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Public Service Commission of Wisconsin
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April 5, 2024

Mr. Cru Stubley
Secretary to the Commission
Public Service Commission of Wisconsin
4822 Madison Yards Way
Madison, WI 53705-9100

Re: Docket 6630-CE-317: Application of Wisconsin Electric Power Company for Authority to Construct the Oak Creek Single Combustion Turbine Project in the City of Oak Creek, Milwaukee County, Wisconsin

Dear Mr. Stubley:

In the enclosed Application, Wisconsin Electric Power Company ("Applicant") seeks approval under Wis. Stat. § 196.491(3) and Wisconsin Administrative (Wis. Admin. Code) Code Chapter PSC 111 to construct a natural gas electric generating facility (the "Project" or "Facility") with a capacity of approximately 1,100 net megawatts (MW). The Project will consist of five General Electric 7 Simple Cycle Combustion generators, each generator having a nominal capacity of approximately 220 MW.

The proposed project is a key component of the Applicant's continued transformation of its generation fleet to ensure reliability and resiliency in the face of evolving regional energy market resource adequacy rules established by the Mid Continent Independent System Operator ("MISO"), manage substantial load growth, and ensure compliance with proposed US Environmental Protection Agency ("USEPA") rules.

Respectfully submitted,

Theodore T. Eidukas
Vice President – Regulatory Affairs
Wisconsin Electric Power Company

Application of Wisconsin Electric Power Company for Authority to Construct the Oak Creek Single Combustion Turbine Project in the City of Oak Creek, Milwaukee County, Wisconsin

Docket Number: 6630-CE-317

4/5/2024

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
°F	Fahrenheit
AFUDC	Allowance for Funds Used During Construction
AHI	Architecture and History Inventory
APE	Area of Potential Effects
ATC	American Transmission Company
BESS	Battery Energy Storage System
Btu	British thermal unit
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
BMPs	best management practices
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CPCN	Certificate of Public Convenience and Necessity
CT	Combustion Turbine
CTG	Combustion Turbine Generator
DATCP	Department of Agriculture, Trade and Consumer Protection
EPC	Engineering, Procurement, and Construction
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency

Abbreviation	Term/Phrase/Name
FIRM	Flood Insurance Rate Map
GADS	Generating Availability Data System
GIS	geographic information system
H_2SO_4	sulfuric acid mist
HAP	hazardous air pollutants
HFCs	hydrofluorocarbons
Hg	mercury
HHV	higher heating value
ISO	International Organization for Standardization
kV	kilovolt
kWh	kilowatt hour
MECL	minimum emissions compliance load
MISO	Midcontinent Independent System Operator
MW	megawatts
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NANSR	New Source Review
NERC	North American Electric Reliability Corporation
NFPA	National Fire Protection Association
NHI	Natural Heritage Inventory
NO_x	nitrogen oxides
NRHP	National Register of Historic Places

Abbreviation	Term/Phrase/Name
PAH	polycyclic aromatic hydrocarbon
Pb	lead
$PM_{2.5}$	particulate matter with aerodynamic diameter less than or equal to 2.5 micrometers
PM_{10}	particulate matter with aerodynamic diameter less than or equal to 10 micrometers
PSCW	Public Service Commission of Wisconsin
PSD	Prevention of Significant Deterioration
RPBB	rusty patched bumblebee
rpm	revolutions per minute
SO_2	sulfur dioxide
SF_6	sulfur hexafluoride
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VOC	volatile organic compounds
WE-GO	Wisconsin Electric Gas Operations
WEPCO	Wisconsin Electric Power Company
WDNR	Wisconsin Department of Natural Resources
WHPD	Wisconsin Historic Preservation Database
WHS	Wisconsin Historical Society
WisDOT	Wisconsin Department of Transportation
Wis. Admin. Code	Wisconsin Administrative Code

Abbreviation	Term/Phrase/Name
WPSC	Wisconsin Public Service Corporation
Wis. Stat	Wisconsin Statute
WRAPP	Water Resources Application for Project Permits

1.0 PROJECT PROPOSAL

Wisconsin Electric Power Company (Wisconsin Electric or the Applicant) submits this application to the Public Service Commission of Wisconsin (PSCW) for a Certificate of Public Convenience and Necessity (CPCN) under Wisconsin Statute (Wis. Stat.) § 196.491(3) and Wisconsin Administrative (Wis. Admin. Code) Code Chapter PSC 111 to construct a natural gas electric generating facility (the Project) with a capacity of approximately 1,100 megawatts (MW). The Project will consist of five new GE 7FA.05 combustion turbine generators (CTGs) or Units (hereafter called the Facility). The Project will be located at the existing Oak Creek Generating Site (OCGS) property directly west of the existing Oak Creek Power Plant (OCPP) and Elm Road Generating Station (ERGS) on land owned by Wisconsin Electric, located in the City of Oak Creek, Wisconsin (**Volume I Appendix A – Location Map**).

Wisconsin Electric submitted an Engineering Plan to the PSCW and Wisconsin Department of Natural Resources (WDNR) on February 5, 2024, in accordance with Wis. Stat. § 196.491(3)(a)3.a. WDNR provided permit and approval requirements to support the issuance of a CPCN.

1.1 Project Facilities

The following sections provide information related to proposed Project facilities.

1.1.1 Owner and Operator of Proposed Facility

The Applicant will be primarily or exclusively responsible for the Facility's design, construction, startup testing, and operation and maintenance. This will help ensure that the Facility meets the Applicant's expectations for safe and reliable generation, efficient operations, schedule, and cost targets.

Wisconsin Electric is located at:

231 W. Michigan Street
Milwaukee, Wisconsin 53203

1.1.2 Cities, Villages, Townships, and Counties Directly Impacted

The Project will be constructed in the City of Oak Creek, Wisconsin in Milwaukee County. The Project is just south of Milwaukee surrounded by several other cities and villages including the Cities of Franklin, Milwaukee, and South Milwaukee, the Villages of Raymond and Caledonia.

In addition to the Facility, the Project would include a tie-in to the Rochester Lateral gas pipeline[1] including a new meter set for natural gas fuel supply and interconnections to the existing 138-kilovolt (kV) and 345 kV switchyard at the OCGS.

1.1.3 Contractual Agreements

The Applicant will negotiate a Replacement Interconnect Request with Midcontinent Independent System Operator, Inc. (MISO) to replace the retired Oak Creek Units 5 - 8. The timing and details of the application is further detailed in Section 1.1.9.

A generator interconnection agreement will be negotiated with American Transmission Company (ATC).

The Applicant will engage an Engineering, Procurement, and Construction (EPC) contractor for the construction of the facility.

1.1.4 Type of Power Facility Proposed

The Facility will consist of an approximately 1,100 MW electric generating unit consisting of five CTGs. Further details of the type of power plant are provided in Section 3.1.1.

1.1.5 Potential Use for Excess Heat or Steam

No nearby potential uses for excess heat recovery have been identified.

1.1.6 Proposed Generating Unit

The Facility includes five (5) natural gas fired advanced F-Class units with an approximate output of 220 MW each for an approximate combined Facility output of 1,100 MW. The Facility will burn natural gas without the capability to use a backup fuel. The Facility will be cooled by a closed-loop cooling water system that uses air-cooled heat exchangers.

1.1.7 Estimated Capacity Factors

The capacity factor of an electric generating facility is calculated as the actual power generation of a facility over time compared to its potential power generation if it had operated at full nameplate capacity over that same period. It is an estimate of how often a facility is run during a year and is expressed as a ratio or a percentage.

There are several factors that will affect the capacity factor of the Facility. These factors include fuel pricing, temporary transmission constraints, efficiency of the Facility, maintenance requirements, power

[1] Rochester Lateral Project – Docket No. 6630-CG-139

demand, and competing generation resource availability, capacity, and efficiency. Based on current projections, the annual capacity factor for the Facility is expected to be between 10 and 20% over its life with monthly variations. The Facility is planned to be operated in a peak load configuration.

1.1.8 Temporary and Onsite Storage

The following sections describe the natural gas and water facilities that will provide temporary or permanent onsite storage.

1.1.8.1 Natural Gas Fuel Supply

The Facility will burn natural gas without an option for backup fuel. The CTGs will be designed to burn pipeline quality natural gas only. New facilities for the natural gas infrastructure will include up to an 24-inch diameter pipeline tie-in, on the OCGS, to the Rochester Lateral being constructed under Docket No. 6630-CG-139. Additionally, the Applicant is submitting a separate Certificate of Authority application for a proposed liquefied natural gas (LNG) storage tank and associated facilities to be constructed near the Facility in April 2024.

1.1.8.2 Water Supply and Discharge

Service water and potable water will be provided by the existing water source on the OCGS, which is the City of Oak Creek municipal water supply system. The Project is not anticipated to require construction of water pipelines offsite and no change in the City of Oak Creek existing water or sewer utility facilities is anticipated.

The primary service water uses for the Facility will include water supplied to the turbine evaporative coolers. Demineralized water will be trucked from the existing facility for periodic spray washes of the compressor side of the turbine. The existing admin building may be repurposed as the Facility control room and the existing potable water system is anticipated to be reused. The Facility water systems will be designed to maximize water reuse and recycling and minimize water consumption within the Facility systems.

Process drains from the CTGs will be collected in two oil-water separators and discharged to onsite storm water management facilities, oil/waste collected shall be pumped and hauled off-site. The existing admin building may be repurposed for the Facility control room. Sanitary wastewater from bathrooms, showers, and other employee areas in the admin building is expected to be maintained to the existing systems and discharge points.

1.1.8.3 Heat or Steam Delivery

The Facility is planned to be designed without heat or steam export capabilities.

1.1.8.4 Waste Disposal

The Facility will not generate any solid wastes. The Facility will be natural gas-fired and will not generate an ash byproduct requiring waste disposal.

1.1.9 Electric Transmission Interconnections

The Project will utilize the existing Interconnection Service granted to the OCPP. Existing Interconnection Service will be replaced using the MISO Generating Facility Replacement Process in conjunction with the retirement of Oak Creek units 5-8.

Because the American Transmission Company (ATC) is planning to eliminate and convert the existing 230 kV Points of Interconnection, the Applicant has obtained a FERC waiver granted in ER24-646-000 in order to replace the existing interconnection service on the 138 kV and 345 kV systems. The Applicant does anticipate additional Transmission Owner Interconnection Facilities will be required due to the ATC 230kV conversion project. The Applicant does not anticipate any additional network upgrades will be required. However, if any network upgrades are identified in the Replacement Studies that require PSCW approval, the Applicant expects those facilities to be permitted separately by their respective owners.

1.1.9.1 MISO Interconnection Studies

Due to the timing of the Oak Creek Units 5 & 6 retirement, MISO's Replacement process prohibits the Applicant from submitting the Replacement Interconnection Request prior to June 1, 2024. The Applicant anticipates the Replacement Interconnection Request will be submitted on or shortly after June 1, 2024. MISO is expected to have the Replacement Studies completed within 180 days of submittal.

1.1.9.2 MISO Interconnection Queue Position Number

The Applicant will be working closely with ATC and MISO to coordinate generator and transmission outages to minimize the impacts of constructing and connecting the replacement generating facility and converting the 230 kV transmission system.

1.1.10 Project Life Span

The Facility will be designed for an operating life of not less than 30 years. The Facility may operate over a longer period.

1.1.11 Project Decommissioning Plan

End of life decommissioning will include performing a pre-demolition survey of the equipment and structures to be removed and identify any regulated wastes to be removed prior to structural demolition. First, waste will be removed for offsite recycling or disposal as appropriate. Then demolition specifications and drawings will be prepared for bidding purposes. The selected demolition contractor will establish a schedule for site demolition activities. Similar projects required 12 to 24 weeks from contractor mobilization to complete removal of facilities.

1.1.11.1 Cost of Decommissioning and Source of Funding

The Proposed Facility is anticipated to have greater than 30-year life, indicating earliest decommissioning would occur in 2058. The Facility would follow similar decommissioning plans completed in recent years for other generating equipment and similar facilities.

The accounting for the removal of the asset is included in the Cost of Removal (COR) of depreciation reserves calculated in depreciation studies and recovered in customer rates approved through rate case proceedings as part of depreciation expense. This occurs once the asset is included in the Applicant's depreciation study filed with the Commission. The depreciation calculation is comprised of the remaining life, (COR) rate and the salvage rate. The COR rate is determined at the beginning of the assets life and can be updated (if needed) during subsequent depreciation studies. The accumulated COR funds less salvage will be used to fund the dismantling of the asset.

The physical process of decommissioning will be dependent on future use of the site, but generally involves disassembly of the plant equipment for scrap or salvage by use of either standard tooling and cranes (for salvage) or heavy construction/demolition equipment (for scrap). Site remediation typically utilizes standard heavy equipment for concrete removal and grade restoration. While the costs of decommissioning are not known at this time, the use of the COR, which is periodically evaluated in depreciation studies will ensure adequate funding has been set aside for decommissioning of the site at the end of the Facility's useful life.

1.1.11.2 Start of Decommissioning Decision

Generating units are typically decommissioned when fully depreciated and when life extension is not justified for economic or environmental reasons. Site abandonment is rare in Wisconsin Electric's experience, but where appropriate it involves decommissioning existing facilities and restoring the site to an appropriate condition for anticipated future use (e.g. industrial, natural, agricultural).

1.2 Project Costs

The Project total costs are estimated to be $1,205,000,000. The approximate breakdown of this cost is as follows:

Item	Estimated Cost
EPC Contractor	[redacted]
Equipment Supplier	[redacted]
Owner	[redacted]
Total	$1,205,000,000

1.3 Project Sites

Two alternative sites (Proposed and Alternate) were selected as possible locations for the proposed Facility; both of which are located on the OCGS property. The Proposed and Alternate sites (Sites) are further described in the following sections.

1.3.1 Locations and Footprints of the Sites

Two construction sites and layouts, the Proposed Site and the Alternate Site, were identified as potential Project locations. Both the Proposed Site and Alternate Site are located on the OCGS property, a 1,000-acre parcel of land owned by Wisconsin Electric, 15 miles south of Milwaukee. The Proposed Site would locate the CTGs west of ERGS. The Alternate Site would locate the CTGs east of the existing Oak Creek Liquefied Natural Gas ("LNG") Plant.

The Proposed Site would be approximately 16 acres in size. The Alternate Site would be approximately 19 acres. See **Volume I Appendix A (Location Map and Aerial Photographs)** and **Appendix B (Site Arrangement)** for a map showing the location of both Sites and the preliminary facility arrangements for each site.

1.3.2 Geology, Topography, Land Cover, and Land Use

The geology of the site includes consolidated sedimentary rock deposited as sequences of sandstone, limestone, or dolomite. This makes up the current sedimentary rock aquifer and confining bed. Beneath the consolidated sedimentary rock is Silurian rock (Ground Water Atlas of the United States, 1992). See **Volume I Appendix C (Bedrock Geology Map)** for a map of the geology of the area and Section 5.4 for additional information related to the geology of the Site.

The topography of the Sites is flat with an elevation of approximately 706 feet above sea level. See **Volume I Appendix D (Topographic Map)** and Section 5.5 for more information related to topography of the area and anticipated changes to site topography.

According to the U.S. Department of Agriculture Soil Survey most of the Sites are associated with the Ozaukee and Blount silt series. The Proposed Site is entirely comprised of Ozaukee silt loam (2 to 6 percent slopes). The Alternate site is largely Ozaukee silt loam (2 to 6 percent slopes) and Blount silt loam (1 to 3 percent slopes). These soil types are described further in Section 5.6. See **Volume I Appendix E (Soil Survey and Hydric Soils Map)** for a soils map.

The land use and land cover for the Sites are classified as Developed, High Intensity according to the Wiscland 2 land cover data set provided by WDNR. The Sites are currently used to support operation of the existing OCGS. See **Volume I Appendix F (Land Use and Land Cover)** for a map showing existing land use and land cover. Section 5.8 provides additional detail relating to land cover. Within the surrounding area, the land cover includes woodland with a mixture of deciduous and forested wetlands. Lake Michigan borders the Project area to the east. Residential areas are located northwest and south of the OCGS.

1.3.3 Special/Unique Natural or Cultural Resources

Special/unique natural or cultural resources in the Project are identified below. Further details regarding these resources are provided in Section 5.7.

1.3.3.1 Natural Resources

Over 90 wetlands were identified to occur within the Study Area but only 15 and 13 wetlands were identified to occur within the footprint of the Proposed or Alternate Sites and associated disturbance areas. Due to past disturbance and restoration activities associated with the development of other generation facilities at OCGS, some, if not all, of these wetlands are likely artificial and may be eligible for a wetland exemption.

A proposed Endangered Resources (ER Review) was conducted for the Study Area to identify any state or federally listed rare species, natural communities, or other natural features with element-occurrence records that may occur within the one- or two-mile buffers of the Study Area boundaries **(Volume III Appendix A)**. Occurrences of two special concerns bees, one endangered bird, two natural communities, three special concern plants, and two endangered plants. The Project was also assessed via the U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) website. Between the two, several species were identified to occur in the vicinity of the Project, however, impacts are expected to be

minimal and the Applicant plans to implement all required actions to comply with federal and state endangered species laws.

1.3.3.2 Cultural Resources

The University of Wisconsin-Milwaukee Cultural Resource Management (UWM-CRM) conducted cultural resource investigations for the Project. Based on archival and literature research, 12 archaeological sites are coincident with the Study Area. All define precontact Native American affiliation isolated finds, lithic scatters and/or campsite village sites; none are codified as burial sites. Previous investigations found nine sites lacked the materials and/or integrity for listing on the National Register of Historic Places (NRHP). Three of the identified sites are recommended for further investigations to determine whether significant resources are present in the Study Area that may be affected by the Project. Two of the three sites are not impacted by the Project. A Phase 1 field investigation for the third site will be conducted in spring/summer 2024.

The archives and literature research found that there are no previously surveyed architecture/history resources within the Study Area; five resources were identified as adjacent to or in the immediate vicinity of the Study Area. Of these five resources, two are no longer extant, two were determined to be outside the Area of Potential Effect (APE) and one was previously determined not eligible for the NRHP. As a result, the Project will not impact any architecture/history resources.

1.3.4 Residential Concentrations

Residences within the Project vicinity are predominately in the City of Oak Creek in residential subdivisions located northwest of the northern boundary of the OCGS property, approximately 0.3 mile from the Proposed and Alternate Sites. There are multiple scattered residential developments south of the OCGS property with the largest being approximately 2.2 miles from the Proposed Site and 2.4 miles from the Alternate Site in the Village of Caledonia. See **Volume I Appendix G (Residential Concentrations)** for a map showing the Sites in relation to the nearest residential concentrations.

1.3.5 Existing Area Utilities

Service water and potable water will be provided by the existing water source on the OCGS, which is the City of Oak Creek municipal water supply system. The Project is not anticipated to require construction of water pipelines offsite and no change in the City of Oak Creek existing water or sewer utility facilities is anticipated.

The existing Oak Creek switching station consists of 138 kV ATC switchyard and 345 kV transmission facilities. There are seven 138 kV transmission lines connected to ATC switchyard in addition to two 345

kV transmission lines, and one 230 kV transmission line. The existing 138 kV switching station will provide connection to two of the CTGs. The existing 345 kV station will provide connection to three of the CTGs.

The natural gas requirements for the Facility will be supplied by Wisconsin Electric Gas Operations (WE-GO). New facilities for the natural gas infrastructure will include up to a 24-inch diameter pipeline from the Rochester Lateral metering station, to be installed at the OCGS, to the combustion turbine units. **Volume I Appendix H (Existing Transmission, Pipeline, and Applicable Infrastructure)** contains a map of the existing electrical transmission and natural gas pipelines on the Project site.

1.3.6 Expected Connecting Utilities

Volume I Appendix I contains a map of the planned Project utility connections.

1.3.7 Railroads

A Union Pacific rail line that extends through the central portion of the OCGS property. This rail line is connected to the existing rail spur at the OCGS. No additional connections will be required by the Project. See **Volume I Appendix J** for a map showing the Sites in relation to the nearest railroads.

1.4 Site Selection Process

The OCGS site selection was based on a number of factors including the following: the site currently houses an existing power plant, existing transmission infrastructure and natural gas infrastructure. OCGS will also provide support to the 138kV and 345kV transmission systems. In addition, siting at the OCGS is anticipated to allow Applicant to use MISO's Generating Facility Replacement Process, as described in Section 1.1.9. Please see section 2.1 for additional details on the benefits of selecting the OCGS.

Proposed and Alternate facility locations were evaluated within the OCGS and a cost analysis between the two sites is presented in Section 4.1.

1.5 Permits and Approvals

The following sections discuss the Federal, State, and local permits and approvals needed for the Project.

1.5.1 Federal, State, and Local Government Correspondence

Volume II Appendix A provides copies of official correspondence between Applicant and Federal, State, and local agencies.

1.5.2 Federal and State Permits and Approvals

Table 1-1 and Table 1-2 list the Federal and State permits and approvals required for the Project, respectively. All permits listed below are anticipated to be applicable to both Sites.

Table 1-1: Federal Permits and Approvals

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone #)
FAA[1]	Construction or alteration of structures more than 200 feet above ground level.	7460 Notice of Proposed Construction or Alteration (14 Code of Federal Regulations (CFR) S77.13)	To be completed	TBD
USFWS[2]	Land disturbance construction activities	Endangered Species Act and National Bald Eagle Management Guidelines	Guidelines to be followed	TBD
USACE[3]	Discharge of dredge or fill materials into waters of the U.S.	Clean Water Act, Section 401/404 Permit	To be filed in April 2024	TBD

[1]FAA – Federal Aviation Administration
[2]USFWS – U.S. Fish and Wildlife Service
[3]USACE – U.S. Army Corps of Engineers

Table 1-2: State Permits and Approvals

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone #)
PSCW[1]	Building and operating generating units	Certificate of Public Convenience and Necessity (Wis. Stat. §196.491(3))	Filed on April 5, 2024	TBD
Wisconsin Department of Agriculture, Trade and Consumer Protection	Petroleum / Hazardous Liquids Storage Tanks Permitting & Registration	Tank Registration is required for aboveground tanks over 5,000 gallons in size.	To be filed	TBD
WDNR[2]	Construction and operation of new source of air emissions	Construction and operating permits: (Wis. Admin. Code NR 405 through 408)	To be filed in April 2024	TBD
	Discharge hydrostatic test water from pipelines, water mains, tanks, or vessels	WPDES[3] hydrostatic test water discharge permit (Wis. Stat. ch. 283)	To be filed	TBD

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone #)
	Required to discharge non-contact cooling water, air conditioning condensate, and similar discharges free of toxic substances to surface waters or seepage systems	WPDES non-contact cooling water or condensate or boiler water discharge permit (Wis. Stat. ch. 283)	To be filed	TBD
	Erosion control and storm water management for land disturbance during construction	WPDES construction site storm water discharge permit (Wis. Admin. Code ch. NR 216)	To be filed	TBD
	Various land disturbance construction activities	Potential impacts to state threatened and endangered species. An Endangered Resources Review was completed on February 19, 2024. We will work with the WDNR to confirm there is no impact to state-listed species.	Guidelines to be followed	TBD
	Invasive species management for land disturbance during construction	40 Invasive Species Identification, Classification and Control (Wis. Adm. Code NR 40)	Guidelines to be followed	TBD
	Wetland and waterway impacts	Chapter 30 waterway, wetland impacts (Wis. Stat. ch. 30), Water Quality Certification. No waterway impacts are expected. A wetland permit may be required.	TBD	TBD
	Construction on historic fill site	Applies primarily to the alternative site but may be needed for supporting infrastructure (Wis. Admin. Code ch. NR 506)	To be filed	

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone #)
Wisconsin Department of Safety and Professional Services	Foundation, structural, building (architectural), heating, ventilation and air conditioning, and fire protection plan reviews and inspections for all applicable buildings (those with doors allowing entrance). Installation registration of boilers, pressure vessels, and power piping.	Approval and inspection of buildings (Wis. Stat. § 101.12) Machines and boilers, safety requirements (Wis. Stat. § 101.17)	To be filed	TBD
WisDOT[4]	Delivery of equipment to the construction site	Oversized Equipment Delivery Permit	To be filed	TBD
Wisconsin Historical Society	Site preparation and grading	Approval of archaeological surveys (Wis. Stat. § 44.40) and Section 106 Cultural Resources Clearance	To be filed in April 2024	TBD

[1]PSCW – Public Service Commission of Wisconsin
[2]WDNR – Wisconsin Department of Natural Resources
[3]WPDES – Wisconsin Pollution Discharge Elimination System
[4]WisDOT – Wisconsin Department of Transportation

1.5.3 Local Permits and Approvals

Table 1-3 below provides a preliminary list of the local permits and regulatory approvals anticipated for the Project. Contact information for the agencies is provided in **Volume II Appendix B**. All permits listed below are anticipated to be applicable to both the Proposed and Alternate Sites.

Table 1-3: Anticipated Local Permits and Approvals

Agency	Planned Activity	Type of Approval	Status	Contact (Name and Phone Number)
Milwaukee County – Highway Department	Delivery of oversized or overweight equipment to the construction site	Single Trip Permit	TBD	TBD
City of Oak Creek	Conditional Use Permit	Issued by Plan Commission and Common Council	TBD	TBD
	Land Use Building Permit	Issued by the Community Development Director		
	Certificate of Zoning Compliance	Issued by the Community Development Director		
	Certificate of Occupancy	Issued by the Community Development Director	TBD	TBD
	Sign Permit	Issued by the Community Development Director	TBD	TBD

1.5.4 Railroad Facilities

The following sections provide location and owner of railroad facilities near the Project, as well as correspondence with railroad owners.

1.5.4.1 Location and Owner

A Union Pacific rail line that extends through the central portion of the OCGS property. This rail line is connected to the existing rail spur at the OCGS. No additional connections will be required by the Project. See **Volume I Appendix J** for a map showing the Sites in relation to the nearest railroads.

1.5.4.2 Railroad Correspondence

No railroads are impacted by the Project.

1.5.5 Utility Pipelines

The natural gas requirements for the Facility will be supplied by Wisconsin Electric Gas Operations (WE-GO). New facilities for the natural gas infrastructure will include up to a 24-inch diameter pipeline from the Rochester Lateral metering station, to be installed at the OCGS, to the combustion turbine units. Approximately 600 ft of 24-inch diameter pipeline will be installed from the new metering station on the OCGS to the Proposed Site and approximately 1,800 ft to the Alternate Site.

Service water and potable water will be provided by the existing water source on the OCGS, which is the City of Oak Creek municipal water supply system. The Project is not anticipated to require construction of water pipelines offsite and no change in the City of Oak Creek existing water or sewer utility facilities is anticipated.

The existing admin building may be repurposed for the Facility. Sanitary wastewater from bathrooms, showers, and other employee areas in the admin building are expected to be maintained to the existing systems and discharge points.

1.5.5.1 Utility Pipeline Owner

WE-GO owns the natural gas transmission pipeline that supplies fuel to the OCGS, which will also supply natural gas to the Facility. The City of Oak Creek municipal water supply system owns potable water pipelines and sewage pipelines near both Sites.

1.5.5.2 Utility Pipeline Correspondence

The existing pipeline agreements between Wisconsin Electric and WE-GO will not be altered for the Facility initially. As firm pipeline transportation service is identified for the Facility, pipeline agreements may be altered for the purpose of re-allocating firm capacity to the interconnection point that serves the Facility.

1.6 General Construction Schedule

The general schedule, including construction activities, is provided below.

1.6.1 Pipeline Operator Correspondence

The natural gas pipeline interconnection will be to a WE-GO distribution lateral, so there is no specific correspondence to be included within this application. Construction and operation of the interconnection will be coordinated between the Applicant and WE-GO, including safety and reliability.

1.6.2 Major Construction Activities

The following list provides a general schedule of major milestones for the Project:

- Engineering Plan Submitted 2/5/2024
- CPCN Submitted 4/5/2024
- CPCN Approval 5/5/2025
- 1st Combustion Turbine Delivered 5/2026
- Last Combustion Turbine Delivered 1/2027
- Commercial Operation Date Winter 2027 – Summer 2028

1.6.3 Seasonal or Regulatory Construction Constraints

There are no Seasonal or Regulatory construction constraints.

1.6.4 Critical Path Items

The following tasks are the critical path for the Project:

- Approval of CPCN Application
- Below ground utilities and foundation construction
- Combustion Turbine Deliveries
- Mechanical Construction
- Electrical Construction
- Startup and Commissioning of Equipment

1.6.5 Generation or Transmission Outage Constraints

Outages will need to be requested and coordinated with ATC and the ERGS units.

1.7 Mailing Lists

The following sections provide information related to mailing lists used for the Project, their sources of information, library locations where the application will be sent for public review, and information on chief executive officers, regional planning commissions, and State and Federal agencies contacted for the Project.

1.7.1 Microsoft Excel Mailing Lists

See **Volume II Appendix B** for Microsoft Excel Mailing Lists for the Project for the public outreach efforts.

1.7.2 Sources of Information

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) assisted the Applicant in creating the mailing lists used to inform stakeholders of the Project and invite them to the open houses. (See Section 6.7 for more information related to communication with the potentially affected public.) The parcel data was pulled from the Wisconsin Statewide Parcel database in January 2024. The open house mailing list is provided in **Volume II Appendix B**. The data for the Statewide Parcel Map Initiative is obtained from counties and cities, but potential inaccuracies in these data could occur due to the length of time between the initial data download and the submission of this application. Also, the Statewide Parcel Map Initiative states on its website that data was collected between January and June 2023. There may be new development or new landowners since the data were uploaded to the Statewide Parcel database. Maps in this application and lists of landowners use the parcel ownership information available in the statewide databases.

1.7.3 Library Locations

The CPCN application for the Project will be sent to the Oak Creek Public Library. The mailing address for the library is below.

Oak Creek Public Library
8040 S 6th St
Oak Creek, WI 53154

1.7.4 Mailing Lists

Mailing lists were created for the Project open houses that consisted of the property owners near the Project (**Volume II Appendix B**). The following sections discuss property owners within 0.5 mile of the

Project as well as public property owners; county, town, village, and municipal executive officers; regional planning commissions; and State and Federal agencies.

1.7.4.1 Property Owners

A list of all property owners within 0.5 mile of the Project is found in **Volume II Appendix B**.

1.7.4.2 Public Property Owners

A list of all public property owners within 0.5 mile of each Site is provided in **Table 1-4**. Further contact and mailing addresses are found in **Volume II Appendix B**.

Table 1-4: List of Public Property Owners within 0.5 Mile of Sites

Alternative	Public Property Owners within 0.5 Mile
Proposed Site	Milwaukee County
	Racine County
	Village of Caledonia
	United States of America
	State of Wisconsin
	City of Oak Creek
Alternate Site	Milwaukee County
	Racine County
	Village of Caledonia
	United States of America
	State of Wisconsin
	City of Oak Creek

1.7.4.3 Chief Executive Officers & Clerks

A list of the chief executive officers of the applicable counties, towns, villages, or cities is provided in **Table 1-5**. Further contact and mailing addresses are found in **Volume II Appendix B**.

