Oregon Clean Energy Center

Application to the Ohio Power Siting Board For a Certificate of Environmental Compatibility and Public Need

Submitted by:

Oregon Clean Energy, LLC

CASE NO. 12-2959-EL-BGN

January 2013

Oregon Clean Energy, LLC
Natural Gas Energy for Ohio's Future

Bricker & Eckler
ATTORNEYS AT LAW

COLUMBUS | CLEVELAND
CINCINNATI-DAYTON

BRICKER & ECKLER LLP
100 South Third Street
Columbus, Ohio 43215-4291
MAIN: 614.227.2300
FAX: 614.227.2390

www.bricker.com
info@bricker.com

Sally W. Bloomfield
614.227.2368
sbloomfield@bricker.com

January 17, 2013

Ms. Betty McCauly
Administration/Docketing
Ohio Power Siting Board
180 East Broad Street, 11th Floor
Columbus, Ohio 43215-3793

Re: Oregon Clean Energy, LLC
Case No. 12-2959-EL-BGN

Dear Ms. McCauly:

Enclosed, please find an original and four copies of the Application of Oregon Clean Energy, LLC, a limited liability company, for a Certificate of Environmental Compatibility and Public Need for an Electric Generating Facility in Oregon, Ohio, Lucas County under Chapter 4906-13 of the Ohio Administrative Code (OAC). Pursuant to OAC Rule 4906-5-03(A)(3), the applicant makes the following declarations:

Name of Applicant:	Oregon Clean Energy, LLC whose member and manager is William J. Martin 20 Park Plaza, Suite #400 Boston, MA 02116
Name/Location of Proposed Facility:	Oregon Clean Energy Center Municipality of Oregon, Ohio
Authorized Representative Technical:	William J. Martin Oregon Clean Energy, LLC 20 Park Plaza, Suite #400 Boston, Massachusetts Telephone: (617) 948-2165 E:mail: wmartin@cme-energy.com or wmartin2@vzw.blackberry.net

Authorized Representative
Legal:

Sally W. Bloomfield
Bricker & Eckler LLP
100 South Third Street
Columbus, OH 43215
Telephone: (614) 227-2368
Facsimile: (614) 227-2390
E-Mail: sbloomfield@bricker.com

Since the pre application was filed, there have been no revisions that appear in the application.

Notarized Statement: See Attached Affidavit of William J. Martin, on behalf of Oregon Clean Energy, LLC

Sincerely on behalf of
OREGON CLEAN ENERGY, LLC

Sally W Bloomfield

Sally W. Bloomfield

Attachment

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of **OREGON CLEAN ENERGY, LLC** for a Certificate of Environmental Compatibility and Public Need for an Electric Generating Facility in Oregon, Ohio, Lucas County	)))))	Case No. 12-2959-EL-BGN

AFFIDAVIT OF WILLIAM J. MARTIN, OREGON CLEAN ENERGY, LLC

STATE OF MASSACHUETTS :
: ss.
COUNTY OF MIDDLESEX:

I, William J. Martin, being duly sworn and cautioned, state that I am over 18 years of age and competent to testify to the matters stated in this affidavit and further state the following based upon my personal knowledge:

1. I am executing this affidavit on behalf of Oregon Clean Energy, LLC as a member and manager.

2. I have reviewed Oregon Clean Energy LLC's Application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need for the Oregon Clean Energy Center project.

3. To the best of my knowledge, information and belief, the information and materials contained in the above-referenced Application are true and accurate.

4. To the best of my knowledge, information and belief, the above-referenced Application is complete.

William J. Martin
William J. Martin

Sworn to before and signed in my presence this 14 day of January 2013.

Kathryn J. Longo
Notary Public

[SEAL]

KATHRYN J. LONGO
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
February 15, 2019

6028784v1

Tables

List of Figures

List of Appendices

LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
°F	degrees Fahrenheit
AERMOD	A USEPA steady-state air quality dispersion plume model
AMP	American Municipal Power
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
ATV	all-terrain vehicle
BACT	Best Available Control Technology
BAT	Best Available Technology
BMP	Best Management Practice
BP	British Petroleum
Btu	British thermal units
CAIR	Clean Air Interstate Rule
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CH_2O	formaldehyde
CI	compression ignition
C-I Zone	Commercial-Industrial Zone
CO	carbon monoxide
CSAPR	Cross-State Air Pollution Rule
CTG	combustion turbine generator
dB	decibel
dBA	A-weighted decibel
DLN	dry low NO_x
EIF	Energy Investors Fund
FAA	Federal Aviation Administration
the Facility	Oregon Clean Energy Center
FERC	Federal Energy Regulatory Commission
FuA	Fulton silty clay loam
GAAP	Generally Accepted Accounting Principles

g/hp-hr	grams per horsepower-hour
g/kW-hr	grams per kilowatt-hour
gpd	gallons per day
gpm	gallons per minute
HAP	hazardous air pollutant
HHV	higher heating value
HRSG	heat recovery steam generator
H_2SO_4	sulfuric acid mist
Hz	Hertz
IPP	Independent Power Project
ISO	International Standards Organization
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
lb/MMBtu	pounds per million British thermal units
lb/MW-hr	pounds per megawatt-hour
Lc	Latty silty clay
L_{eq}	Equivalent steady sound level of a noise energy-averaged over time
MACT	Maximum Achievable Control Technology
mgd	million gallons per day
MMBtu/hr	million British thermal units per hour
mph	miles per hour
MW	megawatts
MWh	megawatt-hour
NAAQS	National Ambient Air Quality Standards
NAVD88	North American Vertical Datum of 1988
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
ng/J	nanograms per Joule
NH_3	ammonia
NO	nitric oxide

NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NSR	New Source Review
O_3	ozone
OAC	Ohio Administrative Code
OCE	Oregon Clean Energy, LLC
ODOT	Ohio Department of Transportation
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Office
O&M	Operations & Maintenance
OPSB	Ohio Power Siting Board
OSHA	Occupational Safety and Health Administration
Pb	lead
PJM	the regional electric transmission Independent System Operator
PM	particulate matter
PM_{10}	particulate matter with a diameter less than or equal to 10 microns
$PM_{2.5}$	particulate matter with a diameter less than or equal to 2.5 microns
POTW	publicly owned treatment works
ppmv	parts per million by volume
ppmvd	parts per million volume dry basis
the Project	Oregon Clean Energy Center
PSD	Prevention of Significant Deterioration
PTI	Permit to Install
RICE	Reciprocating Internal Combustion Engine
RQD	Rock Quality Designation

scf	standard cubic feet
SCR	selective catalytic reduction
SIL	Significant Impact Level
SO_2	sulfur dioxide
SO_x	sulfur oxides
STG	steam turbine generator
tpy	tons per year
TTL	TTL Associates, Inc.
UL	Underwriters' Laboratory
U.S.	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compounds

4906-13-01 Project Summary and Facility Overview

(A) PROJECT SUMMARY AND OVERVIEW

Oregon Clean Energy, LLC (OCE) is proposing to develop, finance, build, own and operate the Oregon Clean Energy Center (the Project or Facility), a new natural gas-fired combined-cycle generating facility located in Lucas County, Ohio (Figure 01-1).

(1) General Purpose of the Facility

The Oregon Clean Energy Center will help meet energy demand in the region, particularly in light of the planned retirement of 1,611 megawatts (MW) of existing coal-fired generating assets currently serving that need (Bay Shore, Ohio; Avon Lake, Ohio; and J. R. Whiting, Michigan). The Oregon Clean Energy Center will help meet this need by providing additional base load and peaking capability via its natural gas-fired combined-cycle technology.

(2) Description of the Facility

The Oregon Clean Energy Center is identified in its PJM interconnection application as a nominal 799 net MW (unfired International Standards Organization [ISO] conditions) energy facility and will utilize advanced gas turbine/steam turbine, combined-cycle technology to generate electricity. When the two gas turbines are fired at their maximum capability and the heat recovery steam generators (HRSGs) are operated using auxiliary firing, the maximum net plant output will remain at approximately 799 MW, even under summer operating conditions. Because a final combustion turbine vendor has not yet been selected, layouts based on both Mitsubishi and Siemens technology have been provided in this application. Although differences in layout details exist and are shown, the environmental impacts are similar between the two options; where impacts differ, it will be noted in the application narrative.

The Project is designed to operate solely on natural gas. The Project will not be capable of operating on fuel oil. OCE has determined that, due to the high level of reliable natural gas delivery to the Project, a back-up fuel such as fuel oil is not required. Gas turbine and steam turbine power generating equipment will be located indoors, making the Project visually pleasing and a quiet neighbor.

The proposed location for the Oregon Clean Energy Center consists of an irregularly shaped parcel of land, totaling approximately 30 acres, located entirely within Lucas County on North Lallendorf Road in the City of Oregon, Ohio (the Site). Located approximately 4.25 miles northeast of Interstate 280 and 2 miles north of Route 2, access to the Site is good. Its setting is within a mixed industrial, commercial and agricultural area that is located east of North Lallendorf Road, west of farmland located at 4632 Cedar Point Road, north of the Norfolk Southern Railroad, and south of the John Gradel and Sons' Farms. The Site is commercially/industrially zoned within the Cedar Point Development Park, a designated Foreign Trade Zone. First Energy-owned 345 kilovolt (kV) transmission lines extend in an east-west direction just to the north of the Site. The eastern edge of the Site is transected by Johlin Ditch, while Driftmeyer Ditch extends across the western portion of the Site. Both ditches flow north to Maumee Bay of Lake Erie, located less than 2 miles north of the Site. Existing Site elevation is approximately 588 feet (NAVD88).

Pearson Park is located approximately 1.5 miles south of the Site, Collins Park is 1.5 miles west-southwest of the Site, and East Shore Veterans Park and Maumee Bay

State Park are approximately 2 miles east-northeast of the Site. Further east-northeast, along the shore of Lake Erie, are the Mallard Club Wilderness Area and Cedar Point National Wildlife Refuge.

(3) Site Selection Process

The Site selection process is described in greater detail in Section 4906-13-03. As outlined in that section, OCE's market knowledge identified this region of Ohio as one where the planned shutdown of existing coal-fired capacity will create the need for clean, efficient power generation. The City of Oregon and the proposed Site were selected based on consideration of a range of key characteristics for a successful Project. Upon identification of this Site, additional scrutiny of a range of issues was undertaken prior to initiating the engineering and environmental activities necessary for completion of the Ohio Power Siting Board (OPSB) application.

Key characteristics of the proposed Site that makes it suitable for Project development are outlined in Table 01-1.

TABLE 01-1
Proposed Site Characteristics

Key Attribute	Site Conditions
Adequate Size	Adequate space for Facility layout exists within the 30-acre Site. An additional 30.5-acre adjacent parcel, controlled by OCE, is available for potential construction laydown use and the proposed electrical interconnection corridor.
Compatible Zoning and Land Use	The Site is within a Commercial-Industrial zone intended for the type of use proposed and is surrounded by mixed uses, including several industrial facilities.
Natural Gas Alternatives	At least five strong alternatives exist for providing natural gas to the Project site, to be permitted by others.
Short Distance to Robust Electrical Interconnection	An approximately 550-foot interconnection corridor will extend on the adjacent parcel, controlled by OCE, to reach the existing First Energy 345 kV transmission lines. Dual connection is planned, allowing power to access need.

Key Attribute	Site Conditions
Adequate Water Supply	Raw water is to be provided by the City. Adequate water is available to the City such that community water use will not be affected. Potable water connection is available from the City to meet the Project's low domestic and internal steam cycle water requirements.
Feasible Wastewater Discharge	The Project can discharge to existing City infrastructure, meeting existing industrial discharge requirements.
Strong Transportation Network	The adjacent rail line provides opportunity for heavy equipment deliveries during construction. Port access and a roadway infrastructure with significant loading capacity are also beneficial.
Lack of Significant Environmental Constraints	The Site is located within an air quality attainment area, and has limited ecological constraints. The Project can be accommodated with limited environmental impact.

(4) Principal Environmental and Socioeconomic Considerations

OCE has evaluated the impacts of the proposed Project's construction and operation on the environment and on the community. Topics evaluated include: air quality, water resources, solid waste, demographics, noise, ecology, land use, economics (including employment), cultural resources and agricultural districts.

(a) Potential Construction Impacts

Construction impacts have been minimized through the selection of a Site that is relatively flat, requires no significant tree clearing, and has wetlands/waterways limited to within the banks of the two on-site ditches. Floodplain is also restricted to within the banks of Driftmeyer Ditch and does not extend further onto the Site. Utility infrastructure and natural gas interconnection routes (provided by others) are anticipated to be available that will minimize the need for clearing and the potential for other environmental resource impacts. The electric transmission interconnection will extend a short distance north to an existing transmission corridor over property similar in character to the Project Site.

Although the Site is in active agricultural use, it is not within a designated agricultural district; no impact to such area is, therefore, anticipated to occur as a result of the Project. No impacts to cultural resources are anticipated. An on-site archaeological investigation has been completed for the Site to confirm that there are no significant on-site artifacts. The report of this investigation is pending acceptance by the Ohio Historic Preservation Office (OHPO), and will be updated to include consideration of any off-Site parcels, as applicable, as potential impact areas are confirmed.

A number of park, recreation and open space areas are present around the Site vicinity but no negative impact is anticipated. Just beyond a mile northeast of the site is the Eagles Landing Golf Club, an 18-hole public golf course. About 2.5 miles northeast of the site is Maumee Bay State Park, a 1,336-acre park that offers camping, hiking, fishing, boating and swimming. Maumee Bay Golf Course is an 18-hole public golf course inside Maumee Bay State Park.

About 5 miles northeast of the Site is the 402-acre Mallard Club Marsh Wildlife Area, which supports hunting, fishing and trapping. The wildlife area consists of six marshlands separated by dikes and is managed to provide wetland vegetation that sustains a variety of wildlife. A portion of the marsh borders Maumee Bay on Lake Erie. Just east of the wildlife area is Cedar Point National Wildlife Refuge. Cedar Point National Wildlife Refuge was donated to the United States Fish and Wildlife Service (USFWS) in 1964 by the owners of the

Cedar Point Shooting Club. Currently, the refuge consists of 2,445 acres of three marshes, including the largest contiguous marsh in Ohio's Lake Erie marshes. Most of the refuge is closed to the public; however, a fishing area is open from June through August.

Approximately 1 mile south of the Site is Pearson Metropark, part of the Toledo Area Metropark system. Pearson Metropark is one of the last remaining stands of the Great Black Swamp that once covered much of northwest Ohio. The thick woods and location close to Lake Erie make Pearson an important stopover for migrating birds. The park includes buildings, shelters, bridges, ponds and a garden with a waterfall. A wetland mitigation bank, part of a 300-acre addition to Pearson Metropark, is located north of Starr Avenue. This area will continue to be developed with a range of wetland types to offset unavoidable impacts to similar wetland resources.

Approximately 1.5 miles west of the Site is Collins Park, a 9-hole public golf course. About 2.5 miles southwest of the Site is Ravine Park and Hecklinger Pond.

During construction, air quality impacts will be limited to relatively minor emissions from the construction equipment required for Site preparation and from fugitive dust emissions. Impacts to water quality will also be extremely limited, with no direct impacts to wetlands or surface waters proposed. The Project will obtain general permit coverage for construction under the National Pollutant Discharge Elimination System (NPDES) and will implement Best Management Practices (BMPs) to maintain water quality standards and minimize erosion and sediment control. Solid waste generated by Project construction will be minimized and removed from the Site by licensed haulers and disposed of at local or regional approved facilities. Traffic will increase during the 32 to 36-month construction period. In order to minimize potential effect on the community, OCE will coordinate with local officials to ensure that shift times and travel routes are optimized to the extent possible.

(b) Potential Operational Impacts

Following construction, impacts will also be minimal. Operational impacts on air quality will be minimized through the use of efficient new gas turbine technology, and incorporating dry-low nitrogen oxide (DLN) combustors, oxidation catalysts and selective catalytic reduction (SCR). The Project will not be equipped to burn liquid fuel, thereby ensuring low emission rates throughout its operating life. All air quality impacts will be below United States Environmental Protection Agency (USEPA) significant impact levels (SILs) (see Table 06-3). Noise impacts associated with the Project will comply with the City's Commercial-Industrial zone requirement of 75 A-weighted decibels (dBA) at the Project property line. Sound-generating equipment will be at least 970 feet from the nearest residential property, which is a non-conforming use within the Commercial-Industrial zone. All solid waste generated during Project operation will be minimized and removed from the Site by licensed haulers and disposed of at local or regional approved facilities. Project-related traffic will be minimal once the Facility is operational, with only approximately 25 employees and Facility-related deliveries traveling to and from the Site on a regular basis.

The Project is expected to have a significant positive impact on the local economy since it will pay for local services utilized, as well as contribute to the local tax base. The Project will utilize municipal raw water supplies available from the City of Oregon, eliminating the need for a new surface water intake structure or groundwater well. The Project will purchase a lesser amount of potable water from the City for use in the Project's internal steam cycle as well as for sanitary purposes. Process wastewaters generated by the Project will be directly discharged to the City of Oregon's wastewater collection system and Publicly Owned Treatment Works (POTW) and will comply with existing POTW pretreatment requirements protective of water quality.

(5) Project Schedule

The Oregon Clean Energy Center schedule is based on the submission of this Application in January 2013, the issuance of the OPSB certificate by June 2013, and the commencement of commercial operation by May 2016. It is crucial that the Oregon Clean Energy Center be in operation by May 2016 in order to meet the anticipated summer peak load demands within the PJM marketplace.

