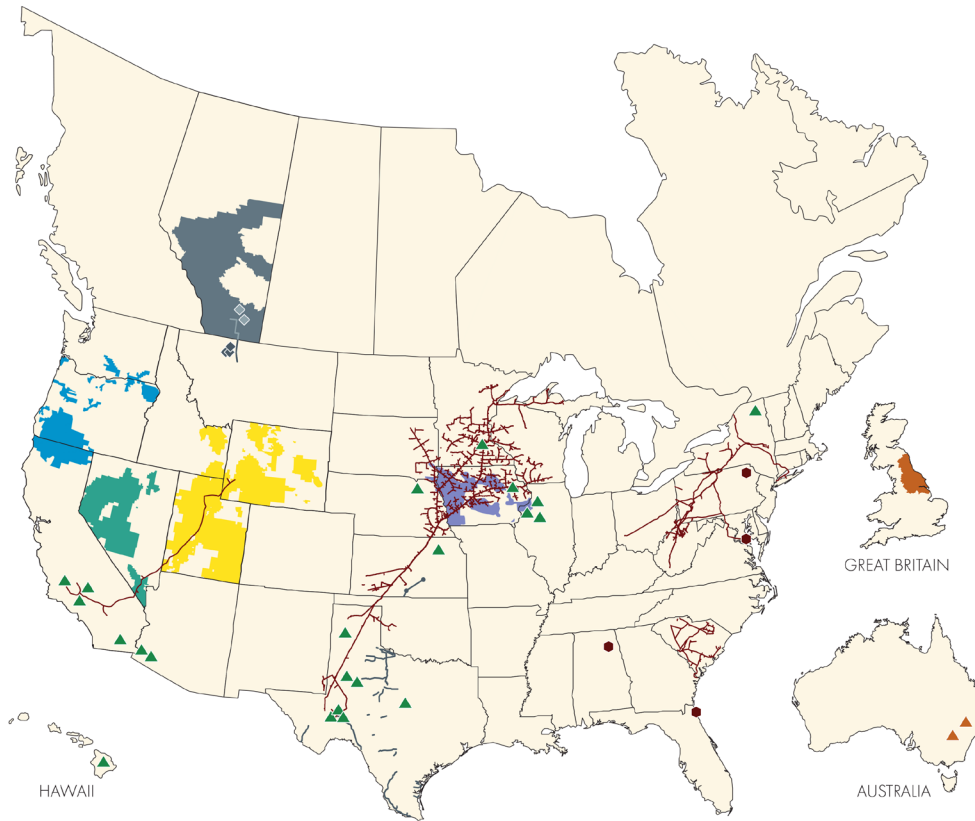




# **2023 Winter Forum Nashville, Tennessee**

**September 21, 2023**

# Berkshire Hathaway Energy



- 12 million customers and end-users
- Top-rated service provider within the industry



- OSHA recordable incident rate of 0.38



- 45% renewable/noncarbon generation



- 35% below national average prices at MidAmerican Energy
- 29% below national average prices at PacifiCorp
- 23% below national average prices at NV Energy

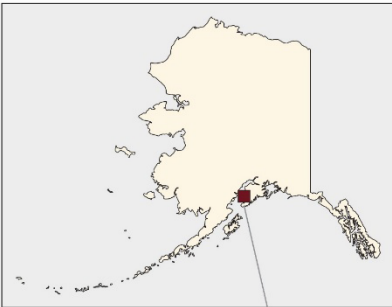


- \$133.8b in total assets
- Exceptional cyber and physical protection

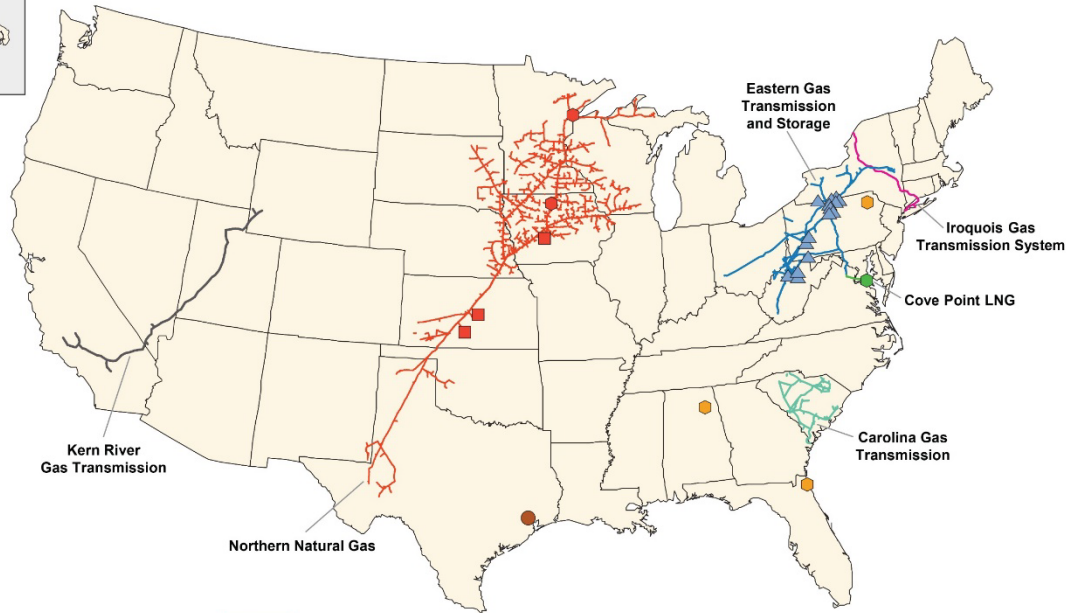


- 2022 earnings on common shares > \$4.2b (adjusted to remove amounts from BYD investment)
- Operating cash flows > \$9.3b

# BHE Pipeline Group



Cook Inlet Natural Gas Storage Alaska



*BHE Pipeline Group operates more than 21,200 miles of pipeline in 23 states.*

*In 2022, BHE Pipeline Group pipelines transported approximately 15% of the natural gas consumed in the U.S.*



Kern River Gas Transmission  
— Pipeline

Northern Natural Gas

— Pipeline

■ LNG Facility

■ Underground Storage Facility

Cook Inlet Natural Gas Storage Alaska (26.5%)

■ Underground Storage Facility

Cove Point LNG (75%)

— Pipeline

■ LNG Terminal

Eastern Gas Transmission and Storage

— Pipeline

▲ Storage Facility

— Carolina Gas Transmission

— Iroquois Gas Transmission System (50%)

■ Modular LNG Holdings

● BHE Compression Services

# Customer Commitment

## Vision Statement

- To be the preferred provider of natural gas transportation and storage services based on our integrity, operational excellence, financial strength and environmental responsibility

## Mission Statement

- We are in business to serve our customers. Fairly. Efficiently. Reliably.

## These statements mean that

- You will get what we promise on time
- We will share the purpose behind our actions
- We will commit to making it easy to do business with us
- We will negotiate and perform in good faith
- We will continue to invest in the pipeline in order to provide you highly reliable service and to meet your future growth needs



## **-Permanent Partners-**

- Mutually beneficial relationships based on our core principles, not quarter over quarter profits
- Perform necessary due diligence, but maintain an attitude of partnership
- No surprises either way
- Frank, candid discussions
- Seek balanced outcomes

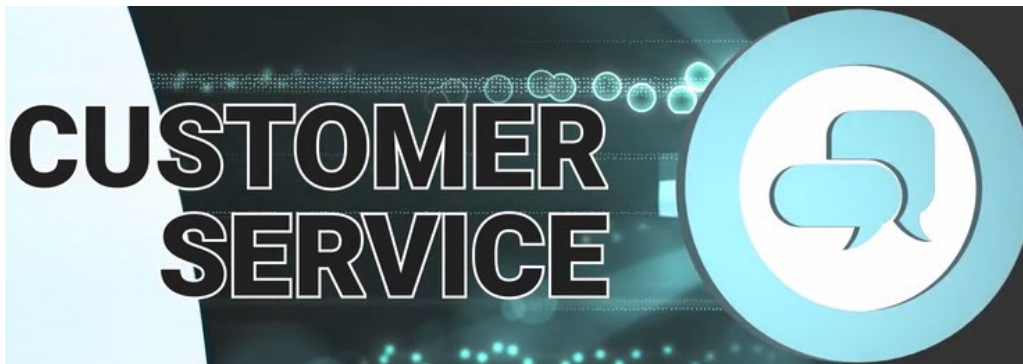
**Why Six Core Principles and the focus on Permanent Partnerships? SUSTAINABILITY**