Table 1-5: Executive Officers

Executive Officer	County, City, Village, or Town
Marcelia Nicholson, County Board Chair	Milwaukee County
Thomas Roanhouse, County Board Chair	Racine County
Daniel Bukiewicz, Mayor	City of Oak Creek

1.7.4.4 Regional Planning Commission

The Southeastern Wisconsin Regional Planning Commission is a multi-county planning commission that serves Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties. Contact information for the Milwaukee and Racine County Committee Chairs is provided below.

Milwaukee County Commissioners:

- Donna Brown-Martin
- Priscilla Coggs-Jones
- Michael Maistelman

Racine County Commissioners:

- Jonathan Delagrave
- Peggy Shumway

Mailing Address:

Southeastern Wisconsin Regional Planning Commission
P.O. Box 1607
Waukesha, WI 53187-1607

1.7.4.5 State and Federal Agencies

A list of the State and Federal agencies is provided in **Table 1-6**. Further contact and mailing addresses are found in **Volume II Appendix B**.

Table 1-6: State and Federal Agencies

Federal Agencies	State Agencies
U.S. Department of Transportation – Federal Aviation Administration	Wisconsin Department of Agriculture, Trade and Consumer Protection
U.S. Environmental Protection Agency	Wisconsin Department of Natural Resources
U.S. Fish and Wildlife Service	Wisconsin Department of Safety and Professional Services
U.S. Army Corps of Engineers	Wisconsin Department of Transportation, Bureau of Aeronautics
—	Wisconsin Historical Society
—	Public Service Commission of Wisconsin

1.7.4.6 Tribal Government Representatives

The Project is not located within a county where Tribal government representatives for Native American Tribes hold off-reservation treaty rights in Ceded Territory.

1.8 Project Maps and Illustrations

Volume I of the appendices contains required maps, figures, diagrams, etc. Volume III of the appendices includes confidential maps. The sections below provide the appropriate appendix for each map as well as an additional description of the map, if necessary.

1.8.1 Aerial Photographs

See **Volume I Appendix A** for aerial photographs of the Sites.

1.8.2 Facilities Data

The following sections provide maps showing facilities data, such as the Sites; facilities and footprint; proposed utility connections; proposed access roads; and temporary laydown, storage areas, and construction areas.

1.8.2.1 Proposed Site Alternatives

See **Volume I Appendix A** for maps showing the Proposed and Alternate Sites.

1.8.2.2 Proposed Facilities and Footprint

See **Volume I Appendix B** for maps showing the proposed facilities and footprint.

1.8.2.3 Proposed Utility Connections

See **Volume I Appendix I** for maps showing the proposed utility connections.

1.8.2.4 Proposed Access Roads

See **Volume I Appendix A** for maps showing permanent access roads.

1.8.2.5 Railroads Map

See **Volume I Appendix J** for maps showing the nearby railroads. Railroads onsite may be used for equipment deliveries during the Project.

1.8.2.6 Proposed Temporary Laydown, Material Storage Areas, and Construction Parking Areas

See **Volume I Appendix A** for maps showing the proposed temporary laydown, material storage areas, and construction parking areas.

1.8.3 Environmental Data

The following sections provide maps showing environmental data, such as the waterways, wetlands, soils, geology, rare species, topography, and floodplains.

1.8.3.1 Rivers, Lakes, and Other Waterways Map

See **Volume I Appendix K** for maps showing the location of rivers, lakes, and other waterways relative to the Sites.

1.8.3.2 Outstanding or Exceptional Waterways, Trout Streams, or Wild or Scenic Rivers Map

See **Volume I Appendix L** for maps showing outstanding or exceptional waterways and trout streams relative to the Sites. There are no outstanding or exceptional waterways in Milwaukee or Racine Counties. The nearest Exceptional Resource Water (Mukwonago River) is approximately 26 miles west of the Project. The nearest Trout Stream is Mill Brook, located approximately 19 northwest of the OCGS property boundary.

1.8.3.3 Wetland Maps

See **Volume I Appendix M** for maps containing field-delineated wetlands and Wisconsin wetland inventory wetlands relative to the Sites.

1.8.3.4 Soils and Hydric Soils Map

See **Volume I Appendix E** for maps containing soil information for the Sites.

1.8.3.5 Geology Map

See **Volume I Appendix C** for the geology map of the Sites.

1.8.3.6 NHI Rare Species - Confidential

See **Volume III Appendix A** for maps containing NHI rare species maps (CONFIDENTIAL).

1.8.3.7 USGS Topographic Map

See **Volume I Appendix D** for the U.S. Geological Survey (USGS) topographic map of the Sites.

1.8.3.8 Floodplain Map

See **Volume I Appendix N** for FEMA Flood Insurance Rate Map (FIRM) showing the location of floodplain relative to the Sites. The Proposed and Alternate Sites are not located within the 100-year floodplain.

1.8.4 Parcel Data

The following sections provide maps showing parcel data, such as privately and publicly owned lands, tribal property, other types of property, and political subdivisions.

1.8.4.1 Privately Owned Parcels Map

See **Volume I Appendix O** for a map of privately owned lands near the Sites.

1.8.4.2 Public Properties Map

See **Volume I Appendix P** for a map of publicly owned lands near the Sites.

1.8.4.3 Tribal or Other Types of Property Map

No tribal properties or other types of property are located within 0.5 mile of the Sites.

1.8.4.4 Political Subdivision Boundaries Map

See **Volume I Appendix Q** for a map showing political subdivision boundaries.

1.8.4.5 Township, Range, and Section Map

See **Volume I Appendix R** for a map showing township, range, and section near the Sites.

1.8.5 Land Use

The following sections provide maps showing land use information (e.g., land cover), zoning, active mines and quarries, schools and hospitals, airports, communication towers, and recreation areas and trails.

1.8.5.1 Land Use and Land Cover Map

See **Volume I Appendix F** for a map showing land use and land cover near the Sites.

1.8.5.2 Zoning Map

See **Volume I Appendix S** for a map showing zoning within 0.5 mile of the Sites.

1.8.5.3 Active Mines and Quarries Map

See **Volume I Appendix T** for a map showing active mines and quarries within 0.5 mile of the Sites.

1.8.5.4 Sensitive Sites Map

See **Volume I Appendix U** for a map showing sensitive sites within 0.5 mile of the Sites.

1.8.5.5 Airports and Airstrips Map

See **Volume I Appendix V** for a map showing airports and airstrips near the Sites. The closest public use airports to the Sites are the John H Batten Airport, located approximately 6 miles to the south, and the General Mitchell International Airport, located approximately 6 miles to the northwest. The closest private airstrips, Valhalla, Aero Estates, and Potts Fld are located approximately 11.6 miles southwest, 10.8 miles west, and 10.4 miles southwest of the Sites, respectively.

1.8.5.6 Communication Tower Map

See **Volume I Appendix W** for a map showing communication towers near the Sites.

1.8.5.7 Recreation Areas and Trials Map

See **Volume I Appendix X** for a map showing recreation areas and trails near the Sites.

1.8.6 Utility/Infrastructure Data

The following sections provide maps showing utility and infrastructure data, such as existing transmission lines, pipelines, distribution lines, transportation infrastructure, railroads, and applicable rights-of-way.

1.8.6.1 Existing Transmission, Pipelines, and Other Applicable Infrastructure

See **Volume I Appendix H** for a map showing existing transmission lines, pipelines, and other infrastructure near the Sites.

1.8.6.2 Existing Distribution Lines to be Modified or Relocated

No existing distribution lines will be modified or relocated due to the proposed Project.

1.8.6.3 Roads, Highways, and Interstates

See **Volume I Appendix Y** for a map showing existing roads, highways, and interstates near the Sites.

1.8.6.4 Railroad Map

See **Volume I Appendix J** for a map showing railroads near the Sites.

1.8.6.5 Applicable Infrastructure ROWs

See **Volume I Appendix H** for a map showing existing transmission lines, pipelines, and other infrastructure near the Sites. The connecting facilities are all located on WEPCO property. No new infrastructure ROW is required offsite.

1.9 ESRI ArcGIS Data Files

Electronic data are provided under separate cover. See **Volume II Appendix C** for a spreadsheet listing each GIS file, a description of the data, data source, and date when the data was generated or collected in the field.

2.0 PROJECT NEED ANALYSES

2.1 Project Need

Wisconsin Electric has a considerable need for additional capacity and energy resources to meet their load obligations in the 2026 timeframe, as discussed below in Section 2.1.1, when a significant addition of load is expected. Serving the load with the appropriate mix of resources is key to ensure balance between environmental, economic, reliability, resiliency and market needs. As discussed in recent applications for new resources with the Commission, the addition of solar, wind and battery resources is crucial to meeting the environmental and economic objectives. However, these resources also introduce complexity in ensuring reliability, resiliency and transmission grid stability. Given the change in Wisconsin Electric's portfolio, developing the right mix of generation resources across all hours of the load profile is vital to ensure reliability.

Portfolio Need – Dispatchable Resources

The foremost objective of supply planning is to meet customer demand at all times. Historically, thermal, dispatchable resources were the primary resource relied on to achieve this goal. Given the rapid movement toward decarbonization, many of the dispatchable units have been or will shortly be retired and those remaining will be limited in their operation due to USEPA regulations. To fill the gap, a significant amount of intermittent generation is being built. This transition impacts not only the applicant's portfolio, but the generation mix across a significant portion of the United States. The risk of not having energy available at all hours is not a future risk, but is recognized as a risk we are currently experiencing by Regional Transmission Organizations, North American Energy Reliability Corporation ("NERC"), and reliability organizations such as the Midwest Reliability Organization ("MRO"). In their 2023 Long Term Risk Assessment, NERC lists Mid-Continent Independent System Operator ("MISO") as "High Risk" regarding potential future electricity supply shortfalls under extreme as well as normal conditions. The MRO, for the first time in their history, identified an Extreme Risk for Energy Availability in their 2024 Regional Risk Assessment. While the Applicant is in the Reliability First reliability organization, the MRO is our neighbor immediately to the west which implies the Applicant cannot prudently rely on neighbors to support our energy needs.

Given these factors and the significant and high load factor load additions planned, the applicants must seek a combination of resources that can ensure the energy needs of the customers are met at all times. Dispatchable resources like combustion turbines ("CTs"), reciprocating internal combustion engines ("RICE") and Batteries ("BESS") provide different characteristics that are required to ensure a smooth

transition to a renewable baseload grid. CTs and RICE are both fully dispatchable resources, meaning they can provide energy at all hours, for weeks on end and in any seasons. CTs provide the energy density needed when large amounts of renewable energy are not available, while RICE can provide energy similar to CTs, it is better suited to provide the daily and hourly energy needed to more precisely follow the daily renewable energy supply shape. Batteries are also part of the resource mix Wisconsin Electric plans to utilize as they can effectively shift stored energy between different hours of the day. However, there is some forward risk regarding battery accreditation within MISO's proposed Direct Loss of Load methodology which determines accreditation value.

Batteries and natural gas generation provide the fast-ramping capability necessary to reliably serve load and quickly and seamlessly offset energy production changes, either forecasted or unexpected, from renewable resources. While batteries and dispatchable gas-fueled resources both support this effort, they play very different but important roles. Batteries can help shift stored energy to different points in the day but only to a limited extent due to charging and discharging capacity. On the other hand, only fully dispatchable gas resources can provide needed energy over days and even weeks when renewable energy generation resources are limited. As noted by MISO in January 2023:

> *Wind resources can also experience "fuel" availability challenges in the form of highly variable wind speeds correlated with weather patterns. The energy output of wind resources can fluctuate significantly on a day-to-day and even an hour-by-hour basis including multi-day periods of low wind output. The chart below illustrates how the MISO, Southwest Power Pool (SPP), Electric Reliability Council of Texas (ERCOT), and PJM regions all experienced 12 consecutive days of low wind output during Winter Storm Uri in February 2021.*

While batteries and fully dispatchable gas resources are both resources that can help fill energy gaps, they are very different in their capability, application and are far from interchangeable.

Dispatchable Resources – Diversity

Diversity of resources in the overall portfolio is required to serve ratepayers energy needs, economically, reliability and in an environmentally fashion. This diversity of resources allows the Applicant to design a portfolio that is baseload renewable while using the dispatchable resources to fill in the gaps during hours, weeks and seasons where renewables may not be available to provide energy.

Wisconsin Electric currently has a significant number of large framed combustion turbines in its fleet and plans to add additional units. These resources are an ideal fit to ensure energy is available when large

amounts of intermittent resources are unavailable, especially in the winter months when solar units are least effective and when wind units are not available for long stretches of time. The energy density inherent to these units enables the continued addition of large amounts of intermittent renewable resources to the grid thereby providing the foundation of dispatchable gas resources needed for energy security over the coming decades.

While the CTs provide the foundation, RICE technology can be viewed as providing the framing. As discussed below, RICE units have faster start-up times and multi-shaft reliability, provide better load matching capability and superior system restoration capability during all hours and all seasons. These characteristics are crucial to supply daily and hourly grid reliability when CTs are not on-line due to high renewable generation while also complimenting the benefits the CTs provide while they are on-line.

Lastly, batteries provide the finish. They are a superior resource to supply certain Essential Reliability Services (fast frequency response, voltage support and ramping), energy arbitrage and can supply needed energy for short term grid disruptions. As part of its generation reshaping plan Wisconsin Electric, partnering with Wisconsin Public Service Corporation and Madison Gas and Electric, has already received approval or is seeking approval to install 515 MW of new battery resources. Wisconsin Electric's share of these resources is approximately 385 MW.

Each of these three dispatchable resources provide different characteristics that collectively are required to ensure the safe and reliable operation of the electric grid and complement each other very well as the electric fleet continues to change.

Dispatchable Resources – Why CTs?

Given pending United States Environmental Protection Agency ("USEPA") regulations and the continued push toward decarbonization, CTs and RICE are the prudent and economic choices to provide the capacity and energy assurance required. These resources can provide energy security across many hours and/or days when the wind is not blowing and the sun is not shining, while not being relied on as a baseload resource like a combined cycle or coal unit.

The Project is an ideal fit to provide capacity and energy assurance with the high load factor associated with the substantial load addition. Given their higher power density, a bank of large industrial frame

combustion turbines can be installed in a relatively small footprint on the existing OCGS, respecting certain land use considerations[2].

Modern large frame combustion turbines have relatively low heat rates, fast start-up times, high ramp rates, offer future fuel flexibility and a have a demonstrated history of providing high reliability and availability metrics (across a large installed base, with tens of millions of aggregate fleet operating hours since their commercial introduction). Most importantly, they are capable of supplying peaking power over hours, days or even weeks. The Project fits well in Wisconsin Electric's portfolio existing operations and maintenance expertise with its other combustion turbine facilities.

The selection of combustion turbine technology further considers the complimentary nature of natural gas-fired power generation and renewable resources, in terms of each technology's relative strengths and weaknesses. In a whitepaper[3] on this topic, published in February 2021, the General Electric Company ("GE") provided a succinct and compelling summary of certain key technology attributes, many of which are under current consideration. Rather than paraphrasing the relevant highlights, a direct excerpt (a portion of "Table 1") from the whitepaper identifies the complementary attributes of renewables and natural gas power.

[2] Burns & McDonnell had previously determined that the potentially available siting areas (in terms of land use) at the existing Oak Creek campus may not be physically large enough to accommodate the required number of aero-derivative gas turbines or reciprocating engines (as competing gas-fired options) needed to produce approximately 1,200 MW of generating capacity (under original consideration).
[3] GEA34578 (02/21), entitled "Accelerated Growth of Renewables and Gas Power Can Rapidly Change the Trajectory on Climate Change"

Figure 2-1: Complementary Attributes of Renewables and Gas Power

TABLE 1: The complementary attributes of renewables and gas power

	WIND, SOLAR & STORAGE	GAS POWER
FUEL	Limitless, free fuel that is variable	Flexible, dispatchable power whenever needed, utilizing abundant & affordable natural gas or LNG
CO_2	Carbon-free generation	Less than half the CO_2 of coal generation with a pathway to future conversion to low or near-zero carbon with hydrogen and Carbon Capture and Sequestration (CCS)
COST	Competitive Levelized Cost of Electricity (LCOE) with no lifecycle uncertainty (mostly CAPEX)	Competitive LCOE with lowest CAPEX, providing affordable, dependable capacity
DISPATCH	Dispatches first in merit order... extremely low variable cost	Most affordable dispatchable technology... fills supply/demand gap
PEAKING	Battery storage economical for short duration peaking needs (<8 hour, intraday shifting)	Gas economical for longer-duration peaking needs (day-to-day and weather-related extended periods)
CAPACITY FACTORS	25%–55% capacity factors based on resources (wind and solar often complementary)	Capable of >90% capacity factors when needed, runs less based on variable costs & renewables
LAND	Utilizes abundant land with good renewable resources (multi-purpose land use); Offshore wind is not land constrained	Very small physical footprint for dense urban areas with space constraints

GE further highlights in the whitepaper how, in their opinion, gas power enables the deployment of more renewables.

> *Natural gas-fired power generation is flexible and dispatchable. Plants can come online quickly, adjust power output level, and turn down to a very low output level to balance supply and demand as needed. They can deliver more power or less as supply and demand for electricity vary throughout the day, over the course of a week or month, and seasonally—whenever required. This flexibility is especially important to maintain grid stability as more non-dispatchable wind and solar resources are deployed.*
>
> ***Gas-fired power plants are available regardless of the time of day** [...], **providing dependable capacity as long as needed, whether for minutes, hours, days or weeks at a time**. Wind and solar power are available when the wind is blowing or the sun is shining. The availability of the wind and solar resources does not always coincide with demand. Because electricity supply and demand must always be in balance, renewables require dispatchable backup power such as natural gas power plants or batteries to ensure system reliability."*

In terms of combustion turbine technology's ability to promote system reliability, GE further highlights the relative dependable capacity offered by gas-fired and renewable technologies, in addition to other conventional power generation options. According to GE and shown in **Table 2-1** below, natural gas-fired power generation generally compares favorably in terms of relative dependability compared to various generation technologies[4].

Table 2-1: Average Dependable Capacity

Natural Gas	84%
Coal	78%
Nuclear	92%
Hydro	63%
Wind (Onshore)	14%
Wind (Offshore)	27%
Solar	20-40%

Furthermore, combustion turbines offer inherent advantages relative to renewables in terms of frequency response and rotating inertia in order to help maintain grid stability. Such characteristics may be of particular interest to regional transmission operators when modeling evolving power grid dynamics as large conventional generators, such as coal-fired power plants continue to retire.

GE's whitepaper on how the accelerated growth of renewables and gas-powered technology can rapidly change the trajectory on climate change concludes with the following selected guidance to the general power generation industry, as interested stakeholders consider their near-term de-carbonization strategies:

> *Recommended steps for the power industry include*:
>
> - *Invest in a combination of wind, solar, batteries and gas-fired power at scale and with urgency*
> - *As coal-fired generation declines, replace this capacity with renewables supported by gas power […].*

Such recommendations are broadly consistent with the theme of gas power enabling more renewables, a key strategic concept that has partially informed the selection of combustion turbine technology for the proposed Project at Oak Creek.

[4] Such dependable capacity figures are understood to reflect "*global averages*", as informed by an internal analysis performed by GE Gas Power. Source of data is based on information from Figure 9 in GE's Whitepaper.

CT Technology – Why Oak Creek?

The Oak Creek site provides a significant advantage over other locations for two main reasons. First, replacing generation at an existing site with Interconnection Service allows us to follow MISO's Generating Facility Replacement Process ("GFRP") in lieu of the new generator interconnection process which is currently averaging two to three years to complete in the ATC footprint. MISO's GFRP allows a generation owner to replace existing generation with a new generation of equal or lesser MW output at the same point of interconnection. The expectation is that the replacement generation will not cause an adverse material impact to the existing transmission infrastructure, therefore the process is expected to take less than 1 year to complete and likely less than 6 months. In addition, the GFRP will have cost savings to the company as the deposit payments are far less than the new Generation Interconnection Process.

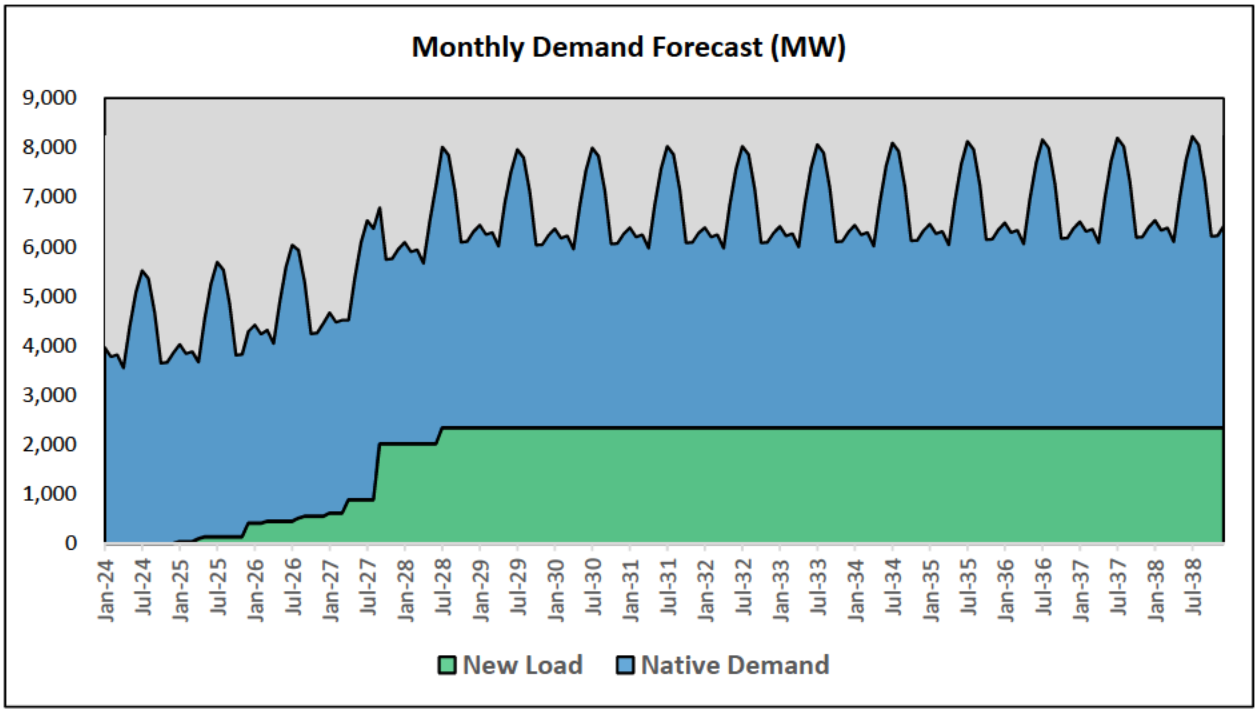
Selecting an existing site minimizes network transmission and affected system upgrades as the existing transmission infrastructure will be used for the replacement generation, saving customers the expense of costly transmission infrastructure investments. The Oak Creek site offers the ability to take advantage of an existing brownfield site. Given the proximity and availability of existing infrastructure, such as transmission interconnection, water and natural gas, provides the ability to minimize costs that otherwise would be required at a greenfield site. Construction and operations of these units at the Oak Creek site also offers the opportunity to minimize impacts to natural resources or local residents. In addition, efficiencies associated with security and human resources can be realized by placing the CT units at an existing secured, manned site with 24/7 staff which has existing operations staff and systems.

2.1.1 Peak Demand and Energy Forecast

Wisconsin Electric evaluated the economics of the Project across four planning futures. Each planning future has a unique demand and energy forecast based on the underlying assumptions that define that planning future, which is discussed in more detail in **Volume III Appendix B**. Consistent in all demand and energy forecasts in each planning future is the assumption all wholesale electric contracts are not renewed upon expiration. Wisconsin Electric's demand and energy forecasts all include the forecasted new load in the I-94 corridor starting in 2025. Total annual energy requirements for the I-94 corridor are assumed to start at approximately [redacted] growing to almost [redacted] and peak demand is assumed to grow from approximately [redacted] over the same time period. The baseline long term demand and energy forecast for Wisconsin Electric includes a modest 0.60 percent and 0.48 percent compound annual growth rate ("CAGR") applied to Wisconsin Electric's 2024 native demand and energy forecast, respectively. The growth rates are based on Wisconsin

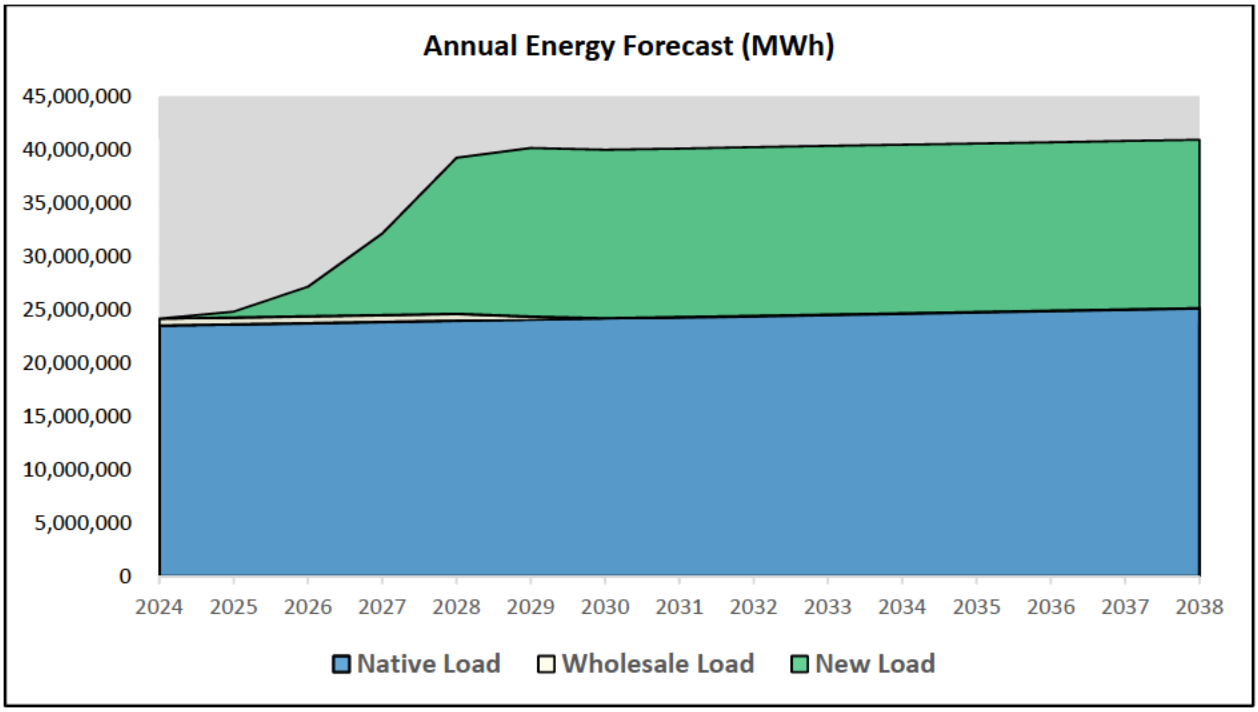
Electric's Continued Fleet Change planning future which assumes existing economic factors with small increases in electric vehicle penetration and electrification[5]. The growth rates are not incorporated in the new load for the I-94 corridor because that is based on a specific forecast and is consistent across all planning future regardless of the native load CAGR. The forecasted monthly peak demand and annual energy forecasts used for Wisconsin Electric's baseline planning future are provided in the figures below.

Figure 2-2: Monthly Peak Demand



[5] The demand and energy CAGRs are based on MISO's 2021 transmission expansion plan ("MTEP") Future 1 scenario.

Figure 2-3: Annual Energy Forecast



2.1.2 PLEXOS Long-Term Capacity Expansion Model

WEC used Energy Exemplar's PLEXOS market simulation software to evaluate each utility's optimal long-term expansion plan. PLEXOS is a proven power market simulation tool and is a leader in modeling flexibility, efficiency, simulation alternatives and advanced analysis. PLEXOS is a comprehensive production cost model with regional databases for conducting generation capacity expansion planning and is used by over 280 customers (utilities are the largest customer base).[6] The model provides the capability to solve the generation capacity expansion simultaneously with commitment and dispatch. PLEXOS accounts for all types of generation including storage resource options while optimizing generation capacity expansion. PLEXOS produces balanced portfolios of conventional, renewable and storage resources. WEC has used PLEXOS to analyze and support the approval of the following projects:

- Paris Solar and battery energy storage system ("BESS")
- Red Barn Wind
- Weston RICE
- Darien Solar and BESS

[6] Notable customers include AEP, Xcel Energy, Dominion, Southern California Edison, MISO, PJM, and California Independent System Operator.

- Koshkonong Solar and BESS
- West Riverside Combined Cycle purchase options
- Whitewater Combined Cycle purchase
- High Noon Solar and BESS

2.1.2.1 Optimal Generation Expansion Plan

Wisconsin Electric undertook a robust evaluation of the quantitative benefits the Project provides the Wisconsin Electric Utilities' customers. As part of the evaluation, Wisconsin Electric tested its primary assumptions to understand their overall impact on the results. This type of evaluation studies how different values of an independent variable (referred to as planning assumptions, scenarios or sensitivities) affect a project's economics. As such, the optimal generation expansion plan is dependent on the assumptions and scenarios used in the evaluation. However, what is evident in the results of the economic evaluation, given the significant growth in demand and energy forecasted, is a balanced and complimentary resource mix that includes combustion turbines, RICE units, solar facilities, wind facilities, battery facilities, and energy efficiency. For more information, the optimal resource mix can be found in **Volume III Appendix B**.

2.1.2.2 Impact on the Wholesale Market

The Project is not being justified on the basis of its impact on wholesale energy costs.

2.1.3 Market Purchased Power

Having a balanced mix of energy resources that allows a utility to serve its customers regardless of any reliance on the market for energy has become increasingly evident. Due to the significant changes in the MISO resource adequacy construct, increased penetration of intermittent resources and increased retirements of thermal resources, Wisconsin Electric has developed a balanced resource planning approach that addresses both capacity and energy assurance, which is discussed in more detail in **Volume III Appendix B**. Both methodologies meet seasonal peak demand plus the MISO PRM with accredited capacity from new resources and do not rely on the market for accredited capacity. Capacity Assurance resource planning recognizes the ability to purchase and sell market energy. To capture this interchange the PLEXOS model included the ability to purchase or sell up to 800 MW per hour of energy from the broader MISO market. Energy Assurance resource planning on the other hand assumes all Wisconsin Electric energy requirements are provided by its own generation fleet 24 hours a day, 365 days a year.

2.1.4 Facility Retirement Forecast

Wisconsin Electric's planned generation retirement dates for the Oak Creek coal units are included in **Table 2-2** below. Wisconsin Electric will continue to evaluate the economic and environmental attributes of the remainder of their existing fleet but no determination has been made regarding additional retirements beyond what is included below.