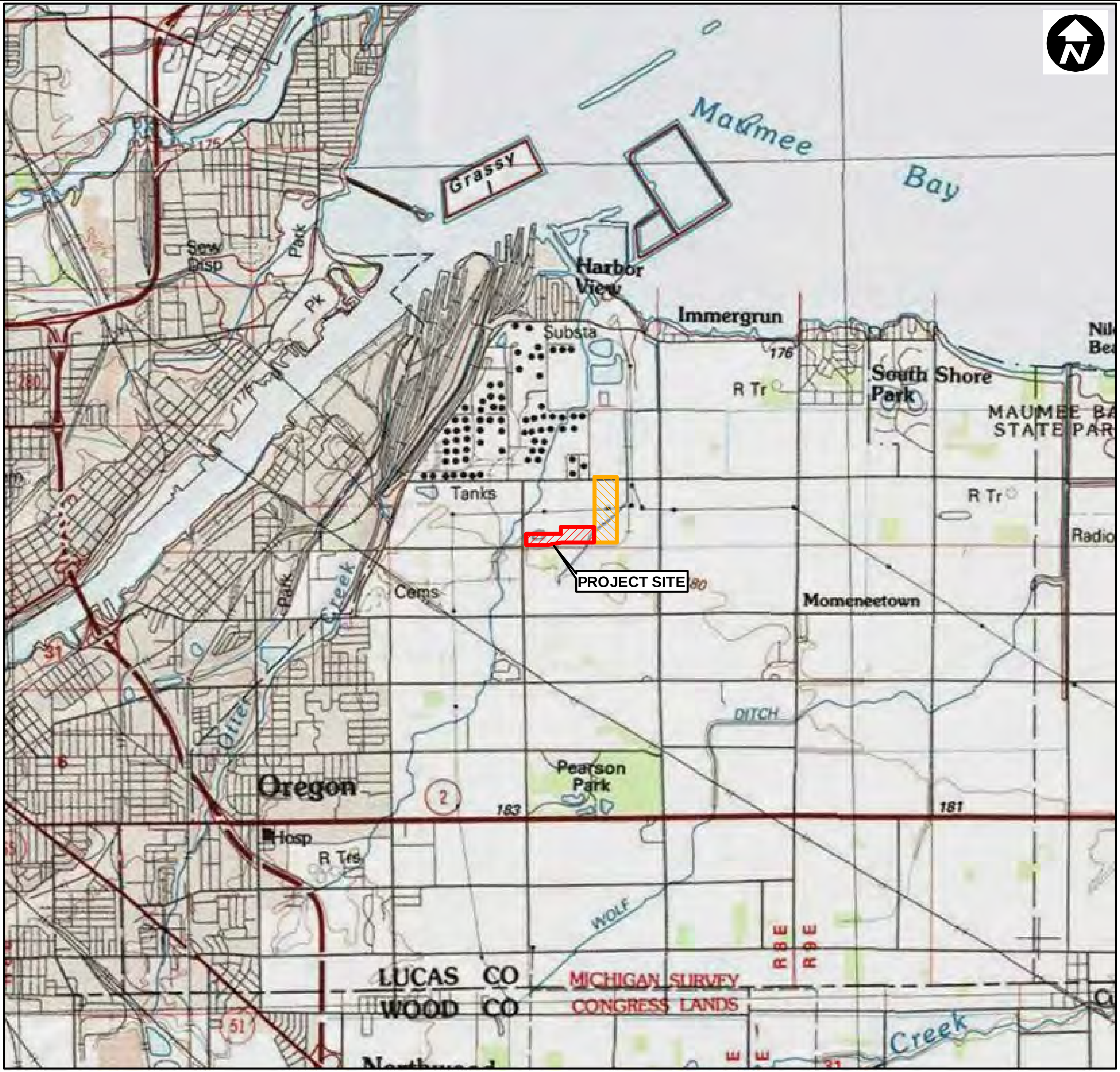
Any delay in the issuance of the OPSB certificate would have a significant negative commercial impact on the Project's planned summer 2016 operations and would jeopardize the Project's ability to meet contractual PJM needs, as well as lowering the available capacity during critical summertime.

OCE intends to bid into PJM's Capacity Auction in May 2013, for delivery of Facility capacity in summer 2016 – 17. As part of this bid process, OCE will be making guarantees to PJM that the Project will be operational by May 2016. If development delays occur, including issuance of permits, OCE will be subject to substantial financial penalties by PJM, since PJM would be relying upon capacity not operational when needed the most.

OCE is confident that this schedule is achievable and that the Oregon Clean Energy Center will be producing electricity on May 1, 2016 when the State of Ohio needs new electricity resources.

Figure – Section 4906-13-01

- Figure 01-1 – Project Location



LUCAS COUNTY, OHIO

Legend

- Project Site
- Construction Laydown Parcel

Topographic Base Image Source: ArcGIS Online Services, Access date: 01/04/2013, via ArcGIS v10. This image is not for re-sale or distribution outside of the use of this PDF.

0 0.5 1
Miles
1 inch equals 1 miles

ARCADIS

OREGON CLEAN ENERGY CENTER

FIGURE 01-1

PROJECT LOCATION

Lucas County, Ohio | Date: 01/04/2013

City: Chicago Author: MNesta Path: C:\PROJECTS\OCE\MXD\OPSB_20130104\01-1_OCE_ProjectLocation.mxd

(A) DETAILED DESCRIPTION OF PROPOSED GENERATION AND ASSOCIATED FACILITIES

Figure 02-1A through 02-1G identifies the proposed Facility; major population centers and administrative boundaries; major transportation routes and utility corridors; named rivers, streams and other bodies of water; and major institutions, parks, and recreational areas within a 5-mile radius of the Site. As discussed in Section 4906-13-01, Project configurations reflecting two potential turbine vendors (Mitsubishi and Siemens) are under consideration. Figures 02-2A and 02-2B illustrate the proposed Project and vicinity on an aerial photograph overlay for the Mitsubishi and Siemens technology, respectively, showing surrounding road names and major features of the proposed Project. Additional detail is provided in Figures 02-3A and 03B, plot plans which focus on the primary Facility footprint and label the various Facility components for the Mitsubishi and Siemens layouts, respectively. A computer generated color rendering of the Project is included as Figure 02-4.

(1) Project Details

(a) Generating Units

The Oregon Clean Energy Center is designed to be a net 799 MW (unfired at ISO conditions) power plant and will consist of two Siemens SGT6-8000H or Mitsubishi 501GAC combustion turbine generators each capable of generating a nominal approximately 270 MW. The Oregon Clean Energy Center will be capable of operating up to 8,760 hours per year, although its actual hours of operation will be dependent upon energy needs in the region and will incorporate downtime for planned and unplanned maintenance events. Based on power market data for northwestern Ohio, it is anticipated that the Project will initially operate at least 70 – 75 percent of the year. The Project will also include one three-pressure HRSG with auxiliary duct burners for each of the two combustion turbines and one reheat, condensing steam turbine generator utilized by both HRSGs. The Project will be designed to operate in combined-cycle mode only. The maximum net output of the Project can be maintained at 799 MW at a 95°F ambient temperature due to two factors: power augmentation of the two gas turbines and auxiliary firing of the two HRSGs using natural gas.

(b) Land Area Requirements

The Oregon Clean Energy Center will be located on a 30-acre Site, of which approximately 16.5 acres is needed for the Facility itself. An additional 30.5-acre parcel, controlled by OCE, is located immediately east of the Project Site, which can be used for temporary construction laydown and will likely be the location of the Project's electrical interconnection corridor.

(c) Fuel Quantity and Quality

The fuel will be natural gas supplied at an approximate pressure of 535 pounds per square inch gauge (psig). The natural gas provider will deliver fuel to the Oregon Clean Energy Center metering station to be located onsite. A liquids removal, preheating system (as required), and gas compression system will be installed as a part of the natural gas fuel system. Table 02-1 is a summary of the natural gas characteristics.

TABLE 02-1

Fuel Characteristics

Characteristic	Natural Gas
Ash (%)	--
Sulfur Content (grains per 100 dry standard cubic feet)	0.5
British thermal unit (Btu) Value (Btu/cubic foot, higher heating value [HHV])	1,006

(d) Plant Emissions

Construction impacts on air quality will consist mainly of relatively minor emissions from the construction equipment required for site preparation and from fugitive dust emissions. General construction vehicles (both gasoline- and diesel-powered) and other diesel-powered engines will emit insignificant amounts of volatile organic compounds (VOC), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen oxides (NO_x) and particulate matter (PM). These emissions are not expected to cause any significant adverse impacts onsite or beyond the Site boundary.

Atmospheric dispersion modeling has been performed to predict maximum concentrations for a range of Project operating conditions, and has confirmed that Project impacts will be below SILs. The model accounts for emission rates, stack height, exhaust parameters, meteorological data (wind speed, direction, atmospheric stability, and temperature), and the topography around the Project site. The Project stacks will be no taller than 240 feet. The following is a list of the federal criteria pollutants that will be emitted from the Facility: SO_2, particulate matter with a diameter of less than 10 microns (PM_{10}), particulate matter with a diameter of less than 2.5 microns ($PM_{2.5}$), NO_x, CO and VOCs. Several non-criteria pollutants will be emitted, including sulfuric acid mist (H_2SO_4), ammonia (NH_3), and formaldehyde (CH_2O).

The air pollution controls proposed for this Project are proven technologies. The primary control devices include both low-NO_x burners in each of the two gas turbines and SCR systems and oxidation catalysts in each of the two HRSGs. The SCRs and oxidation catalysts reduce emissions of both NO_x and CO to 2 parts per million by volume (ppm_v). In addition, emissions from the Project will be continuously tracked using a Continuous Emissions Monitoring System (CEMS). In the unlikely event of a control equipment failure, it would be immediately detected by the distributed control system and corrective actions would be initiated. It is unlikely that any unforeseen outage of pollution control systems would result in a significant impact before corrective actions could be taken.

(e) Water Requirements

The Project has selected a closed loop cooling system employing a wet cooling tower. This system has been identified as an appropriate water use option that maintains the economic viability of the Project and balances other resource issues. Comparable generation using once-through cooling would likely require around 250 million gallons per day (mgd) compared to the Project's estimated maximum withdrawal of around 6.7 mgd. Detailed water balances for the Project are provided in Figure 02-5.

Cooling and fire protection water for the Project will utilize raw water from the City of Oregon that is withdrawn from Lake Erie under the City's existing permit. The raw water will be diverted from the headworks of the City's water treatment plant located at 935 North Curtice Road in Oregon (Figure 02-6). The City will construct the appropriate equipment and piping to redirect raw water to the Project site, located approximately 3.5 miles west of the City's water treatment plant. The City will be responsible for identifying and securing the needed rights-of-way to construct the new City-owned raw water pipe that will transport water from the City's water treatment plant to the Project site. The City's new raw water line will deliver water to the eastern boundary of the Project Site. The Project's infrastructure (piping, valves, meter and tanks) will be connected to the City's pipeline at that location. Commercial arrangements between OCE and the City are currently being developed; the Project intends to reimburse the City for design, construction and start-up costs. Once the Project is operational, OCE will purchase raw water from the City.

The Project's raw water needs will range from a high of approximately 6.7 mgd in the summer to a low of approximately 2.6 mgd in the winter. Raw water will be required when the Project is operational, which is initially expected to be approximately 70 to 75 percent of the year. The City has confirmed that supplying this raw water need to the Project will not adversely affect its ability to serve other water needs in the community.

The City of Oregon will also supply potable water to the Project from its existing infrastructure located in North Lallendorf Road. Potable water demand will seasonally range from 70,000 gallons per day (gpd) to 152,000 gpd, and will be used for sanitary purposes as well as HRSG and auxiliary boiler make-up.

Wastewater discharge will also vary seasonally, from approximately 0.6 to 1.7 mgd. Discharge of Project wastewaters will utilize existing municipal sewer piping located in North Lallendorf Road; wastewater flows will discharge to the existing Oregon POTW in accordance with pretreatment and City requirements.

Stormwater flows from the developed Site will be controlled through the use of two detention ponds and other features. Discharge from the detention ponds intends to maintain subwatershed flows to both Driftmeyer and Johlin Ditch. Stormwater features are shown in Figures 02-2A and 02-2B, and detailed calculations are provided in Appendix A.

(2) Description of Major Equipment

The Project will include two combustion turbine generators (CTGs) with natural gas as the fuel; evaporative coolers for inlet air cooling; two three-pressure-level HRSGs; two duct burners; and one reheat, condensing steam turbine generator (STG). Additionally, the Project will utilize a multiple-cell cooling tower and a steam-surface condenser. An auxiliary steam boiler will be used for heating steam to accommodate a faster Facility startup. The Project will also include three approximately 20 to 345 kV step-up transformers, one for each generator. The gas turbines, steam turbine, and condenser will be located within a building.

Significant plant equipment not addressed above is described below.

- *Gas Fuel Handling* – Natural gas supplied to the Site will require additional compression for use in the CTGs. Electrically powered gas compressors will be used to increase natural gas pressure. A knock-out drum will be provided to remove any liquids that may be present in the gas. Filter/separators will further treat the fuel gas by removing any debris or liquids prior to entering the turbines. The auxiliary steam boiler will use low pressure natural gas.

- *Steam System* – The steam system will consist of steam drums, super-heaters and economizers; steam piping to and from the steam turbine; steam turbine bypass piping; steam piping to gland seal and steam jet air ejector systems; and solids and chemistry control. No export steam will be produced at this Facility. Steam generated by the auxiliary boiler will be used for heating and start-up purposes.

- *Condensate System* – The condensate system will be designed to provide water sufficiently deaerated and with the proper water chemistry to meet HRSG and steam turbine requirements. The system will provide sufficient capacity for operation over the entire ambient range and supply water to the auxiliary boiler.

- *Feedwater System* – Boiler feedwater will be supplied by a three-element feedwater control system for each section of the HRSG. Chemical treatment of the boiler feedwater will be accomplished using chemical feed equipment. Although the particular treatment program for this

Facility has not yet been determined, a typical program would include corrosion inhibitor injected to the HRSG steam drums; oxygen scavenger injected into the HRSG; and pH control amine injected into the boiler feedwater pump suction piping.

- *Cooling Water System/Steam Condensing* – The circulating water cooling system will provide cooling for condensing the steam turbine exhaust and the Facility closed loop cooling system. The system will consist of a 16-cell cooling tower constructed of fiberglass or wood and a steam surface condenser with an air ejector/vacuum system. The cooling tower will include high efficiency drift eliminators for particulate reduction capable of achieving a 0.0005 percent cooling tower drift rate. Chemical treatment of the cooling tower water will be accomplished utilizing chemical feed equipment. Although the particular treatment program for this Facility has not yet been determined, a typical program could include pH control (acid); scale inhibitor; biocide; dispersant; and chlorine/hypochlorite.

- *Closed Loop Auxiliary/Cooling Water System* – The closed loop auxiliary cooling water system provides cooling for auxiliary equipment. The system will utilize demineralized water with corrosion inhibitor.

- *Fire Protection System* – A complete fire protection/detection system will be provided for the Facility. The system will include fixed water fire suppression systems, fire hose stations, hydrants, portable fire extinguishers, detection and control systems. The system will include a motor driven fire pump and an ultra-low sulfur diesel engine driven fire water pump (an approximately 50-gallon double containment oil storage tank will be integrated into the unit). It will be designed and installed in accordance with National Fire Protection Association (NFPA) standards and insurer's recommendations. All fire protection equipment and systems will be Underwriters' Laboratory (UL) approved and comply with the City's fire protection authority's and OCE's insurance carrier's requirements.

- *Stand-by Diesel Generator* – A 2,250-kilowatt (kW) diesel engine driven generator will be provided and designed to safely shut the Facility down in the event of a disruption of power delivery. The generator will provide power to essential services necessary to protect the equipment. Ultra-low sulfur fuel will be utilized, stored in an approximately 500-gallon double containment tank integrated into the equipment skid.

- *Water System* – Raw water for the Project will be supplied by the City of Oregon. Water will be used in the cooling tower for makeup to replace water loss due to evaporation. OCE will also purchase potable water from the City for the demineralizer system and other Facility uses. Water balances depicting the Facility uses and volumetric flows are shown in Figure 02-5.

- *Demineralizer* – Demineralized water will be created by on-site treatment of the City's potable water. Demineralized water will be used in the evaporative cooler and as makeup water to the steam cycle. Water will be processed by the demineralizer system, which will remove the dissolved solids to the level required by the HRSG and steam turbine manufacturer's requirements. The effluent from the demineralized system will be sent to the demineralized water storage tank. The demineralized water storage tank will provide demineralized water for condenser hot-well makeup and be of sufficient size so as to allow normal Facility operations without excessive cycling of the demineralized water system. Demineralizer regeneration waste will be equalized and neutralized in a fiberglass tank before being discharged to the wastewater system.

- *Wastewater System* – A regeneration waste neutralization system will receive the regeneration wastes from the demineralized waste system and the chemical waste sump. This system will equalize and adjust the pH through the addition of acid or caustic to comply with discharge limits. Process wastewater from equipment drains will be routed through an oil/water separator, then recycled through the cooling tower. Any oils remaining in the oil/water separator will be removed by qualified contractors. Boiler blowdown will also be recycled through the cooling tower. Sanitary waste and the cooling tower blowdown will be piped to the Oregon municipal wastewater system for treatment and disposal. Stormwater will be routed to onsite detention basins to control runoff from the Site.

(3) Transmission Line Interconnect

The Project will interconnect with the existing 345-kV transmission lines that are located just north of the Site. A new substation that will be built by OCE and ultimately owned by First Energy is shown in Figure 02-2, although the final location and configuration will be determined by First Energy. The electric transmission line interconnection is anticipated to extend from the new substation north to the existing transmission corridor; Figure 02-2 illustrates the electric transmission interconnect extending to the east to the adjacent parcel controlled by OCE (that will also be used for construction laydown), then north along that property's western boundary. The Project will interconnect at two points along the 345-kV line, allowing power to be supplied to multiple distribution systems. An electrical one-line diagram is provided as Figure 02-7.

Electrical power will be generated by the Project at an approximate voltage level of 20 kV and then stepped-up to a voltage level of 345 kV by newly installed transformers to be located adjacent to the power block. The power will then move through available transmission paths to wholesale electric customers.

System Interconnection Studies have been initiated with PJM. The PJM Feasibility Study was completed in July 2012, with the System Impact Study initiated in August 2012. As a result, the Oregon Clean Energy Center was assigned queue position Y1-069. Completion of the System Impact Study is anticipated in late January 2013. This information will be provided to OPSB staff once available.

(4) New Gas Transmission Line

The Project has several gas transportation options that are currently being evaluated. These include a range of options, from direct connection to an existing gas lateral located within North Lallendorf Road adjacent to the site (owned by Columbia Gas) to a newly constructed gas lateral to connect to high pressure gas laterals that are located south of the Site. OCE has met with representatives of Columbia/TCO/NiSource, ANR, TCPL, Dominion East Ohio, Panhandle Eastern, and NEXUS, as well as several intrastate firms including Twin Eagle, Somerset Gas and Net Midstream Gas. Multiple connections are available for consideration by the Project, offering considerable fuel flexibility that supports a low-cost Project.

The appropriate natural gas interconnection strategy is anticipated to be identified by February 2013. Depending upon the configuration of the selected option and on whether the interconnection will be supplied by OCE or by others, applicable approvals from the OPSB and/or Federal Energy Regulatory Commission (FERC) will be sought.

The new lateral to the Project will be designed to be 24 inches in diameter so there will be little pressure drop from the interstate source lines and to provide an ample gas supply capability should the Project at some point in the future expand. Gas compression, that will use electric-driven motors, will be required at the Site to accommodate the range of potential gas supply options.

(B) DETAILED PROJECT SCHEDULE

(1) Schedule

Figure 02-8 provides the proposed Project schedule covering all major activities and milestones. This schedule is based on the submission of this Application in January 2013, the receipt of the OPSB certificate by June 2013, and placing the Facility into commercial operation by May 2016.

(2) Delays

It is crucial that the proposed in-service date of May 2016 be achieved in order to meet the anticipated summer peak load demand. OCE intends to enter the PJM Capacity Auction to be held in May 2013 for delivery of power from summer 2016 to summer 2017. Therefore, the OPSB certificate must be issued prior to a summer construction start date order for the Oregon Clean Energy Center to be completed on schedule. A delay in the Project before the beginning of construction would jeopardize the Project's ability to meet peak summer demand in 2016, potentially lowering the region's available capacity during critical summertime conditions and resulting in significant performance penalties payable by OCE for not meeting PJM's contractual performance date (starting in May 2016). Based on PJM's Capacity Auction rules/procedures, OCE must make contractually binding commitments in May 2013 to supply capacity beginning in May 2016 (for a one-year contractual capacity supply period).

