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June 1, 2020

Ms. Steffany Powell Coker
Secretary to the Commission
Public Service Commission of Wisconsin
4822 Madison Yards Way
North Tower - 6th Floor
Madison, WI 53705-9100

Re: Application of Wisconsin Electric Power Company and Wisconsin Gas LLC for Certificate of Authority to Construct Liquefied Natural Gas Peaking Facilities

Dear Ms. Powell Coker:

On November 1, 2019, Wisconsin Electric Power Company - Gas Operations and Wisconsin Gas LLC (together, "Utilities") filed an application requesting a Certificate of Authority to install and place in service two new liquefied natural gas ("LNG") peaking facilities in southeastern Wisconsin near Ixonia and Bluff Creek. The enclosed filing provides updated information on the project sites for the project. Because this has been prepared as a complete application the November 2019 filing is superseded in its entirety by this application.

As indicated in the November 2019 filing, the LNG facilities project provides the following benefits:

- Provides new infrastructure in order to increase firm deliverability of natural gas to their distribution systems and maintain reliable service to their customers, particularly during periods of peak natural gas demand (normally, the coldest days of the winter).
- Provides a lower cost alternative for the Utilities compared to procuring additional deliverability with one or more pipelines for new capacity that would need to be constructed and paid for by the Utilities.
- In addition to significant cost savings to the customer, the project has a number of attributes that make them the better strategic solution to the Utilities forecasted deliverability and supply needs as follows:
    - Utility control and PSCW oversight
    - Physical hedge against volatile gas prices
    - The project allows for expansion of capacities and thus provides a physical price hedge against future interstate pipeline expansion costs
    - With a smaller physical footprint, the construction and operation have less of an environmental impact than an interstate pipeline expansion
    - A "no-regrets" solution because even if the forecasted increase in firm gas demand does not occur, the Utilities will be able to reduce their reliance on higher priced interstate pipeline capacity over time while still providing customers all the benefits listed above.

The construction schedule is planned to take place from November 2020 through November 2023. The Utilities respectfully request approval of this application no later than October 1, 2020, to allow sufficient time to receive the necessary DNR permits and approvals, to negotiate the necessary property transactions, to complete engineering, and to place initial material orders and complete construction so that the LNG facilities can be placed in service for the 2023/2024 winter heating season.

The attached application provides a detailed discussion of the need for the proposed LNG facilities, the economic analysis of alternatives, and satisfies the application filing requirements for natural gas pipeline construction projects.

If you have any questions regarding this application, please do not hesitate to contact Rich Stasik at richard.stasik@wecenergygroup.com or (414) 221-3685.

Very truly yours,

Theodore T. Eidukas
Vice President, State Regulatory Affairs

Attachments

cc: Lindsay Tekler, Department of Natural Resources
Jennifer Heaton-Amrhein, Department of Agriculture, Trade and Consumer Protection

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
ADID	Advanced delineation and identification
agl	Above ground level
AGRU	Acid Gas Removal Unit
AHI	Architecture and History Inventory
ANR	ANR Pipeline Company
ARI	Archaeological Report Inventory
ASI	Archaeological Sites Inventory
ASME	American Society of Mechanical Engineers
AT	Auxiliary transformer
ATC	American Transmission Company
Bcf	Billion cubic feet
BITP/A	Broad Incidental Take Permit/Authorization
BMP	Best Management Practices
BOG	Boil Off Gas
BOP	Balance of Plant
CA	Certificate of Authority
CO2	Carbon dioxide
CT	Combustion Turbines
CWA	Clean Water Act
CWIP	Construction Work in Process
DATCP	Department of Agriculture, Trade, and Consumer Protection

Abbreviation	**Term/Phrase/Name**
DCS	Digital Control System
Dth	Dekatherm
ESD	Emergency Shutdown
ER	Environmental Resources
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FM	Factory Mutual
FT	Firm Transportation
GAN	Gas nitrogen
GIS	Geographical information system
Guardian	Guardian Pipeline LLC
GSC	Gas Supply Consulting
HDMS	Hazard Detection and Mitigation System
HMI	Human-Machine Interface
HP	Horsepower
HV	High Voltage
I/O	Inputs/Outputs
ISA	International Society of Automation
LAN	Local Area Network
LDC	Local Distribution Companies
LFL	Lower Flammable Limit

Abbreviation	Term/Phrase/Name
LiDAR	Light Detection and Ranging
LIN	Liquid Nitrogen
LNG	Liquefied Natural Gas
LNG Construction Footprint	Extent of temporary and permanent disturbance at each site
LNG Facility	Fenced area for each facility
LOTO	Lockout/Tagout
MCC	Motor Control Center
MDQ	Maximum Daily Quantity
µg/Nm^3	Microgram per Newton-meter cubed
MERC	Minnesota Energy Resources Corporation
MMSCFD	Million standard cubic feet per day
NAAQS	National Ambient Air Quality Standards
NFPA	National Fire Protection Association
NGP	Natural Gas Pipeline Company
NNG	Northern Natural Gas
NPV	Net Present Value
NR	Natural Resources
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OHWM	Ordinary High-Water Mark
PDC	Power Distribution Center

Abbreviation	Term/Phrase/Name
PEMB	Pre-engineered metal buildings
PGAC	Purchased Gas Adjustment Clauses
PGL	Peoples Gas Light and Coke Company
PLC	Programmable Logic Controller
PLSS	Public land survey system
ppmv	Parts per million by volume
Project	Two LNG facilities and associated pipelines
PSCW	Public Service Commission of Wisconsin
PVRR	Present Value Revenue Requirement
QMR	Quadruple Modular Redundant
ROFR	Right Of First Refusal
ROW	Right of Way
RTU	Remote Terminal Unit
SAMP	Special Area Management Plan
SIS	Safety Instrumented System
SO2	Sulfur Dioxide
SPCC	Spill Prevention, Control and Countermeasures
SSURGO	Soil Survey Geographic Database
SST	Station service transformer
SWIS	Special wetland inventory studies
TCP/IP	Transmission Control Protocol/Internet Protocol
TMR	Triple Modular Redundant

Abbreviation	**Term/Phrase/Name**
UL	Underwriters Laboratories
UPS	Uninterrupted Power Supply
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish & Wildlife Service
usg	U.S. gallons
usgpm	U.S. gallons per minute
Utilities	WEPCO and WG
VAC	Volts alternating current
WDNR	Wisconsin Department of Natural Resources
WEC	WEC Energy Group, Inc., the corporate parent of WEPCO and WG
We Energies	WGWe Energies is the trade name of WEPCO and WG
WE-GO	Wisconsin Electric Power Company - Gas Operations
WEPCO	Wisconsin Electric Power Company (d/b/a We Energies)
WG	Wisconsin Gas LLC (d/b/a We Energies)
WHS	Wisconsin Historical Society
WisDOT	Wisconsin Department of Transportation
WRAM	Wetland Rapid Assessment Methodology
WWI	Wisconsin Wetland Inventory
Viking	Viking Pipeline Co.

1.0 PROJECT OVERVIEW

1.1 Introduction

Wisconsin Electric Power Company ("WEPCO") and Wisconsin Gas LLC ("WG") (together, "Applicants" or "Utilities") submit this application to the Public Service Commission of Wisconsin ("PSCW") for a Certificate of Authority ("CA") under Wisconsin Statutes §196.49 and Wisconsin Administrative Code PSC 133.03 to construct a system of new Liquefied Natural Gas ("LNG") facilities and associated natural gas pipelines near Ixonia and Bluff Creek, Wisconsin (the "Project").

The Project is needed to ensure that the Utilities can continue to serve their customers reliably and efficiently, especially during periods of peak demand. In order to meet their customers' demand for heating and process gas the Utilities rely predominantly on long-term firm capacity on interstate pipelines and firm contracted gas supplies. Each Utility forecasts increased demand for its firm (uninterruptible) natural gas supply and distribution services in the near term [redacted]), and therefore needs the capability of getting more natural gas delivered to its distribution system. The challenge today is that the capacity of the interstate pipelines serving Southeastern Wisconsin is fully subscribed for the foreseeable future.

Historically, when the Utilities have identified the need for increased natural gas deliverability, they have obtained [redacted] After analyzing the cost of additional interstate pipeline capacity, the Utilities identified an approach that would enable them to meet their needs at a much lower cost to customers (an estimated combined savings of approximately $224 million net present value ("NPV") over the lowest cost Altenrative using the base planning assumptions[1]) by constructing new LNG "peaking" facilities in Southeastern Wisconsin that will store natural gas in liquefied form and provide on short notice a ready supply of natural gas to the Utilities' distribution systems during peak demand periods, normally the coldest days of the winter. These facilities will take gas delivered via the Utilities' existing pipeline capacity and cool the gas to -260 ºF to liquefy it and reduce its volume by 600% for storage. When it is needed, the LNG will be heated to vaporize it for injection into the Utilities' distribution systems.

The facilities the Utilities seek to construct are analogous to combustion turbine "peaker" electric generation facilities. Like combustion turbine peakers, LNG peaking facilities are called upon during

[1] Of this amount approximately $103 Million will accrue to WEPCO customers and approximately $122 Million will accrue to WG customers.

peak periods of usage to complement a utility's base and intermediate load resources. Although LNG peaking facilities store gas (in liquefied form), they are distinguishable from underground storage (e.g., WEC's Bluewater facility in Michigan that serves WEC subsidiaries WEPCO, WG and Wisconsin Public Service Corporation). LNG peaking facilities are designed to provide a short-term supply of gas for a limited number of days of peak demand, whereas underground storage provides the bulk of the Utilities' gas supply during the winter months. Because Wisconsin lacks the geology to store gas underground, the Utilities' underground storage resources are located elsewhere, dependent on interstate pipelines for delivery of gas to and from the facilities.

The LNG peaking facilities would cost-effectively diversify and add reliability and resiliency to the Utilities' existing portfolios of interstate pipeline capacity, firm gas supply contracts, and contracted underground storage. To supply gas during peak periods today, the Utilities must rely on short-term supplies in the market and interstate pipeline capacity to deliver such supplies. The proposed alternative—owning LNG peaking facilities in Wisconsin—will provide the Utilities with short-term gas supplies that are already delivered and connected to the Utilities' distribution system, without the need to hold additional amounts of firm pipeline capacity year round. The LNG peaking facilities would not impair the efficiency of service, provide unreasonable excess facilities, or add to the cost of service without propoportionaly increasing the value or available quantity of service.

Figures 1-1 and 1-2 depict how the proposed LNG peaking facilities will fit into the Utilities' resource portfolios compared to the alternative [redacted] to meet their forecasted needs. As these figures show, the proposed LNG peaking facilities will allow the Utilities to more efficiently serve their peak demands, given how sensitive demand is to temperature and weather conditions, without the need for additional swing supplies and the interstate pipeline capacity needed to deliver it. In the Alternative, [redacted] as opposed to only meeting at or near peak periods, [redacted], during the winter.

Figure 1-1: Load Duration Curve with LNG

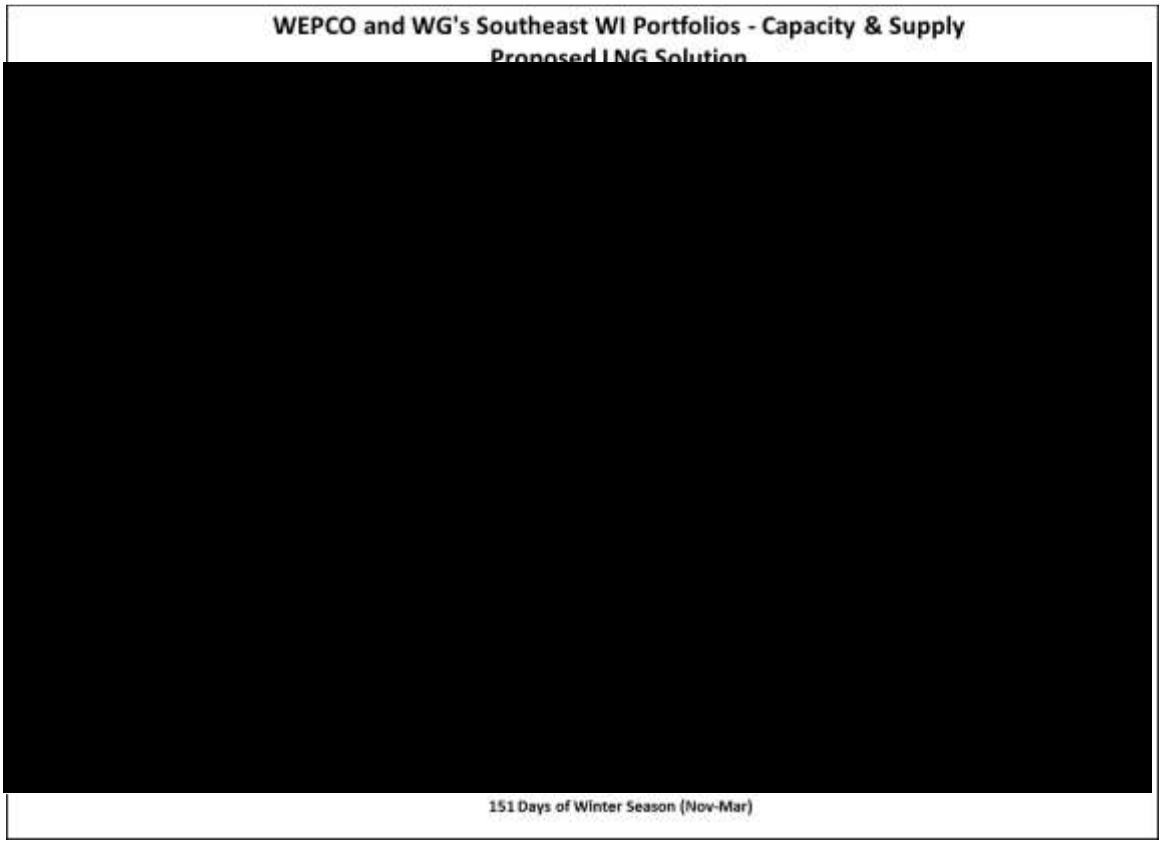
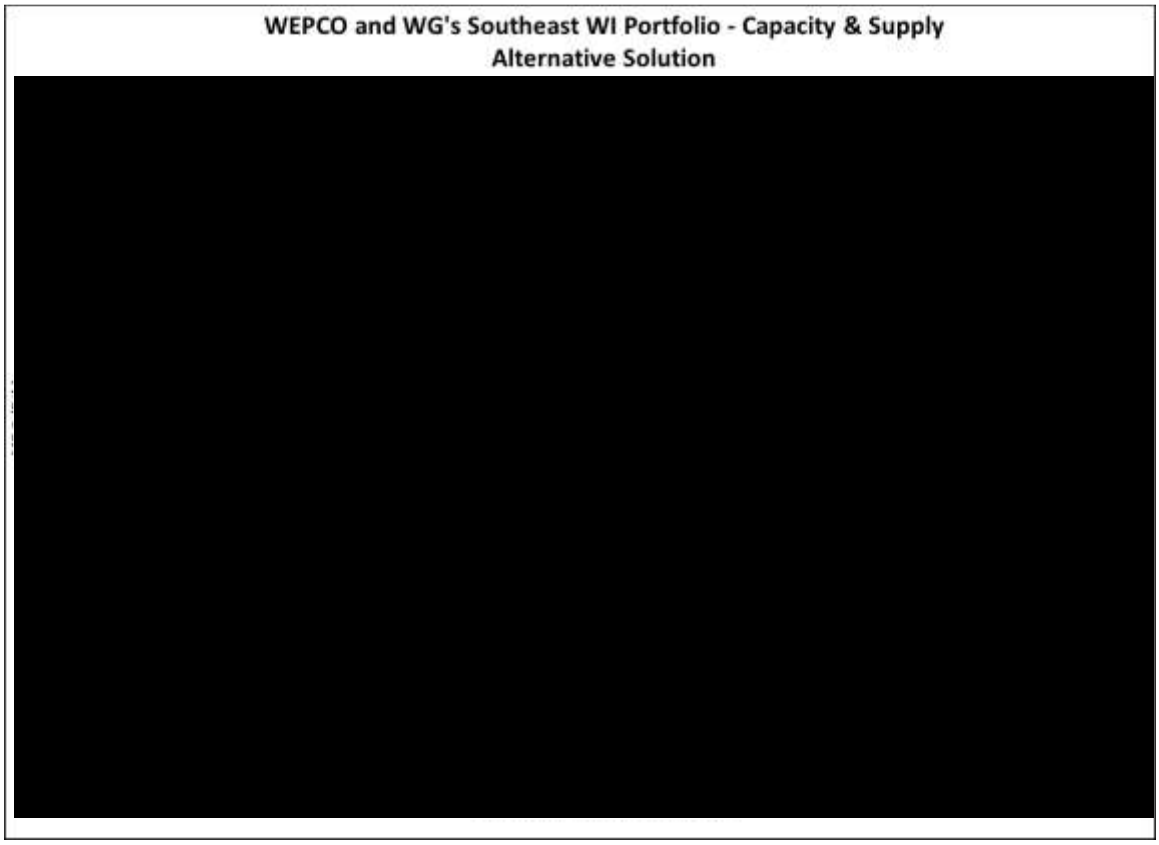


Figure 1-2: Load Duration Curve without LNG

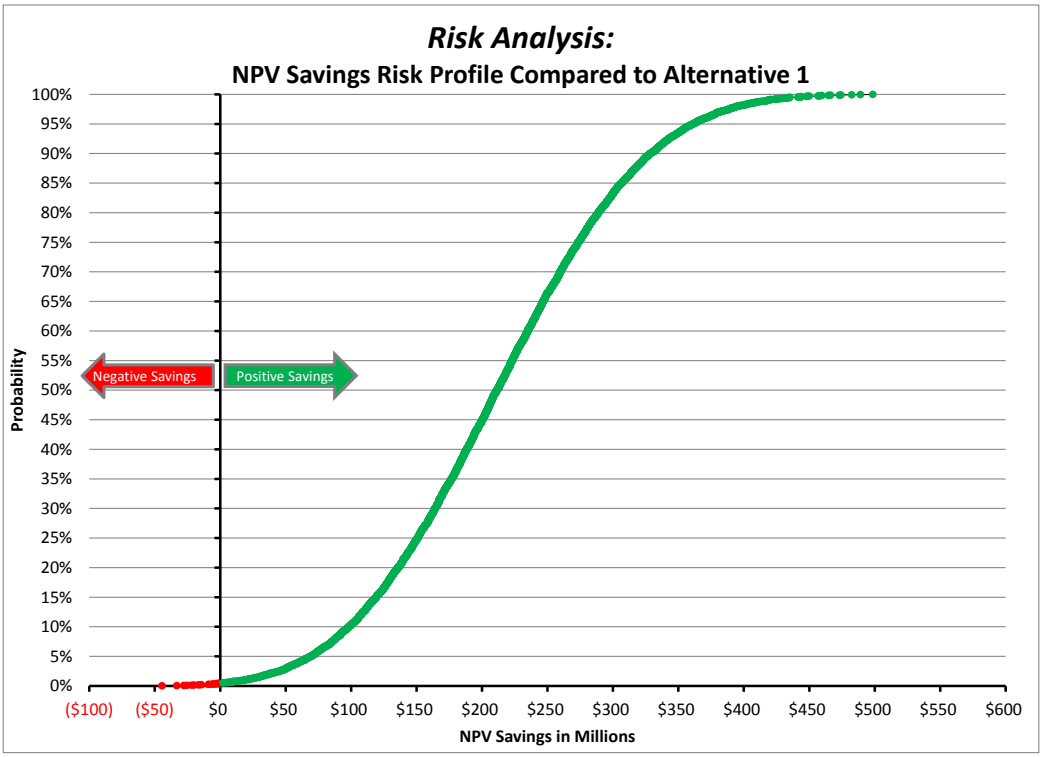


The LNG peaking facilities will provide the Utilities' customers significant value compared to the alternatives analyzed. The economic analysis performed by the Utilities is very robust and includes evaluations under different load growth scenarios, numerous sensitivities to key assumptions, and a risk analysis to test and confirm the overall economics of the LNG facilities. Figure 1-3 includes a risk profile showing the combined NPV savings the Project provides compared to the next lowest cost alternative using a complete enumeration[2] of the sensitivities identified in the risk analysis. The risk analysis includes a combined 3,888 sensitivity scenarios and of these sensitivities only 23, or 0.6%, of the sensitivity scenarios results in a net cost of the Project. In other words, 99.4% of the sensitivity scenarios performed resulted in the Project providing ratepayers savings compared to Alternative 1, and those scenarios represent extreme, very low probability and worst case combinations of assumptions. The minimum NPV savings observed resulted in a net cost of $51 million for the ratepayer while the maximum NPV savings observed was $489 million. Eliminating the 5% "book ends" on each end of the risk profile results in a 90% probability the NPV savings will approximately be between **$60 and $355 million**. The sensitivity

[2] The risk analysis combines multiple sensitivities at the same time to create a scenario. All possible combinations of the sensitivies were analyzed.

scenarios that indicate the Alternative would provide savings compared to the Project are extreme book end scenarios and only occur if the sensitivities analyzed would benefit the Alternative and be a detriment to the Project.

Figure 1-3: Sensitivity Analysis NPV Savings



In addition to significant cost savings to customers, the proposed LNG peaking facilities have a number of attributes that make them the best strategic solution to the Utilities' forecasted deliverability needs for customers:

- Utility control and PSCW oversight. The Utilities will have direct control and the PSCW will have direct oversight, of the facilities, which is not the case with [redacted]

- Physical hedge against volatile gas prices. In addition to their primary reliability function, LNG peaking facilities will also provide the Utilities with a physical hedge against price volatility in the gas market because they can be used to quickly dispatch supply and reduce the need to purchase gas during high price periods.

- Expandability. The proposed facilities will be designed in a manner that allows for optionality and flexibility to expand the deliverability and thus provide a physical price hedge [redacted]

[redacted]

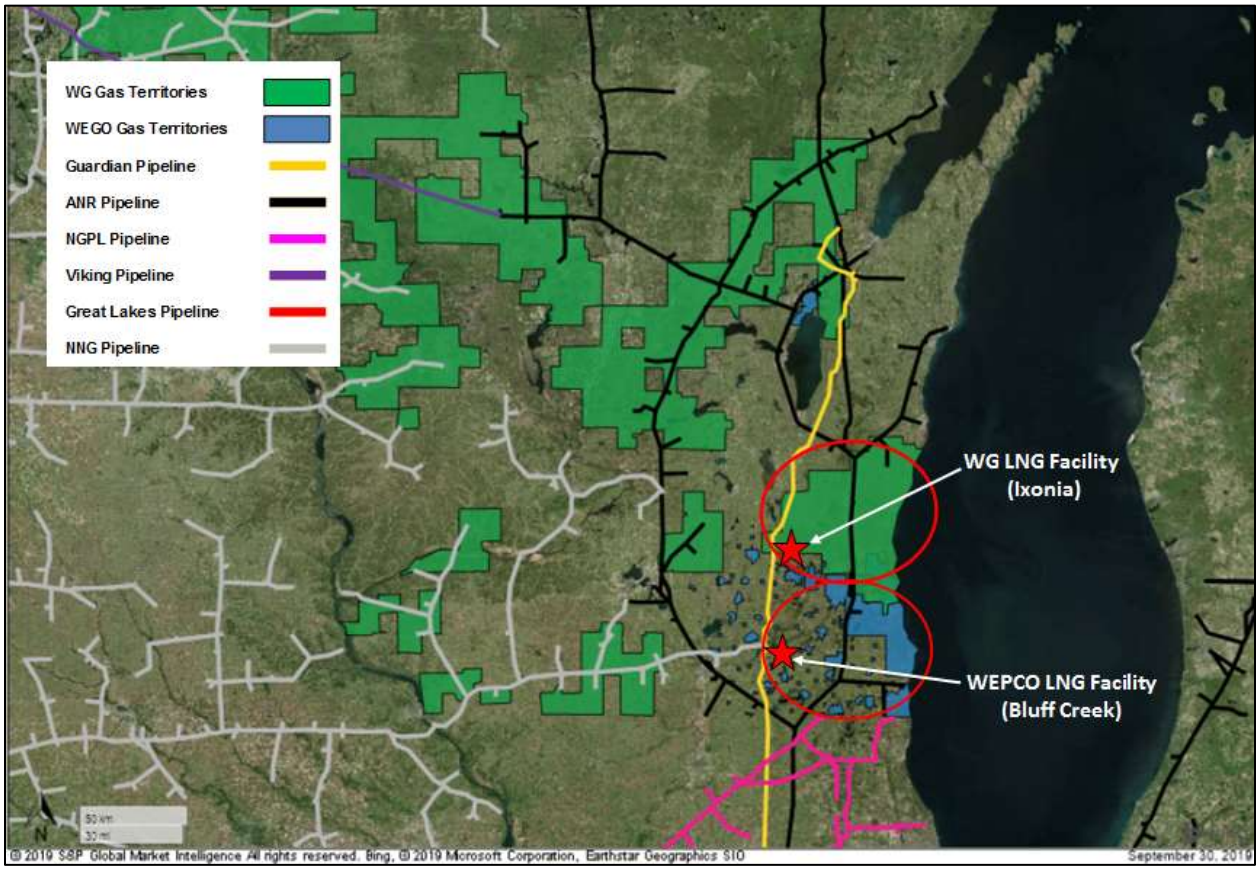
- Environmental attributes. With smaller physical footprints, the construction and operation of LNG peaking facilities have less environmental impact [redacted].