Table 2-2: Forecasted Retirements

Generating Units	Technology	Capacity (ICAP)	Retirement Date
Oak Creek 5	Coal	236	5/31/2024
Oak Creek 6	Coal	248	5/31/2024
Oak Creek 7	Coal	298	12/31/2025
Oak Creek 8	Coal	303	12/31/2025
Total		**1,085**	

2.1.4.1 Retirement or Economic Suspension Studies

The confidential retirement studies performed by MISO for Oak Creek units 5, 6, 7 and 8 were filed[7] in compliance with the Commission's December 19, 2019 Final Order in docket 5-UR-109[8].

2.1.4.2 Capacity Position and Planning Reserve Margin Forecast

Historically a 14.5 percent reserve margin above annual peak day demand was utilized in Wisconsin filings for new generation resources. However, the Midcontinent Independent System Operator ("MISO") has recently implemented a seasonal resource adequacy construct, as opposed to the historic annual resource adequacy construct, to better reflect intermittent characteristics of wind and solar, maintenance outages, and overall unit performance. As a result, instead of planning for a single peak day requirement LSEs now need to plan for peak day requirements in each season. Wisconsin Electric's approach incorporates MISO's seasonal construct for Planning Year 2024/25 LOLE Report and the corresponding MISO planning reserve margin ("PRM") installed capacity ("ICAP") percentage requirements for each season, which are as high as 49.4 percent in the winter season, as shown in **Table 2-3** below.

[7] See PSC REF: 443375
[8] See PSC REF: 381305

Table 2-3: Reserve Margins

MISO Planning Reserve Margin (PRM)	Summer 2024	Fall 2024	Winter 2024-2025	Spring 2025	Formula Key
MISO System Peak Demand (MW)	124,669	112,232	104,303	99,496	[A]
Installed Capacity (ICAP) (MW)	150,187	148,755	165,924	152,092	[B]
Unforced Capacity (UCAP) (MW)	139,444	136,572	143,201	138,251	[C]
Firm External Support ICAP (MW)	3,217	2,865	3,771	3,247	[D]
Firm External Support UCAP (MW)	3,052	2,758	3,613	3,105	[E]
Adjustment to ICAP [1d in 10yr] (MW)	(6,650)	(11,145)	(13,890)	(15,275)	[F]
Adjustment to UCAP [1d in 10yr] (MW)	(6,650)	(11,145)	(13,890)	(15,275)	[G]
ICAP PRM Requirement (PRMR) (MW)	146,754	140,475	155,805	140,064	[H] = [B]+[D]+[F]
UCAP PRM Requirement (PRMR) (MW)	135,846	128,185	132,925	126,081	[I] = [C]+[E]+[G]
MISO PRM ICAP	17.7%	25.2%	49.4%	40.8%	[J]=([H]-[A])/[A]
MISO PRM UCAP	9.0%	14.2%	27.4%	26.7%	[K]=([I]-[A])/[A]
LOLE Criteria (days/year)	0.1	0.01	0.01	0.01	

In parallel to MISO's seasonal capacity construct there is seasonal variation in the value of firm capacity for all generating resources. Since firm capacity is needed to meet MISO's PRM, wind, solar and battery facilities' capacity value can fluctuate drastically depending on the season. As more solar comes online the tight hours shift to later in the day when solar generation output is diminished or not available at all. As a result, over time, the solar firm capacity accreditation is expected to further decrease and battery accreditation changes seasonally as MISO implements its DLOL capacity accreditation methodology. **Table 2-4** below summarizes the approach Wisconsin Electric has taken to account for this concept in its modeling accompanying this application, based on MISO studies.

Table 2-4: Capacity Accreditation

	Solar				Wind				Battery			
	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring
2024	70%	37%	1%	58%	16%	18%	29%	21%	100%	100%	100%	100%
2025	70%	37%	1%	58%	16%	18%	29%	21%	100%	100%	100%	100%
2026	70%	37%	1%	58%	16%	18%	29%	21%	100%	100%	100%	100%
2027	70%	37%	1%	58%	16%	18%	29%	21%	100%	100%	100%	100%
2028*	30%	25%	1%	12%	16%	18%	29%	21%	85%	73%	92%	100%
2029	30%	25%	1%	12%	16%	18%	29%	21%	85%	73%	92%	100%
2030	20%	25%	1%	12%	16%	18%	29%	21%	87%	85%	74%	86%
2031	20%	25%	1%	12%	16%	18%	29%	21%	87%	85%	74%	86%
2032+	20%	25%	1%	12%	16%	18%	29%	21%	89%	96%	56%	72%

**** DLOL estimates applied***

Incorporating the seasonal PRM and capacity accreditation methodology results in four decision points the PLEXOS resource expansion model makes regarding resource adequacy in order to meet the PRM in all seasons over the entire planning horizon. **Table 2-5** below provides an estimate of Wisconsin Electric's capacity position over the next ten years based on its baseline Continued Fleet Change planning future. The capacity positions below only include existing and recently approved facilities.

Table 2-5: Wisconsin Electric Forecasted Capacity Position – By Season

Winter (January)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Peak Demand										
Reserve Requirement (49.4%)										
Total Winter Obligation										
Firm Capacity Resources										
Capacity Position										
Reserve Margin										

Spring (May)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Peak Demand										
Reserve Requirement (40.8%)										
Total Winter Obligation										
Firm Capacity Resources										
Capacity Position										
Reserve Margin										

Summer (July)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Peak Demand										
Reserve Requirement (17.7%)										
Total Winter Obligation										
Firm Capacity Resources										
Capacity Position										
Reserve Margin										

Fall (September)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Peak Demand										
Reserve Requirement (25.2%)										
Total Winter Obligation										

Firm Capacity Resources	[redacted]
Capacity Position	
Reserve Margin	

2.1.5 Consideration of Independent Power Producers ("IPP")

As described in Section 2.1, one of the major components of the need for the Project is to maintain and enhance reliability and resiliency while the Utilities reshape their respective portfolios with a significant increase in intermittent, carbon free resources and substantial new load growth. While Wisconsin Electric considers and evaluates market alternatives, including proposals from IPPs, a purchased power agreement ("PPA") does not provide the level of control ownership does while addressing reliability and resiliency of the utilities' systems.

A PPA is typically entered into when the purchasing entity is not able or willing to take on the operating risks associated with the facility and there is minimal market risk to the overall portfolio at the time the PPA expires. In general, Wisconsin Electric prefers asset ownership in situations where it has experience in operations of a facility or similar facilities, and where there is adequate means to mitigate risks outside its control. Ownership of the facility is generally preferable because it allows Utilities the ability to manage O&M costs and increase the value of the unit in the marketplace. The ability to execute this optimization provides a competitive advantage for the Wisconsin Electric's ratepayers. With the "in house" expertise Wisconsin Electric believes the risks outside its control have been greatly reduced due to the following:

- Significant Experience in the dispatch, operations and maintenance of combustion turbine technology has provided valuable experience in managing dispatch and operations in the market place; and,
- Extensive experience operating and maintaining plant equipment similar to the equipment present at other gas-fired facilities.

2.1.6 Energy Efficiency and Conservation

The energy and demand forecast used to develop the need for this Project is based on historical trends, which includes energy efficiency and conservation. Wisconsin Electric's long-range energy and demand forecast already includes cost-effective and technically feasible energy efficiency and conservation. The current levels of energy efficiency and conservation savings are implicitly included in the historical data used to develop Applicant's energy and demand forecast.

2.1.6.1 Existing Services Available to Customers

Wisconsin Electric has Commission-approved demand response programs that provide a credit to participating customers based on the cost of new entry ("CONE")[9]. Based on recent market conditions and the expectation that MISO will call on demand response resources (e.g., curtailable and interruptible load) in the future, many of these customers have indicated they are reviewing whether they will continue to take service under the associated demand response rates.

Wisconsin Electric has a Commission-approved[10] Voluntary Design Assistance Program, which allows for Focus on Energy to deliver the Focus on Energy Design Assistance Program to selected Wisconsin Electric customers who would qualify following the exhaustion of the Focus on Energy program budget.

In addition, Wisconsin Electric has a Commission-approved[11] Residential Assistance Program, which identifies low-income homeowners who would likely benefit from the Focus on Energy program, provides an energy assessment, and then pays for the cost of the recommended improvements that are not covered by then-available Focus on Energy incentives. The Commission has also approved an expansion of this program to pilot similar activities for a small number of multi-family rental properties and non-profit entities, to help determine how such programs may work successfully for these customer types.

2.1.6.2 Energy Efficiency and Demand Response Needed to Reduce, Alter, or Eliminate Need for Project

With regards to energy conservation and efficiency, Chapter 196 of the Wisconsin Statutes sets forth laws that public utilities must follow to receive construction approval for new electric generating facilities.

- Wis. Stat. § 196.025 (1) (b) states: In a proceeding in which an investor-owned electric public utility is a party, the commission shall not order or otherwise impose energy conservation or efficiency requirements on the investor-owned electric public utility if the commission has fulfilled all of its duties under § 196.374 and the investor-owned electric public utility has satisfied the requirements of § 196.374 for the year prior to commencement of the proceeding as specified in § 196.374 (8).

- Wis. Stat. § 196.374 (3) (b) 2. states: The commission shall require each energy utility to spend 1.2 percent of its annual operating revenues derived from retail sales to fund the utility's

[9] The interruptible credit is adjusted from CONE to account for a lack of coincidence between the customer's peak demand and the Company's system peak.
[10] PSCW Docket No. 5-EE-2023 and 5-EE-2025
[11] PSCW Docket No. 5-EE-2024

programs under sub. (2) (b) 1., the utility's ordered programs, the utility's share of the statewide energy efficiency and renewable resource programs under sub. (2) (a) 1., and the utility's share, as determined by the commission under subd. 4., of the costs incurred by the commission in administering this section.

- Wis. Stat. § 196.374 (8) states: An energy utility that spends the full amount required under sub. (3) (b) 2. in any year is considered to have satisfied its requirements under this section for that year.

Absent a change in Wisconsin law, Wisconsin Electric has assumed their annual funding of energy conservation and energy efficiency programs through their contributions to Wisconsin's Focus on Energy programs as specified under Wis. Stats. § 196.025 and § 196.374 satisfies their statutory obligations.

With regards to demand response, as mentioned in Section 2.1.6.1, with the expectation that MISO will call upon demand response more often in the future given existing market conditions many existing customers have indicated they are reviewing whether they will continue to take service under the associated demand response rates. Given these conditions, to provide an incentive for customers to participate in such rates going forward, the participation credit would need to be increased to compensate those customers for the increased risk of interruption to their business operations. However, as noted above, these credits are already based on CONE and any increase in those credits could result in costs to non-participating customers that are higher than the cost of the proposed Project – making an expansion of demand response offerings a less economic alternative than the proposed Project.

Notwithstanding the above, Wisconsin Electric developed high-level theoretical cost estimates for additional energy efficiency and demand response alternatives. The cost estimates were developed by analyzing Focus on Energy's Potential Study as well as energy efficiency and demand response data from U.S. Energy Information Administration's ("EIA"), Form EIA-861, Annual Electric Power Industry Report. These alternatives were then included as supply-side alternatives that could be selected as part of the optimal resource plan in the PLEXOS modeling runs, which is further discussed in Section 2.6.1.4.

However, as previously discussed the need of the Project is to meet the capacity and energy needs of significant load growth in Wisconsin Electric's service territory and maintain system reliability and resiliency. Serving this need with speculative increases in energy conservation and energy efficiency programs that are (a) voluntary programs, (b) over which Applicants have no control, and (c) at levels that are orders of magnitude above and beyond energy conservation and energy efficiency levels previously achieved by the Focus on Energy programs to date is inconsistent with current applicable Wisconsin law.

Energy efficiency and demand response are not practical or cost-effective alternatives to the superior attributes the Project provides, as previously discussed, in meeting the magnitude of capacity and energy need.

2.1.6.3 Analysis of Energy Efficiency and Demand Response

Wisconsin Electric is in compliance with and will continue to maintain compliance with all Wisconsin statutes regarding energy efficiency and conservation by utilizing the state administered Focus on Energy program and the current voluntary programs offered, including demand response. However, no amount of energy efficiency or demand response can replicate the overall need for the Project and comparable attributes.

2.1.6.3.1 Definition of Energy Efficiency and Demand Response

The concept of energy efficiency is to use less electricity whenever it is needed. Improvement in energy efficiency is defined as increasing the output per unit of energy used, resulting in energy savings if the output does not change. In contrast, demand response is to use less electricity during hours of peak usage when it matters to the bulk electric system by changing consumption patterns to optimize the usage of energy supply.

2.1.6.3.2 Cost-Effectiveness of Available Options

As supply-side resources that can be selected in the PLEXOS expansion planning model, incremental energy efficiency and demand response may be optimally selected as part of the expansion plan to complement the benefits of the Project. However, as previously stated, incremental energy efficiency and demand response are not feasible alternatives to replace the Project.

2.1.6.3.3 Total Savings Required to Reduce, Alter, or Eliminate Need for Project

As previously stated, incremental energy efficiency and demand response are not feasible alternatives to meet the overall capacity and energy need as well as the key attributes the Project provides, namely reliability and resiliency.

2.1.6.3.4 Ability to Implement

Since incremental energy efficiency and demand response is not a feasible alternative to the Project it is not achievable to implement energy efficiency or demand response for the purpose of avoiding the Project.

2.1.6.4 Energy Efficiency and Demand Response in Expansion Planning Model

As previously mentioned, Wisconsin Electric's PLEXOS capacity expansion model included both energy efficiency and demand response alternatives as supply-side resources that could be selected as part of the expansion plan if they were cost-effective, similar to other supply-side resources identified further in **Volume III Appendix B**.

Incremental energy efficiency modeled as a supply-side resource in PLEXOS was developed by evaluating Focus on Energy's Potential Study. Utilizing the annual incremental funding costs, cumulative incremental potential energy efficiency MWhs for the "Plus 100%" funding levels Wisconsin Electric was able to develop an equivalent supply-side resource with cost and performance characteristics, which is included in **Volume III Appendix B**. Based on the potential study, incremental energy efficiency was modeled as a 14.5 MW supply-side resource with an equivalent 52 percent capacity factor based on Wisconsin Electric's load ratio share of peak demand in Wisconsin.

Incremental demand response modeled as a supply-side resource in PLEXOS was developed by evaluating EIA's Form 861 which identifies demand response actual peak demand savings (MW) and actual program costs by year. Based on this information, incremental demand response was modeled as a 50 MW supply-side resource with capacity only attributes.

The information used for incremental energy efficiency and demand response supply-side resources in the PLEXOS expansion planning model is consistent with what was provided in PSCW Docket 5-BS-258 data request JAK-1.06 (PSC REF No. 445242) and JAK-1.07 (PSC REF No. 445244) as well as Wisconsin Electric's most recent CA filing for the acquisition of High Noon Solar and Battery in PSCW Docket 5-BS-276.

2.2 Alternative Analysis

Wisconsin Electric used Energy Exemplar's PLEXOS market simulation software to evaluate each utility's optimal long-term expansion plan. PLEXOS is a proven power market simulation tool and is a leader in modeling flexibility, efficiency, simulation alternatives and advanced analysis. The model provides the capability to solve the generation capacity expansion simultaneously with commitment and dispatch. PLEXOS accounts for all types of generation including storage resource options while optimizing generation capacity expansion. PLEXOS produces balanced portfolios of conventional, renewable and storage resources.

Due to the significant changes in the MISO resource adequacy construct discussed above, the resource planning process must also change. For many years resource planning consisted of planning for the peak load (typically summer for most utilities) plus a prescribed reserve margin requirement based on the assumption that if a utility has adequate resources in the summer, it will have adequate resources in all months of the year. However, increased penetration of intermittent resources as well as physical operating characteristics of resources (*e.g.*, planned maintenance outages) drove the need for more granularity in the resource adequacy construct to ensure resources are available when needed. While the seasonal construct was just implemented with Planning Year 2023-2024, MISO continues to develop additional, significant changes that it hopes to implement as early as Planning Year 2025-2026. The inability to precisely forecast the impacts of these changes as their final contours are being developed makes the long term resource planning process challenging. To minimize risk to customers, what has become evident is the importance to have a resource plan that has the right mix of resources that allows a utility to serve its own customers every hour of the year without significant reliance on the MISO market. As a result, WEC has developed its GRP to incorporate a balanced mix of resources as a physical hedge against the uncertainty elsewhere in the MISO market by including an adequate amount of local generation resources.

To accomplish this, WEC has developed a resource planning approach that incorporates traditional resource planning based on (1) capacity requirements utilizing a planning reserve margin ("PRM") while also (2) providing a mix of resources that can meet energy needs 24 hours a day, 365 days a year when needed without having to rely on the broader MISO market for energy. This results in a comprehensive alternative analysis that provides capacity assurance and energy assurance. Descriptions of the assumptions, parameters, modeling and economic justification for the Project is located in **Volume III Appendix B**.

2.2.1 Supply Alternatives

As previously mentioned, Wisconsin Electric in the process of reshaping its portfolio as older, less efficient coal units retire while also meeting significant load growth in the I-94 Corridor in southeast Wisconsin. A balanced and appropriate mix of new generation resources are needed in order to provide economic benefits to ratepayers, maintain reliability and meet CO2 emission reduction goals.

A detailed description of the Supply Alternatives considered in the economic evaluation is located in **Volume III Appendix B**.

2.2.2 Proposed Options Justification

The only realistic resources available to replace the older, less efficient fossil generation and serve significant load growth in Wisconsin Electric's service territory are natural gas and renewable/battery technologies. Wisconsin Electric arrived at an optimal mix given resource characteristics and availability in an effort to balance the environmental, economic and market risks in the portfolio used to serve its load while ensuring reliability and resiliency meets the standards the Wisconsin Electric's customers expect. As noted in Section 2.1, there is a need in the portfolio for a critical mass of dispatchable resources to effectively and economically serve load and a combination of simple cycle combustion turbine and RICE technology were the fully dispatchable options that met the magnitude of capacity and energy need that offered the most economic, reliable and resilient source of generation.

2.2.3 Cogeneration Project

At this time, no cogeneration opportunity exists near the Oak Creek location. Wisconsin Electric currently has 281 MW of cogeneration assets, comprised of natural gas and biomass-fired units. Wisconsin Electric will continue to consider reasonably priced cogeneration opportunities that would have economic, environmental, or other benefits for customers.

2.2.4 No-Build Alternative

A no-build alternative is not a viable alternative to The Project. As noted within this application, The Project is an integral component of Wisconsin Electric's GRP that will provide energy, capacity, system support, reliability, and resiliency. The Project complements the intermittent renewable generation within Wisconsin Electric's resource portfolio and provides a physical and financial hedge against high capacity and energy prices within the market, especially during those times when intermittent resources are not producing electricity. A no-build alternative cannot provide these needs and benefits nor does it provide a hedge against market prices. A no-build alternative will expose ratepayers to potentially substantial and unpredictable risks as the MISO region continues to replace traditional generation resources with intermittent resources.

Traditionally, the resource adequacy construct established generation reserve margin requirements based on the summer peak load. This approach assumes that generation resources available in the summer are generally available during the non-summer time periods. Intermittent resources have different capabilities in different seasons and transitioning to MISO's new seasonal resource adequacy construct allows the proper identification and accounting for those different seasonal capabilities. The Project proposed within this application compliments the seasonal variability of intermittent resources and provides the Utilities'

and its ratepayers with more financial certainty than a no-build alternative within a seasonal resource adequacy construct.

2.2.5 Load Reduction

See section 2.1.6 for the discussion on load reduction (conservation and energy efficiency) as an alternative.

2.2.6 Cost-Effectiveness, Technical Feasibility, and Environmental Soundness Analyses

Wisconsin Electric has developed a comprehensive generation reshaping plan over the next 5 years that provides significant savings to ratepayers, is technically feasible, and provides significant environmental benefits. The Project is an integral component of Wisconsin Electric's GRP that will provide system support, reliability and resiliency, and complements new intermittent renewable generation in its portfolio.

Wisconsin Stat. § 196.49(3)(b) states that the Commission may refuse to certify a project only if it appears that the project will do any of the following:

1. Substantially impair the efficiency of the service of the public utility.

2. Provide facilities unreasonably in excess of the probable future requirements.

3. When placed in operation, add to the cost of service without proportionately increasing the value or available quantity of service.

Wisconsin Electric's construction of the Project will have none of these consequences. The Project will not impair the efficiency of the utilities' service. In fact, the Project will enhance energy efficiency by providing support, reliability and resiliency, and complements new intermittent renewable generation in its portfolio. The Project will not provide facilities unreasonably in excess of probable future requirements. Wisconsin Electric needs capacity to meet current and anticipated future customer requirements.

The Project will not add to the cost of service without proportionately increasing the value or available quantity of service. Wisconsin Electric independently evaluated the expected costs of the Project and determined that the Project is a necessary part of the portfolio for dispatchable resources to effectively and economically serve load. The Project provides the capacity and energy need that offered the most economic, reliable and resilient source of generation.

Further, the inclusion of the Project in the Wisconsin Electric's overall GRP meets the energy and capacity needs in accordance with the following energy priorities (Wis. Stat. §§ 1.12(4) and 196.025(1)(ar)).

Wis. Stat. § 196.025 states "To the extent cost-effective, technically feasible and environmentally sound, the Commission shall implement the priorities under s. 1.12(4) in making all energy-related decisions." Wis. Stat. § 1.12(4) establishes the following priorities:

> (4) PRIORITIES. 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 renewable resources.
> (c) Combustible renewable energy resources.
> (d) Nonrenewable combustible energy resources in the order listed:
>
> 1. Natural gas.
> 2. Oil or coal with a sulfur content of less than 1 percent.
> 3. All other carbon-based fuels.

As further described below, Wisconsin Electric believes it has satisfied the energy priorities law.

2.2.6.1 Noncombustible Renewable Energy Resources

The noncombustible renewable technologies included in the analysis consist of Wind and Solar facilities. Although not considered a noncombustible renewable energy resource Wisconsin Electric also include generic Battery Energy Storage System (BESS) units as resource alternatives. Additional detail of the economic analysis can be found in **Volume III Appendix B**.

2.2.6.1.1 Advanced Nuclear Energy

Wisconsin Electric currently has a long term PPA for approximately 1,030 MW of nuclear capacity from the Point Beach nuclear facility. Building a new nuclear facility is not a feasible alternative to the Project given the much higher capital ($9,044/kW) and fixed costs ($106.92/kW-year)[12] and much longer lead time required. Advanced Nuclear models that are expected to be less expensive and more flexible are still undergoing pre-commercial development. Wisconsin Electric will continue to evaluate new nuclear technology as it develops and may include it in future plans but at this time it is not a viable option to meeting the near term need.

[12] U.S. Energy Information Administration's ("EIA") 2023 Annual Energy Outlook, Cost and Performance Characteristics of New Central Station Electricity Generating Technologies. Values expressed in 2022 dollars.

2.2.6.2 Combustible Renewable Energy Resources

Similar to Advanced Nuclear, building a new Biomass facility is not economically viable and is not a feasible alternative to the Project. Utilizing current cost estimates and performance characteristics of new electric generating facilities from EIA's 2023 Annual Energy Outlook, a new biomass unit has a capital cost ($5,329/kW) that is 485 percent higher than an industrial frame combustion turbine ($911/kW)[13]. As a result, Wisconsin Electric did not further consider Biomass as a cost-effective alternative.

2.2.6.3 Nonrenewable Combustible Energy Resources in the following order listed:

2.2.6.3.1 Natural gas

The nonrenewable combustible energy resources included in the alternative analysis include combustion turbines, RICE units, combined cycle units and combined cycle units with carbon capture and sequestration ("CCS"). Additional detail of the economic analysis can be found in **Volume III Appendix B**.

2.2.6.3.2 Oil or coal with sulfur content of less than 1 percent

Oil and coal units with a sulfur content of less than 1 percent were not considered in the analysis.

2.2.6.3.3 All other carbon-based fuels.

Additional carbon-based fuel sources were not considered in the analysis.

2.3 Wholesale Market Competition

To issue a CPCN for new generation facilities, the Commission must find that the facilities "will not have a material adverse impact on competition in the relevant electric wholesale market" Wis. Stat. § 196.491(3)(d)7). The Project will interconnect and operate within the wholesale electricity market administered by MISO. MISO commits and dispatches generation to serve load on an unbiased, least-cost basis through a centrally-dispatched security-constrained energy market. Offers from generation owners and bids from Load Serving Entities within MISO's energy market are closely monitored by an Independent Market Monitor ("IMM") who is responsible for the identification and mitigation of market power abuses. Module D of the MISO Tariff contains the Market Monitoring and Mitigation Measures used by the IMM to provide fair, equitable and non-discriminatory access to the MISO energy market.

[13] Costs expressed in 2022 dollars.

The Market Mitigation Measures provide the means for MISO to mitigate the market effects of any conduct that may distort competitive outcomes in the Markets and Services administered by MISO.

The Project will interconnect to the transmission system owned by ATC. Fair and equitable access to ATC's transmission system is provided through the MISO Tariff and subject to the functional control of MISO. The units will interconnect to ATC's transmission system and operate under the functional supervision of MISO and the IMM through the open-access and energy market provisions of the MISO Tariff. As such, the Project will not have a material adverse impact on competition within the relevant electric wholesale market of MISO.

2.4 Excess Heat or Steam Energy

Not Applicable for this technology.

3.0 PROJECT ENGINEERING

The following sections provide detailed information related to the proposed Facility operations.

3.1 Facilities

The following sections describe the type of power Facility proposed; any proposed additions, expansions, or modifications; expected hours of operation and capacity; physical dimensions; etc.

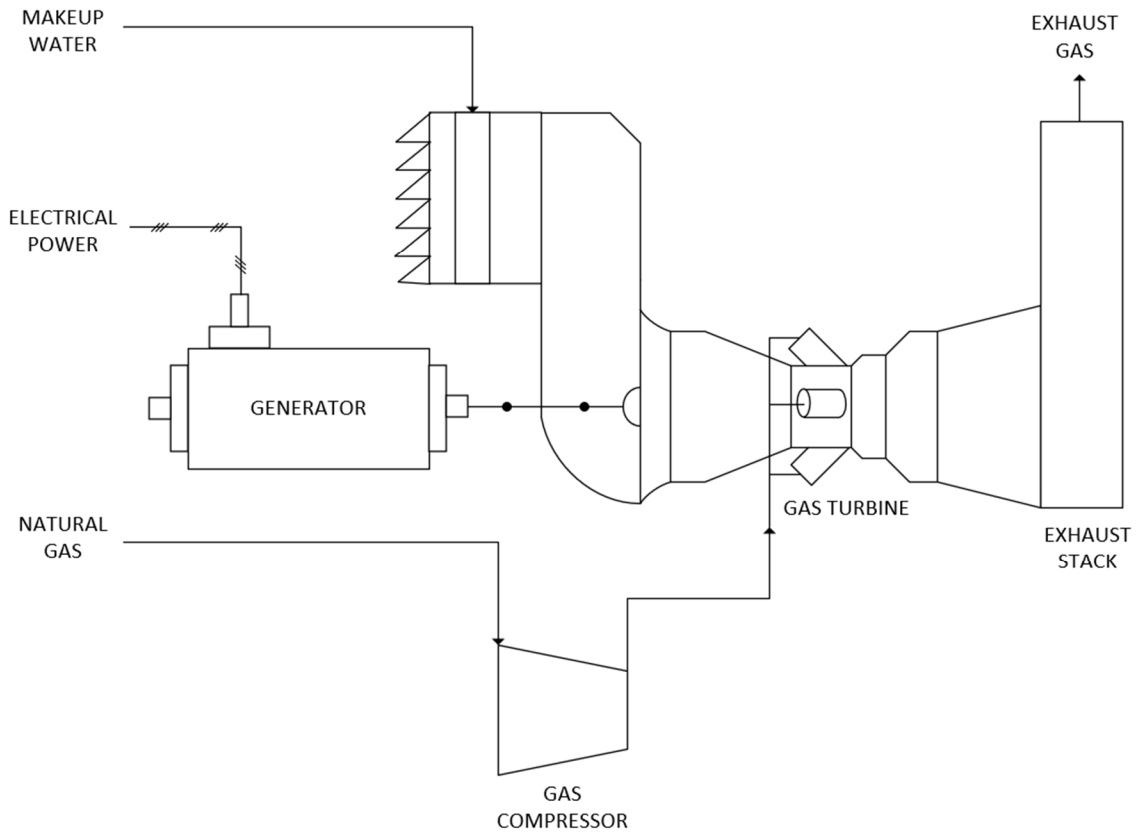
3.1.1 Type of Power Facility Proposed

Details of the proposed Facility are discussed in the following sections.

3.1.1.1 Description of Proposed Technology

The Project will install five (5) new GE 7FA.05 combustion turbine generators (CTGs). Each CTG generator will have a capacity of 220 MW. The Facility is designed for continuous service; however Wisconsin Electric anticipates it will be primarily available at all times of the year for peaking service. **Figure 3-1** provides a schematic of the overall CTG generating process.

Figure 3-1: Overall Facility Process



Source: Burns & McDonnell Engineering, 2024

3.1.1.2 Major Power Generation Equipment

The following sections describe the major equipment that will be used for the Facility.

3.1.1.2.1 Combustion Turbine Generators

Each CTG will generate a nominal capacity of 220 MW consisting of an F-Class combustion turbine driven electric generator fueled by natural gas with capabilities for hydrogen blending. The combustion turbine will consist of combustion chambers and a multi-stage turbine with multi-stage axial compressor operating at 3,600 rpm. Dry Low NOx ("DLN") combustion technology will be used when firing on natural gas. The combustion turbine's drive shaft turns the attached electric generator to produce electricity. The 60 hertz (Hz) generators will be hydrogen cooled.

The combustion turbines will be installed outdoors. Combustion air will pass through an inlet hood with air filters and may include an evaporative cooler to increase air density during warm weather. Turbine bleed heat will be used for inlet air heating/anti-icing. The exhaust gas will pass through a silencer and exhaust stack. The CTG lubrication oil and generator will be cooled by a closed loop system with a mixture of propylene glycol and water with an outdoor air-cooled heat rejection fin-fan cooler.

For starting of the Units, the Facility will include load commutated inverters ("LCI").

3.1.1.2.2 Emergency Generator(s)

The Facility will include natural gas-fired Emergency Generator(s) ("EGs"). The EGs will auto-start and pick up Facility loads if the Facility loses power. The EG specification will include protective relaying typical for a small generator interconnected to a utility power system.

The EGs will be started using an integral battery system, sized and rated for the Facility. EG primary control will be contained within the EG itself.

3.1.1.3 Major Systems

The following sections describe the major systems associated with the Facility.

3.1.1.3.1 Fuel Supply System

The Facility will burn natural gas without the capability to use a backup fuel. New facilities for the natural gas infrastructure will include a pipeline tie-in, on the OCGS, to the Rochester Lateral being constructed under Docket No. 6630-CG-139. The approximate location of the natural gas tie-in is shown on **Volume I Appendix I**.

The fuel gas supply and conditioning equipment will include gas compressors, overpressure protection, coalescing filters to remove any particulate matter and water droplets from the fuel, and dew point heaters; all to maintain the desired fuel requirements of the CTGs. Facility

3.1.1.3.2 CTG Cooling System

CTG cooling will be provided by a closed loop system. A pump and piping system will circulate a propylene glycol/water freeze-resistant mixture through equipment heat exchangers to an external air-cooled heat exchanger. Heat from the closed-loop cooling water system will be rejected to atmosphere by a forced air-cooled tube heat exchanger, commonly referred to as a fin-fan cooler.