# Customer Commitment

## (continued)



- **Transparency:** We recognize the importance of maintaining open communication with customers regarding Northern's business and work efforts – *there are no secrets*
- **Communication:** Prioritize clear and frequent communication with customers concerning work efforts that may have an impact – *no surprises*
- **Personal Responsibility:** Actions taken by each team member can impact the service we provide to customers positively or negatively
- **Collaboration:** By closely partnering with colleagues and various internal departments, Northern elevates its capacity to deliver exceptional service to its customers
- **Ownership:** Team members are empowered to seek out solutions to address customers' needs and remain engaged until challenges are effectively resolved





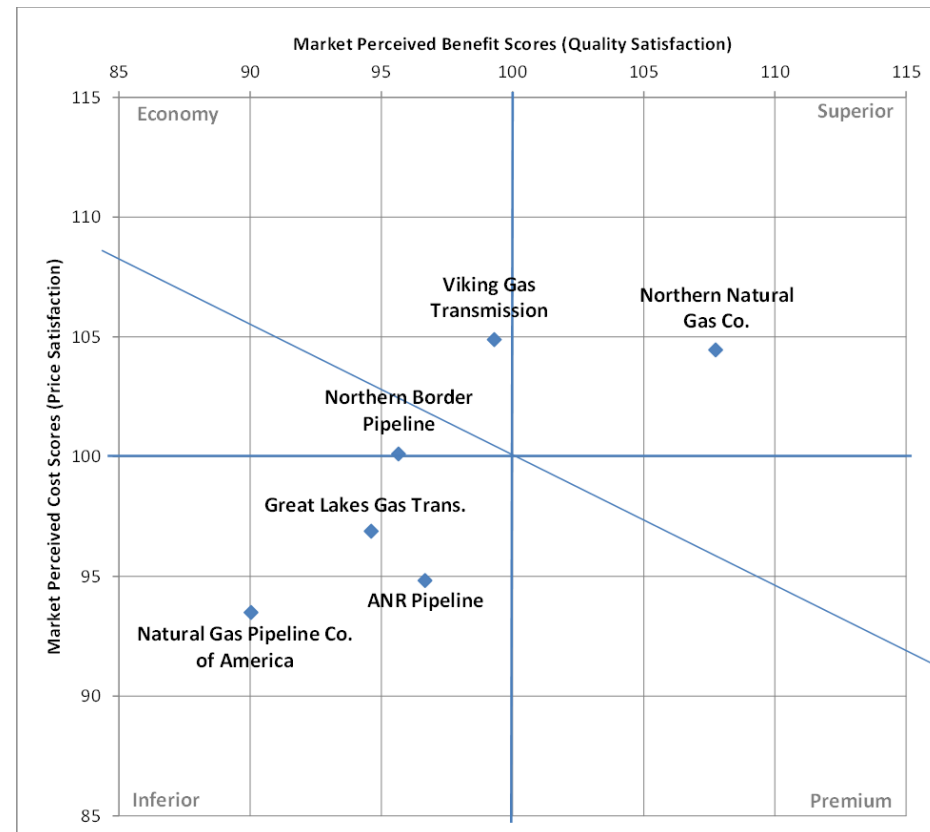


**Tom Halpin**  
Vice President, Marketing

# Industry Leading Customer Service



- Northern ranked third behind sister companies Kern River Gas Transmission and Carolina Gas Transmission out of 38 interstate pipelines in the 2023 Mastio & Co. survey, resulting in a sweep of the top three spots for the second year in a row
- Northern ranked first in the “Mega” and “Major” pipeline categories for the 15<sup>th</sup> consecutive year
- The BHE Pipeline Group has finished first in the organization category for each of the last 18 years
- Northern scored highest in the following areas
  - Accurate operational information availability
  - Scheduled gas volumes are accurate
  - Accuracy of invoices
  - Firm gas transportation is highly reliable
  - Representatives who listen well
- What must we do now to earn a “10” later this year?
  - “10” = 1<sup>st</sup> place
  - “9” = 5<sup>th</sup> place
  - “8” = Bottom 20%
  - “7” = Last





# Rate Case Wrap Up

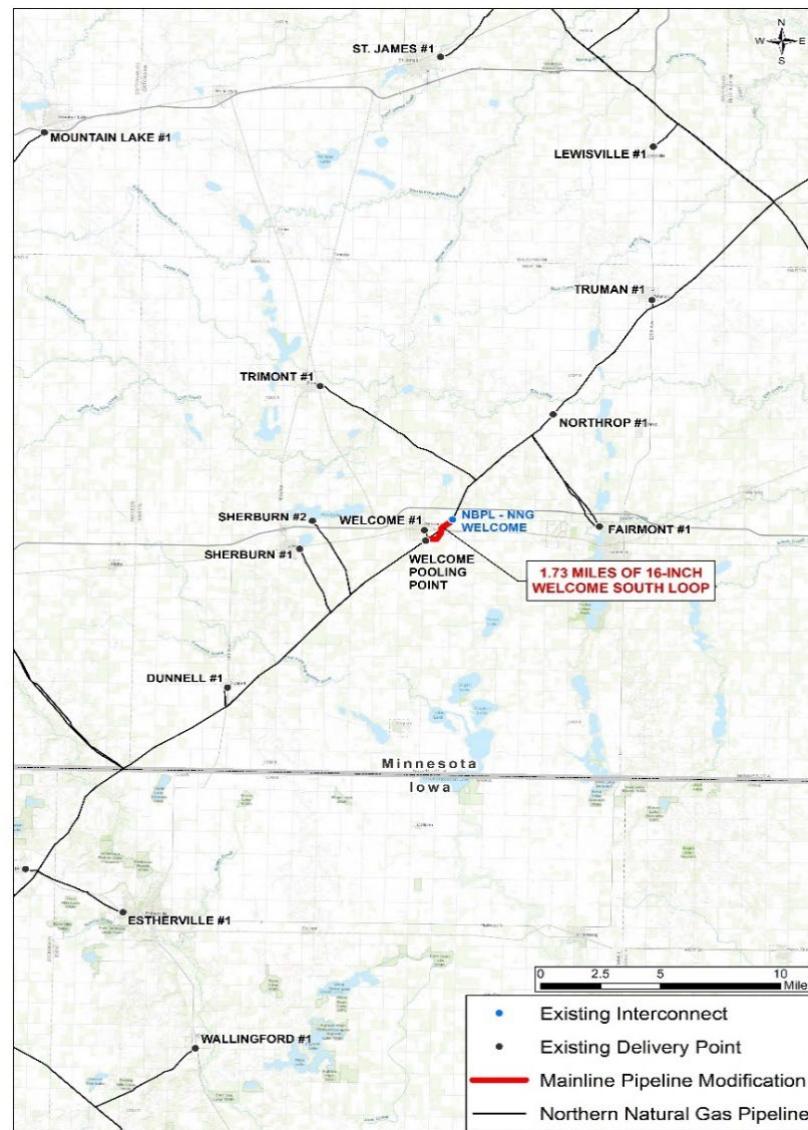


- After working with customers, FERC Trial Staff and other interested parties, Northern filed an unopposed settlement agreement with the FERC on June 23, 2023, effectively concluding Northern's section 4 general rate case proceeding that began in July 2022
- This settlement is the culmination of efforts by all the parties to reach a balanced outcome that allows Northern to recover the costs associated with \$1.6 billion in investment in the reliability and modernization of its systems since its last rate case, provides certainty for all parties, including a moratorium through June 2024, concludes an expensive and time intensive process and hastens the implementation of final rates and refunds
- This settlement supports Northern's capability to continue investing in the modernization of its pipeline system, ensuring that customers continue to receive the industry leading reliability that they have grown to expect from Northern
- Northern received final approval from FERC on September 7, 2023
  - Rate refunds will be issued with the invoicing of September 2023 activity
  - Prospective tariff changes include:
    - The ability for customers to choose an average annual rate in order to flatten monthly charges
    - An increase in the frequency of refunding penalties back to customer from once to twice per year, ensuring cash is returned to customers in a more timely manner
    - A posting mechanism indicating when operational sales are being made
- How did the process work and how would you like us to engage the next time?
  - Tracker?
  - Get to the answer?