- No regrets solution. The proposed LNG peaking facilities represent a "no regrets" solution because even if the forecasted increase in firm gas demand does not occur, the Utilities would be able to reduce their reliance on higher priced interstate pipeline capacity over time.

1.2 Project Description

The proposed LNG facilities will be located near each utility's distribution system in areas of concentrated firm customer demand (see **Volume I Appendix A**). The LNG facility near Bluff Creek (the "Bluff Creek LNG Facility"), east of Whitewater, will serve customers in WEPCO's southeast Wisconsin service area delivering firm LNG supply by way of the recently-approved Lakeshore Lateral. The LNG facility near Ixonia (the "Ixonia LNG Facility") will serve customers in WG's greater Milwaukee service area by way of the Ixonia lateral. Figure 1-4 below shows the concentrated demand areas the Project's facilities will serve.

Figure 1-4: Demand Areas accessible via Project Sites



1.2.1 Project Owner/Operator

The Project will be owned and operated as follows:

- Bluff Creek LNG Facility – WEPCO
- Ixonia LNG Facility – WG

Additional information is provided in Chapter 2 (Project Need Analysis).

1.2.2 Municipalities and Counties Potentially Impacted

The Project is anticipated to potentially impact the following counties and townships:

- The Bluff Creek LNG Facility will be in Walworth County in the Town of LaGrange. The plant will be located approximately 4.5 miles southeast of the City of Whitewater, Wisconsin, and approximately 5.6 miles northwest of the City of Elkhorn, Wisconsin.

- The Ixonia LNG Facility will be in Jefferson County in the Town of Ixonia. The plant will be located approximately 5.7 miles southeast of the City of Watertown, Wisconsin, and approximately 3.3 miles northwest of the City of Oconomowoc, Wisconsin.

1.2.3 Project Details

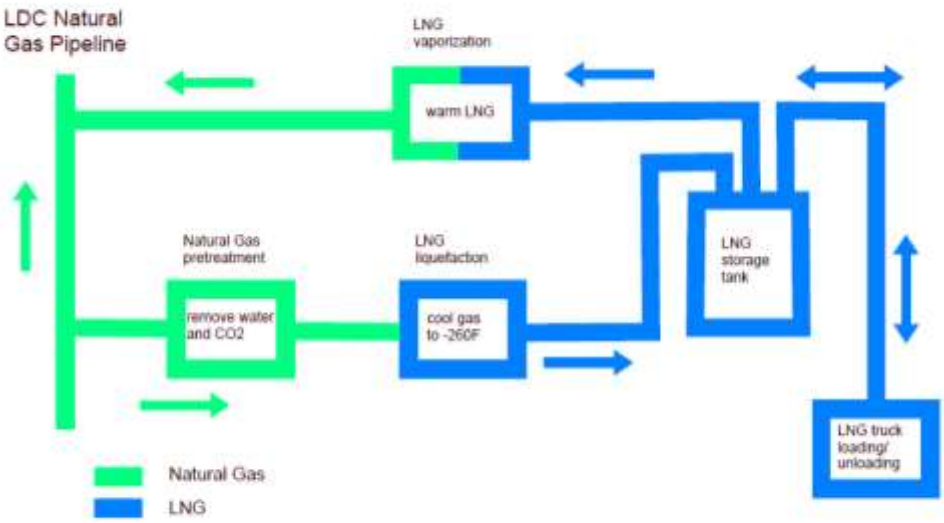
The Project includes new LNG peaking facilities, associated on-site pipelines and supporting equipment at both sites. This application for a CA seeks authorization to construct both sites as well as the associated on-site pipelines and supporting equipment. Both the Bluff Creek and Ixonia LNG facilities will be capable of liquefying, storing and vaporizing natural gas for peaking service.

1.2.3.1 Bluff Creek & Ixonia Sites

The Bluff Creek and Ixonia LNG facilities will include natural gas pretreatment and liquefaction equipment, LNG storage tanks, vaporization equipment and truck loading/unloading equipment. A preliminary general arrangement plan is included within **Volume I Apppendix A**. Infrastructure, equipment, piping, tanks, pumps, and materials will be supplied and installed new.

Liquefaction, storage, vaporization and truck loading/unloading that will occur at the Bluff Creek and Ixonia LNG facilities is illustrated in Figure 1-5.

Figure 1-5: LNG Liquefaction, Storage, and Vaporization at Bluff Creek and Ixonia LNG Facilities



1.2.3.2 Storage and Vaporization Equipment at Each Facility

The vaporization system will either be indirect water bath type or a shell and tube type vaporizers. In either case, water/glycol will serve as the heat transfer medium to vaporize the LNG.

LNG storage tanks will have a secondary containment impoundment. The impoundment will be capable of holding 110% of the volume of the tank. The tank sizes are further discussed in Section 3. The Balance of Plant ("BOP") systems and equipment will be designed to meet specific performance guarantees necessary for the Project to achieve its stated objectives and realize the identified benefits.

Safety will be paramount. Fire protection equipment will comply with the recommendations of site specific fire protection evaluations performed for each site.

The control system will consist of a central Digital Control System ("DCS") at each facility with remote access. There will also be a Safety Instrumented System ("SIS") to provide safe shutdown of the facility and isolation for various segments of process piping and equipment. In addition; fixed, local Emergency Shutdown System ("ESD") push-buttons will be located at strategic locations throughout the facilities to safely shutdown corresponding portions of the plant.

Each facility requires feed gas, which will come from existing gas distribution pipelines located on-site, and a combination boil-off gas/tail gas return pipe, that will connect to existing on-site pipelines.

Each facility will require electric power. Based on the final site selections, required electrical distribution facilities will be installed. The Bluff Creek LNG Facility will be interconnected to an existing 138-kV transmission line that currently crosses the site. The Ixonia LNG Facility will receive electric power from the Concord Substation via an underground 24.9-kV electric distribution line, which will be installed along existing road right-of-way.

Potable water and fire water will be supplied by groundwater wells at each site.

1.2.4 Proposed Project Construction

The Bluff Creek and Ixonia LNG facilities will be greenfield sites within agricultural areas.

1.2.5 Project Connection Points

Pipelines between each natural gas lateral and LNG Facility will be located within the specific LNG Property. Pipeline connection points will be determined at a later date, during detailed design.

1.2.6 Project Life Span

The design life of the Facility located at each Project site is 30 years.

1.3 Site Selection Process

The Utilities reached out to the local communities for suggestions and feedback on potential sites for the proposed LNG plants in Jefferson and Walworth Counties. After dialogue with the local communities, the Utilities identified landowners who were willing to sell their land for the Project and also identified potential LNG facility sites that could satisfy the purpose and need for the Project while minimizing community and environmental impacts. The Utilities used the following criteria when investigating the potential LNG plant site locations:

1. System requirements: The Project identified the need for an LNG facility to be interconnected to the existing Ixonia lateral for supply of natural gas to the WG local distribution system. The Project also identified the need for a second LNG facility to be interconnected to the Bluff Creek or proposed Lakeshore laterals for supply of natural gas to the WEPCO local distribution system. Reference Figure 1-4 Demand Areas accessible via Project Sites

2. Proximity to the existing natural gas laterals: Potential facility sites were investigated that were within close proximity to these existing laterals to minimize the amount of new pipeline required to connect the LNG facilities. By reducing the distance for interconnecting pipelines, the community and environmental impacts of the pipelines would also be minimized.

3. Site Size: Potential facility sites require a minimum size of approximately 100 to 160 acres to provide adequate setbacks necessary to meet PHMSA recommended siting guidelines without significant additional capital expenditures. All of the potential locations can meet PHMSA recommendations for siting.

4. Adjacent residences: Potential facility sites were reviewed to minimize the impacts on adjacent neighbors and the community. The proposed sites are in agricultural areas with low concentration of existing residences.

5. Willing seller: Potential facility sites were also investigated and identified to determine if landowners were willing to sell the properties. The Utilities established upfront that they would not use eminent domain for acquisition of the LNG facility sites but may use eminent domain for siting the interconnecting pipelines if necessary.

6. Environmental features: Potential facility sites were reviewed to minimize environmental impacts, including impacts to wetlands, threatened or endangered species habitat, and cultural resources.

Based on the factors above, the Utilities identified and evaluated three potential facility sites for the LNG facility proposed for Jefferson County and one potential facility site in Walworth County. The sites are shown on maps in **Volume I Appendix B**. The LNG facility site analysis was completed using publicly-available desktop data. Table 1-1 provides a quantitative comparison of the environmental characteristics of the LNG facility sites. The analysis evaluated potential impacts within the extent of temporary and permanent disturbance ("LNG Construction Footprint") at each site as well as near the fenced area for each facility ("LNG Facility").

Table 1-1: Comparison of LNG Facility Sites

	Jefferson County			**Walworth County**
Environmental Factor	Site 1 Proposed Site (Ixonia LNG Facility)	Site 2 (Concord Site) Site was not Selected	Site 3 (Highway P Site) Site was not selected	Site 1 Proposed Site (Bluff Creek LNG Facility)
Location	Near intersection of North Road and Hill Road, Ixonia	Near intersection of Highway E and Kohloff Lane, Town of Watertown	North of Highway P and east of Hustisford Road, Ixonia	East of Highway O and north of Territorial Road, La Grange
Primary Land Use	Agricultural	Agricultural and wooded; brownfield-adjacent	Agricultural and wooded	Agricultural
Designated floodplain within LNG Construction Footprint (acres)	2.9	0	0	0
New off-site pipeline required (miles)	0	4.8	3	0

Environmental Factor	Jefferson County			Walworth County
	Site 1 Proposed Site (Ixonia LNG Facility)	Site 2 (Concord Site) Site was not Selected	Site 3 (Highway P Site) Site was not selected	Site 1 Proposed Site (Bluff Creek LNG Facility)
Wetlands within the LNG Construction Footprint (acres)	1.0	0	0	0
Waterbodies/waterways within the LNG Construction Footprint (number)	1[a]	0	0	0
Known cultural resource sites within the LNG Construction Footprint (number)	0	0	0	0
Residences within 100 feet of LNG Facility (number)	0	0	0	0
Distance from LNG Facility to nearest residence (feet)	520	405	1,145[b]	1,660
Residences within 1/2 mile of LNG Facility (number)	19	143	12	6
Residences within 1 mile of LNG Facility (number)	104	448	109	39

[a] The waterbody associated with the Ixonia LNG Facility is an artificially straightened drainage ditch.
A residence is located within the intended property boundary. This property would be purchased and is not considered the closest residence.

1.3.1 Proposed Site for the Bluff Creek LNG Plant

Only one potential facility site was identified for the plant in Walworth County that met the siting criteria above, including having a willing seller and adequate acreage. The Proposed Site in Walworth County is comprised of portions of three adjoining parcels located on the east side of Highway O in the Town of La Grange between Kettle Morraine Drive and Territorial Road. The Utilities have an option to purchase the parcels totaling approximately 333 acres (the Bluff Creek LNG Property). The site consists primarily of active agricultural land. The closest residence is located approximately 1,660 feet southwest of the proposed LNG Facility. A total of 39 other residences were identified within one mile of the LNG Facility. A total of six residences were identified within 0.5 mile of the LNG Facility.

The approved route (Route A) for the Lakeshore Lateral natural gas pipeline crosses the Proposed Site. The site will not require any natural gas pipeline to be constructed off site. An approximately 1,500-foot-long permanent access road will also be constructed.

The Proposed Site in Walworth County minimizes environmental impacts. The Bluff Creek LNG Construction Footprint was determined to have medium/low to low ranking of wetland probability based on a desktop evaluation. As such, it was determined that the Bluff Creek LNG Facility is unlikely to impact wetlands. There is no floodplain, waterbodies, or known cultural resources within the LNG Construction Footprint. The site also offers natural features that provide visual screening for the community, including a large hill to the east that will limit the visual impacts to neighbors that are not in the immediate area. The elevation of the hill east of the Bluff Creek LNG Plant is approximately 40 feet above plant grade. The size of the parcel will also allow the Utilities to construct the facility with significant set-backs from the exising roads. The site also has an existing American Transmission Company ("ATC") 138-kV power line crossing the property that will reduce the cost for electrical interconnection.

The Utilities selected the Bluff Creek LNG Facility site in Walworth County as the Proposed Site for the following reasons:

- The only site offered for sale
- Minimizes environmental impacts (unlikely to impact wetlands; no floodplain, waterbodies, or known cultural resources)
- Distances from nearby residences
- Provides natural screening buffers and size of parcel allows for facility to be set back from road
- Requires a minimal amount of new pipeline to connect to existing natural gas infrastructure, all of which would be on-site
- Requires minimal infrastructure to connect to existing 138-kV power line on-site

1.3.2 Proposed Site for the Ixonia LNG Facility

Three sites were investigated in Jefferson County for the Ixonia LNG Facility. These sites are described in the following sections.

1.3.2.1 Proposed Site

The Proposed Ixonia LNG Property is comprised of six adjoining parcels located on the east side of North Road, between Hill Road and Gopher Hill Road. The Utilities have an option to purchase the

parcels totaling approximately 164 acres. The Ixonia LNG Property consists primarily of active agricultural land. The closest residence is located approximately 520 feet southwest of the proposed LNG Facility. A total of 104 other residences were identified within one mile of the LNG Facility. A total of 19 residences were identified within 0.5 mile of the LNG Facility.

The existing Ixonia natural gas lateral crosses the Proposed Site. The site will not require any natural gas pipeline to be constructed off site. A 250-foot-long permanent access road will also be constructed.

The Proposed Site would be designed to minimize environmental impacts. The desktop review estimated the Ixonia LNG Construction Footprint to have approximately 1 acre of wetland and approximately 2.9 acres of floodplain onsite. The Project could possibly impact wetlands to an extent that a General Permit may be required from the USACE and WDNR. There is also one waterway onsite. It is not anticipated that the waterway will be permanently impacted. The Utilities will work with Jefferson County and FEMA to determine floodplain impacts and required permitting. There are no known cultural resources onsite.

The site also offers natural features that provide visual screening for the community, including a large hill to the east that will limit the visual impacts to neighbors that are not in the immediate area. The elevation of the hill east of the Ixonia LNG Facility is approximately 80 feet above plant grade. The size of the parcel also will allow the Utilities to construct the LNG Facility with significant set-backs from the existing roads.

The Utilities selected the Proposed Site as the preferred alternative in Jefferson County for the following reasons:

- Minimizes landowner impacts compared to other Jefferson County sites
- Provides natural screening buffers and size of parcel allows for facility to be set back from road
- Requires a minimal amount of new pipeline to connect to existing natural gas infrastructure, all of which would be onsite

1.3.2.2 LNG Facility Site 2 (Concord Power Plant)

Site 2 (Concord Power Plant) is located just north of the existing Concord Power Plant on County Road E in the Town of Watertown. This 129 acre site was evaluated because the property is already owned by WEPCO and has existing infrastructure, such as roads, fencing, electrical supply, fire water, control room and other potential savings that could also be used for the Project. The closest residence is located

approximately 405 feet west of the LNG Facility. A total of 448 other residences were identified within one mile of the LNG Facility. A total of 143 residences were identified within 0.5 mile of the Facility.

There are no floodplains, waterbodies, or known cultural resources within the potential LNG Construction Footprint on this site.

Site 2 is located approximately 4.0 miles west of the Ixonia lateral, but would require construction of approximately 4.8 miles of new 12-inch-diameter pipeline and a 6-inch-diameter tailgas pipeline between the new LNG Facility and the Ixonia lateral. The new pipeline would need to cross the Rock River, various wetland complexes, and a wooded area. A new offsite pipeline will increase the impacts of this site due to additional length through agricultural areas and would impact more landowners.

This site was not selected because of the increased environmental impacts, landowner impacts and construction and maintenance costs associated with the need for a new offsite pipelines. It was also not selected because it will have a higher number of impacted residences within one mile relative to the other sites.

1.3.2.3 LNG Facility Site 3 (Highway P)

Site 3, the Highway P Site, is located north of Highway P approximately 1,500 feet east of the intersection of Hustisford Road and Highway P. This site was evaluated because the property was for sale and the Utilities were able to negotiate and obtain an option to purchase the site. The site also has an existing ATC 138-kV power line crossing the property that could reduce the cost for electrical interconnection. Site 3 is in active agricultural land. The closest residence is located approximately 1,145 feet south of the LNG Facility. A total of 109 other residences were identified within one mile of the LNG Facility. A total of 12 residences were identified within 0.5 mile of the Facility.

No wetlands, floodplain, waterbodies, or known cultural resources are within the potential LNG Construction Footprint on this site.

This site is located approximately 2.0 miles southwest of the Ixonia lateral and would require construction of approximately 3 miles of new 12-inch-diameter pipeline and a 6-inch-diameter tailgas pipeline between the LNG Facility and the existing Ixonia lateral. The new pipeline would cross Highway 16.

Site 3 was not selected because of the increased environmental impacts, landowner impacts and construction and maintenance costs associated with the need for a new offsite pipelines.

1.4 Permits and Approvals

The following sections provide information on federal, state, and local correspondence; anticipated permits and approvals required for the Project; and federal, state, or local government issues or concerns.

1.4.1 Federal, State, and Local Government Correspondence

The Utilities have notified property owners within 1 mile of each proposed LNG Facility. Due to the COVID-19 pandemic, the Utilities were unable to host a public information meeting prior to this filing. The Utilities intend to host an information meeting for the community and stakeholders later this summer. A summary of public communication is provided in **Volume I Appendix C** and agency correspondence is provided in **Volume I Appendix D**.

The Utilities have also had correspondence with the Department of Agriculture Trade and Consumer Protection ("DATCP") and received approval to hold preliminary discussions with landowners to determine if a landowner may be interested in voluntarily selling their property to allow for preliminary evaluation of the property (e.g., surveying, etc.). This also included obtaining DATCP approvals to secure options to purchase the land from landowners prior to final approval of this application.

1.4.2 Project Permits and Approvals

Tables 1-2, 1-3, and 1-4 provide anticipated federal, state, and local permits/approvals for the Project. Additional approvals may be identified after more detailed siting and design is complete.

Table 1-2: Federal Permits and Approvals

Agency	Planned Activity	Type of Approval
USFWS	Various land disturbance construction activities	Endangered Species Act and Bald and Golden Eagle Protection Act
USACE	Discharge of dredged or fill material into waters of the U.S.	Clean Water Act - Section 404 Utility Regional General Permit via St. Paul District Utility RGP

Table 1-3: State Permits and Approvals

Agency	Planned Activity	Type of Approval
PSCW	Building and operating the LNG Sites and natural gas lines	Certificate of Authority
WDNR	Air permitting for facilities	Air Construction Permit (Chapter NR 406)
	Air permitting for facilities	Air Operating Permit (Chapter NR 407)
	Erosion control and stormwater management for land disturbance during construction	Construction site stormwater discharge permit (Wis. Admin. Code NR 216)
	Operational stormwater pollution prevention plan	Industrial stormwater discharge permit (Wis. Admin. Code NR 216).
	General Permit for Utility Temporary and Permanent Wetland Impacts (WDNR-GP3-2018)	Permits for discharges into wetlands (Permit: Wis. Stat. §§ 281.36)
	Various land disturbance construction activities	Potential impact to federal and state threatened and endangered species.
	Placement of structure within a waterway; placing [temporary] bridges over navigable waterway	Wis. Stat. Chapter 30 (Navigable Waters, Harbors and Navigation) Permit: Wis. Stat. §§ 30.12 and 30.123 and Wis. Admin. Code NR 320
	Required for issuance of USACE Section 404/10 permits unless waived by WDNR	Section 401 Water Quality Certification (Application for Wetland Water Quality Certification, Form 3500-53N)

Agency	Planned Activity	Type of Approval
	Invasive Species management for land disturbance during construction	Chapter NR 40 Invasive Species Identification, Classification and Control (Ch. NR 40, Wis. Adm. Code)
	Hydrostatic test water discharge	General Permit No. WI-0057681-4
	High capacity well for potable water and fire suppression and/or dewatering activities	Approval of high capacity wells (Wis. Admin Code NR 812.09)
Wisconsin Department of Safety And Professional Services	Construction of all buildings and structures	Approval of plans and specifications (Wis. Stat. § 101.02)
WisDOT	Delivery of equipment to the construction site	Oversized Equipment Delivery Permit
Wisconsin Historical Society	Site preparation and grading	Approval of archaeological surveys (Wis. Stat. § 44.40) and Section 106 Cultural Resources Clearance
Wisconsin Department of Agriculture, Trade and Consumer Protection	Storage of flammable or hazardous material in an above ground tank	Registration

Table 1-4: Anticipated Local Permits and Approvals

Agency	Planned Activity	Type of Approval
Jefferson County and Town of Ixonia	Land Division	Certified Survey Map approval
	Land Use/Zoning	Conditional Use permit
Jefferson County	Floodzone permitting	Jefferson County Floodplain Ordinance
Jefferson County	Construction	Conditional Use permit

Agency	Planned Activity	Type of Approval
Walworth County and Town of La Grange	Land Use/Zoning	Conditional Use permit
Walworth County	Construction	Conditional Use permit
	Land Division	Lot Line Adjustment approval
County and Local Municipality	Construction	Conditional Use permit

1.4.3 Federal, State, and Local Government Issues/Concerns

The Utilities have informed the local governmental entities – the Towns of Watertown, Ixonia and LaGrange of the Project and to date none have identified significant issues or concerns with the Project.

1.5 General Construction Schedule

The construction schedule for each site is provided in Table 1-5.

Table 1-5: General Construction Schedule

Task	Bluff Creek		Ixonia	
	[redacted]	[redacted]	[redacted]	[redacted]
CA Filing	[redacted]			
Engineering				
Site Preparation				
Tank Construction				
Balance of Plant Construction				
Mechanical Completion				
Substantial Completion				
Tank Fill Period				
Commercial Operation				

1.5.1 Major Construction Activities

The following construction activity descriptions are generally applicable to each LNG Facility. Where activities are not applicable to a particular site, that difference is identified.