(A) SITE SELECTION STUDY

(1) Site Selection Process

(a) Description of Study Area

The principals of OCE have extensive experience in understanding energy markets and locations for potential demand. Research beginning in the spring of 2010 focused on the potential future closure of several thousand megawatts of aging and environmentally challenged coal plants throughout the country. It appeared certain that over 5,600 MW of existing generating capacity would be closed within the PJM transmission grid alone, leaving the region capacity-short and dependent on imported power, resulting in higher prices for electricity by ratepayers in that region. Analyses completed by The Brattle Group, ICF and Credit Suisse independently provided the same conclusions about coal plant closures in the PJM region.

In addition to the near-term need projected by PJM in their public reports and meetings, the OCE principals had extensive experience working within this particular region. For these reasons, OCE determined that a focus on identifying a site within the PJM region would be more appropriate than within other regions of the U.S.

(b) Study Area and Site Map

Within the very expansive PJM region, several states were considered, including Maryland, Virginia, Indiana and Ohio. In addition to capacity needs, pricing structure and other economic factors were evaluated, as well as the complexity and anticipated timeline associated with applicable regulatory processes. The OCE principals intended to focus their efforts and resources on a single project with the most favorable characteristics possible. Through this evaluation, it was determined that Ohio – and specifically, potential locations in either northwestern or northeastern Ohio – yielded the most favorable balance of attributes.

(c) Siting Criteria

Careful site evaluation was undertaken to determine suitability for the proposed Project. Criteria considered in selecting and evaluating sites included:

- Adequate site size;
- Compatible zoning and land use;
- Availability of natural gas alternatives;
- Proximity of robust electrical interconnection;
- Water supply and wastewater discharge alternatives to support a wet-cooled facility (due to the higher energy efficiency associated with that cooling technology);
- Strong transportation network;
- No environmental fatal flaws; and
- Community political support for industrial development and this type of facility.

(b) Process for Identifying the Proposed Site

Within Ohio, potential locations within northeastern and northwestern Ohio were considered using the criteria noted above. In northeastern Ohio, it was not then clear that coal plant retirement would create a capacity need within the timeframe being considered. In addition, available sites in northeastern Ohio appeared more limited with regard to potential water source availability to support a low-cost, high output project.

A focus on northwest Ohio was selected, as several coal-fired power plants currently operating in that region had announced plans to retire generation, this part of Ohio had recently become part of the PJM electrical grid, and the OCE developers had experience developing, financing and building the nearby Fremont Energy Center, now owned and operated by American Municipal Power (AMP).

The OCE principals engaged real estate consultants who were familiar with the characteristics of a suitable community and site. As sites were identified, informal consideration of the range of issues occurred. A number of sites were considered that met some, but not all of the identified attributes. The Oregon Clean Energy Center Site (Figure 03-1) was one of the early sites identified within the area of focus, and appeared to meet all identified site selection and screening criteria.

Based upon this preliminary evaluation, OCE secured approximately 30 acres on North Lallendorf Road zoned "commercial and industrial." With that option in place, OCE entered a queue position in PJM (Y1-069) to verify the robust nature of the selected point of interconnection and undertook a detailed critical issues assessment to review characteristics of the Site to confirm key criteria were met.

(e) Factors in Selecting the Proposed Site

The Oregon Clean Energy Center Site (Figure 03-1) was one of the early locations identified within the area of focus by OCE real estate consultants. Evaluation of key characteristics that would indicate suitability was undertaken to determine the feasibility of the Project in this location. After thorough due diligence, OCE decided that the City of Oregon and the identified Site had the characteristics that would enhance the likelihood of Project success.

Regional attributes included confirmation that three major coal plants in the generally vicinity of the Site were planning to close before 2016, supporting a need for additional energy generation.

The City of Oregon encourages industrial development, in particular within this portion of the City which is zoned for commercial and industrial development. The City is currently home to several heavy industrial plants, including a coal-fired power plant and two refineries. From OCE’s initial introduction, the City leadership were cooperative and supportive. In addition, the Site has significant services and infrastructure in place, such as ample and economically priced water supply and sewage disposal, direct access to high voltage electrical transmission lines adjacent to the Site, reinforced roads and bridges (important when transporting heavy equipment), and other strong transportation attributes such as an active port and a rail spur adjacent to the Site, all particularly important during the construction phase.

The location of the Site allows for consideration of several gas supply options, an unusual advantage when developing an Independent Power Plant

(IPP). Flexibility in fuel source can lead to particularly competitive pricing, resulting in lower overall energy costs.

Upon evaluation of the above attributes, OCE secured the Site, approximately 30 acres on North Lallendorf Road zoned "Commercial and Industrial" and began the next stage of development by entering a queue position in PJM (Y1-069). Once the queue position was favorably established and evaluation underway, OCE conducted more formal due diligence on the Site. OCE contracted with a local firm, Mannik & Smith Group, Inc., to complete a Phase 1 Environmental Site Assessment that concluded that no indication existed of historical or current Recognized Environmental Conditions that would have the potential to result in liability at the Site. OCE then contracted with ARCADIS, who has a local office engaged with the Project, to have an environmental and regulatory critical issues assessment completed. This assessment evaluated on a preliminary basis the range of environmental issues including: air quality; natural resources, including wetlands, floodplain and species; and community resources such as land use, cultural resources, and local zoning compatibility. Water and wastewater feasibility assessments were completed separately by ESS, Inc.

With the results of these independent studies confirming the Site as favorable for the proposed Project, OCE has undertaken the more detailed environmental and other studies, as well as Project engineering design, to support the OPSB Application for the Project.

(2) Constraint Map

Figure 03-1 provides constraint mapping completed as a part of the critical issues assessment for the Project.

(B) SUMMARY TABLE OF EVALUATED SITES

No additional sites were formally evaluated. A summary of key characteristics of the selected Site is provided in Table 01-1.

(C) ADDITIONAL SITE SELECTION STUDIES

No additional site selection studies have been completed for the Project.

4906-13-04 Technical Data

(A) SITE

(1) Geography and Topography

Figure 02-1 presents seven maps at 1:24,000 scale exhibiting the area within a 5-mile radius of the Site, and is a compilation of the area shown on the following six United States Geological Survey (USGS) 7.5-minute series topographic maps: Toledo; Oregon; Reno Beach; Ross Ford; Walbridge; and Genoa Quads. Figure 02-1 shows the following: the proposed Project; major population centers and administrative boundaries; major transportation routes and utility corridors; named rivers, streams, and other bodies of water; and major institutions, parks, and recreational areas.

As can be seen in Figure 02-1, the Project is located entirely within the City of Oregon in Lucas County, Ohio, and approximately 1 mile east of Toledo, Ohio. The Project Site is irregular in shape and encompasses an area of approximately 30 acres. As shown on Figure 02-1, the Project Site is located in the S1/2 of the SW1/4 of Section 26, Township 9 South (T.9S.), Range 8 East (R.8E.) of the First Principal Meridian at a latitude of 41° 40' 3.00" N and a longitude of 83° 26' 36.69" W. An adjacent parcel, approximately 30.5 acres in size, is also controlled by OCE and will be available for construction parking and laydown.

The topography of the Site is generally flat with elevations ranging from approximately 583 feet to 590 feet (NAVD88). The land surface of the surrounding area is also generally flat and slopes north toward Maumee Bay of Lake Erie (located approximately 1.6 miles north of the Site). The relief of the land surface within a 5-mile radius of the Site is approximately 130 feet, with a high of approximately 670 feet to the southwest and a low of approximately 539 feet to the northeast.

Much of the relief seen in the land surface surrounding the Site to the north, west, and southwest is attributable to the industrial, commercial, and residential development with Driftmeyer Ditch, Otter Creek, and Duck Creek traversing the area until the Maumee River is reached to the west. The proposed Project footprint is situated between Driftmeyer Ditch directly to the west and the Johlin Ditch directly to the east. Surface water runoff from the western portion of the Site is north-northwest, discharging into Driftmeyer Ditch, which drains to Driftmeyer/Amolsch Ditch and eventually into the Maumee Bay. From the eastern portion of the Site, surface water runoff is to the northeast, discharging into Johlin Ditch and eventually into Maumee Bay. Driftmeyer/Amolsch Ditch, Driftmeyer Ditch, and Johlin Ditch are all classified as perennial surface waters as defined by the USGS High Resolution National Hydrology Dataset.

As shown in Figure 02-1, First Energy-owned transmission lines extend in an east-west direction approximately 550 feet north of the Site. The Site consists of farmland with associated structures, including two single-family dwellings, a garage and a barn. The majority of the Site is in active agricultural use. The land immediately surrounding the Site to the north, east, and southeast is primarily used for agricultural purposes, but does not contain any agriculture-related structures. The southern boundary of the Site abuts an operating Norfolk Southern railroad line. This rail line delivered coal to the Bay Shore power plant, which is no longer receiving coal deliveries. A cluster of commercial/industrial uses border the Site to the west-southwest, including several manufacturing and warehouse facilities, among them, Fresenius Medical Care (a manufacturer of dialysis machines) and Caraustar (a manufacturer of gypsum facing paper and spiral-wound paper tubes). More densely developed residential areas are located about a mile southwest of the Site. The Project is located approximately 2 miles south of First Energy's existing Bay Shore coal-fired power plant on Lake Erie. Coal Boilers Numbers 2 – 4 at Bay Shore are closed (as of September 2012). Boiler No. 1 remains operational using British Petroleum's (BP) petroleum coke as its primary fuel. BP's expansive BP-Husky Toledo Refinery is located less than 0.5 mile to the north, beyond the existing electric transmission corridor.

(2) Aerial Photograph

Figures 02-2A and 02-2B provide an aerial photograph showing the location of the proposed Facility in relation to surface features for the potential Mitsubishi and Siemens layouts, respectively. As can be seen, the proposed Site is comprised of active agricultural fields and several residential structures that will be demolished to accommodate the Project. Its surroundings are similar in character, with agriculture, as well as other mixed industrial and commercial and residential uses, in close proximity. Residences are scattered throughout, with the closest associated with an excavating business north of the Site along North Lallendorf Road, approximately 700 feet from the Site (approximately 970 feet from the Project's footprint).

(3) Site Mapping

Figure 04-1 presents a map showing topographic contours, including the two ditches that traverse the Site and existing structures. The Site and adjacent construction laydown property is zoned Commercial-Industrial (C-I). Because the Site is in active agricultural use, wooded vegetation is limited and little clearing will be associated with the Project.

As can be seen in Figure 04-1, two residences and associated outbuildings are located on the property. In addition, an existing operating railroad line is located immediately adjacent to the south. The existing electric transmission corridor is located approximately 550 feet to the north of the Site. Driftmeyer Ditch traverses the western edge of the Site and Johlin Ditch extends across the southeastern corner. The drainage ditches convey surface water runoff to tributaries that, in turn, discharge into the Maumee Bay of Lake Erie.

(4) Geology and Seismology

(a) Geological Issues

A preliminary geotechnical investigation has been completed for the Project by TTL Associates, Inc. (TTL). A copy of the report is provided as Appendix B, with information summarized in this section of the OPSB Application.

Regional geologic maps from the Ohio Department of Natural Resources (ODNR) indicate that the Project site is located in the Maumee Lake Plains of the Huron-Erie Lake Plains Physiographic Region. Within this region, specifically in proximity to Lake Erie, the upper profile geology includes predominantly Pleistocene-age silts and clays that were lake-laid (lacustrine) sediments, deposited in historic glacial lakes following retreat and melting of glacial ice. The lacustrine soils are underlain by glacial till deposits, underlain by sedimentary bedrock.

The lacustrine soils consist of predominantly silty clays and lean clays, and often exhibit alternating thin layers of interbedded silts and clays known as varves. Varved soils are characteristic of lacustrine deposits, and the thin layering is typically attributed to seasonal or other cyclic variations of sedimentation in the lake waters. In addition, thin sand seams and partings may be encountered. Due to present day water levels that are receded compared to historic glacial lake levels, the upper portion of the lacustrine soils generally exhibit lower natural water contents and somewhat higher undrained shear strengths associated with a "crust" layer that overlies the deposits that are now at or below the groundwater table. At the Project site, the total thickness of the lacustrine deposits is estimated to be on the order of 25 to 40 feet below existing grades, before encountering the till.

The glacial till (also referred to as moraine) was deposited by the advance and retreat of glacial ice. Due to the weight of the ice mass, the till deposits are moderately to highly overconsolidated, that is, the existing soil deposits have experienced a previous vertical stress significantly higher than the present effective vertical stress due to the remaining overlying soil strata in the profile. The till often exhibits two distinct layers, a younger layer comprised of predominantly fine-grained soils (silts and clays) with some sand and fine gravel, and an older layer comprised of a heterogeneous mixture of clays, sands and gravels. In some locations, particularly near Lake Erie, the upper portion of the younger till zone has been subjected to post-glacial deposition activity due to wave action associated with lake waters or stream flows from glacial melt waters. This zone is often referred to as "wave-planed" or "reworked" till, and may exhibit lower compactness/consistency and/or higher moisture contents than the underlying consolidated till.

The older, very compact till is commonly referred to as “hardpan.” Both the younger and older till layers can contain cobbles and/or boulders left in the till soil matrix, but in the Oregon area, the prevalence of cobbles and boulders, is typically greater in the deeper, older till deposits. Additionally, seams of granular soils may be encountered within glacial tills. These granular seams may or may not be water bearing.

Bedrock in the Project area is broadly mapped on the “Geologic Map of Ohio” as Silurian-age Monroe limestone. Specific to the Project Site, the uppermost carbonate rock formation is mapped as Greenfield dolomite. Bedrock across the Site is generally expected at depths on the order of 80 to 90 feet below existing grades. In the borings completed by TTL for this Project, auger refusal on bedrock was encountered at depths ranging from approximately 82.5 to 84.5 feet.

The overall potential for seismic activity resulting in significant damage at the Site is very small. Based on information provided in a publication entitled “Earthquakes in Ohio” (ODNR Educational Leaflet No. 9, M.C. Hansen, 2000), Ohio is on the edge of what is referred to as the New Madrid Seismic Zone, an area centered in Missouri and extending into adjacent states. The areas in Ohio most susceptible to seismic activity are Shelby County, northeastern Ohio and southwestern Ohio. The closest of these areas (Shelby County) is over 100 miles to the south. Recorded seismic activity dating back to 1875 suggests that earthquake activity in Lucas County has been infrequent, of minor magnitude, and with no appreciable damage or structural impact.

Based on the review of geological and seismic information, geological issues are not expected to restrict Facility development at the Site.

(b) Soils and Soil Suitability

Based on review of the Soil Survey database for Lucas County, Ohio the soil units on the Site are mapped as Latty silty clay (Lc) and Fulton silty clay loam, 0 to 2 percent slope (FuA).

Lc, which covers over 80 percent of the Site, is a nearly level, deep, very poorly drained soil on lake plains with restrictive layers greater than 80 inches. This soil receives runoff from adjacent, higher-lying soils and is subject to ponding but not flooding. Depth to water table may be from 0 to 12 inches. Where the soil has been drained, the root zone is deep. Surface ditches can be used to lower the water table. Lc soils contain predominantly Latty but also Toledo components, and may also develop hydric indicators if the water table is above 12 inches during the growing season or there is long to very long ponding during the growing season.

FuA, which constitutes a minor portion of the Site, is a nearly level, somewhat poorly drained soil on lake plains on a convex rise, with restrictive layers occurring greater than 80 inches with no ponding or flooding. Depth to water table may be 6 to 18 inches. FuA soils have small components of both Toledo and Latty soil types in narrow drainageways or low areas which may be hydric if the water table is above 12 inches during the growing season or there is long to very long ponding during the growing season.

Two drainage features transverse the east and west ends of the site, respectively, Driftmeyer Ditch and Johlin Ditch. These drainage features appear to keep the water table low during the growing season to promote agricultural use of the land. Figure 04-2 provides mapping of soils on the Site.

Table 04-1 presents a summary of the soil properties and characteristics as provided in Table 15 of the Lucas County Soil Survey (1980).

TABLE 04-1

Soil Properties and Characteristics

Soil Series	Depth Below Surface (inches)	Permeability (inches per hour)	Soil pH	Potential Frost Action	Shrink-Swell Potential
Latty silty clay (Lc)	0 – 10	0.06 – 0.2	5.6 to 7.3		High
	10 – 46	0.06 – 0.2	5.6 to 7.8	Moderate	High
	46 - 65	<0.06	7.8 to 8.4		High
Fulton silty clay loam, 0 to 2 percent slope (FuA)	0 – 9	0.6 – 2.0	6.1 to 7.3		Moderate
	9 – 39	0.06 – 0.2	6.6 to 7.8	Moderate	High
	39 – 60	<0.2	7.4 to 8.4		High

TTL has completed a preliminary geotechnical investigation at the Site to determine the suitability of the subsurface soil for construction of the proposed Project. The subsurface investigation included five test borings designated as Borings B-1 through B-5 (shown on Figure 04-3), drilled in representative Site locations during the period from December 6 through December 12, 2012. Table

04-2 provides general boring information from the on-site testing program. As noted, one of the five borings included rock coring.

TABLE 04-2

General Boring Information

Boring Number	Ground Surface Elevation (feet)	Boring Termination Depth (feet)	Boring Termination Elevation (feet)	Additional Notes	Shelby Tube Sample Interval Depth (feet)
B-1	587.1	70.0	517.1	Terminated at target completion depth	--
B-2	587.1	83.0	504.1	Terminated at auger refusal	11 to 13
B-3	587.1	94.5	492.6	Auger refusal at 84.5’, 10’ of rock cored	--
B-4	587.4	82.5	504.9	Terminated at auger refusal	23 to 25
B-5	587.1	70.0	517.1	Terminated at target completion depth	--

Source: TTL, Appendix B.

The test borings were performed in general accordance with geotechnical investigative procedures outlined in American Society for Testing and Materials (ASTM) Standards D 1452 and D 5434. The test borings performed during this investigation were drilled with an all-terrain vehicle (ATV)-mounted rotary drilling rig utilizing 3¼-inch inside diameter hollow-stem augers. Upon completion of drilling, the boreholes were backfilled using a cement-bentonite grout to just below ground surface, and then capped with soil backfill.

During auger advancement, soil samples were generally collected at 2½-foot intervals to a depth of 15 feet and at 5-foot intervals thereafter. Split-spoon samples were obtained by the Standard Penetration Test Method (ASTM D 1586), which consists of driving a 2-inch outside diameter split-barrel sampler into the soil with a 140-pound weight falling freely through a distance of 30 inches. The sampler is driven in three successive 6-inch increments with the number of blows per increment being recorded. The sum of the number of blows required to advance the sampler the second and third 6-inch increments is termed the Standard Penetration Resistance and is presented on the Logs of Test Borings provided in Appendix B.

