: Hypothetical Future Natural Gas Consumers and Scenarios

Description	Forecast Natural Gas Usage, Dth/d[a]	Scenario
Crystal Sugar – East Grand Forks	520	Convert from coal to natural gas for processing beets
Crystal Sugar – Crookston	450	Convert from coal to natural gas for processing beets
Crystal Sugar – Hillsboro	750	Convert from coal to natural gas for processing beets
Crystal Sugar – Drayton	370	Convert from coal to natural gas for processing beets
Core Scientific Data Center	28,500	If facility power generated by natural gas turbines
Large-Load Data Centers	660,000	If facility power generated by natural gas turbines
Total (estimated)	**>690,000**	

[a] 1 Dth/d ≈ 1 Mcfd.

The existing American Crystal Sugar (ACS) facilities located in East Grand Forks, Crookston, Hillsboro, and Drayton, are currently using coal as a fuel for sugar beet process operations. Energy demand for natural gas was calculated for these industries, based on converting to natural gas from their current coal-fired energy source. Each facility was on the same order of magnitude of required natural gas usage. The ACS facilities are forecast to require an operational natural gas usage range between ~ 370–750 Dth/d by switching to natural gas.

The Core Scientific Data Center, established in 2021, spans 20 acres with a substantial 90,000 square feet under roof.[5] Designed for efficiency and high performance, it boasts an energized capacity of 100 megawatts (MW), matching its total available capacity to ensure consistent operational excellence. With its current demand, if the data center were to switch to natural gas, a turbine would require a daily power demand equivalent to 150 MW, necessitating natural gas usage at approximately 28,500 Dth/d (28,500 Mcfd).

[5] www.datacentermap.com/usa/north-dakota/grand-forks/core-scientific-grand-forks/

Data center development and prospective large load data centers have the potential to use natural gas for generating electricity to satisfy their required power. Data center developers have expressed interest in developing facilities in the Grand Forks area. It is estimated that if these data centers were to generate electricity by natural gas turbines, the new natural gas demand would be approximately 660,000 Dth/d (660,000 Mcfd).

Other notable activities identified during this study include two Department of Defense (DOD) missions that will involve the Grand Forks Air Force base and Grand Sky operations, and, although the potential natural gas demand was not quantified for this study, they have the potential to create significant demand for data center computing power (and in turn natural gas demand). Specifically, the Space Development Agency, part of the U.S Space Force, is deploying a constellation of hundreds of low-orbit satellites and the DOD Test Resource Management Center operates a high-altitude flight test system for unmanned aircraft. Both examples will generate significant quantities of sensor and communications data, representing existing and growing demand for high performance computing power.

5.2 Market Signals and Supply Evolution

Grand Forks and the surrounding Red River Valley region in northeastern North Dakota are projected to have sufficient natural gas demand within the next several years to potentially capitalize on natural gas infrastructure development opportunities for industrial, commercial, and residential end users. Under a scenario in which current, known future, and hypothetical large-load developments proceed, natural gas demand within the case study region could exceed 800,000 Dth/d (800,000 Mcfd). Within the foreseeable future, the demand for natural gas is expected to substantially increase making a strong case to support a long-term natural gas supply option of natural gas delivery to the case study region prudent.

5.2.1 Near-Term Market Activity: Viking Grand Forks Open Season (2025)

On November 3, 2025, Viking Gas Transmission launched a Binding Open Season to solicit shipper commitments for up to 15,000 Dth/d of new firm capacity from Emerson to Grand Forks. The proposal includes looping existing sections of the Grand Forks lateral. Bidding concluded on December 5, 2025, with a proposed rate of $1.51 per Dth/d for a 10-year term.

This project represents the most practical near-term opportunity to add physical capacity into the Grand Forks market and is best viewed as a bridge solution while longer-term infrastructure options are developed.

5.2.2 Long-Term Supply Evolution: Bakken East as a Strategic Pivot

Beginning in late 2030, the Bakken East pipeline is expected to introduce a second, regionally sourced supply basin into eastern North Dakota. This new pipeline will deliver Bakken-sourced natural gas eastward, supplementing the long-standing Canadian supply available through Emerson.

With Bakken East in service, the Red River Valley would then have access to two independent, competitive natural gas supply basins. This long-term structural change strengthens energy security, enhances pricing competition, and materially improves the region's attractiveness for large-scale industrial development.

