

ASSET MODERNIZATION

The purpose of this communication is to describe, explain the necessity of, and update the Asset Modernization investment that Northern has made and will continue to make to ensure the safety and reliability of Northern's system. By the end of 2020, Northern is expected to have completed \$633 million of Asset Modernization investment from the beginning of the program. Over the next ten years, Northern is expected to invest another \$1.6 billion for a total overall investment of over \$2.2 billion in Asset Modernization.

The Asset Modernization program is intended to significantly reduce the reliability risk inherent in Northern's vintage facilities and the integrity risks that have plagued other operators. Northern classifies its Asset Modernization projects into five broad project classifications: (1) Pipeline Assessment; (2) Compression Replacement; (3) LNG Equipment Replacement; (4) Underground Storage Integrity; and (5) Vintage Pipeline Replacement.

The program has an impact on Northern's operations and maintenance (O&M) expenses as well. While many of the classifications result in a reduction, the net impact is an increase to O&M expenses. The primary O&M cost driver of Asset Modernization is the Pipeline Assessment category, which substantially increases Northern's costs of in-line inspections.

Facilities of equivalent capacity will be installed to replace the capacity of the pipeline and compressor units that are taken out of service. Incremental capacity is not generally created through these replacements; however, as projects are designed and implemented, Northern will evaluate whether incidental capacity increases are available due to the design of the specific installation of facilities or may be coupled with an expansion open season.

Background

The Northern system was built in phases, beginning in the 1930s, as system expansions occurred to meet customer requirements. Northern currently operates approximately 14,700 miles of pipeline and 54 compressor stations. Approximately 85% of the pipeline mileage was installed prior to the first enactment of federal pipeline safety standards in 1968. As technology developed, regulations were subsequently enacted and major system expansions requiring new facilities made use of the available equipment technology. Significant expansion facilities were installed in the 1940s, 1950s and 1960s, and since that time robust equipment analysis, equipment maintenance programs and proactive parts management have resulted in reliable operation. While these facilities are still dependable, these facilities have a finite life, and vendor/product support is no longer available for older equipment as equipment manufacturers moved to support newer technology.

Northern has been working to maintain and modernize its system for many years. Over time, Northern has repaired and replaced components of its transmission and storage plant to ensure continued reliability. Examples of Northern's modernization efforts over the last

five years include replacing compressor units at the Beatrice, Nebraska, Mullinville, Kansas, and Bushton, Kansas, compressor stations; replacing the molecular sieve vessels at the Garner, Iowa, and Wrenshall, Minnesota, liquefied natural gas (LNG) storage facilities; and abandoning the A-mainlines from Palmyra, Nebraska, to Ogden, Iowa, Palmyra to South Sioux City, Nebraska, and Bushton to Clifton, Kansas. While these efforts have maintained the reliability of Northern's system, Northern must continue to implement broader replacement programs for specific Asset Modernization needs.

Asset Modernization as a category was created to capture the dramatic increase in the costs related to the modernization projects. Conceptually, Northern's Asset Modernization program was created using FERC's final policy statement on Cost Recovery Mechanisms for Modernization of Natural Gas Facilities. This program is a significant expansion of Northern's historical maintenance and upgrade programs. The costs are captured in the following budget summary categories:

- Pipeline Assessment
- Compression Replacement
- LNG Equipment Replacement
- Underground Storage Integrity
- Vintage Pipeline Replacement

Northern must continue with this Asset Modernization effort in order to ensure its industry-leading service reliability will not suffer due to increased number of outages and outages of longer duration. In addition, Asset Modernization is required to ensure continued pipeline integrity and avoid unacceptable pipeline incidents. Distribution utilities have undertaken similar modernization efforts to replace vintage facilities such as cast-iron pipelines, which pose similar threats to service reliability and public safety.

Capital Expenditures Summary

Northern will complete \$239.2 million of Asset Modernization projects in 2020 and plans to add Asset Modernization projects totaling \$1.6 billion from 2021 through 2030.

Northern is at the point where it is necessary to replace many of the aged components and systems. If Northern does not continue this modernization effort now, service reliability will suffer due to more frequent and longer outages. Further, pipeline integrity would be jeopardized and inevitably result in threats to people and property.

Asset Modernization does not completely replace all vintage facilities on the Northern system as a majority of the approximately 14,700 miles of pipeline and 185 compressor units will continue to be maintained through more traditional means. Only those facilities and systems that are at the end of its useful life or where replacement is required by federal regulations are addressed by the Asset Modernization program.

Budget Summary Categories

Pipeline Assessment

On October 1, 2019, the Pipeline and Hazardous Materials Safety Administration (PHMSA) issued the first of a three-part final rule titled the Safety of Gas Transmission Pipelines: MAOP Reconfirmation, Expansion of Assessment Requirements and Other Related Amendments (Mega Rule). The final rule focuses primarily on reconfirming maximum allowable operating pressures and expanding assessment requirements to include the newly defined moderate consequence areas. The rule expands pipeline integrity assessment requirements by defining moderate consequence areas and requiring integrity assessments. The rule requires MAOP reconfirmation in high consequence areas, moderate consequence areas, and Class 3 locations that operate at or above 30% specified minimum yield strength.

The Pipeline Assessment category captures significant capital expenditures driven by the need to modernize infrastructure for the purpose of accommodating the internal inspection of pipelines and to comply with increased requirements imposed by new or updated pipeline safety laws and regulations. The costs for Asset Modernization fall into two major categories:

- (1) Pipeline modification projects on Class 3 pipeline segments that are operating above 30% specified minimum yield strength not previously assessed with in-line inspection tools to meet requirements of the Mega Rule.
- (2) Pipeline modifications to increase the percent of the system that is in-line inspection capable with the focus on large diameter pipelines and pipelines operating above 30% of their specified minimum yield strength in areas outside of high consequence areas, and to assist with meeting existing PHMSA Maximum Allowable Operating Pressure Regulations and other regulations.