# Recently Completed Market Area Expansions

- West Leg 2022
  - Incremental capacity of 10,065 Dth/day
    - Nine customers
  - Project scope
    - 1.7 miles of new 16-inch-diameter mainline loop near the existing Welcome, Minnesota, interconnect
  - Project Cost: \$5.9 million
  - In service: November 1, 2022





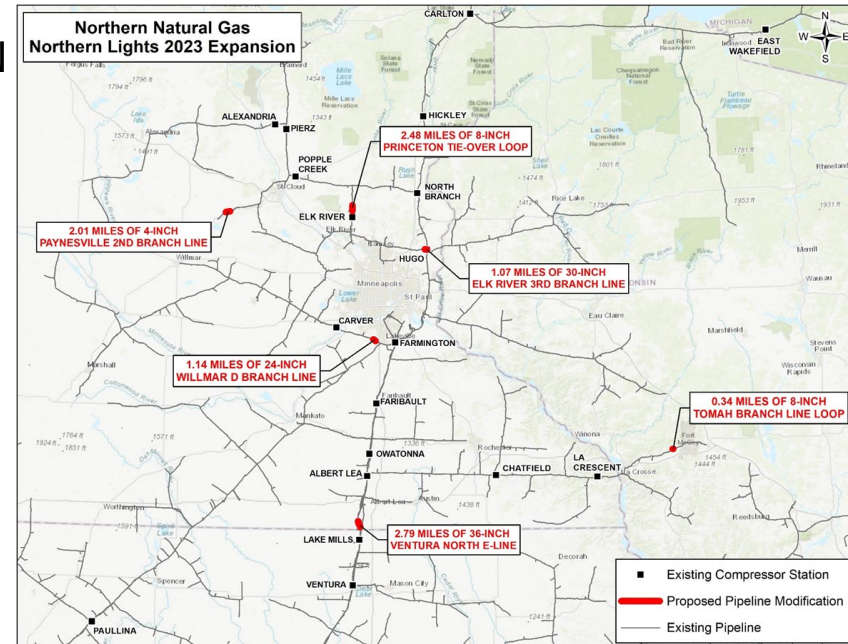
# Current Market Area Expansions



- Northern Lights 2023
  - 50,889 Dth/day (Peak Winter MDQ)
  - In service: 2024
  - Capital: \$54.6 million
  - Filed with FERC as a section 7c on March 28, 2022
  - Awaiting FERC authorization
- West Leg 2023 Expansion
  - 18,250 Dth/day (Peak Winter MDQ)
  - In service: November 1, 2023
  - Capital: \$20.9 million
  - Prior Notice filed with FERC December 22, 2022
  - Approved March 1, 2023
- Hazel Branch Line 2023 Expansion
  - 2,000 Dth/day (Peak Winter MDQ)
  - In service: November 1, 2023
  - Capital: \$11.3 million
  - Completing under Northern's blanket authority

# Northern Lights 2023 Expansion

- Incremental capacity of 50,889 Dth/day (Peak Winter MDQ)
- Project scope:
  - Mainline:
    - 2.79 miles of 36-inch near Lake Mills, MN
  - Branch Line:
    - 2.01 miles of 4-inch near Paynesville, MN
    - 1.14 miles of 24-inch near Wilmar, MN
    - 1.03 miles of 30-inch near Elk River, MN
    - 0.34 miles of 8-inch near Tomah, WI
    - 2.47 miles of 8-inch near Princeton, MN
  - TBS Modifications
    - Six in Minnesota
    - One in Wisconsin
- Project Cost: \$54.6 million
- Awaiting FERC authorization; final completion in 2024





# Developing Market Area Expansions

- Northern Lights 2025
  - Open season closed on May 22, 2023
  - Currently working with customers to determine final participants, total MDQ and facility requirements
  - Project will likely require a section 7(c) approval from FERC
- West Leg 2024 Expansion
  - Open season ended April 21, 2023
  - Currently working with customers to determine final participants, total MDQ and facility requirements
  - Project will likely require a prior notice filing



# Field Area Expansions



- Permian Highway Pipeline, Waha Interconnect
  - 100,000 Dth/day, delivery to Permian Highway
  - In service: November 2020
  - Approximately \$1.7m
- Gulf Coast Express Pipeline, Waha Interconnect
  - 100,000 Dth/day
  - In service: September 2021
  - Approximately \$1.3m
- Gulf Coast Express Pipeline, Spraberry Interconnect - bi-directional updates at the interconnect
  - Adds bi-directional service for deliveries to Gulf Coast Express
  - 100,000 Dth/day interconnect delivery capacity
  - In service: September 2021
  - Approximately \$1.1m
- Whistler Pipeline, Spraberry Interconnect
  - 100,000 Dth/day, delivery to Whistler Pipeline
  - In service: November 2021
  - Approximately \$5.5m
- Spraberry Compression Project
  - Adds compression and pipeline headers and lateral
  - Increases Spraberry high pressure delivery capacity by 67,000 Dth/day each phase
  - In service: June 2022
  - Approximately \$19.2m



# Demarc to Ventura Expansion

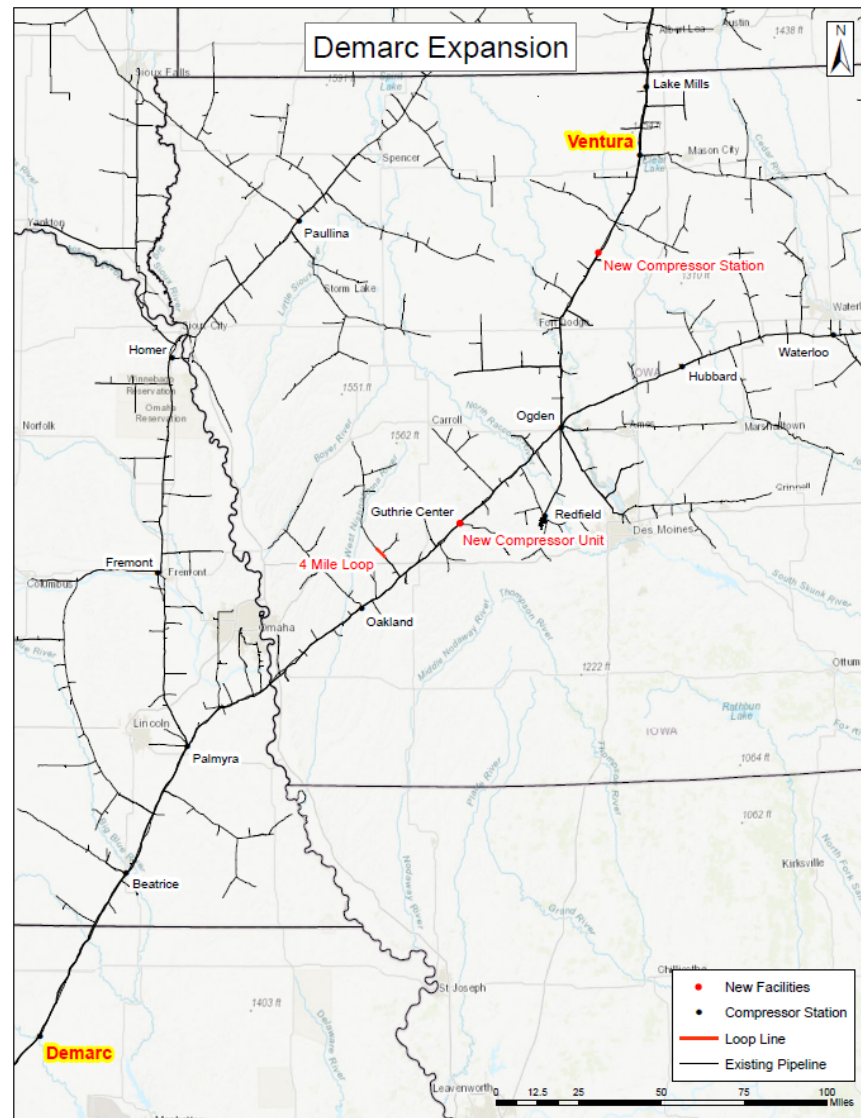


- Expansions on Northern have often occurred at the Ventura, Iowa interconnect with Northern Border pipeline; however, design capacity on Northern Border is 2.24 Bcf/day, which does not match the 2.78 Bcf/day of take-away capacity contracted on Northern at Ventura
  - Customers are aware of this mismatch and utilize storage receipts on high flow days, mitigating the impact of this situation
  - Customers have elected expansion capacity receipts at Northern Border due to lower capital project costs
  - FERC policy provides the shipper is responsible for arranging upstream capacity; risk of non-performance by Northern Border is on the shipper
- Project Concept
  - Investment of \$75 million; annual cost of service of \$12 million; capital recovery rate of \$0.31/Dth/day
  - Incremental capacity of 100,000 Dth/day receipt point realignment from Ventura to Demarc
  - In service date of November 1, 2026, assuming timely agreement and regulatory approvals
- Current forward spreads indicate the cost of gas at Demarc is approximately \$0.20/Dth/day less than at Ventura, which is significant, but does not cover the cost of the buildout
- Northern is soliciting interest from customers on the project and, if interested, on the mechanism to finance the project and ensure Northern's cost recovery