1.5.1.1 Soil and Site Preparation

The first step of construction will involve marking the boundaries of wetlands and other environmentally sensitive areas that must be avoided during construction. Each LNG Construction Footprint will then be cleared of vegetation, rough graded, and compacted, as necessary, to create level surfaces for the movement of construction equipment to prepare the site for construction.

Construction will start with initial soil and site preparation including the following activities:

- Submit NOI to the WDNR at least 14 days prior to the start of construction

- Identify and mark environmentally sensitive areas for awareness and avoidance during construction;
- Mobilize labor and construction resources;
- Complete additional site surveys, as necessary;
- Install stormwater management features/erosion and sediment control Best Management Practices prior to land disturbing activities;
- Clear and grub vegetation where necessary to prepare the site for construction;
- Grade site construction access, roadways, and site features;
- Construct pipe systems, drainage ditches, and culverts to convey stormwater;
- Installing temporary construction and laydown areas;
- Apply first layer of surfacing to facility roads (as soon as practical)
- Construct foundation for storage tank;
- Install LNG storage tank secondary containment impoundment;
- Construct LNG storage tanks and conduct hydrostatic/pressure testing;
- Construct associated Project components;
- Implement stabilization measures (seeding/mulching) on disturbed portions of the Project sites;
- Remove temporary BMPs upon establishment of final stabilization; and,
- Within 45 days after final stabilization of the sites, complete and submit the NOT to the WDNR.

Site grading and berms will be designed to use the cut fill material on site as much as practicable.

1.5.1.2 Foundations

LNG storage tank foundation installation will consist of an elevated mat or pile supported foundations or a heated shallow foundation.

Other equipment and structures on site, such as the liquefaction equipment, compressors, fire protection equipment, utility racks, buildings will be lightly to moderately loaded and are expected to be soil or pile supported foundations.

1.5.1.3 Roads

Permanent road routes will be used as much as possible during construction and will be supplemented by temporary roads for access to construction parking, laydown yards, and work areas.

Construction Roads:

- Roads, parking areas, and lay down areas will be paved with compacted gravel, crushed stone, or an asphalt base course.
- Permanent roads will be paved or compacted gravel.
- Paved areas will slope to drainage ditches sized to carry expected runoff.

1.5.1.4 LNG Secondary Containment

Secondary containment for LNG Storage Tanks will be an impoundment located adjacent to each storage tank area as shown in the general arrangement plans **(Volumes I Appendix A)**. The impoundment will be fully functional before LNG is placed in the tank.

Process areas containing vessels and piping system with LNG and refrigerant will be curbed and graded so that any LNG and refrigerant spills will be contained within designated containment areas. A Spill Prevention, Control and Countermeasures ("SPCC") plan will be created for the Project. A template of the SPCC plans is included in **Appendix B of Volumes II and III**.

1.5.1.5 LNG tank construction

LNG storage tank construction will take approximately 18 months to complete. The construction sequence for the tanks is expected to proceed as follows:

- Install outer tank floor plate and annular shell
- Install roof and suspended deck
- Install floor insulation and leveling course
- Install inner tank floor plate and annular shell
- Install piping and tank shell closure pieces
- Hydrotest/pressure test tank
- Install final insulation
- Nitrogen purge tank

1.5.1.6 Process Equipment Construction

The process equipment construction duration will be shorter than construction of the LNG storage tank. The construction process will include erecting the Compressor and Vaporizer enclosures:

- Compressor enclosures will store the refrigerant and boil off gas compressor equipment.
- Vaporizer enclosures will be used to store the LNG vaporizer.

Construction of process equipment will occur as construction of the equipment enclosures is underway. During construction of the enclosures the following equipment will be set:

- Truck unloading equipment
- Truck scales
- Cold Box
- Pretreatment equipment
- Refrigerant tanks
- Instrument air equipment
- Emergency generator
- Utility racks
- Fire/Service Water Tank
- Fire Suppression Equipment

1.5.1.7 Electrical and Control System Construction

The electrical equipment room and DCS/SIS equipment room will be within a common enclosure. The DCS/SIS room will include the local operator workstations for controlling and monitoring the facility.

1.5.1.8 Gas Line Lateral and Associated Ancillary Gas Facility Construction

Pipeline construction will be within the proposed LNG Construction Footprint, as in both cases, the laterals that need to be tied into will be or are on the LNG Property as well. Construction of the natural gas pipelines and associated facilities (valving) will be located on the LNG Property. Pipeline construction activities will include:

- Additional site surveys, as necessary;
- Marking wetland boundaries;
- Installing stormwater management features/Best Management Practices;
- Clearing and grubbing vegetation where necessary to prepare the site for construction;
- Trenching and installing pipe and valve assemblies;
- Hydrotesting;
- Backfilling excavation; and,
- Restoration

1.5.2 Seasonal and Regulatory Construction Constraints

A reviewer, certified by the State of Wisconsin DNR completed an Endangered Resources ("ER") Review to identify protected plant and animal species near the Facilities and pipeline routes. The Ixonia LNG Facility was assigned ER Log #20-262 and the Bluff Creek LNG Facility was submitted as an ER Review Verification Form. See **Appendix T of Volumes II and III** (ER Review) (CONFIDENTIAL) for occurrences of species included in the Wisconsin Natural Heritage Inventory ("NHI") Portal. Additional information related to the ER Reviews is provided in Section 6.9.

No follow-up actions would be recommended for the Bluff Creek LNG Facility because it is covered under the Broad Incidental Take Permit/Authorization ("BITP/A"). The following actions were recommended by the WDNR to help conserve Wisconsin's rare species that may occur in the vicinity of the Ixonia LNG Facility:

[redacted]

If a [redacted] is observed on-site any time during the course of the project, the Endangered Resources Review Program Coordinator will be contacted immediately at 608-266-5241.

[redacted]

Suitable nesting habitat for [redacted] may be present within the project area. [redacted] is a special concern species and no protection measures for this species are required; however, the following measures are recommended.

Non-overwintering areas – For wetlands/water bodies shallower than 3 feet at the deepest point, conduct work outside of the [redacted] active season (March 5 – November 15). The installation and maintenance of exclusion fencing using the WDNR Amphibian and Reptile Exclusion Fencing Protocol is an avoidance option that can be used during this period as long as the exclusion fencing is installed between November 16 and March 4. Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained.

Upland nesting habitat – Avoid work in suitable upland nesting habitat (sandy and/or well-drained soils) within 275 meters (900 feet) of a wetland or water body during the [redacted] nesting period (May 20 – October 15). The installation and maintenance of exclusion fencing using the WDNR Amphibian and Reptile Exclusion Fencing Protocol is an avoidance option that can be used during this period as long as the exclusion fencing is installed between October 16 and May 19. Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained. Otherwise if a turtle is found, please carefully move it to suitable habitat outside the project area.

Active dates are updated frequently in the spring, starting in early March, and will be checked here: http://dnr.wi.gov/topic /WildlifeHabitat/Herps.asp#regs

1.6 Project Maps

1.6.1 Project-Specific Data

Project specific design conditions are included in **Appendix C of Volumes II and III**. The appendix includes site specific environmental conditions applicable to the design of the facility.

1.6.2 Environmental Data

The following appendices provide maps showing environmental data, such as the waterways, wetlands, soils, rare species, topography, and floodplains:

- Overview Map of Project Counties, Sites, and General Arrangement: **Volume I Appendix A**
- Rivers, Lakes, and Other Waterways**: Appendix D of Volumes II and III**
- Outstanding or Exceptional Waterways, Trout Streams, Wild or Scenic Rivers: **Appendix E of Volumes II and III**
- Wetland Maps: **Appendix F of Volumes II and III**
- Soils and Hydric Soils Map: site-specific soils maps are provided in **Appendix G of Volumes II and III**
- USGS Topographic Maps: a general topographic map for each LNG Property is provided in **Appendix H of Volumes II and III**
- Floodplain Maps: **Appendix I of Volumes II and III.**

Environmental data used in Project design is included in **Appendix C of Volumes II and III**. Environmental data critical to the plant design include wind speeds, humidity, and temperature information that is used in calculating thermal exclusion zones and gas dispersion zones as defined by the Wisconsin Administrative Code and NFPA 59A.

1.6.3 Parcel Data

Recent county parcel data was obtained from the Statewide Parcel Map Initiative website in June 2019. This data was used to provide maps of privately owned parcels; public properties; tribal or other types of properties; political subdivision boundaries; and townships, ranges, and sections within 0.5-mile of each proposed LNG Facility and pipeline route. These maps are provided in **Appendix J of Volumes II and III.**

1.6.4 Land Use

Site-specific landcover maps are provided in **Appendix K of Volumes II and III**. A detailed zoning map was created for each LNG Property and is provided in **Appendix L of Volumes II and III**. Also, recreation areas and parks near each site are provided in **Appendix M of Volumes II and III**.

1.6.5 Utility/Infrastructure Data

Appendix N of Volumes II and III contains a map of roads, highways, interstates, and railroads near each LNG Property. An existing utility/infrastructure map for each Project Property is provided in **Appendix O of Volumes II and III.**

1.6.6 DNR Required Information

WDNR required information is included on Project maps in **Volumes II and III**, and the WDNR Impact Tables are in **Appendix Q of Volumes II and III**.

1.7 Mailing Lists

Recent county parcel data was obtained from the Statewide Parcel Map Initiative website in June 2019. This data was used to create mailing lists containing landowners within 1 mile of each LNG Facility. These lists will be submitted separately to the docket coordinator.

1.8 ESRI ArcGIS Data Files

ESRI ArcGIS Version 10.8 was used to create all maps for this application. **Volume I Appendix E** contains a spreadsheet listing each GIS file, a description of the data, the data source, and date the data was generated or collected in the field. A combination of GIS and field surveys was used to determine potential impacts for construction and operation of the LNG Facilities. All GIS files will be provided separately to the docket coordinator.

2.0 PROJECT NEED ANALYSIS

2.1 Introduction

As part of their ongoing portfolio assessment, the Utilities continue to focus on developing firm capacity and supply alternatives to improve reliability, deliverability, resiliency and support of the rising demand for natural gas among all customer sectors, existing and new, in a very challenging environment in Wisconsin where there is no underground storage and interstate pipeline capacity is fully subscribed. Like other gas utilities around the country with constrained storage and/or transport capacity, the Utilities have sought ways of getting lower cost firm gas deliverability into Wisconsin while improving system reliability, resiliency and providing a new source of capacity and supply that better fits the Utilities' demand profile. To meet increasing demand, the Utilities will need incremental firm deliverability, capacity and supply in the near future. In their evaluation of alternatives to meet that demand, the Utilities have determined that the proposed LNG peaking facilities will provide the superior, long-term solution needed when compared to available alternatives [redacted]

2.2 Purpose and Necessity

The Utilities conducted a comprehensive risk assessment of their gas supply portfolios and an evaluation of long-term natural gas demand growth in Wisconsin in an effort to optimize their gas portfolio, increase reliability and resiliency, mitigate exposure to third party costs and meet future growth needs. The underlying goal of the assessment was to find a solution that would allow WG and WEPCO ratepayers to have more control over gas supply costs. Based on conservative assumptions about increased firm demand for gas in their service territories, the Utilities have identified an immediate need for new infrastructure. As the result of their evaluation, the Utilities have concluded that the proposed LNG peaking facilities are the best means of serving long-term gas demand and supply requirements, meeting short-duration winter peaks more efficiently and economically, position the gas supply portfolios to manage risk, and optimize ratepayer benefits in the short and long term. Additionally, and more importantly, the proposed solution adds an asset to the gas supply portfolio, which is under the control of Utilties and the Commission's oversight, to be leveraged specifically for the benefit of WG and WEPCO customers. The benefits of this approach are described in detail below.

2.2.1 Forecasted Demand and Capacity

The Utilities' firm demand forecast is based on the first three years of their 2020-2023 Gas Supply Plans that also includes future incremental load from large customers that have recently requested new service in southeast Wisconsin[3]. Following that period, the Utilities conservatively estimate that their firm demand will grow at [redacted] percent annually. In addition to this base forecast, the Utilities modeled a low demand scenario with a [redacted] percent growth rate and a high demand scenario with a [redacted] percent growth rate. The low demand forecast reflects a higher level of energy efficiency and results in a decrease in the overall need for additional capacity and supply, whereas in the high demand scenario the demand for natural gas is even more than expectations. This provides the Utilities a way to quantify the overall benefit/cost of the Project over a range of demand forecast scenarios.

In recent years it has become apparent that [redacted] will not be available for the foreseeable future. This is challenging for any gas utility and means that any material amount of capacity needed to meet long-term growth will [redacted] or some other alternative.

Interstate Pipelines Serving Wisconsin

[redacted] collectively supply the vast majority of the Utilities' pipeline capacity in eastern Wisconsin. The service areas [redacted] serves can also be served [redacted] The Utilities are also served [redacted] also serves southeastern Wisconsin, [redacted] in the far southeastern corner of the state. [redacted] serve some of the same areas [redacted] However, these pipelines primarily serve [redacted] Because of these inherent limitations, [redacted] were not included in the analysis for incremental deliverability.

[redacted] The Utilities collectively hold approximately 460,000 Dth/day of [redacted] for peak day coverage. All of this capacity is held on a "right of first refusal" ("ROFR") basis. Therefore, the Utilities have assurance the capacity they hold can continue to be secured long term.

[3] For the purpose of the evaluation, the incremental load included was confined to the specific areas of each utility's distribution system the proposed LNG peaking facilities will serve. Load areas included for each utility are as follows: WG – southeast WI (greater Milwaukee area); WE – southeast WI (Lakeshore area).

[redacted] The Utilities, along with Wisconsin Public Service Corporation ("WPSC"), currently hold 1,246,000 Dth/day, or 96%, [redacted] in Wisconsin. Of this total, the Utilities collectively hold approximately 1,015,000 Dth/day[4]. However, unlike the [redacted] the Utilities hold only about two-thirds, [redacted] on a ROFR basis. Capacity held that includes ROFR can be retained indefinitely as long as the holder agrees to pay the prevailing market price and term. Pipelines freely offer capacity *not* held on a ROFR basis to the market as contracts expire and the holder must offer the highest price in order to retain the capacity. This puts the Utilities at risk of being short of their required firm deliverability at some point in the future.

The combination of firm demand growth and the lack of available pipeline capacity into Wisconsin has caused increased demand for [redacted] from parties other than the Utilities. This increased demand has resulted in a significant increase in third-party shipper contracts [redacted] compared to historical levels. As a result, [redacted] indicated its pipeline is currently sold-out. All things remaining equal, this means some of the existing capacity the Utilities currently have (that does not include ROFR) will not be available for the Utilities to renew.

Capacity Need

The need for capacity is determined based on the level of capacity the Utilities have compared to their demand. Utilities must plan to serve their forecasted customer demand plus a 5.0% reserve margin and secure additional capacity to account for potential disruptions on third-party pipelines (e.g., force majeure, incremental non-captured load additions, and forecasting error). A reserve margin less than 5.0% suggests there is a need for new capacity (aka deliverability), while a reserve margin less than 0.0% indicates the utility does not have enough capacity to meet the peak firm demand. To show the need for incremental deliverability, given the forecasted increase in demand and the reality that certain levels of existing [redacted] will not be available for renewal, the Utilities developed 10-year load (demand) and capacity tables for the base, low and high load forecasts, as detailed in **Volume I Appendix F, Attachment 1**. The load and capacity tables include the forecasted demand, the projected capacity resources over the next 10 years, and the net firm capacity to firm demand position (i.e. shortfall or surplus) using a 5.0% reserve margin for each utility. The load and capacity tables collectively show that the Project is needed to meet anticipated capacity and supply needs. The base forecast indicates a need for approximately [redacted] of new deliverability, whereas the low forecast indicates a need for approximately [redacted] and the high load forecast indicates a need for approximately [redacted]

[redacted]

[redacted]. Table 2-1 shows the annual forecasted need for incremental capacity for the Utilities under each load forecast scenario.

Table 2-1: Forecasted Need for Incremental Capacity (Dth/day)

	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
Base Forecast						
WG	[redacted]					
WEPCO						
Total						
Low Forecast						
WG						
WEPCO						
Total						
High Forecast						
WG						
WEPCO						
Total						

In the base forecast, WEPCO's need for incremental capacity is approximately [redacted] and WG's need for incremental capacity is approximately [redacted] The LNG facilities are proposed to increase capacity [redacted] for each utility. In turn, the assumption for WEPCO includes [redacted]

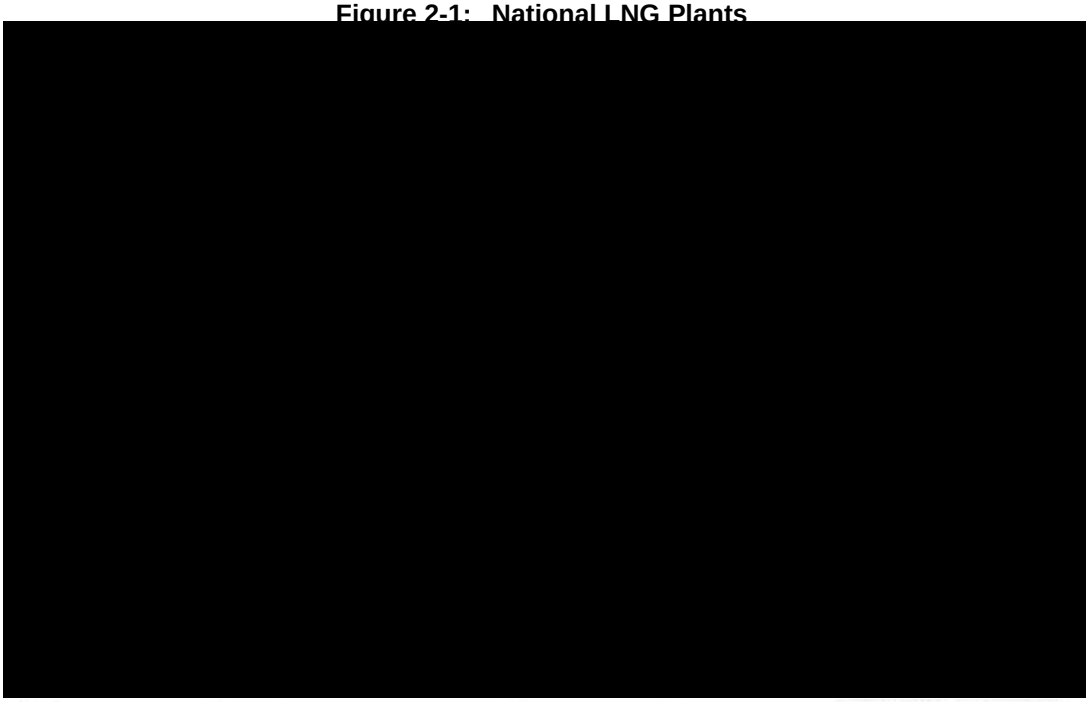
2.2.2 Strategic Fit

As an alternative to one or more interstate pipeline expansions to meet their forecasted deliverability needs, the Utilities evaluated the feasibility and cost effectiveness of constructing LNG peaking facilities. The use of such facilities for meeting natural gas demand is not uncommon and is used throughout the U.S. Currently, there are more than 100 peaking plants in the U.S. consisting of both LNG and propane air facilities, three of which are owned and operated by the Utilities.[5] Fifty percent of the LNG facilities are located in the northeast portion of the U.S. where gas pipeline capacity is limited and/or constrained. Most of the LNG facilities are owned by gas transmission companies and local distribution companies ("LDCs").

[5] The LNG facilities include WEPCO's Oak Creek facility, WG's Rice Lake satellite facility and PGL's Manlove facility.

The Utilities' proposed LNG facilities mirror what a number of gas LDCs have built across the country as a cost-effective option to meet peak day loads. Besides the Marine terminals for imports and exports and a small percentage owned by interstate pipelines as a storage service for shippers, the majority of LNG plants in-service are used for peak shaving and owned by the local natural gas utility for use on their respective distribution system. Peaking facilities are typically located on or in close proximity to large distribution nodes where there is sufficient downstream demand and accompanying gas flow. Figure 1-2 below shows the LNG plants in the U.S. that are connected to natural gas pipeline systems.

Figure 2-1: National LNG Plants



Source: U.S. Department of Transportation

The proposed LNG peaking facilities will provide the same types of services and benefits that other LNG peaking facilities provide in other parts of the country. They would complement the approximately [redacted] of existing peaking capacity owned and operated by the Utilities. Collectively, the Utilities have significant experience in operating and maintaining LNG facilities for peak shaving.

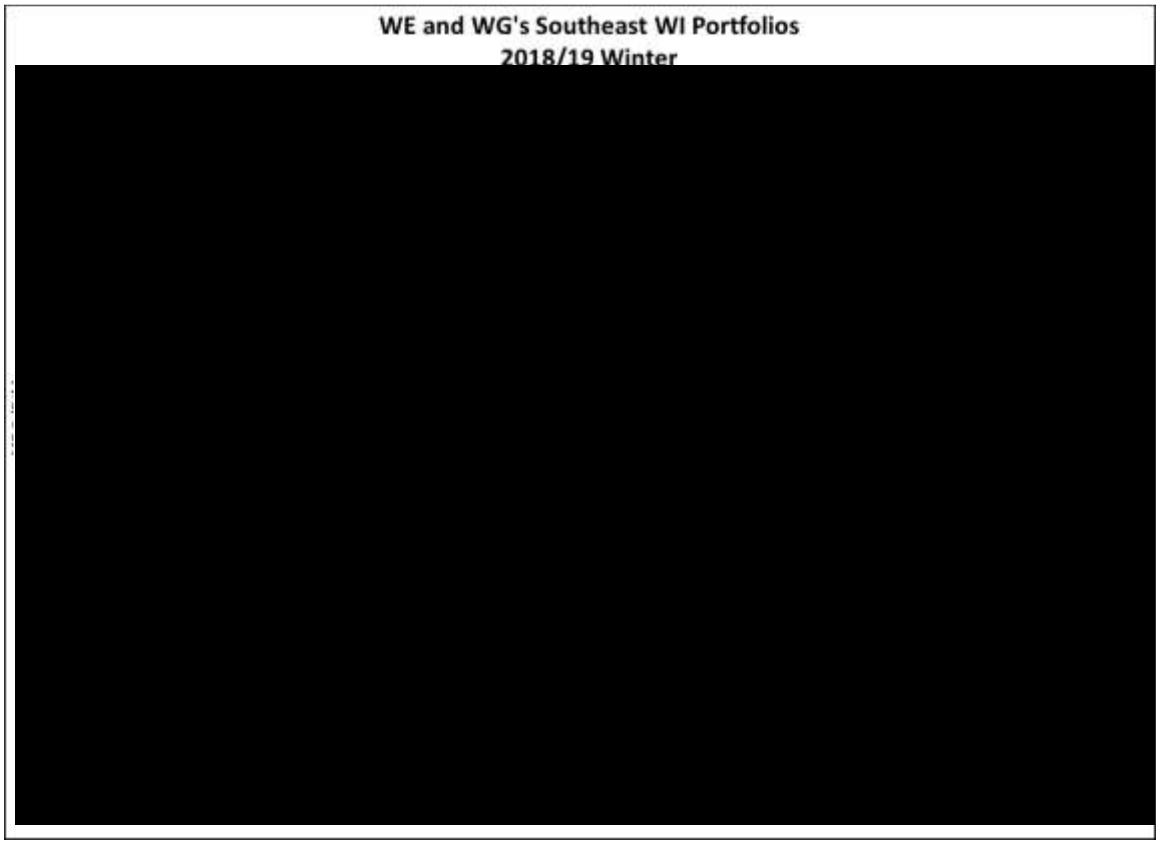
While the proposed facilities will store gas (in liquefied form), it is important to understand the difference between an LNG peaking plant and underground storage, such as WEC's Bluewater storage facility. Underground storage facilities provide baseload natural gas supplies throughout the winter months, typically from November through March (150 days). The Utilities must procure firm transportation capacity on an interstate pipeline to move gas from storage fields outside of Wisconsin to the utility because Wisconsin does not have the geology for the underground storage of natural gas. By contrast, LNG peaking facilities like those proposed provide supply during short periods of exceptionally high

demand, typically less than ten (10) days during the winter. They also serve as a physical price hedge against the short periods of high natural gas prices that can occur at any time of the year.