As shown in Exhibit No. 1, Northern plans to spend \$614.2 million in Pipeline Assessment projects during the next 10 years.

These projects will have a significant O&M expense impact that will materialize in the form of the subsequent in-line inspections, tool data verification excavations and repair work associated with the inspections. These costs are not included in the capital portion of the work required to make the modifications, and are extremely variable based on the line length, tool technology required and data results of the inspection. The expenses associated with the inspections will be on a recurring basis, normally five to 10 years in frequency, depending on the condition of the line and regulatory requirement.

In comparison to Northern's previous seven years, the \$17 million average annual in-line inspection expenses is anticipated to increase by approximately one third or more over the 7-year period of 2020-2026. Further, the costs in 2020-2026 are expected to be nearly three times the costs of the first seven years of inspection from 2003 to 2009 when the high-

consequence area program began. These increases are due to the substantial increase in inspectable mileage resulting from the Asset Modernization program and regulatory requirements.

Compression Replacement

Northern's Asset Modernization Compression Replacement category represents the costs to replace vintage compression units throughout the system, with the priority placed on units based on vintage, criticality to pipeline operations, historical reliability concerns and outlook for future maintainability. The program also extends compression Asset Modernization to critical compression support auxiliary equipment and building and electrical infrastructure.

Northern has 111 compression units between 50 and 73 years old. As these facilities reach obsolescence, parts become more difficult if not impossible to obtain. In fact, Northern has had to manufacture many of its own replacement parts for obsolete units. Unexpected failures can lead to extended duration outages while parts are located or fabricated for the older compressor units, which negatively impacts service to customers. Northern has incurred rising costs of compression maintenance, which are directly tied to issues with an aging fleet.

With over half of these units reaching the 80-year mark and some surpassing 90-years old in the next 20 years, a replacement program has been implemented that will mitigate short- and long-term customer and public service reliability risks. As these facilities are not expected to last 100 years, it is likely the program will need to be expedited to effectively address reliability and maintainability risks as compression facilities reach the end of their life cycle and are no longer supported by industry parts or service providers.

High reliability of the Northern compression fleet is critical to meeting public service requirements and fulfilling customer commitments. The historical design of Northern's system and the design of subsequent expansions have taken advantage of economical incremental compressor installations to meet public service growth, while minimizing impacts to the environment and private landowners by avoiding long distance pipeline expansions. Over decades these designs have avoided pipe expansions that could affect wetlands, wildlife and private landowner property.

The current Asset Modernization plan includes replacement of up to 30 units through 2030. This represents 27% of the 111 vintage compression units and approximately 16% of Northern's 185 total compression units. Beatrice, Nebraska, Unit No. 27 was placed in service in 2016, Mullinville, Kansas, Unit No. 27 was placed in service in 2019 and Bushton, Kansas, Unit No. 33 was placed in service in 2020.

The units targeted for modernization are spread across Northern's system and are included in both the field and market areas. As a result, many units on the main trunks of the system have replacement plans in the near-term or have already been replaced. Vintage units along the main corridor of Northern's pipeline system at Bushton, Kansas; Mullinville, Kansas;

Beatrice, Nebraska; Ogden, Iowa; and Farmington, Minnesota, have been or will be replaced in the near-term to ensure reliable service to customers and the public. Specifically, the Beatrice, Nebraska; Mullinville, Kansas; and Bushton, Kansas, units were selected to eliminate the last three General Electric LM 1500 units remaining on the Northern system. These units are becoming increasingly unreliable, are nearing the end of their useful fatigue cycle life for critical rotating components, are obsolete and difficult to effectively repair, and are only supported by one service entity in the industry. The Ogden, Iowa, horizontal reciprocating compressor units are also becoming unreliable, obsolete, and generally unsupported within the industry. Most pipeline companies in North America have replaced vintage horizontal compressors years ago. Northern was able to extract several years more life out of the units, but replacement is now necessary. The Farmington, Minnesota, reciprocating Unit Nos. 1-5 will be replaced in 2021, as the station would otherwise no longer be able to meet emissions limit set by the Minnesota Pollution Control Agency for the facility.

As shown in Exhibit No. 1, Northern plans to spend \$287.6 million in Compression Replacement projects during the next 10 years.

Maintenance costs are essentially neutral from the compression replacement projects in terms of daily expenses. However, there is approximately \$1.25 million in annual savings due to the elimination of recurring overhaul expenses and a reduction in fuel expenses. Instead of regularly scheduled overhauls for reciprocating engines, nine vintage reciprocating units will be replaced with turbines. As a result, the overhauls are replaced with unit exchanges, which are capitalized.

LNG Replacement

Northern operates peak shaving LNG facilities at Wrenshall, Minnesota, and Garner, Iowa. The Wrenshall LNG station was installed in 1974, and the Garner LNG station was installed in 1977. These cryogenic facilities each have 2.1 billion cubic feet of LNG storage and can vaporize the stored liquefied gas into useable pipeline gas at a rate of 300,000 Mcf/day total through three vaporization trains. The liquefaction equipment can replace vaporized storage gas at a rate of 12,000-17,000 Mcf/day.

The LNG facilities are used as operational storage to support the delivery of hourly peaking volumes, to support the simultaneous receipt and delivery of transportation quantities, and to balance line pack requirements on Northern's system. Vaporization is not only used to ensure contractual deliveries are not jeopardized but has proven absolutely critical to customer reliability winter after winter.