# Demarc to Ventura Expansion Proposed Facilities



- Additional compressor unit at Guthrie Center, Iowa
- New greenfield compressor station near Clarion, Iowa
- Four miles of 6-inch pipeline loop on the Denison, Iowa, branch line





# **Frank Rozmus**

## Vice President, Gas Control & Facility Planning

# Winter 2022-2023 Review



- Colder than normal throughout most of the heating season
  - Winter Storm Elliott brought significantly colder than normal temperatures throughout Northern's operational area from December 17, 2022, through December 26, 2022
- Market Area deliveries on December 23, 2022, were 5.33 Bcf, the ninth highest delivery day all-time
- Four consecutive days with Market Area deliveries greater than 5.0 Bcf/day from December 20, 2022, through December 23, 2022
  - Storage assets delivered 0.42 Bcf from LNG and 4.2 Bcf from underground storage during this period
- Market Area deliveries for the 2022-2023 heating season averaged 3.631 Bcf/day, third most all-time
  - Daily average Market Area delivery records in December and March

	System Weighted Temp vs Normal				
	18-19	19-20	20-21	21-22	22-23
November	31%	20%	9%	1%	11%
December	8%	5%	8%	7%	13%
January	8%	6%	13%	14%	7%
February	25%	4%	27%	21%	2%
March	22%	7%	15%	14%	23%
Heating Season	13%	0%	3%	8%	7%







# Advanced Technical Training

- The Owatonna Technical Training Center (OTTC) is Northern's advanced training center located in Owatonna, Minnesota
- The facility opened in 2021 with the goal of providing high quality advanced training to our pipeline personnel in a safe, controlled environment
- Training is currently provided in four core areas
  - Gas Measurement
  - Corrosion
  - Mechanical Maintenance
  - Controls
- The facility has become a host site for safety and environmental training events throughout the company



**Measurement Lab**

Technicians are trained on flow meter, relief valve and control valve maintenance.



**Measurement Lab**

# Owatonna Technical Training Center



**Mechanical Lab**

Training is provided on routine compressor maintenance tasks as well as overhauls and advanced troubleshooting.



**Controls Lab**

Technicians are trained on fire and gas systems, emergency shutdown controls and serial communications.



**Driving Simulator**

A high-fidelity simulator is utilized to improve driving skills and manage extreme driving hazards in a safe environment.



**Measurement Lab**

Corrosion training includes pipeline inspections, regulatory requirements and corrosion mitigation techniques.

# Methane Emissions Reduction Initiative



- BHE Pipeline Group focuses on continuous methane emissions reductions
  - 2022 combined intensity rate was 90% lower than the natural gas transmission and storage segment emissions rate of 0.25%
- BHE Pipeline Group forecasts emissions 12 months forward and makes prioritized decisions to help control emissions to stay within goal

Year	BHEPG Methane Intensity
2022	0.028%
2021	0.049%
2020	0.041%
2019	0.040%
2018	0.050%
2017	0.046%

- Northern publicly posts an annual greenhouse gas report
  - Actual greenhouse gas emissions data
  - Description of GHG emission reduction strategies
  - Detail projects implemented to mitigate methane emissions
  - Annual reporting in accordance with ONE Future Protocol
  - Description of Northern's publicly disclosed efforts and requests submitted for interconnects with renewable natural gas, hydrogen, certified natural gas, or other low-carbon gas production facilities

# Methane Emissions Reduction Initiative

## (continued)



- Reducing fugitive methane emissions by:
  - Routing gas to a compressor
  - Routing gas to a flare
  - Routing gas to a low-pressure system by taking advantage of existing piping connections between high- and low-pressure systems, temporarily resetting or bypassing pressure regulators to reduce system pressure prior to maintenance, or installing temporary connections between high- and low-pressure systems
  - Utilizing hot tapping, a procedure that makes a new pipeline connection while the pipeline remains in-service, flowing natural gas under pressure, to avoid the need to blow down gas
- Reducing methane emissions from non-emergency blow downs by at least 50% from total potential emissions
- Year-over-year reduction of the methane emissions rate (emissions/throughput)

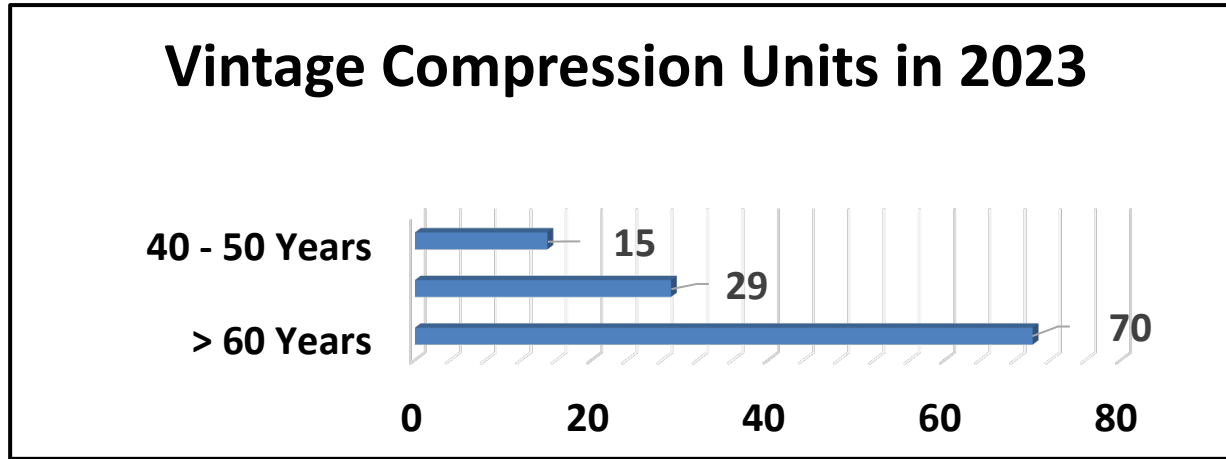


Portable Compression



Hot Tap and Bypass

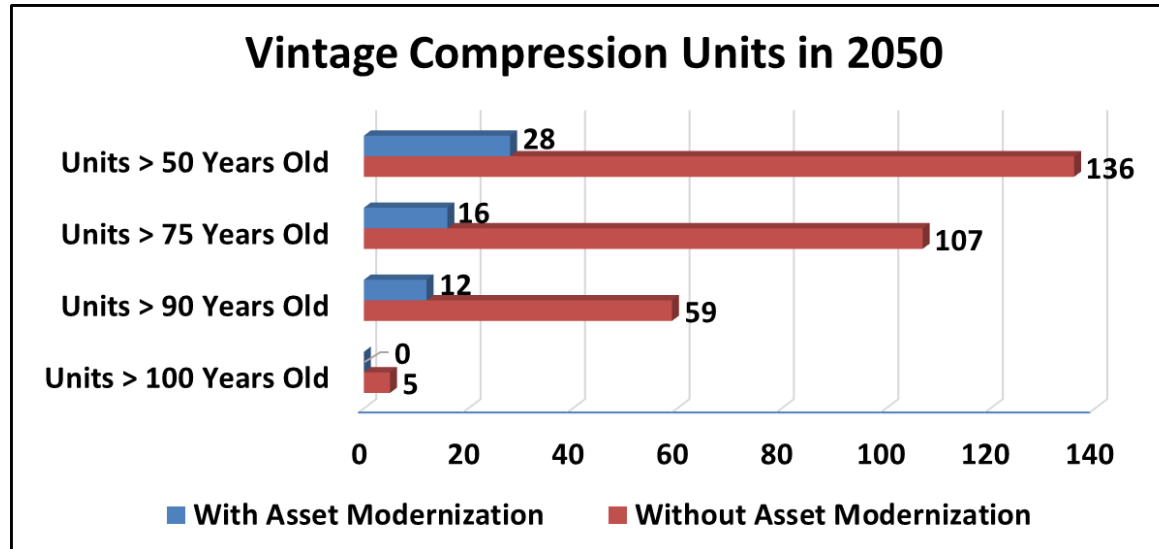
# Compression Fleet – 2023 Status



- Through summer 2023, Northern is operating 114 compression units greater than 40 years old (62.0% of total units), with 70 units exceeding 60 years old (38.0% of total units)
- As assets approach or exceed the original intended service life, risks must be strategically and diligently managed to ensure equipment safety and reliability