Two Shelby tube samples were obtained from Borings B-2 and B-4 at selected depths within the subsurface profile. The Shelby tube samples were obtained by hydraulically advancing a 3-inch diameter, thin-walled sampler approximately 24 inches beyond the hollow-stem auger into relatively undisturbed soil in accordance with ASTM D 1587. The Shelby tubes were then extracted from the subsoils, and the ends were capped and sealed. These samples were transported to TTL's laboratory where they were extruded, classified, and tested.

Core samples of the bedrock were obtained from Boring B-3, using a diamond-bit core barrel and coring techniques in general accordance with ASTM D 2113. Two core runs of 5 feet were completed following auger refusal in Boring B-3. Recovery of the core is expressed as the percentage ratio of the recovered rock length to the total length of the core run. The Rock Quality Designation (RQD) is the percentage ratio of the summed length of rock pieces 4 inches long and greater to the total length of the run. The core samples were examined and logged in general accordance with Ohio Department of

Transportation (ODOT) Rock Description Methods. Photographs of the rock cores are provided in Appendix B.

A geological cross-section reflecting conditions at the boring locations sampled is provided in Figure 04-4. Based on the results of field and laboratory tests, the subsoils encountered underlying the topsoil can generally be characterized by five predominantly cohesive soil strata overlying the bedrock:

- Stratum I – an upper “crust” layer of lacustrine soils.
- Stratum II – an underlying lacustrine layer, generally at or below the groundwater table.
- Stratum III – a zone of reworked or wave-planed till transitioning to consolidated till.
- Stratum IV – a consolidated (younger) till deposit
- Stratum V – a highly consolidated (“hardpan”) till deposit above the bedrock.

Borings B-2 and B-4 were terminated upon encountering auger refusal at depths of approximately 83 feet and 82½ feet, respectively. In Boring B-3, the Stratum V soils were encountered to auger refusal at a depth of 84½ feet, and this boring was then advanced by coring an additional 10 feet into the bedrock. Underlying the Stratum V soils in Boring B-3, dolomite bedrock was encountered to boring termination at a depth of 94½ feet. Based on the depth of split-spoon refusal and auger penetration before reaching auger refusal, there appears to be a thin veneer (6 inches) of weathered rock at this borehole location. Based on visual classification, the dolomite would be characterized as “strong” and “hard” rock. Based on RQD values of 80 and 95 percent, the apparent rock mass quality within the zone of exploration can be generally described as good to excellent.

Groundwater was initially encountered during drilling in three of the five test borings, at depths ranging from 78 to 83 feet below existing grade. Upon completion of drilling operations, groundwater was observed in three of the test borings at depths ranging from 69 to 72.8 feet. Based on the soil characteristics and groundwater conditions encountered in the borings, TTL believes that "normal" long-term groundwater levels will be generally encountered at depths of approximately 8 to 11 feet, corresponding to approximate elevations 579 to 576. These levels correspond to elevations several feet above the level of nearby Lake Erie, and it is expected that there is a small gradient of shallow groundwater flow trending from the Project Site in the general direction of the lake. Some localized influence on groundwater levels can also be expected due to the presence of the two drainage ditches that traverse the opposite ends of the Site. It should be noted that groundwater elevations can fluctuate with seasonal and climatic influences. Therefore, the groundwater conditions may vary at different times of the year from those encountered during the subsurface investigation.

Based on the results of the preliminary geotechnical program, geological issues are not expected to restrict Facility development at the Site. However, given the potential for variability within any given site, a more detailed geotechnical program will be undertaken to support final design and construction of the Project.

(5) Hydrology and Wind

(a) Characteristics of Directly Affected Waterbodies

The only surface water bodies located on or adjacent to the Site are Driftmeyer Ditch and Johlin Ditch.

Driftmeyer/Amolsch Ditch is a headwater stream that is a direct tributary to Lake Erie. Driftmeyer Ditch enters the Site from the south through two 53-inch steel culverts under the railroad track. The average width of the reach within the Site is approximately 9.25 feet, with a maximum pool depth of 3.5 inches. There is a large 83-inch concrete culvert approximately 25 feet long under an agricultural road that crosses over the ditch. Silt and muck were the two predominant substrates found in this reach of the stream; other substrates included sand and fine detritus. Approximately 60 percent canopy coverage, no sinuosity, and very narrow riparian zone of approximately 15 feet were observed. This segment of the stream was noted to be low-gradient, stagnant, and silt-laden.

Project access will be from North Lallendorf Road and will require an access road to cross Driftmeyer Ditch. The access road will be designed to accommodate two lanes of travel, particularly due to the large equipment access required during the construction phase. It is anticipated the access road will be approximately 24 feet wide, and will be designed to maintain flow through Driftmeyer Ditch; a culvert comprised of an approximately 121 x 77 inch elliptical pipe, as specified by the City of Oregon, is anticipated to be used.

Johlin Ditch is a small headwater stream tributary to Lake Erie. Johlin Ditch transverses the eastern portion of the Site, running south to north. Johlin

Ditch enters the Site through a single 36-inch culvert under the railroad track. The average bank full width of the reach within the Site was approximately 8.3 feet. The channel was dry at the time of evaluation, so there was no maximum pool depth. Clay and leaf pack/woody debris were the two predominant substrates in this reach of the stream. Approximately 100 percent canopy coverage, no sinuosity, and very narrow riparian zone of approximately 15 feet were observed. This segment of the stream was noted to be low-gradient.

A temporary access will be required across Johlin Ditch during the construction period, as the adjacent parcel is planned for construction laydown use. The temporary access is anticipated to be approximately 16 feet wide, allowing for two travel lanes but no road shoulders. Although temporary in nature, the road crossing will be designed to maintain flow through Johlin Ditch, and is anticipated to require installation of a 36-inch culvert. Once construction of the Project is completed, OCE can determine through consultation with the City whether removal of the culvert or surface restoration with the culvert in place would be preferable.

Water needs for the Project will be met through the use of raw water from the City of Oregon's water system, which has an adequate supply to serve the Project. A far lesser quantity of treated potable water will also be purchased from the City. Wastewater discharge will utilize Oregon's municipal system by discharging the Project's wastewater into the local gravity sewer line for delivery to the City's POTW. All Project wastewater will meet the City's applicable pretreatment requirements. Stormwater will be discharged from the Site via detention basins and utilizing Best Management Practices to ensure that water quality standards are met and that erosion and sedimentation will be minimized and will not impact adjacent properties.

(b) Potential for Flooding or High Wind Conditions

The identification and location of any mapped 100-year flood hazard zones within the Site was determined. The only mapped Zone A, 100-year flood hazard area within the Site boundaries is restricted to within the banks of Driftmeyer Ditch. The extent of the 100-year flood hazard zone is shown in Figure 04-2.

Figure 04-05 presents the distribution of wind speeds and directions for historic data collected in Toledo, Ohio (Toledo Airport) for the years 2006 through 2010 in the form of a wind rose. The prevailing wind direction, occurring approximately 13 percent of the time, is from the west-southwest. The average prevailing wind speed is 7.47 knots (8.6 miles per hour [mph]). High winds (greater than 25 mph) have been recorded in Toledo, Ohio and have occurred from the west, west-southwest and southwest.

(c) Aquifer Mapping

Figure 04-6 presents a portion of a map entitled "Ground-Water Resources of Lucas County" (ODNR 1986). This map illustrates the groundwater resources throughout the entire county as well as in the immediate vicinity of the Site. As Figure 04-7 shows, the Site is situated in an area where groundwater yields of 100 to 500 gallons per minute (gpm) may be developed from the carbonate aquifer at depths of less than 100 feet. The ODNR map shows three municipal or industrial water wells located within approximately one mile of the Site, which have groundwater yields of 88 gpm, 98 gpm and 500 gpm, respectively.

Water well log information from ODNR was also reviewed for additional information. ODNR well logs indicate that water wells in the immediate vicinity of the proposed Site generally have yields of approximately 10 to 30 gpm. However, the ODNR well logs indicate one nearby well (Log #9948065) was tested at a rate of 1,200 gpm.

(B) LAYOUT AND CONSTRUCTION

The natural topography of the Site is flat, but fill materials may be required to facilitate drainage. The existing buildings will be demolished and the Site will be cleared and grubbed prior to the start of major construction activity. The top approximately 1 foot of soil with significant organic matter will be removed within the Site boundary. This material will be stockpiled and may be used later for final grading and seeding.

The access drive and the stormwater system and erosion and sedimentation controls will then be installed, and the Site will be graded to an elevation of approximately 590 feet prior to the start of construction. Spoil materials from the equipment foundation will be spread within the property. Additional fill will also be brought to the Site. Construction debris will be routinely collected in containers and hauled offsite to a landfill by a licensed waste hauler.

(1) Site Activities

(a) Test Borings

Preliminary test borings have been conducted at the Site, as further discussed in Section 4906-13-04(A)(4). Additional geotechnical borings will be completed prior to Project final design and construction.

(b) Removal of Vegetation

As previously described, the Site is located in an agricultural production area and was most recently planted with soybeans. An early harvest in 2013 will be planned in order to allow Project construction to commence. At this time, tree removal is not anticipated for Project work occurring onsite.

(c) Grading and Drainage

The Site will be graded and properly sloped to facilitate drainage. Ditches, swales, and drainage structures will be provided to capture stormwater and direct it by gravity flow to detention basins that will discharge to the two on-site ditches. A Grading and Drainage Plan will be developed in coordination with the City of Oregon.

(d) Access Roads

A Site access road located off North Lallendorf Road will provide ingress and egress to the Site, as shown in Figures 02-2A and 02-2B. The road will be designed to support construction activities. The road will be paved for plant operations after construction of the Project is complete. Figure 02-2 illustrates the location of the proposed crossing of Driftmeyer Ditch associated with Project access. As previously noted, the access road will be designed to accommodate two lanes of travel (two lanes plus road shoulders) at a width of approximately 24 feet. It is anticipated that an approximately 121 x 77 inch elliptical pipe culvert will be installed at the crossing location.

A temporary road will be needed to provide access from the Site to the adjacent construction laydown parcel. This temporary road will traverse the Johlin Ditch at the location shown in Figure 02-2. As previously noted, the temporary access is anticipated to be approximately 16 feet wide, and will require installation of an approximately 36-inch culvert. Once construction of the Project is completed, OCE can determine through consultation with the City whether removal of the culvert or surface restoration with the culvert in place would be preferable.

No additional roads will be needed.

Because the roads will extend across the on-site ditches and require placement of culverts, OCE will coordinate with the U.S. Army Corps of Engineers (USACE) to determine potential jurisdiction and the need for applicable Nationwide Permits. Approval will also be required from the City of Oregon.

(e) Removal and Disposal of Debris

Excess soil materials will be used as backfill where possible throughout the Site. Debris generated during the construction phase of the Project will be collected in containers and hauled offsite to a landfill by a licensed waste hauler.

(f) Post-Construction Reclamation

Areas around the Facility not covered with concrete foundations, concrete paving, or asphalt will receive a 6-inch thick course of crushed stone or be loamed, seeded and landscaped. The unoccupied areas disrupted around the Facility during construction will be graded and seeded with native grass or stabilized in another appropriate manner immediately after construction activities are complete.

(2) Layout

The overall layout of the proposed Facility is provided on the Proposed Project and Vicinity map (Figure 02-2A and 02-2B) and the Proposed Plot Plan (Figure 02-3A and 02-3B). A rendering illustrating the Project layout is provided in Figure 02-4. An Overall Electrical One Line Diagram (Figure 02-7) is also provided.

(3) Structures

(a) Dimensions

The specific dimensions of major structures will vary depending upon which gas turbine vendor is selected, and can be seen on Figures 02-2A and 02-2B. Other buildings to be included at the Site are:

- A 16-cell cooling tower (approximately 108 feet wide by 433 feet long by 60 feet high);
- The control/maintenance/administration building (approximately 61 feet wide by 142 feet long by 25 feet high); and
- An auxiliary boiler skid (approximately 40 feet wide by 50 feet long by 15 feet high).

(b) Construction Materials

The CTGs, HRSGs and STG will all be installed on reinforced concrete foundations. The CTGs and STG will be designed for indoor operations and will be enclosed by a weatherproof metal building. All materials and construction practices used will meet or exceed safe and reliable power plant engineering and design standards. The building will also provide noise attenuation for the enclosed equipment.

(c) Color and Texture

Final design colors and textures have not been selected, however, neutral-colored coatings will be used on exposed surfaces for aesthetic appeal, and ribbed siding materials will be used for metal buildings.

(d) Pictorial Sketches

A computer generated color rendering of the Project is included as Figure 02-04.

(e) Unusual Features

No unusual characteristics are incorporated into the design and final appearance of the proposed new power generation facility.

(4) Plans for Construction

Initial construction activities will commence following certification by the OPSB and receipt of other environmental permits. Site preparation and demolition, grading, Site access, stormwater management, and underground utilities will be completed, followed by equipment foundations.

As equipment foundations are completed, CTGs, tanks, pumps and electric equipment will be installed. During this same period, electrical cable, piping, and pre-engineered metal buildings will be installed. As the various equipment components are installed, system checkout and testing activities will be performed to ensure the plant conforms to design specifications. After completing checkout, inspection and testing activities, the Project will be started up for operation.

In conjunction with initial start-up and testing of the Project, finish coatings, insulation, paving and landscaping activities will be completed.

(5) Future Plans

There are no plans for future addition of generating units at this Site. The opportunity exists for future use of the construction and laydown parcel for additional power facility development. However, should this be proposed, separate review and approvals will be sought.

(C) EQUIPMENT

(1) Description of Major Generating Equipment

The major equipment at the Facility will include two CTGs with natural gas as the fuel, evaporative coolers for inlet air cooling, two three-pressure level HRSGs, two duct burners, and one reheat, condensing STG. The Project will utilize a 16-cell cooling tower and a steam surface condenser. An auxiliary gas-fired steam boiler will be used for heating steam to accommodate a faster Facility startup.

(a) Combustion Turbine Generators

Two advanced technology Siemens or Mitsubishi CTGs will be provided. The CTGs will be capable of delivering electric power in continuous operation and include all associated auxiliary systems and accessory equipment.

Evaporative coolers will be supplied for cooling inlet air. The CTGs will be equipped with a DLN combustor for turbine exhaust emission control. The HRSGs will be equipment with SCR to minimize NO_x and an oxidation catalyst to minimize CO and VOC emissions. Project emissions under all operating conditions will comply with permit requirements.

(b) Steam Turbine Generator

The STG will be a condensing type with reheat capability. The unit will include all of the associated auxiliary systems and accessory equipment. The STG's maximum rated output is approximately 350 MW at a 95°F ambient temperature.

(c) Heat Recovery Steam Generators

One HRSG will be provided for each CTG to recover the waste heat from gas turbine exhaust and then generate steam. The HRSG will be a supplementary-fired three-pressure level, natural circulation design with steam reheat and superheater sections, complete with steam attemperators. SCR will be installed for NO_x control in each HRSG. Each HRSG will be equipped with an ammonia injection grid and associated aqueous ammonia storage tank. Additionally, an oxidation catalyst shall be provided for CO and VOC control. All associated auxiliary systems and accessory equipment, as well as an exhaust stack for each unit, will be provided.

(d) Fuel Gas System

Natural gas will compressed to a higher pressure via an electrically powered gas compressor station. A knock-out drum will be provided to remove any liquids that may be present in the gas. Filter/separators will further treat the fuel gas by removing any debris or liquids prior to entering the turbines. The auxiliary steam boiler and duct burners will use low-pressure natural gas.

(e) Steam System

The steam system will consist of steam drums, super-heaters and economizers, steam piping to and from the steam turbine, steam turbine bypass piping, steam piping to gland seal and steam jet air ejector systems, and solids and chemistry control. No export steam will be produced at this Facility. Steam generated by the auxiliary boiler will be used for heating and warm-up purposes.

(f) Condensate System

The condensate system will be designed to provide water sufficiently deaerated and with the proper water chemistry to meet HRSG and steam turbine requirements. The system will provide sufficient capacity for operation over the entire ambient range, and also supply water to the auxiliary boiler.

(g) Feedwater System

Boiler feedwater will be supplied by a three-element feedwater control system for each section of the HRSG. Chemical treatment of the boiler feedwater will be accomplished using chemical feed equipment. Although the particular treatment program for this Facility has not yet been determined, a typical program could include corrosion inhibitor injected to the HRSG steam drums; oxygen scavenger injected into the HRSG; and pH control amine injected into the boiler feedwater pump suction piping.

(h) Cooling Water System/Steam Condensing

The circulating water cooling system will provide cooling for condensing the steam turbine exhaust and the Facility closed-loop cooling system. The system will consist of a 16-cell cooling tower constructed of either wood or fiberglass and a steam surface condenser with an air ejector/vacuum system. The cooling tower will include high efficiency drift eliminators for reduction particulate emissions capable of achieving a 0.0005 percent cooling tower drift rate.

Chemical treatment of the cooling tower water will be accomplished utilizing chemical feed equipment. Although the particular treatment program for this Facility has not yet been determined, a typical program could include pH control (acid); scale inhibitor; biocide; dispersant; and chlorine/hypochlorite.

(i) Closed Loop Auxiliary/Cooling Water System

The closed loop auxiliary cooling water system provides cooling for auxiliary equipment. The system will utilize demineralized water with corrosion inhibitor.

(j) Fire Protection System

A complete fire protection/detection system will be provided for the Project. It will include fixed water fire suppression systems, fire hose stations, hydrants, portable fire extinguishers, detection and control systems. The system will include a motor driven fire pump and a ultra-low sulfur diesel engine driven fire water pump (an approximately 50-gallon double containment oil storage tank will be integrated into the unit). It will be designed and installed in accordance with NFPA standards and insurer's recommendations. All fire protection equipment and systems will be UL approved, and will comply with the City's fire protection authority's and OCE's insurance carrier's requirements.

(k) Water System

Water for the Project will be supplied by the City of Oregon. The City's raw water will be used in the cooling tower for makeup to replace water loss due to evaporation and blowdown. Potable water will be used for the demineralizer system, evaporative coolers, and other Facility uses. Water balances depicting the Project uses and flows are shown in Figure 02-5.

(l) Demineralizer

The City will supply treated potable water to the Project for further demineralization. Demineralized water is supplied for use as makeup water to the steam cycle to replace water lost as a result of boiler blowdown. Water will be processed by the demineralizer system, which will remove the dissolved solids to the level required by the HRSG and steam turbine manufacturer's requirements. The product from the demineralizer system will be sent to the demineralized water storage tank. The demineralized water storage tank will provide demineralized water for condenser hot-well makeup, and will be of sufficient size so as to allow normal Facility operations without excessive cycling of the demineralized water system. Demineralizer regeneration waste will be equalized and neutralized in a fiberglass tank before being discharged to the wastewater system.