This category represents the cost to replace major equipment components at the Wrenshall, Minnesota, and Garner, Iowa, LNG plants. LNG plant operations also involve significant electrical and electronic control equipment. Electrical system modernization increases the safety and reliability of station motor control centers and electrical power distribution to critical vaporization and liquefaction equipment.

The original facilities were installed in the 1970's, and as a result, many of the facilities have reached their end of useful life. Northern has historically maintained older equipment and replaced parts or subsystems versus wholesale replacements. However, in recent years, routine maintenance projects have proven insufficient, and Northern began replacing larger systems or pieces of equipment out of necessity. This equipment either displayed integrity concerns or required replacement due to obsolescence and unavailability of parts.

As shown in Exhibit No. 1, Northern plans to spend \$55.2 million in LNG Replacement projects during the next 10 years.

These projects are not expected to have any measurable impact to O&M expense, as the new equipment will require similar maintenance activities as the existing equipment.

Underground Storage Integrity

The Underground Storage Integrity category includes projects to ensure compliance with a new PHMSA rule. In 2020, the Safety of Natural Gas Underground Storage Final Rule became effective. This rule gave PHMSA new jurisdiction over the underground storage field wells and reservoirs. The new regulations incorporated new industry standards into the pipeline safety regulation that operators are required to implement, including American Petroleum Institute API- Recommended Practice 1171- Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon and Aquifer Reservoirs. In order to comply with the regulations, Northern revised its reservoir integrity management plan that includes new operating procedures and engineering standards and created the Underground Storage Integrity capital expenditure program.

Under its reservoir integrity management plan required per this rulemaking, Northern will complete additional observation wells and natural gas withdrawal wells the Redfield, Iowa, underground storage fields, and establish and maintain a buffer zone. Northern completed the installation of one withdrawal well in 2020.

As shown in Exhibit No. 1, Northern plans to spend \$25.2 million in Underground Storage Integrity projects during the next 10-year plan years.

The new wells will slightly increase storage O&M expense in order to maintain the new facilities.

Vintage Pipeline Replacement

The Vintage Pipeline Replacement projects will replace existing aged pipelines by abandoning Dresser-coupled and acetylene-welded mainlines and branch lines, and installing facilities designed to replace the capacity associated with the abandoned pipelines.

Dresser-coupled pipeline joint technology originated in 1891 and is now obsolete. Similarly, acetylene-welded pipeline technology was initially used in 1911 for pipeline

construction and has also been discontinued. These mechanical couples were historically used in natural gas pipeline applications and through the initial construction of Northern's system but were largely discontinued by 1940. Both Dresser-coupled and acetylene-welded joints are subject to failure from ground movement and can frequently leak natural gas. By 1933, the majority of cross-country pipelines were being constructed with the superior strength electric resistance arc-welded girth joints.

Furthermore, these joint types are not compatible with modern pipeline integrity assessment methods; they cannot be inspected with in-line inspection tools nor hydrostatically tested without incurring significant quantities of leaks. Additionally, this construction method has integrity concerns since much of this pipe is uncoated and is therefore susceptible to external corrosion. The Dresser-coupled joints rely on stable soils surrounding the pipe to maintain joint integrity, which can lead to integrity concerns when soils are eroded or become unstable. These pipeline segments, therefore, need to be retired and the capacity needs to be replaced.

While Northern has successfully operated these facilities for nearly 90 years, the facilities have reached the end of their useful life based on the increased failures and integrity concerns associated with the Dresser-couplings and acetylene welds.

As shown in Exhibit No. 1, Northern plans to spend \$660.5 million in Vintage Pipeline Replacement projects during the next 10 years.

The Vintage Pipeline Replacement category is expected to have a neutral impact on O&M expense and \$0.7 million decrease in compressor fuel expense. While leaks and repairs associated with the Dresser-coupled A-mainlines will certainly decrease, the replacement facilities include two compressor units. These units will require additional O&M expenses approximately equivalent to any anticipated savings. The new units will provide a fuel savings through an optimized system operation.

Conclusion

In summary, Northern will invest approximately \$1.6 billion over the next 10 years to modernize the pipeline, compression, underground storage and LNG facilities as described above, resulting in improvements to system integrity, reliability, efficiency and public safety.