3.1.1.3.3 Compressed Air System

A Facility compressed air system will be used for instrument air. The compressed air system is made up of air compressors and receivers to provide service to various control and protection devices. The compressors will control motor starting and capacity output locally based on maintaining adequate system pressure. The compressors will automatically start and stop as needed.

The compressors will be sized based on the total capacity, pressure, and quality requirements for the Facility. The system will be complete with compressor inlet filters, after cooler, pressure dampening, air receiver tanks, controls, automatic condensate traps, piping, and valves.

3.1.1.3.4 Exhaust and Emission Control System

Each CT exhaust system includes a silencer, exhaust stack, and Continuous Emissions Monitoring System (CEMs). Dry Low NOx combustors control NOx emissions and the stack heights will be determined based on air dispersion models.

The CTGs will be provided with provisions for a future CO catalyst. Provisions will include ductwork in the exhaust path which will allow a CO catalyst to be installed, if required, in the future.

3.1.1.3.5 Lubricating Oil System

Each CTG will include an accessory module which houses a lubrication oil reservoir and lubrication oil pumping system. The lubrication oil system circulates oil to the bearings of the CTG for lubrication. The lubrication oil reservoir will be located in a containment area for spill prevention.

3.1.1.3.6 Wash Water System

The combustion turbine wash water system will be used periodically for CT blade wash cleaning. It will include wash water pumps, detergent storage tank, and controls for on-line and off-line compressor blade washing.

3.1.1.3.7 Facility Water Supply System

Potable water will be provided by the existing water source on the OCGS, which is supplied from the City of Oak Creek municipal water system. The Facility's water systems will be designed to minimize water consumption and manage the water quality within the Facility's systems.

The primary water use for the Facility is water supplied to the turbine evaporative coolers. The Facility water systems will be designed with back-flow prevention devices to separate the process users from the potable users.

3.1.1.3.8 Effluent Water Disposal System

The effluent water system will be divided into storm water runoff, sanitary wastewater, and process wastewater.

Storm Water

The storm water runoff management system will be designed to meet all applicable federal, state, and local guidelines and requirements, the specific details of which will be finalized during detailed design.

Sanitary Wastewater

Existing bathrooms, showers, and other employee areas may be repurposed in the existing admin building.

Process Wastewater

Each CTG will include a water wash drain tank to collect wastewater from the CTG. The water wash drain tanks will be double walled and leak-monitored underground storage tanks. The contents of the tanks will be periodically emptied and disposed of using existing onsite treatment systems or hauled offsite for treatment.

Oil containments and CT process drains will be drained to an oily-water separator, consisting of a double-walled, leak-monitored underground storage tank. The Facility will include two oil-water separators. Oil water separator clean effluent will be discharged to onsite stormwater management facilities. Oil/waste will be periodically emptied and hauled offsite.

3.1.1.3.9 Fire Protection and Detection System

The design for the Facility's fire protection systems and features is based on the recommendations of the National Fire Protection Association ("NFPA") 850, "Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations," NFPA 37, "Installation and Use of Stationary Combustion Engines and Gas Turbines," NFPA 30, "Flammable and Combustible Liquids Code," and their referenced standards.

The existing private fire water supply system at the OCGS will supply the Facility with firewater for active fire suppression.

Fire department connections will be located at the Facility, including hydrants located throughout the Facility yard at maximum 300-foot spacing per the recommendations of NFPA 850. Portable fire extinguishers will be provided throughout the Facility in accordance with NFPA 10.

3.1.2 Proposed Additions, Possible Expansions, or Modifications

No proposed additions or future expansions of the Facility are planned at this time.

3.1.3 Expected Hours of Operation and Capacity

The Facility will be available to operate at any time that it is not in a planned or forced outage for maintenance, including both night and day on weekdays, weekends, and holidays. Several factors affect when the Facility operates, including overall system power demand, system power prices, natural gas pricing, temporary transmission constraints, outages of other units, etc. Since these factors vary, operation of the Facility will vary. Typical system demand is highest during the week when all industry is in operation and is highest in the hot summer and cold winter (especially early morning and early evening). Demand during other periods will be high enough to necessitate operation as well, especially during outages of other power generation facilities or when the energy sources for renewable energy production facilities is not available (sun is not shining or wind is not blowing). See Section 1.1.7 for estimated capacity factors for the Facility.

3.1.4 Facilities' Physical Dimensions

The physical dimensions of the Sites and anticipated appearance are provided in drawings and photo simulations in **Volume I Appendix B (Site Arrangements)**.

3.1.4.1 Scale Drawings and Simulations

See **Volume I Appendix B (Site Arrangements)** for detailed scale drawings of proposed Project facilities for each Site.

3.1.4.2 Photo Simulations

See **Volume I Appendix Z** for photo simulations of proposed Project facilities for the Sites.

3.1.5 Operating Characteristics

The following sections describe proposed operating characteristics for the Facility. These characteristics include heat rate, water balance, availability, and maintenance.

3.1.5.1 Heat Rate

Table 3-1 provides the estimated heat rate for the General Electric 7FA.05 CT generators considered for the Facility when firing natural gas based on the design average ambient conditions (59°F, 60% RH).

Table 3-1: Heat Rates

Operating Mode at Annual Average Ambient Conditions	Gross Facility Heat Rate HHV[1] (Btu/kWh[2])	Gross Output (MW)
Half Load (Facility operating 3 units)	9,830	660
Full Load (Facility operating 5 units)	9,830	1,100

[1] Higher heating value – HHV
[2] British thermal units per kilowatt hour – Btu/kWh

3.1.5.2 Equivalent Availability and Capacity Factors

Based upon historical operation obtained from existing CT generating stations in the USA, the Equivalent Availability Factor for F-class CT facilities operating in simple cycle is approximately 88.9 percent with approximately 1.98 percent Equivalent Forced Outage Factor and approximately 3.15 percent Equivalent Un-forced Outage Factor. This reflects operation of the facilities referenced above reporting to Generation Availability Data System (GADS) in the year 2023.

See Section 1.1.7 for estimated capacity factors for the Facility.

3.1.5.3 Auxiliary Power Usage

The estimated auxiliary power for the General Electric 7FA.05 CT generators considered for the Facility when firing natural gas is approximately 1,250 kW per Unit, based on the design average ambient conditions. Auxiliary loads when firing natural gas include: fuel heaters, cooling water pumps and fans, lube oil pumps, heating ventilation and air conditioning (HVAC) equipment, battery charges, air compressors, and miscellaneous electrical panels.

3.1.6 Heat Balances

Not applicable to the proposed simple cycle CTG technology.

3.1.7 Black Start Capability

The Facility will not be designed as a MISO black start asset.

3.2 Fuel Supply

The following sections describe fuel sources, availability, heating value, and delivery systems.

3.2.1 Types of Proposed Primary and Backup Fuels

The Facility will burn natural gas without the capability to use a backup fuel. New facilities for the natural gas infrastructure will include up to a 24-inch diameter pipeline from the Rochester Lateral metering station, to be installed at the OCGS, to the combustion turbine units. Wisconsin Electric Gas Operations (WE-GO) owns the natural gas transmission pipeline that will supply fuel to the OCGS, which will also supply natural gas to the Facility.

3.2.2 Fuel Source and Availability

Natural gas for the Facility will flow from the Rochester Lateral to the Oak Creek Combustion Turbine Plant. WE-GO will provide the commodity and delivery service through its natural gas distribution tariff.

3.2.3 Potential Fuel Heating Value

Natural gas delivered to the Facility will be pipeline-quality gas which is regulated by the WE-GO tariff, section 6.13. The tariff contains heating value and chemical make-up standards that the natural gas must meet. For example, the following specifications can be found in the above referenced tariff:

- Heating value not above 1,200 Btu, nor less than 967 Btu, per cubic foot of natural gas
- The natural gas cannot contain more than 20 grains of total sulfur per 100 cubic feet.
- The natural gas cannot contain more that 2 percent CO2 by volume.

3.2.4 Fuel Transport and Delivery System

New facilities for the natural gas infrastructure will include a 24-inch diameter pipeline from the Rochester Lateral metering station, to be installed at the OCGS, to the combustion turbine units.

3.2.5 Coal

No coal will be used by the Facility.

3.2.6 Natural Gas

The following sections provide further details of the natural gas to be supplied for the Facility.

3.2.6.1 Pipeline Supplier

The pipeline supplier to the OCGS is WE-GO.

3.2.6.2 Fuel Supply

The following is a discussion of the fuel supply in terms of firm, secondary firm, and interruptible capacity.

3.2.6.2.1 Firm

Natural gas for the Facility will be supplied by the WE-GO gas utility company. WE-GO holds firm pipeline capacity to meet the peak day requirement for its firm sales customers. The Facility will have a target firm supply of approximately 240,000 MMBtu/day. This level of firm capacity provides enough fuel for greater than 20 hours/day of full load operation.

Firm capacity at this level is not currently available from WE-GO at this location, however WE-GO is in the process of seeking approval on three projects that will provide firm fuel to this site; the Rochester Lateral Project (RLP), ANR 2027 Capacity Expansion, and the proposed Oak Creek LNG facility (Application to be filed with the PSCW in April 2024).

3.2.6.2.2 Secondary Firm

No secondary firm is currently secured for the Facility.

3.2.6.2.3 Interruptible

Interruptible pipeline capacity will be utilized when firm service is not available.

3.2.6.3 Natural Gas Pipeline Characteristics

The Facility is connected to the WE-GO high-pressure distribution system at the site. This system is supplied by the ANR, Guardian, and Northern Natural Gas interstate pipeline networks.

3.2.6.4 Delivery Vehicles

No vehicles will be used to deliver natural gas to the Facility.

3.2.6.5 Onsite Fuel Handling

Fuel handling for the Facility will include a new fuel gas compression area, filter/coalescers, regulating valves and associated valves and piping as well as gas dew point water bath heaters.

3.2.6.6 Interconnections With Existing Natural Gas Piping Infrastructure

Not applicable.

3.2.6.7 Communications with Natural Gas Pipeline Operators

Not applicable.

3.2.7 Biomass

No biomass will be used by the Facility.

3.2.8 Fuel Storage

Natural gas storage will not be included in the Facility. However, natural gas storage exists at the OCGS and additional storage will be proposed in a separate application to be filed with the PSCW in April 2024. This storage will deliver to the Local Distribution Company's (LDC) Rochester Lateral pipeline.

3.2.9 Fuel Quantity

The maximum fuel heat input for the proposed Facility is approximately 10,890 million British thermal units per hour (MMBtu/h) (HHV). This equates to a usage of approximately 245 million standard cubic feet per day assuming a heating value for natural gas of 1,060 Btu/SCF (HHV).

3.2.9.1 Minimum Load Operation

Minimum load operation is approximately 1,284 MMBtu/hr (HHV) for one (1) unit operating at 50% load.

3.2.9.2 Half Load Operation

Half load operation for the facility is approximately 6,515 MMBtu/hr with three units operating at 100% load.

3.2.9.3 Rated Load Operation

Rated load operation for the facility is approximately 10,890 MMBtu/hr for five units operating at 100% load.

3.2.9.4 Maximum Capacity Operation

Maximum capacity operation for the facility is approximately 10,890 MMBtu/hr for five units operating at 100% load.

3.3 Water – Supply, Storage, Use, Discharge

The following sections describe water supply, storage, use, and discharge.

3.3.1 Supply

Service water and domestic use water will be provided by the existing water source on the OCGS, which is the City of Oak Creek municipal potable water supply system. The primary service water use for the Facility will include water supplied to the turbine evaporative coolers. Demineralized water will be trucked from the existing facility for periodic spray washes of the compressor side of the turbine. The Facility water systems will be designed to maximize water reuse and recycling and minimize water consumption within the Facility systems.

3.3.1.1 Water Supply Sources

For both Sites, service water and domestic use water needs will be met by the existing water source on the OCGS, which is the City of Oak Creek municipal potable water supply system.

3.3.1.2 Water Supply Pipelines

A water pipeline, approximately 6” in diameter, to the Facility will be constructed from the existing potable water source located immediately south of the Proposed Site.

3.3.1.3 Low-Capacity Wells

No low-capacity wells will be used for the Facility.

3.3.1.4 High-Capacity Wells

No high-capacity wells will be used for the Facility.

3.3.2 Storage

No new water storage will be added for the Facility. The existing fire water storage tank and pumps will be used to provide the Facility with fire water.

3.3.3 Consumptive Use

The primary service water use for the Facility will include water supplied to the turbine evaporative coolers. Demineralized water will be trucked from the existing facility for periodic spray washes of the compressor side of the turbine. The Facility water systems will be designed to maximize water reuse and recycling and minimize water consumption within the Facility systems.

Process drains from the CTGs will be collected in oil-water separators. Clean effluent from the oil-water separators will be discharged to the storm water management facilities and the oil/waste collected from the oil-water separators will be periodically emptied and hauled for disposal offsite.

Each CTG will include a water wash drain tank to collect wastewater from the CTG. The water wash drain tanks will be double walled and leak-monitored underground storage tanks. The contents of the tanks will be periodically emptied and hauled offsite for treatment.

3.3.3.1 Water Balances for Operating Modes

See **Volume I Appendix AA** for the water mass balance diagram for a typical operating scenario.

3.3.3.2 Alternatives for Reduced Water Consumption in Cooling Towers

Cooling towers are not required for the operation of CTGs. CTG cooling will be provided by a closed loop system. The system circulates coolant through the turbine and air-cooled heat exchanger. The closed loop cooling system has a minimal consumptive use as shown in the Water Balance.

3.3.3.3 Operational Mode Flows

When inlet evaporative cooling is in service, variations in Combustion Turbine load, and ambient temperature and humidity impacts evaporative cooler water usage. Additionally, it's anticipated that the evaporative cooler is only used during the warm weather (summer) months.

Service water usage is periodic, varying from zero to the maximum value depending on plant maintenance requirements.

3.3.3.4 Water Balance for Ash Handling

No coal or biomass will be used by the Facility. As such, no water balance for ash handling will be required, and there will be no WPDES requirement resulting from ash-handling water discharges.

3.3.4 Wastewater Discharge

Process wastewater used for the Facility will include water wash drain tanks to collect wash water from the CTGs and oil water separators to collect wastewater from oil containment areas and evaporative cooler blowdown. The water wash drain tanks and oil water separators will be double walled and leak-monitored underground storage tanks. Water wash drain tank will be periodically emptied and disposed of using existing onsite treatment systems or hauled offsite for treatment. Oil water separator clean effluent will be discharged to new stormwater management facilities. Oil/waste from the oil water separators will be periodically emptied and hauled offsite for treatment. No new sanitary wastewater systems are anticipated to be required as the existing bathrooms, showers, and other employee areas are anticipated to be repurposed in the existing admin building. It is anticipated that the Facility will require modification of the existing WPDES permit or may need to obtain a separate permit for operation due to the existing

onsite treatment system discharging to surface waters. See **Volume I Appendix AA** for water mass balance diagrams.

3.3.4.1 Wastewater Discharge Outfall Points

The Facility will not discharge into a lake, river, or other surface water directly. Process wash water from water wash drains will be periodically emptied and disposed of using existing onsite treatment systems or hauled offsite for treatment. Oil water separator clean effluent will be discharged to new stormwater management facilities. Oil/waste from the oil water separator will be periodically emptied and hauled offsite for treatment. No new sanitary wastewater systems are anticipated to be required as the existing bathrooms, showers, and other employee areas are anticipated to be repurposed in the existing admin building.

3.3.4.2 Wastewater Collection Points and Pathways/Pipelines

Process wastewater will be stored onsite in underground storage tanks and disposed of using existing onsite wastewater treatment systems or hauled offsite for treatment, as needed. No new sanitary wastewater systems are anticipated to be required as the existing bathrooms, showers, and other employee areas are anticipated to be repurposed in the existing admin building. See Sections 5.10.3 as well as **Volume I Appendix AA (Water Mass Balances)**.

3.3.4.3 Water/Oil Separation Points

The CT generator step up transformers, auxiliary transformers, and other transformers containing large volumes of oil as well as the CT lube oil skid will be provided with local containment. Containment drains will be installed at each containment and will drain to the oil-water separators for treatment.

3.3.4.4 Facilities Required by WPDES Permit

It is anticipated that the Facility will require modification of the existing WPDES permit or may need to obtain a separate permit for operation. A WPDES permit is required when wastewaters from the Facility are discharged to the existing onsite treatment system or are otherwise conveyed to surface waters of the State.

3.4 Steam

The Facility will not produce steam.

3.5 Air Pollution Emissions Control Equipment

The Project will not require a major source construction permit under the PSD program because potential emission increases are projected to not exceed PSD significant emissions thresholds for regulated pollutants.

3.5.1 Pollution Control Equipment

The CTGs will utilize dry low NOx combustors to minimize NOx emissions. No other air pollution control equipment is required.

3.5.1.1.1 Oxidation Catalyst Provisions

An oxidation catalyst system to control CO, VOCs, and hazardous air pollutants will not be required for the Facility. However, provisions will be provided for the future installation of a CO catalyst including ductwork in the CT exhaust path.

3.5.2 Integration of Pollution Control Equipment

See **Volume I Appendix B (Site Arrangements)** for locations of oxidation catalyst provisions.

3.5.3 Auxiliary Power Requirements for Pollution Control Equipment

Auxiliary power is required for the CTG to operate. Loss of auxiliary power would result in CTG shutdown.

3.6 Solid, Oil, or Hazardous Wastes, including Ash

The Facility will not generate an ash byproduct because it will be fueled by only natural gas. No other solid wastes will be generated by the Facility during the production of electricity. Solid wastes produced during the Project will only occur from construction debris, wastes produced by construction workers, and wastes produced by employees onsite during operation of the Facility. These wastes will be collected in trash containers throughout the Project site and hauled to a local landfill.

The following sections discuss the hazardous chemicals and waste products for the Project.

3.6.1 Hazardous Chemicals

Table 3-2 and **Table 3-3** provide chemicals needed during construction, pre-operational cleaning, and for regular operations and maintenance once the Facility is in-service.

Table 3-2: Typical Chemicals Stored During Construction

Product	Storage Method
Chemicals utilized in construction and pre-operational cleaning of piping and equipment:	
Oxygen	
Surfactant	
Corrosion inhibitor	
Paint	
Solvents and cleaners	
Concrete curing compound	
Fuel oil and gasoline	Stored in separate tanks onsite
Glycol	Stored in tank onsite
Chlorine	Stored in containers onsite
Lube oil	Stored in reservoir and/or tanks and drums onsite
Hydraulic oil	Stored in reservoir and/or tanks and drums onsite

Table 3-3: Typical Chemicals Stored for Operation

Product	Use
Glycol	Anti-freeze chemical used in closed loop cooling
Lube oil	Turbine lubrication

The Project will have a construction superintendent responsible for oil spill containment and cleanup. The construction superintendent will report spills and supervise cleanup and disposal of any contaminated soil and spill cleanup materials for any significant volume (defined as 55 gallons or more) of chemicals such as lubricants, fuel, grease, or other oil. Diesel and gasoline fuel will be temporarily stored at the Project site during construction in aboveground tanks. Preventative measures will be implemented during re-fueling or transfer of these fuels to reduce the risk of spills. Lubricating oils and certain other industrial chemicals required for the Project will be stored in specially designed and covered containment areas. Also, equipment will be kept in good working condition through routinely inspections and service to reduce the risk of leaks of transmission, hydraulic, or brake fluid. Chemical storage areas will be well marked and include eye wash stations, first aid kits, safety showers, hose stations, and spill kits with absorbent pads and/or material.

Larger spills will be removed from the containment area using a vacuum tank truck or will be pumped into a suitable container for cleanup. Contaminated soil and/or absorbent pads or products used to cleanup a spill will be immediately removed, stored, and disposed of in accordance with Wisconsin State regulations. Absorbent pads or other manufactured absorbent products will be used to cleanup minor

spills. These pads and absorbent products will be stored on maintenance trucks and/or in a dedicated area that is readily accessible.

3.6.2 Solid Waste Reuse/Recycling and Disposal Facilities

The Project will generate solid waste during construction and operation in the form of construction debris and employee-generated waste. Wastes are anticipated to be disposed of at a local landfill. Recycling pickup services are anticipated to be provided by a local disposal company.

3.6.3 Coal or Solid Biomass

No coal or solid biomass will be used by the Facility.

3.6.4 Oil/Water Separation

The CT generator step up transformers, auxiliary transformers, and other transformers containing large volumes of oil as well as the CT lube oil skid will be provided with local containment. Containment drains will be installed at each containment and will drain to the oil-water separators for treatment. Oil water separator clean effluent will be discharged to onsite stormwater management facilities. Oil/waste will be periodically emptied and disposed of using the existing onsite treatment systems or hauled offsite.

3.7 Electricity

The following sections describe the step up transformer and the transmission line facilities required for the Project.

3.7.1 Step Up Transformer

The Facility will connect to the existing 138 kV and 345 kV switchyard at the OCGS. Two CTGs will each have a new 19 kV to 138 kV step up transformer that will connect to the existing 138 kV switchyard. Three CTGs will each have a new 19kV to 345 kV step up transformer that will connect to the existing 345 kV switchyard.

All site generation tie line connections are identified on **Volume I Appendix A** and **Volume I Appendix I**.

3.7.2 Transmission Interconnection Study

MISO's Tariff and Business Practices contain provisions to replace an existing generating facility with a new generating facility without the need to request new interconnection service. The replacement generating facility can utilize the Interconnection Service of the existing facility if it is equal to or smaller in MW size, utilizes the same point of interconnection to the transmission system, has no material adverse

impact on the transmission system, and will commence commercial operation within three years of the existing generating facility retirement. Within 180 calendar days of receiving a replacement request, MISO will perform a Replacement Impact Study to determine if the replacement generating facility would have a material adverse impact on the system when compared to the existing facility. In that same period, MISO will also conduct a reliability assessment study to evaluate the "gap period" between the existing facility ceasing operation and commercial operation of the replacement.

Due to the timing of the Oak Creek Units 5 & 6 retirement, MISO's Replacement process prohibits the Applicant from submitting the Replacement Interconnection Request prior to June 1, 2024. The Applicant anticipates the Replacement Interconnection Request will be submitted on or shortly after June 1, 2024. Applicant anticipates there will be no adverse impacts to the transmission system.

3.7.3 Transmission Line Facilities

New generation tie- line poles will be installed to connect the new generation facility to the tie-in locations at the existing 138 kV and 345 kV switchyard.

4.0 PROJECT COSTS

4.1 Capital and Construction Costs

4.1.1 Capital Costs of the Facility

The capital cost estimate for the Project is $1,205,000,000 with the cost breakdown as presented in **Table 4-1** below. This capital cost estimate was developed in 2024 dollars and escalation was applied based on a 2028 commercial operation date. The capital cost estimate includes costs associated with design and construction of the Facility, on-site electric interconnection facilities and, on-site natural gas pipeline facilities. The Project cost estimate does not include Allowance for Funds Used During Construction (AFUDC).[14]

Table 4-1: Capital Cost Estimate

Item	Estimated Cost
EPC cost	$813,000,000
Equipment supplier cost	$361,000,000
Owner's costs	$31,000,000
Total	**$1,205,000,000**

Additionally, the Company requests that it first be required to notify the Commission upon actual project costs exceeding 10% or more of the Total Project Costs, exclusive of AFUDC, as noted in the table above.

4.1.2 Construction Cost of the Facility

The total costs of the Project are estimated to be $1,205,000,000. The approximate breakdown of this cost is as follows: The cost estimate uses an EPC contracting approach with the selected contractor performing engineering, procurement, construction, and startup of the Facility. The cost estimate includes project direct costs, project indirect costs, construction indirect costs, contractor fees, and general and administrative (G&A) expenses to execute the proposed project. Also included in the estimate are owner's costs for development and execution of the Project. Project contingencies, as well as escalation to the actual date of cash expenditures are also included in the Project cost estimate.

[14] Applicant is also requesting as part of this application to earn AFUDC on 100% of the CWIP balance. The AFUDC amount is estimated to be $138.6 million.

4.1.2.1 EPC Costs

The EPC costs include the costs for the procurement of balance of plant equipment, commodities, installation of the major equipment, and materials used within the permanent plant facility. The EPC direct costs also include costs for construction labor and installation subcontracts as required to install the permanent plant facilities. As a basis of the estimate, material takeoffs, balance of plant (BOP) equipment and associated installation requirements, and major equipment and installation requirements were considered. Engineering costs and contractor fees for performing the engineering, procurement, construction, and startup of the proposed project, are based on recent industry trends and current market indicators. These costs include those for EPC contractor project management and G&A fees. Given the current design phase of the Facility, contingencies have been allocated based on comparable market projects, assessment of project-specific risks, and uncertainty related to market effects to key components of the Facility.

4.1.2.2 Equipment Supplier Costs

The equipment supplier costs include the costs for the procurement and delivery of the major plant equipment, which include combustion turbines, generators, ductwork, stacks, expansion joints, generator, and controls system. The costs also include startup support of the supplier's equipment, and technical support personal required to install the equipment.

4.1.2.3 Owner's Costs

Owner's costs included in the capital cost estimate are the costs experienced by the Applicant to develop, manage, and place into service the proposed project that are not otherwise reflected in the EPC estimate. These costs include, but are not limited to Project development, permitting, project management, construction management, and operations personnel during construction, commissioning, training, supply of start-up and commissioning consumables, such as fuel, water, chemicals, site security and communications. They also include an initial stock of spare parts and initial equipment long- term maintenance program fees, control room, lab, and warehouse furniture and furnishings, sales taxes.

4.1.3 Air Pollution Control Costs

No air pollution control equipment external to the combustion turbine is proposed as part of the Project.

4.1.4 Property to be Retired

No property will be retired as part of the Project.

4.1.5 Gross Costs of Alternatives

The Alternate Site location will impact costs for generation tie-lines, onsite gas pipelines and the removal of ash underneath the Alternate Site location. The total cost impact for the Alternate Site locations is $38 million in added cost.

4.2 Project Financing

4.2.1 Terms and Conditions of Any Lease Agreements

The Project will be a rate base asset rather than a leased asset under the lease generation law. There are no leases arrangements requiring approval related to the Project.

4.2.2 Affiliated Interest Approvals Required for Each Unit

Because the American Transmission Company, LLC (ATC) is planning to eliminate and convert the existing 230 kV Points of Interconnection, the Applicant has obtained a FERC waiver granted in ER24-646-000 in order to replace the existing interconnection service on the 138 kV and 345 kV systems. The Applicant does anticipate additional Transmission Owner Interconnection Facilities will be required due to the ATC 230kV conversion project. The Applicant does not anticipate any additional network upgrades will be required. However, if any network upgrades are identified in the Replacement Studies that require PSCW approval, the Applicant expects those facilities to be permitted separately by their respective owners.

Wisconsin Electric will execute a replacement Generator Interconnection Agreement (GIA) with MISO and the transmission owner, ATC. As a replacement GIA, we anticipate no additional interconnection facilities or transmission system network upgrades will be required. If any facilities are required to interconnect the Project, Wisconsin Electric and ATC will seek the necessary affiliated interest approval of the GIA as part of a separate application to the Commission.

4.2.3 Conditions of Wis. Stat. § 196.52(9)(a)3(b) Conditions

Not applicable.

4.2.4 Cost Analysis of Proposed Project Contracts

Not applicable.

4.3 Forecasted Costs

4.3.1 Market Price Forecasts

See **Volume III Appendix B** (Market Prices).

4.3.2 Fuel Prices

See **Volume III Appendix B** (Natural Gas Prices).

4.3.3 Estimate of Annual Production Costs

An estimate of the total production costs, which consists of labor and non-labor O&M, variable costs (consumables), fuel, and an estimate for firm fuel supply, is provided in **Table 4-2**. Generation from the OCGS will vary by day, month and year depending on market factors. However, the estimated annual production costs assume [redacted]. Additional information regarding each category of costs in the table below can be found in **Volume III Appendix B**.

Table 4-2: Estimate of Annual Production Costs

	Estimated Production Costs							Levelized Costs	
	Labor O&M	Non-Labor O&M	Variable Costs	Fuel Costs	Firm Fuel Costs	Total Costs	$/MWh	Total Costs	$/MWh
Year 1	[redacted]								
Year 2									
Year 3									
Year 4									
Year 5									
Year 6									
Year 7									
Year 8									
Year 9									
Year 10									
Year 11									
Year 12									
Year 13									
Year 14									
Year 15									
Year 16									
Year 17									
Year 18									
Year 19									
Year 20									
Year 21									
Year 22									
Year 23									
Year 24									
Year 25									

Year 26
Year 27
Year 28
Year 29
Year 30
NPV

[redacted]

4.3.4 Estimate of Annual Total Costs

An estimate of the total annual costs is provided in **Table 4-3**. The total annual cost estimate is comprised of the production costs identified in **Table 4-2** and the capital revenue requirements for the overall capital cost estimate. The capital revenue requirements include depreciation expenses, income taxes and return on rate base utilizing the current capital structure and rates for Wisconsin Electric.

Table 4-3: Estimate of Annual Total Costs

	Estimated Total Costs				Levelized Costs	
	Production Costs	Capital Recovery	Total Costs	$/MWh	Total Costs	$/MWh
Year 1	[redacted]					
Year 2						
Year 3						
Year 4						
Year 5						
Year 6						
Year 7						
Year 8						
Year 9						
Year 10						
Year 11						
Year 12						
Year 13						
Year 14						
Year 15						
Year 16						
Year 17						
Year 18						
Year 19						
Year 20						
Year 21						
Year 22						
Year 23						
Year 24						

Year 25
Year 26
Year 27
Year 28
Year 29
Year 30
NPV

[redacted]

4.3.5 Useful Life of the Facility

The Facility is designed for a useful life of not less than 30 years.

4.3.6 Comparative Costs of Fuel Alternatives

The alternatives analysis described in Section 2.0 and further detailed in **Volume III Appendix B** describes the full list of planning alternatives considered in the analysis.

4.3.7 Operation and Reliability of Service

Operation and reliability of any generating facility is extremely important, but can differ based on technology. As described in Section 2.0, CTGs will provide superior operational flexibility, efficiency, and reliability to the bulk power system. CTG technology is not new to WEC. Currently, WEC owns and operates the Port Washington Generating Station in Port Washington, Wisconsin, on the shore of Lake Michigan and the Fox Energy Center in Wrightstown, Wisconsin.

4.4 Transmission Costs

4.4.1 Electric Transmission Costs

There are no transmission costs associated with this project. The costs for the generation tie-lines are included in this Project.

4.4.2 Underground Construction Costs

No underground electric transmission system modifications are anticipated.

4.4.3 Substation Construction Costs

Modification to the existing ATC switchyard will be provided by ATC. No new substation costs are included in this project.

4.4.4 Transmission System Costs

Applicant does not anticipate any transmission infrastructure modifications will be required as part of the Project.

5.0 NATURAL RESOURCES IN THE PROJECT AREA

The natural resources located in the vicinity of the Project will be discussed in the following sections.