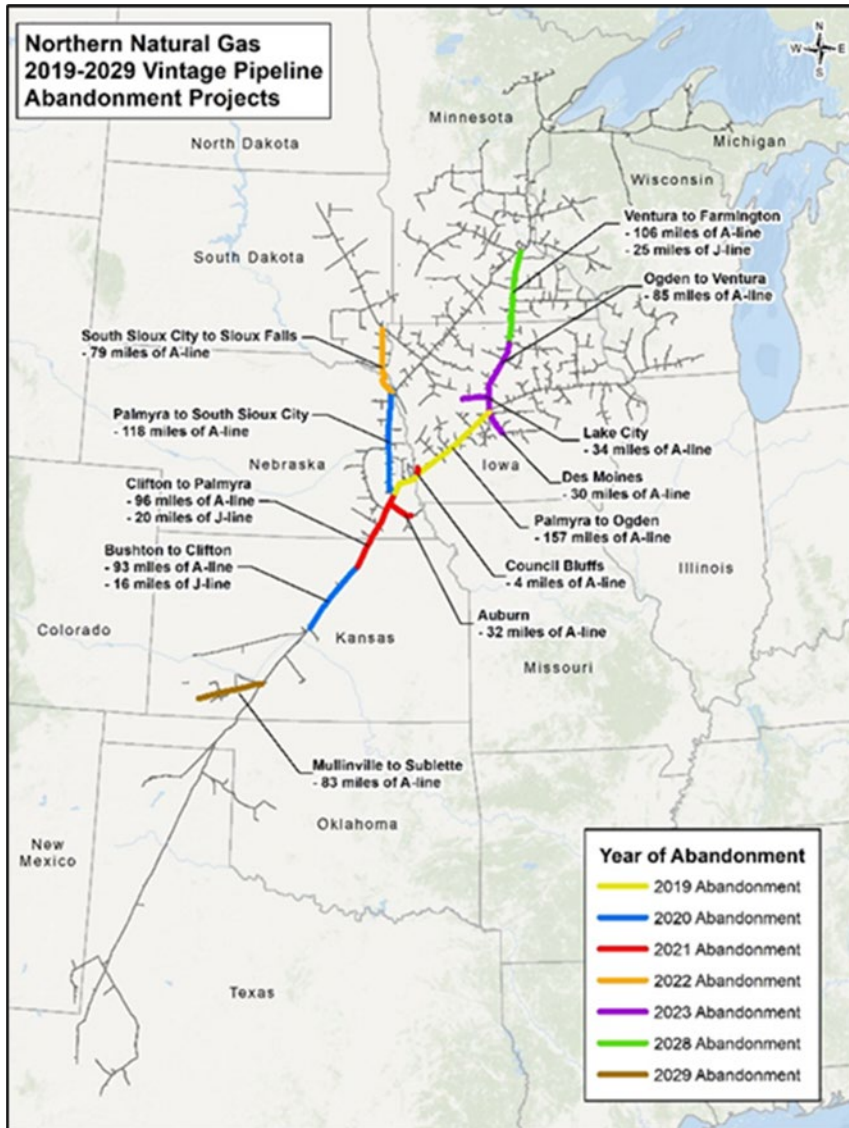


# Compression Fleet – 2050 Outlook



- Without asset modernization, Northern will be operating 107 units over 75 years old (58.2% of total units), 59 units over 90 years old (32.1% of total units), and five units over 100 years old by 2050
- With strategic investments in compression replacement on an annual basis, the risks inherent to operating units past the end of their service life are manageable
- Asset modernization is critical to customer reliability expectations

# Vintage Pipeline Abandonment Projects



- Replace vintage pipeline installed with antiquated construction techniques
- Complete replacement of large-diameter (>12") vintage mainlines within the next 6 years
  - 2019 through 2022: 583 miles of large-diameter 1930s vintage A-line was abandoned
  - 2023 through 2029: 329 miles of additional large-diameter vintage pipeline abandonment is planned
- Continue to address small-diameter vintage pipeline segments

# Vintage Pipeline Abandonment Projects

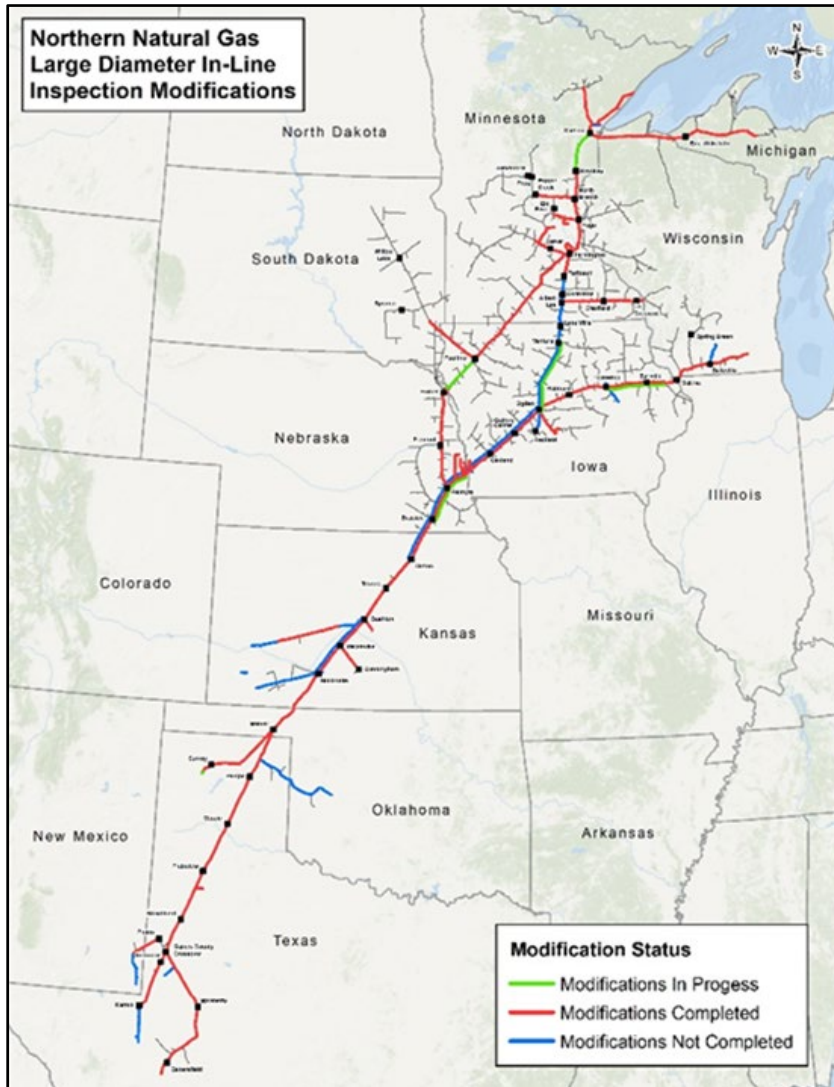


- In 2022, Northern completed \$143m in projects
  - Installed 82 miles of pipeline
  - Abandoned 79 miles of pipeline
- In 2023, Northern has \$79m in projects planned
  - Installing 10.5 miles of pipeline
  - Abandoning 115 miles of pipeline





# Large-Diameter In-Line Inspection Modifications



- In-line inspection (ILI) is used to assess the integrity of pipelines
  - Pipeline modifications are needed to enable inspection tool launching, receiving and passage
- Current ILI modifications focus on large-diameter ( $\geq 16"$ ) pipelines
  - 45% of Northern's 14,300-mile system is 16-inch-diameter or larger
- Large-diameter pipeline modifications
  - By 2023, 71% of Northern's large-diameter pipeline will be in-line inspectable
  - By 2029, 95% of Northern's large-diameter pipeline will be in-line inspectable

# Large-Diameter In-Line Inspection Modifications



- In 2022, completed \$64m in projects
  - 342 miles of pipeline was made in-line inspection capable
- In 2023, \$63m in projects planned
  - 191 miles of pipeline will become in-line inspection capable