Exhibit 1
Asset Modernization Project Detail

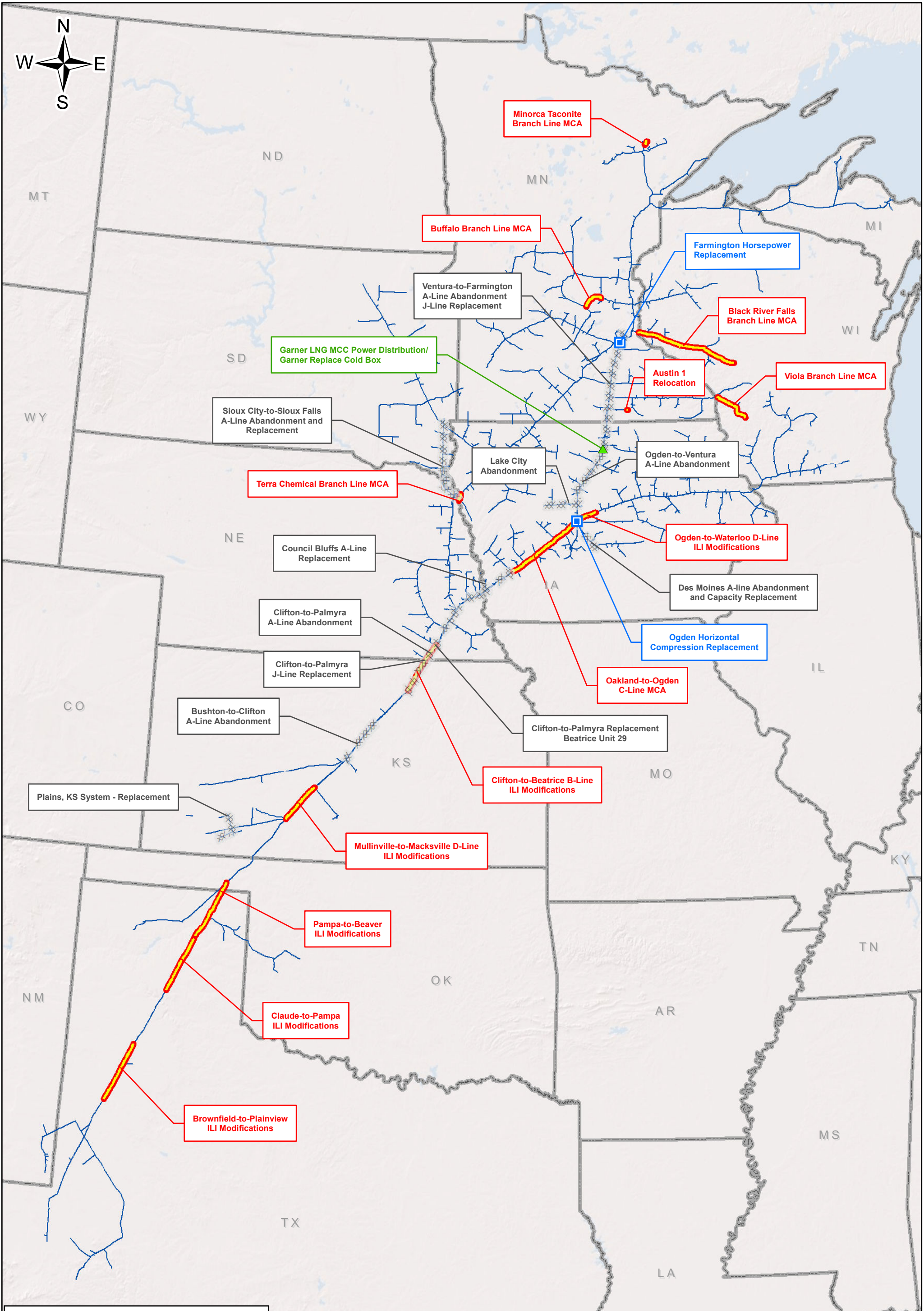
Project Description	2020	2021	2022	2023	2024-2030	10-year 2021-2030	Regulatory Authority
Pipeline Assessments							
Ventura-Faribault B-MCA					14,699,342		Prior Notice
Ventura-Faribault C-MCA			13,965,003				Prior Notice
Ventura-Faribault D-MCA					6,409,193		Blanket
Replace Anamosa-CLS					897,272		Blanket
Portage-MCA							Blanket
Stillwater-MCA			2,066,476				Blanket
Replace Worthington-CLS					271,935		Blanket
Cambridge 2nd Mods-CLS					252,316		Blanket
Huron-MCA			2,313,607				Blanket
Lady Smith BL-MCA				2,725,677			Blanket
Replace Morris-CLS					857,088		Blanket
Galena-Janesville-MCA			4,231,895				Blanket
Waterloo-Dubuque-MCA					13,400,920		Prior Notice
Replace Cedar Falls-CLS					238,540		Blanket
Replace Sauk City BL-CLS					952,320		Blanket
Viola-MCA		2,923,872					Blanket
Palmyra-Oakland C-MCA					15,607,232		Prior Notice
Palmyra-Oakland D-MCA				8,253,772			Blanket
Ogden-Vent C-MCA				17,195,649			Prior Notice
Ogden-Vent D-MCA					6,315,829		Blanket
Oakland-Ogden B-MCA					15,204,020		Prior Notice
Oakland-Ogden C-MCA	10,256,093						Blanket
MNB95101 Tie-Over-MCA				142,890			Blanket
Beloit-MCA					1,189,299		Blanket
Blaine-MCA				612,086			Blanket
Replace Coon Rapids-CLS					285,696		Blanket
Essar-MCA					891,509		Blanket
Grand Rapids-MCA				3,191,977			Blanket
Replace Ham Lake-CLS					1,904,639		Blanket
Replace Little Falls-CLS					285,696		Blanket
Onawa-MCA				1,070,658			Blanket
OPPD BL-MCA					590,712		Blanket
Paynesville-MCA				1,878,764			Blanket
Portage Loop-MCA				1,003,931			Blanket
White Bear-MCA				1,879,747			Blanket
Yankton 2nd-MCA					446,184		Blanket
Beaver-to-Mullinville ILI Mods	11,071,350						Blanket
GCCO to Brownfield ILI Mods			1,905,985				Blanket
Brownfield-Plainview ILI Mods		9,157,573					Blanket
Beatrice-Palmyra C-MCA	10,523,036						Blanket
Beatrice-Palmyra D-MCA					8,674,294		Blanket
Beatrice-Palmyra E-MCA					6,430,548		Blanket
Tescott-Clifton E-MCA				5,374,743			Blanket
Sid Richardson-Hobbs-MCA					8,163,614		Blanket
Ogden-Redfield C-MCA					3,943,915		Blanket
Ogden-Redfield B-MCA					4,901,778		Blanket
Madison-MCA					4,148,617		Blanket
Holcomb-Kalvesta B-MCA					9,676,047		Blanket
Dumas-Sunray-MCA					6,520,992		Blanket
Austin 1 Relocation	418,514	726,669					Blanket
Black River Falls-MCA	6,124,218	10,200					Blanket
Tomah 6-inch					1,002,776		Blanket
Rockford-MCA					2,428,200		Blanket
Buffalo-MCA		537,122					Blanket
Wisconsin Dells					501,388		Blanket
Hudson-MCA			1,949,898				Blanket
Replace MP 7.5-8 Monona					501,388		Blanket
Charles City-MCA					5,380,531		Blanket
Replace Class 3 Anamosa					501,388		Blanket
Black River Falls-MCA							Blanket
Replace Platteville					501,388		Blanket
Aberdeen 12-inch-MCA					12,626,600		Blanket
Terra Chemical-MCA		2,090,233					Blanket
Watkins-MCA				536,264			Blanket
Jesup-MCA					517,861		Blanket
Little Falls					1,002,776		Blanket
Albany					501,388		Blanket
Monroe-MCA					517,861		Blanket
Princeton Tie-over					3,809,316		Blanket
Arlington 4-inch					3,809,316		Blanket
Lytton-MCA					513,922		Blanket
Morris-MCA					5,109,062		Blanket
Bloomer-MCA					776,791		Blanket
Grinnell-MCA					5,238,601		Blanket
NGPL Interconnect-MCA					4,226,710		Blanket
St Michael 2nd-MCA					517,861		Blanket
Iowa Falls-MCA					4,190,841		Blanket
Hancock-MCA					1,039,690		Blanket
Marshall-MCA					513,922		Blanket
Paynesville-MCA					3,167,160		Blanket
Sioux City 1A 6-inch					451,538		Blanket
Replace Albany					476,164		Blanket
Grand Rapids 8-inch					4,761,645		Blanket
Alexandria 2nd-MCA					2,571,263		Blanket