5.1 Mapping Requirement

See **Volume I Appendix B (Site Arrangements)** for maps of the Proposed Sites.

5.2 History of Sites and Grounds

The following sections provide additional information related to previous and current land use and ownership, remediation conducted at each of the Sites, and any planned future remediation.

5.2.1 Previous and Current Land Use and Ownership

In 1950, WEPCO purchased a 368 acre tract of land along Lake Michigan in the unincorporated Town of Oak Creek, about 14 miles south of Milwaukee. Following that purchase WEPCO proceeded to build the first generating unit in May 1951. By 1957 the North OCPP units were completed. Starting in 1959 WEPCO embarked on construction of the four South OCPP units bringing the capacity of this facility to 1,670 megawatts ("MW") by 1967. In the late 1980's the North OCPP units were retired and the next significant expansion was commenced in June 2005 with the construction of the two unit ERGS facility. The ERGS units, each having a net generating capacity of approximately 634 MW, are located at 10800 South Chicago Road, Oak Creek, Wisconsin. Unit 1 went into service in 2010 and Unit 2 in 2011. The ERGS facilities are operated by WEPCO and are majority-owned by Elm Road Generating Station Supercritical, LLC. MGE and WPPI each have 8.33% part-ownership of ERGS. The four OCPP units, having a combined net generating capacity of 1,135, MW are fully owned and operated by WEPCO.

5.2.2 Remediation

According to the WDNR's Bureau for Remediation and Redevelopment Tracking System, reports 11 sites at or around the OCPP facilities. Historically, these reports have included leaking underground storage tanks and spills. Remedial activities for these historic events, including spill cleanup and/or soil excavation and transportation to a landfill if needed, has been fully completed as indicated by the closed or historic status of the activity in the WDNR tracking system.

5.2.3 Future Remediation

According to the WDNR's Bureau for Remediation and Redevelopment Tracking System and to the best of Wisconsin Electric's knowledge, there is no contamination that would require remediation on the OCGS site.

5.3 Construction Areas

The following sections describe the proposed construction areas for the Project, including details concerning laydown, material storage, and parking areas, as well as post-construction site restoration.

5.3.1 Laydown Areas and Material Storage Areas

The construction area and laydown site arrangement are shown in **Volume I Appendix B (Site Arrangements)** for each Site. The drawings show the following:

- Access for construction workforce, material deliveries, and construction equipment
- Construction offices
- Laydown areas for material storage and staging
- Construction entrance turnstile with controlled electronic badge access for entry into the Facility site

5.3.2 Construction Parking Areas

Construction parking areas are shown in **Volume I Appendix B (Site Arrangements)** for each of the Sites.

5.3.3 Expected Use Post-Construction

Construction areas, including laydown, material storage, and parking areas, will be restored to current (pre-construction) use.

5.3.4 Post-Construction Restoration

Temporary construction facilities will be dismantled after construction is complete. These areas will be restored to pre-construction conditions.

5.4 Geology

The following sections describe the geology of the Sites.

5.4.1 Site Geology

The geology of the Sites includes consolidated sedimentary rock deposited as sequences of sandstone, limestone, or dolomite. This makes up the current sedimentary rock aquifer and confining bed. Beneath the consolidated sedimentary rock is Silurian rock.[15]

[15]U.S. Geological Survey. 1992. Ground Water Atlas of the United States. Accessed February 2024 from https://pubs.usgs.gov/ha/730j/report.pdf.

5.4.2 Special Conditions

No unusual geological features or conditions related to site geology are anticipated to require special methods or management during construction.

5.4.3 Impact on Geological Formations

One mine is located on the southeast corner of WEC-owned property. The Proposed and Alternate Sites are approximately 1,300 feet from the identified mine site.

Construction work will be limited to minor earthwork and regrading of the Project site. Heavy construction equipment will be used. Blasting will not be required for Project construction. Therefore, based on the limited amount of excavation required and the type of substrate at the site, construction of the Facility is not expected to impact the area's geological formations.

5.5 Topography

Topography of the Sites is discussed in the following sections.

5.5.1 General Topography for Each Site

The sites are located approximately 13.5 miles south of Milwaukee, Wisconsin, on the west side of Lake Michigan in an area that is currently used for electrical generation. Both sites are generally flat with an elevation of approximately 706 feet above sea level. As shown on the USGS topographic map data, both sites gradually slope to the east towards Lake Michigan.

5.5.2 Changes to Site Topography

Construction impacts to the topography will be minimal. Both Sites are generally at the expected design finish grade and significant impacts to the overall site topography are not expected. Onsite earthwork will be balanced, to the extent practicable, with no significant imported general fill required nor any significant excess excavated material to be permanently stored onsite or exported.

5.6 Soils

According to the U.S. Department of Agriculture (USDA) NRCS Web Soil Survey (http://websoilsurvey.nrcs.usda.gov), three soil types are mapped within the Sites (**Volume I Appendix E**). The three soil types are Ozaukee silt loam, Blount silt loam, and marsh series.

5.6.1 Soil Types

The following information for each soil type was obtained from the USDA NRCS Web Soil Survey. More detailed soils information for each soil type is available from the NRCS[16].

5.6.1.1 Ozaukee silt loam

The Ozaukee silt loam series consist of well drained soils that are moderately deep on slopes that range from 0 to 35 percent.[17] Approximately 85 percent of the soil present at the OCGS consists of Ozaukee silt loam, which includes almost all of the Proposed and Alternate Site.

5.6.1.2 Blount Silt Loam, 1 to 3 percent

The Blount series consists of very deep, somewhat poorly drained soils that are moderately deep or deep to dense till. Blount soils formed in till and are on wave-worked till plains, till plains, and near-shore zones (relict). Slope ranges from 0 to 6 percent.[18]

5.6.1.3 Marsh Series

The Marsh series consists of moderately deep, well drained soils on uplands. The soil formed in colluvium or residuum from interbedded sandy limestone, siltstone, and shale. These soils are on gently sloping to steep, highly dissected back slopes, shoulders, and narrow on ridgecrests. Slopes range from 2 to 45 percent.[19]

5.6.2 Anticipated Soil Impacts

Storm water runoff from construction activities will drain into new and existing storm water management systems for the OCGS. To avoid and minimize soil erosion and sediment transport, erosion and sediment control best management practices (BMPs) will be used in accordance with the WDNR's Storm Water Construction and Post-Construction Technical Standards and requirements of the anticipated WDNR Construction Storm water permit. Further details will be provided in the Erosion Control and Storm Water Management Plan to be submitted to the WDNR for approval. Any excess soil accumulated during construction of the Facility foundations will be used onsite to the extent practicable. Onsite earthwork is designed to be balanced to avoid the need to haul soil offsite.

[16] https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/tools/
[17] https://soilseries.sc.egov.usda.gov/OSD_Docs/O/OZAUKEE.html
[18] https://soilseries.sc.egov.usda.gov/OSD_Docs/B/BLOUNT.html
[19] https://soilseries.sc.egov.usda.gov/OSD_Docs/M/MARSH.html#:~:text=The%20Marsh%20series%20consists%20of,from%202%20to%2045%20percent.

5.6.3 Soil Mitigation

BMPs for erosion and sediment control will be used to minimize impacts to soil and potential erosion. Topsoil will be kept separate from subsoils and will be stockpiled separately from subsoils. Topsoil will be used after construction to resurface areas disturbed by construction activities. Compacted soils will be disced prior to final stabilization. The WDNR Storm Water Construction and Post-Construction Technical Standards will be used during construction and operation. A stormwater discharge permit application will be submitted to the WDNR, which will include details regarding soils management.

5.7 Archaeological Historic Resources

The following sections discuss the historic resources within 0.5 mile of the Project boundary.

5.7.1 Archaeological & Historic Sites within Project's APE Mapping

See **Volume III Appendix C** for maps depicting archaeological sites within the Project's area of potential effect (CONFIDENTIAL).

A map depicting the location of historic buildings in close proximity to the Study Area is included as Figure 3-1 in the Cultural Resources Report (**Volume III Appendix C - CONFIDENTIAL).**

There are no burial sites or historic districts within close proximity to the Study Area.

5.7.2 Archaeological & Historical Resources within Project's APE Report

The University of Wisconsin-Milwaukee Cultural Resource Management (UWM-CRM) conducted cultural resource investigations for the Project. The methods and techniques used during the investigations conformed to the standards and guidelines set forth by the National Park Service in the *Secretary of Interior Standards and Guidelines for Archeology and Historic Preservation* (1983), by the Wisconsin Archaeological Survey in the *Guide for Public Archaeology in Wisconsin* (2012), and by the Wisconsin Historical Society in the *Architecture/ History Survey Manual*.

UWM-CRM performed a comprehensive archival and literature search to identify all previously reported archaeological and burial sites within one mile of the Study Area. Archival and literature research entailed a comprehensive review of the data housed at UWM-CRM offices and the Wisconsin Historical Society (WHS). Archives and database systems were searched for site-specific information. The Cultural Resources Report (**Volume III Appendix C - CONFIDENTIAL)** provides detail on the various sources utilized to complete this comprehensive review. Based on the archival and field research, there are 12 archeological sites within one mile of the Study Area and 12 archaeological sites coincident with the Study Area. There are no burial sites identified as coincident with the Study Area.

Previously recorded archaeological sites coincident with the Study Area include:

Table 5-1: Archaeological Sites

Smithsonian Number	Site Name	Site Type	Affiliation	Recommendations
47MI0366		Campsite/village	Late Archaic	No further work
47MI0513		Lithic Scatter	Unknown Prehistoric, Late Archaic	No further work
47MI0514		Lithic Scatter	Unknown Prehistoric	No further work
47MI0542	Oak Creek Lithic Scatter 1	Lithic Scatter	Unknown Prehistoric	No further work
47RA0147	WEPCO I	Campsite/village	Late Woodland	No further work
47RA0148	WEPCO II	Campsite/village	Middle Archaic, Middle Woodland	No further work
47RA0292		Lithic Scatter	Uknown Prehistoric	No further work
47RA0293		Lithic Scatter	Late Prehistoric	No further work
47RA0294		Lithic Scatter	Uknown Prehistoric	No further work
47RA0295	Seven Mile Road Isolated Find	Isolated Finds	Late Prehistoric	Phase 1 field investigations
47RA0296	MI6	Isolated Finds	Late Archaic	Phase 1 field investigations
47RA0297	Ruemler Lithic Scatter	Lithic Scatter	Archaic	Phase 1 field investigations

Given the scope of the Project and the potential to affect historic resources, such as physical alteration, changes in use, change of physical features within the property's setting or the introduction of visual, atmospheric, or audible elements, the Area of Potential Effect (APE) was defined as the OCGS property and adjacent legal parcels. Within the APE, resources that have been previously surveyed were examined for potential historical significance. UWM-CRM conducted a literature review that included searches of the WHPD and the NRHP. There were no previously surveyed resources within the Study Area recorded in the database. Five previously surveyed resources were identified that were adjacent to or in the immediate vicinity of the Study Area and that had been recorded in WHPD, those include:

Table 5-2: Previously Surveyed Resources

AHI	Name	Address	APE	Comments
149922	Racine Range House - Wisconsin National Guard	8922 Rifle Range Road	Y	No public access
237209	TMER&L Co. - Pipe culvert		N	
237208	TMER&L Co. - Pipe culvert		N	
12464		9049 Douglas Avenue		Not extant
133026		4330 Seven Mile Road		Not extant

Of the five previously surveyed resources adjacent to or in the immediate vicinity of the Study Area, two are non-extant: AHI# 12464 and 133026), two TMERL&L Co. pipe culverts were confirmed to be outside of the APE (AHI# 237209 and 237208) and one property was previously evaluated (AHI# 149922).

The Racine County Line Rifle Range, formerly the Racine Range House of the Wisconsin National Guard (149922), is immediately south of the OCPP. The range was previously evaluated in an intensive survey, *Historical/Architectural Survey Selected Facilities: Wisconsin Army National Guard (2009)*. Based on that evaluation, the range was recommended as not eligible for the NRHP. See **(Volume III Appendix C - CONFIDENTIAL)** for detail related to this evaluation.

5.7.3 Project Effects on Archaeological & Historical Resources

None of the twelve archaeological sites are codified as burial sites; therefore, no further work is required under Wisconsin Statute §157.70. Based on the archival research, nine sites lack the materials and integrity necessary for inclusion in the NRHP. These sites are: 47MI0366, 47MI0513, 47MI0514, 47MI0542, 47RA0147, 47RA0148, 47RA0292, 47RA0293, and 47RA0294. Three of the twelve sites require additional field investigations. Phase I field survey investigations are recommended for 47RA0295, 47RA0296, and 47RA0297 to assess whether significant resources are present that may be affected by the Project. Of these three sites, only one (47RA0295) is coincident with the Project. Phase 1 field investigations for this site will be conducted in spring/summer 2024.

Of the five previously surveyed architecture/history resources adjacent to or in the immediate vicinity of the Study Area, two are non extant: AHI# 12464 and 133026, two TMERL&L Co. pipe culverts were confirmed to be outside of the APE (AHI# 237209 and 237208) and one property was previously evaluated (AHI# 149922) and recommended as not eligible for the NRHP. Consequently, the Project will not impact any historic properties and no further action is necessary.

5.7.4 Project Mitigation to Preserve Resources

Based on the archival and literature research completed by UWM and subsequent recommendations, the Project will not impact any burial sites and nine of the ten archaeological sites lack the materials and integrity necessary for inclusion in the NRHP. Therefore, the Project will not impact archaeological or cultural resources and mitigation is not necessary. One archaeological site requires further field investigations and a Phase 1 field investigation will be complete in the spring/summer 2024. If the results of the Phase 1 survey indicate that the site contains significant resources that may be affected by the

Project, then the Applicant will mitigate as necessary. Mitigation may include, but is not limited to, avoidance.

The Project will not impact historic properties and architecture/history mitigation is also not necessary.

5.7.5 Burial Site Disturbance Authorization/Permit

The Project will not impact any burial sites, therefore a burial site disturbance authorization/permit from WHS is not needed.

5.7.6 Unanticipated Archaeological Discoveries Plan

The Applicant will follow their Unanticipated Archaeological Discoveries Plan (**Volume II, Appendix D**) if any archeological or historic artifacts are found during construction.

5.7.7 Wisconsin Tribal Historic Preservation Officers Correspondence

Notification letters were sent to Tribal Historic Preservation Officers (THPO) for the 12 tribes that are resident in the state of Wisconsin on April 2, 2024. The notification letter along with the THPO mailing list are included in **Volume II, Appendix D**.

5.8 Existing Vegetative Land Cover, Excluding Agricultural Uses

The following sections describe the existing vegetative land cover near the Sites.

5.8.1 Existing Vegetation Communities

5.8.1.1 Proposed Site

The Proposed Site would locate the CTGs west of ERGS and east of the existing Site Bulk Material Handling Admin & Warehouse building. This area is primarily turf grass, with grassland dominated by Kentucky bluegrass (*Poa pratensis)*, meadow false rye grass (*Schedonorus pratensis)*, and Canada goldenrod (*Solidago canadensis*) and wetland communities along with a detention pond. The Proposed Site was previously disturbed during construction of ERGS and the Site Bulk Material Handling Admin & Warehouse facility. During field investigations completed in September and October 2023 by Oneida Total Integrated Enterprises (OTIE), five wetlands were identified within the Proposed Site. Wetland communities observed within permanent impact area are fresh wet meadows dominated by reed canary grass (*Phalaris arundinacea),* common reed grass *(Phragmites australis),* common reed grass (*Phragmites australis*) and red top (*Agrostis gigantea*) and a stormwater detention pond.

5.8.1.2 Alternate Site

The Alternate Site would locate the CTGs east of the existing Oak Creek Liquefied Natural Gas ("LNG") Plant in an area that is developed with an existing ground cover as asphalt. This site was previously used as a laydown area during construction of ERGS and various other construction projects at the OCGS. No wetlands were identified within the Alternate Site and there are grassland communities surrounding the asphalt area.

5.8.1.3 Laydown Yard and Other Disturbance Areas

The proposed laydown areas are delineated in **Volume I Appendix B (Site Arrangements)** and will utilize both developed and undeveloped areas at the OCGS. For the Proposed Site, the asphalt area will be utilized as one of the laydown areas. The trailer area for both the Proposed and Alternate Site will utilize a grassland community dominated by smooth brome (*Bromus inermis)*, Kentucky bluegrass and false meadow rye grass and is located north of the existing Site Bulk Material Handling building. For the Alternate Site, one of the laydown areas will utilize the turf grass area surrounding the Site Bulk Material Handling Admin & Warehouse building. Both the Proposed and Alternate Sites will utilize a laydown area west of the railroad tracks dominated by Kentucky bluegrass, false meadow rye grass, and smooth brome. During field investigations completed in February 2024 by OTIE, several wetlands were identified in this area. Wetland communities observed within the temporary impact area are fresh wet meadows dominated by reed canary grass, common reed grass and red top and fresh wet meadow/shrub swamp dominated by reed canary grass, Kentucky bluegrass, and eastern cottonwood (*Populus deltoides).*

The Proposed and Alternate Sites will utilize an area on the southern parcel on the OCGS. This area has historically been used to dispose of clean fill generated by various projects at the OCGS; it will be used to dispose of clean fill for the Project. Some of the area is bare or exposed soil due to recent addition of clean fill; other areas are currently in grassland community dominated by Kentucky bluegrass, false meadow rye grass, smooth brome, and Canada goldenrod. There was also one wetland observed within the disturbance limits, a fresh wet meadow.

The Proposed and Alternate Sites also utilize a transmission line connection area. Impacts within this area will largely be temporary; however, permanent structures to support overhead transmission will be constructed within. The footprint is generally the same, though slightly more expansive for the Alternate site. The land cover within the transmission line connection area includes developed, forest land, grassland and wetland communities. The grassland communities were dominated by Kentucky bluegrass, false meadow rye grass and smooth brome and the wetland communities identified include fresh wet

meadow, fresh wet meadow/shrub swamp and detention ponds generally dominated by reed canary grass, common reed grass and narrow leaved cattail *(Typha angustifolia*).

5.8.1.4 Natural Communities

One natural community was identified within the Study Area, Southern Mesic Forest. No impacts to this natural community are proposed as part of the Project.

5.8.2 Land Cover Types

A vegetative land cover map was completed for the disturbance areas. These maps were developed using field collected and confirmed data. The map indicates that the Proposed Site is predominately turf grass and developed and the Alternate Site is predominately developed with a small area of grassland. The various other disturbance areas are predominantly developed and grassland (see **Volume I, Appendix F [Land Cover Map]**). See **Tables 5-3** and **5-4** for a full breakdown of impacts by land cover type.

Table 5-3: Land Cover Impacts for Proposed Site

Land Cover Classification	Proposed Site		Laydown		Transmission Connection Area		Trailer Area		Other Disturbance		Total	
	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
Developed	9.00			21.16		11.80		0.02	1.80		10.80	32.98
Turf Grass	19.38					0.88					19.38	0.88
Grassland	0.67			15.40		6.06		2.47	25.34		26.01	23.93
Woodland					0.50						0.50	0.00
Wetland	0.64			0.33		0.77			0.04		0.68	1.10
Total	29.69	0.00	0.00	36.89	0.50	19.51	0.00	2.49	27.18	0.00	57.37	58.89

Table 5-4: Land Cover Impacts for Alternate Site

Land Cover Classification	Alternate Site		Laydown		Transmission Connection Area		Trailer Area		Other Disturbance		Total	
	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
Developed	18.62			2.88		11.25		1.51	1.80		20.42	15.64
Turf Grass				10.03		6.50					0.00	16.53
Grassland	5.67			14.88		7.06		2.50	11.30		16.97	24.44
Woodland					0.62						0.62	0.00
Wetland				0.95		0.60			0.04		0.04	1.55
Total	24.29	0.00	0.00	28.74	0.62	25.41	0.00	4.01	13.14	0.00	38.05	58.16

5.8.3 Vegetation and Wildlife Habitat

The Proposed and Alternate Sites were previously disturbed or are currently developed (i.e. asphalt, gravel). Those areas that were previously disturbed were returned to either turf grass or low maintenance grassland community. Wetlands are also scattered throughout the Study Area. A majority of the area that will be permanently impacted by the Project is either currently in turf grass or asphalt, neither of which provide significant habitat to wildlife. These sites have limited vegetative growth and animal species likely only occasionally pass through the Sites when moving between habitats located elsewhere on or adjacent to the property. The Proposed Site is comprised of turf grass and a low maintenance grassland community. Buildings, other structures supporting generation production, paved roads or parking areas border the Proposed and Alternate Sites. Grassy species in the vicinity of both sites include smooth brome, Kentucky blue grass, and meadow false rye grass. Reed canary grass, giant reed grass, narrow leaved cattail all invasive wetland species, were the dominant species found in wetlands surrounding and within both sites.

The OCGS is primarily industrial, consisting of buildings, roads and other structures that provide little to no wildlife habitat. Wildlife pass through the industrial areas and the Proposed and Alternate Sites while moving between habitats, either open or forested, on the property that are generally located on the north and south ends of the OCGS. Wildlife species may commonly use the woodland areas on the property, which provide a variety of habitat. The woodlands provide den and nesting areas, cover, and feeding areas for wildlife and are dominated by overstory species including sugar maple (*Acer saccharum*), shagbark hickory (*Carya ovata*), basswood (*Tilia Americana*), dead/dying green ash (*Fraxinus pennsylvanica*), eastern cottonwood, and American elm *(Ulmus americana*). Dead trees and downed logs are homes to insects, which provide food for woodpeckers and for mammals such as raccoons or skunks. Woodlands support a variety of insects that are food sources for birds such as wood pewees or flycatchers and reptiles such as the northern redbelly snake. Deer, rabbits, and squirrels browse on woodland vegetation and nuts. Predators such as the great horned owl and fox feed on small mammals, small birds, and other animals that use the woodland.

The trees, shrubs, and other wetland vegetation provide food for birds and mammals. Insects that inhabit aquatic habitats are sources of food to birds, amphibians, and reptiles.

5.8.4 Expected Impacts to Vegetation and Wildlife Habitat

Construction and operation of the Project at either the Proposed or Alternate Site would result in the permanent loss of very little vegetation or wildlife habitat; no animal populations are known to use the Sites as preferred habitat. Some of the wildlife communities that may pass through the vicinity of the

Sites will be temporarily displaced to surrounding areas where habitat is available. Additionally, wildlife is known to pass through construction areas at night when there is no activity (based on tracks left behind). The property has already experienced habitat fragmentation associated with development in and around the OCGS, as such so we do not anticipate that the Project will cause significant loss of wildlife habitat or impacts to local wildlife populations.

5.8.5 Forest Lands

Both forested wetland and forested upland communities occur within the Study Area. Forested wetland communities are dominated with an overstory of dead and dying green ash, eastern cottonwood, American elm, and black willow (*Salix nigra*). Their understory is dominated by common buckthorn (*Rhamnus cathartica*), grey dogwood (*Cornus racemosa*), red osier dogwood (*Cornus sericea*), sand bar willow (*Salix exigua*) and reed canary grass. Forested upland communities are dominated with an overstory of sugar maple, shagbark hickory, basswood, with a sparse understory of common buckthorn, Kentucky bluegrass, and dandelion (*Taraxacum spp.*).

Two small forest lands occur within the transmission line connection area; these areas are remnants of larger woodlands that were cleared as part of the plant expansion between 2005 and 2014. The transmission line connection area for the Proposed Site overlaps only one of these wooded areas. This wooded area is dominated by paper birch (*Betula papyrifera*), basswood, dead/dying American beech (*Fagus grandifolia*) with a sparse shrub layer dominated by American hop-hornbeam (*Ostrya virginiana*) saplings with a few Japanese barberry (*Berberis thunbergii*) observed along the edges. The herbaceous layer was dominated by Pennsylvania sedge (*Carex pensylvanica*), Canada bluegrass (*Poa compressa*) and Canada goldenrod. The tree height in this area ranged from 25-55 feet, suggesting a maturing forest. While the transmission line connection area for the Alternate Site overlaps both of the wooded areas. The second wooded area is dominated by box elder (*Acer negundo*) and dead/dying green ash with a moderately dense shrub layer dominated by honeysuckle (*Lonicera periclymenum*) and an herbaceous layer dominated by Kentucky bluegrass and white avens (*Geum canadense*). The tree height in this area ranged from 30-45 feet, suggesting a maturing forest.

5.8.6 Potentially Affected Forest Lands

No forest lands occur at the Proposed and Alternate Sites, laydown areas or permanent disturbance area on the southern parcel on the OCGS; therefore, no forest land impacts will occur as a result of the use of these areas.

Depending on which site is selected, one or both of the two small forest lands that occur within the transmission line connection area will be cleared. The clearing of these areas is required to maintain proper clearance for the maintenance and operation of the generator tie lines. Additionally, if not cleared, the forest lands pose a risk for potential outages and safety issues.

5.8.7 Forest Land Mitigation

All forest land impacts will be avoided with the exception of the clearing required within the transmission line connection area. Impacts to forest lands are minimal, 0.50-acres and 0.62-acres for the Proposed and Alternate Sites, respectively, and the Applicant is not proposing any mitigation at this time.

5.8.8 Grasslands

The Proposed Site is primarily turf grass and grassland dominated by Kentucky bluegrass, meadow false rye grass and Canada goldenrod. The Alternate Site is predominantly asphalt cover with temporary impacts to turf grass and other grasslands dominated by Kentucky bluegrass, meadow false rye grass and Canada goldenrod. Some of the proposed laydown areas will utilize grassland communities, one located west of the railroad tracks and the other located north of the existing Site Bulk Material Handling building, both communities are dominated by smooth brome, Kentucky bluegrass and meadow false rye grass. The permanent disturbance area on the southern parcel on the OCGS is also a grassland community dominated by Kentucky bluegrass, meadow false rye grass, smooth brome and Canada goldenrod. Grassland communities are also scattered throughout the transmission line connection area and are generally dominated by Kentucky bluegrass, meadow false rye grass and smooth brome.

5.8.9 Potentially Affected Grasslands

Both permanent and temporary impacts to grasslands will occur as part of Project construction, while the grassland communities will be the same, the type (i.e. permanent or temporary) and extent of impacts will vary based on the site selected. If the Proposed Site is selected, there will be approximately 19.38-acres of permanent impacts to turf grass and 26.01-acres of permanent impacts to grassland communities. Approximately twenty-five of these acres are associated with the use of the clean fill disposal area on the southern parcel on the OCGS, which will be revegetated following construction. There are approximately 24-acres of temporary impacts to grassland communities.

If the Alternate Site is selected, there will be approximately 16.5-acres of temporary impacts to turf grass and 16.9-acres of permanent impacts to grassland communities. Approximately eleven of these acres are associated with the use of the clean fill disposal area on the southern parcel on the OCGS, which will be

revegetation following construction. There are approximately 24.4 acres of temporary impacts to grassland communities.

5.8.10 Grassland Mitigation

The Applicant is proposing to restore larger grassland areas that are temporarily impacted by Project construction to a native community. Specific areas for native restoration will be identified through consultation with the USFWS. Once these areas have been identified, a detailed restoration plan will be developed to address the restoration, monitoring, management and maintenance of these areas.

5.8.11 Re-Vegetation and Site Restoration Plan

The following sections describe the re-vegetation and site restoration plan for the Project.

5.8.11.1 Proposed Re-Vegetation

During construction, portions of the Project site will be graded and excavated. Some areas will have permanent facilities constructed, while others such as the proposed laydown areas and permanent disturbance area on the southern parcel on the OCGS will be revegetated. In areas not impacted by construction activities, existing vegetation will be preserved as an erosion control BMP. To the extent practicable, the amount of soil exposed during construction will be minimized. Areas surrounding or adjacent to permanent facilities will be seeded with an appropriate seed mix based on intended final use (i.e. manicured with routine maintenance). Areas that do not require routine maintenance in the future, will be seeded with a site specific designed seed mix, appropriate for the final use for each area. All seeding and mulching will be completed in accordance with WDNR Technical Standard 1059 – Seeding for Construction Site Erosion Control and Wis. Admin. Code NR 40, regarding noxious weed seed content and labeling.

Temporary seeding will be applied to areas of exposed soil where the establishment of vegetation is desired, but the areas have not been brought to final grade or on which land-disturbing activities will not be performed for a period greater than 30 days, but vegetative cover is required for less than 1 year. Areas needing protection during periods when permanent seeding is not applied, must be seeded with annual species. This will minimize erosion and non-native, invasive (or weedy) species propagation.

5.8.11.2 Vegetative Monitoring Criteria

Final stabilization is achieved when all soil-disturbing activities at the site are complete and a uniform (i.e., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent

has been established on all unpaved areas or areas not covered by permanent structures or with alternative surfacing, such as riprap or crushed rock as required by the WDNR standards.

During construction, areas that have been seeded will be inspected by a qualified person at least once every 7 days and within 24 hours after every precipitation event that produces 0.5 inch of rain or more during a 24-hour period. Where areas of concern are identified, the area will be re-seeded and maintained until reaching the required density. During the growing season, the Project site will be inspected at least once per month, as part of the weekly inspections, to monitor vegetative growth and composition until final stabilization is achieved and the Notice of Termination has been submitted. Following the submittal of the Notice of Termination, areas that will be routinely maintained as part of operations will proceed on a routine maintenance schedule. Any areas that are returned to pre-existing vegetative cover or otherwise enhanced will be monitored, managed and treated as needed by a third party contractor and in accordance with any restoration plan developed for these areas.

Vegetative monitoring criteria and methods in areas identified for native restoration will be determined through consultation with the USFWS.

5.8.11.3 Invasive Species Monitoring and Management

The Applicant is committed to reducing the introduction and spread of invasive species while constructing the Project and will comply with Wis. Admin. Code NR 40 – Invasive Species Identification, Classification and Control throughout construction and restoration. Invasive species will be monitored during the establishment period and any invasive species observed will be managed until the desired vegetation is established.

5.9 Invasive Species (Uplands and Wetlands)

A discussion of invasive species in both uplands and wetlands on the Project site is provided in the following sections.