(m) Wastewater System

A regeneration waste neutralization system will receive the regeneration wastes from the demineralized waste system and the chemical waste sump. This system will equalize and adjust the pH through the addition of acid or caustic to comply with discharge limits. Process wastewater from equipment drains will be routed through an oil/water separator, then recycled through the cooling tower. Any oils remaining in the oil/water separator will be removed by qualified contractors. Boiler blowdown will also be recycled through the cooling tower. Sanitary waste and the cooling tower blowdown will be piped to the City of Oregon wastewater system for treatment and disposal. The City's existing gravity sewer line is located along North Lallendorf Road, adjacent to the Site. Stormwater will be routed to on-site detention basins to maintain acceptable rates of runoff from the Site.

(n) Backup Generator

A 2,250 kW diesel engine driven generator will be provided and designed to safely shut the Facility down in the event of a disruption of power delivery. The generator will provide power to essential services necessary to protect the equipment. Ultra-low sulfur fuel will be utilized, which will be stored in an approximately 500-gallon double containment tank integrated into the equipment skid.

(o) Transformers

Electrical power will be generated by the Project at a voltage level of approximately 20 kV and then stepped-up to a voltage level of 345 kV by newly installed transformers to be located adjacent to the power block. Each step-up transformer will be oil-filled with low voltage windings sized for the maximum output of each generator. The transformers will be provided with no load tap changers and surge arresters. The power will then move through available transmission paths to wholesale electric customers throughout Ohio and the Midwest. In addition to the main step-up transformers, two auxiliary transformers will provide power for station loads.

(2) Emissions Control and Safety Equipment

(a) Flue Gas Emissions Control

The DLN combustors in the CTGs, coupled with SCR in the HRSGs, will limit Facility NO_x emissions to a level that meets those specified in the Project air permit to be issued by the Ohio Environmental Protection Agency (Ohio EPA). The exclusive use of natural gas, combined with state-of-the-art combustion control/optimization, will minimize emissions of other pollutants.

SCR is an air pollution control technology that is used to remove NO_x from the flue gases that are produced during combustion of fossil fuels in turbines or boilers. SCR removes NO_x through a catalyzed chemical reduction of NO_x by ammonia that is introduced as a reactant in the flue gas in the presence of excess oxygen (O_2). This reaction generates nitrogen gas and water as the reduced end products that are ultimately emitted from the stack to the atmosphere. The resulting NO_x emissions will be controlled to 2 parts per million volume dry basis (ppmvd) corrected to 15 percent O_2.

The HRSG will also be equipped with an oxidation catalyst for control of CO and collateral control of VOC.

A CEMS will be provided for each HRSG with sample porting located on the corresponding HRSG stacks. The CEMS will continuously extract flue gas samples from both units near the HRSG exhaust and measure flue gas parameters. The parameters subject to CEMS measurement will be specified in the air permit required from Ohio EPA, and will likely include NO_x, CO and O_2.

(b) Equipment Reliability and Efficiency Reduction

The reliability of the DLN system, because it is an integral combustion turbine component, exceeds combustion turbine reliability. A failure of a DLN combustor would require that the respective turbine be shut down. The oxidation catalyst is similarly integral to overall Facility operation. The SCR system is of high reliability. Ceramic block life span varies by manufacturer, with replacement normally completed during a regularly scheduled preventative maintenance outage lasting a couple of days. The CEMS will detect a deterioration of performance well before a failure of the catalyst occurs. At no time will a unit operate if its respective SCR is not functioning properly.

(c) Effluent Control Equipment

No direct discharge of wastewaters to a surface water body will occur as a result of the Project. The Project will be designed with appropriate effluent control equipment to ensure that no indirect impact will occur and that all applicable pretreatment standards are met when discharging to existing facilities.

A regeneration waste neutralization system will receive the regeneration wastes from the demineralizer system. This system equalizes and adjusts the pH by the addition of acid or caustic to comply with discharge limits.

Equipment drains will be routed through an oil/water separator. Waste oil and equipment wash solutions will be collected and removed by a qualified waste contractor. Process and sanitary wastewater will be directed to the POTW via an existing gravity sewer line located along North Lallendorf Road. Stormwater will be routed to on-site detention basins prior to discharge to the on-site ditches.

(d) Public Safety Equipment

There will be no public access to the proposed Facility. A security fence will be installed around the Facility with card-activated gates and Facility operator access control. Occupational, Safety and Health Administration (OSHA) requirements will be implemented to ensure worker safety during Project construction and operation.

(3) Other Major Equipment

The major equipment not addressed in Sections 1 and 2 above are described below.

(a) Combustion Turbine Air Inlet Coolers

Combustion air inlet coolers provide evaporative cooling of inlet air by circulating water over a fill material in the inlet housing of the combustion turbine. These units will typically be operational at ambient temperatures above approximately 59°F.

(b) Auxiliary Boiler

During initial startup or during turbine downtime over a short duration (i.e., with no cold reheat or high pressure steam available), auxiliary steam is provided by the auxiliary boiler. The auxiliary boiler is fired by natural gas from the Fuel Gas System and will have a maximum input capacity of 99 million British thermal units per hour (MMBtu/hr). Makeup water for the auxiliary boiler is supplied from the Demineralized Water System, with the water deaerated by the Auxiliary Boiler De-aerator.

The auxiliary boiler provides steam until the HRSG has sufficient pressure to supply the needs of the auxiliary steam system. At that point, the auxiliary boiler can be shut down.

(c) Fuel Gas Preheaters

Two electric fuel preheaters will be located in the gas yard. Together these two heaters will provide a maximum input capacity of 6.6 MMBtu/hr.

(d) Fire Water Pump – Diesel Engine Driven

One 300 horsepower diesel engine driven fire water pump will be provided.

(e) Oil/Water Separator

An oil/water separator will be provided to remove hydrocarbon materials and sediment from equipment drains.

(A) OWNERSHIP

OCE will develop, construct, own and operate the proposed Project. OCE currently has an option to own the approximately 30-acre Site on which it proposes to construct the Project. OCE will own all the equipment, structures and on-site improvements associated with the Project. It also has optioned the adjacent land (approximately 30.5 acres) for the laydown area to be used during construction.

(B) CAPITAL AND INTANGIBLE COSTS

(1) Estimated Capital and Intangible Costs

Table 05-1 presents cost information using Generally Acceptable Accounting Principles (GAAP) accounting format.

TABLE 05-1
Estimated Capital and Intangible Costs ($1,000)

Description	Cost
Engineering, Procurement, Construction	$832,640
Transmission Interconnection Costs	$19,540
Project Development Costs	$7,200
Land	$620
Total ($1,075 per kW)	**$860,000**

(2) Capital Cost Comparison

Neither OCE nor its investor, Energy Investors Funds (EIF), own other operating natural gas-fired combined-cycle power plants built with technologies identical to that of the Project. Due to multiple unique local economic conditions, specific Facility modifications and timing of equipment purchases, OCE estimates that the regional range of costs would vary from $225 million ($281 per kW) to $350 million ($438 per kW). However, the Project's all-in capital cost (including financing related costs) of $1,075 per kW is clearly within the range of similar large-scale combined-cycle plants.

(3) Present Worth and Annualized Capital Costs

No Facility configuration alternates are presently being considered and, thus, no comparisons can be developed.

(C) OPERATION AND MAINTENANCE EXPENSES

(1) Estimated Annual Operation and Maintenance Expenses

OCE estimates that the fixed and variable annual operation and maintenance (O&M) expense for the Project's partial calendar year in operation (2016) will be approximately $7,220,000. Commercial operation is currently expected to occur in late May of 2016, so that expenses for that year reflect only 7 months of operation. In 2017, the Project's first entire calendar year in operation, the estimated O&M expense will be $12,689,000. However, neither of these expense estimates includes the cost of fuel or major overhauls required by Facility machinery. Using current dispatch estimates of 75 percent of available hours in 2016 and of 75 percent of available hours in 2017, the annual expense corresponds to an expected $2.35 per megawatt-hour (MWh) and $2.41 per MWh, respectively. Due to the Project's unique features, the variable O&M costs, coupled with the large amount of fixed costs associated with operating a combined-cycle plant, such costs per MWh can vary significantly from location to location.

The amount, and thus cost, of natural gas that will be utilized by the Project is a function of the percentage of the annual hours in a given year that the Project will be run, or "dispatched."

Assuming a 75 percent annual average dispatch rate and a 2016 delivered gas price of $5.00/MMBtu, the annual cost of purchased natural gas will be approximately $173 million.

(2) Operation and Maintenance Expenses Comparison

As discussed in Section (B)(2) above, OCE does not own other combined-cycle natural gas-fired power plants. However, estimates of annual non-fuel operation and maintenance expenses at other facilities that have publicly available data range from $2.00 per MWh to $3.00 per MWh, depending in large part on forecasted plant dispatch, local economic conditions and specific facility characteristics. With consideration of these influences, the Project is anticipated to perform well within this given range of expected plant costs.

(3) Present Worth and Annualized Operation and Maintenance Expenses

OCE is not considering any alternate O&M regimes or Facility technology configurations at this time.

(D) DELAYS

A significant portion of the initial annual Project energy revenues are associated with commercial operation during the specific months of June, July, August and September of 2016. This is due to the fact that electricity consumption is highest in the summer, and the value of energy is also at its highest during these months. Any cost associated with a delay of operations would primarily be the result of this lost energy revenue opportunity. Each of those summer months has an estimated lost revenue value of $7,600,000 per month. The remaining cost of delay for the months October 2016 through the end of 2016 is estimated to be $5,700,000 per month.

Delay also adds unnecessary Project costs such as: storage and double-handling costs for major equipment slated for the Oregon Clean Energy Center; interest costs on funds used to purchase major equipment; higher risk for increases in costs of construction debts; and cost increases associated with general construction.

It is critical that the proposed in-service date of May 2016 be achieved in order to meet the anticipated summer peak load demand of 2016. PJM manages the eastern U.S. electrical grid that includes Ohio. To the extent OCE commits to PJM in May 2013 to have the Facility operational in May 2016 and does not meet that schedule, there are significant non-performance penalties that would be owed by OCE to PJM. Therefore, the OPSB certificate should ideally be issued before the scheduled start-of construction date of June 2013, in order for the Project to be completed on schedule. A delay in the Project before the beginning of construction would jeopardize the Project's ability to meet peak summer demand of 2016.

OCE is about to order two combustion turbines from either Mitsubishi or Siemens that will become the primary power generation equipment within the Project. This "power island" package, including the two gas turbines, represents an OCE financial commitment of more than $185 million. The fabrication of these units will need to commence in 2013, however, this significant expenditure would not occur until OPSB approval is certain. Any delay in the OPSB process results in a day-for-day delay in commencing manufacturing of the primary generation equipment that is the "critical path" component of the overall Project construction schedule.

It is important also to keep in mind the potential regional power circumstance relative to supply of electricity generation. In northwestern Ohio, 1,611 MW of aging coal-fired generation are scheduled for closure from September 2012 through September 2015. These plants are: Bay Shore (2012), Avon Lake (2015) and J.R. Whiting (2015). Without replacement generation in the implementation stages (namely, summer 2016 operations for the Oregon Clean Energy Center), there will be a "power generation void" in northwestern Ohio. Loss of power generation supply without adequate replacement can lead to costly regional grid reliability issues. The financial consequences of inadequate regional power supply and compromised grid reliability can cost regional customers hundreds of millions of dollars, as has been detailed in public testimony by PJM's transmission experts (in, for example, Case Docket 9214 before the Maryland Public Utilities Commission in January 2012 where similar regional coal plant closure is planned).

(A) GENERAL

This section provides an assessment of the environmental effects specifically relating to air quality, water quality, and waste generation/disposal associated with the proposed Project. Instances where existing data have been substituted for physical measurements are indicated, as applicable, below.

(B) AIR

(1) Preconstruction

(a) Description of Ambient Air Quality

The Ohio EPA collects air quality data (ambient air pollutant concentrations) at a number of monitoring locations throughout the state, including Lucas County and the surrounding area. Data collected from air quality monitoring sites are used, in part, to verify attainment of the National Ambient Air Quality Standards (NAAQS). NAAQS exist for six criteria air pollutants: ozone (O_3), SO_2, particulate matter (PM_{10}, $PM_{2.5}$), nitrogen dioxide (NO_2), CO, and lead (Pb). The proposed Site is within an area classified as attainment for all criteria pollutants.

As defined by the Ohio EPA, background air quality includes pollutant concentrations due to natural sources, nearby sources other than the one(s) under consideration, and unidentified sources. For the Oregon Clean Energy Center, therefore, background air quality is defined as the ambient air pollutant concentration that exists outside the immediate vicinity of the Project.

For the Project area, the most recent background concentrations for $PM_{2.5}$, PM_{10}, lead, and ozone were obtained from the Ohio EPA Annual Air Quality Report for 2011. The background concentrations for SO_2, NO_2 and CO were obtained by contacting Ohio EPA. Table 06-1 summarizes these background data, and Table 06-2 compares the data to the ambient air quality standards. These data are based on the closest monitoring station locations, which are discussed in Section (B)(1)(e) below. Figure 06-1 shows the location of each monitoring station with respect to the Site.

TABLE 06-1

Background Air Quality Monitoring Stations

Pollutant	Station Location	Station ID
O_3	348 S. Erie Street, Toledo, Lucas County	39-095-0024
SO_2	5400 Spangler Rd., Enon Clark County	39-023-0003
PM_{10}	Lee and Front, Toledo, Lucas County	39-095-1003
$PM_{2.5}$	600 Collins Park, Toledo, Lucas County	39-095-0028
NO_2	7760 Blackburn Road, Athens Athens County	39-009-0004
CO	901 W. Fairview, Dayton Montgomery County	39-113-0028
Pb	200 Van Buren Street, Bellefontaine, Fulton County	39-051-0001

TABLE 06-2

Background Air Quality Data

Pollutant	Averaging Period	Background Concentration	NAAQS
O_3	8-hour	0.072 ppm	0.075 ppm
SO_2	3-hour	19.3 mg/m^3	1309 mg/m^3
	1-hour	57.64 mg/m^3	196 mg/m^3
PM_{10}	24-hour	86 mg/m^3	150 mg/m^3
$PM_{2.5}$	24-hour	29 mg/m^3	35 mg/m^3
	Annual	11.42 mg/m^3	12 mg/m^3
NO_2	Annual	5.9 mg/m^3	99.7 mg/m^3
	1-hour	37.79 mg/m^3	188 mg/m^3
CO	1-hour	1,484 mg/m^3	40,000 mg/m^3
	8-hour	1,142mg/m^3	10,000 mg/m^3
Pb	Rolling 3 month avg	0.178mg/m^{3*}	0.15 mg/m^3

* The monitoring location identified is in Fulton County, a location that is non-attainment for Pb. No monitoring locations in Lucas County, which is in attainment for Pb are available.

The following subsections summarize background air quality by pollutant.

Ozone – Ozone differs from the other criteria air pollutants in that it is not directly emitted into the atmosphere. Instead, ozone is produced photochemically in the lower atmosphere from the reaction of NO_x and VOCs in the presence of sunlight. Emissions of NO_x and VOCs participate in a series of photochemical reactions to form ozone and other photochemical oxidants in the lower atmosphere. USEPA has defined the "ozone season" as occurring between May 1 and September 30, when direct sunlight and elevated temperatures are likely to promote the photochemical reactions.

The background concentration for ozone was selected from a monitoring station in Toledo, Ohio. Toledo was selected based on its size and location in comparison to Oregon and the other ozone monitoring sites in Ohio. The ozone concentrations measured at the Toledo monitoring station are indicative of the levels located around Oregon.

Sulfur Dioxide – Sulfur dioxide is formed through the combination of sulfur and oxygen during combustion. Burning of sulfur-containing fossil fuels is the major source of SO_2 emissions. Currently, there are no active SO_2 monitors near the Project location. The background concentrations of SO_2 were provided by Ohio EPA from a station located in Enon, OH.

Particulates – PM_{10} is defined as any liquid (aerosol) or solid substance found in the atmosphere with a diameter less than 10 micrometers (microns). Common forms of suspended particulate matter are fly ash, process dusts, soot, and oil aerosols. Industrial processes, electric power generation, industrial fuel combustion, and dust from plowed fields, roadways, or construction sites are examples of major sources of PM_{10}. The background concentration for PM_{10} was selected from a monitoring station located in Toledo, Ohio. Toledo was selected due to its size and location in comparison to Oregon.

Nitrogen Dioxide – Oxides of nitrogen are toxic gases formed in a high temperature combustion process when nitrogen in the air is oxidized to nitric oxide (NO) or NO_2. Because the predominant form of NO_x is NO_2, the NAAQS are expressed in terms of NO_2. The major sources of NO_2 are high temperature fuel combustion, motor vehicles, and certain chemical processes.

Currently only three NO_2 monitors are operated in Ohio. The background concentrations for NO_2 were provided by Ohio EPA from a station located in Athens, OH. The concentrations from this monitor are more representative of Site conditions than the other two monitors which are located in larger industrial cities like Cincinnati and Cleveland.

Carbon Monoxide – CO is produced by the incomplete combustion of carbon-containing fuels, primarily in the internal combustion engine. CO is a general urban pollutant that is produced mainly from transportation vehicles.

The background concentrations of CO were provided by Ohio EPA from a station located in Dayton, OH.

Lead – Sources of airborne lead include lead smelting facilities, lead-acid storage battery manufacturing plants, and other manufacturing operations. The lead monitoring stations in Ohio are generally located in the vicinity of lead emission sources. In the Oregon area, the background lead concentration was selected from a monitoring station in Fulton County, Ohio. This monitoring station, which is the closest station to Oregon, was selected based on its relative location to the Site in comparison to the other lead monitoring sites in Ohio. However, the lead concentrations measured at this monitoring station are impacted by emissions from a local steel mill. Therefore, the background concentration for lead at the selected monitoring station is higher than expected for the Oregon area.

(b) Description of Pollution Control Equipment

A review of the air emissions and controls for the proposed Project is presented below.

Nitrogen Oxides

Nitrogen oxides are formed in the turbine combustion chamber during high temperature gas firing primarily as a result of the reaction between nitrogen and oxygen present in the combustion air (thermal NO_x). The combustion turbine and duct burner utilize DLN combustors which are integrated within the combustion turbines. The DLN combustion controls NO_x formation by pre-mixing fuel and air immediately prior to combustion. Pre-mixing inhibits NO_x formation by minimizing both the flame temperature and the concentration of oxygen at the flame front.

SCR, a post-combustion chemical process, will be installed in the HRSGs to treat exhaust gases downstream of the CTGs. The SCR process will use 19 percent aqueous ammonia as a reagent. Aqueous ammonia will be injected into the flue gas stream, upstream of the SCR catalyst, where it will mix with NO_x. The catalyst bed will be located in a temperature zone of the HRSG where the catalyst is most effective. The mixture will pass over the catalyst and the NO_x will be reduced to nitrogen gas and water. The SCR system will reduce NO_x concentrations to 2.0 ppmvd at 15 percent O_2 with or without duct firing at all load conditions and ambient temperatures. A small amount of ammonia will remain un-reacted through the catalyst, which is called the “ammonia slip.” The ammonia slip will be limited to 5.0 ppmvd at all load conditions and ambient temperatures.