Exhibit 1
Asset Modernization Project Detail

Project Description	2020	2021	2022	2023	2024-2030	10-year 2021-2030	Regulatory Authority
Andrews-MCA					6,397,073		Blanket
Virginia					2,856,959		Blanket
Kermite-MCA					4,704,021		Blanket
Hobbs-Plains-MCA					603,018		Blanket
Yankton-MCA					603,018		Blanket
NGPL IC-MCA					3,254,475		Blanket
Waterloo BL-MCA					2,104,579		Blanket
Decorah BL-MCA					3,015,088		Blanket
Mason City BL-MCA					603,018		Blanket
Rosemount Jct-St Paul-MCA					3,015,088		Blanket
Lacrosse BL-MCA					3,517,569		Blanket
Flint Hills-MCA					3,015,088		Blanket
Shamrock-MCA					3,015,088		Blanket
Waverly BL-MCA					3,015,088		Blanket
Willmar BL-MCA					4,020,078		Blanket
Sheldon Power Plant-MCA					3,015,088		Blanket
Lake City BL-MCA					952,320		Blanket
Springfield 2nd BL-MCA					3,015,088		Blanket
Blair/Cargill BL-MCA					3,015,088		Blanket
Yankton 2nd BL-MCA					603,018		Blanket
Yankton 2nd BL-MCA					5,163,791		Blanket
Yankton 2nd BL-MCA					603,018		Blanket
Pipestone BL-MCA					1,001,486		Blanket
Bristow BL-MCA					2,512,574		Blanket
Osage BL-MCA					1,005,029		Blanket
Hampton BL-MCA					2,856,959		Blanket
Clarksville BL-MCA					2,380,799		Blanket
Tama BL-MCA					4,285,480		Blanket
Independence BL-MCA					2,380,799		Blanket
Harlan Loop-MCA					2,380,799		Blanket
Manchester BL-MCA					2,380,799		Blanket
Otter Creek BL-MCA					1,428,479		Blanket
Granite Falls BL-MCA					1,428,479		Blanket
Hanna Mining BL-MCA					476,160		Blanket
Dayton 2nd BL-MCA					1,428,479		Blanket
Mora BL-MCA					1,428,479		Blanket
Springfield BL-MCA					3,015,088		Blanket
Luverne BL-MCA					1,005,029		Blanket
Windom BL-MCA					1,507,544		Blanket
Herburn TBS #2 BL-MCA					4,020,078		Blanket
Minorca Taconite BL-MCA		1,672,539					Blanket
Brookings BL-MCA					2,010,059		Blanket
Parkston/Scotland BL-MCA							Blanket
M770D ILI Mods	1,280,244						Blanket
Farmington-North Branch B-MCA					4,059,661		Blanket
GCCO-Plains ILI Modifications	768,120						Blanket
Ogden-Waterloo D ILI Mods		4,003,533					Blanket
Galena ILI Mods	225,373						Blanket
Ogden-Vent B ILI Mods					20,101,699		Prior Notice
Oakland-Ogden D ILI Mods					6,219,823		Blanket
Beaver-to-Mullinville ILI Mods	5,015,536						Blanket
Pampa-Beaver ILI Mods		3,251,744					Blanket
Claude-Pampa ILI Mods		10,517,924					Blanket
Mullinville-Macksville C ILI Mods					8,860,247		Blanket
Mullinville-Macksville D ILI Mods		8,091,141					Blanket
Mullinville-Macksville E ILI Mods					5,946,080		Blanket
Macksville-Bushton B ILI Mods	50,696		11,877,244				Blanket
Macksville-Bushton D ILI Mods	30,440		5,345,842				Blanket
Macksville-Bushton E ILI Mods	33,745				6,807,184		Blanket
Tescott-Clifton B ILI Mods	519,866						Blanket
Clifton-Beatrice B ILI Mods		9,936,547					Blanket
Clifton-Beatrice C ILI Mods	8,971,934						Blanket
Clifton-Beatrice D ILI Mods					16,412,778		Prior Notice
Clifton-Beatrice E ILI Mods					7,395,391		Blanket
Auburn J-line Extension	524,399						Blanket
Auburn A Line Repair	398,021						Blanket
M600C Launcher	545,114						Blanket
Block Valve 3 Replacement	641,784						Blanket
Fowler-Mullinville ILI Mods					6,975,939		Blanket
Sublette-Fowler ILI Mods					10,689,099		Blanket
Kalvesta-Burdette ILI Mods					7,153,448		Blanket
Cedar Rapids ILI Mods					4,599,150		Blanket
Hemphill #2 Loop ILI Mods					3,639,838		Blanket
Hemphill CO #2 Loop ILI Mods					4,053,423		Blanket
Shamrock Loop ILI Mods					4,921,147		Blanket
Jayhawk Plant ILI Mods					3,639,838		Blanket
Mullinville Mods					6,139,833		Blanket
Valero Interconnect Mods					502,544		Blanket
Trans Pecos Lateral Mods					753,816		Blanket
Pampa-Beaver ILI Mods		1,303,147					Blanket
M600C Shallow Pipe Remediation	1,791,111						Blanket
Columbus 2nd ILI Mods					2,991,869		Blanket
Ames 2nd ILI Mods					2,949,334		Blanket
SSC-Paullina C ILI Mods					17,535,697		Prior Notice
Clifton-Beatrice BBB02 Removal	767,570						Blanket