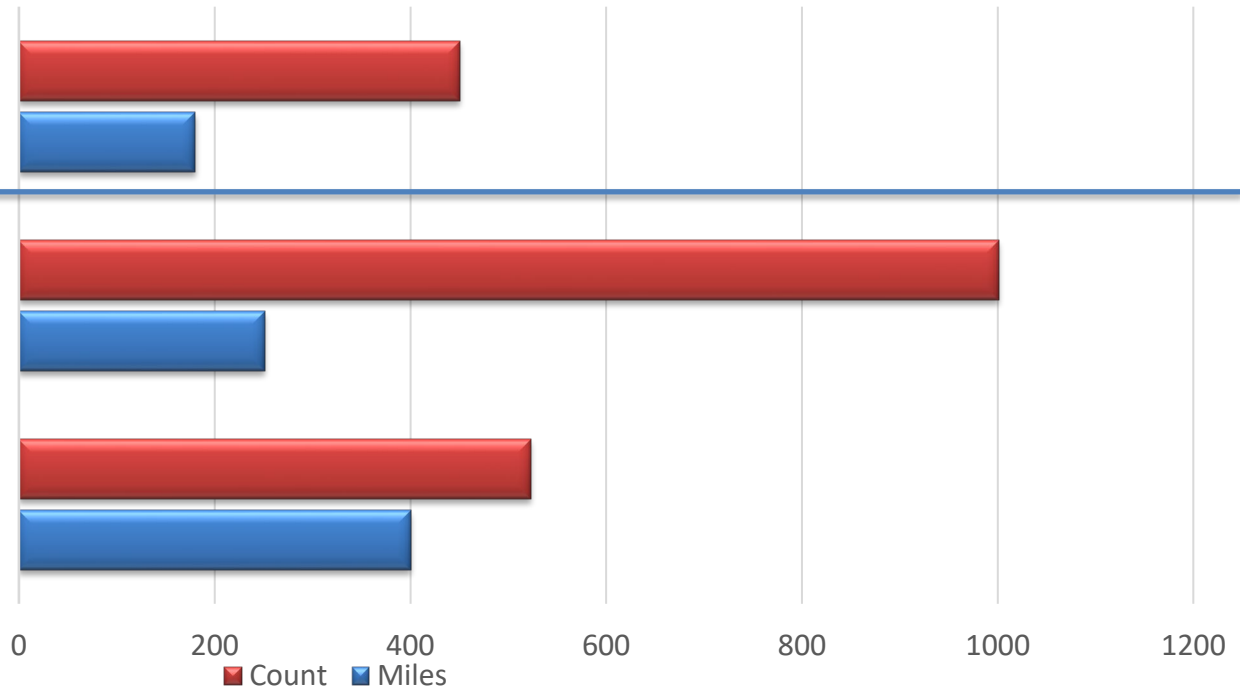
# Consequence Segments



- 2002 Pipeline Safety Improvement Act
  - Result of El Paso pipeline rupture near Carlsbad, New Mexico in 2000
- 2019 Pipeline Safety Improvement Act
  - Result of explosions in Merrimack Valley, Massachusetts in 2018
  - **Over 3 times the scope of the 2002 Act**

## 2002 Act

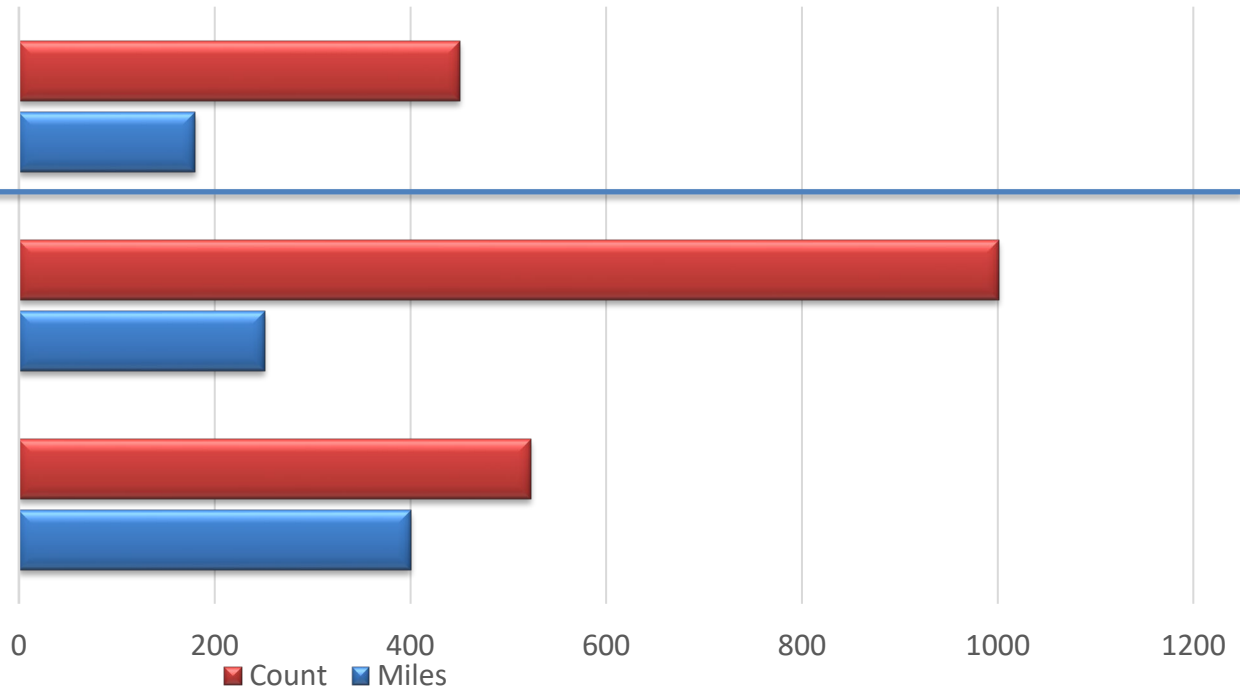
High Consequence Areas



## 2019 Act

Moderate Consequence Areas

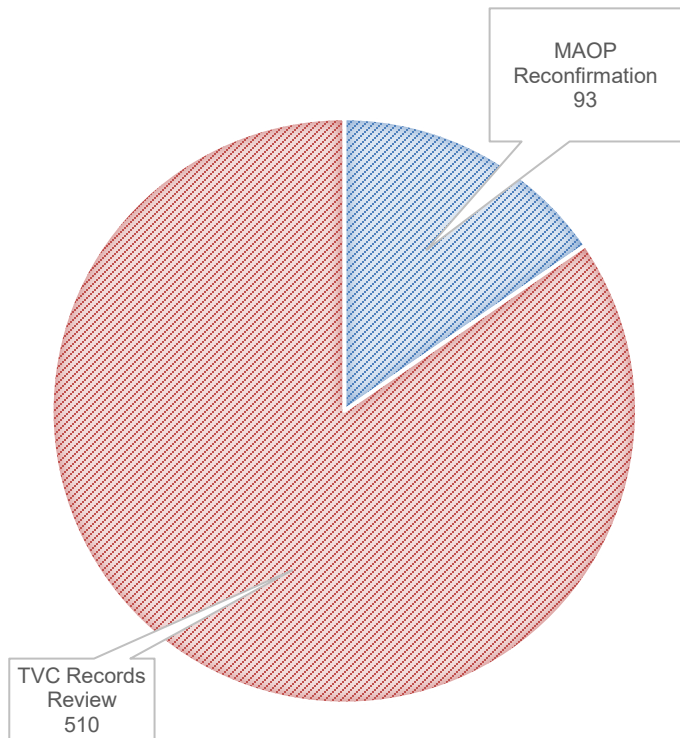
Class 3 Locations



# MAOP Reconfirmation



- **603 miles of HCA, MCA, and Class 3 locations**



- 93 miles of MAOP reconfirmation is required
  - Grandfathered pipeline segments that will no longer be able to operate at high pressure without action
- 510 miles of MAOP reconfirmation is not necessary, but traceable, verifiable, and complete (TVC) records validation is required
- Roughly 200 MAOP reconfirmation projects are needed
  - First 50% of mileage required by 2028
  - Remaining 50% by 2035

# Ozone Transport Rule



- 2023 Ozone Transport Rule
  - 18 compressor units are impacted in two states (Texas and Oklahoma)
  - Units are required to achieve enhanced emissions performance by 2026
- Compliance accomplished through unit retrofits or replacement
  - Upgrades are not technologically viable on some vintage units
  - Some units are nearing end of life and require replacement versus emission modifications at a high cost of \$3m to \$5m
  - Current strategy is a blend of unit upgrades and replacements at a total cost of \$120m

Engine Type and Fuel	Published NOx Emissions Limit (grams per horsepower per hour)
Natural Gas Fired Four Stroke Lean Burn	1.5 g/hp-hr
Natural Gas Fired Two Stroke Lean Burn	3.0 g/hp-hr

# Physical Security Enhancements

- Northern developed a robust barrier protection plan incorporating concrete T-wall security barriers designed to protect critical assets from high powered rifle fire without restricting employee access
- Northern has assessed current physical security standards and has begun implementing various upgrades, which includes enhanced perimeter fencing at critical facilities
- Total forecasted cost of \$62m across 2023 and 2024