5.9.1 Invasive Species Areas

Field surveys of the Study Area were conducted in Fall/Winter 2023/2024. The general location and composition of invasive plant species present within the Study Area were documented. A list of those species, their NR 40 status and comments associated with their general location is below:

Table 5-5: Invasive Species

Scientific Name	Common Name	Prohibited	Restricted	Comments
Alliaria petiolata	Garlic mustard		X	Generally located within or close to tree/shrub habitats
Artemisia absinthium	Wormwood		X	Scattered throughout generally near roadsides
Berberis thunbergii	Japanese barberry		X	Found in woodland areas
Cirsium arvense	Canadian thistle		X	Scattered throughout old field and recently disturbed areas often associated with reed canary grass
Coronilla varia	Crown vetch		X	Scattered throughout old field and recently disturbed areas
Dipsacus fullonum	Fuller's teasel		X	Generally found in old field and recently disturbed upland areas
Dipsacus laciniatus	Cut-leaf teasel		X	Generally found in old field and recently disturbed upland areas
Euonymus alatus	Burning bush		X	Few scattered individuals in tree/shrub communities
Gallium mollugo	False baby's breath		X	Scattered throughout constructed berm and recently graded areas
Hesperis matronalis	Dame's rocket		X	Few scattered individuals in tree/shrub communities
Lonicera X bella	Honeysuckle		X	Scattered throughout Study Area, found in tree/shrub and old field areas
Lythrum salicaria	Purple loosestrife		X	Generally found in wetlands areas or in uplands directly adjacent to wetlands
Phalaris arundinacea	Reed canary grass		X	Found throughout Study Area
Phragmites australis	Common reed	X		Generally found in fresh wet meadow wetlands but also observed in adjacent uplands
Rhamnus cathartica	European buckthorn		X	Found in distrubed wetlands and growing in recently disturbed uplands
Rosa multiflora	Multiflora rose		X	Limited to tree/shrub upland areas throughout the site
Solidago sempervirens	Seaside goldenrod	X		Found in wetland areas along STH 32 and adjacent uplands
Tanacetum vulgare	Common tansy		X	A few individuals scattered throughout the site in old field areas
Typha angustifolia	Narrow-leaf cat-tail		X	Generally found in ditches and stormwater basins but also found in disturbed
Typha X glauca	Hybrid cattail		X	Generally found in ditches and stormwater basins but also found in disturbed
Ulmus pumila	Siberian elm		X	Scattered throughout old field and recently disturbed areas

5.9.2 Invasive Species Mitigation Measures

In compliance with Wis. Admin. Code NR 40 – Invasive Species Identification, Classification and Control, Joint Applicants will mitigate the potential to spread invasive species during Project activities. Once a site is selected, the Applicant will map invasive species locations and dominance. The results of mapping will be incorporated into the final design and construction planning. Prior to the start of construction, invasive species populations will be flagged and avoided, where feasible. In areas where impacts to invasive species are unavoidable, The Applicant will require that equipment be cleaned prior to moving from an infested area to a non-infested area.

Construction equipment brought onsite will be required to be free of muck, dirt, debris or plant material. Equipment cleaning will primarily be conducted by brush, broom, or other hand tools at the Project site. The Applicant may periodically require equipment to be cleaned by compressed air. Equipment used during ground-disturbing activities will be cleaned prior to leaving the Project site to reduce the risk of spreading invasive species beyond the site.

In accordance with Wis. Admin. Code NR 40 and the Department of Agriculture, Trade and Consumer Protection (DATCP), seed mixtures that contain potentially invasive species or species that may be harmful to native communities will be avoided. Seed will be tested for purity, germination, and noxious

weed seed content, and will meet the minimum requirements prescribed in the current edition of *Rules for Testing Seed*, published by the Association of Official Seed Analysts.

5.10 Hydrology

The following sections discuss water intake, consumption, discharge, and stormwater management.

5.10.1 Potential Water Sources

The following sections provide information on the potential water sources required for the Project.

5.10.1.1 Water Sources

Service water and potable water will be provided by the existing potable water source on the OCGS, which is the City of Oak Creek municipal water supply system.

5.10.1.2 Water Usage

The primary service water uses for the Facility will include water supplied to the turbine evaporative coolers. The existing admin building will be repurposed as the Facility control room and the existing potable water system will be reused. The existing admin building will be repurposed for the Facility control room. Sanitary wastewater from bathrooms, showers, and other employee areas in the admin building will maintain the existing systems and discharge points. Demineralized water will be trucked from the existing facility for periodic turbine water wash. Refer to **Volume I Appendix AA** for Water Mass Balances diagrams.

5.10.1.3 Low-Capacity Onsite Well Sources

No low-capacity onsite well sources will be used for the Facility.

5.10.1.4 High-Capacity Onsite Well Sources

No high-capacity onsite well sources will be used for the Facility.

5.10.1.5 Municipal Water Utility Groundwater Sources

Potable water for the Facility will be obtained from the City of Oak Creek municipal water supply. The City of Oak Creek sources its water from Lake Michigan.[20]

5.10.1.5.1 Operating Water Utility and Supply Well(s) Location(s)

Not applicable as the City of Oak Creek obtains its water from a surface water source.

[20] https://www.oakcreekwi.gov/home/showpublisheddocument/17638/638205327904730000

5.10.1.5.2 Capacity of Municipal Well(s) Providing Service

Not applicable as the City of Oak Creek obtains its water from a surface water source.

5.10.1.5.3 Reserve Capacity of Municipal System

Not applicable as the City of Oak Creek obtains its water from a surface water source.

5.10.1.5.4 Potential Impact of Municipal Water Use

The Facility will not impact the ability of the Oak Creek Municipal Water Utility to provide water to municipal customers.

5.10.1.5.5 Methods Proposed for Delivering Municipal Water to Facility Sites

Potable water will be provided to the Facility by the existing potable water connection on the OCGS. See **Volume I Appendix I (Planned Connecting Facilities)** for tie-in locations. The following sections provide additional detail related to delivery of municipal water to the alternative sites.

5.10.1.5.6 Size of Pipeline

The connection to the existing 12 inches potable water pipeline will be 6 inches in diameter to serve the Facility.

5.10.1.5.7 Proposed Route

New pipelines will be constructed from existing facilities to the Facility and will be installed on land currently owned by Wisconsin Electric.

See **Volume I Appendix I (Planned Connecting Facilities)** for a map of proposed pipeline routes.

5.10.1.5.8 Length of Pipeline

The existing potable pipeline feeding the OCGS will be extended to the Oak Creek Combustion Turbine Plant.

5.10.1.5.9 Entity that will Construct, Operate, and Own the Pipeline

The water supply pipeline for the Facility will be installed exclusively on property owned by and will be operated by Wisconsin Electric.

5.10.1.5.10 Property Owners along Pipeline Route

The water supply pipeline for the Facility will be installed exclusively on Wisconsin Electric property.

5.10.1.6 Surface Water Sources

The Facility will only receive water from the City of Oak Creek municipal potable water supply. As such, the Facility will not directly draw from surface water sources.

5.10.2 Water Consumptive Use

The following section discusses consumptive water usage for the Facility.

5.10.2.1 Source of Water

For the Proposed and Alternate Sites, all water will be from the existing potable supply at the OCGS, which is sourced from the City of Oak Creek municipal water supply system.

5.10.2.2 Consumptive Water Usage

The primary service water uses for the Facility will include water supplied to the turbine evaporative coolers. The existing admin building may be repurposed as the Facility control room and the existing potable water system may be reused. Sanitary wastewater from bathrooms, showers, and other employee areas in the admin building may reuse the existing systems and discharge points.

5.10.2.3 Total Consumptive Use/Net Loss of Water

The turbine evaporative cooler system consumption varies on ambient temperature and operational usage. Refer to **Volume I Appendix AA** for Water Mass Balances diagrams.

5.10.3 Wastewater Discharges

The following sections describe wastewater handling for the Facility.

5.10.3.1 WDNR WPDES Permit Application

It is anticipated that wastewater from the water wash drain tanks will use the existing onsite treatment system. Due to the existing onsite treatment system discharge to surface waters of the State, the existing WPDES permit will need to be modified or a separate permit may be required for operation.

5.10.3.2 Proposed Wastewater Discharge Structures

Process wastewater will be hauled to the existing onsite treatment system or offsite for treatment, as required. Sewage will be discharged to the City of Oak Creek municipal sewer system for offsite treatment.

5.10.3.3 Wastewater Chemical and Physical Attributes

Process wastewater may contain suspended solids and oil & grease from the operation of the CTG facility.

5.10.3.4 Surface Water Discharges

The Facility may discharge process wastewater to the existing onsite treatment system, that discharges to surface waters of the State. The Facility will not discharge sanitary wastewaters to surface waters of the State. Stormwater runoff from the Facility is planned to discharge to a new onsite detention basin, which will discharge to the existing storm water conveyance infrastructure on site, that discharges to surface waters of the State.

5.10.3.5 Municipality Discharges

Sanitary wastewater from bathrooms, showers, and other employee areas would be collected and routed to a lift station, which would discharge to the City of Oak Creek municipal sewer system for offsite treatment. No process wastewaters will be discharge to the municipal system.

5.10.4 Storm Water Management

A discussion of State and local storm water management requirements, the required Erosion Control and Storm Water Management Plan for Facility construction, and the proposed storm water management facilities for the Facility is provided in the following sections.

5.10.4.1 Erosion Control and Storm Water Management Plan Permit Application

In the State of Wisconsin, projects that will disturb 1 or more acres of land must obtain coverage under the WPDES General Permit No. WI-S067831-5 (WPDES General Permit), which authorizes the discharge of storm water associated with land-disturbing construction activities into State waters. Coverage under the WPDES General Permit is obtained by developing an Erosion Control and Storm Water Management Plan and submitting a Water Resources Application for Project Permits (WRAPP)[21] to the WDNR for approval prior to the start of Project construction.

The City of Oak Creek does have additional regulations or permitting requirements related to erosion control and stormwater management including submitting for an Oak Creek stormwater management permit.

[21] A WRAPP is also referred to as a Notice of Intent.

5.10.4.2 Erosion Control and Storm Water Management Plan

Prior to Project construction, the Erosion Control and Storm Water Management Plan, including descriptions and typical drawings of BMPs, will be provided. It will be formatted and designed to meet or exceed compliance with the erosion control and storm water management technical standards and the construction and post-construction performance standards identified in Wis. Admin. Code NR 151 and 216. The Erosion Control and Storm Water Management Plan will address both the control of sediment and pollutants during construction until site stabilization is complete and the storm water management practices that will be installed during the construction phase to address the discharge of total suspended solids, control peak flow, provide for infiltration, and maintain protective areas during Facility operation. Site-specific plans will be developed during the final design phase of the Project and provided to the WDNR for review and approval prior to commencement of construction.

5.10.4.3 Proposed Storm Water Management Facilities

The stormwater management facilities will be designed to meet all applicable federal, state, and local guidelines and requirements, the details of which will be determined at a later date.

5.10.4.3.1 Onsite Wastewater and Storm Water Treatment Facilities

If additional process wastewater treatment is required, the existing onsite treatment facility may be used. Stormwater runoff (including clean effluent from oil water separator) from the Facility will drain to a new stormwater management system that meets all applicable federal, state, and local guidelines and requirements.

5.10.4.3.2 Solid/Sludge Generation

Any solid wastes or sludge generated during Facility operations will be disposed of offsite at an authorized waste disposal facility.

5.10.4.3.3 Pretreatment Facilities

Process wastewater will be hauled to the existing onsite treatment facility or offsite for treatment, as required. No new pretreatment facilities will be required.

5.10.4.3.4 Estimated Amount of Flow

Stormwater management facilities will be designed to handle flows based on the applicable federal, state, and local guidelines and requirements.

5.10.4.3.5 Location of Collection and Discharge

Process wastewater from cleaning combustion turbine equipment will be collected in below grade tanks and hauled offsite for treatment, as needed. Storm water runoff from the Facility will be drained through new culverts, storm sewers, and ditches/swales to the new on-site storm water management facility. The new on-site storm water management facility will direct storm water to existing storm water management infrastructure within the facility.

5.10.4.3.6 Storm Water Management Plan for Fuel Handling and Storage Facilities and Ash Handling and Disposal Facilities

No coal or solid biomass will be used by the Facility.

5.10.4.3.7 Erosion Control Plan

A copy of the Erosion Control and Storm Water Management Plan, including descriptions and typical drawings of erosion and sediment control best management practices, will be provided for WDNR review prior to construction.

5.11 Air Quality

The following sections discuss the air pollution control and air quality impacts of the Project.

5.11.1 WDNR Air Permits

Pursuant to the requirements specified in Chapter NR 406 of the Wis. Admin. Code, Wisconsin Electric is submitting a minor construction permit application to the WDNR. The OCGS is located in an area designated as moderate nonattainment for ozone by the EPA.

Potential emissions from the Facility will be reviewed under various State and Federal programs, including:

- National Ambient Air Quality Standards (NAAQS), if applicable;
- New Source Review requirements for major stationary sources and major modifications, including Prevention of Significant Deterioration (PSD) review and non-attainment New Source Review (NANSR), if applicable;
- New Source Performance Standards;
- National Emission Standards for Hazardous Air Pollutants and Maximum Achievable Control Technology; and

- Wis. Adm. Code, chapters NR 405-455 – various state regulations including construction permitting and review of hazardous air pollutants.

The OCGS is an existing major stationary source under the PSD and NANSR programs because it has the potential to emit at least one PSD pollutant at a rate greater than 100 tons per year. The Facility will not be a major modification under either the PSD program or the NANSR program because the net emission increases are not projected to exceed the significant emissions increase thresholds for any PSD pollutant.

5.11.2 Fuel Type

The Facility will be fueled by only natural gas.

5.11.3 Air Emissions Modeling and Results

Air dispersion modeling was performed using the latest version of AERMOD (Version 23132). The AERMOD model is an EPA-approved, steady-state Gaussian air dispersion model that is designed to estimate downwind ground-level concentrations from single or multiple sources using detailed meteorological data. AERMOD is a model currently approved for industrial sources and PSD permits.

5.11.3.1 Control Technologies

Each CTG will be equipped with state-of-the-art dry low NO_x combustion systems that are designed to limit NO_x formation in the exhaust. This lean pre-mix technology maintains a near optimum fuel to air distribution through the combustion zone and the residence time in the flame zone to be low enough to achieve low NOx emissions. The combustion gases will exit each CTG at approximately 1,100 to 1,250 ^{o}F.

The five CTGs will be controlled as follows:

- NOx – Dry low NOx combustors

Emissions from the two natural gas-fired emergency generators will be controlled as follows:

- Use of a natural gas-fired emergency generator that meets the applicable *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* under 40 CFR 60, Subpart JJJJ, combined with limited hours of operation.

The balance of plant equipment will utilize natural gas, a clean fuel, and good combustion practices for emissions control

Figure 3-1 in Section 3.0 provides an Overall Facility Process Diagram for the CTGs and controls.

5.11.3.2 Emission Rates

Emissions of criteria pollutants and greenhouse gases will occur from the Facility's equipment as detailed below.

5.11.3.2.1 Criteria Pollutants

Worse case emissions across a range of ambient conditions were used to determine potential hourly and annual emission rates from the five CTGs for permitting purposes. Emissions from the CTG are dependent on ambient temperature conditions and the turbine's operating load, which can vary from approximately 50 to 100 percent. To account for representative seasonal climatic variations, potential emissions from the proposed combustion turbine during normal operation were analyzed at the minimum emissions compliance load (MECL) (designated as "low"), 75, and 100 percent load conditions for ambient temperatures ranging from negative (-)34.3 degrees Fahrenheit (°F) to 95.5°F. The projected emissions were based on data provided by the combustion turbine manufacturer and/or from AP-42 emission factors.

Table 5-6 presents the maximum hourly emissions from each turbine.

Table 5-6: Maximum Expected Hourly Combustion Turbine Emission Rates for Natural Gas

Pollutant			Operating Condition		
			100% Load	75% Load	MECL (50%)
Carbon Monoxide	CO	lb/hour	81.2	60.2	46.5
Nitrogen Oxides	NOx	lb/hour	107.1	79.4	61.3
Particulate Matter	PM	lb/hour	25.0	18.5	14.3
Particulate Matter	PM10	lb/hour	25.0	18.5	14.3
Particulate Matter	PM2.5	lb/hour	25.0	18.5	14.3
Sulfur Dioxide	SO2	lb/hour	1.5	1.1	0.8
Volatile Organic Compounds	VOC	lb/hour	5.0	3.7	2.9
Sulfuric Acid Mist	H2SO4	lb/hour	0.7	0.5	0.4
Lead	Pb	lb/hour	1.2E-03	9.0E-04	3.0E-03
Carbon Dioxide	CO2	lb/hour	283,500	210,191	710,571
Greenhouse Gases	CO2e	lb/hour	283,793	210,408	711,305

Potential start-up and shutdown emissions for natural gas are shown in **Table 5-7**.

Table 5-7: Potential Natural Gas Turbine Start-up and Shutdown Emissions

Pollutant		Emissions	
		Each Start-up and Shutdown Event (pounds per event)	Annual total for 5 CTGs Combined (tons/year)[(a)]
Carbon Monoxide	CO	477.1	596.4
Nitrogen Oxides	NO_x	88.8	111.0
Particulate Matter	PM	2.4	3.0
Particulate Matter	PM_{10}	2.4	3.0
Particulate Matter	$PM_{2\,5}$	2.4	3.0
Sulfur Dioxide	SO_2	0.1	0.2
Volatile Org Cmpds	VOC	53.0	66.3
Sulfuric Acid Mist	H_2SO_4	0.1	0.1
Lead	Pb	1.2E-04	1.5E-04
Carbon Dioxide	CO_2	27,267	34,084
Greenhouse Gases	CO_2e	27,295	34,119

(a) Emissions are based on 2,500 events per year for start-up and shutdown, combined, for natural gas operation.

5.11.3.2.2 Greenhouse Gases

Table 5-8 presents the hourly greenhouse gas emissions from each turbine and for the combined five CTGs of the Facility.

Table 5-8: Combustion Turbine Greenhouse Gases Hourly Emission Rates

Pollutant			Each CTG	5 CTGs Combined
Carbon Dioxide	CO_2	lb/hour	283,500	1,417,501
Methane	CH_4	lb/hour	5.3	26.7
Nitrous Oxide	N_2O	lb/hour	0.5	2.7
Hydrofluorocarbons	HFCs	lb/hour	-	-
Perfluorochemicals	PFCs	lb/hour	-	-
Sulfur Hexafluoride	SF_6	lb/hour	-	-
Greenhouse Gases	CO_2e	lb/hour	283,793	1,418,965

5.11.3.3 Estimated Maximum Expected Annual Emission Rates

The estimated maximum expected annual emissions of each pollutant for the Facility are presented in **Table 5-9**.

Table 5-9: Maximum Annual Emission Rates

Pollutant		Emissions (tons per year)
Carbon Monoxide	CO	952.0
Nitrogen Oxides	NO_x	469.2
Particulate Matter[a]	PM	109.5
Particulate Matter[a]	PM_{10}	109.5
Particulate Matter[a]	$PM_{2\,5}$	109.5
Sulfur Dioxide	SO_2	6.4
Volatile Organic Compounds	VOC	88.2
Sulfuric Acid Mist	H_2SO_4	3.2
Lead	Pb	5.3E-03
Carbon Dioxide	CO_2	1,241,759.5
Greenhouse Gases	CO_2e	1,243,042.0

[a] – Filterable plus condensable

5.11.3.4 Projected Emissions in Tons-per-Year by Source

The combustion turbines will be designed to utilize pipeline-quality natural gas. In addition to the five combustion turbines, two natural gas-fired gas dew point heaters and two emergency generators will be included as part of the Facility. Projected emissions from these sources are outlined in **Table 5-10** and **Table 5-11**.

Table 5-10: Project Emissions by Source

Pollutant		Five CTGs	Two Emergency Generators	Two Natural Gas Dew Point Heaters	Natural Gas Piping System
		tons/year			
Carbon Monoxide	CO	952.0	3.8	11.0	-
Nitrogen Oxides	NO_x	469.2	1.9	4.9	-
Particulate Matter	PM	109.5	0.0	1.0	-
Particulate Matter	PM_{10}	109.5	0.0	0.1	-

Pollutant		Five CTGs	Two Emergency Generators	Two Natural Gas Dew Point Heaters	Natural Gas Piping System
		tons/year			
Particulate Matter	$PM_{2\,5}$	109.5	0.0	0.1	-
Sulfur Dioxide	SO_2	6.4	0.0	0.1	-
Volatile Organic Compounds	VOC	88.2	1.0	0.7	1.5
Sulfuric Acid Mist	H_2SO_4	3.2	0.0	0.0	-
Lead	Pb	5.3E-03	1.7E-06	6.6E-05	-
Carbon Dioxide	CO_2	1,241,760	390	15,371	-
Greenhouse Gases	CO_2e	1,243,042	391	15,387	1,704

Table 5-11: Project Emissions of Greenhouse Gases

Pollutant		Five CTGs	Two Emergency Generators	Two Natural Gas Dew Point Heaters	Natural Gas Pipe system
		tons/year			
Carbon Dioxide	CO_2	1,241,760	390	15,371	-
Methane	CH_4	23.4	7.4E-3	0.3	68.2
Nitrous Oxide	N_2O	2.3	7.4E-4	2.9E-2	-
Hydrofluorocarbons	HFCs	-	-	-	-
Perfluorochemicals	PFCs	-	-	-	-
Sulfur Hexafluoride	SF_6	-	-	-	-
Greenhouse Gases	CO_2e	1,243,042	391	15,387	1,704

(a) Represents worse-case emissions scenario

5.11.3.5 National Ambient Air Quality Standards (NAAQS) and PSD Increments

The NAAQS are set by the EPA to protect human health and public welfare. The PSD Increment constitutes the maximum allowable ambient air quality concentration increase that may occur for a given pollutant above a baseline concentration. To determine if the Facility will contribute to a NAAQS or PSD Increment exceedance, the Facility was modeled along with the appropriate existing sources in the area. This was performed in two phases – an initial analysis that compared the Facility impacts to the Significant Impact Levels (SILs), and then a refined analysis for pollutants/averaging periods with Facility impacts that exceeded the SILs. The initial Facility modeling demonstrated that the CO, PM_{10},

$PM_{2.5}$, and SO_2 impacts were below the SILs and therefore the Facility will not cause or contribute to an exceedance of the NAAQS or PSD Increments for these pollutants and averaging intervals. Because the impacts were less than the SILs, in accordance with WDNR and US EPA modeling guidance, refined NAAQS and PSD Increment modeling was therefore not performed for these pollutants and averaging intervals.

5.11.3.5.1 Background Ambient Levels

Regional background values will be obtained from WDNR *Guidance on Background Concentrations* memo that lists values for both "low" and "high" background categories.[22] The Facility is located in an area categorized as a "high" background area; therefore, the "high" background values were used for each pollutant that requires a refined analysis. The background concentrations for NO_2 by hour of day and monthly values are provided in the WDNR background guidance memo.

5.11.3.5.2 NAAQS Modeling Results

The existing air quality in the Project area is designated as attainment or unclassifiable with regard to the NAAQS for all criteria pollutants. The refined modeling showed that the Facility will not threaten continued attainment of the NAAQS in this area. The results of the NAAQS refined models are provided in **Table 5-12**. The Project sources were modeled along with all other sources at the facility.

[22] WDNR, Guidance on Air Quality Background Concentrations, 2021

Table 5-12: NAAQS Modeling Results

Site	Pollutant	Averaging Period	UTM Coordinates[a]		Year[b]	Predicted Concentration[c]	Background Concentration	Total Concentration	NAAQS
			Easting	Northing					
			meters	meters		micrograms per cubic meter (µg/m^3)			
Preferred Site	NO_2	Annual	431247	4743672	2020	47.6	N/A[d]	47.6	100
		1-hour	431247	4743672	5 yr	156	N/A[d]	156	188
Alternate Site	NO_2	Annual	431304	4743559	2020	47.3	N/A[d]	47.3	100
		1-hour	431088	4744027	5 yr	156	N/A[d]	156	188

(a) UTM = Universal Transverse Mercator: NAD83
(b) For some pollutants the model "design concentration" is a multi-year value; in this case, the value for Year is listed as "5 yr".
(c) ARM2 methodology was applied for the NO_2 modeling analyses.
(d) HROFDY & MONTH background data used; therefore, the modeled impact is presented as project impacts and background combined.

NOTE: The initial Facility modeling demonstrated that the CO, PM_{10}, $PM_{2.5}$, and SO_2 impacts were below the SILs and therefore the Facility will not cause or contribute to an exceedance of the NAAQS or PSD Increments for these pollutants; because the impacts were less than the SILs, in accordance with WDNR and US EPA modeling guidance, refined NAAQS and PSD Increment modeling was therefore not performed for these pollutants.

5.11.3.5.3 PSD Increment Modeling Results

Refined modeling was performed for NO_2 to demonstrate compliance with the annual NO_2 PSD Class II Increment. All Facility emission sources and other increment consuming sources in the vicinity were included in the PSD increment modeling analysis.

There were no modeled PSD Class II Increment exceedances for NO_2 at either site, as shown in **Table 5-13**. Therefore, the Facility will be in compliance with the Class II PSD Increment.

Table 5-13: PSD Class II Increment Modeling Results

Site	Pollutant	Averaging Period	UTM Coordinates		Year	Predicted Concentration	PSD Class II Increment
			Easting	Northing			
			meters	meters		micrograms per cubic meter ($\mu g/m^3$)	
Preferred Site	NO_2	Annual	431287	4743603	2018	3.1	25
Alternate Site	NO_2	Annual	431304	4743559	2018	2.8	25

NOTE: The initial Facility modeling demonstrated that the CO, PM_{10}, $PM_{2.5}$, and SO_2 impacts were below the SILs and therefore the Facility will not cause or contribute to an exceedance of the NAAQS or PSD Increments for these pollutants; because the impacts were less than the SILs, in accordance with WDNR and US EPA modeling guidance, refined NAAQS and PSD Increment modeling was therefore not performed for these pollutants.

An assessment of air quality impacts at Class I areas was performed to demonstrate that the operation of the Facility will not result in, or contribute to, concentrations above the PSD Class I Increment threshold. The closest Class I area is the Forest County Potawatomi Community area, at more than 300 kilometers distance from the Preferred and Alternate sites. A screening analysis to determine if further analysis was required was performed for NO_2. The Class I Increment screening was analyzed with AERMOD at a 50-kilometer distance from the Project by placing an arc of receptors extending 45 degrees (+/-) from the line connecting the Project and the Class I area. The modeled NOx emission rates were the 100% load emission rates. The AERMOD modeled impacts in comparison to the Class I significance thresholds are shown in **Table 5-14** (at a distance of 50 km the impacts are the same for both site locations when rounded up to one significant digit). Based on the analysis, it was determined that the impacts from the Facility will not significantly impact the PSD Class I Increment at the surrounding Class I areas and does not require further analysis.

Table 5-14: Class I modeled Screening Impacts and Class I Significant Impact Level

Site	Pollutant	Averaging Time	Maximum Modeled Concentration (µg/m³)	Class I Significant Impact Level[1]
Preferred Site	NO_2[a]	Annual	0.04	0.1
Alternate Site	NO_2[a]	Annual	0.04	0.1

Sources:
(1) EPA. Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR) Proposed Rulemaking, July 23, 1996. (61 FR 38249).
(2) EPA Memorandum, 2018a, "Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program."
(a) Modeled using ARM2 conversion technique.

5.11.3.6 Expected Annual Emissions of CO_2, N_2O, CH_4 and Hydrofluorocarbons

The expected annual emissions in tons per year of CO_2, N_2O, CH_4, and hydrofluorocarbons (HFC), perfluorochemicals (PFCs), and sulfur hexafluoride (SF_6) by source assuming maximum capacity operation for 8,760 hours per year are provided in Section 5.11.3.6.1. The expected emissions (assuming anticipated capacity factor that allows for outages and electric market variations) for the same pollutants are provided in Section 5.11.3.6.2.

5.11.3.6.1 Expected Emissions Assuming Maximum Capacity Operation for 8,760 Hours per Year

The expected annual emissions in tons per year of CO_2, N_2O, CH_4, and hydrofluorocarbons by source assuming maximum capacity operation for 8,760 hours per year are provided in **Table 5-15**. Emissions for the combustion turbines are based on the maximum capacity operation that will be allowed by the air permit. Additionally, in accordance with U.S. EPA guidance the maximum capacity operation for emergency generators is 500 hours per year. All other sources are based on 8,760 hours per year of operation.

Table 5-15: Annual Emissions by Source of CO_2, N_2O, CH_4, HFCs, PFCs, and SF_6, (Maximum Capacity)

Pollutant		Five CTGs	Two Emergency Generators	Two Natural Gas Dew Point Heaters	Natural Gas Pipe system
		tons/year			
Carbon Dioxide	CO_2	1,241,760	488	15,371	-
Methane	CH_4	23.4	0.2	0.3	68.2
Nitrous Oxide	N_2O	2.3	0.3	2.9E-2	-

Pollutant		Five CTGs	Two Emergency Generators	Two Natural Gas Dew Point Heaters	Natural Gas Pipe system
		tons/year			
Hydrofluorocarbons	HFCs	-	-	-	-
Perfluorochemicals	PFCs	-	-	-	-
Sulfur Hexafluoride	SF_6	-	-	-	-
Greenhouse Gases	CO_2e	1,243,042	488	15,387	1,704

5.11.3.6.2 Expected Emissions Assuming Anticipated Capacity Factor that Allows for Outages and Electric Market Variations

The expected annual emissions in tons per year of greenhouse gases by source assuming anticipated capacity factor that allows for outages and electric market variations are provided in **Table 5-16**.

Table 5-16: Annual Emissions by Source of Greenhouse Gases (Anticipated Capacity Factor allowing for Outages and Electric Market Variations)

Pollutant		Five CTGs	Two Emergency Generators	Two Natural Gas Dew Point Heaters	Natural Gas Pipe system
		tons/year			
Carbon Dioxide	CO_2	1,241,760	390	15,371	-
Methane	CH_4	23.4	7.4E-3	0.3	68.2
Nitrous Oxide	N_2O	2.3	7.4E-4	2.9E-2	-
Hydrofluorocarbons	HFCs	-	-	-	-
Perfluorochemicals	PFCs	-	-	-	-
Sulfur Hexafluoride	SF_6	-	-	-	-
Greenhouse Gases	CO_2e	1,243,042	391	15,387	1,704

5.11.3.7 Hazardous Air Pollutant Emission Estimates

The OCGS is an existing major source of federal HAP emissions (*i.e.*, it has the potential to emit more than 25 tons per year of total HAPs and/or more than 10 tons per year of any single HAP). The Facility will not change this status.

A summary of HAP emissions from the Facility are included in **Table 5-17**.