Exhibit 1
Asset Modernization Project Detail

Project Description	2020	2021	2022	2023	2024-2030	10-year 2021-2030	Regulatory Authority
Clifton-Beatrice C Verification Run	150,018						Blanket
Subtotal: Pipeline Assessments	64,670,000	59,796,631	43,655,949	44,349,085	466,386,552	614,188,218	
Compression Replacement							
Waterloo MCC Replacement				303,325			2.55(a)
Alexandria MCC			649,416				2.55(a)
Claude Turbine MCC				508,060			2.55(a)
Garner LNG MCC				4,983,541			2.55(a)
Hubbard MCC			448,005				2.55(a)
LaCrescent MCC Replacement			924,888				2.55(a)
LaCrescent MCC Replacement			170,336				2.55(a)
Mullinville Compressor Unit 27	1,252,266						2.55(b)
Bushton Compressor Unit 33	20,844,133						2.55(b)
Ogden Horizontal Compression Replacement	5,196,256	25,439,406					2.55(b)
Ventura Interconnect MCC Upgrade	156,093						2.55(a)
Paullina 1-5 Replacement Compression			25,063,654				2.55(b)
Spraberry 6-10 Replacement Compression					29,562,429		2.55(b)
Brownfield 1 Replacement Compression					28,748,542		2.55(b)
Macksville 1-4 Replacement Compression					28,599,023		2.55(b)
Macksville 1-4 Replacement Compression					29,491,838		2.55(b)
Bushton 29-31 Replacement Compression					28,693,919		2.55(b)
Farmington Horsepower Replacement	37,431,876	24,581,597					2.55(b)
Bushton 29-31 Replacement Compression					29,369,739		2.55(b)
Beaver 19-21 Replacement Compression					30,030,833		2.55(b)
Subtotal: Compression Replacement	64,796,000	50,021,003	27,256,299	5,794,925	204,496,323	287,568,450	
LNG Replacement							
Garner LNG MCC Power Distribution		1,363,102	1,448,512				2.55(a)
Wrenshall Vap Replacements			1,012,325	10,913,799	4,090,387		2.55(b)
Garner Replace Cold Box	53,278	1,648,303	4,824,680				2.55(b)
Garner LNG Refrigeration Compressor/Motor Replacement				29,870,520			Prior Notice
Subtotal: LNG Replacement	67,000	3,011,405	7,285,517	40,784,319	4,090,387	55,171,627	
Underground Storage Integrity							
Redfield - New I/W Well					4,926,750		Blanket
Redfield - New I/W Well					5,195,630		Blanket
Redfield - New I/W Well					4,926,799		Blanket
Redfield Ellis 3 New Well			4,926,702				Blanket
Redfield Maher 11 Well Replacement	2,193,875						Blanket
Redfield - New I/W Well					5,195,681		Blanket
Subtotal: Underground Storage Integrity	2,230,000		4,926,702		20,244,860	25,171,562	
Vintage Pipeline Replacement							
Ogden-Ventura A-line Abandonment	20,325,215	9,889,541	14,084	33,427,738			FERC 7(b)/(c)
Palmyra-SSC Abandonment	7,725,909						FERC 7(b)/(c)
Palmyra - SSC A-line Replacement - 1.7 Mile Loop	9,045,869						FERC 7(b)/(c)
Palmyra - SSC A-line Replacement - 2.48 Mile Loop	8,722,972						FERC 7(b)/(c)
Bushton-Clifton Abandonment	5,931,730	1,347,035					FERC 7(b)/(c)
Bushton-Clifton A Mainline Replacement - Tescott Unit 6	30,393,452						FERC 7(b)/(c)
Clifton-Palmyra A-line Abandonment	8,030,301	6,192,478					FERC 7(b)/(c)
Clifton-Palmyra A-line Replacement Beatrice Unit 29	7,779,502	22,187,983					FERC 7(b)/(c)
South Sioux City-Sioux Falls A-line Abandonment and Replacement	4,880,427	7,023,850	162,282,602	541,636			FERC 7(b)/(c)
Ventura-Farmington Abandonment	28,129	4,170,564	5,100	16,814,428	89,250,008		FERC 7(b)/(c)
Mullinville-Sublette Abandonment				4,795,418	18,379,889		FERC 7(b)/(c)
Council Bluffs A-line Abandonment	239,820	2,031,082					Blanket
Auburn A Line Abandonment	2,271,640						Prior Notice
Lake City Abandonment	177,388	14,255,484	322,329	13,137,073			Prior Notice
Des Moines A-Line Abandonment and Capacity Replacement	10,344	3,589,738	778,753	41,302,713			FERC 7(b)/(c)
Plains, KS System Replacement	1,250,547	12,105,416					Blanket
Mason City Dresser Coupled 6.2 miles					5,889,267		Blanket
Fort Dodge Dresser Coupled 3.4 miles					3,229,598		Blanket
Columbus Dresser Coupled 10.27 miles					9,755,286		Blanket
Beemer Dresser Coupled 9.26 miles					8,795,906		Blanket
Mankato Dresser Coupled 23.26 miles					22,122,269		Prior Notice
Ashgrove Dresser Coupled 5.68 miles					5,402,171		Blanket
Schuyler Dresser Coupled 7.63 miles					7,229,655		Blanket
Blair Dresser Coupled 17.61 miles					16,686,006		Prior Notice
Wayne Dresser Coupled 13.18 miles					12,488,624		Blanket
Yankton Dresser Coupled 29.03 miles					27,506,800		Prior Notice
Yankton Dresser Coupled 3.49 miles					3,306,880		Blanket
Britt Dresser Coupled 6.78 miles					6,404,714		Blanket
Albert Lea Dresser Coupled 0.87 miles					824,351		Blanket
Belle Plaine Dresser Coupled 4.62 miles					4,377,589		Blanket
Worthington Dresser Coupled 18.89 miles					17,898,845		Prior Notice
New Ulm Dresser Coupled 23.85 miles					22,598,594		Prior Notice
Austin Dresser Coupled MP 9.7-16.3					10,038,878		Blanket
Austin Dresser Coupled MP 16.8-20.0					4,967,564		Blanket
Dresser Couple BL Replacement					1,613,437		Blanket
Subtotal: Vintage Pipeline Replacement	107,453,000	88,332,100	163,402,867	110,015,745	298,748,361	660,499,073	
Asset Modernization Total	239,216,000	201,149,038	246,527,335	200,944,075	997,775,799	1,646,396,247	