5.2.3 Expansion Options Overview

There are several expansion options and routes that would allow natural gas delivery within the case study region to become viable (Table 4). These include:

- A Bakken East Pipeline Extension (Mapleton → Grand Forks): A large-scale pipeline extension delivering Bakken supply to the region.
- Viking Pipeline Backhaul (Felton, Minnesota): A contractual displacement option that does not alter physical flows.
- Emerson Expansion (TransCanada → Viking or Third-Party → Grand Forks): Potential future system upgrades or a new third-party pipeline.
- Minot Industrial Pipeline Extension (Highway 2 Corridor): A long-distance, high capital extension of WBI's Tioga–Minot system.
- Viking Grand Forks Loop / Pipe Expansion (~14 miles): A near-term physical expansion aligned with the 2025 Open Season.
- Alliance Pipeline Lateral (Highway 2 → Grand Forks): Technically feasible but challenged by distance, capital requirements, and gas quality.

Table 4. Projected Natural Gas Estimates for Case Study to Become Commercially Viable

Option	Estimated Minimum Project Volumes of Needed Natural Gas, MMcfd	Capital Intensity
Bakken East Pipeline Extension	150–175	High
Viking Pipeline Backhaul	70	Low–Moderate
Emerson Expansion	70	Moderate
Minot Industrial Pipeline Extension	400	Very High
Viking Grand Forks Loop/ Pipe Expansion	Up to 70	Low
Alliance Pipeline Lateral	200	High

5.2.4 Commercial and Pricing Framework

All major expansion pathways require one or more anchor shippers willing to make long-term binding commitments, typically 10 or more years. Viking's 2025 Open Season explicitly requires executed precedent agreements and awards capacity based on highest net present value. Without anchor shipper support, neither incremental nor large-scale expansion projects will proceed.

Delivered gas economics will depend on supply source, pipeline tolls, and contract structure. Key considerations include Emerson index pricing and Viking expansion rates for Canadian-sourced gas, as well as WBI system pricing and Bakken East tariffs for Bakken-sourced gas. These pricing dynamics will be central to anchor shipper decision making.

5.3 Natural Gas Demand Case Study Summary

Over 800,000 Dth/d (800,000 Mcfd) of natural gas demand is possible under a full build-out scenario that includes existing, known future, and hypothetical users. This assumes all existing, known future, and hypothetical users are in demand of the natural gas and will move forward in project development and infrastructure that require natural gas.

Grand Forks and the broader Red River Valley are well positioned, with multiple viable pathways to expand natural gas availability. Viking-based solutions provide near-term, incremental capacity, while Bakken East represents a strategic long-term pivot that fundamentally changes supply optionality for eastern North Dakota. A coordinated commercial strategy—centered on anchor shipper engagement and long-term pricing competitiveness—will determine the most effective path forward.

Grand Forks stakeholders have evaluated multiple infrastructure pathways to increase natural gas availability for commercial and industrial development in the case study region. These pathways include 1) an extension of the Bakken East pipeline, 2) a Viking backhaul solution, 3) an Emerson-to-Grand Forks expansion through Viking, 4) a Minot Industrial Pipeline extension, 5) a

Viking loop or pipe expansion of approximately 14 miles from the Viking mainline to Grand Forks as contemplated in the November 2025 Binding Open Season, and 6) a potential lateral from the Alliance Pipeline along Highway 2 into Grand Forks.

Recent market activity demonstrates strong developer interest in serving the region. The 2025 Viking Binding Open Season confirms that incremental volumes—up to approximately 15,000 Dth/d—can be added in the near term through modest looping. Larger-scale solutions will require anchor shipper commitments and longer development timelines.

Looking forward, the WBI Energy Bakken East pipeline—expected to be placed into service in late 2030—represents a strategic, long-term pivot for eastern North Dakota supply. When combined with legacy Emerson-based Canadian gas, Grand Forks and the Red River Valley will be uniquely positioned between two independent, low-cost supply basins. This dual-supply structure enhances long-term competitiveness, improves supply redundancy, and strengthens the region's ability to attract major commercial and industrial development.

6.0 SUMMARY AND CONCLUSIONS

Natural gas availability in North Dakota reflects the interaction of participants operating within the limits of existing infrastructure. System capacities, geography, and deliverability constraints shape how decisions are made and where gas can ultimately be used.

Historically, natural gas produced in the Williston Basin has been considered a secondary product of the oil production from the Bakken formation, evidenced by the label "associated gas" used to describe the rich gas at the wellhead. Although the natural gas produced was of a lesser economic value than oil, over time an entire network of infrastructure has been developed to gather, process, and market the natural gas and mitigate excessive flaring.

As oil production continues and reservoir pressure drops, more dissolved gas comes out of solution per barrel, so the GOR in individual wells and the Williston Basin in aggregate tends to increase. This increasing GOR has been documented and is forecasted to continue.

The combination of increasing GORs and continued oil production should result in abundant statewide natural gas supply in the near term, although deliverability to specific regions will continue to depend on transmission pipeline infrastructure. New natural gas demand from areas of North Dakota outside the Williston Basin or from within the Basin (e.g., enhanced oil recovery) could exceed supply, warranting additional study and monitoring by NDPA and others to assure strategic planning is done.