**Chris Perry**  
Vice President, Customer Service



# Customer Service Team



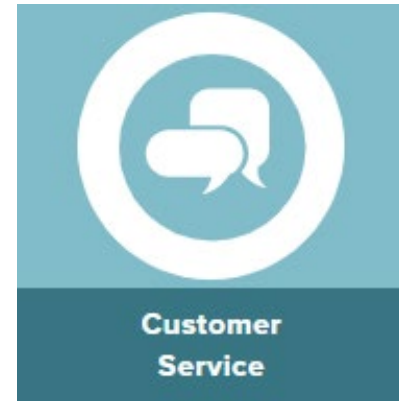
- The customer service group assists customers with nomination, confirmation, scheduling, contracting and billing tasks
- Each customer is assigned a designated customer service and contract representative
- Scheduling group is organized into four pods of four customer service representatives
- Pod structure ensures that each customer benefits from the expertise of three additional backup customer service representatives within the same pod who are well-acquainted with its business



# Customer Service




- Northern's customer service team is committed to providing:
  - Accessible and well-informed representatives
    - Each phone call received in the customer service group will be answered by a person
    - In-office personnel between 6:30 a.m. CCT and 10 p.m. CCT everyday, including weekends and holidays
    - Regular team stand-up meetings to review ongoing pipeline activities and potential customer implications
    - Ongoing training led by each senior customer service representative provided quarterly
    - A comprehensive onboarding training program developed for new customer service representatives
  - Reliable business applications and accurate invoices
    - Business application reliability of 99.9% year to date
    - Invoice accuracy is greater than 99.9% year to date
  - Proactive communication regarding potential shifts in business conditions
    - Northern Daily Highlights
    - Critical/Non-Critical Notices
    - Weekend Outlook
  - Efficient and effective daily business communication
    - Collaborate with customers to assess and proactively correct nominations
    - Examine and resolve any billing inquiries prior to finalizing invoices



# Communication



- Northern Daily Highlights
  - Distributed via email every morning at approximately 5 a.m. CCT
  - Provides a one-page newsletter featuring prominent updates such as critical notices, commercial highlights, operational updates, available capacity and billing highlights



**Northern Daily Highlights**  
January 01, 2023

### Critical Notices

Subject	Type	Begin Date	End Date
<a href="#">CARLTON RESOLUTION OBLIGATION</a>	Operational Flow Order/Carlton Resolution	Dec 28 2022 09:00 AM	Apr 01 2023 08:59 AM

The Critical Notices above are active notices posted within the last 14 days. For a complete list of all active critical notices please see [Northern's Critical Notices](#) section.

### Pipeline Status Highlights

**Market and Field Planned Service Outages** — Northern has updated the planned service outages that will affect operating capacity within the months of December 2022 through March 2023 for the Market and Field Areas. Please refer to [planned service outage notice #68523](#) and the [Planned Service Outage Summary](#) page for detailed information related to each outage, including the impacted allocation group(s) and/or point(s), direction of flow, normal operating capacity, estimated daily operating capacity during the outage and the anticipated impact to primary firm service. Please continue to review the [Planned Service Outage](#) and [Planned Service Outage Summary](#) sections on Northern's website for updated information.

### Marketing / Commercial Highlights

**Christmas Weekend Performance** — Despite a ten-day stretch of significantly colder-than-normal temperatures and challenging conditions for customers and point operators throughout the entire system, Northern Natural Gas' facilities and personnel performed exceptionally well to meet the dynamic needs of our customers over the Christmas holiday weekend. Please see [non-critical notice #68526](#) for further details.


# Communication

## (continued)



- Pipeline Notifications
  - Critical Notices
    - Signal an immediate impact to customer business
  - Non-Critical Notices
    - Offers a diverse range of information for customer awareness
  - Customers have the option to receive selected Non-Critical Notices directly to their inbox by utilizing Northern's Notification and Security Administration System (NAS)

**Notification and Security Administration System** [view]



This system allows customers and other interested parties to elect to receive, via email, selected proprietary information, critical and non-critical notices and other customer communications that are posted to Northern's website. The application will provide immediate notification of communications that may impact your business operations. Additionally, each customer has the ability to view its system access and security levels for all of Northern's business applications, including the Capacity Release System, Contract Management System, Flowing Gas, Invoicing, Imbalance Resolution and Throughput Management System.

## Non-Proprietary

### Non-Proprietary Notifications

Public Notices not associated to a Legal Entity

#### ► Critical Notices

☒ All Critical Notices

#### ► Non-Critical Notices

☒ All Non-Critical Notices

[Show Non-Critical Notices Definitions](#)

- ☒ Allocation Notices
- ☒ Business Application Notices
- ☒ Capacity Release Notices
- ☒ Imbalance Resolution Notices
- ☒ Invoicing and Rate Notices
- ☒ Miscellaneous Notices
- ☒ Operational Notices
- ☒ Scheduling Notices
- ☒ Storage Notices
- ☒ TSP Capacity Offering Notices

#### ► Other Customer Communications

☒ All Other Customer Communications

[Show Other Customer Communications Definitions](#)

- ☒ Northern Daily Highlights
- ☒ Northern Notes

# Communication

## (continued)



- Weekend Guidance
  - Posted every Thursday afternoon or prior to a holiday weekend during the heating season to notify customers of Northern’s requirements for the Carlton Resolution and SOL days
    - Carlton Resolution – If Carlton is 100%, it will remain 100% for the entire weekend
    - SOL – If an SOL is required for any of the three days, an SOL will be called for the entire weekend to protect customers from negative DDVCs
    - SMS percentage on SOL days may fluctuate based on evolving conditions, but any change will always be an increase and never a decrease



<b>TSP Name:</b> Northern Natural Gas Company	<b>Post Date/Time:</b> 12/22/2022 03:00 PM
<b>TSP:</b> 784158214	<b>Notice Effective Date/Time:</b> 12/24/2022 09:00 AM
<b>Notice ID:</b> 068324	<b>Notice End Date/Time:</b> 12/28/2022 08:59 AM
<b>Notice Type:</b> Pipeline Conditions	<b>For Gas Day(s):</b> 12/24/2022 - 12/27/2022
<b>Subject:</b> HOLIDAY WEEKEND OUTLOOK DECEMBER 24-27, 2022	<b>Notice Status:</b> Initiate
<b>Critical:</b> N	<b>Required Response Indicator Description:</b> 5-No response required
<b>Location:</b> ALL MARKET AND FIELD AREAS	
<b>Notice Text:</b>  In an effort to provide timely and useful information that may impact customers’ decisions regarding nominated volumes, and to assist customers in scheduling their transportation and storage services, Northern is providing advance notice of system conditions for the upcoming holiday weekend. Based on the temperatures and system conditions that are currently forecast through the holiday weekend, the Carlton sourcing obligation and System Overrun Limitation (SOL) status are shown below.  The Carlton sourcing obligation will be as follows for the Market Area: <ul style="list-style-type: none"> <li>• Gas Day Saturday, December 24, 2022 will be 100%</li> <li>• Gas Day Sunday, December 25, 2022 will be 100%</li> <li>• Gas Day Monday, December 26, 2022 will be 100%</li> <li>• Gas Day Tuesday, December 27, 2022 will be 100%</li> </ul> SOL and related System Management Service (SMS) status will be as follows in the <b>Market and Field</b> Areas: <ul style="list-style-type: none"> <li>• Gas Day Saturday, December 24, 2022 will have a SOL with 0% SMS</li> <li>• Gas Day Sunday, December 25, 2022 will have a SOL with 0% SMS</li> <li>• Gas Day Monday, December 26, 2022 will have a SOL with 0% SMS</li> <li>• Gas Day Tuesday, December 27, 2022 will have a SOL with 0% SMS</li> </ul>	



# Operational Decisions



Northern is committed to calling SOL, SUL, Critical and Carlton Resolution days only when necessary to maintain system integrity and minimize potential impact to customers

<b>SOL/SUL Factors</b>	<b>Critical Day Factors</b>	<b>Carlton Resolution Factors</b>
<ul style="list-style-type: none"><li>• <b>Maintain system integrity and protect firm shippers</b></li><li>• Load forecast</li><li>• Temperature and wind forecasts</li><li>• Shipper recent behaviors – long/short</li><li>• Storage deliverability</li><li>• LNG deliverability and inventory (SOL)</li><li>• Line pack levels</li><li>• Horsepower utilization and outages</li><li>• Timing</li></ul>	<ul style="list-style-type: none"><li>• <b>Maintain system integrity and protect firm shippers</b></li><li>• Primary difference with SOL is level of penalties</li><li>• Pricing scenarios which could incent shippers to short Northern's system</li><li>• Regional system conditions</li><li>• Inability of upstream pipelines to perform</li></ul>	<ul style="list-style-type: none"><li>• <b>Maintain system integrity and protect firm shippers</b></li><li>• Load forecast north of Farmington, MN</li><li>• Temperature and wind forecasts</li><li>• Availability of operational capacity from the Twin Cities north</li><li>• Wrenshall LNG deliverability and inventory</li><li>• Baseload Carlton and Chisago receipts</li><li>• Horsepower utilization and outages</li><li>• Timing</li></ul>