- ▲ 2021 LNG Replacement
- 2021 Compression Replacement
- XXXX 2021 Vintage Pipeline Replacement
- 2021 Pipeline Assessments
- NNG Pipeline

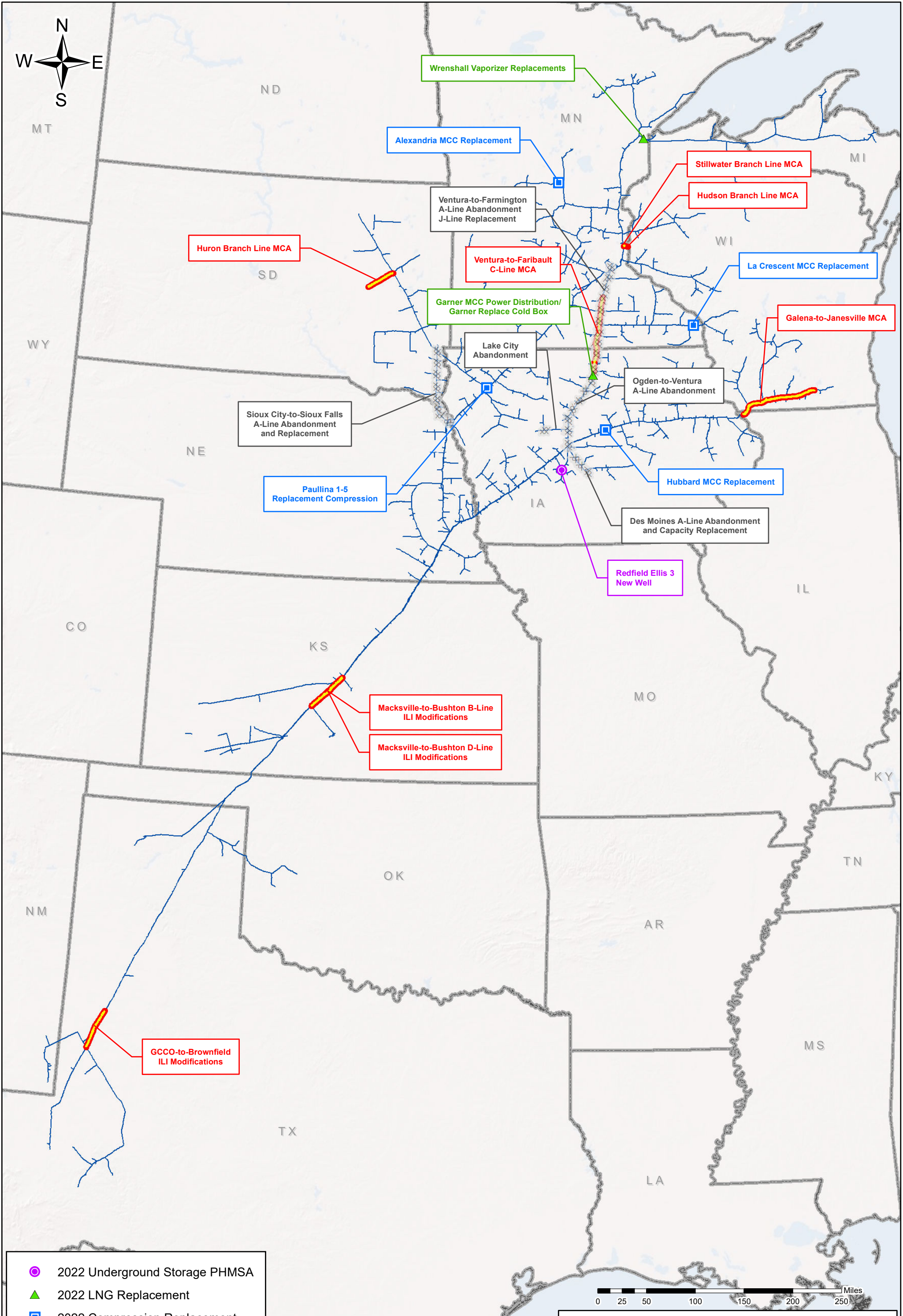
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2021 Asset Modernization Projects