The use of LNG facilities to supply gas during peak demand periods is analogous to how electric utilities use combustion turbines as economic sources of capacity and supply during peak demand periods. As such, LNG peaking facilities provide similar reliability and economic benefits. Because LNG peaking facilities are connected directly into the Utilities' gas distribution system, there is no need for additional firm transportation on an interstate pipeline. In fact, LNG facilities will make more efficient use of existing firm pipeline capacity that the Utiltiies already hold. For example, a significant portion of the Utilities' firm pipeline capacity is an annual service. This means the Utilities hold the same amount of capacity in the summer as they hold in the winter even though demand in the summer is significantly less. As a result, much of the summer capacity that isn't used for injecting into underground storage is underutilized. By having LNG on their distribution systems, the Utilities can more effectively use their existing firm pipeline capacity during liquefaction without the need to secure additional pipeline capacity.

Compared to the alternatives of expanding interstate pipeline capacity and firm gas supplies, LNG peaking facilities will provide a much better fit as a supply source at or near peak levels on the demand curve, since there are typically only a handful of days a year in which demand rises to these levels. Figure 2-2 below shows how LNG will strategically fit into the Utilities' portfolio during high demand periods. The firm demand load duration curve in this figure is based on daily firm demands during the 2018/19 gas year (Nov-Mar), which is when demand reached levels at or near peak conditions for the Utilities.

Figure 2-2: WG & WEPCO (LDC) Firm Load Duration Curve: Dth/day



As shown above, there were nine days in 2018-19 in which the combined firm demand for both Utilities rose above [redacted] In similar circumstances in the future, a combined maximum daily quantity ("MDQ") of [redacted] of LNG peaking capacity could serve [redacted] highest days of that firm demand, with the Utilities' other resources — including contracted storage, interstate pipeline capacity and contracted firm gas supply — providing sufficient resources to meet demands and reserve margins during the rest of the gas year. In this manner, including the proposed LNG facilities in the Utilities' portfolios will provide an optimal fit of supply and deliverability during short-term, high demand periods.

Absent these proposed new peaking facilities, the Utilities would have to secure [redacted] to cover these high demand periods, with that capacity typically [redacted] even though it is needed for only [redacted]. The Utilities would also need to acquire firm peak supplies from gas suppliers to fill that pipeline capacity on those days, but such supplies are 1) relatively more expensive; 2) in some cases unavailable for the short duration needed; and 3) typically limited to [redacted] regardless of the amount actually needed or used.

The proposed peaking facilities will be located downstream of the interstate pipeline system on the Utilities' distribution systems and will thus take advantage of the Utilities' built-in system deliverability. The firm supply will be stored on-site and ready for re-delivery during either high demand or high priced conditions or year-round as required.

Accordingly, the Utilities propose to build LNG peaking facilities to provide a [redacted] of storage to serve peak demands on their respective systems. The total incremental deliverability need for the Utilities is approximately [redacted],[6] which translates to an LNG storage inventory of approximately [redacted] The combined liquefaction systems will be sufficient to fully refill the entire storage capacity during the non-winter months.

2.2.3 Economic Solution for Customers

LNG peaking facilities are the optimal solution to the Utilities' identified needs for additional deliverability to their distributions systems. Under base case assumptions, the proposed LNG peaking facilities will provide the Utilities' customers with a combined $224 million, or 33%, in net present value ("NPV") savings when compared to the lowest cost alternative. The LNG peaking facilities will allow the utilities to avoid [redacted]. In addition, the LNG facilities will provide the Utilities with the option and ability to increase vaporization to [redacted]. The LNG facilities will also allow the Utilities to avoid the need to secure incremental term swing supply and incremental no-notice service, and can take advantage of the lower summer natural gas price for liquefaction, all of which increase the value and savings to customers with the LNG facilities. The economic analysis that supports and describes these savings is described further in Section 2.4 and in **Volume I Appendix F, Attachment 2.** The proposed facilities represent a measured approach to meet growth in a cost effective way by not [redacted]

The economic analysis performed by the Utilities was very robust and includes evaluations under different load growth scenarios, numerous sensitivities to key assumptions and a risk analysis to test the overall economics of the LNG facilities. The risk analysis was performed on the base load growth scenario and includes a complete enumeration of all the sensitivities to key assumptions considered. In all, 3,888 separate sensitivity scenarios were evaluated, of which 99.4 percent resulted in NPV savings for the Utilities' ratepayers. Only in extreme, low probability worst case 0.6% of combinations of assumptions are the LNG facilities not the Utilities' least cost option.

[6] The total deliverability is comprised of; [redacted]

2.2.4 Increased Reliability and Resiliency

From a system reliability and resiliency perspective the combination of LNG utility ownership and the plants' downstream locations to a given interstate pipeline system provides a firm, short-term supply alternative to real-time upstream pipeline flow disruptions on that system, scheduled or unscheduled[7]. To the extent that the disrupted pipeline is [redacted] the LNG alternative's value is further enhanced as the disrupted pipeline flow cannot be readily absorbed by idle, firm capacity that the pipeline might otherwise hold in the form of uncontracted FT. It is much more likely in the sold-out circumstance that a shipper's firm rights are subject to force majeure and firm entitlement reductions per the pipeline's tariff provisions. This is typically the case for Wisconsin.

Furthermore, to the extent an LNG facility feeds into an integrated downstream distribution system that receives gas from more than one pipeline its reliability and resiliency value is further enhanced in how it mitigates disruption across those pipelines. Not just a winter or peak day benefit, a large scale LNG facility that can support [redacted] on-site inventory with adequate liquefaction capability can provide deliverability support during off-peak (shoulder, summer) months without jeopardizing peak deliverability in the subsequent winter. This is a key resiliency aspect of large scale LNG operations as flow disruption can occur on any pipeline and repairs can take several days. The proposed LNG facilities at Ixonia and Bluff Creek will share these characteristics.

The reliability and resiliency benefits of the proposed LNG facilities are difficult to monetize. However, the Utilities performed a high level assessment of the potential risk of disruption for a given pipeline(s) based on factors such as design, volumetric exposure, and historical experience. For example, since 2013 [redacted] three separate occassions of force majeure, compressor-related, firm flow reductions of varying degrees. The Utilities can impute a comparable pipeline cost to implement certain facility and operating upgrades that would address the risk of interruption. In this way the reliability and resiliency value LNG provides is reflected as an additional cost in the economic case analysis for the alternatives. With respect to the alternative [redacted] and the potential for the more common pipeline flow disruptions the economic analysis in **Volume I Appendix F, Attachment 3** includes the cost of [redacted] in order to model the reliability benefits of the Project relative to the constrained capacity on the interstate pipelines serving the Utilities.

[7] The causes of total or partial [redacted] can be physical such as accidental line-hits or scheduled maintenance outages, or non-physical such as those caused by human control error or cyber-attack.

2.2.5 Direct Control

Typically, natural gas utilities are dependent on interstate pipelines for the majority of their supply during the winter months. This will continue to be true even with the proposed LNG peaking facilities, but to a lesser degree. The proposed facilities will give each of the Utilities a localized source of firm deliverability and stored supply embedded in their distribution system over which they have direct control.

Unlike [redacted], installing utility assets will also give the PSCW line of sight as to the project scope and cost from start to finish. The Utilities will have direct control of the design, construction and operation of the facilities and the PSCW will have direct oversight over these elements. With [redacted] the final cost is not fully known until [redacted] for the final cost and [redacted] which creates significant uncertainty [redacted]

In addition, having the LNG facilities located on the Utilities' distribution system provides load balancing, supported by firm supply and 24-hour availability. Balancing is needed by the Utilities to mitigate the impact of unanticipated, real-time changes in customer end-use patterns and market area temperature variation from the forecast. As demand grows the level of load balancing opportunities also increases. As a result, the added direct control of the LNG facilities enables the Utilities to avoid future purchases of incremental load balancing pipeline products.

2.2.6 Physical Gas Price Hedge

LNG storage provides a physical supply that can be dispatched quickly, providing a physical supply hedge and arbitrage opportunities for the benefit of this Utilities' customers. With the proposed [redacted] and the ability to refill relatively quickly, the Utilities will be able to execute on these opportunities more frequently than if they had a lower level of storage.

2.2.7 Managed, Self-Controlled Expandability

The proposed LNG peaking facilities will be designed to be the "hubs" of a "hub and spoke" framework that will allow [redacted]. The proposed sites will also have the potential of expanding liquefaction, vaporization and/or storage capacity. This will provide a further physical hedge against [redacted] compete directly with LNG expansion costs and will provide more price certainty for the Utilities' customers. As described and demonstrated in the economic analysis in **Volume I Appendix F, Attachment 2**, this

optionality can provide significant significant ratepayer benefit, enable other third-party shippers the ability to secure [redacted], and/or avoid permanent [redacted] The ability to add additional vaporization [redacted] is a key attribute of LNG that offers tremendous value to all gas customers (Firm and Transport) across all future scenarios. Given the uncertainty of where the greatest value [redacted]) for this option in future scenarios, the Utilities took a conservative approach to avoid additional capital spend upfront and then evaluate the cost benefit in the future.

2.2.8 Reduced Environmental Impacts

[redacted] requires either increased [redacted], or both. The proposed facilities will be strategically placed on the Utilities' existing distribution systems and will have significantly lower environmental impacts [redacted].

In addition, as shown in Figure 2-2 above, LNG peaking facilities are designed to provide natural gas for the highest peak portion of the load duration curve. [redacted] to meet the same forecasted growth in demand will allow for natural gas to flow the entire year, whether it is for the Utilities or other off takers. By avoiding [redacted], the LNG peaking facility option avoids additional natural gas flowing and being utilized by others, on a subsidized basis, the remaining [redacted] of the year. The proposed facilities, [redacted], will also reduce the carbon impact of the addition of new deliverability resources to the Utilities' systems.

2.2.9 Synergies and Benefits with Common Systems

There are inherent benefits and synergies in having the same equipment, procedures, operations and maintenance practices, and capital planning shared by multiple utilities, particularly when those utilities are in the same holding company system. The Utilities' customers will benefit by realizing the cost savings achieved by this structure.

2.2.10 "No Regrets" Solution

While substantial and critical for reliability at peak periods, the additional deliverability provided by the proposed LNG peaking facilities will constitute only [redacted] of the Utilities' overall capacity in the market areas they will serve. Based on the Utilities' forecasted increases in demand and [redacted] serving Wisconsin, the proposed facilities will avoid costs of [redacted] delaying it to a future year or eliminating the

need for it altogether. As explained below, whether the forecasted demand is higher or lower than expected in the based demand forecast, the LNG peaking facilities provide a "No Regrets" solution.

Although their projected firm peak demand has increased just over [redacted] annually over the last six years, the Utilities have conservatively assumed [redacted] in annual native load growth in their demand forecast for this project. Compared to [redacted], the LNG facilities provide a much better solution for planning for future load growth, while also providing peaking supply and capacity to the portfolio. In a [redacted] a utility essentially has "one shot" at predicting the [redacted]. If overall demand is higher than initially expected, the Utilities may face a shortfall much sooner and need to [redacted] to cover that shortfall, which can be very costly to the customer. As a result, in the alternative scenario, because of the current rate of growth that is occurring in Southeast WI the Utilities would likely request [redacted] than what is currently being contemplated [redacted] to make sure there is sufficient capacity to serve customers. For example, in the high demand forecast, which uses a [redacted] native load growth and is consistent with the last six years of projected peak growth, the increase in need goes from approximately [redacted] As done historically, given the load growth uncertainty, the Utilities would ask for at least [redacted]. With LNG, however, the Utilities can avoid [redacted] and design the facilities with [redacted] of capacity[8]. Following the path of a traditional [redacted] would result in significant reserve margins in the near term that will decrease over time as demand increases. In contrast, in this same scenario the LNG facilities provide a "right fit" and allow the Utilities to react to and manage the shortfall in a more timely and economical way. The Utilities could manage this by either [redacted] or by adding additional vaporization, i.e. deliverability, at each site at a [redacted]

Going in the other direction, even if the expected demand increases do not transpire, the proposed facilities will still provide value to the Utilities' customers. As technology continues to advance in renewable generation and battery storage, it is reasonable to surmise a scenario where the demand for natural gas fired generation may decrease, and along with that a reduced need for combined cycle electric generators to hold FT capacity. Today the [redacted] In a future where less natural gas is used regionally for electric generation, additional capacity on the pipelines could become available. In Wisconsin alone,

[8] [redacted].

there are over [redacted] secured by natural gas fired generators. If a lower gas demand future unfolds, installing LNG capacity as proposed will allow the Utilities to avoid some of the increased costs of [redacted].

Interstate pipeline rates will continue to increase as the pipelines are modernized. For example, in 2016 [redacted] a rate case at FERC asking for a 92 percent increase in FT rates. [redacted] described the reliability and modernization work it planned in the next few years. This future reliability and modernization work will result in additional future costs, above and beyond the rate increase that resulted from the settlement of that rate case. [redacted] this ongoing work is expected to result in a significant cost increases to the Utilities' customers, and these increases would be exacerbated if the demand for firm transportation on interstate pipelines decreases and pipeline costs must be collected from lower quantities of capacity sold.

In a situation where the demand does not meet the growth assumptions underlying this proposal, the Utilities would have the ability to [redacted] and still gain all the benefits of increased reliability and resiliency as well as price hedging. Increasing the LNG facilities' vaporization capacity is a [redacted] way to increase deliverability and is an option that can directly [redacted] In these ways, the proposed LNG peaking facilities will provide a physical price hedge against [redacted]

2.2.11 Summary of Attributes

LNG peaking capacity is clearly the Utilities' best option to manage their near term load growth requirements. LNG peaking facilities will also provide the Utilities with significant strategic value in the form of control over long term costs and system reliability and resiliency. The proposed facilities will insulate customers from the increasing costs and risk profile [redacted] The LNG peaking solution will allow the Utilities to "right size" their gas supply portfolio while providing both the Utilities and Wisconsin significantly more control over long term gas supply costs and risks.

Figure 2-3: Matrix of Attributes

Attributes:	Project	Alternative	Do Nothing
Control of Costs	✓	⊘	✓
Resiliency for Wisconsin	✓	⊘	⊘
Reliability for Wisconsin	✓	⚠	⊘
Addresses Growth in Wisconsin	✓	✓	⊘
Economic Gas Cost Hedge for WI Ratepayers	✓	⊘	⊘
Economic Expansion Hedge for WI Ratepayers	✓	⊘	⊘
Minimize Environmental Impact	✓	⊘	⊘
PSCW Control	✓	⊘	✓
Ease of Expandability	✓	⊘	⊘
Optimize Wisconsin Natural Gas Portfolios	✓	⊘	⊘
Connectability to WI's Major Distribution Systems	✓	⊘	⊘

2.3 Consistency with Future Projects

The Project is part of the Utilities' overall strategy to increase reliability, enhance resiliency and meet increasing demand in Wisconsin. The proposed Project will provide a platform to increase LNG capacity in other areas that have a need for additional supply and peaking capacity. The ability in the future to develop a "Hub and Spoke" framework to truck LNG to other locations, including potential facilities for non-WEC utilities, will allow for continued growth where it is cost effective and provides a benefit to the Utilities' customers. The Utilities will continue to analyze future applications on their systems but additional future construction projects are not planned at this time.

2.4 Alternatives Analysis

The Utilities currently meet the majority of their firm peak obligations in the service areas identified above in Section 2.0 by taking supply deliveries [redacted]. Incremental long-term firm capacity [redacted] where demand continues to increase [redacted] An alternative of "Doing Nothing" is not prudent nor is it feasible because [redacted]

Given the [redacted] circumstances on the [redacted], the only other feasible alternative to meet the growth requirements for the Utilities is to [redacted] to the Utilities service areas in southeastern WI. The Utilities have the ability to [redacted] the system delivery capabilities for [redacted] Recent [redacted] confirmed [redacted] For that reason an evaluation was performed to determine what [redacted] to provide similar incremental deliveries to the same service areas the proposed Project will serve. [redacted] to determine the incremental [redacted] to southeastern Wisconsin[9]:

1. [redacted] – low load growth scenario
2. [redacted] – base load growth scenario
3. [redacted] – high load growth scenario

The [redacted] required in each scenario are based upon [redacted] Therefore, the cost of [redacted] are representative of [redacted]. The [redacted] analyzed are summarized below and are further detailed in **Volume I Appendix F, Attachment 2**. The costs incurred for the alternatives conservatively only include costs that would be incurred by [redacted]

The costs of [redacted] are typically recovered from [redacted] that includes a [redacted] and the current [redacted].

[9] [redacted]

Table 2-2 provides the [redacted] for the three aforementioned [redacted]

Table 2-2: [redacted]

[redacted]

The [redacted] only reflects the costs [redacted] and does not include the [redacted] associated with [redacted]. As a result, a [redacted] Therefore, the forecasted [redacted] to calculate the total cost [redacted].

The economic analysis is a robust evaluation that tests and confirms the overall economic value the Project provides customers and consists of the following three analyses:

1. Scenario Analysis – A scenario analysis is a method of analyzing the expected value by considering alternative planning assumptions, sometimes called alternative planning futures. The scenario analysis considers alternative planning assumptions under different load growth scenarios, which includes a low, base, and high growth rates.
2. Sensitivity Analysis – A sensitivity analysis determines how different values of an independent variable, i.e. planning assumptions, affect the economic value the Project provides.
3. Risk Analysis – The risk analysis is an extension of the sensitivity analysis but incorporates a complete enumeration of all the changes in the independent variable whereas the sensitivity analysis provides the impact while only changing one variable at a time.

The economic analysis, which compares the quantitative attributes of the Project to the alternatives, results in significant NPV savings for the Utilities' ratepayers if the Project is pursued.

Table 2-3 summarizes the results of the scenario analysis performed using the different load growth assumptions identified. Under base assumptions the Project results in a combined $224 million NPV savings, or 33 percent savings, compared to Alternative 1 and a combined $267 million NPV savings, or 37 percent savings, compared to Alternative 2.

Table 2-3: NPV Results of Scenario Analysis ($MM)

	Comparison to Alternative 1			Comparison to Alternative 2		
	Base Scenario	Low Scenario	High Scenario	Base Scenario	Low Scenario	High Scenario
Alternative	$685	$658	$818	$727	$716	$940
Proposal	$460	$469	$497	$460	$469	$541
Savings	**$224**	**$189**	**$322**	**$267**	**$247**	**$399**
% Savings	**33%**	**29%**	**39%**	**37%**	**34%**	**42%**

As demonstrated in **Volume I Appendix F, Attachment 2,** the robustness of the comprehensive economic analysis performed validates the Project provides a solution that not only fits the Utilities' winter peaking demand profile better than increasing more annual FT capacity, but also presents an overwhelmingly economic solution to address the overall need identified. Combining all these quantitative benefits with the qualitative benefits identified provides a solution that adds significant value for the Utilities' ratepayers and the state of Wisconsin.

In addition, the Utilities are also providing the confidential economic model, with formulas intact, in **Volume I Appendix F, Attachment 3**.

2.5 Energy Conservation and Efficiency Analysis

Wis. Stats. §196.025(1) requires the PSCW, to the extent cost-effective, technically feasible and environmentally sound, to implement the priorities under Wis. Stats.§1.12(4) in making all energy-related decisions and orders. In turn, §1.12(4) states that in meeting energy demands, the policy of the state is that, to the extent cost-effective and technically feasible, options be considered based on the following priorities, in the order listed:

(a) Energy conservation and efficiency.
(b) Noncombustible and renewable energy resources.
(c) Combustible nonrenewable energy resources, in the order listed:
    1. Natural Gas.
    2. Oil or coal with sulfur content of less than 1%.
    3. All other carbon-based fuels.

The energy-related decision presented to the PSCW in this proceeding is whether it should authorize construction of the Project. The purpose of the Project is to increase reliability and provide additional natural gas supply and capacity to meet the Utilities "peak" demand needs in southeast Wisconsin. The

methodology and development of the demand forecasts include energy efficiency impacts on those demand forecasts. In addition, as explained in Section 2.2.1, the Utilities have included a scenario with a low demand forecast to reflect an increased effort and penetration of energy efficiency and conservation. As a result, the low demand forecast reflects a lower overall need the Utilities have for additional capacity. However, even in this scenario the Project still provides customers approximately **$190 million** in NPV savings (29%) compared to the alternative – [redacted]. Given the magnitude of the need for additional capacity and supply, the increased energy efficiency assumed in the low demand forecast does not materially change the overall need for the Project. Additional conservation activities, renewable resources, or any other energy priorities listed in Wis. Stats. §1.12(4) cannot provide a means to provide additional capacity and supply in the area. Therefore, the Project satisfies the requirements of the energy priorities law.

2.6 Pipeline Route Evaluation

The natural gas pipelines associated with each LNG Facility will be located entirely on the Utilities' property. As such, there will be no offsite pipeline impacts.

3.0 ENGINEERING DATA

3.1 Proposed Project

As discussed in Section 1.0, the Utilities will be constructing LNG peaking facilities near Ixonia and Bluff Creek. Bluff Creek and Ixonia sites will include liquefaction, storage, vaporization, and truck loading/unloading.

3.1.1 Technology and Major Components Required

The Bluff Creek and Ixonia LNG Facilities will each include one LNG train. Each LNG train will include a Feed Gas Pretreatment System and a Liquefaction Unit capable of separating heavy hydrocarbons from the inlet gas stream during the initial cool down steps of the liquefaction process.

The Liquefaction Unit will cool the natural gas until it changes to liquid form and send it to the onsite storage tank. Gas that evaporates from the upper surface of the liquid (boil-off gas) is captured, compressed, and sent back into the natural gas distribution pipeline. Each site can accommodate truck loading or unloading of LNG.

When needed to support the communities natural gas needs, the stored LNG is vaporized by the Vaporization Units and discharged back into the natural gas pipeline.

These key steps of Pretreatment, Liquefaction, Storage, Truck Loading/Unloading, and Vaporization are discussed in the following sections.

3.1.1.1 Feed Gas Pretreatment and Liquefaction Systems

Incoming natural gas for the LNG liquefaction systems will be pipeline quality natural gas. Each pre-treatment unit will be sized to handle a normal flow of feed gas and remove carbon dioxide, water, and mercury to meet the gas specifications required at the liquefaction unit.

The Liquefaction Unit liquefies treated natural gas, as well as removing and recovering heavy hydrocarbon components. Natural gas from the pre-treatment system enters the Liquefaction Cold Box and is first cooled to an intermediate temperature to condense heavy hydrocarbons. The condensed heavy hydrocarbons are separated and reheated before discharging to a warm heavy hydrocarbon separation system. The gas remaining after separating the heavy hydrocarbons is liquefied and subcooled to LNG against cold refrigerant. The LNG is then flowing to the LNG storage tank.

3.1.1.2 LNG Storage and Vaporization Systems

LNG will be stored in single containment LNG storage tanks. The inner tank will be constructed of a cryogenic alloy, 9% Nickel steel and will serve as the primary liquid containment. The outer tank will be constructed of carbon steel and will serve to contain the perlite insulation of the primary tank.

Secondary containment will be provided by an earthen impoundment.

The tanks will include in-tank, submersible pumps for sendout of LNG to the vaporization system or the truck loading system.