NO_x emissions will increase during limited periods of start-up and shutdown due to less efficient combustion at these loads. Additionally, the SCR unit is not operational during start-up and shut down until the turbine exhaust reaches the operating temperature window required by the SCR.

The use of DLN and SCR meets Best Available Control Technology (BACT) for NO_x.

The proposed auxiliary boiler will also minimize NO_x emissions using low NO_x burners and clean-burning natural gas as the sole fuel for the Project. This meets BACT for NO_x.

Sulfur Dioxide

Sulfur dioxide is formed by the reaction of sulfur found in fuel with oxygen from the combustion air. A small amount of the sulfur in fuel may be converted to sulfate, which together with SO_2 is referred to as sulfur oxides, or SO_x. Clean-burning natural gas has only trace quantities of sulfur. An SO_2 emission limit of 0.0015 pounds per million British thermal units (lb/MMBtu) (with and without duct burning) is proposed as BACT for the combustion turbines. This level of emissions will be achieved by combusting commercially available pipeline quality natural gas with a maximum sulfur content of 0.5 grains per 100 standard cubic foot (scf) by weight in the combustion turbines. This emission level is consistent with the limits and control technologies in BACT determinations for previously licensed similar facilities. An SO_2 emission limit of 0.0007 lb/MMBtu is proposed as BACT for the auxiliary boilers. This limit is consistent with other BACT determinations for this type of equipment. The use of clean-burning pipeline quality natural gas is BACT for SO_2.

Particulate Matter

Particulate matter emissions result from trace quantities of ash (non-combustibles) in the fuel and formation of ammonium sulfate salts from unreacted ammonia from the SCR system. Particulate emissions for the turbines, duct burners, and auxiliary boiler are minimized by exclusive use of clean-burning natural gas as the sole fuel for the Project in conjunction with good combustion practices. A $PM_{10}/PM_{2.5}$ emission limit of 0.0049 lb/MMBtu without duct burning and 0.0065 lb/MMBtu with duct burning is BACT for the proposed Project. This level of emissions will be achieved by combusting only commercially available pipeline quality natural gas in the turbines. A $PM_{10}/PM_{2.5}$ emission limit of 0.005 lb/MMBtu is proposed for the auxiliary boiler. The use of clean-burning natural gas, in conjunction with good combustion practices, is BACT for $PM_{10}/PM_{2.5}$.

The Project will use a 16-cell cooling tower for condensing the steam turbine exhaust. Particulates may be emitted from the cooling tower as some small water droplets evaporate and liberate dissolved solids in the cooling water to the atmosphere. In order to minimize particulate emissions from the cooling tower, drift eliminators with a drift rate of 0.0005 percent will be used for this Project. This represents BACT for $PM_{10}/PM_{2.5}$ from the cooling towers.

Carbon Monoxide

Carbon monoxide emitted from combustion turbines is a product of incomplete combustion of the fuel. An oxidation catalyst system will be located within each HRSG to control emissions of CO. Exhaust gases from the turbines will be passed over a catalyst bed where excess air will oxidize the CO. The oxidation catalyst system will reduce CO concentrations to 2.0 ppmvd (at 15% O_2) in the exhaust gas under all dispatch conditions. The use of oxidation catalyst meets BACT for CO.

BACT for the auxiliary boiler will also be met using good combustion practices.

Volatile Organic Compounds

Volatile organic compounds emitted from the combustion turbines, duct burners, and auxiliary boiler are products of incomplete combustion of the fuel. The use of an oxidation catalyst system within each HRSG will control VOC emissions. Exhaust gases from the turbines will be passed over a catalyst bed where excess air will oxidize the VOCs. The oxidation catalyst will also reduce VOC emissions to between 1.0 and 3.5 ppmvd, depending on the amount of supplemental duct firing. The use of oxidation catalyst is BACT for combustion turbines. For the auxiliary boiler, VOC emissions will be less than 0.02 lb/MMBtu. Use of clean-burning natural gas as the sole fuel is BACT for auxiliary boiler. VOC emissions will increase during limited periods of start-up and shutdown due to less efficient combustion at these loads.

(c) Description of Regulatory Applicability

Prevention of Significant Deterioration Review and New Source Review

New major stationary sources of air pollution and major modifications to major stationary sources of air pollution are required by the Clean Air Act to obtain an air pollution permit before commencing construction. This process is called New Source Review (NSR) and is required whether the major source or modification is planned for an area where the NAAQS are exceeded (i.e., nonattainment area) or an area where air quality is better than the NAAQS or cannot be classified (i.e., attainment and unclassifiable areas). Air construction permits for sources in attainment areas are referred to as Prevention of Significant Deterioration (PSD) permits, whereas air construction permits for sources in nonattainment areas are referred to as nonattainment NSR permits. The entire program, including both PSD and nonattainment NSR permits, is referred to as the NSR program. The USEPA has delegated authority to issue PSD and nonattainment NSR permits to Ohio EPA. Regulations adopted and administered by Ohio EPA for PSD and nonattainment NSR are codified in the Ohio Administrative Code (OAC) Chapter 3745-31, Permit to Install New Sources of Pollution. OAC Chapter 3745-31 provides requirements for obtaining a Permit-to-Install (PTI) for industrial processes. The requirements in this chapter incorporate the provisions of the federal PSD and nonattainment NSR programs as defined in 40 Code of Federal Regulations (CFR) Parts 51 and 52. Note that, for this Project, the Toledo Environmental Services (TES) Department acts as the regional office of Ohio EPA.

The NSR requirements are pollutant-specific. Even though a source may emit many types of air pollutants, only specific pollutants may be governed by the NSR, depending on the magnitude of the emissions of each pollutant. Moreover, a source may have to obtain both PSD and nonattainment NSR permits if it is located in an area that is designated attainment for one or more pollutants and nonattainment for the remaining pollutants. Lucas County, Ohio has been designated or is treated as attainment for all criteria air pollutants. Because the area is attainment for all air pollutants, only PSD review applies to the Oregon Clean Energy Center.

The NSR program requires that an applicability determination be conducted for any proposed source (either new source or modification of an existing source) to see if it will be subject to PSD pre-construction review. Three basic criteria must be evaluated when making a PSD applicability determination. These criteria are the magnitude of the emissions for a new or modified source, location in an attainment or nonattainment area, and the pollutants released.

A combined-cycle power generating facility is listed as one of USEPA's 28 named source categories and is considered a major new source under PSD regulations if it has the potential to emit 100 tons per year (tpy) or more (including fugitive emissions) of a regulated air pollutant. The Oregon Clean Energy Center has the potential to emit more than 100 tpy of the regulated pollutants NO_x, VOC, $PM_{2.5}$, PM_{10}, and CO and is, therefore, subject to review for these pollutants under PSD regulations.

Once a facility is subject to review under the PSD regulations by exceeding the major source threshold for at least one pollutant, PSD review encompasses each attainment air pollutant that can be emitted at rates greater than the Significant Emission Rates listed in 40 CFR 52.21 and OAC Rule 3745-31-01(MMMMM). Based on potential emission estimates, the Oregon Clean Energy Center is subject to PSD review for several regulated air pollutants. The air pollutants subject to PSD review and their significant emissions rates include NO_x (40 tpy), CO (100 tpy), PM_{10} (15 tpy), $PM_{2.5}$ (10 tpy), SO_2 (40 tpy) and VOC (40 tpy), and the regulated non-criteria pollutant sulfuric acid mist (7 tpy).

On April 2, 2007, the U.S. Supreme Court found that greenhouse gases, including CO_2, are air pollutants covered by the Clean Air Act. On May 13, 2010, the USEPA issued a final rule (called the "Tailoring Rule") that establishes an approach to greenhouse gas emissions from stationary sources under the Clean Air Act. This final rule "tailors" the requirements of the Clean Air Act permitting program to limit which facilities will be required to obtain PSD permits. Under this rule, effective July 1, 2011, PSD permitting requirements will cover new construction projects that exceed 100,000 tpy of greenhouse gas emissions. Oregon Clean Energy Center has the potential to emit more than 100,000 tpy of greenhouse gas emissions and, therefore, is subject to PSD review for greenhouse gases in addition to the pollutants discussed above.

The other significant aspects of OAC Chapter 3745-31 are outlined in the following paragraphs.

OAC Rule 3745-31-06 - Completeness determinations, processing requirements, public participation, public notice, and issuance – This section mandates that a completeness determination be rendered within 60 days of application receipt by Ohio EPA and within 30 days of receiving a written request from the applicant. The director must rule on a permit application within 180 days after the date that the application is deemed complete. The director must notify the public, by advertisement in a local newspaper, of the draft decision to grant or deny the permit and offer an opportunity for the public to comment or request a hearing.

OAC Rule 3745-31-11 - Ambient Air Ceilings and Increments – The emissions increases due to the proposed new source or modification must not cause an ambient air quality impact that exceeds the maximum allowable increment in the area, nor can they cause an exceedance of any NAAQS, which represent the ambient air quality ceilings.

OAC Rule 3745-31-13/OAC Rule 3745-31-14 - Ambient Monitoring Requirements – The director may determine that pre-construction ambient monitoring data is needed for the purposes of determining whether emission of an air pollutant would cause or contribute to a violation of any NAAQS or applicable increment. The director may exempt a source or modification from this monitoring requirement if the emission increases produce an ambient impact that is less than significant (*de minimis*) air quality levels. The Oregon Clean Energy Center is expected to produce less than significant impacts on air quality, and will thus qualify for a pre-construction monitoring waiver.

OAC Rule 3745-31-15 - Control Technology Review – The owner or operator of a new source must employ BACT for each pollutant subject to major source review.

OAC Rule 3734-31-16 - Impact Analysis – The owner or operator of a new source must conduct an impact analysis to demonstrate that the increase in emissions, in conjunction with all other applicable emission increases and decreases, will not cause an exceedance of any NAAQS or applicable increment.

OAC Rule 3745-31-17 - Additional Impact Analysis – The owner or operator of a new source must provide an analysis of the impairment to visibility, soils and vegetation that would occur as a result of the emission increases and an analysis of the ambient air quality impact of expected secondary growth in the area.

Other Regulatory Requirements

In addition to the NSR program, other federal and state air quality standards also apply during operation of an air pollutant source. They include federal New Source Performance Standards (NSPS), federal National Emission Standards for Hazardous Air Pollutants (NESHAP), and the Ohio EPA rules codified under the various chapters of OAC Chapter 3745.

40 CFR 60 Subpart KKKK applies to Stationary Combustion Turbines and places emission limits on NO_x and SO_2 from new combustion turbines. The combustion turbines and duct burners would be subject to this standard. For new

combustion turbines firing natural gas with a rated heat input greater than 850 MMBtu/hr, NO_x emissions are limited to:

- 15 ppmv at 15 percent O_2; or
- 54 nanograms per Joule (ng/J) of useful output (0.43 pounds per megawatt-hour [lb/MW-hr]).

Additionally, SO_2 emissions must meet one of the following:

- Emissions limited to 110 ng/J (0.90 lb/MW-hr) gross output; or
- Emissions limited to 26 ng/J (0.060 lb/MMBtu).

The Oregon Clean Energy Center will use an SCR system to reduce NO_x emissions to 2 ppmv at 15 percent O_2 and pipeline natural gas to limit SO_2 emissions to 0.0015 lb/MMBtu. As such, the Project will meet the emission limits under Subpart KKKK.

Additionally, the provisions of this Subpart require continuous monitoring of water-to-fuel ratio, but allow for the use of either a 40 CFR Part 60 or Part 75 certified NO_x CEMS in lieu of this requirement. Oregon Clean Energy Center proposes to use a 40 CFR Part 75 certified NO_x CEMS, which will satisfy this requirement.

40 CFR 60 Subpart Dc applies to steam generating units with a maximum input capacity greater than 10 MMBtu/hr and less than 100 MMBtu/hr. The auxiliary boiler has a maximum input capacity of 90 MMBtu/hr, and is, therefore, subject to the standard. For units combusting natural gas, the standard requires initial notifications at the start of construction and at startup. In addition, records

must be maintained regarding the amount of fuel burned on a monthly basis; however, since natural gas is the only fuel burned in the boiler, there are no specific reporting requirements to the USEPA under Subpart Dc.

40 CFR 60 Subpart IIII is applicable to owners and operators of stationary compression ignition (CI) internal combustion engines that commence operation after July 11, 2005. Relevant to the Oregon Clean Energy Center, this rule applies to the emergency generator and emergency fire pump. For model year 2009 and later fire pump engines with a displacement less than 30 liters per cylinder and an energy rating between 300 and 600 hp, Subpart IIII provides the following emission limits:

- 4.0 grams per kilowatt-hour (g/kW-hr) (3.0 grams per horsepower-hour [g/hp-hr]) of VOC + NO_x
- 3.5 g/kW-hr (2.6 g/hp-hr) of CO
- 0.2 g/kW-hr (0.15 g/hp-hr) of particulate matter

The Oregon Clean Energy Center will install a fire pump meeting these emission standards. To comply with Subpart IIII, the emergency generator must meet the emission standards for new non-road CI engines (Tier 2 or 3). Engines with a model year 2006 or later with a power rating of 560 kW (750 hp) or greater must meet the following limits:

- 6.4 g/kW-hr (4.8 g/hp-hr) of VOC + NO_x
- 3.5 g/kW-hr (2.6 g/hp-hr) of CO
- 0.2 g/kW-hr (0.15 g/hp-hr) of particulate matter

The emergency generator associated with the Oregon Clean Energy Center will be certified to meet non-road emission standards.

There are no NESHAP regulations under 40 CFR Part 61 that are applicable to the Oregon Clean Energy Center's operations. The NESHAP regulations under 40 CFR 63 will require the facility to meet Maximum Available Control Technology (MACT) for Hazardous Air Pollutant (HAP) emissions. The USEPA has promulgated a variety of standards for each category or subcategory of major sources and area sources of HAPs. For the Project, the potential emissions of a single HAP will not exceed the major source threshold of 10 tpy. In addition, potential emissions of combined HAPs will be less than the major source threshold of 25 tpy. Therefore, the major source NESHAP standards under 40 CFR Part 63 are not applicable to this Project. An area source of HAPs is a source that is not major, i.e., emits or has the PTE to emit below the major source thresholds. Area source NESHAP, 40 CFR 63, Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines (RICE), is applicable to the emergency generator and the emergency fire pump at the Oregon Clean Energy Center. The requirements under Subpart ZZZZ for new sources are to comply with NSPS Subpart IIII standard. Therefore, Oregon Clean Energy Center will comply with both NESHAP Subpart ZZZZ and NSPS Subpart IIII standards.

The SCR system will use aqueous ammonia with a less than 19 percent weight solution; therefore, the Facility will not be subject to the requirements of the USEPA's Accidental Release Prevention Program.

Oregon Clean Energy Center will be subject to the Acid Rain Program based on the provisions of 40 CFR 72.6(a)(3) because the turbines are considered utility units under the program definition and they do not meet the exemptions listed under paragraph (b) of this Section. As required under this rule, the Facility will submit an acid rain permit application at least 24 months prior to the date on which the affected unit commences operation.

On March 10, 2005, USEPA issued the Clean Air Interstate Rule (CAIR) which requires reductions in emissions of NO_x and SO_2 from large fossil fueled electric generating units using a cap-and-trade system. The rule provides both annual emissions budgets and an ozone season emission budget for each state. On July 6, 2011, the USEPA issued the Cross-State Air Pollution Rule (CSAPR) which replaced CAIR. Ohio power generation sources of 25 MW or greater would be subject to this rule. CSAPR was to go into effect January 1, 2012 and would have imposed new cap-and-trade programs for ozone season NO_x, annual NO_x, and annual SO_2 emissions. On August 21, 2012, the Court vacated CSPAR and ruled that the former CAIR remain in effect until a viable replacement to CSAPR is made. Under CSAPR, electric generating facilities in Ohio would have been required to obtain allowances for ozone season NO_x, annual NO_x, and annual SO_2 emissions. Under CAIR, assets holding excess allowances will be able to sell or trade allowances to those without sufficient allowances. Oregon Clean Energy Center will comply with the rules currently in effect at the time of operational start.

The applicable Ohio EPA rules include OAC Rule 3745-17-07(A)(1), which limits visible particulate emission limitations for stack emissions to 20 percent opacity as a six-minute average; OAC Rule 3745-17-10(B)(1), which limits particulate matter from gaseous fuel-burning equipment to 0.20 lb/MMBtu; OAC Rule 3745-18-06(F), which limits SO_2 emissions; OAC Rule 3745-21-08, which limits CO emissions; OAC Rule 3745-21-09, which limits VOC emissions; OAC Chapter 3745-31, which requires a PTI and use of Best Available Technology (BAT) for emissions abatement; OAC Chapter 3745-77, which requires a Title V permit; and OAC Chapter 3745-103, which requires an acid rain permit.

An airport is located approximately 2 miles from the Site. It is therefore expected that review of the Project by the Federal Aviation Administration (FAA) will be required to determine the need for navigational lighting on the Facility stacks. A filing with the FAA, assigned Aeronautical Study Number 2013-AGL-239-OE, is currently under review for the two proposed stacks.

(d) Required Permits to Install and Operate Air Pollution Sources

Federal authority is delegated to the state, and all air permit applications will be submitted to Ohio EPA through the TES. The air construction permit, known as the PTI, will serve as the air construction permit and initial operating permit. Since the Facility qualifies as a "Part 70" major source under Title V rules, the Facility will be required to apply for a Title V air operating permit within 12 months after initial startup.

The following list of air permits is applicable to the proposed Project:

- *Ohio EPA Permit to Install (PTI)*: OAC Chapter 3745-31 – Permit to Install New Source of Pollution: OAC Rules 3745-31-01 through -27. The PTI will serve as the submission vehicle for the PSD preconstruction review and construction permit.
- *Title V Permits*: OAC Chapter 3745-77 – Title V Permits: OAC 3745-77-01 through -10. The Title V permit will serve as the federally enforceable operating permit for the Facility.
- *Title IV*: Phase II Acid Rain Permit Program (40 CFR Part 72).

(e) Air Monitoring Stations and Major Source Mapping

Existing ambient air quality data are available for the Project area or from other representative locations within the state. Figure 06-1 provides a section of a USGS map (1:100,000 scale) showing the location of the Facility in relation to the Ohio EPA monitoring stations used to identify background levels for the Project, along with other identified major point sources in the area.

(f) Demonstration of Regulatory Compliance

An initial PTI for the Project was submitted to TES/Ohio EPA in August 2012. An updated PTI application for the Facility will be submitted to the Ohio EPA (one application for each potential scenario) in early 2013. This document will address compliance with the requirements identified in Section (B)(1)(c) and (B)(1)(d). Demonstration that the Project will meet the range of applicable standards, including demonstrating modeled impacts below SILs will be made. A variety of compliance demonstration procedures, in the form of testing, monitoring, recordkeeping, and reporting, will be conducted to ensure operational compliance with all applicable air rules, standards, and permit conditions. These procedures will be performed in accordance with federal NSPS for combustion turbines (Subpart KKK), boilers (Subpart Dc), emergency generator and emergency fire pump (Subpart IIII).