Engineering_Construction\8259_2020_2022 Asset Modernization Projects (12/8/2020)

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- 2022 Underground Storage PHMSA
- ▲ 2022 LNG Replacement
- 2022 Compression Replacement
- 2022 Vintage Pipeline Replacement
- 2022 Pipeline Assessments
- NNG Pipeline


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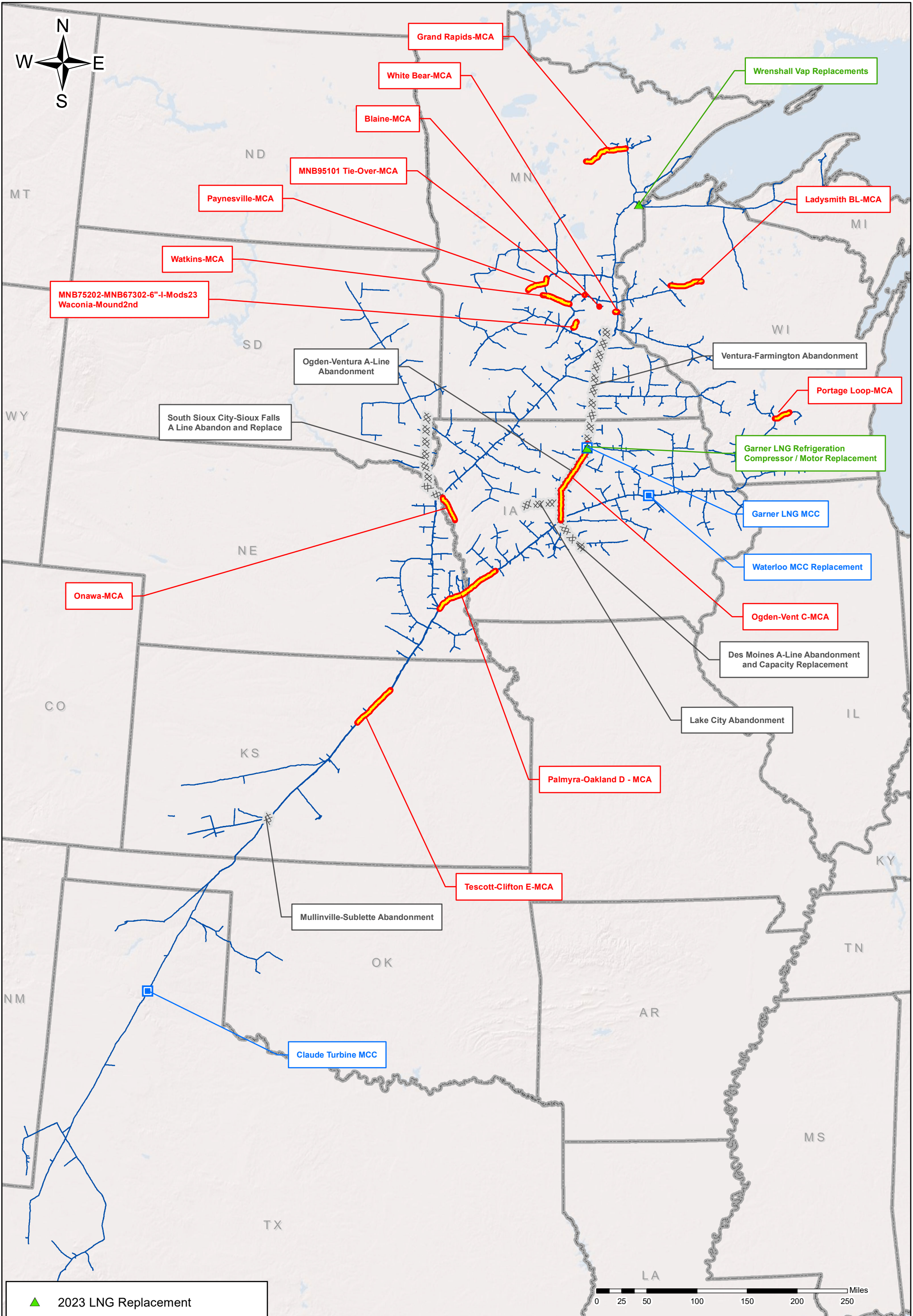
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2022 Asset Modernization Projects

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-  2023 LNG Replacement
-  2023 Compression Replacement
-  2023 Pipeline Assessment MCA
-  2023 Vintage Pipeline Replacement
-  NNG Pipeline


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2023 Asset Modernization Projects

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