# Business Continuity



- Northern utilizes FEMA guidelines to develop and oversee its business continuity and disaster recovery strategies
- A documented business continuity plan has been in place since 2017 and is updated quarterly
- Commercial plan considers critical business functions in the event of technology disruptions
  - Processing customer requests
  - Gas scheduling through both online and EDI methods
  - Billing processes
  - Maintaining communication channels
- Testing and Drills
  - Loss of technology drills are conducted twice per year
  - Alternate business locations tested annually
- In the event of technology disruption, Northern will communicate with customers through posted notices on an off-network website — [NNGoffsite.com](http://NNGoffsite.com)



# TMS Mobile



- Northern is currently working on developing an enhanced mobile version of the TMS business application to provide users with an improved experience
- The rollout of new screens and functionalities will be released in iterative phases over the course of the upcoming year
- The initial release is anticipated for early November 2023, and will encompass the following screens:
  - Nomination Maintenance
  - Nomination Reconciliation
  - Scheduled Quantities
  - Dashboard

The screenshot displays the TMS Mobile application interface. At the top is a blue header bar with the text "Retrieval Form" and a downward arrow. Below this is a form with several input fields and a "Retrieve" button. The form is divided into sections: "Gas Day:" with a date input "09/01/2023", "Cycle:" with a dropdown menu showing "Timely", "View By:" with a dropdown menu showing "Svc Req Prop" and a search input "14790" with a magnifying glass icon, and "Svc Req/Name:" with the text "999999888 GIGGLES & GAS LLC". A blue "Retrieve" button is located at the bottom right of the form. Below the form is a blue header bar with the text "Filters" and an upward arrow. Below this is a dark grey header bar with a white downward arrow. The main content area is a table with the following data:

Svc Req K:	142053	Rate Sch:	FDD
Loc:	98	K Flo:	R
Loc Name:	OGDEN DEF. DELIVERY		
Up/Dn K:	142056	Up/Dn ID:	99999988
Nom Qty:	3,762	Svc Req:	99999988
Up/Dn K Nom Qty:	3,963	Nom Diff:	-201
Conf Qty:		Conf Diff:	

At the bottom of the screen is a mobile navigation bar with icons for back, forward, add, a calendar icon showing "12", and a menu icon.

# TMS Mobile – Grid Design



The redesigned content layout enables users to access information without scrolling

## TMS Mobile

Welcome Fletcher McMeen  
Nomination Maintenance

☰

TMS | TSP/NAME: 784158214 NORTHERN NATURAL GAS COMPANY

Retrieval Form

Add

Cycle:	Timely	Beg Date:	09/01/2023	End Date:	09/02/2023
Rec Loc:		Del Loc:	37654	TT:	08
Rec Qty:		Del Qty:	4000	Fuel Qty:	0
Up K:		Dn K:	142056	Pkg ID:	GIGGLES
Up ID:		Dn ID:	999999888		FT
Rec Rank:		Del Rank:	500	Nom Trk ID:	

Cycle:	Timely	Beg Date:	09/01/2023	End Date:	09/02/2023
Rec Loc:		Del Loc:	37654	TT:	08
Rec Qty:		Del Qty:	14000	Fuel Qty:	0
Up K:		Dn K:	142064	Pkg ID:	GIGGLES IT
Up ID:		Dn ID:	999999888	Nom Trk ID:	
Rec Rank:		Del Rank:	2		

Cycle:	Timely	Beg Date:	09/01/2023	End Date:	09/02/2023
Rec Loc:	37654	Del Loc:		TT:	08
Rec Qty:	4000	Del Qty:		Fuel Qty:	0

Gas Day: 09/01/2023 Total Del Qty: 18000

Total Rec Qty: 18000 Total Fuel Qty: 0

< > ...

12

## Current Mobile View

TMS | TSP/NAME: 784158214 NORTHERN

☰

Main Nomination Confirmation

Gas Day:\* 09/01/2023 ◀ ▶ Svc Req K:\* 142054 (\$

Pool:\*  
NNG FIELD/MKT DE

☐ Display Names

Drag here to set row groups

Cycle	Beg Date <sup>2</sup> ↓	End Date	Rec Loc
Timely	09/01/2023	09/02/2023	
Timely	09/01/2023	09/02/2023	
Timely	09/01/2023	09/02/2023	37654
Timely	09/01/2023	09/02/2023	37654
Timely	09/01/2023	09/02/2023	37654

Gas Day: 09/01/2023

Total Receipt Qty: 18,000

Total Delivery Qty: 18,000

< > ...

11

# TMS Mobile Design



TMS Mobile utilizes a responsive design, ensuring that screen content is resized in accordance with the width of the mobile device screen

## Phone

Retrieval Form

Gas Day:\*

Cycle:\*

09/01/2023

Timely

View By:\*

Svc Req Prop

14790

Svc Req/Name:

999999888 GIGGLES & GAS LLC

Retrieve

Filters

Svc Req K:

142053

Rate Sch:

FDD

Loc:

98

K Flo:

R

Loc Name:

OGDEN DEF. DELIVERY

Up/Dn K:

142056

Up/Dn ID:

999999888

Nom Qty:

3,762

Svc Req:

999999888

Up/Dn K Nom Qty:

3,963

Nom Diff:

-201

Conf Qty:

Conf Diff:

<

>

+

12

≡

## Tablet

Retrieval Form

Gas Day:\*

Cycle:\*

Svc Req/Name:

09/01/2023

Timely

999999888 GIGGLES & GAS LLC

View By:\*

Svc Req Prop

14790

Retrieve

Filters

Svc Req K:

142053

Rate Sch:

FDD

Nom Qty:

3,762

Svc Req:

999999888

Loc:

98

K Flo:

R

Up/Dn K Nom Qty:

3,963

Nom Diff:

-201

Loc Name:

OGDEN DEF. DELIVERY

Conf Qty:

Conf Diff:

Up/Dn K:

142056

Up/Dn ID:

999999888

Sched Qty:

3,762

Sched Diff:

0

Svc Req K:

142053

Rate Sch:

FDD

Nom Qty:

190

Svc Req:

999999888

Loc:

98

K Flo:

R

Up/Dn K Nom Qty:

198

Nom Diff:

-8

Loc Name:

OGDEN DEF. DELIVERY

Conf Qty:

Conf Diff:

Up/Dn K:

142064

Up/Dn ID:

999999888

Sched Qty:

190

Sched Diff:

0

Svc Req K:

142054

Rate Sch:

MPS

Nom Qty:

4,000

Svc Req:

999999888

Loc:

37654

K Flo:

D

Up/Dn K Nom Qty:

4,000

Nom Diff:

0

Loc Name:

NNG FIELD/MKT DEMARCATION -16B

Conf Qty:

Conf Diff:

Up/Dn K:

142056

Up/Dn ID:

999999888

Sched Qty:

3,797

Sched Diff:

203

Svc Req K:

142054

Rate Sch:

MPS

Nom Qty:

14,000

Svc Req:

999999888

Loc:

37654

K Flo:

D

Up/Dn K Nom Qty:

Nom Diff:

14,000

Loc Name:

NNG FIELD/MKT DEMARCATION -16B

Conf Qty:

Conf Diff:

Up/Dn K:

142056

Up/Dn ID:

999999888

Sched Qty:

Sched Diff:

Svc Req K:

142054

Rate Sch:

MPS

Nom Qty:

14,000

Svc Req:

999999888

Loc:

37654

K Flo:

R

Up/Dn K Nom Qty:

4,000

Nom Diff:

14,000

Loc Name:

NNG FIELD/MKT DEMARCATION -16B

Conf Qty:

Conf Diff:

Up/Dn K:

142056

Up/Dn ID:

999999888

Sched Qty:

Sched Diff:

Svc Req K:

142054

Rate Sch:

MPS

Nom Qty:

4,000

Svc Req:

999999888

Loc:

37654

K Flo:

R

Up/Dn K Nom Qty:

4,000

Nom Diff:

0

Loc Name:

NNG FIELD/MKT DEMARCATION -16B

Conf Qty:

Conf Diff:

Up/Dn K:

142056

Up/Dn ID:

999999888

Sched Qty:

3,762

Sched Diff:

203



# Questions?