Boil-off gas (BOG) generated by the LNG storage tank will be collected and compressed in the Boil-off Gas Compressors which will increase the pressure of the gas to the point it can be reinjected into the gas supply pipeline.

The LNG will be vaporized and sent to the Utilities' distribution system gas pipelines to meet seasonal demand.

3.1.1.3 LNG Truck Loading/Unloading System

Each Facility will be equipped with a truck loading / unloading facility. The facilities will provide the ability to provide liquefied natural gas from one site to the other, when needed, during the summer refill periods. This capability will also allow each Facility to serve as a supply source of LNG to other potential future satellite locations that could be owned by the Utilities, or another (affiliate or non-affiliate) utility in the future.

3.1.1.4 Electric Power

Within the Facility, auxiliary transformers (AT) will be utilized to lower the incoming utility voltage to 4160VAC to power the Facility's 4160VAC switchgear. The 4160VAC switchgear will power the major electrical loads greater than 250 HP. Station service transformers (SST) will feed various 480VAC motor control centers (MCCs) that distribute power to smaller motors, utilities, lighting transformers, and other common systems. ATs and SSTs will be located outdoors. Switchgear and MCC's will be located in the facility electrical room. In general, all common systems required to operate the facilities will be powered from the electrical room; typical loads in this category include:

- Pretreatment System
- Liquefaction System
- Boil-off Gas Compressors

- LNG in-tank pumps
- Vaporization equipment
- Truck loading/unloading
- Admin buildings including Control Room
- Fire Protection System
- Site Security System
- Site lighting

3.1.1.5 Emergency Power Supply

An Emergency Generator will provide medium voltage backup power in the event of a loss of grid-supplied power for safe emergency shutdown and vaporizer operation. The emergency generator will be natural gas fired.

Typical loads for the emergency generator include:

- Instrumentation systems for HDMS
- UPS backup power
- Switchgear controls
- Vent System controls
- Fire water pumps
- Boil-off Gas Compressors
- Vaporization
- Emergency lighting system
- Site Security System

The UPS System will be capable of supporting the ESD system for safe emergency shutdown of the plant if both the grid power and emergency generator are out of service.

3.1.1.6 Facility and Instrument Air Systems

Each facility will include electric driven Air Compressor Packages, each sized for the operating demand (Facility and instrument air) of the LNG system.

Each compressor package will include an oil free air compressor and instrument air dryers. A dry air receiver will be sized to provide compressed air throughout an ESD procedure without the air compressors in service.

3.1.1.7 Refrigerant Storage

Refrigerant storage will be provided at the sites where liquefaction is installed.

3.1.1.8 Potable and Service Water

Potable and service water for the LNG Facility will be provided by groundwater wells. Service water will be used in utility stations and potable water will be used for safety showers and buildings.

3.1.1.9 Fire Water

The Fire Water System provides water to fire hydrants, monitors and fixed suppression systems in the event of a fire within the LNG Facility. The primary source of fire water for firefighting and fire exposure control within the Facility is from the Service/Fire Water Tank. The volume provided in the tank is sufficient to provide water to the largest system demand for two hours.

3.1.1.10 Other Utilities

3.1.1.10.1 Effluent Water Systems

Stormwater from the equipment area will drain to the LNG tank containment berm. Stormwater from the permanent development area not including the equipment area will be directed to the permanent stormwater pond. This pond will be a wet pond having three feet of permanent pool and two feet of solids storage. Temporary disturbed areas of the site to be reclaimed when construction is complete will drain to a temporary wet pond having the same permanent pool and solids storage as the permanent pond. The stormwater collected in the LNG tank containment berm will be pumped to the permanent pond for discharge.

Stormwater that does not collect in the LNG tank impoundment or in other process area containments will be routed away from the LNG Facility offsite per the applicable permit. Sanitary waste will be stored in a holding tank for periodic removal.

3.1.1.10.2 Fuel Gas System

A common fuel gas system for the LNG Facility will provide fuel gas for operation of fired equipment within the LNG system. The fuel gas source will be from the existing, on-site distribution pipeline.

3.1.2 Physical Dimensions of the Facilities

See **Volume I Appendix A** for a preliminary general arrangement drawing for an LNG Facility. The arrangement of the plant with respect to adjacent properties was determined based on code-prescribed vapor dispersion limits and calculated thermal radiation zones.

3.1.2.1 Vapor Dispersion Limits

Flammable vapor dispersion limits will be calculated using DEGADUS software as defined in the Wisconsin Administrative Code and NFPA 59A.

3.1.2.2 Thermal Radiation Zone

Thermal exclusion distances for various heat flux levels will be calculated in accordance with the Wisconsin Administrative Code using the "LNGFIRE III" computer program.

3.1.2.3 Hazardous Area Classification Basis

Area hazard classifications will be determined in accordance with NFPA 59A and NFPA 70. Acceptable protection techniques that are defined in NFPA 70 will be used to mitigate hazards in the classified areas. Specific protection measures to address each hazard will be determined during detailed engineering and design.

3.1.2.4 Hazard Detection System

The Hazard Detection Management System that will be installed at each LNG Facility will be based on providing a Proprietary Supervising Station Fire Alarm System that meets the requirements of NFPA 72 for LNG applications and International Code Standards and project specifications for the process, storage and utility application of each LNG Facility.

The HDMS will include combustible gas, toxic gas, low temperature, heat, smoke, and flame detectors. A description of hazard detection equipment and associated warning equipment that will be installed at the Facility is included in the NFPA 59A Fire Protection Evaluation that will be prepared prior to detailed design.

3.1.2.5 Fire Suppression Systems

Details of the fire suppression system will be determined based on the NFPA 59A defined Fire Protection Evaluation. It is anticipated that the following fire suppression systems will be utilized as part of the overall fire protection system:

- Dry Chemical fire suppression will be utilized at areas where LNG fires could occur.
- Water-based fire suppression systems will be used to protect areas of the facility that do not have a risk of LNG fires.

3.1.2.6 Security Plan

A site security assessment will be performed that includes hazards, threats, vulnerabilities, and potential consequences. The site security assessment will be available to the authority having jurisdiction and will include, at a minimum, the following:

- Security System with controlled access that is designed to prevent entry by unauthorized persons.
- Peripheral fence
- Security communication system
- Security monitoring and warning systems
- Warning signs

3.1.3 Expected operation

References to LNG as "peaking" supply does not fully describe the benefits provided to the Utilities in terms of this source of firm deliverability during real time operations. To that end, the following describes how the Utilities intend to operate the LNG's vaporization and liquefaction systems across the entire gas year to meet not just one but several firm deliverability goals.

3.1.3.1 Vaporization

Winter Period - On both a planning and supply operations basis, the proposed LNG facilities provide short term (up to [redacted]) firm supply and firm capacity for the Utilities firm sales customers during very cold and peak temperature periods in the winter months (November-March). In this manner LNG displaces what would have otherwise been served through contracts for firm pipeline transport services; contracted storage; firm balancing; and, third party supplies in the Utilities' annual Gas Supply Plans. Given the nature of the Utilities' load curves LNG is better-suited to meeting the [redacted] than those alternatives and is therefore the traditional or standard rationale for building LNG into the Utilities' supply and capacity portfolios.

Shoulder Period - LNG also provides the Utilities with a real time solution to very cold and peak temperatures in the spring shoulder month of April. With the preceding winter's supply contracts expired; with seasonal firm transport contracts at term or re-directed to storage operations; and, with storage inventories exhausted, significantly colder-than-normal April temperatures can present a unique firm supply challenge as the industry switches to summer time operations. To the extent that a Utility can utilize available LNG inventory to fill firm supply gaps in April it reduces the need to further press its storage inventories (if available), purchase of comparably high-priced gas supplies, and mitigate its exposure to pipeline penalties.

Year-Round - As a Utility-controlled source of firm deliverability, LNG can serve to mitigate the Utilities' exposure to upstream pipeline and downstream Utility distribution system supply disruptions. Gas supply disruptions to and within the Utilities' distribution systems can be anticipated as in the case of a planned out-of-service for maintenance. In this instance LNG can be used to offset or back-up supply work-arounds on a planned basis. Disruptions can also be unanticipated as the result of system mechanical failures (e.g. compression, regulation, metering) or, in the worst case, by line strikes. In these real time instances LNG, when connected to sufficiently-sized, integrated distribution facilities (e.g. Bluff Creek and Ixonia distribution laterals), provides firm deliverability in as near to a real time manner as is available. At a minimum, in the case of anticipated or unanticipated supply disruption LNG provides the Utilities with a firm, self-controlled back-up supply source year round.

3.1.3.2 Liquefaction:

Summer Base Load - As proposed, the LNG project would be designed to provide the Utilities with up to ten (10) days of gas supply at each plant's prescribed maximum delivery rate (vaporization capability). Notwithstanding operational use to meet the various requirements spelled-out above, on-going vaporization due to inventory boil-off will result in available working inventory to less than the maximum ten (10) days of service. In general, it is the Utilities' plan to fill tank inventory in-advance of the upcoming winter period in a ratable, base load manner during the preceding summer period when gas supply availability and pricing are expected to be more favorable than other times of the gas year. In this way, buying gas supply as LNG feedstock (for liquefaction) is very similar to buying gas supply for injection to storage with the added benefit of making better use of the Utilities' annual Guardian FT services by delivering additional gas supply into southeast Wisconsin during the summer months.

Year-round - Over the course of the gas year as inventory is used for distribution system supply operations; for feedstock to other utility LNG operations; and, as the result of on-going boil-off, liquefaction operations will take place to protect the utility's ability to vaporize across the gas year for the purposes described above. It is the Utilities' plan to manage each plant's inventory to a minimum level of three (3) days of working, MDQ of vaporization in addition to the respective base inventory needed to support on-going operations (tank pump requirements, boil-off) across the gas year. The Utilities will accomplish this through the purchase and delivery of gas supply through existing term supply agreements, or from the spot market as circumstances require.

The three (3) day inventory minimum is established as an absolute floor needed to provide full deliverability across a weekend and holiday period when incremental third-party gas supply is typically less available; when the use of leased firm storage service can be limited by contract terms and/or storage

field operational status; and, as a backstop to the upstream pipeline and downstream distribution system supply disruptions referenced above. Because liquefaction is a mechanical process with physical limitations, then depending on where tank inventory levels are in terms of potential need (demand) liquefaction will commence in-advance of inventory actually declining to the three (3) day minimum.

3.1.3.3 Arbitrage Opportunities

First and foremost, the Utilities are fully committed to the use of the proposed LNG for the purposes of meeting the vaporization and liquefaction requirements set-out above. However, given the capability to liquefy throughout the year combined with adequate capacity to and from the facility, Utility owned and operated LNG provides a substantial physical hedge against natural gas price spikes by providing a real time, on-system alternative to market supply being sold at high prices, albeit in the short-term.

In addition to the above, to the extent that the Utilities are presented with opportunities to safely adjust planned liquefaction and vaporization schedules for the purpose of capturing favorable forward gas price differentials (or avoiding unfavorable gas costs) as compared to other sources of supply, the Utilities can adjust LNG operations accordingly and take the steps necessary to lock-in the benefits for the customer.

3.1.4 Staging Areas and Temporary Workspaces

Laydown areas and temporary workspaceswill be within the LNG Property, adjacent to the permanent disturbance.

3.2 Associated Facilities

The following sections provide information related to the associated facilities required for the Project.

3.2.1 Necessary Associated Facilities

Necessary associated facilities are the natural gas interconnection piping and associated valving.

3.2.1.1 Pipeline Interconnection

The Project will require delivery of natural gas to each Site. The routes will be entirely within the Utilities' property.

The actual construction will begin with work area preparation. Clearing and grading will be done if necessary to provide a level area to facilitate pipe-laying operations and transport of required construction equipment. The main will be installed by open-cut trenching. Material excavated during trenching will be temporarily piled to one side, with topsoil and subsoil separated, if applicable. Any material not suitable

for backfill, or in excess, will be hauled to a suitable location. Best management erosion control practices will be employed to minimize erosion during trenching, piling and construction activities.

A qualified inspector will visually and radiographically inspect completed welds. An external coating applied at the mill will protect the piping. Following inspection, a coating will be field-applied to each weld joint or fitting.

The trench bottom will be inspected to ensure it is free of rock and debris. If required, sand or soil bedding material will be placed in the trench bottom. The pipeline will be lowered into the trench. The trench will then be padded and backfilled, using trench excavation material and then will be compacted. Compaction will avoid future settlement. Decompaction will occur where necessary and re-vegetation will be compatible with preconstruction condition and adjacent vegetation patterns. The pipeline will be both hydrostatically tested and dried prior to being placed in service.

3.2.1.2 ROW Required

Right of Way will not be required for the Project as all facilities would be located on the Utilities' property.

3.2.1.3 Valve Locations

A valve station will be provided at a Facility tie-in to the existing pipelines. Valve stations will be fenced and have an access road from the nearest plant road or public road.

3.2.1.4 Meter Stations, Regulator Stations, Gate Stations, and Odorizing Equipment

Any meter station, regulator station, gate station, and odorizing equipment locations will be located within the LNG Facility. Final locations will be determined in final design.

3.2.2 Proposed Routes

The pipeline routes will be entirely within the Utilities' property. Since no offsite pipelines are proposed for the Project, no alternative route corridors were considered.

3.2.3 Construction Impacts

See Section 5.2 for a discussion of potential construction impacts to property owners; mitigation measures; and safety procedures, methods, and timing of notification during construction.

3.2.4 Off-ROW Access Roads

The access roads for the LNG Facilities will be completely within the LNG Properties. No off-property access roads will be required.

4.0 PROJECT COSTS

4.1 Capital and Construction Costs

4.1.1 Cost of Facility and Associated Facilities

Table 4-1: Project Costs

Major Plant Account	Bluff Creek LNG Facility Cost Estimate	Ixonia LNG Facility Cost Estimate
374 – Land and Land Rights	[redacted]	[redacted]
375 – Structures and Improvements	[redacted]	[redacted]
376 – Mains	[redacted]	[redacted]
378 – Measuring and Regulating Equipment	[redacted]	[redacted]
Total	$185,000,000	$185,000,000

4.1.2 Depreciation Rates

The LNG facilities and associated pipelines will be depreciated over a 40-year life on a straight-line basis.

4.2 Financing and Rate Recovery

4.2.1 Financing

The cost of the project will be met from internal sources and will not require the issuance or sale of securities by the Utilities.

4.2.2 Rate Recovery

For ratemaking purposes, the Utilities propose a return on Available Funds Used During Construction for 100% of their Construction Work in Process ("CWIP") balance at their respective weighted average cost of capital. The Utilities will recover their investment in the facilities by including it in rate base and recovering the return on and of the investment in base rates. The Utilities propose to recover their fixed labor and O&M costs in base rates and their variable O&M costs through their Purchased Gas Adjustment Clauses ("PGAC").

These variable O&M costs include the energy and material costs to vaporize LNG when the facilities are dispatched to serve peak demands and to liquefy gas to refill the storage facilities after they have been dispatched. Recovery of these costs through the Utilities' PGACs is reasonable and appropriate because

these variable O&M costs are dependent on weather and market conditions beyond the Utilities' control and therefore cannot accurately be forecasted for inclusion in base rates. These costs are analogous to the fuel costs to start up an electric generating facility upon being dispatched by MISO, which are recovered through the electric utility's fuel costs. PGAC treatment of LNG liquefaction, vaporization and, if necessary, trucking costs is also consistent with the similar treatment of the cost of LNG delivered (by truck) to WG's Rice Lake LNG peaking facility. That cost, which includes the vendor's cost of liquefaction, vaporization and delivery costs, is collected through WG's PGAC.

Forecasted Costs

Forecasted costs for both sites are provided in Table 4-2.

Table 4-2: Forecasted Costs

Cost Category	Bluff Creek LNG Facility	Ixonia LNG Facility
Annual O&M Costs	[redacted]	[redacted]
Annual Maintenance Capital Costs	[redacted]	[redacted]
Annual Liquefaction and Vaporization Costs	[redacted]	[redacted]
Total	$2,430,000	$2,430,000

NOTE. [redacted] utilization of working inventory every year and annual boil-off

5.0 COMMUNITY IMPACTS

5.1 Communication with Potentially Affected Public

The following sections describe the anticipated public communication activities for the Project.

5.1.1 Communication with Public

The Utilities have notified property owners within 1 mile of each of the LNG Facility. Due to the COVID-19 pandemic, the Utilities were unable to host a public information meeting prior to the filing. The Utilities intend to host an information meeting for the community and the stakeholders later this summer, as circumstances allow.

5.1.2 Public Information Meetings

As described in Section 5.1.1, the Utilities plan to conduct public information meetings and to send invitations to landowners, local, state, and Federal stakeholders.

5.1.3 Public Outreach Mailings and Handouts

A copy of the letter sent to landowners is included in **Volume I Appendix C**.

5.1.4 Public Comments

The Utilities will provide opportunities for landowners and local, state, and federal officials to provide feedback on the Project during the information meeting and the permitting process.

5.2 Construction Impacts to Property Owners

The following sections provide information related to impacts to property owners due to construction of the Projects, as well as mitigation measures to limit inconveniences to neighboring property owners and describe safety procedures, methods, and timing of notification during construction.

5.2.1 Mitigation of Inconveniences to Property Owners

The Project will require the construction of each LNG Facility as well as connection to the existing natural gas transmission system near each proposed LNG Facility. Access roads will be constructed from existing roads to the LNG Facilities and will be completely within the LNG Property. These roads will be asphalt paved or monitored and wetted or swept clean to minimize fugitive dust that may occur due to construction equipment. Signage will be erected in advance of construction where road closures or land closures are required. The Utilities will coordinate with local road authorities on the signage and construction procedures related to road/lane closures to minimize traffic disruptions. Disturbed vegetation

in temporary construction areas will be restored according to the vegetation restoration plan (see Section 8.11).

5.2.2 Safety Procedures, Methods, and Timing of Notification during Construction

The Utilties will coordinate with local road authorities on the signage and construction procedures related to road/lane closures to minimize traffic disruptions. The natural gas pipeline will require excavations during construction. Any excavation areas will be properly marked and/or fenced off during construction hours and overnight, if necessary. Letters will be sent ahead of construction to inform property owners of timing. No driveway crossings or other access route disruptions are anticipated. The Utilities will coordinate with nearby property owners ahead of construction near their property.

5.3 Potential Impacts to Agricultural Lands

The Ixonia LNG Construction Footprint and Bluff Creek LNG Construction Footprint occur on agricultural lands that are primarily cropland. Other agricultural land uses in the area include pastures, hayfields, farm residences, farm buildings, wooded areas, wetlands, and farm roads. The following sections provide information on potential impacts to agricultural lands.

5.3.1 Type of Farming

Based on field investigations, the Ixonia LNG Construction Footprint and Bluff Creek LNG Construction Footprint occur on agricultural lands that include row-crop production fields.

The Ixonia LNG Construction Footprint would permanently remove agricultural land from production and temporarily affect adjacent agricultural land during construction. Section 6.7.1 lists the amount of agricultural lands affected by the Ixonia LNG Facility.

The Bluff Creek LNG Construction Footprint would permanently remove agricultural land from production and temporarily affect adjacent agricultural land during construction. Section 6.7.2 lists the amount of agricultural lands affected by the Bluff Creek LNG Facility.

5.3.2 Farmland Preservation Programs Affected by the Project

None of the agricultural lands affected by the Ixonia Project or Bluff Creek Project are enrolled in a USDA conservation program.

5.3.3 Mitigation and Minimization of Construction Impacts on Agricultural Lands

Construction will be contained within the LNG Construction Footprint. Impacts to agricultural lands associated with the new natural gas pipelines and staging areas will be temporary and minimized by implementing best management practices ("BMP") for construction in agricultural lands. BMPs include topsoil segregation, erosion control, soil restoration (i.e. decompaction, topsoil replacement, rock removal and final cleanup), seeding and crop compensation, if applicable. Matting may be used in wet areas to minimize soil disturbance in the absence of stable ground conditions. Areas outside the permanently impacts area will be returned to production.

5.3.4 DATCP Agricultural Impact Statement

Eminent domain will not be used for the Project. As such, an Agricultural Impact Notice is not required for the Project. **Volume I Appendix D** contains correspondence dates with DATCP confirming that an Agricultural Impact Notice is not required.

6.0 NATURAL RESOURCES IN LNG PLANT AREA

6.1 Mapping Requirement

Project maps are included in **Volume I, II, and III**.

6.2 History of Site and Grounds

The 1837 General Land Office ("GLO") survey map labeled the Bluff Creek LNG Property area as "dry prairie" but no houses, trails, or other features were depicted in the Site. The historic accounts of the county indicate that the township was first settled in 1837, but the land patents for the properties which include the LNG Property were not granted until 1841. According to the nineteenth century U.S. Census records, all the landowners were farmers. An 1857 map of Walworth County depicts a farmhouse and orchard within the LNG Property, along the western edge, adjacent to county road. This farmhouse and orchard were not depicted on later plat or topographic maps of the area and appears to no longer exist by the late nineteenth century. No other houses of improvements were noted on any of the historical and modern maps or aerial imagery reviewed. Historical and modern aerial imagery of the area indicates that the entire LNG Property was under cultivation since at least 1937.

The 1837 GLO survey map does not show any houses, trails, or other features in the Ixonia LNG Property. The historic accounts of the county indicate that the township was first settled in 1837, but the land patents for the properties which include the Ixonia LNG Property were not granted until 1848 to 1851. According to the nineteenth century U.S. Census records, all the landowners were farmers. In 1853, the northeast portion of the county was described as having the best stand of hardwood trees in the state. No houses or improvements were noted on any of the historical and modern maps or aerial imagery reviewed. Historical and modern aerial imagery of the area indicates that the entire LNG Property was under cultivation since at least 1937.

6.3 Construction Areas

Temporary disturbances will occur on land surrounding each LNG Facility. At the Ixonia LNG Facility, temporary disturbance will occur during construction along the proposed pipeline which are expected to extend along the east side of North Road. The total temporary disturbance area at the Ixonia LNG Facility will be approximately 18 acres.

At the Bluff Creek LNG Facility, temporary disturbance will occur during construction along the proposed pipeline which are expected to extend along the south side of the site access road. Temporary

disturbance will also be required near the electric transmission line connection point. The total temporary disturbance area at the Bluff Creek LNG Facility will be approximately 23 acres.

6.4 Geology

The Project is within the Central Lowland physiographic province, which is the largest physiographic province of the United States. Elevations in this province are generally 2,000 feet or less. The Central Lowland province contains large areas of flat lands with geomorphic remnants of glaciation.[10] Within the Central Lowland province, the Project is within the Eastern Lake Section which is characterized by nearly level to rolling till plains, lake plains, and outwash plains. Low hills and ridges are formed by drumlines, bedrock-controlled moraines, and beaches in this section. Lake terraces, floodplains, dunes, swamps, and marshes can also be found. Elevation in the Eastern Lake Section ranges from 660 to 1,310 feet.[11] Bedrock in this region consists of primarily early Paleozoic shale, limestone, and dolomite rocks.

6.5 Topography and Soils

The following sections describe site-specific topography and soils at each LNG Facility.

6.5.1 Ixonia LNG Facility - Jefferson County

6.5.1.1 Topography

Jefferson County is located in southeastern Wisconsin and is known for being primarily farmland. The topography of Jefferson County was influenced by glacial drift. Elevations for Jefferson County range from approximately 620 to 1200 feet above sea level. Areas in the central portion of the county from north to south generally have higher elevations that areas to the east or west, but topography is generally gently rolling to flat. The southeast corner of the county contains a more complex topography, with steep slopes and potholes. The USGS topographic maps indicate the northern portion of the Ixonia LNG Property is relatively flat (845 feet above sea level), while the southern portion has more relief on the eastern (880 feet above sea level) and western (920 feet above sea level) boundaries, converging towards the center, towards a low-lying drainage area (850 feet above sea level), sloping downward towards the northern flat area. USGS topography maps are shown in **Volume II Appendix H**.