(2) Construction

Construction impacts on air quality will consist mainly of the relatively minor emissions from the construction equipment required for Site preparation and from fugitive dust emissions. General construction vehicles (both gasoline- and diesel-powered) and other diesel-powered engines will emit minor amounts of VOC, SO_2, CO, NO_x, and PM. These contaminants are not expected to cause any significant impacts onsite or beyond the Site boundary.

(3) Operation

(a) Description of Air Quality Monitoring Plans

There are no plans to perform any ambient air quality monitoring during operation. However, as noted above, a variety of compliance monitoring procedures in accordance with the federal NSPS for combustion turbines will be implemented to ensure compliance with all applicable rules, standards and permit conditions.

(b) Estimated Air Concentration Isopleths

The ambient air quality impacts of the Project were assessed by dispersion modeling, using the USEPA model AERMOD, in accordance with Ohio EPA guidance as summarized in *Engineering Guide #69, Air Dispersion Modeling Guidance*. Modeling was performed using five years of hourly meteorological data (2006 through 2010) consisting of surface data from the Toledo National Weather Service Station merged with the mixing heights from the White Lake, Michigan National Weather Service Station. This data set was provided by the Ohio EPA, Division of Air Pollution Control. Impacts of the combustion turbines were evaluated for a series of ambient temperatures and operating loads spanning the range of anticipated operating conditions.

The calculated maximum air quality impacts of the combustion turbines are summarized in Table 06-3. The maximum impacts are below the USEPA SILs for all criteria pollutants. Isopleth plots showing the spatial pattern of calculated concentrations by pollutant and averaging time are provided in Figures 06-2 through 06-9.

TABLE 06-3

Maximum Calculated Project Impacts for Criteria Pollutants

Pollutant	Averaging Time	Maximum Calculated Impact Mitsubishi ($\mu g/m^3$)	Maximum Calculated Impact Siemens ($\mu g/m^3$)	Significant Impact Level ($\mu g/m^3$)	Class II PSD Increment ($\mu g/m^3$)
NO_2	Annual	0.074	0.068	1.0	25
NO_2	1-hr	6.59	6.96	7.52	N/A
CO	1-hr	172.72	31.79	2,000	N/A
CO	8-hr	109.80	14.84	500	N/A
PM_{10}	24-hr	3.37	3.35	5	30
PM_{10}	Annual	0.60	0.59	1	17
$PM_{2.5}$	24-hr	0.47	0.61	1.2	9
$PM_{2.5}$	Annual	0.04	0.04	0.3	4

(c) Potential Failure of Air Pollution Control Equipment

The pollution control equipment consists primarily of the DLN combustors and the SCR. This equipment has been proven to be reliable, safe, and effective. The DLN control is built into the combustion chamber of the combustion turbine. If a DLN combustor fails, there are detection systems that will notice the failure and automatically initiate shutdown, informing the operator to initiate corrective action. The typical life span of a combustor is based upon number of cold starts and hours of operation. The turbine manufacturer recommends periodic maintenance, including inspection of the combustors, at specific intervals which will minimize the risk of in-service failure of any of the components.

Performance of the combustors is also monitored in the Facility computer system, which will detect degradation in a combustor prior to failure. The CEMS would also detect changes in emissions.

The SCR is an integral part of the HRSG. A steel structure is erected in the combustion turbine exhaust gas path along with the HRSG boiler tubes. This structure holds ceramic catalyst blocks. Aqueous ammonia is distributed into the exhaust gas stream ahead of the ceramic blocks to achieve the chemical reaction for NO_x reduction. The ceramic blocks must be periodically replaced. Their life span varies by manufacturer; however, the replacement would be completed during a regularly scheduled preventative maintenance outage. The CEMS will detect a deterioration of performance well before a failure of the catalyst could occur. In addition, the Facility will have a sophisticated computer control system that has the ability to automatically shut down the unit quickly, if necessary.

(C) WATER

No new water source is required for the Project's use. Rather, the Project will rely on the existing source of raw water available from the City of Oregon. Raw water will be diverted from the headworks of the City's water treatment plant located at 935 North Curtice Road in Oregon (Figure 02-6). The City will construct the appropriate equipment and piping to redirect raw water to the Project site, located approximately 3.5 miles west of the City's water treatment plant. The City will be responsible for identifying and securing the needed rights-of-way to construct the new raw water pipe that will transport water from the City's water treatment plant to the Project site. The Project's infrastructure (piping, valves, meter and tanks) will be connected to the City's pipeline at that location. Commercial arrangements between OCE and the City are currently being developed; the Project intends to reimburse the City for design, construction and start-up costs. Once the Project is operational, OCE will also purchase raw water from the City.

The City of Oregon will also supply potable water to the Project from its existing infrastructure located in North Lallendorf Road.

Wastewater discharge will also utilize the City of Oregon system, using existing infrastructure located in North Lallendorf Road. Adequate capacity exists within the existing treatment facility to accommodate Project wastewater flows, and the Project will comply with applicable pretreatment standards consistent with the POTW's existing National Pollutant Discharge Elimination System (NPDES) authorization.

(1) Preconstruction

(a) List of Permits

Prior to constructing the Oregon Clean Energy Center, two permits related to water resources will need to be obtained: a general NPDES permit for stormwater discharges associated with construction (Ohio EPA's Construction General Permit #OHC000003) and a permit associated with industrial discharge to the existing City of Oregon POTW. In addition, prior to operation, a general NPDES permit for stormwater discharges associated with operation will be obtained, if necessary.

(b) Location of Survey Data Sources

No monitoring or gauging stations have been used to collect preconstruction survey data because no new surface or groundwater sources will be utilized by the proposed Project; therefore, no mapping of such stations has been provided. Any incremental impact associated with on-site stormwater or wastewater discharge will be negligible due to the use of standard engineering design, Best Management Practices and pretreatment as appropriate to comply with NPDES and POTW standards. Stormwater and wastewater flows, therefore, will have no discernible effect on surface or groundwater quality.

(c) Description of Data Sampling Stations

Because there are no monitoring stations, this is not applicable.

(d) Water Quality of Receiving Stream

Because the wastewater will be directed to the City of Oregon's POTW in accordance with its existing NPDES requirements and because Facility stormwater discharge will incorporate Best Management Practices and good engineering design practices, water quality impact will not occur as a result of this Project. In addition, stormwater from the Site will be held within on-site detention basins, to allow clean stormwater to further settle and to retain peak flows, prior to release into the on-site ditches. This information, therefore, is not applicable.

(e) Water Discharge Permit Information

Construction and operation of the Oregon Clean Energy Center will result in the discharge of a number of sources of stormwater and wastewater, both during construction and operation. Because Project stormwaters will be discharged consistent with stormwater and NPDES requirements and industrial and sanitary wastewaters will be discharged to an existing municipal treatment facility, consistent with pretreatment requirements and in compliance with the POTW's existing NPDES authorization, this section is not applicable.

(2) Construction

No water discharges will be associated with the Project during construction with the exception of stormwater runoff. Sanitary wastes during construction will be handled using portable units that will be the responsibility of an independent contractor. Therefore, no monitoring or gauging stations are intended to be utilized during construction. The Site is flat, and existing drainage patterns will be maintained to the extent possible; therefore, no significant changes in flow patterns are anticipated. The use of Best Management Practices in accordance with federal and state requirements will ensure that the potential for erosion and sedimentation will be minimized during construction, and that stormwater from the Site will not cause off-site impact. Discharges are not anticipated to occur in association with Project construction that would influence aquatic resources.

(3) Operation

The Project may require coverage under a general NPDES permit for operational stormwater. The Project will incorporate Best Management Practices and will identify responsibility for tracking changes in stormwater management procedures. No NPDES permit will be required for the Project's wastewater discharge because it will be conveyed to an existing POTW consistent with pretreatment requirements. Because Best Management Practices will be utilized and no significant water-related impact is expected, no water monitoring or gauging stations are proposed.

Water pollution control equipment to be located at the Site will include an in-line pH meter, a neutralization tank for demineralizer regenerate waste, oil/water separator for equipment drains, spill containment areas for bulk chemical storage tanks and unloading areas, in-line flow equalization, and two detention ponds for stormwater management. A waste neutralization tank will receive the regeneration wastes from the water demineralizer system. This neutralization tank equalizes and adjusts the pH of the wastewater by the addition of acid or caustic to comply with pretreatment standards.

The Facility water balance, shown in Figure 02-5, provides specific information with regard to water use and discharge for the Project for average and peak uses, respectively. The following are shown: sewerage, blowdown, chemical and additive processing, wastewater processing, oil/water separators, and runoff from other soils/surfaces. No runoff or leachate from fuels and solid wastes is anticipated due to the

Project's exclusive use of natural gas as fuel, the limited solid waste storage planned, and the use of an oil/water separator to ensure collection of any incidental materials onsite.

Under normal summer baseload operating conditions, a maximum of approximately 1.7 million gallons per day (mgd) are expected to be discharged from the Project to the Oregon municipal system. This maximum discharge will be limited to the hottest summer days. Conversely, the wastewater volume will be at its minimum of 0.6 mgd when the Project is operating on a cold winter day (i.e., 0°F). Depending on operating conditions and weather conditions, the discharge from each individual Facility system may vary. The effluent quality of the wastewater discharge from the Project will, however, comply with local standards outlined in the City of Oregon Sanitary Sewer Discharge Limitations and Prohibitions (Oregon Municipal Code Chapters 925 and 927). A comparison of anticipated Project discharge characteristics as compared to key POTW pretreatment requirements is presented in Table 06-4.

TABLE 06-4
Project Consistency with POTW Standards

Constituent	POTW Maximum Daily Discharge Limit	POTW 30-Day Average Discharge Limit	Typical Project Discharge
Temperature (°F)	104	--	76
pH minimum (s.u.)	<6	--	7
pH maximum (s.u.)	11	--	9
Oil and grease maximum (mg/l)	100	100	10
Total Suspended Solids (TSS) (mg/l)	240	--	30
Biological Oxygen Demand (BOD) (mg/l)	200	--	9
Total phosphorus (mg/l)	10	--	0.3
Arsenic – total (As)	--	14.2	0.01
Cadmium – total (Cd)	1.24	1.24	<0.003

Constituent	POTW Maximum Daily Discharge Limit	POTW 30-Day Average Discharge Limit	Typical Project Discharge
Chromium – hexavalent (Cr^{6+})	5.21	3.32	0.02
Copper – total (Cu)	25.4	--	0.015
Cyanide – total (CN)	--	13.1	--
Lead – total (Pb)	13.9	10.2	0.008
Mercury – total (Hg)	0.0050	0.0007	<0.0007
Nickel – total (Ni)	11.8	6.08	<6.08
Silver – total (Ag)	--	2.76	0.01
Zinc – total (Zn)	32.0	18.8	0.05

The proposed Oregon Clean Energy Center design incorporates significant water conservation measures. The Facility cooling water system is designed to maximize cycles of concentration to reduce water intake requirements. Another measure incorporated in the cooling tower to minimize water requirements is the use of a state-of-the-art cooling tower drift elimination system. Other measures include the return of recovered boiler blowdown to the cooling tower.

D. SOLID WASTE

(1) Preconstruction

This Site is currently undeveloped and used for agricultural purposes. No debris was noted during on-site reconnaissance efforts. Therefore, no plans exist that would require disposal of solid waste during the preconstruction phase of the Project.

(2) Construction

During Project construction, materials associated from the demolition of the residential structures located on-site will require appropriate disposal. Following demolition, solid waste will be generated that is typical of normal construction efforts. This includes packing materials, office waste, scrap lumber, metals, cables, glass, cardboard containers and debris from lunches and catering/vending machines. In addition, during Project construction and pre-operational cleaning, some solvents and flushing materials will be used. Solid waste that can be neither recycled nor reused will be stored in on-site containers for disposal. Programs will be developed to ensure that potentially hazardous wastes are separated from normal waste, including segregation of storage areas and proper labeling of containers. All waste will be removed from the Site by licensed contractors in accordance with applicable regulatory requirements and managed in licensed facilities. The construction phase of the Project is estimated to take approximately 33 months. The estimated volume of solid waste generated by construction activities during this time is approximately 1,200 cubic yards.

(3) Operation

During Project operations, generated solid waste is anticipated to consist of office waste, including paper and miscellaneous trash, as well as plant operations wastes such as spent chemical and lube oil containers, spare parts, packaging, etc. Any solid waste generated will be removed from the Site by a licensed hauler. The estimated volume of solid waste generated during operation of the Project is 120 cubic yards on an annual basis.

(4) Licenses and Permits

No new solid waste treatment or disposal facility is proposed as a part of this Project, or will be necessitated as a result of the construction or operation of this Project. All solid waste generated will be trucked off site by an appropriately licensed contractor. SCR catalysts will be removed and returned to a catalyst vendor for regeneration, salvage or disposal. Therefore, since no hazardous wastes are expected to be generated, no such licenses or permits will be required.

4906-13-07 Social and Ecological Data

The data presented in this section are intended to provide a basis for assessing the costs and benefits of the Project with regard to health and safety, ecology, land use, community development, cultural and aesthetic qualities, public responsibility, and agricultural district land.

(A) HEALTH AND SAFETY

(1) Demographic Characteristics

Areas within a 5-mile radius of the Site include the City of Toledo, City of Oregon, and Washington Township within Lucas County, City of Northwood and Lake Township within Wood County, and Allen Township within Ottawa County. The estimated 2010 populations were acquired through U.S. Census Bureau, Geography Division, TIGER/Line Shapefile, 2010 Ohio Census Blocks, and 2020 population projections for Lucas, Wood, and Ottawa Counties were obtained from the Ohio Department of Development, Office of Strategic Research, created June 2007. Table 07-1 presents the population data for each city and/or township within 5 miles of the Site.

TABLE 07-1

Existing and Projected Populations

City/Township	Percent of Community Within the 5-Mile Radius	2010 Estimated Population (Within the 5-Mile Radius)	2020 Projected Population (Within the 5-Mile Radius)
Allen Township	10.07	559	549 (-1.8%)
Jerusalem Township	3.29	730	697 (-4.5%)
Lake Township	4.19	1,178	1,297 (10.1%)
Northwood City	66.37	3,297	3,630 (10.1%)

City/Township	Percent of Community Within the 5-Mile Radius	2010 Estimated Population (Within the 5-Mile Radius)	2020 Projected Population (Within the 5-Mile Radius)
Oregon City	98.93	20,414	19,495 (-4.5%)
Toledo City	25.04	65,119	62,189 (-4.5%)
Washington Township	86.92	2,402	2,294 (-4.5%)

(2) Atmospheric Emissions

No impact to the population is anticipated as a result of atmospheric emissions. Air modeling indicates that Facility impacts will be below SILs and PSD increments and in full compliance with all applicable ambient air quality standards. The air pollution control technologies to be used for the Project have been proven to be reliable, safe and effective. In addition, CEMS will continuously monitor compliance with applicable air emission standards. In the event of an air permit excursion, Facility personnel will take immediate action, including immediate Facility shut-down, if warranted.

(3) Noise

Metric Descriptions

Sound is a physical disturbance in a medium, such as air, that is capable of being detected by the human ear. Sound waves in air are caused by variations in pressure above and below the static value of atmospheric pressure. Sound is measured in units of decibels (dB) on a logarithmic scale. The “pitch” (high or low) of the sound is a description of frequency, which is measured in Hertz (Hz). Most common environmental sounds are composed of a composite of frequencies. A normal human ear can usually detect sounds within frequencies from 20 Hz to about 20,000 Hz. However, humans are most sensitive to frequencies from 500 Hz to 4000 Hz.

Certain frequencies are given more “weight” during assessment because human hearing is not equally sensitive to all frequencies of sound. The dBA scale corresponds to the sensitivity range for human hearing. Noise levels capable of being heard by humans are measured in dBA.

A sound level is a measurement of noise that occurs during a specified period of time. A continuous source of noise is rare for long periods of time and is typically not a characteristic of community noise. Community noise refers to outdoor noise in the vicinity of a community. A community noise environment varies continuously over time with respect to the contributing sources. Within a community, ambient noise levels gradually change throughout a typical day and the changes can be correlated to the increase and decrease of transportation noise or to the daytime/nighttime operation of stationary mechanical equipment. The variation in community noise throughout a day is also due to the addition of short-duration single-event noise sources, such as aircraft, sirens, and various natural sources.

The metrics for evaluating the community noise environment are based on measurements of the noise levels over a period of time. These metrics are used in order to characterize and evaluate the cumulative noise impacts. These metrics are time-varying and are defined as statistical noise descriptors. The relevant metric for noise compliance in the City of Oregon is the equivalent sound level, or the time-integrated continuous sound level, that represents the same sound energy as the varying sound levels, logarithmically averaged over a specified monitoring period, or L_{eq}.

Applicable Noise Level Regulations

No specific noise regulations exist at the federal or state level that apply to this Project. The City of Oregon has noise level regulations specified by zoning district.

Section 531.14 - Fixed Source Noise Levels - located within the City of Oregon's Municipal Code states that noise levels shall not exceed the noise level thresholds provided in Table 07-2 at the affected property boundary lines. Therefore, this Project will demonstrate that a sound level of 75 dBA will be met at the Project property boundaries. Industrial sound-generating facilities must also be greater than 500 feet from residential structures.

Construction noise is regulated by the City of Oregon's Municipal Code in Section 531.11. Particularly loud construction is restricted, unless approved by the City, between the hours of 10:00 p.m. and 6:00 a.m. Construction sound levels are generally limited to 90 dBA at the property line, with the exception of impulsive sound and critical construction equipment. Impulse-related activities, such as pile driving and blasting, are regulated by Section 531.17, in accordance with specified vibration standards.

TABLE 07-2

City of Oregon Fixed Source Noise Threshold Limits

Zoning District	Time Period	Sound Level (dBA L_{eq})
R-1, R-2	10:00 p.m. – 7:00 a.m.	55
	7:00 a.m. – 10:00 p.m.	60
R-3, R-4	10:00 p.m. – 7:00 a.m.	60
	7:00 a.m. – 10:00 p.m.	65
C-1, C-2, C-3	10:00 p.m. – 7:00 a.m.	65
	7:00 a.m. – 10:00 p.m.	70
M-1	Anytime	70
M-2, C-I*	Anytime	75

*C-I zones are not currently reflected in the noise standard; communication with City officials confirms that M-2 standards are applicable within the C-I zone.

Ambient Noise Level Survey

To document existing ambient noise conditions, two Larson Davis Model 831 fully integrated field noise monitors were placed along the northern and eastern property lines defining the Site (Figure 07-1). These two noise monitors were programmed to record continuously throughout a two-week period from Tuesday, October 16, 2012 to Wednesday, October 31, 2012. The results of the noise monitoring at Measurement Location 1 (41.667750°N, 83.447781°W) are shown in Table 07-3.