Table 5-17: Estimated Hazardous Air Pollutant Emissions from the Facility

Hazardous Air Pollutant (HAPs)	Total Facility Emissions
1,1,2,2-Tetrachloroethane	1.33E-04
1,1,2-Trichloroethane	1.06E-04
1,1-Dichloroethane	7.87E-05
1,2,3-Trimethylbenzene	7.67E-05
1,2,4-Trimethylbenzene	4.77E-05
1,3,5-Trimethylbenzene	1.13E-04
1,2-Dichloroethane	7.87E-05
1,2-Dichloropropane	8.98E-05
1,3-Butadiene	5.58E-03
1,3-Dichloropropene	8.81E-05
2-Methylnaphthalene	1.11E-04
2,2,4-Trimethylpentane	8.34E-04
Acenaphthene	4.17E-06
Acenaphthylene	1.85E-05
Acetaldehyde	4.64E-01
Acrolein	8.70E-02
Benzene	1.33E-01
Benzo(b)fluoranthene	5.54E-07
Benzo(e)pyrene	1.38E-06
Benzo(g,h,i)perylene	1.38E-06
Biphenyl	7.07E-04
Butane	1.81E-03
Butyr/Isobutyraldehyde	3.37E-04
Carbon Tetrachloride	1.22E-04
Chlorobenzene	1.01E-04
Chloroethane	6.24E-06
Chloroform	9.51E-05
Chrysene	2.31E-06
Cyclopentane	7.57E-04
Dichlorobenzene	1.58E-04

Hazardous Air Pollutant (HAPs)	Total Facility Emissions
Ethylbenzene	3.49E-01
Ethylene Dibromide	1.48E-04
Fluoranthene	3.70E-06
Fluorene	1.89E-05
Formaldehyde	2.68E+00
Methanol	8.34E-03
Methylcyclohexane	4.10E-03
Methylene Chloride	6.67E-05
n-Hexane	2.40E-01
n-Nonane	3.67E-04
n-Octane	1.17E-03
Naphthalene	1.45E-02
PAH[(a)]	2.41E-02
Phenanthrene	3.47E-05
Phenol	8.01E-05
Propylene oxide	3.16E-01
Pyrene	4.54E-06
Styrene	7.87E-05
Tetrachloroethane	8.27E-06
Toluene	1.42E+00
Vinyl Chloride	4.97E-05
Xylene	6.99E-01
Arsenic	2.63E-05
Barium	5.78E-04
Cadmium	2.76E-04
Hydrogen Chloride	1.63E-03
Chromium	1.84E-04
Cobalt	1.10E-05
Copper	1.12E-04
Manganese	4.99E-05
Mercury	3.42E-05

Hazardous Air Pollutant (HAPs)	Total Facility Emissions
Molybdenum	1.45E-04
Nickel	2.76E-04
Vanadium	3.02E-04
TOTAL, Federal HAPs	**6.46**

(a) PAH = polycyclic aromatic hydrocarbon

5.11.4 Sources and Projected Amounts of Fugitive Dust and Control Measures

Fugitive dust sources and proposed control measures are described in the following sections.

5.11.4.1 Dust Sources and Control Measures

During construction, steps will be taken to limit emissions of particulate matter resulting from construction activities and vehicular traffic. These steps may include compacting, seeding, covering, paving, wetting, sweeping, or otherwise controlling particulate matter emissions.

Post-construction, the areas disturbed during construction will receive final cover to eliminate dust. All exposed soil areas will be seeded to grow grass, lesser-traveled road surfaces will be graveled and compacted, and the new main roads on-site will be surfaced with asphalt. The roads will be monitored and either wetted or swept to clean any fugitive dust that may occur due to onsite wheeled traffic.

5.11.4.2 Fuel Storage Piles and Fuel Handling Conveyance Fugitive Dust Emissions and Control Measures

No fugitive dust emissions are expected to occur since there will be no solid fuel.

5.12 Solid Waste Handling and Disposal

The Facility will not generate solid waste as a result of electricity production because it will be fueled by natural gas. No other solid wastes will be generated by the Facility during the production of electricity. Solid waste produced during the Project will only occur from construction debris, wastes produced by construction workers, and wastes produced by employees onsite during operation of the Facility. These wastes will be collected in trash containers throughout the Project site and sent to a local landfill.

5.12.1 Solid Waste Identification

The Facility will not generate solid waste as a result of electricity production.

5.12.2 Composition and Quantity of Wastes

The Facility will not generate solid waste as a result of electricity production.

5.12.3 WDNR Solid Waste and Landfill Permits

An Exemption to Construct on a Historic Fill Site permit from the WDNR will be required if the Alternate site is selected for the project. In addition, this permit may also be required if the final lay-down areas are located over historic fill sites on the property.

5.12.4 Location of Solid Waste Storage, Transport, and Loading for Removal

The Facility will not generate solid waste as a result of electricity production.

5.12.5 Potential for Beneficial Use or Reuse of Ash and Other Combustion Byproducts

The Facility will not generate an ash byproduct because it will be fueled by natural gas.

5.12.6 Potential Ash Landfills

The Facility will not generate an ash byproduct because it will be fueled by natural gas.

6.0 COMMUNITY IMPACTS

Community resources located in the vicinity of the Project are described below.

6.1 Community Resource Maps and Photos

6.1.1 Nearest Residences and Other Buildings

See **Volume I Appendix G (Residential Concentration Areas)** and **Volume I Appendix U (Nearest Residences and Other Buildings Map)** for maps showing the Sites in relation to the nearest residences and other buildings. The nearest residences are located approximately 0.3 mile from the Proposed and Alternate Sites.

6.1.2 Schools, Daycare Centers, Hospitals, and Nursing Homes

No schools, daycare centers, hospitals, or nursing homes are located within 0.5 mile of the Sites. The closest school is Deerfield Elementary School, located approximately 0.8 mile west of the Project boundary. The closest daycare facility is the Early Childhood Educational Center, located approximately 0.8 miles northwest of the Proposed Site. The closest senior living center is located approximately 0.7 mile northeast of the Project boundary (see **Volume I Appendix U [Sensitive Sites Map]**).

6.2 Current Land Ownership

The Proposed and Alternate Sites are currently owned by Wisconsin Electric.

6.2.1 Temporary or Permanent Acquisition of Lands or Rights-of-Way

Wisconsin Electric owns the Proposed and Alternate Sites. No land purchases or right-of-way easements will be required for the Project.

6.2.2 Options to Purchase

Wisconsin Electric owns the Proposed and Alternate Sites. No land purchases will be required for the Project.

6.3 Local Zoning

The following sections describe the local zoning near the Sites.

6.3.1 Zoning Ordinances

See **Volume II Appendix E** for copies of zoning ordinances affecting the Project and the area within 0.5 mile of each Site boundary.

6.3.2 Existing Zoning and Expected Changes

The Proposed and Alternate Site are located within the zoning jurisdiction of the City of Oak Creek. In addition, the Project would have laydown areas within the boundaries of the City of Oak Creek that are also zoned as M1-Industrial. There will also be laydown areas located in Racine County zoning jurisdiction which are zoned A1-Agricultural. The Project will not require zoning changes based on current zoning and permitted uses of existing zoning districts. See **Volume I Appendix S** for a map showing zoning within 0.5 mile of the Sites.

6.3.3 Land Area in Each Existing Zoning Classification

The zoning for either Site will be the same as the existing zoning (M1- Manufacturing District and A1-Agricultural). The total acres impacted, including temporary and permanent areas, is approximately 117 acres for the Proposed Site and 96 acres for the Alternate Site.

6.3.4 Zoning Changes Requested

The Applicant will not request a zoning change for either Site.

6.4 Land Use Plans

The following sections discuss land use plans. Copies of land use plans are provided **in Volume II Appendix F**.

6.4.1 Land Use Plans Adopted by Local Governments

The OCGS is located partially within the City of Oak Creek, and the current land use is subject to the City of Oak Creek Comprehensive Plan 2020; it is available at: https://www.oakcreekwi.gov/government/departments/community-development/comprehensive-plan-update

A portion of the sites are located within the County of Racine, and the current land use is subject to the County of Racine's Comprehensive Plan; it is available at: https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-301-comprehensive-plan-for-racine-county.pdf

See **Volume II Appendix F** for applicable sections from the above-mentioned comprehensive plans.

6.4.2 Conflicts with Land Use Plans

As described in Section 6.3, no zoning changes will be required for the Project. OCGS operations will continue to adhere local and regional land use plans.

6.5 Agriculture

The following sections discuss the current and past onsite farming activities, impacted practices, preservation lands, and potential mitigation.

6.5.1 Past and Present Farming Activities

The Project is located at the existing OCGS on land owned by Wisconsin Electric Power Company, which has been developed as an industrial area with access roads and structures supporting generation production. There are no farming activities, either immediate past or present, occurring within either Site

6.5.2 Agricultural Practices Impacted

The Project is not anticipated to impact area agricultural practices during construction or operation.

6.5.3 Farmland Preservation Programs

No known farmland preservation programs are located within 0.5 mile of the Sites.

6.5.4 Mitigation of Agricultural Lands

No agricultural lands occur at the Proposed or Alternate Sites and laydown areas or other facilities will not be placed within agricultural lands; therefore, the Project will not impact agricultural lands and mitigation is not necessary.

6.5.5 Drainage Districts

The Project is not within a Drainage District.

6.5.5.1 County Drainage Board Notification

The Project is not within a Drainage District.

6.5.6 Agricultural Impact Statement

The Project does not involve acquiring farmland and is currently owned by the Applicant; therefore an Agricultural Impact Statement (AIS) from DATCP is not needed.

6.5.7 Agricultural Properties Affected

6.5.8 Agricultural Impact Notice

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) requires Projects that use or have the authority to acquire farmland through condemnation, or eminent domain to submit an

agricultural impact notice. The Project does not involve acquiring farmland and is currently owned by the Applicant; therefore, notification to DATCP in accordance with Wis. Stat. § 32.035(3) is not needed.

6.5.9 Release Letter from DATCP

The Project does not involve acquiring farmland and is currently owned by the Applicant; therefore, a release letter from DATCP is not needed.

6.5.10 Induced Voltage Issues

The following sections discuss the potential issues and concerns surrounding induced voltage.

6.5.11 Confined Animal Dairy Operations

There are no known confined animal dairy operations within 0.5 mile of the Proposed facility location.

6.5.12 Agricultural Buildings

There are no known agricultural buildings located within 300 feet of the Proposed or Alternate Sites.

6.5.13 Induced Voltage Issues Discussion

No induced voltage issues are anticipated for the Facility due to the distance of animal operations and agricultural buildings from the OCGS property. No new electric transmission or distribution lines are required for the Facility outside of the existing property boundary of OCGS facility.

6.6 Conservation Easements and Programs

The following sections provide information on conservation easements near the Project. Conservation easements are defined as voluntary legal agreements undertaken by a private landowner, who retains ownership of the property, which place restrictions on the use of the landowner's property to protect the natural attributes of the land.

6.6.1 Properties with Conservation Easement Agreements

The Project is not located within 0.5 mile of any known conservation easements.

6.6.2 Discussion of Conservation Easements

The Project will be located entirely within the OCGS property and will not cross any known conservation easements.

6.6.3 Managed Forest Law or Forest Crop Law Programs

The Project will be located entirely within the OCGS property and will not impact any properties enrolled in Managed Forest Law or Forest Crop Law programs.

6.7 Communication with Potentially Affected Public

The following sections provide a discussion of the methods used by the Applicant to communicate with and provide information to the affected public.

6.7.1 Public Communication

Once this CPCN Application is filed with the PSCW, under Docket # 6630-CE-317, the Applicant will notify landowners near the Project (per Property Owners Mailing List in **Volume II Appendix B**), making them aware of the Project and the proposed public informational meeting (i.e., open house meeting) the Applicant plans to host. At this informational meeting, the Applicant will present the Project and get feedback from the public.

Local officials have been made aware of the proposal.

6.7.2 Public Meetings

Once this CPCN Application is filed with the PSCW under Docket # 6630-CE-317, the Applicant will host a public informational meeting (i.e., open house meeting) to inform the public of the Project, obtain feedback, and record any issues or concerns. Issues or concerns will be addressed on a case-by-case basis.

6.7.3 Public Outreach Mailings and Handouts

Once this CPCN Application is filed with the PSCW under Docket # 6630-CE-317, the Applicant will invite nearby landowners to a public informational meeting. No public outreach mailings and handouts have been mailed to date.

6.7.4 Written Public Comments

No written public communication has been received to date.

6.8 Demographics

The following sections provide population, race, and income levels of residents within 0.5 mile of the Sites, the City of Oak Creek and Milwaukee and Racine Counties.

6.8.1 Population, Race, and Income Levels

The Project's Proposed and Alternate Sites are within the City of Oak Creek, Wisconsin. The southern portion of the OCGS extends into the Village of Caledonia. The population composition of the City of Oak Creek is indicated in **Table 6-1**. The median household income levels within the vicinity of the Project range from $86,745 in census tract 15.01, to $121,007 in census tract 1603.01. The census tract 15.01 had the greatest percentage of people whose income in the past 12 months was below poverty level (7.5 percent), while census tract 1603.01 had the fewest (2.2 percent).

A map of the nearby communities is provided in **Volume I Appendix Q (Political Subdivision Boundaries Map)** and a map of the nearest residences is provided in **Volume I Appendix U (Nearest Residences and Other Buildings Map)**.

Table 6-1: Population Characteristics – City of Oak Creek, and Census Tracts within ½ Mile of Project

Demographic Group	City of Oak Creek	Census Tract 1602.02	Census Tract 1603.01	Census Tract 15.01	Census Tract 16.01
Total population	36,286	7,907	5,098	3,570	5,938
White (percent)	80.4	80.2	88.3	87.8	88.1
Black or African American (percent)	3.2	2.7	2.6	2.5	>1
American Indian and Alaskan Native (percent)	>1	>1	0.0	>1	0.0
Asian (percent)	6.0	7.9	2.6	3.5	1.1
Native Hawaiian and other Pacific Islander (percent)	0.0	0.0	0.0	3.5	0.0
Some other race (percent)	2.6	3.4	0.0	>1	>1
Two or more races (percent)	7.6	5.8	6.5	1.8	8.8
Median household income	$86,408	$95,888	$121,007	$86,745	$89,167
All people whose income in the past 12 months is below the poverty level (percent)	4.5	4.7	2.2	7.5	6.6

Source: U.S. Census Bureau American Community Survey 5-Year Estimates, 2017-2022

6.8.2 Description of Milwaukee and Racine Counties

The overall Milwaukee County population in 2022 was estimated at 918,661. The population composition for the county is 63.3 percent White, 27.1 percent Black or African American, 16.6 percent Hispanic or Latino, with small percentages American Indian, Asian, and other races. The median household income was $59,319 and the percentage of people whose income in the past 12 months fell below poverty level was 17.4 percent for the county. Racine County, located to the south of Milwaukee County, has a population of 195,846. The population composition for the county is 82.8 percent White, 11.8 percent Black or African American, 15.1 percent Hispanic or Latino, with small percentages of American Indian, Asian, and other races. The median household income for the county was $72,658 and the percentage of people whose income fell below the poverty level in the past 12 months was 9.6 percent. Based off the location and vicinity of the Project, population characteristics for Racine County are included in **Table 6-2**. A map of the nearest cities, towns and villages is provided in **Volume I Appendix Q (Political Subdivision Boundaries Map)**.

Table 6-2: Population Characteristics – Milwaukee and Racine Counties

Demographic Group	Milwaukee County, Wisconsin	Racine County, Wisconsin
Total population	918,661	195,846
White (percent)	63.3	82.8
Black or African American (percent)	27.1	11.8
American Indian and Alaska Native (percent)	1.0	0.7
Asian (percent)	5.3	1.4
Native Hawaiian and other Pacific Islander (percent)	N/A	0.1
Two or more races (percent)	3.2	3.2
Hispanic or Latino (percent)	16.6	15.1
Median household income	$59,319	$72,658
Poverty level (percent)	17.4	9.6

Source: U.S. Census Bureau American Community Survey, 2022

6.9 Local Government Impacts

The following sections discuss potential local government impacts from the Project.

6.9.1 List of Provided Services

The Facility will be connected to the City of Oak Creek municipal water treatment system to discharge sanitary waste. Emergency medical services are provided by the Fire Departments of the City of Oak Creek and the Village of Caledonia, with the closest hospital being Aurora Health Center. Fire and police protection are provided by both the City of Oak Creek and the Village of Caledonia, with stations as close as 0.7 miles of the OCGS.

6.9.2 Local Government Infrastructure and Facility Improvements Required

The Facility will require minor construction of water pipelines to connect with the municipal water supply and sewerage systems. There will be no change in capacity needed because the existing municipal sewer water systems have sufficient capacity.

Currently, healthcare facilities are anticipated to be sufficient for the Project during construction and operation, and no necessary improvements are anticipated. The Facility will have fire suppression measures of its own, as well as facilities for the storage of hazardous materials. This storage will require coordination activities with local fire departments. Police protection will be provided by the City of Oak Creek and the Wisconsin State Patrol, during both construction and operations, and no necessary improvements are anticipated related to police patrols.

6.9.3 Impacts on Local Budgets

Table 6-3 in **Section 6.9.4** provides estimate annual revenue by unit of government for Milwaukee County and the City of Oak Creek.

6.9.4 Revenue

The estimated annual revenue by unit of government associated with this Project is provided in **Table 6-3** below. Actual shared revenue payments are administered by the Wisconsin Department of Administration.

Table 6-3: Estimated Annual Revenue by Unit of Government

Unit of Government	Portion	Amount
Milwaukee County	1/3	$1.47 M
City of Oak Creek	2/3	$0.73 M
TOTAL		$2.20 M

6.9.5 Community Benefits

See 6.9.4 above.

6.9.6 Existing Facility Retirements as a Consequence of the Project

No existing facility retirements are planned in association with this Project.

6.9.6.1 Natural Gas Pipelines Impact

No existing facility retirements are planned in association with this Project.

6.9.6.2 Working with Natural Gas Pipeline Facility Owners

No existing facility retirements are planned in association with this Project.

6.9.6.3 Safety Measures for Pipeline Operators

No existing facility retirements are planned in association with this Project.

6.9.6.4 Work Plan with Pipeline Operators For Access

No existing facility retirements are planned in association with this Project.

6.9.7 High Voltage Transmission Line Fee Distributions

Other than a new gen-tie interconnection facility within the existing OCGS, no other transmission lines are needed for the Facility. Fee distributions do not apply.

6.10 Workforce

The follow sections describe the proposed workforce size, skills, and expected sources for construction and operation of the Project.

6.10.1 Workforce Size and Skills

During construction, the Project will create up to 500 jobs during peak activity. These jobs will include construction management staff, site superintendents, skilled craftsmen, engineers, start-up support personnel, and other miscellaneous services. Manufacturer's representatives will be onsite periodically; although, these representatives will not significantly increase the number of workers onsite at any given time.

Craft labor, including carpenters, heavy equipment operators, laborers, millwrights, ironworkers, masons, pipefitters, and electricians, will be required during construction. Other staff will also be onsite during construction, such as management, engineering, technical, and start-up staff. The number of workers onsite will begin at nominal levels at the beginning of construction and steadily increase over time.

The future operational staff (up to 8 full-time permanent jobs) will require a group of individuals trained to operate and maintain a Combustion Turbine powered generation facility. The training and skills required will include but not be limited to Facility-specific trained control operators, maintenance technicians, and supervisory personnel. Due to the close proximity of the existing Oak Creek units, some of the current site supervisory and maintenance personnel can be shared.

6.10.2 Workforce Source

The workforce may be sourced from different locations locally or nationwide. WPSC, construction contractor, and subcontractors will supply staff for management, engineering, technical, start-up, and other support staff. Skilled labor, including carpenters, heavy equipment operators, laborers, millwrights, ironworkers, insulators, painters, boilermakers, sheet metal workers, masons, pipefitters, electricians etc., will be sourced as available from subcontractors and/or local union labor halls.

6.11 Traffic, Roads, Railroads

The following sections provide a discussion of vehicle types to be used, construction traffic at each Proposed Site, potential impact of construction traffic, changes to traffic, and permanent changes to existing roads, railroads, and traffic signals as a result of the Project.

6.11.1 Vehicle Types

Construction traffic entering the Project site will primarily consist of automobile traffic for craft labor, construction management staff, contractors, equipment, and vendors. Material and equipment deliveries may be made by large trucks as well as heavy haul vehicles. Onsite traffic is anticipated to primarily consist of heavy construction equipment and material transport equipment.

6.11.2 Construction Traffic at Site Alternatives

The proposed construction entrance is shown in **Volume I Appendix A** and will consist of a material delivery entrance and main construction entrance utilizing existing roads and craft check-in gatehouse. For the Proposed and Alternate Site, these entrances will be located off Elm Road. Vehicle access to either site will be controlled by the existing gatehouse located off of a service road with a connection to Highway 32.

The construction site will be operated as a restricted worksite on the existing OCGS property. Craft workers will be required to ‘badge in’ when arriving at the site gatehouse and proceed to parking in the designated parking area. Designated walk paths to working locations will be constructed for craft workers to use. Craft workers will be expected to remain in the construction area onsite for the duration of their shifts, including a lunch break.

6.11.3 Estimated Traffic Frequency and Volume

Construction traffic entering the Project site will primarily consist of automobile traffic for craft labor, construction management staff, contractors, equipment, and vendors. Also, material and equipment deliveries may be made by large trucks as well as heavy haul vehicles.

The frequency of the daily workforce automobile traffic will follow the Project workforce numbers onsite at a given time. The daily automobile traffic to the site will increase from approximately 50 to 100 vehicles in the initial stages of construction to approximately 300 to 500 vehicles for peak months. The traffic will begin to decrease until it reaches approximately 75 vehicles near construction completion.

Material and equipment deliveries are anticipated to average between 5 and 15 trucks per day. Bulk deliveries for materials such as crushed stone, hot asphalt paving, and redi-mix concrete may occasionally exceed 15 vehicles on a given day. When possible, bulk deliveries will be schedule to avoid peak traffic on local roads.

6.11.4 Estimated Impacts on Local Transportation System

6.11.4.1 Probable Routes for Heavy Haul Transportation

It is anticipated that material deliveries will utilize the Wisconsin Interstate highway system to Highway 32, then to the local roads and into the OCGS entrance roads. Heavy haul components such as transformers and generators could be transported via barge, rail, or heavy haul truck to the Project area, then transported over local roads via heavy haul truck to the site. Heavy haul transports will likely utilize Highway 32 to access the Project site, subject to the limits imposed by the governing heavy haul permits. Construction material and workforce will come to the Project site via rubber-tired transport.

6.11.4.2 Potential for Road Damage

Applicant does not expect any permanent damage to roads with the implementation of mitigation measures proposed in Section 6.15.3.6.

6.11.4.3 Traffic Congestion

The Applicant will work with the appropriate county or municipal authority on solutions to potential traffic congestion that may develop as a result of the construction traffic.

6.11.4.4 Rail Line Usage

A UP rail line is located along the western boundary of the WEC property. This rail line is connected to the existing rail spur at the OCGS. No additional connections will be required by the Project. Railroads onsite may be used for equipment deliveries during Project construction.

6.11.4.5 Management of Heavy/Large Loads

Heavy haul and oversized permit loads will travel along the roadways described in Section 6.11.4.1. Certain oversized loads with height or width requirements may require alternate routes other than the

roadways described above and these are shown in **Volume I Appendix A**. Oversized loads and heavy loads will be planned and scheduled well in advance of shipping. Permits will be acquired before delivery. Vehicle escort services will be used for delivery as well.

6.11.5 Operational Traffic

Up to 8 full-time permanent employees will be hired for the Project. The addition of 8 permanent employees will have no significant effect on road traffic near the site during operation. All Facility personnel and deliveries to and from the Sites will enter from the existing entrance.

6.11.6 Permanent Road Changes

The entrance to the OCGS from Elm Road would be removed if the Proposed Site is constructed. No other permanent changes to existing roads are anticipated as part of the Project.

6.12 Noise

The following sections provide information on noise associated with the Project.

6.12.1 Noise Study

The full sound report is included in **Volume II Appendix G (Sound Emissions Feasibility Assessment)**.

6.12.2 Local Noise Ordinances

Applicable Federal, State, county, and municipal noise ordinances were reviewed for the Project area. The Project will be in the City of Oak Creek, Milwaukee County, Wisconsin. The State of Wisconsin and Milwaukee County do not have noise ordinances with applicable numerical sound level limits for the Project.

The City of Oak Creek and Applicant currently have an established Conditional Use Permit (CUP) which states that the noise emissions associated with operations activities on the property, measured at the agreed upon monitoring location, must be less than the limits agreed upon in the CUP.

6.12.3 Noise Impacts

As shown in **Volume II Appendix G (Sound Emissions Feasibility Assessment)**, the Project has been designed and can be built to maintain compliance with all applicable noise regulations listed above.

6.12.3.1 Fuel Delivery Train Couplings

No coal delivered by trains will be used by the Project.

6.12.3.2 Fuel Unloading

No coal delivered by trains will be used by the Project.

6.12.3.3 Rail Car Noise

No fuel delivered by trains will be used by the Project.

6.12.3.4 Unloading, Dumping, and Loading of Fuel Delivery Trucks and Ash/Waste Removal Trucks

Fuel will be delivered to the site via an existing lateral natural gas pipeline.

6.12.3.5 Steam Blows for Facility Start-Up

The Facility will use simple-cycle CTs for power generation. No steam will be produced.

6.12.3.6 Cooling Tower Operation

The Facility will not operate a cooling tower.

6.12.3.7 Other Dominant Generation Unit Components

Dominant noise sources that are expected to be part of the Project were incorporated into the predictive modeling. A description of the sources and their sound profile is included in the full noise report, included as **Volume II Appendix G (Sound Emissions Feasibility Assessment)**.

6.13 Odors

No odors are expected to be perceived outside the Facility boundary during construction or operation.

6.14 Fogging and Icing

The Facility will not operate a cooling tower.

6.15 Residential and Urban Communities

The nearest residences and neighborhoods are identified in the following sections.

6.15.1 Nearby Residences

The number of residences and other buildings for each of the Sites are listed in **Table 6-4** along with the range of distances to each site (See also **Volume I Appendix U [Nearest Residences and Other Buildings Map]**). The nearest residences are located approximately 0.3 mile northwest of the Proposed Site permanent project boundary. The nearest residences to the Alternate site permanent project boundary are located approximately 0.3 mile to the northeast.

Table 6-4: Residences and Other Buildings within the 0.5-Mile Project Boundary

Site Alternative	Building Type	Number within 0.5-Mile Project Boundary[1]	Range of Distances from Project Boundary (feet)
Proposed Site	Residence	160	772 - 2,637
	Commercial	4	372 - 2,404
	Municipal	0	NA
Alternate Site	Residence	153	1,017 - 2,630
	Commercial	3	372 - 2,404
	Municipal	0	NA

Note: 1. Project boundary includes temporarily and permanently areas impacted by the Project.

6.15.2 Impacts to Residential/Urban Neighborhoods

The land use immediately surrounding the proposed Project is industrial, commercial, and residential. There are residential properties to the north and west of the Proposed Site and northwest and west of the Alternate Site. The following sections discuss the potential impacts to residential neighborhoods located in the vicinity of the two Sites.

6.15.2.1 Cooling Tower Impacts

The Facility will not operate a cooling tower.

6.15.2.2 Noise

As shown in **Volume II Appendix G (Sound Emissions Feasibility Assessment)**, the Project has been designed and can be built to maintain compliance with all applicable noise regulations listed in Section 6.12.

6.15.2.3 Dust

Project construction will create additional airborne dust due to construction activities onsite. Offsite impacts are expected to be minimal due to the implementation of BMPs to reduce the amount of dust generated during construction. Facility operation is not expected to result in generation of a noticeable amount of dust because any well-traveled surfaces will be paved to reduce dust generation.

6.15.2.4 Aesthetics

The aesthetics of the surrounding area will not be significantly altered by the Facility. Photo simulations of the Sites are provided in **Volume I Appendix Z (Photo Simulations)**.

Both the Proposed and Alternate Sites are located at the OCGS. While the addition of the Facility will alter the aesthetics in the immediate surrounding, its construction will add to the industrial nature of the surrounding area. Components of both sites would be visible from East Elm Road.

6.15.2.5 Lighting

The Facility will result in the installation of lighting at locations where lighting does not currently exist; however, lighting will be designed to reduce offsite lighting impacts. See Section 6.16.2 for lighting techniques to be used to minimize impacts.

6.15.2.6 Air Emissions

Based on the modeling results, it has been predicted that the Facility will not cause or contribute to air quality concentrations that exceed the NAAQS and PSD Class I and Class II Increment. See Section 5.13 for more information related to air emissions.

6.15.2.7 Road Impacts

Construction traffic and any road closures will be temporary in nature and cease after construction is complete. Traffic during operation will primarily include employees entering or exiting the Facility, as well as occasional maintenance vehicles. Traffic during Project operation will increase vehicles on nearby roads but is not anticipated to significantly increase traffic due to the number of employees anticipated. With the mitigation measures proposed in Section 6.15.3.6, the Applicants do not expect any permanent impact on roads.

6.15.3 Mitigation

The following sections describe mitigation measures related to residential and urban communities to be implemented for the Project.

6.15.3.1 Cooling Tower Impact Mitigation

The Facility will not operate a cooling tower.

6.15.3.2 Noise

The Project has included sound mitigating elements including, but not limited to, exhaust stack silencing and exhaust diffuser barriers.

6.15.3.3 Dust Mitigation

BMPs will be implemented to reduce the amount of dust generated during construction. Well-traveled surfaces will be paved to reduce the potential for dust generation during operations.

6.15.3.4 Aesthetics

The Project will be located on the existing OCGS property and will not include additional components to improve aesthetics.

6.15.3.5 Lighting Impact Mitigation

The Project may require night lighting for safety and security during construction. During potential extensions of working hours, temporary lighting may be used in the construction and laydown areas. If work extends into the evening, the Applicant intends to utilize portable light if temporary lighting is necessary during Project construction. Lights will be turned to focus on work activities, so as not to shine on neighboring property on-coming traffic. During operation, outdoor light fixtures will be fully shielded and directed downward to minimize light visible from adjacent properties and to reduce glare in the area. Any floodlights required for the operation of the Project will be directed inward towards the Facility and will have top and side shields. To the extent practicable, lighting for security purposes will be turned on either by a local switch, as needed, or by motion sensors that will be triggered by movement.

6.15.3.6 Road Impact Mitigation

The Applicant does not anticipate permanent damage to roads. As a precautionary measure, Applicant will video-document the condition of local roads used for construction vehicle traffic from the construction entrances to state routes or the interstate prior to the start of construction. Any documented adverse impacts to the roads incurred due to the construction of the Project will be addressed through consultation with applicable road authorities regarding the Applicant's responsibility for repairing the adversely impacted roads.

Applicant will coordinate the proper construction signage on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.

6.15.4 Property Value

To date, no groups or communities have raised concerns about property values.

6.15.5 Impacts to Regional Communities

The area surrounding the Sites ranges from undeveloped forested land to highly developed residential and industrial areas. The Project will not involve any river-related activities. Based on the modeling results, it has been predicted that the Facility will have minimal effects on the NAAQS and PSD Class I and Class II Increment. With the mitigation measures noted in Section 6.15.3 and the installation of air pollution

emission control equipment (described in Section 3.5), the Facility is not anticipated to adversely impact the regional community.

6.15.6 Concerns Raised by Groups or Communities

To date, no groups or communities have raised concerns over the Project.

6.15.7 Hospitals, Schools, Daycare, and Retirement Homes

No schools, daycares, senior living centers, churches, medical facilities, or hospitals are located within 0.5 mile of the Project boundary; see **Volume I Appendix U (Sensitive Sites Map)**.

Hospitals

No hospitals are within 0.5 mile of the Proposed or Alternate Sites. The nearest hospital is the Aurora Health Center, located on Milwaukee Avenue, approximately 3.9 miles north of the OCPP property.

Schools

No schools are within 0.5 mile of the Proposed or Alternate Sites. The closest school is Deerfield Elementary School, located approximately 0.8 mile east of the Proposed Site.

Daycares

No daycare facilities are located within 0.5 mile of the Proposed or Alternate Sites. The closest daycare facility is the Early Childhood Educational Center, located approximately 0.8 miles northwest of the Proposed Site.

Retirement homes

No retirement facilities are located within 0.5 mile of the Proposed or Alternate Sites. The closest senior living center, Country view Assisted Living, is located approximately 0.7 mile northwest of the Proposed Site.