[10] NPS. (2017). Physiographic Provinces. Retrieved August 2019 from https://www.nps.gov/subjects/geology/physiographic-provinces.htm.
[11] USDA NRCS. (2006). Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Retrieved August 2019 from https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_050898.pdf.

6.5.1.2 Soils

Soils in Jefferson County include glacial till, outwash, lake-laid clay, silt and sand. These soils are conducive to farming. Houghton muck, 0 to 2 percent slopes, comprises approximately 7.9 percent of the soils in the county. These are poorly drained soils but are good for farming. Wacousta silty clay loam, 0 to 2 percent slopes, comprises 5.2 percent of the soils in Jefferson County and are very poorly drained. Kidder loam, 6 to 12 percent slopes, eroded, make up 4.2 percent of the county soils. These soils are well drained. Keowns silt loam, 0 to 2 percent slopes, comprise 4.0 percent of Jefferson County soils and are poorly drained. Table 6-1 provides the soils within the Ixonia LNG Property. Soils and hydric soils are shown in **Volume II Appendix G**.

Table 6-1: Soils in Ixonia LNG Property

Soil Unit Name	Soil Unit Symbol	Acreage in Property	Percentage of Property
Lamartine silt loam, 2 to 6 percent slopes	LaB	14.8	9%
Mayville silt loam, 2 to 6 percent slopes	MoB	3.4	2%
Palms muck, 0 to 2 percent slopes	Pa	61.7	38%
Rotamer loam, 12 to 20 percent slopes, eroded	RtD2	5.7	4%
Rotamer loam, 2 to 6 percent slopes, eroded	RtB	3.7	2%
Theresa silt loam, 2 to 6 percent slopes	ThB	2.2	1%
Theresa silt loam, 6 to 12 percent slopes, eroded	ThC2	11.2	7%
Wacousta silty clay loam, 0 to 2 percent slopes	Wa	44.6	27%
Wauconda silt loam, 2 to 6 percent slopes	WvB	16.7	10%

6.5.2 Bluff Creek LNG Facility - Walworth County

6.5.2.1 Topography

Walworth County is located in the southeastern part of the state. An important topographical feature of Walworth County is its moraines and kettles, which show the different stages of glaciation in the region. Outside of these areas the topographic is generally level to slightly undulating. Elevations in the county range from approximately 800 to 1000 feet above sea level, with the northwestern portion of the county having higher elevations and more rugged topography. The USGS topographic maps indicate the Bluff Creek LNG Property general landscape is relatively flat throughout (960 feet above sea level), with gradual sloping upward towards the southeast corner (990 feet above sea level). USGS topography maps are shown in **Volume III Appendix H**.

6.5.2.2 Soils

Most of the soils in Walworth County were formed in loess or came from materials from glaciation in the area. Miami silt loam, 2 to 6 percent slopes, amounts for 6.4 percent of the soils in Walworth County. These are known as well drained soils and are considered prime farmland soils. Plano silt loam, gravelly substratum, 0 to 2 percent slopes, comprises 6.3 percent of the soils in the county. These soils are well drained as well and considered as prime farmland soils. Pella silt loam, 0 to 2 percent slopes, make up 6.1 percent of the soils in the county, and are poorly drained soils. McHenry silt loam, 2 to 6 percent slopes, comprise 5.7 percent of the soils in the county and are well drained, prime farmland soils. Table 6-2 provides the soils within the Bluff Creek LNG Property. Soils and hydric soils are shown in **Volume III Appendix G**.

Table 6-2: Soils in Bluff Creek LNG Property

Soil Unit Name	Soil Unit Symbol	Acreage in Property	Percentage of Property
Griswold loam, 12 to 20 percent slopes, eroded	GsD2	1.3	<1%
Griswold loam, 6 to 12 percent slopes, eroded	GsC2	2.1	1%
Lorenzo-Rodman complex, 12 to 20 percent slopes, eroded	LzD2	3.2	1%
Lorenzo loam, 2 to 6 percent slopes	LyB	7.4	2%
Lorenzo loam, 6 to 12 percent slopes, eroded	LyC2	6.1	2%
Plano silt loam, gravelly substratum, 0 to 2 percent slopes	PtA	144.2	43%
Plano silt loam, gravelly substratum, 2 to 6 percent slopes	PtB	89.1	27%
Plano silt loam, till substratum, 2 to 6 percent slopes	PsB	10.3	3%
Radford silt loam, 0 to 3 percent slopes	RaA	0.7	<1%
Troxel silt loam, 0 to 3 percent slopes	TxA	2.1	1%
Warsaw silt loam, 2 to 6 percent slopes	WhB	63.2	19%
Warsaw silt loam, 6 to 12 percent slopes, eroded	WhC2	2.9	1%

6.6 Historical Resources

An archaeological survey of the Ixonia LNG Facility was conducted on April 9 and 10, 2020 by Burns & McDonnell archaeologists, based on the potential for wetlands impacts to trigger a regulatory cultural review (e.g., potentially requiring a Section 106 consultation). The cultural resources study is provided in **Volume II Appendix R**.

6.6.1 Construction Locations

The Public Land Survey System locations being impacted by the proposed construction are displayed in Table 6-3.

Table 6-3: General Site Location

Site	Township	Range	Section(s)	Quarter Sections
Bluff Creek LNG Construction Footprint	4N	16E	29	SWNE, SENW, SWNE, NWSW, NESW, NWSE, SWSW, SESW, SWSE
Ixonia LNG Construction Footprint	8N	16E	10, 15	Section 10: SWSW, SESW
				Section 15: NWNW, NENW, SWNW, SENW

6.6.2 Historical Resources Report

The historic resources include those on the State Historical Society of Wisconsin Digital Geographic Data Sets including (1) Architectural and History Inventory ("AHI"), (2) an Archaeological Sites Inventory ("ASI"), and (3) Archaeological Report Inventory ("ARI") (Table 6-4).

Table 6-4: Wisconsin Historical Society Digital Geographic Data Sets

Project Elements	ARI[a]	ASI[b]	AHI[c]
Bluff Creek LNG Facility	3	6	8
Ixonia LNG Facility	5	3	27

Source: Wisconsin Historical Society ("WHS") 2020
(a) ARI = Archaeological Report Inventory
(b) ASI = Archaeological Sites Inventory
(c) AHI = Architecture and History Inventory

6.6.3 Cultural Resource Surveys

The following sections provide a summary of previously recorded cultural resources and surveys recorded in the vicinity of each LNG Facility. No field surveys were performed for the Bluff Creek LNG Facility due to there not being a trigger for such studies, and the previously recorded data did not indicate that field surveys were warranted.

6.6.3.1 Bluff Creek LNG Facility

A total of three cultural resource surveys, including a National Register of Historic Places ("NRHP") site evaluation have been previously performed near the Bluff Creek LNG Construction Footprint (Table 6-5). None of these surveys crossed portions of the proposed LNG Construction Footprint.

There are six ASIs within one mile the Bluff Creek LNG Facility: five archaeological sites (47WL0156, 47WL0299, 47WL0306, 47WL0307, and 47WL0318) and one cemetery (BWL-0072) (Table 6-6). Site 47WL0299 was the only one of these that has been evaluated against the significance criteria of the NRHP. The archaeological sites or the cemetery will not be impacted by this Project within the Bluff Creek LNG Construction Footprint.

A total of eight historic-aged resources have been recorded within a mile of the Bluff Creek LNG Facility. All eight of these resources are houses distributed along the sides of the county roads. None of the AHI sites fall within the construction limits, although two are immediately adjacent (9957 and 9959) (Table 6-7).

Table 6-5: Archaeological Report Inventory (ARI) Polygons Near the Bluff Creek LNG Facility

ARI #	Report Title	Author	Date
86-1260	Letter to SHSW Hpd. Archaeologist Re: Northern Natural Gas Company Pipeline	Benchley, Elizabeth D.	1988
99-0955	Fall 2000 National Register of Historic Places Investigations at 47WL299 in Wisconsin	McGowan, Kevin	2001
10-9045	Letter Report: Phase I Archaeological Survey for the Katzman Farms, Inc., Proposed Construction within the Boundary of Archaeological Site 47WL156 in Walworth County, Wisconsin	Van Dyke, Allen	2010

Source: WHS 2020

Table 6-6: Archaeological Sites Inventory (ASI) Polygons Near the Bluff Creek LNG Facility

Trinomial / ASI ID	Type	Affiliation
47BWL-0072	*Cemetery*	Historic Euro-American
47WL-0156	*Campsite/Village*	Unknown Prehistoric/Historic Indian
47WL-0299	Lithic Scatter; Homestead	Unknown Prehistoric; Historic Euro-American
47WL-0306	Farmstead	Historic Euro-American
47WL-0307	Foundation/ Depreciation	Historic Euro-American
47WL-0318	Farmstead	Historic Euro-American

Source: WHS 2020

Table 6-7: Architecture and History Inventory (AHI) Resources Near the Bluff Creek LNG Facility

Trinomial / AHI ID	Address	Resource(s)	Name
9952	*N. Side of Kettle Moraine Dr. 0.25 mile W. of Jackson*	House	-

Trinomial / AHI ID	Address	Resource(s)	Name
9957	E. side of county highway 0.25 mile south of Kettle Moraine Rd.	House	-
9958	6577 Kettle Moraine Dr.	House	George W. Esterly House
9959	NW corner of County Highway O and St Peterson Rd.	House	Pope House
9960	W. side of county highway 0.5 mile N. of Territorial Rd.	House	-
9961	N. side of county highway 0.2 mile W. of curve	House	-
9962	N. side of county highway 0.2 mile W. of Blue Wing Rd	House	-
9963	(Original location) N. side of county highway 0.2 mile E. of Blue Wing Rd.	House	James Sanford House

Source: WHS 2020

6.6.3.2 Ixonia LNG Facility

A total of five cultural resource surveys were previously performed in the Ixonia LNG Facility 1-mile radius Study Area limits (Table 6-8). Of those five surveys, one (99-1357) crossed the proposed LNG Property boundary. One of these surveys (99-1357) crossed portions of the proposed LNG Construction Footprint. A survey report is provided in **Volume II Appendix R** detailing the findings in the previously unsurveyed portions of the Ixonia LNG Facility.

There are 3 ASIs within 1 mile of the LNG Property boundary, one site (47JE1156) and 2 cemeteries fall within these limits (Table 6-9). The archaeological sites and the cemeteries will not be impacted by this Project within the LNG Property boundary. A total of 27 historic-aged resources have been recorded within 1 mile of the LNG Property boundary, none fall within these limits (Table 6-10).

An archaeological survey of the Ixonia LNG Facility was conducted on April 9 and 10, 2020 by Burns & McDonnell archaeologists. No archaeological resources were identified during this survey.

Table 6-8: Archaeological Report Inventory (ARI) Polygons Near the Ixonia LNG Facility

ARI #	Report Title	Author	Date
83-0054	Archaeological Survey Field Report, STH 135, Jefferson County, Wisconsin	Emerson, Thomas E.	1983
99-1357	An Archaeological Survey for The Wisconsin Gas Company Lateral Line Project in Jefferson, Waukesha and Washington Counties, Wisconsin	Van Dyke, Allen P.	1999

ARI #	Report Title	Author	Date
00-0010	*Archives and Literature Search, Archaeological and Burial Sites, Milwaukee to Madison Passenger Rail Corrido Study, Dane, Jefferson, Waukesha and Milwaukee Counties, Wisconsin*	Overstreet, Davis and Georgia Lusk	2000
06-0348	*Phase I Archaeological Investigations of Proposed USDA NRCS Improvements on the Thomas and Kevin Griswold Property, Jefferson County, Wisconsin*	Watson, Robert and Katherine Shillinglaw	2006
06-0834	*Cultural Resource Investigations for the Guardian II Pipeline Project in Wisconsin, During the Summer of 2006*	Walz, Gregory, Kevin P McGowan, and Christopher Flynn	2006

Source: WHS 2019, 2020

Table 6-9: Archaeological Sites Inventory (ASI) Polygons Near the Ixonia LNG Facility

Trinomial / ASI ID	Type	Affiliation
47JE1156	Lithic Scatter	Unknown Prehistoric
BJE-0024	Cemetery	Historic Euro-American
BJE-0025	Cemetery	Historic Euro-American

Source: WHS 2020

Table 6-10: Architecture and History Inventory (AHI) Resources Near the Ixonia LNG Facility

Trinomial / AHI ID	Address	Resource(s)	Name
6691	N9166 Green Valley Rd.	Silo	T. H. Schmidt
6692	W710 Gopher Hill Rd.	Church	Evangelisch Lutherische Kruez-Kirche
6694	W1510 Marietta Ave.	House	E. T. Evans
6695	E. Side of North St., 0.1-Mile N. of Marietta Rd.	Town Hall	Ixonia Town Hall
6696	NE Center of Jolly Ct. and State Highway	House	-
9963	(Original location N. side of County Hwy. 0.2-Mile E. of Blue Wing Dr.	House	James Sanford House
122538	W1541 Gopher Hill Rd.	House	Fred Huebner House
122540	W1541 Gopher Hill Rd.	Basement Barn	-
122541	N8950 Triangle Rd.	House	L. Huebner Farm
122542	N8950 Triangle Rd.	Barn	L. Huebner Farm

Trinomial / AHI ID	Address	Resource(s)	Name
122543	N8950 Triangle Rd.	Barn	L. Huebner Farm
122544	N8950 Triangle Rd.	Silo	-
122554	N8934 River Valley Rd.	House	Herman Danes Farm
122555	N8934 River Valley Rd.	Basement Barn	Herman Danes Farm
122556	N8934 River Valley Rd.	Garage	Herman Danes Farm
122557	N8934 River Valley Rd.	Granary	Herman Danes Farm
122558	W799 Gopher Hill Rd.	House	Carl Gauerke Farm
124087	N8960 Ridge Ln.	House	Renards and Maki Farm
124088	N8960 Ridge Ln.	Barn	O.W. Schroeder Farm
124098	N8960 Ridge Ln.	Garage	O.W. Schroeder Farm
124099	N8960 Ridge Ln.	Silo	O.W. Schroeder Farm
124101	N8960 Ridge Ln.	Domestic - outbuilding	O.W. Schroeder Farm
164941	W1156 Hill Rd.	House	John Humphrey
164942	W1156 Hill Rd.	Machine Shed	John Humphrey
164961	W1156 Hill Rd.	Small Animal Building	John Humphrey
165021	W1510 Marietta Ave.	Basement Barn	E. T. Evans
165022	W1510 Marietta Ave.	Silo	E. T. Evans

WHS 2019, 2020

6.6.4 Potential Effect on Historical Resources

No previously recorded cultural resources will be directly impacted by the proposed Project. In addition, none of the above ground resources are listed on the NRHP and therefore there are no indirect impacts resources in the areas of either LNG Facility. The April 2020 archaeological survey of the Ixonia LNG Facility found no cultural resources and determined that the Project will not impact historical resources.

6.7 Existing Vegetative Land Cover

The following sections provide details related to the existing vegetation communities in each LNG Facility based on field observations. Detailed habitat assessment surveys were completed during the appropriate regulatory and seasonal time frames. Based on observations made during the field investigations, the Ixonia LNG Facility occurs primarily on agricultural lands, while the Bluff Creek LNG Facility occurs entirely on agricultural lands.

6.7.1 Ixonia LNG Facility

The existing land cover at the Ixonia LNG Construction Footprint is provided in Table 6-11.

Table 6-11: Ixonia LNG Construction Footprint Land Cover

Land Cover Type	Total Acres in Ixonia LNG Construction Footprint	Acres in Permanent Impact Areas	Acres in Temporary Impact Areas[A]
Agriculture	37.01	23.81	13.20
Developed	0.26	0.18	0.08
Grassland	5.39	1.71	3.68
Non-forested Wetland	0.97	0.06	0.91[B]
Upland Forest	0.06	0.00	0.06

Source: Stantec, 2020
[A] Includes land available for use in construction footprint; however, not all areas will be temporarily impacted.
[B] Expected impacts are shown in Vol II Appendix Q – WDNR Impact Tables.

6.7.2 Bluff Creek LNG Facility

The existing land cover at the Bluff Creek LNG Construction Footprint is provided in **Error! Reference source not found.**.

Table 6-12: Bluff Creek LNG Construction Footprint Land Cover

Land Cover Type	Total Acres in Bluff Creek LNG Construction Footprint	Acres in Permanent Impact Areas	Acres in Temporary Impact Areas[A]
Agriculture	51.59	29.12	22.47

Source: Stantec, 2020
[A] Includes land available for use in construction footprint; however, not all areas will be temporarily impacted.

6.8 Invasive Species (Uplands and Wetlands)

Based on field delineation observations on April 15th to 17th, 2020, garlic mustard (*Alliaria petiolate*) and Canada thistle (*Cirsium arvense*), both listed as restricted species on the Wisconsin Chapter NR 40 invasive species list, were observed within the Ixonia LNG Construction Footprint. Reed canary grass (*Phalaris arundinacea*), a non-NR 40 species, was also observed as a dominant species throughout the Ixonia LNG Construction Footprint wetland areas. Results of the delineated invasive species will be incorporated into construction planning. Please reference to wetland delineation report in **Volume II Appendix U** for additional information.

No NR 40 invasive species were observed at the Bluff Creek LNG Construction Footprint. Please reference to wetland delineation report in **Appendix U of Volume III** for additional information. The

Utilities will mitigate the potential spread of the species in compliance with Chapter NR 40 Invasive Species Identification, Classification and Control Rule. During construction, the Utilities will include invasive species on construction plans and flag invasive species onsite that have been identified. Construction equipment will be cleaned when moving from an invasive species area to a non-infested area.

In accordance with Chapter DATCP 20, WAC, seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities will be avoided during revegetation activities. Seed mixtures will meet the minimum requirements in the Rules for Testing Seed, published by the Association of Official Seed Analysts.

The following actions were recommended by the WDNR to help conserve Wisconsin's rare species that may occur in the vicinity of the Ixonia LNG Facility:

- One of the most significant potential impacts to the threatened, endangered, and special concern species in proximity to the project site is invasive species. Roads and trails are well documented vectors for the spread of invasive species, particularly plants. Invasive species can be spread during the construction of the trail by materials or equipment or during its use upon completion of the trail. All surfaces of construction equipment will be thoroughly cleaned of mud and debris from previous work sites to prevent the spread of invasive species.
- When reseeding impact areas, native local seed mix will be used that does not contain invasive species. Use of a certified noxious-weed-free forage and mulch as a preventive measure to limit the spread of noxious weeds. This voluntary certification program, operated by the Wisconsin Crop Improvement Association, is designed to assure that certified mulch meets minimum standards designed to limit the spread of noxious weeds.
- All equipment used for the project has been adequately cleaned of aquatic and terrestrial invasive species prior to being used in waters or wetlands of the state. Equipment will be cleaned when invasive species are present in one area of the project before working in an area where invasive species are not present. Inspection for and removal of all plant materials and draining of all waters from equipment should be done routinely after every site visit in or adjacent to wetlands or waterways, regardless of whether the site is currently infested.

6.9 Rare Species, Natural Communities, and ER Reviews

WDNR Certified ER Reviews for the Ixonia LNG Facility and Bluff Creek LNG Facility were completed on April 6, 2020 and April 7, 2020, respectively. The Ixonia LNG Facility was assigned ER Log #20-262

and the Bluff Creek LNG Facility was submitted as an ER Review Verification Form. See **Appendix T of Volume II and Volume III** (ER Review) (CONFIDENTIAL) for occurrences of species included in the Wisconsin NHI Portal.

6.9.1 Communication with WDNR and USFWS

As stated previously, separate ER Reviews for the Ixonia LNG Facility and Bluff Creek LNG Facility were completed on April 6, 2020 and April 7, 2020, respectively. No official correspondence with the USFWS concerning the Project has taken place.

6.9.2 Compliance with WDNR and USFWS Direction

See Section 6.9.3.1 and Section 6.9.3.2.

6.9.3 Concerns and Potential Impacts to Rare Species

The NHI Portal and USFWS Information for Planning and Consultation ("IPaC") databases were reviewed to determine if any state or federally protected species are known or likely to occur within the vicinity of the Ixonia LNG Facility and Bluff Creek LNG Facility.

According to the USFWS IPaC data, the federally threatened [redacted] and federally threatened [redacted] are known or likely to occur within the vicinity of both Facilities. The NHI Portal database contains occurrence record data for all current state and federally protected species, including [redacted] roost sites and hibernacula in Wisconsin. The NHI Portal also contains verified survey results from WDNR, USFWS, and private organizations. The NHI Portal was consulted for this Project, and per USFWS's 4(d) rule, it was determined that the Ixonia LNG Facility and Bluff Creek LNG Facility are more than 150 feet from a known maternity roost tree and are more than 0.25 miles from a known hibernaculum. Additionally, neither site is within the vicinity of a known occurrence of [redacted] therefore, the Ixonia LNG Facility and Bluff Creek LNG Facility are expected to have no effect on federally protected species.

The ER Review completed for the Bluff Creek LNG Facility determined that [redacted]*;* State Special Concern) and [redacted] State Endangered) element occurrences are within two miles of the site. However, given that the Bluff Creek LNG Facility is located on agricultural land and no impacts to these species are anticipated, the Project is covered under the BITP/A, per Activity 2-A2. An ER Review Verification Form was submitted to the Bureau of Natural Heritage Conservation and shows that the ER requirements have been met.

The ER Review completed for the Ixonia LNG Facility revealed that [redacted] and [redacted] element occurrences are within two miles of the site. The [redacted] has been in decline over the past several decades throughout most of Wisconsin. Per the [redacted] Species Guidance Document, we do not believe [redacted] are still present in this area, and the Project and avoidance measures are not required for this species. However, if [redacted] are observed on site during the course of the Project, Endangered Resources Review Program Coordinator will be contacted immediately. [redacted] are listed as a state special concern species and hold no legal protection; however, voluntary avoidance and minimization measures are recommended (e.g., time of year restrictions and installation of exclusion fencing). Additional details regarding these species and the related habitat is provided in Section 6.9.3.1.

6.9.3.1 WDNR Follow-Up Actions

No follow-up actions would be required for the Bluff Creek LNG Facility because it is covered under the BITP/A. The following actions would be taken to comply with state and/or federal endangered species laws.

6.9.3.2 WDNR Recommended Actions

No follow-up actions would be recommended for the Bluff Creek LNG Facility because it is covered under the BITP/A. The following actions were recommended by the WDNR to help conserve Wisconsin's rare species that may occur in the vicinity of the Ixonia LNG Facility.

[redacted]

If a [redacted] is observed on-site any time during the course of the project, the Endangered Resources Review Program Coordinator will be contacted immediately at 608-266-5241.

[redacted]

Suitable nesting habitat for [redacted] may be present within the project area. [redacted] is a special concern species and no protection measures for this species are required; however, the following measures are recommended.

Non-overwintering areas – For wetlands/water bodies shallower than 3 feet at the deepest point, conduct work outside of the [redacted] active season (March 5 – November 15). The installation and maintenance of exclusion fencing using the WDNR Amphibian and Reptile Exclusion Fencing Protocol is an avoidance option that can be used during this period as long as the exclusion fencing is installed between November 16 and March 4. Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained.

Upland nesting habitat – Avoid work in suitable upland nesting habitat (sandy and/or well-drained soils) within 275 meters (900 feet) of a wetland or water body during the [redacted] nesting period (May 20 – October 15). The installation and maintenance of exclusion fencing using the WDNR Amphibian and Reptile Exclusion Fencing Protocol is an avoidance option that can be used during this period as long as the exclusion fencing is installed between October 16 and May 19. Work can then be conducted within the fenced area at any time of year as long as the fencing is maintained. Otherwise if a turtle is found, please carefully move it to suitable habitat outside the project area.

Active dates are updated frequently in the spring, starting in early March, and will be checked here: http://dnr.wi.gov/topic /WildlifeHabitat/Herps.asp#regs

6.10 Wetlands and Permits

The following sections describe site-specific surface water features.

6.10.1 Ixonia LNG Facility

6.10.1.1 Wetlands & Waterways

A field delineation to determine the full extent of wetlands and waterways within the Ixonia LNG Construction Footprint was conducted on April 15th – 17th, 2020. As result of the wetland delineation, two wet meadow wetlands were identified within the Ixonia LNG Construction Footprint. Both wet meadow wetlands were dominated by reed canary grass (*Phalaris arundinacea*) with mucky to silty clay loam soils. Additional wetland characteristics can be found on WDNR Table 2 in **Volume II Appendix Q**, and an overlay map of temporary and permanent impacts on the identified wetlands is shown in **Volume II Appendix F**. The maps show that the Facility is somewhat space constrained because it just meets the minimum PHMSA setback requirements mentioned in Section 1.3, and the usable land is a mix of wetland and upland. The Project has effectively avoided most of the wetlands with the chosen Permanent Impact Area, but crossing into wetlands with temporary impacts, to connect to the supply pipeline, was unavoidable.

The Wisconsin Wetland Rapid Assessment Methodology ("WRAM") was used to determine if any wetlands may be considered significant or high-quality. It was determined that neither delineated wetland is likely to be considered significant or high-quality, primarily due to the presence of common invasive vegetative species. WRAM forms are available for review in the wetland delineation report (**Volume II Appendix U**). Total permanent impacts to wetlands is estimated to be approximately 2,500 sq feet or 0.06 acres from fill associated with a meter station at the existing gas pipeline tie-in point, while temporary impacts are estimated to be approximately up to 16,579 sq feet or 0.38 acres from open cut trenching for

pipeline installation and temporary matting in wetlands. Additional wetland impact information can be found on WDNR Table 1 in **Volume II Appendix O**. Efforts were made to completely avoid wetland impacts, however based on the Ixonia Project site logistics, impacts to wetland are unavoidable. However, design considerations were made to minimize wetland impacts to the extent feasible. The Ixonia LNG Facility and laydown yard were sited away from wetland boundaries. Based on the minimal amount of wetland impacts, mitigation is not anticipated. However, if regulating agencies determine that mitigation is required, appropriate plans will be provided for assessment at that time. Construction equipment will utilize frozen ground conditions or temporary matting to spread out heavy vehicle loads and minimize soil disturbance in wetlands. Temporary matting would be regularly inspected for gaps, cracks, and subsidence; and not in place for more than 90 consecutive days. Additionally, tracked vehicles will be used to the extent practical to further spread out vehicle loads throughout wetland areas with frozen ground conditions or temporary matting. Where feasible, spoil from open trenching in wetlands will be placed in upland areas, but for spoil placement in wetland areas, temporary matting will be utilized. Once matting is removed (if applicable) and construction is completed, restoration efforts will begin as soon as possible. Where applicable, re-grading of wetland areas to pre-construction contours and slopes will occur prior to reseeding. Wetland communities dominated by invasive species prior to the start of construction will not be seeded with a native mix. Prior to restoring these areas, the seed bed will be prepared for optimal germination and re-vegetated with an annual cover crop, thereby allowing the existing seedbank to regenerate.

One perennial waterway was also identified within the Ixonia LNG Construction Footprint. This waterway is an unnamed tributary to the Rock River, is a channelized drainage, and primarily acts as a agricultural drainage. Additionally, the delineated waterway is not classified as a trout stream or Outstanding or Exceptional River under WDNR classification. Additional waterway characteristics can be found on WDNR Table 2 in **Volume II Appendix Q** and wetland delineation report in (**Volume II Appendix U**). There are no anticipated permanent waterway impacts. Approximately 0.01 acre of temporary waterway impacts are estimated for open trenching for pipeline installation. Additional waterway impact information can be found on WDNR Table 1 in **Volume II Appendix Q**. Additional information regarding waterway construction methods is provided in Section 8. There is one intermittent waterway shown on the WDNR24k Hydrography data (WBIC ID# 5034614) in the low-lying, central portion of the Ixonia Project site. Based on field observations, this low-lying area did not have a defined bed and bank and therefore was not considered to be a jurisdictional waterway. Furthermore, the WDNR conducted a navigibaility determination on May 18, 2020 and concluded that WBIC 5034614 does not require Chapter 30 permit coverage for facility construction activities.

6.10.1.2 Flood-Sensitive Facilities

According to FEMA FIRM maps, portions of the Ixonia LNG Property contain both 100- and 500-year floodzones (**Volume II Appendix I**). Portions of the containment must be sited properly such that the exclusion zone of a facility like this is sufficient distance from any nearby residences and other areas of concern. Because of that requirement, the containment is proposed to be located within the extreme outer portions of the historical 100- and 500-year floodplain. A perimeter ditch around the northern and eastern sides of the Ixonia LNG Facility is being assessed to maintain current floodzone elevations. At this time, it is not anticipated that this potential perimeter ditch will impact wetlands. Appropriate authorization through Jefferson County and FEMA will be obtained for all proposed work within both 100- and 500-year floodzones and potential measures to maintain current floodzone elevations.

6.10.2 Bluff Creek LNG Facility

6.10.2.1 Wetlands & Waterways

A field delineation to determine the full extent of wetlands and waterways within the Bluff Creek LNG Construction Footprint was conducted on April 15th – 17th, 2020. As result of the wetland delineation, no wetlands or waterways were identified and therefore impacts are not anticipated. An overlay map of the temporary and permanent impcats on the identified wetlands is shown in **Volume III Appendix F**.

6.10.2.2 Flood-Sensitive Facilities

There are no mapped floodzones within the Bluff Creek LNG Property (**Volume III Appendix I**).

6.11 Air Quality

6.11.1 Jefferson County – Ixonia LNG Facility

The existing air in Jefferson County is in attainment/unclassified for all NAAQS pollutants. A detailed air permit application will be submitted for the site, inclusive of predictive ground-level concentration modeling if needed. Criteria pollutant emissions from the Project are expected to be less than the Prevention of Significant Deterioration ("PSD") significance level thresholds. Therefore, it is anticipated that a minor source (i.e., non-PSD) air construction permit application will be submitted to the WDNR.

6.11.2 Walworth County – Bluff Creek LNG Facility

The existing air in all of Walworth County was historically classified as nonattainment for the NAAQS of 1-hour Ozone standard. The county has since been re-designated to a status of maintenance. A detailed air permit application will be submitted for the site, inclusive of predictive ground-level concentration modeling if needed. Criteria pollutant emissions from the Project are expected to be less than the PSD

significance level thresholds. Therefore, it is anticipated that a minor source (i.e., non-PSD) air construction permit application will be submitted to the WDNR.

6.12 Forested Lands

As a result of field surveys conducted on April 15th – 17th, 2020, no forested lands were identified at the Bluff Creek LNG Facility and therefore impacts are not anticipated. One small upland forested area (0.06 acres) was identified at the Ixonia LNG Facility, adjacent to the only identified waterway. The dominant tree species in the upland forest area are box elder (*Acer negundo*) over common prickly-ash (*Xanthozylum americanum*), pin cherry (*Prunus pensylvanica*), and grey dogwood (*Cornus racemosa*). Impacts to woody trees will likely be avoided based on sufficient distance from open trenching for pipeline installation.

6.12.1 Managed Forest Law or Forest Crop Law Properties

According to the WDNR online interactive map "Private Forest Lands Open for Public Recreation", there are no Managed Forest Law or Forest Crop Law Properties within the Ixonia LNG Facility or Bluff Creek LNG Facility.[12]

6.13 Grasslands

Please refer to Table 6-11 and 6-12 for landcover information at the Ixonia and Bluff Creek LNG Construction Footprints. Based on field surveys, grasslands in the vicinity of the Ixonia LNG Construction Footprint generally occur along streams and in areas not currently used for agriculture. The largest grassland areas are wet meadow communities that are dominated by reed canary grass (*Phalaris arundinacea*). Upland grasslands are dominated by smooth brome (*Bromus inermis*), Kentucky bluegrass *(Poa pratensis*), giant foxtail (*Setaria faberi*), yellow-rocket (*Barbarea vulgaris*), curly dock (*Rumex crispus*), and common dandelion (*Taraxacum officinale*), and are generally upslope of agricultural and wetland areas. Field surveys at Bluff Creek LNG Construction Footprint did not identify any grasslands.

6.13.1 Grassland Impacts

Project construction within the Bluff Creek LNG Construction Footprint would have no impact on grassland communities because the entire site is located within an agricultural field.

Project construction within the Ixonia LNG Construction Footprint will have minimal impacts to wet meadow wetlands dominated by non-native grasses associated with the pipeline corridor. Impacts will be primarily from open trenching. Please refer to Section 8 for additional construction and restoration

[12] https://dnrmaps.wi.gov/opfl/; accessed June 27, 2019

methods proposed in wetland areas temporarily impacted from pipeline activities. Upland grasslands will be minimally impacted from mowing, grading and excavation activities. Vegetation will be removed from the Project construction footprint. Construction BMP and restoration activities are expected to reduce the spread of invasive species and encourage the re-establishment of vegetative cover. Following construction activities, grasslands that were temporarily disturbed will be restored using an approved native seed mix, such as WisDOT mix #70.

6.14 Restoration of Disturbed Areas

All temporary construction facilities will be dismantled after construction is complete. Grades in temporary work areas will be restored to original elevations where appropriate. Re-seeding will be completed in areas where perennial vegetation is disturbed by construction activities. All temporarily impacted agricultural areas outside the plant footprint will be available for farming after construction is complete. The Utilities will work with the tenant farmers to seed croplands, where appropriate. All other disturbed upland areas will be revegetated with a standard WisDOT seed mix appropriate for site conditions. Wetland communities dominated by invasive species prior to the start of construction will not be seeded with a native mix. Prior to restoring these areas, the seed bed will be prepared for optimal germination and re-vegetated with an annual cover crop, thereby allowing the existing seedbank to regenerate.

7.0 COMMUNITY RESOURCES IN PROJECT AREA

7.1 Community Resource Maps and Photos

Maps containing nearby residences are provided in **Appendix J in Volumes II and III**. No known schools, daycare centers, hospitals, or nursing homes are within 0.5 mile of either LNG Property.

7.2 Current Land Ownership

County parcel data was obtained from the Statewide Parcel Map Initiative website in June 2019. Both LNG plants will be located on privately-owned parcels. Portions of these parcels would be purchased by the Utilities for Project use. See **Appendix J Volumes II and III** for maps of land ownership near each LNG Facility.

7.3 Local Zoning

Zoning maps for each plant site are provided in **Appendix L of Volumes II and III**. The Bluff Creek LNG Facility is located within an A-1 (Prime Agricultural Land) zoning district. The purpose of this district is to preserve productive farmland for agricultural operations and to prevent encroachment of conflicting uses. All agricultural uses are permitted and the zone requires farms to be at least 35 acres in size. Walworth County has confirmed that a re-zone of this area will not be required. No individual parcel will be below 35 acres. A conditional use permit will be required and the Bluff Creek LNG property will remain zoned A-1.

The Ixonia LNG Facility is located within Zone A-1 (Exclusive Agricultural). The A-1 zoning district is "intended to promote continued agricultural uses on the best quality agricultural land; protect and encourage long-term investments in food, fiber, and other resource related production; be a state-certified farmland preservation zoning district to maintain property owner eligibility in the State's farmland preservation tax credit program in conjunction with the Agricultural Preservation and Land Use Plan; preserve rural character and manage non-farm development; and provide reasonable opportunities for agriculturally-related businesses and home occupations."[13] The principal purposes of this zone are agricultural use; undeveloped natural resource or open space area; or transportation, utility, communication, or other use that is required under state or federal law to be located in a specific place, or that is authorized to be located in a specific place under a state or federal law that preempts the requirement for a conditional use permit. Rezoning out of the A-1 district may occur only after the

[13] Jefferson County. 2018. Jefferson County Zoning Ordinance No. 11. Effective January 15, 1975; Amended October 9, 2018. Retrieved January 2020 from https://www.jeffersoncountywi.gov/County%20Board/Ordinances/Zoning%20Ordinance%20Chapter%2011.pdf.

County Planning and Zoning Committee conducts a public hearing and makes findings as specified in §91.48(1) of the Wisconsin Statutes, as articulated in Section 11.11(c) of this Ordinance. Walworth County requires a re-zoning applicant for a rezone or conditional use to approach the concerned town plan commission/town board to ascertain the town's position on the proposal. The County must have the town's decision on the proposal prior to a County hearing on the matter.

Jefferson County has confirmed that a re-zone of this area will not be required. A conditional use permit will be required and the Ixonia LNG property will remain zoned A-1. Local zoning ordinances are provided in **Volume II Appendix V** (Jefferson County) and **Volume III Appendix V** (Walworth County).

7.4 Land Use Plans

Copies of relevant portions of land use plans are provided in **Volume II Appendix W** (Jefferson County) and **Volume III Appendix W** (Walworth County).

7.4.1 Land Use Plans Adopted by Local Governments

The Ixonia LNG Facility and associated pipelines will be completely within Jefferson County. The Jefferson County Comprehensive Plan Ordinance 2011-23 was adopted in February 2012. The plan provides information about the two phases for the plan, plan implementation, and plan monitoring processes and timing. The advanced manufacturing, energy, and electrical technology portion of Section 3 (Context for Emerging Economic Opportunities and Vision) is relevant to the Project and is included in **Volume II Appendix W**.

Jefferson County also has an Agricultural Preservation and Land Use Plan, which was developed as an amendment to the Jefferson County Comprehensive Plan and was adopted in February 2012. The plan focuses on the county's land use planning and zoning approach to farmland preservation and addresses how the county intends to "preserve agricultural production, farmland, environmental corridors, and rural character." The plan focuses on directing intensive development to urban service areas. The sections of the plan related to A-1 zoning districts and environmental corridors are relevant to the Project and are included in **Volume II Appendix W**.

The Bluff Creek LNG Facility and associated pipelines will be completely within Walworth County. The Walworth County Comprehensive Plan, *A Multi-Jurisdictional Comprehensive Plan for Walworth County: 2035*, was published in 2009 and updated in June 2019. The updated plan provided recent inventories of previously studied features in the county, including population, land uses, natural resources, park and open space sites, other public facilities, and regulations in the county to be taken into

consideration in the preparation of the update to the comprehensive plan. The plan also included regional and county plans and studies that had been completed after the completion of the original Walworth County Comprehensive Plan in 2009. The following topics from the plan are relevant to the Project:

- Chapter 4: Update of County and Regional Plans (VISION 2050, Walworth County Farmland Preservation Plan)
- Land Use Element
- Agricultural, Natural, and Cultural Resources Element
- Economic Development Element
- Recommended bicycle network in Walworth County

These sections of the Walworth County Comprehensive Plan are provided in **Volume III Appendix W**. In terms of re-zoning, Walworth County requires an applicant for a rezone or conditional use to approach the concerned town plan commission/town board to ascertain the town's position on the proposal. The County must have the town's decision on the proposal prior to a County hearing on the matter.

The Walworth County Farmland Preservation Plan aims to reaffirm and advance Walworth County's agricultural resource goals and objectives that are discussed in the Walworth County Comprehensive Plan. The goals and objectives in the Farmland Preservation Plan are consistent with those in the comprehensive plan for the county. The Farmland Preservation Plan describes and documents the process used to identified valuable agricultural and environmental important land in the county. The plan provides a map of the Town of Le Grange with farmland preservation areas identified, as well as criteria for rezoning a farmland preservation area. These relevant portions of the plan are provided in **Volume III Appendix W.**

7.4.2 Conflicts with Land Use Plans

The Ixonia LNG Facility is within a Farmland Preservation Area due to its zoning classification as A-1. Farmland Preservation Areas are intended to preserve productive agricultural lands in the long-term; preserve the rural character and aesthetic quality of the county; provide equity and fairness to owners of land with comparable resource and location characteristics; minimize nonagricultural development on prime farmland; maintain the integrity of agricultural districts allowing for accepted agricultural practices; protect existing farm operations from encroachment by incompatible uses; and maintain farmer eligibility for farmland preservation incentive programs. Approval of a rezoning out of the A-1 district would be necessary for the Project. As stated in Section 7.3, Jefferson County has confirmed that a re-zone of this

area will not be required. A conditional use permit will be required and the Ixonia LNG Property will remain zoned A-1.

VISION 2050, which was discussed in Chapter 4 of the Walworth County Comprehensive Plan, recommended preserving the region's most productive farmland and primary environmental corridors. VISION 2050 focuses on residential development in agricultural areas in particular. While the Bluff Creek LNG Facility is not within an environmental corridor, it is within agricultural land and would require removing approximately 35 acres from agricultural production. Though this permanent impact area would no longer be able to be farmed, the remainder of the property owned by the Utilities would be available for farming activities. The property would not be able to be developed for residential purposes due to the thermal exclusion zone. Agricultural activities would be able to continue in the foreseeable future at the site.

The Bluff Creek LNG Facility is within a Farmland Preservation Area due to its zoning classification as A-1. The intent of this was to enable owners of those parcels to retain eligibility to claim farmland preservation tax credits for as long as the parcel remains in agricultural use. Approval of a rezoning out of the A-1 district would be necessary for the Project. As stated in Section 7.3, Walworth County has confirmed that a re-zone of this area will not be required. No individual parcel will be below 35 acres. A conditional use permit will be required and the Bluff Creek LNG Property will remain zoned A-1.

The Bluff Creek LNG Facility is located along Highway O and near Kettle Moraine Drive. Both roads were identified in the Walworth County Comprehensive Plan as roads that could be upgraded to improve bicycle connectivity in the area, if feasible. If the road were upgraded to include on- or off-street bicycle paths prior to Project construction, then construction activities may have the potential to disrupt bicycle traffic along these roads temporarily with construction employees traveling to and from the site, as well as through material and equipment deliveries to the plant. These impacts would be temporary in nature and cease after construction is complete. The Utilities would work with the bike lane or path manager if this is identified as a potential issue during construction to minimize impacts to cyclists during construction.

7.5 Agriculture

See Section 5.3 for a discussion of potential impacts to agricultural lands.

7.6 Conservation Easements and Programs

No known conservation easements or programs were identified within 0.5 mile of Project Facilities. There are no properties enrolled in Managed Forest Law or Forest Crop Law programs within 0.5-mile of either LNG Facility.

7.7 Communication with Potentially Affected Public

Section 5.1 provides a summary of anticipated public communication activities for the Project.

7.8 Demographics

The population composition of the Project census tracts is primarily white, with small percentages of black or African American, American Indian, Asian, and other races. Table 7-1 provides the population statistics by race for each census tract. The median household income levels within the Project census tracts was similar. Census Tract 1017.02 (Jefferson County) had the greatest percentage of people whose income in the past 12 months was below poverty level (6.2 percent) while Census Tract 3.01 (Walworth County) had the fewest (5.0 percent).

Table 7-1: Population Characteristics – Project Census Tracts

Demographic Group	Census Tract 1017.02 Jefferson County	Census Tract 3.01 Walworth County
Total population	4,893	3,060
White (percent)	96.9	96.9
Black or African American (percent)	0.4	0.1
American Indian and Alaska Native (percent)	0.1	0.1
Asian (percent)	0.4	0.8
Native Hawaiian and other Pacific Islander (percent)	0.0	0.0
Some other race (percent)	0.6	0.2
Two or more races (percent)	1.5	1.8
Hispanic or Latino (percent)	2.7	2.4
Median household income	$ 72,356	$ 73,359
All people whose income in the past 12 months is below the poverty level (percent)	6.2	5.0

Source: U.S. Census Bureau American Community Survey 5-Year Estimates, 2013-2017

7.9 Local Government Impacts

Local services provided by each county are identified in the following section. The following sections also provide a discussion of improvements necessary and impacts to local government.

7.9.1 List of Provided Services

In Jefferson County, telecommunication services are provided by national service providers. Electric and gas power are provided by We Energies and Alliant Energy.[14] The Town of Ixonia has granted Wisconsin Gas LLC a permit as a public utility to maintain and operate pipelines for natural gas in the town. High-voltage electric transmission lines are owned by American Transmission Company. Law enforcement services are provided by the Jefferson County Sheriff's Department and the Wisconsin State Patrol. Nearby police stations include the Watertown Police Department, Lac La Belle Village Police Department, and Oconomowoc City Police Department. Fire protection services are provided by 13 fire districts throughout the county. The nearest fire station is the Ixonia Fire Department. Many rural residences use groundwater wells for water supply. The Town of Ixonia utility district provides sewer services. The nearest hospitals are located in Watertown (Watertown Regional Medical Center) and Oconomowoc (ProHealth Oconomowoc Memorial Hospital). Jefferson County has one landfill (the Superior Environmental Services landfill) which is licensed by the WDNR. Private contractors provide sanitation services to Jefferson County in addition to municipal waste collection.

In Walworth County, telecommunication services are provided by national service providers. Electric power service in Walworth County is provided by We Energies (northern Walworth County) and Alliant Energies (southern Walworth County). ATC owns all major electric transmission lines in the county. Natural gas pipelines in the county are owned by We Energies. Many rural residences use groundwater wells for water supply. Police services are provided by the Walworth County Sheriff's Department. The nearest police department is in Whitewater, Wisconsin. Fire protection services in the area are provided by the Lauderdale-LaGrange Fire Department, Inc. The nearest fire department is approximately 3.6 miles away from the Bluff Creek LNG Plant. Emergency medical services are provided by three private companies within Walworth County. Aurora Lakeland Medical Center and Mercy Walworth Hospital are located in the Town of Geneva. Whitewater, Wisconsin, also has medical facilities. Most solid waste generated in Walworth County is deposited at the Mallard Ridge landfill. Solid waste and recycling in the county is contracted with private haulers (either for communities or by private landowners) or is dropped off at designated drop-off locations.

[14] Jefferson County, Wisconsin. 2012. Agricultural Preservation and Land Use Plan. Adopted February 14, 2012.

7.9.2 Local Government Infrastructure and Facility Improvements Required and Potential Impacts

Existing telecommunication services, electric distribution, police services, fire protection services, medical services, or solid waste and recycling services are anticipated to be sufficient for the Project during construction and operation, and no necessary improvements are anticipated.

The Bluff Creek LNG Facility will tap the existing Bluff Creek to Sugar Creek 138-kV electric transmission that that crosses the plant property. The Utilities will coordinate with ATC during final design to minimize impacts to ATC's electric transmission network. The Ixonia LNG Facility will receive electric power from the Concord Substation via an underground electric transmission line, which will be installed along existing road right-of-way. Both plants will require a connection to the existing natural gas pipelines onsite which are owned by the Utilities.

Due to the lack of local government infrastructure improvements required for the Project, it is anticipated that impacts to the local infrastructure will be minimal. Utility Shared Revenue payments to each of the local Counties and Towns is estimated in Table 7-2 below:

Table 7-2: Estimated Utility Shared Revenue Payments

Counties & Towns to receive Utility Shared Revenue Payments	Bluff Creek LNG Facility Annual Payments*	Ixonia LNG Facility Annual Payments*
County (Walworth & Jefferson)	$1,110,000	$1,110,000
Town (Lagrange & Ixonia)	$555,000	$555,000
Total	**$1,665,000**	**$1,665,000**

*Based on an estimated Net Book Value of $185 million for each LNG Facility

7.10 Workforce

During construction, it is anticipated that the Project will create jobs during peak activity. Jobs will include construction management staff, site superintendents, skilled craftsmen, and engineers. It is anticipated that new permanent jobs will be created due to the Project.