6.16 Visual Impacts

The following sections describe potential visual impact of the Project to the surrounding area.

6.16.1 Facility Profiles and Appearances

The following subsections describe the Facility dimensions, provide photo simulations of the proposed Facility, and identify scenic roads in the area.

6.16.1.1 Facility Profiles and Appearances

See **Volume I Appendix Z** for Facility profiles and appearances.

6.16.1.2 Photo Simulations

The photo simulations are approximations of the Facility orientation and size. See **Volume I Appendix Z** for photo simulations of the Facility.

6.16.1.3 Scenic Roads in the Project Area and Potential Impact

No scenic byways or roads are located near the Project boundary. No impacts to scenic roads are anticipated due to Project construction and operation.

6.16.2 Lighting

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

6.16.2.1 Site Lighting Plan for Construction

The Project may require night lighting for safety and security during construction. During potential extensions of working hours, temporary shielded lighting may be used in the construction and laydown areas. If work extends into the evening, the Applicant intends to utilize portable lights if temporary lighting is necessary during Project construction. Lights will be directed to focus on work activities, so as not to shine on neighboring property or on-coming traffic. It is possible that the FAA may require navigable airspace safety lighting for the temporary use of cranes.

6.16.2.2 Site Lighting Plan for Operations

The Project site will require exterior lighting for safety and security. Lights will be required in parking areas, on service roads around the Facility, at pedestrian entrances to various buildings, and along walkways on the property. Facility service roads, parking areas, and walkways will be illuminated with roadway lighting fixtures on poles. Building entrances will be illuminated with fixtures mounted directly above doors. Outdoor light fixtures will be fully shielded and directed downward to minimize light visible from adjacent properties and to reduce glare in the area. Any floodlights required for the operation of the Project will be directed inward towards the Facility and will have top and side shields. To the extent practicable, lighting for security purposes will be turned on either by a local switch, as needed, or by motion sensors that will be triggered by movement.

6.16.2.3 Potential Impacts of Site Lighting

At the Proposed and Alternate Sites, the nearest residential property is over 1,000 feet northwest of the site. Residences in this area experience light from the existing rail line and any potential lighting from the site would be shielded by the existing OCGS facilities and the existing tree line near the residences. There are no expected increases in lighting impacts on residences associated with the northern portion of the Proposed or Alternate Sites.

The nearest residential properties are approximately 772 and 1,017 feet from the site. The residences in this area would be shielded by a large existing tree line. There are no expected increases in lighting impacts on residences associated with the southern portion of the Proposed or Alternate Site.

6.16.2.4 Local Ordinances

Volume II Appendix E includes City of Oak Creek ordinances related to lighting.

6.17 Parks and Recreation Areas

Oak Creek has three bike trail classifications including class 1, class 2, and class 3 defined below:

- Class 1 - A separate travel way with minimum contact with vehicular or pedestrian movement
- Class 2 – A delineated bikeway next to the car lane
- Class 3 – An undelimited travel way that shares the normal street pavement with other vehicles

There is one class 3 and two class 1 bikeways on OCPP property. The Class 3 bikeway follows East Oak Wood Road to the Lake Michigan Shoreline. The two class 1 pathways follow East Elm Road and the Union Pacific Rail line towards East Oakwood Road.

Starting on the Northside of E Oakwood Road is Bender Park a county park and is approximately 0.2 mile from Alternate Site and 0.5 mile from the Proposed Site. Haas Park is located south of East Elm Road and West of the Union Pacific rail line on WEC property. Hass Park is a small neighborhood park with a playground and baseball field approximately 0.2 miles from the Proposed Site and 0.3 mile from the Alternate Site. To the south of the OPCC property is Cliffside Park a county park approximately 1.5 mile from the Proposed and Alternate Sites. There are no anticipated impacts to recreation areas and therefore no short or long-term mitigation measures are proposed.

6.17.1 Impacts to Parks and Recreation Areas or Trails

There could be temporary impacts from construction to bike trails and roads, but no impact are anticipated for any of the above mentioned parks. There is no long term anticipated impacts to local Parks or Recreation Areas.

6.17.1.1 Communication with Owners/Managers

There are no anticipated impacts to recreation areas as all Project-related activities will be on WEC-owned land; therefore, no communication has occurred.

6.17.1.2 Short- and Long-term Impacts to these Resources

During construction traffic on roads near the OCGS property may increase affecting the local bike trails and roads. Appropriate signage will be used to direct traffic and minimize impacts to local roads and bike trails. These impacts will be temporary in nature and resolve once construction is complete. There are no long-term impacts anticipated to these resources.

6.18 Airports

6.18.1 Location of Airports

There are two public use airports located nearest to the Sites, John H Batten Aiport (Airport ID RAC) to the south and General Mitchell International Airport to the north (MKE). John H Batten is located approximately 6 miles south of the Proposed Site and Alternate Sites. The General Mitchell International Airport is approximately 6.1 miles Northwest of the Alternate Site and 6.3 miles northwest of the Proposed Site.

Other nearby air facility to the northwest includes Aurora St. Luke's Medical Center Helipad approximately 10.9 miles from the Alternate Site and 11.6 miles from the Proposed Site. To southwest is Advocate Aurora Mount Pleasant Hospital Heliport approximately 9.8 miles from the Proposed Site and Alternate Site. The SC Johnson Waxdale heliport is located southwest of the Proposed and Alternate Sites approximately 9.5 miles. Saint Mary's Medical Center heliport is located south the Proposed and Alternate Site approximately 8.1 miles.

6.18.2 Airport Descriptions

General Mitchell International Airport has 5 asphalt paved runways, ranging from 9,990 feet to 4,182 feet long. John H Batten International Airport has two concrete runways, one of which is 6,574 feet long, and the other is 4,421 feet long. The Advocate Aurora Mount Pleasant Hospital Heliport is a 43-foot by 44-foot concrete helicopter landing pad. The SC Johnson Waxdale heliport is a 44-foot by 44-foot concrete

helicopter landing pad. The Saint Mary's Medical Center heliport is a 50-fot by 50-foot concrete helicopter landing pad.

6.18.3 Potential Impact to Navigable Airspace

The Project will not have any structures over 200 feet in height, which are considered to be an obstruction to navigable airspace and could impact aircraft safety unless it is marked and lighted in accordance with criteria set forth by the FAA. The FAA Notice Criteria Tool was used to test various equipment heights to determine if they would require notification to FAA and an aeronautical study. A test structure height of 199 feet at the Project site did not exceed Notice Criteria (**Volume II Appendix H**. It is anticipated that the Project will not impact navigable airspace during operation. The Project is not located within a heigh limitation zone of the General Mitchell International Airport in Milwaukee (**Volume II Appendix E**).

6.18.4 Construction Limitations and Permits

The Project will not require structures over 200 feet in height which can be considered hazards to navigable airspace. It is anticipated that there will be no construction limits related to structure height, but proper notifications will be made to the FAA and WisDOT Bureau of Aeronautics. The Project is not located within a height limitation zone of the General Mitchell International Airport in Milwaukee (**Volume II Appendix E**).

6.18.5 Consultation Documentation

See **Volume II Appendix H** for results from the FAA Notice Criteria Tool for the Project site.

6.19 Communication Towers

The Applicants used the Federal Communications Commission (FCC) GIS data to identify communication towers, such as cellphone towers and TV towers, within 0.5 mile of the Sites and potential connecting transmission line routes. No new towers are planned as part of the Project.

Table 6-5: Communication Towers within 0.5 Mile of the Alternative Sites

Tower Identification Number	Call Sign	Licensee Name	Tower Type	Distance from the Approximate Project Site Boundary (feet)
11520	KNKA214	Milwaukee SMSA Limited Partnership	L Tower	4,574

Source: FCC GIS, 2021

6.19.1 Potential Interference with Communication Towers

The Project is not expected to interfere with communication tower signals based on the location of the facility within the existing OCGS. If needed, the Applicants will work with the licensees near the Project site to mitigate any potential interference as applicable.

6.19.2 GIS Location Information

See **Volume I Appendix W** for a map showing communication towers near the Sites.

7.0 WATERWAY / WETLAND PERMITTING ACTIVITES

This section covers information required by the DNR for wetland and waterway permits for this project.

7.1 Waterway Activities

7.1.1 WDNR Waterway Present

Five waterways were field determined and mapped within the Study Area (**Volume II, Appendix I**), three permanent and two intermittent. All five are also WDNR 24K Hydrography mapped waterways. Detail including waterway width, depth range, substrate makeup, bank conditions and other observations made in the field are included in DNR Table 2, included in **Volume II, Appendix I**.

The Project will not impact any of the WDNR 24K Hydrography mapped waterways.

7.1.2 Outstanding or Exceptional Resources Waterbodies/Waterway

No waterways within the Study Area are classified as Outstanding or Exceptional Resource Waters, Trout Streams, Wild Rice Waters or Wild or Scenic Rivers.

7.1.3 Waterway Navigability Determination

The Applicant will not be requesting DNR staff to perform a navigability determination on any DNR mapped or field identified waterway within the Study Area.

7.1.4 Potential Impacts to Waterbodies/Waterways

7.1.4.1 Waterway Crossings

No waterway crossings are proposed as part of the Project.

7.1.4.2 Structures below Ordinary High Water Mark

No structures are proposed to be placed below the ordinary high watermark (OHWM) of a waterway as part of the Project.

7.1.4.3 Waterway Impacts due to Construction Activities

At this time, the Applicant expects to install new stormwater facilities near the new CT units and does not anticipate the need to modify any existing stormwater facilities, specifically those adjacent to Lake Michigan. However, if through further planning and design it is determined that modifications to the existing stormwater facilities are needed, then the Applicant will apply for the permits necessary to modify or construct those facilities, including any that are regulated under Chapter 30 Wis. Stats.

7.1.4.4 Underground Waterway Crossings

No underground waterway crossings are proposed as part of the Project.

7.1.5 Avoidance, Minimization, and Mitigation Methods of Waterway Impacts

The Project avoids all waterway impacts.

7.1.6 Open Trench Waterways

7.1.6.1 Waterway Width

No waterways within the Study Area are wider than 35 feet, as measured from OHWM to OHWM.

7.1.6.2 Machinery to be Used

No waterways will be open-cut trenched as part of the Project.

7.1.6.3 Size of Trench

No waterways will be open-cut trenched as part of the Project.

7.1.6.4 Details on Proposed In-water Work

No in-water work zone isolation/stream flow bypass systems are needed as part of the Project.

7.1.6.5 Duration and Timing of In-Stream Work

No in-stream work is proposed as part of the Project.

7.1.6.6 Mitigation of Impacts to Water during In-Water Work

The Project avoids all waterway impacts.

7.1.6.7 Restoration of Waterway Bed and Banks

The Project avoids all waterway impacts.

7.1.7 Directionally Boring in Waterways

7.1.7.1 Location and Size of Temporary Staging and Storage

No waterways will be directionally bored as part of the Project; therefore temporary staging and equipment storage areas associated with directionally bored waterways are not needed.

7.1.7.2 Location and Size of Bore Pits

No waterways will be directionally bored as part of the Project; therefore bore pits are not needed.

7.1.7.3 Contingency Plan for Bore Refusal

No waterways will be directionally bored as part of the Project

7.1.8 Temporary Clear Span Bridges (TCSB)

7.1.8.1 TCSB Information

No TCSB will be installed as part of the Project.

7.1.8.2 Waterways Wider than 35 Feet

No waterways within the Study Area are wider than 35-feet, as measured from OHWM to OHWM.

7.1.8.3 Placement and Removal of TCSB

No TCSB will be installed as part of the Project.

7.1.8.4 Duration of TCSB

No TCSB will be installed as part of the Project.

7.1.8.5 Sediment Controls Installed

No TCSB will be installed as part of the Project.

7.1.8.6 TCSB Inspections & Anchorage

No TCSB will be installed as part of the Project.

7.1.8.7 Clearance of TCSB

No TCSB will be installed as part of the Project.

7.1.8.8 Restoration of Waterway Bed and Banks

No TCSB will be installed as part of the Project.

7.1.9 Land Disturbance and Vegetation Removal at Waterway Crossings

No waterway crossings are proposed as part of the Project.

7.1.10 Other Activities in Waterways

At this time, the Applicant expects to install new stormwater facilities near the new CT units and does not anticipate the need to modify any existing stormwater facilities, specifically those adjacent to Lake Michigan. However, if through further planning and design it is determined that modifications to the

existing stormwater facilities are needed, then the Applicant will apply for the permits necessary to modify or construct those facilities, including any that are regulated under Chapter 30 Wis. Stats.

7.2 Wetland Activities

7.2.1 Methods to Identify Wetlands with Project Area

Oneida Total Integrated Enterprises (OTIE) conducted a wetland and waterway determination of the Study Area in Fall/Winter 2023/2024, in accordance with the criteria and methods outlined in the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual, Technical Report Y-87-1 (1987) and subsequent guidance documents, and applicable Regional Supplements to the Corps of Engineers Wetland Delineation Manual. The extent of the Study Area, detailed information on wetland and waterways, and the methodology used is provided in the Environmental Resource Report included in **Volume II, Appendix I.**

7.2.2 Wetland Types Present

A total of 93 wetlands were identified within the Study Area. A general description of each wetland type identified within the study area is as follows:

- Fresh wet meadow dominated by species such as common reed grass, reed canary grass, purple loosestrife, foxtail barley, path rush, salt marsh aster, woolly sedge and Torrey's rush.
- Shallow marsh dominated by species such as narrow leaved cattail, common reed grass and reed canary grass.
- Shrub swamp dominated by species such as eastern cottonwood, green ash, box elder, black willow, sandbar willow, common buckthorn, red osier dogwood and grey dogwood.
- Hardwood swamp and shrub swamp dominated by species such as green ash, box elder, black willow, sandbar willow, red osier dogwood, common buckthorn and silver maple.
- Constructed basin comprised of fresh wet meadow, shallow marsh and deep marsh dominated by open water species such as reed canary grass, common reed grass and narrow leaved cattail.

Volume II Appendix I contains the wetland determination report which contains specific details for each field identified wetland along with a photo log.

A total of 15 and 13 wetlands were identified within the Proposed and Alternate Sites, respectively. A breakdown of wetland type, associated disturbance area, and acreage within each is provided below:

Table 7-1: Proposed Site

Wetland ID	Project Component	Acres
W-16	CT	0.08
W-17	CT	0.05
W-18	CT	0.28
W-19	CT	0.21
W-30	CT	0.01
W-14	Laydown	0.01
W-65	Laydown	0.07
W-66	Laydown	0.25
W-93	Southern Parcel	0.04
W-29	Transmission	0.14
W-31	Transmission	0.12
W-49	Transmission	0.00
W-50	Transmission	0.24
W-52	Transmission	0.17
W-53	Transmission	0.09
Subtotal		1.76

Table 7-2: Alternate Site

Wetland ID	Project Component	Acres
W-16	Laydown	0.08
W-17	Laydown	0.05
W-18	Laydown	0.28
W-19	Laydown	0.2
W-65	Laydown	0.07
W-66	Laydown	0.25
W-93	Southern Parcel	0.04
W-2	Transmission	0.08
W-30	Transmission	0.01
W-49	Transmission	0
W-50	Transmission	0.24
W-52	Transmission	0.17
W-53	Transmission	0.09
Subtotal		1.59

7.2.3 Wetland Functional Values

7.2.3.1 Existing Functional Values of Present Wetland

The Proposed Site contains fresh wet meadow, shallow marsh/fresh wet meadow wetland areas and a detention pond. These wetlands lacked floral diversity due to the predominance of non-native and invasive species and impacts from disturbance and restoration associated with previous development and/or construction projects. These wetlands and detention pond are also adjacent to or surrounded by turf grass. Given non-native species dominance, historical disturbance and adjacent land cover, the overall functional values of the wetlands present are limited, but they provide a source of forage for various small wildlife species and provide areas of stormwater storage and groundwater recharge.

The Alternate site does not impact wetlands permanently and only temporarily impacts the same wetlands impacted by the Proposed site.

The laydown area west of the railroad tracks, transmission line connection area and the permanent impact area on the southern parcel on the OCGS contain fresh wet meadow, fresh wet meadow/shrub swamp, fresh wet meadow/shallow marsh wetland areas and a detention pond. These wetlands also lacked floral diversity due to the predominance of non-native and invasive species and impacts from disturbance and restoration associated with previous development and/or construction projects. These wetlands are surrounded by grassland communities. Given non-native species dominance and historical disturbance, the overall functional values of the wetlands present are limited, but they provide a source of forage for various small wildlife species and provide areas of groundwater recharge.

7.2.3.2 Impact to Existing Functional Values of Wetland

Wetlands impacted by the Project have limited functional value and are likely artificial and eligible for wetland exemption. The impact to existing functional values of these wetlands is limited to the removal of a source of forage for various small wildlife species and potential areas of groundwater recharge which would not affect the functional value of wetlands across the OCPP site in general.

7.2.3.3 Wisconsin Rapid Assessment Methodology (WRAM) Forms

WRAM forms were not completed due to the low quality and artificial nature of wetlands the Project will impact.

7.2.4 Sensitive / High-Quality Wetlands with Project Area

7.2.4.1 Wetlands in or adjacent to Area of Special Resource

No wetlands within the Study Area are in or adjacent to an Area of Special Natural Resource Interest (ANSRI).

7.2.4.2 Specific Wetlands

There is no deep marsh, northern or southern sedge meadow not dominated by reed canary grass, wet or wet-mesic prairie not dominated by reed canary grass, fresh wet meadows not dominated by reed canary grass, coastal marsh, interdunal or ridge and swale complex, wild rice-dominated emergent aquatic, open bog, bog relict, muskeg, floodplain forest within or adjacent to the Study Area.

Wetland W-83 and a portion of W-67 could qualify as an ephemeral pond in a wooded setting. While both of these wetlands are within the Study Area, the Project will not impact either wetland.

7.2.4.3 High Functional Values Wetlands

Wetland W-27 within the Study Area is also known as Elm Road Generating Station W-1 Wetland Mitigation Site. The U.S. Army Corps of Engineers permit was issued to WEPCO to construct two new coal power plants at the OCGS. As a result of the approved wetland disturbances on the ERGS property, wetland mitigation was planned and completed at the W-1 Wetland Mitigation Site. In 2007, restoration and enhancement activities occurred on a 4.75-acre site located in the southeast ¼ of Section 36, Township 5 North, Range 22 East. Today, wetland W-1 Wetland Mitigation Site contains and abundance of native species, some of which are rare (e.g. *Gentiana alba* and *Carex lupuliformis*) and is a higher functional value wetland. While a portion of the W-1 Wetland Mitigation Site falls within the Study Area, the Project will not impact this wetland.

7.2.5 Impacts, Construction Methods, and Restoration Methods

7.2.5.1 Construction Matting in Wetlands

No construction matting will be placed within wetlands as part of the Project.

7.2.5.2 Structures Constructed within Wetland

With either the Proposed or Alternate Site, the temporary disturbance limits of the generator tie-line connection area contains, either wholly or in part, six wetlands. While new generator tie-line structures will be placed within this disturbance area, impacts to these wetlands will be avoided. There are no structures planned to be constructed within a wetland as part of the Project.

7.2.5.3 Permanent Fill within Wetlands

Six wetlands will be permanently filled with the utilization of the Proposed Site; five within the permanent disturbance limits of the facility and one within the disturbance limits on the southern parcel on the OCGS. While these six wetlands were present during field investigations, there is not definitive evidence that shows wetland or stream history prior to August 1, 1991. Further, there is evidence of repeated human disturbance to the landscape and/or hydrology at the site that resulted in these wetlands being formed. These wetlands were not previously created to meet mitigation requirements and may be eligible for artificial wetland exemption. The Applicant will submit a wetland exemption request for these six wetlands.

The total amount of permanent wetland fill associated with these six wetlands is 23,489-square feet.

Only one wetland will be permanently filled with the utilization of the Alternate Site; the single wetland within the disturbance limits on the southern parcel on the OCGS.

The total amount of permanent wetland fill associated with this wetland is 1,702-square feet.

7.2.5.4 Vegetation Clearing within Wetlands

No shrub and/or forested wetlands will be cleared as part of the Project.

7.2.5.5 Additional Impacts to Wetland

No additional impacts to wetlands are proposed as part of the Project.

7.2.5.6 Underground Installation Under Wetlands

No underground installation under wetlands will occur as part of the Project.

7.2.6 Matting in Wetlands

No matting placement in wetlands is proposed as part of the Project.

7.2.7 Open-Cut Trenching within Wetlands

7.2.7.1 Total Disturbance Area in Wetlands

No wetlands will be open-cut trenched as part of the Project.

7.2.7.2 Trench Dewatering

No wetlands will be open-cut trenched as part of the Project; therefore, trench dewatering will not be needed.

7.2.7.3 Duration and Timing of Work in Wetlands

No wetlands will be open-cut trenched as part of the Project.

7.2.7.4 Restoration of Wetlands

No wetlands will be open-cut trenched as part of the Project.

7.2.8 Directional Boring in Wetlands

7.2.8.1 Access to Bored Wetland and Bore Pits

No wetlands will be directionally bored as part of the Project; therefore, access to bored wetland and bore pits is not needed.

7.2.8.2 Location and Size of Temporary Staging and Storage

No wetlands will be directionally bored as part of the Project; therefore, temporary staging and equipment storage in wetlands to facilitate boring is not needed.

7.2.8.3 Location and Size of Bore Pits

No wetlands will be directionally bored as part of the Project; therefore, bore pits are not needed

7.2.8.4 Contingency Plan for Bore Refusal

No wetlands will be directionally bored as part of the Project; therefore, a contingency plan for bore refusal is not needed.

7.2.9 Plowing in Wetlands

7.2.9.1 Total Disturbance Area in Wetland

No wetlands will be plowed as part of the Project.

7.2.9.2 Duration of Work in Wetlands

No wetlands will be plowed as part of the Project.

7.2.9.3 Restoration of Wetlands

No wetlands will be plowed as part of the Project; therefore, restoration is not needed

7.2.10 Wetland Crossings by Vehicle/Equipment Result in Discharge of Fill

7.2.10.1 Total Disturbance Area in Wetlands

No wetlands will be crossed by vehicles or equipment resulting in a discharge of fill.

7.2.10.2 Duration of Work in Wetlands

No wetlands will be crossed by vehicles or equipment resulting in a discharge of fill.

7.2.10.3 Restoration of Wetlands

No wetlands will be crossed by vehicles or equipment resulting in a discharge of fill; therefore, restoration is not needed.

7.2.11 Wetland Vegetation Clearing

7.2.11.1 Justification for Wetland Vegetation Clearing

No wetland tree and/or shrub clearing is proposed as part of the Project.

7.2.11.2 Duration of Vegetation Removal

No wetland tree and/or shrub clearing is proposed as part of the Project.

7.2.11.3 Equipment Use and Soil Disturbance for Vegetation Clearing

No wetland tree and/or shrub clearing is proposed as part of the Project.

7.2.11.4 Type of Wetland and Vegetation to be Cleared

No wetland tree and/or shrub clearing is proposed as part of the Project.

7.2.11.5 Restoration for Removed Vegetation

No wetland tree and/or shrub clearing is proposed as part of the Project.

7.2.11.6 Handling and Disposing of Debris from Vegetation Clearing

7.2.11.6.1 Debris to Remain in Wetland

No wetland tree and/or shrub clearing is proposed as part of the Project.

7.2.11.6.2 Debris to Remain in Wetland Impacts

No wetland tree and/or shrub clearing is proposed as part of the Project.

7.2.11.6.3 Monitoring Wetlands if Debris is not Removed

No wetland tree and/or shrub clearing is proposed as part of the Project.

7.2.12 Methods for Avoiding, Minimizing, and Mitigating Construction Impacts in Wetlands

Wetlands that were field identified by OTIE that had wetland history or did not appear to have been modified by human activity that changed the landscape, were avoided. To the extent practicable, disturbance limits were developed, shifted and reduced to further avoid wetland impacts. Only wetlands that were field determined by OTIE that lacked definitive evidence of wetland or stream history and appear to be present as a result of repeated human modification to the landscape (i.e. artificial) were included in both temporary and permanent disturbance limits. As such, the Project limits impacts to degraded wetlands; all high quality wetlands have been avoided. In the case of the transmission line connection area, which overlaps wetlands, structures will be designed or shifted to avoid wetlands within this area. Construction activities within this area will also avoid impacts to these wetlands.

To reduce the potential for secondary impacts associated with sedimentation into an adjacent wetlands, BMPs for erosion and sediment control will be implemented throughout Project construction and restoration activities as needed or required by permit. BMPs will be maintained until final restoration and stabilization are achieved.

7.2.13 Environmental Monitoring

The Applicant does not expect to employ a full-time environmental monitor during Project construction.

One or more environmental monitors will be utilized during construction. The monitor(s) will be responsible for conducting stormwater inspections and water resource permit compliance. The environmental monitor(s) will support construction personnel throughout the Project to provide direction and guidance related to regulatory compliance and implementing the planned construction measures to minimize impacts to natural resources. The environmental monitor will be onsite a minimum of once per week, and more frequent as necessitated by the construction schedule, construction sequencing, and as site conditions require.

Where specific restoration plans are developed, a qualified environmental monitor, specializing in ecological restoration will be employed during restoration activities. Their presence will be full time during seed bed preparation and permanent seed installation and then periodically as needed and determined by vegetation establishment and the subsequent monitoring and management activities

required to successfully meet the objectives of the site specific restoration plan. They will be responsible for monitoring restored areas and prescribing and conducting vegetation management activities within restored areas until the desired vegetation is established and the objectives of the site-specific restoration plan are met.

7.2.14 Wetland Restoration

Wetlands impacted by permanent facilities will not be restored. Wetlands that are temporarily impacted by Project construction and determined to be artificial/exempt by the WDNR, will not be restored to wetland. These areas will be taken into consideration as restoration plans are developed for upland areas. Wetlands that are temporarily impacted by Project construction that are determined by the WDNR to not be artificial/exempt will be restored to pre-existing conditions. Once this determination has been made, a restoration plan addressing restoring elevations, soil profiles and wetland hydrology along with seeding, maintenance, monitoring and management criteria will be developed for these wetlands.

7.3 Mapping Wetland and Waterway Locations, Impacts, and Crossing

7.3.1 Aerial Map Imagery

Aerial map imagery for the Proposed and Alternate Site are included in **Volume I Appendix A (Location Map and Aerial Photographs)**.

7.3.2 Wetland Delineation Map

A map showing wetland presence (i.e. field determination) for the Proposed and Alternate Sites are included in **Volume I Appendix M (Wetland Map)** as well as in the **Wetland Delineation Report (Volume II Appendix I)**.

8.0 ENDANGERED, THREATENED, SPECIAL CONCERN SPECIES AND NATURAL COMMUNITIES

In the Introduction, page II of the AFR, additional details are provided on how to perform an Endangered Resources (ER) screening and about performing habitat assessments, if required.

8.1 Endangered Resources Review

A proposed Endangered Resources (ER Review) was conducted for the Study Area to identify any state or federally listed rare species, natural communities, or other natural features with element-occurrence records that may occur within the one- or two-mile buffers of the Study Area boundaries. Occurrences of two special concerns bees, one endangered bird, two natural communities, three special concern plants, and two endangered plants. The proposed ER Review was submitted to the WDNR on February 19th, 2024. A Certified ER Review (ER Log# 24-389) was approved by the WDNR on April 5, 2024. Both a confidential and a redacted public version of the Certified ER Review is provided in **Volume III Appendix A**.

The Project has a federal nexus requiring Section 7 consultation. As a result, the Project was assessed via the U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) website. The following species were identified in the Official Species List (**Volume II Appendix J**).

- Northern Long-eared Bat (*Mytosis septentrionalis*) – Endangered
- Tricolored Bat (Perimytosis subflavus) – Proposed Endangered
- Rufa Red Knot (*Calidris canutus rufa*) – Threatened
- Monarch Butterfly (*Danaus plexippus*) – Candidate
- Rusty Patch Bumble Bee (*Bombus affinis*) - Endangered

8.2 Habitat Assessment and Biological Survey

Based on the species identified in the WDNR proposed ER Review and in the USFWS Official Species List, the Study Area was reviewed for potential suitable rare species habitats during field investigations, as summarized below.

Habitat within the Study Area varies from industrial developed with hard surfaces to turf grass to grassland and forest land communities and wetlands. Based on the species habitat information, it is likely that there is suitable habitat within and adjacent to the Proposed and Alternate Sites for one or more of the rare species identified.

No biological surveys are required to be completed prior to construction.

8.3 Potential Impacts to Rare Species

8.3.1 WDNR-Identified Follow-Up Actions

The Certified ER Review identified required actions for two species, a bee and a bird. The project overlaps the Rusty Patched Bumble Bee (RPBB) High Potential Zone, occurs within 1 mile of a RPBB Element Occurrence and contains suitable habitat (i.e. grassland) for the bee. Project proponents should follow the U.S. Fish and Wildlife Service S7 Voluntary Implementation Guidance for the RPBB. This may include the use of native trees, shrubs and flowering plants in landscaping provide plants that bloom from spring through fall and remove and control invasive plants in any habitat used for foraging, nesting or overwintering. If suitable habitat is present and will be affected by the project, the Applicant is to contact the U.S. Fish and Wildlife Service Bloomington Field Office for further consultation.

The Peregrine Falcon is known to nest at the OCGS. If access to the site and project activities are to take place within 300-feet of the known nest location, then access and activities may not take place during the nesting season (March 15 – July 10) unless all work and equipment is less than 20-feet tall. At this time, the Applicant does not expect any project related activities within 300-feet of the peregrine nest box at any time during the year.

8.3.2 WDNR-Identified Recommended Actions to be Incorporated

The Certified ER Review identified recommended actions for a bee, which include the use of native trees, shrubs and flowering plants in landscaping provide plants that bloom from spring through fall and remove and control invasive plants in any habitat this species would use for foraging, nesting and overwintering. These measures align directly with required actions for the Project and as such, will be implemented.

8.3.3 Follow-Up Actions Not Incorporated

At this time, there are no recommended follow-up actions that the Applicant is not planning to incorporate into project construction or operations.

8.3.4 WDNR and USFWS Communication

The Certified ER Review (ER Log# 24-389) was approved by the WDNR on April 5, 2024. Required actions were identified to comply with Wisconsin's endangered species laws.

The Project was assessed via the U.S. Fish and Wildlife Service's IPaC website. The Project was further evaluated using the Northern Long-eared Bat Determination Key and the Minnesota-Wisconsin

Determination Key for the remaining species (**Volume II Appendix J)**. A determination of Not Likely to Affect was made for the Northern Long-eared Bat and Tricolored Bat, while a determination of No Effect was made for the Rufa Red Knot and the Monarch Butterfly a determination of May Effect was made for the Rusty Patch Bumblebee.

Further consultation with the Minnesota-Wisconsin Ecological Services Field Office is required for the Rusty Patch Bumblebee. An email was sent to their office to begin formal consultation and to discuss methods to avoid or minimize potential adverse effects to this species. Correspondence to date is included in **Volume II Appendix A**.