7.11 Traffic, Roads, and Railroads

Construction traffic entering the Project sites will consist primarily of automobile traffic for laborers, construction management staff, contractors, equipment, and vendors. Deliveries of materials and equipment may be made by larger trucks and/or heavy haul vehicles. Within the construction site, traffic is anticipated to consist primarily of heavy construction and transport equipment.

The access road at the Ixonia LNG Facility will extend from North Road to the east. The Bluff Creek LNG Facility access road will extend from County Road O to the east. Vehicle access to all Project sites will be controlled with site security fencing. All Project construction sites will be within the LNG Facilities and operated as a closed worksite.

The amount of daily automobile traffic will correspond to the Project workforce numbers onsite at a given time. The daily automobile traffic to the sites will increase in the initial stages of construction to peak months. The traffic will begin to decrease as construction nears completion. Material and equipment deliveries will be required during construction. Large deliveries will be scheduled to avoid peak traffic on local roads when possible.

Several railroads are located near the Project sites. No railroads are located within a mile of either LNG Facility. As such, no impacts to railroads are anticipated.

7.12 Noise

The Projects consist of natural gas pretreatment and liquefaction equipment, LNG storage tanks, vaporization equipment, and other equipment, some of which will generate noise during operation. There are no applicable Federal, State, or local numerical noise limits applicable to the Project. The Project will be designed to mitigate noise to levels below all applicable, identified regulatory requirements, and to minimize noise impacts at nearby residences. A preliminary sound study is included in **Appendix X** of **Volume II** and **Volume III** for each facility.

A preliminary sound study was completed. Ambient sound measurements were taken on May 5 and 6, 2020. Ambient sound levels were common of those for rural areas with sparse traffic. The Bluff Creek LNG Facility is located near a quarry, which was audible at times during the day.

Future sound level estimates for the proposed Projects were predicted using noise modeling software in conjunction with the existing sound-level measurements. The software is a scaled, three-dimensional program, which considers air absorption, terrain, ground absorption, and reflections and shielding for each piece of noise-emitting equipment, and then predicts sound pressure levels at discrete locations and over a gridded area based on input source sound levels. Predicted sound levels were consistent with those of similar industrial sources.

Temporary noise sources associated with the Projects will include construction activities, such as vegetation clearing, grading and excavation, construction equipment operation, and structure installation. Construction noise would be generated during construction of the LNG Facilities and pipelines. Noise

levels are expected to increase during construction of the Project due to the operation of construction equipment.

7.13 Odors

Natural gas coming to or leaving the LNG Facility is odorized to aid in leak detection. LNG is odorless, non-toxic, and non-corrosive. Therefore, no odors are expected to be perceived outside the plant boundary during operation of the LNG Facility. Temporary odors are anticipated during construction, associated with equipment and vehicle emissions. After construction is complete, these odors will no longer be created.

7.14 Residential and Urban Communities

The land use in the Project counties is primarily rural agricultural or undeveloped with scattered rural farmsteads. No known schools, daycare centers, hospitals, or nursing homes are within 0.5-mile of either LNG Property. At the Ixonia LNG Facility, the nearest residences to the plant footprint are located south and southeast. The closest residence to the Ixonia LNG Facility is approximately 450 feet south of the plant footprint along North Road. At the Bluff Creek LNG Facility, the closest residences to the LNG Facility are located to the north and southwest. The closest residence to the Bluff Creek LNG Facility is approximately 730 feet north of the plant access road along Highway O. Maps containing nearby residences are provided in **Appendix J in Volumes II and III**. The following sections describe potential impacts to residential communities near the LNG Facilities.

7.14.1 Noise

Noise is discussed in Section 7.12. The Project will be designed to mitigate noise to levels below all applicable, identified regulatory requirements, and to minimize noise impacts at nearby residences.

7.14.2 Dust

Construction activities have the potential to create airborne dust onsite. During operation, the plants are not anticipated to generate substantial dust as the access road will be paved. Areas around equipment will contain crushed rock. Small amounts of dust may be generated if vehicles or employees are working near equipment onsite. BMPs will be implemented to reduce the amount of dust generated during construction, operation, and maintenance.

7.14.3 Aesthetics

Both LNG Facilities would be located in areas surrounded primarily by agricultural lands and would introduce a new feature to the landscape, altering the aesthetics in the immediate surrounding area. The

Ixonia LNG Facility is expected to be visible in the surrounding community. The perimeter of the property will have a chain-link security fence.

The Bluff Creek LNG Facility is expected to be visible in the surrounding community. The perimeter of the property will have a chain-link security fence.

7.14.4 Lighting

The Facilities will require the installation of lighting. Lighting does not currently exist at the proposed Facilities; however, lighting will be designed to reduce offsite impacts. See Section 7.15.3 for more information related to lighting and impact mitigation at the proposed plant sites.

7.14.5 Roads

During construction, the Project may slightly increase traffic on nearby roads. This increase in traffic and any road closures required would be temporary in nature and cease after construction is complete. During operation, traffic will include maintenance vehicles accessing the site occasionally. Due to the occasional nature of maintenance and the number of employees required for maintenance activities, operation traffic is not anticipated to substantially increase traffic on nearby roads. No permanent damage to roads is anticipated due to construction or operation of the Project. The Utilities will coordinate proper construction signage on nearby roads to make drivers aware of construction activities and the potential for increased hazards.

7.15 Visual Impacts

The following sections describe potential visual impacts of the Project to the surrounding areas.

7.15.1 Project Appearance

At the Project sites, natural gas pretreatment and liquefaction equipment, LNG storage tank, vaporization equipment, and truck loading/unloading equipment will be installed. The equipment will be installed in a mixture of outdoor and indoor services. Infrastructure, equipment, piping, tanks, pumps, and materials will be installed new. Compression equipment will be either gas turbine or motor driven. The vaporization system will either be an indirect water bath type or a shell and tube type vaporizers. LNG storage tanks will be installed within a berm.

7.15.2 Scenic Roads in the Project Area and Potential Impact

The closest scenic byway to either Facility is the Lincoln Highway, a National Scenic Byway in Illinois. This scenic byway is approximately 60 miles south of the Bluff Creek LNG Facility and approximately 85 miles south of the Ixonia LNG Facility. The next closest scenic byway is the Great River Road, a

National Scenic Byway located on the western boundary of Wisconsin and the Mississippi River. The Bluff Creek LNG Facility is approximately 90 miles east of this byway. The Ixonia LNG Facility is approximately 110 miles east of this scenic byway. Due to the distance from these scenic byways, it is anticipated that the Project will not impact any scenic byways.

The Kettle Moraine Scenic Drive extends along Kettle Moraine Drive, located approximately 0.4-mile north of the Bluff Creek LNG Facility. This scenic drive originates in the Kettle Moraine State Forest-Southern Unit, which is located approximately one mile west of the Bluff Creek LNG Property. The Bluff Creek LNG Facility would be visible from a small portion of the Kettle Moraine Scenic Drive, which would alter the view to the south along this short section of road. There are multiple residences, a utility station, and a quarry along this area of the scenic road north of the Bluff Creek LNG Facility, however. The plant would be located farther away from the road compared to these other existing developments. Due to the distance from the road, existing development, and the short portion of road that would be impacted, the impact to the Kettle Moraine Scenic Drive is anticipated to be minimal.

7.15.3 Lighting

The following sections provide details concerning lighting during construction and operation of the Project, as well as potential impacts of light on adjacent land uses and local ordinances that relate to the proposed lighting plans.

7.15.3.1 Site Lighting Plan for Construction

The Project will require night lighting for safety and security during construction. The LNG Facilities, temporary laydown areas, parking areas, and work zones may also need to be lighted at times during winter workdays or second shifts. Outdoor light fixtures will be shielded and directed downward to minimize light visible to adjacent properties. Impacts from lights will be further mitigated by scheduling the majority of construction activities during daylight hours.

7.15.3.2 Facility Lighting Plan for Operations

Light emissions at both Facilities will increase compared to current levels of generated light as neither site currently has lighting installed. The LNG Facilities will require exterior lighting for safety and security. Lights will be required near structures on the property. Access roads, parking areas, and walkways will be illuminated with lighting fixtures on poles and/or structures. Building entrances will be illuminated with fixtures mounted directly above doors. Outdoor light fixtures will be shielded and directed downward to minimize light visible to adjacent properties. Any floodlights required for the operation of the Project will be directed inward towards the facility and will have top and side shields.

7.15.3.3 Potential Impacts of Facility Lighting

Residences near Project sites may experience an increase in lighting impact. The residences closest to the LNG Facilities have vegetation that may partially or completely shield the homes from lights at the Facility. If this vegetation is removed or if other homes farther from the site can view the site, nighttime lighting may increase overall light in the area. This impact will be minimized through the use of shielded outdoor light fixtures that will be directed downward. Any floodlights required for the operation of the Project will be directed inward towards the facility and will have top and side shields. In Jefferson County, it is required that lighting be directed and screened so that the light will not affect neighboring properties. No more than one foot-candle of light should be allowed to escape from commercial sites to adjoining residentially-zoned properties.[15]

7.16 Parks and Recreation Areas

The following sections provide a high-level overview of parks and recreation areas near the Facilities.

7.16.1 Identification of Parks and Recreation Areas

The Ixonia LNG Facility has no parks or recreation areas within 0.5 mile of the property boundary. The closest recreation area is the Kanow Park Fishery Area located approximately 1.5 miles southwest of the Ixonia LNG Property. The second closest recreation area is a WDNR Extensive Wildlife habitat area located approximately 2 miles northwest of the Ixonia LNG Property in southern Dodge County.

The Bluff Creek LNG Facility has no parks or recreation areas within 0.5-mile of the property boundary. The Kettle Moraine Scenic Drive extends along Kettle Moraine Drive, located approximately 0.25-mile north of the property. This scenic drive originates in the Kettle Moraine State Forest-Southern Unit, which is located approximately one mile west of the property boundary. This forest unit extends north and east into Jefferson and Waukesha counties. A portion of the Ice Age National Scenic Trail extends through the Kettle Moraine State Forest-Southern Unit located northwest of the plant site. A boat ramp on Whitewater Lake is located approximately two miles west of the property boundary.

Maps of recreation areas and parks near each site are provided in **Appendix M of Volumes II and III**.

7.16.2 Short and Long-term Mitigation

The Project will not be located within a park or recreational area. Due to this, direct impacts to parks and recreational areas is not anticipated. Though not directly impacted, parks and recreation areas may be indirectly impacted during construction and operation, depending on the potential need for temporary

[15] Jefferson County, Wisconsin. 2012. Agricultural Preservation and Land Use Plan. Adopted February 14, 2012.

road closures and temporary increased noise associated with construction. Appropriate road signage will be used to mitigate any inconveniences to vehicles during construction. During operations there will be slightly increased traffic and operation noise near the sites, particularly on roads immediately adjacent to the LNG Facilities. Traffic during operation will primarily include employees entering or exiting the LNG Facilities, as well as occasional maintenance vehicles. Increases in traffic are not anticipated to be significant due to the number of employees required during operation.

The Project will require night lighting for safety and security during construction and operation. Outdoor light fixtures will be shielded and directed downward to minimize light visible to adjacent properties. Impacts from lights will be further mitigated by scheduling the majority of construction activities during daylight hours. During operation, the LNG Facilities will require exterior lighting for safety and security. Lights will be required near structures on the property. Access roads, parking areas, and walkways will be illuminated with lighting fixtures on poles and/or structures. Building entrances will be illuminated with fixtures mounted directly above doors. Outdoor light fixtures will be shielded and directed downward to minimize light visible to adjacent properties. Any floodlights required for the operation of the Project will be directed inward towards the facility and will have top and side shields. A more detailed analysis of potential lighting impacts is provided in Section 7.15 (Visual Impacts).

7.17 Airports

The following sections provide information related to airports in the Project area.

7.17.1 Airports in the Project Region

The nearest public use airport to the Ixonia LNG Facility in Jefferson County is the Watertown Municipal Airport (RYV), located approximately 5.5 nautical miles west of the plant site. The only other public use air facilities in the general area of the Ixonia LNG Facility are more than 14 nautical miles from the plant site. Other airports in closer proximity to the Ixonia LNG Facility include private use airstrips that are all more than 5 nautical miles from the plant site.

Airports near the Bluff Creek LNG Facility in Walworth County include the Palmyra Municipal Airport (88C), located approximately 6.5 nautical miles north in Jefferson County and the Gutzmer's Twin Oaks Airport (5Y3), located approximately 7 nautical miles northeast, also in Jefferson County. Other airports in the area of the Bluff Creek LNG Facility include 3 private use airstrips, all within approximately 4 nautical miles of the LNG Facility.

7.17.2 Airport Descriptions

The Watertown Municipal Airport has two paved runways, one of which is approximately 2,800 feet long and oriented in a northwest-southeast direction, while the other is approximately 4,500 feet long and oriented in a southwest-northeast direction. The Gutzmer's Twin Oaks Airport has one turf runway approximately 2,500 feet in length and oriented in a north-south direction. The Palmyra Municipal Airport currently has one turf runway approximately 2,800 feet in length and oriented in an east-west fashion.

7.17.3 Potential Impact to Navigable Airspace

The FAA requires a Form 7460-1, Notice of Proposed Construction or Alteration prior to construction for any structure that exceeds one or more of their notice criteria. These criteria vary based on a number of factors including structure height, proximity to a public use airport, location, frequencies emitted from the structure, etc. Furthermore, any structure (including permanent structures and temporary construction equipment) on the Project sites that exceeds 200 feet above ground level ("agl") in height would need to be studied by FAA to determine if it would be a hazard to navigable airspace or could otherwise impact aircraft safety. The FAA could place the condition on their determination that such a structure be marked and lighted in accordance with criteria set forth by the FAA to make the structure more visible. The FAA does not study potential impacts to private use airports unless that airport has instrument procedures approved by the FAA. None of the private use airport in the area of either LNG Facility would be subject to the FAA obstruction evaluation process.

7.17.4 Construction Limitations and Permits

Any structure (including permanent structures and temporary construction equipment) at the LNG Facility that exceeds any of the FAA notice criteria will require filing notice to the FAA to be studied. Those structures 200 feet agl in height could be considered a hazard to navigable airspace or otherwise impact aircraft safety unless it is marked and lighted in accordance with criteria set forth by the FAA. Based on a preliminary review of structures at both plant sites, none of the proposed permanent structures exceed any of the FAA notice criteria and none would require filing notice. However, it is likely that temporary construction equipment would require notice and any such equipment that is greater than 200 ft agl would have conditions placed on it by the FAA, including obstruction marking and lighting. The general contractor will be responsible for filing pre-construction notification for the temporary cranes.

7.18 Communication Towers

Federal Communications Commission ("FCC") GIS data and online database of licensed towers was used to identify licensed communication towers, such as cellphone towers and TV towers, near each LNG Facility.

No communication towers are within 0.5 miles of the Ixonia property boundary. The nearest communication towers to the Ixonia LNG Facility are over a mile away. Two active towers were identified south of the site and closer to the Town of Ixonia. It is not expected that communications will be interrupted by the Ixonia LNG Facility.

Three FCC towers are located within 0.5-mile of the Bluff Creek LNG Property. These towers are over 0.5-mile from the LNG Construction Footprint, however. The towers are:

- Kettle Moraine Community Radio, Inc. (WFAQ-LP; 92.9 MHz)
- Madison SMSA Limited Partnership, ASR Tower, Call Sign 1034446
- Madison SMSA Limited Partnership, Cellular Tower, Call Sign KNKN325

It is not expected that communications will be interrupted by the Bluff Creek LNG Facility.

7.18.1 Potential Interference with Communication Towers

While it is not anticipated that the Project will interrupt communications, the Project has the potential to interfere with communication tower signals depending on final Project design. The Utilities will work with licensees near the LNG Facilities to mitigate any potential interference if identified.

7.18.2 GIS Location Information

See **Appendix O of Volumes II and III** for a map showing communication towers near the LNG Facilities.

8.0 NATURAL RESOURCES IN THE NATURAL GAS PIPELINE CONNECTION AREAS

8.1 Forested Lands

See Section 6.12 for a discussion of forested land at the LNG Facilities and associated pipelines.

8.2 Grasslands

See Section 6.13 for a discussion of grasslands at the LNG Facilities and associated pipelines.

8.3 Conservation Easements

See Section 7.6 for a discussion of conservation easements near the LNG Facilities and associated pipelines.

8.4 Flood-Sensitive Facilities

See Section 6.10.1.2 and Section 6.10.2.2 for a discussion of flood-sensitive facilities at each LNG Facility.

8.5 Wetlands

See Section 6.10 for a discussion of wetlands at each LNG Facility.

8.6 Waterbodies/Waterways

The following sections provide information on waterbody and waterway crossings; construction activities below the ordinary high-water mark; need and methods for waterbody and waterway crossings; and mitigation methods.

8.6.1 Waterbody and Waterway Crossings

As noted in Section 6.10.1.1, a field delineation to determine the full extent of waterbodies and waterways within the Ixonia LNG Property was conducted on April 15th - 17th, 2020 (**Volume II Appendix U**). One perennial waterway and no waterbodies were identified during the field survey. Crossing over waterways is not anticipated at this time due to close proximity of existing public roadways for sufficient construction access. However, if a temporary crossing is needed, a supported prefabricated span bridge across each bank would likely be utilized to avoid disturbance below the ordinary high-water mark ("OHWM"). A span bridge will avoid placement of any structures within and below the OHWM, would not result in a floodplain water rise, and allow unimpeded flow. WDNR and USACE would be notified for appropriate permit requirements. No waterways or waterbodies are present within the Bluff Creek LNG Construction Footprint.

8.6.2 Construction Activities Below Ordinary High-Water Mark

One perennial waterway is proposed to be temporarily open trenched for pipeline installation at the Ixonia Plant site as discussed in Section 6.10.1.1 and WDNR Table 1 (**Volume II Appendix Q**). Approximately 186 square feet of waterway is proposed for open trenching, from two pipelines (one 8" inlet and one 12" outlet pipeline, to be installed approximately 7' below ground surface). Construction equipment would operate from the banks of the waterway to the extent practicable to excavate a trench. Impacts to water quality will be minimized through the implementation of BMPs. The trench would be excavated immediately prior to pipe installation to limit the duration of construction within the waterway to the extent practical. The pipe segment would be prefabricated and weighted, as necessary, to provide negative buoyancy and placed below scour depth. Spoil piles from trenching will be placed on a stable surface, a minimum of 20 feet from waterway bank slopes, and not allowed within floodzones. Where feasible, spoils will be placed in upland areas, but for spoil placement in wetland areas, temporary matting will be utilized. A flume and dam method is anticipated for open trenching based on the size of the waterway. This method involves temporary upstream and downstream dams being built on the edges of the open trench area and a flume pipe(s) connects the flow to continue, but dries out the open trench area for pipe installation. Following the removal of the flume and dam system from the waterway crossing, grading back to pre-construction contours and slopes will occur as needed. Reseeding on banks of waterways will use an approved riparian seed mix based on guidance from WDNR. Excess excavated materials would be distributed in an upland areas in accordance with applicable regulations. No waterbodies are present within the Ixonia LNG Construction Footprint, while no waterways or waterbodies are present within the Bluff Creek LNG Construction Footprint.

8.6.3 Need and Methods for Waterbody and Waterway Crossings

As noted in Section 8.6.1, as feasible, the perennial waterway intersecting the pipelines will be accessed from either side using an existing public roadway. However, if a temporary crossing is needed, a prefabricated span bridge above the OHWM would likely be utilizing to avoid impacts below the OHWM. No waterbodies are present at the Ixonia LNG Construction Footprint, while no waterways or waterbodies are present at the Bluff Creek LNG Construction Footprint.

8.6.4 Mitigation Methods

Mitigation for disturbed wetland areas is discussed in Section 6.10.1.1. Open trenching construction and restoration methods in waterways are discussed in Section 8.6.2.

8.6.5 Waterbody Classifications

The following sections discuss waterways that are considered outstanding or exceptional; trout streams; or wild and scenic rivers.

8.6.5.1 Outstanding or Exceptional Resource Waters, Trout Streams or Wild and Scenic Rivers

According to the WDNR, the only Exceptional or Outstanding Resource Waters within 10 miles of the Ixonia LNG Property is the Oconomowoc River (Exceptional), which is approximately 9.5 miles due east. The only Exceptional or Outstanding Resource Waters within 10 miles of the Bluff Creek LNG Property are Bluff Creek (Outstanding), approximately 2.5 miles due northwest, and Lulu Lake (Outstanding), approximately 9.5 miles due northeast. Considering the distance from these waters, it is anticipated that construction and operation of the Project will not result in any impacts to Outstanding or Exceptional Resource Waters; thus, no avoidance, minimization, or mitigation measures will be required.

8.6.5.2 Trout Streams

Jefferson County has no trout streams. The following trout streams are located within Walworth county:

Walworth County:

- Bluff Creek
- Harris Creek
- Mukwonago River
- Potawatomi Creek
- Spring Brook
- Steel Brook
- Van Slyke Creek

The nearest trout stream to the Bluff Creek LNG Property is the Bluff Creek, located approximately 2 miles to the northwest. Considering the distance from these waters, it is anticipated that construction and operation of the Bluff Creek LNG Pipelines would not result in any impacts to trout streams; thus, no avoidance, minimization, or mitigation measures will be required.

8.6.5.3 Wild or Scenic Rivers

No wild or scenic rivers are located in Jefferson or Walworth counties. The nearest wild or scenic river is the Wolf River, over 100 miles north of Jefferson or Walworth counties. Due to the distance of the Wolf

River and lack of other wild or scenic rivers, it is anticipated that no impacts will occur. Avoidance, minimization, or mitigation measures will not be required.

8.7 Construction Methods through Wetlands and Waterways

Construction methods for wetland areas is discussed in Section 6.10.1.1. Construction methods for waterways are discussed in Section 8.6.2.

8.7.1 Machinery to be Used

Construction equipment used in wetland areas will be limited to the extent practicable but may include dozers, graders, excavators, trenchers, dump trucks, back hoes, side booms, pickup trucks, vacuum excavators, rippers, tillers, rock picking machines, welding rigs and trucks, and x-ray trucks. Construction matting may be used to minimize rutting and compaction by equipment and for temporary storage of soil stockpiles.

The estimated length of each wetland and waterway crossing and associated construction method is detailed in WDNR Table 1 for the Ixonia LNG Construction Footprint and Table 1 for the Bluff Creek LNG Construction Footprint included in **Appendix Q of Volumes II and III**. The estimated area of construction disturbance within each impacted wetland and waterway is also included in these tables.

8.8 Rare Species and Natural Communities

See Section 6.9 for a discussion of rare species and natural communities at the LNG Facilities and associated pipelines.

8.9 Invasive Species (Uplands and Wetlands)

Invasive species are discussed in Section 6.8.

8.10 Historical Resources

The LNG pipeline routes for both the Bluff Creek LNG Facility and Ixonia LNG Facility are entirely within the property for each plant. Please see Section 6.6 for information related to historical resources near each LNG Facility.

8.11 Restoration of Disturbed Areas

All temporary construction facilities will be dismantled after construction is complete. Grades in temporary work areas will be restored to original elevations where appropriate. Re-seeding will be completed in areas where perennial vegetation is disturbed by construction activities. All temporarily impacted agricultural areas outside the plant footprint will be available for farming after construction is

complete. The Utilities will work with the tenant farmers to seed croplands, where appropriate. All other disturbed upland areas will be revegetated with a standard WisDOT seed mix appropriate for site conditions. Wetland communities dominated by invasive species prior to the start of construction will not be seeded with a native mix. Prior to restoring these areas, the seed bed will be prepared for optimal germination and re-vegetated with an annual cover crop, thereby allowing the existing seedbank to regenerate.