The noise monitoring data provided in Table 07-3 shows that the average ambient daytime noise levels measured at Measurement Location 1 range from 51.1 dBA L_{eq} to 62.1 dBA L_{eq}, and that the average ambient nighttime noise levels range from 50.4 dBA L_{eq} to 58.1 dBA L_{eq}. The overall single average ambient L_{eq} over the two week noise monitoring period during the daytime hours was 55.5 dBA L_{eq} and during the nighttime hours was 54.6 dBA L_{eq}.

The results of the noise monitoring at Measurement Location 2 (41.668396°N, 83.439145°W) are shown in Table 07-4.

TABLE 07-3

Existing Ambient Noise Levels at Measurement Location 1 – October 2012 Noise Monitoring Data Summary

Date	Daytime (dBA L_{eq})7:00 a.m. to 10:00 p.m.	Nighttime (dBA L_{eq}) 10:00 p.m. to 7:00 a.m.
October 16, 2012	55.0	54.6
October 17, 2012	55.5	56.1
October 18, 2012	57.6	55.8
October 19, 2012	57.4	55.3
October 20, 2012	53.6	53.9
October 21, 2012	51.1	55.1
October 22, 2012	55.3	56.2
October 23, 2012	54.9	55.4
October 24, 2012	55.4	55.0
October 25, 2012	56.8	56.4
October 26, 2012	62.1	54.2
October 27, 2012	57.2	50.4
October 28, 2012	52.6	51.0
October 29, 2012	54.8	53.1
October 30, 2012	55.6	58.1
October 31, 2012	53.5	52.9

TABLE 07-4

Existing Ambient Noise Levels at Measurement Location 2 – October 2012 Noise Monitoring Data Summary

Date	Daytime (dBA L_{eq}) 7:00 a.m. to 10:00 p.m.	Nighttime (dBA L_{eq}) 10:00 p.m. to 7:00 a.m.
October 16, 2012	48.4	47.1
October 17, 2012	50.2	49.5
October 18, 2012	54.9	50.6
October 19, 2012	47.9	46.1
October 20, 2012	51.4	49.4
October 21, 2012	47.1	50.9
October 22, 2012	50.7	51.0
October 23, 2012	51.3	50.2
October 24, 2012	49.3	50.7
October 25, 2012	49.8	50.2
October 26, 2012	50.4	50.9
October 27, 2012	49.5	48.6
October 28, 2012	55.8	52.9
October 29, 2012	58.1	57.2
October 30, 2012	57.3	60.6
October 31, 2012	53.3	54.6

The noise monitoring data provided in Table 07-4 shows that the average ambient daytime noise levels measured at Measurement Location 2 range from 47.1 dBA L_{eq} to 58.1 dBA L_{eq}, and that the average ambient nighttime noise levels range from 46.1 dBA L_{eq} to 60.6 dBA L_{eq}. The overall singular average ambient L_{eq} over the two week noise monitoring period during the daytime hours was 51.6 dBA L_{eq} and during the nighttime hours was 51.3 dBA L_{eq}.

While conducting the existing Site characterization noise measurements, start and end times were recorded as well as any significant and background noise sources in the area, such as motor vehicle traffic traveling along nearby adjacent roadways. Each two-week sound level measurement period ran from October 16, 2012 to October 31, 2012, integrating and logging data every hour. Other relevant field data were gathered at the site during the noise survey, including distances to receptors, angles-of-view, topographic slopes, and site elevations. This information was subsequently cross-checked with available maps and records. All sound level meters used during field exercises were field-calibrated prior to and following the noise measurements to ensure accuracy. All sound level measurements conducted and presented in this report are in conformance with the American National Standards Institute (ANSI SI.4-1983 - R2001) specifications for sound level meters. All instruments are maintained with the National Bureau of Standards traceable calibrations.

To document further the existing daytime ambient noise levels at several potential noise sensitive receptor locations, a series of 15-minute equivalent sound level measurements (L_{eq}, A-weighted) were conducted on Tuesday, October 16, 2012 (Figure 07-1). Individual 15-minute noise measurements were conducted using a single fully integrated Larson Davis Model 824 sound level meter at a total of four residential locations within the vicinity of the proposed Project Site. The results of this monitoring are shown in Table 07-5.

TABLE 07-5

Measured Existing 15-minute Noise Levels at Sensitive Receptors on October 16th, 2012

Noise Measurement Location (Coordinates)	Location	Spot Check Noise Level (dBA L_{eq})
41.673181°N, 83.448951°W	1	62.9
41.674061°N, 83.423502°W	2	52.7
41.659612°N, 83.430742°W	3	52.7
41.658875°N, 83.457969°W	4	64.4

The noise measurement data provided in Table 07-5 shows that the independent community ambient noise levels measured at the four identified noise sensitive receptors range from 52.7 dBA L_{eq} to 64.4 dBA L_{eq}.

(a) Construction Noise Levels

An acoustical model encompassing construction operations and equipment was developed using CadnaA (Computer Aided Noise Abatement), which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of environmental conditions. CadnaA assists in the calculation, presentation, assessment, and mitigation of all types of environmental noise exposure conditions. All predicted noise impacts are based on the ISO 9613 standard. The algorithm allows input of information such as noise source data, sound barriers, intervening structures, ground absorption, and topography to create a detailed model.

The construction of the proposed Project would be conducted in the following general phases:

- Demolition
- Grading
- Foundation installation
- Erection of structures and buildings as well as operational equipment installation
- Testing, commissioning, and startup of systems

The phased construction activities, as well as the associated equipment incorporated within this analysis, are based on the construction equipment and workforce estimates provided by OCE engineers. Construction of the Project will employ a variety of equipment. Table 07-6 provides equipment type, quantity, utilization percentage, and noise level for each major piece of construction equipment.

TABLE 07-6

Proposed Construction Equipment Sound Levels

Phase	Equipment Type	Equipment Quantity	Utilization Percentage	Noise Source Level at 50 feet (dBA)
Demolition	Dump Truck	2	40	84
	Bulldozer	2	40	85
	Backhoe w/ Chipper	1	40	85
	Water Truck	1	40	84

Phase	Equipment Type	Equipment Quantity	Utilization Percentage	Noise Source Level at 50 feet (dBA)
Grading	Scraper	4	80	85
	Grader	2	40	85
	Water Truck	1	40	84
	Bulldozer	2	40	85
	Dump Truck	8	40	84
	Excavator	2	40	85
Foundation Installation	Compactor	4	50	80
	Pile Driver	1	60	95
	Ground Heater	2	50	80
	Concrete Truck	12	40	85
	Backhoe (trench)	3	60	80
	Flatbed Truck	2	40	84
	Crane (mobile)	2	60	85
	Generator	4	40	82
	Air Compressor	1	20	80
	Water Truck	1	40	84
Structure and Building Erection. Equipment Installation	Fork Lift	5	80	75
	Pneumatic Tools	10	50	85
	Dump Truck	2	40	84
	Water Truck	1	40	84
	Welder / Torch	12	80	74
	Flatbed Truck	2	50	84
	Crane (crawler)	2	80	85
	Crane (mobile)	3	80	85
	Air Compressor	1	40	80
	Generator	6	50	81
Testing, Commissioning, and Startup of Systems	Fork Lift	2	20	75
	Paver	2	50	84
	Pneumatic Tools	6	50	85
	Welder / Torch	2	40	74
	Package Boiler	1	20	85
	Air Compressor	1	20	80
	Crane (mobile)	1	80	85
	Generator	2	50	81

The noise prediction calculations of the construction equipment assume that the construction activities will operate for 10 hours per day. The calculated noise impacts associated with construction activities range from 49.8 dBA at the eastern property line to 83.6 dBA at the southern property line. The calculated noise impacts at the Project property lines for each phase are provided in Table 07-7.

TABLE 07-7
Oregon Clean Energy Construction Noise Impacts

Receiver	Receiver Location	Construction Operations Noise Impacts (dBA L_{eq})				
		Demolition	Grading	Foundation Installation	Structure and Building Erection. Equipment Installation	Testing, Commissioning, and Startup of Systems
1	Western Project Property Line	81.6	64.1	65.1	65.2	58.6
2	Northern Project Property Line	67.0	68.7	68.7	69.2	61.9
3	Northern Project Property Line	59.2	77.1	77.4	79.2	71.3
4	Northern Project Property Line	56.1	73.2	79.7	80.0	78.9
5	Northern Project Property Line	53.4	81.2	76.9	76.8	72.6
6	Eastern Project Property Line	49.8	64.6	67.4	67.1	62.3
7	Eastern Project Property Line	50.0	64.8	67.8	67.4	62.4
8	Southern Project Property Line	55.3	75.3	82.5	83.6	77.3
9	Eastern Project Property Line	60.2	75.9	77.5	76.2	67.9

The modeling results demonstrate that noise impacts from the construction activities will not exceed the City of Oregon's construction noise threshold limit of 90 dBA at the property lines. Furthermore, the construction activities generally occur during daytime hours (between 6:00 a.m. to 10:00 p.m.), when acceptance towards noise by the general public is higher, and the risk of sleep disturbance and interference with relaxation activities is low. The temporary nature of construction noise, coupled with the impact levels reflected in Tables 07-7, is expected to result in minimal community noise impacts during Project construction.

(b) Operational Noise Levels

A three-dimensional acoustical model of the Project's proposed operations was developed, using CadnaA, in order to predict noise levels at nearby sensitive receivers resulting from each of the potential layout options (e.g., Mitsubishi versus Siemens gas turbines). Far-field levels for equipment associated with each layout were provided by applicable equipment manufacturers and by OCE engineers. Details of inputs utilized for each scenario can be found in Appendix C.

Equipment power levels were adjusted for several known factors, such as the reduction of sound with distance ("geometrical spreading"); absorption of sound by air ("air absorption"); and absorption and reflection of sound by the ground ("ground effect"). Sound levels were further adjusted by shielding effects (i.e., via equipment, topography, etc.) to predict far-field levels.

Operational Noise Impact Assessment

Detailed modeling of Project noise levels has been completed for the two potential Project scenarios. The mitigation needed will vary by scenario. However, reasonable mitigation assumptions have been incorporated into each scenario to demonstrate compliance with the City requirement that Project sound levels achieve 75 dBA at the Project property line, as shown on Figures 07-2 and 07-3 for the Mitsubishi and Siemens layouts, respectively. The Project, therefore, will comply with requirements for facilities located in the C-I zone.

(c) Identification of Noise-Sensitive Areas

The closest residence is a non-conforming land use which is located approximately 700 feet north of the Project Site, and 970 feet from the Project footprint. Note that new residential uses are not permitted to be constructed within the C-I zone. There are also more distant residential communities located east and south of the Project Site.

(d) Description of Equipment and Noise Mitigation Measures

Construction Noise

Construction noise is difficult to control because of the mobile nature of its sources and the flexibility of schedule inherent in most construction work. However, construction is also temporary in nature. In order to mitigate the possible effect of noise caused during the temporary construction period, the following steps will be taken:

- The construction equipment manufacturers' normal sound muffling devices will be used and will be kept in good repair throughout the construction process.

- Construction activities that produce significant sound (pile driving and steam blowouts) will be restricted to daylight hours.

By scheduling the construction effort to be as efficient as possible, sound associated with construction activity will be minimized as the duration of the construction effort is minimized. Because of the temporary nature of the construction noise, no adverse long-term effects are anticipated.

Operational Noise

Specific sound-control elements incorporated into the Project noise analysis have been identified for each equipment layout, as detailed in Appendix C. Once final selection of the gas turbine is completed, final design will identify whether adjustment of the operational mitigation measures will be needed to achieve compliance. On that basis, mitigation measures listed below may be eliminated or modified. Following final design, the noise analysis will be updated to reflect final design conditions and confirm compliance with City noise standards.

In general, mitigation has focused predominantly on sound associated with the cooling tower. Because the cooling tower is located very close to the Site boundaries, the sound of the falling water and fans associated with that element of the Project assumes the incorporation of a 16-foot tall sound wall along the northern property line. Other potential mitigation requirements (which would vary depending upon the Project scenario) could include: increasing sound attenuation ratings of the generation building walls and/or providing additional vendor-supplied enclosures for the combustion turbine and steam turbine; use of an intake silencer; use of a stack silencer; HRSG duct lagging on the top and sides that face property lines; and extension of the sound wall to also address sound associated with the gas turbine inlet.

(4) Water

No significant impact to water bodies is anticipated as a result of the Project. The Project will have a maximum raw water demand of about 6.7 mgd, and a maximum discharge of 1.6 mgd. Raw water for the facility will be supplied through the City of Oregon's existing raw water intake system and will be piped to the Project.

Potable water will also be supplied from the City. With a maximum potable water demand of 150,000 gpd required for sanitary purposes as well as boiler makeup, the Project use does not represent a significant impact to City water supply.

Wastewater discharge will be to the existing City of Oregon sewer system, in compliance with required limits. The City has confirmed adequate capacity to accept Project discharge.

Stormwater will be treated on-site through a settling and detention basin prior to release of storm flows into the two on-site ditches. Stormwater features are shown on Figures 02-2, and stormwater calculations are provided in Appendix A.

(a) Construction and Operation Impact to Public and Private Water Supplies

The Project intends to obtain water during Facility commissioning, start-up, and operation from the City of Oregon. Water from the City of Oregon will be routed to an on-site treatment plant for treatment prior to use. Adequate water supply is available from this source to meet the Project's needs without constraining other uses.

Potable water is available from the City of Oregon, and it is anticipated that most water users rely upon the City water system, although some residents or agricultural uses may utilize private wells. Known groundwater well logs and oil and gas wells in areas surrounding the Project area are shown on Figure 04-6; geologic conditions at the Site are shown on Figures 04-3 and 04-4. The Project is not anticipated to have an influence on any potential private well use in the area. No groundwater will be used by the Project, and spill prevention practices will be designed and implemented for the Project to prevent potential contamination of groundwater.

Based on distance from the Project site and use of Best Management Practices for chemical use, potential impact to public or private water supplies is expected to be extremely low. In addition to design measures, the Project staff will receive training on emergency procedures to ensure prompt and efficient response in the event of an accidental release to the environment.

(b) Impact of Pollution Control Equipment Failures on Public and Private Water Supplies

No impact to public or private water supplies is anticipated as a result of water pollution control equipment failures. Non-point source water pollution controls to be used at the Project site consist of an oil/water separator for in-plant treatment of floor drains and equipment washdown areas, and containment devices around aboveground storage tanks and station transformers (outdoors). The oil/water separator will be regularly maintained to ensure good operating condition. The containment devices will be designed to collect stormwater. After completion of a visual inspection, collected stormwater will be released through the stormwater discharge system.

No adverse impacts are anticipated to occur to public or private water supplies as a result of distance and Best Management Practices that will be implemented.

The wastewater discharge will have insignificant impacts because of its physical and chemical characteristics. The Project has been designed to cycle cooling water five times in the cooling tower while still meeting applicable discharge limits. By cycling water in the cooling water system, water is conserved, resulting in increasing the concentration of ambient constituents in the discharge by approximately the same factor as the number of cycles. Typical chemicals that are added to the water include: biocides; minor amounts of chemicals associated with system cleaning; acid and caustic for neutralization; and cooling water and boiler water treatment chemicals. All Project wastewaters will be discharged into the City's existing gravity sewer line adjacent to the Project Site.

(B) ECOLOGICAL IMPACT

(1) Site Information

(a) Mapping

Figure 07-4 shows the boundary of the Site and information including: the location of wood lots or vacant fields; wildlife areas, nature preserves and other conservation areas; and surface bodies of water, which are limited within this area to open water ditches. No highly erodible soils of 12 percent or greater slopes exist within this area. Figure 07-5 illustrates the Facility and all delineated surface water resources located on the Site (limited to segments of Driftmeyer and Johlin Ditch). Additional details associated with Site ecology can be found in Appendix D.

(b) Vegetation Survey

A survey was conducted of representative plant species present on the Site. The majority of the Site was in active agriculture at the time of the survey. Perimeter and riparian vegetation species data were recorded for the tree overstory, shrub understory, and ground cover layer. A list of plant species noted during the survey is provided in Table 07-9. The tree overstory component includes woody plants existing or capable of greater than 20 feet in height while the shrub understory includes woody plants between 3 and 29 feet in height. The ground cover layer includes all plants less than 6 feet in height.

TABLE 07-9

Vegetation Recorded On and Adjacent to the Site

Scientific Name	Common Name
Ailanthus altissima	Tree of Heaven
Celtis occidentalis	Hackberry
Crataegus spp	Hawthorn
Morus rubra	Red Mulberry
Populus deltoides	Cotton Wood
Quercus palustris	Pin Oak
Cornus amomum	Silky Dogwood
Lonicera maackii	Amur Honeysuckle
Asclepias syriaca	Common Milkweed
Cirsium arvense	Canada Thistle
Conyza canadensis	Horseweed
Daucus carota	Queen Anne's Lace

Scientific Name	Common Name
Dipsacus sylvestris	Teasel
Echinochloa spp	Barnyard Grass
Elymus virginicus	Virginia Wild Rye
Festuca pratensis	Field Fescue
Glycine max	Soybean
Nepeta cataria	Catnip
Poa pratensis	Kentucky Bluegrass
Setaria faberi	Giant Foxtail
Setaria glauca	Yellow Foxtail
Solidago canadensis	Canada Goldenrod
Symphyotrichum ericoides	Heath Aster
Symphyotrichum novae-angliae	New England Aster

Plant communities that were present on Site include agricultural fields (which occupy the majority of the Site), old field meadows buffering the agricultural fields and upland riparian corridors. The active agricultural fields consisted of soybeans (*Glycine max*) at the time of the survey.

Two riparian corridors transect the Site. The corridor canopies, where present, were comprised of a mix of pin oak (*Quercus palustris*), hackberry (*Celtis occidentalis*), mulberry (*Morus rubra*), and hawthorn (*Crataegus* spp.) in the overstory. Where present, the understory was comprised of silky dogwood (*Cornus amomum*) and Amur honeysuckle (*Lonicera maackii*). Where tree species were absent, shrub species were the dominant canopy species.

Old field meadow surrounded the agricultural fields, predominantly comprised of the herbaceous plants common milkweed (*Asclepias syriaca*), Canada thistle (*Cirsium arvense*), Queen Anne's lace (*Daucus carota*), Virginia wild rye (*Elymus virginicus*), field fescue (*Festuca pratensis*), Kentucky bluegrass (*Poa pratensis*), Canada goldenrod (*Solidago canadensis*), heath aster (*Symphyotrichum ericoides*), and New England aster (*Symphyotrichum novae-angliae*).

Drain tiles were not evident within the agricultural fields, although they are anticipated to be present. Johlin Ditch, the channel located in the east portion of the Site, contained no flow and appears to originate on the south side of Parkway Road south of the Site. This channel is approximately 8 feet wide on average and approximately 12 inches deep. The channel enters the Site from under the railroad track through an approximately 36-inch diameter corrugated metal pipe. Elevation indicates flow would move from south to north. A 22-foot wide farm road crosses the ditch conveying flow through an 18-inch pipe. The ditch is tributary to Lake Erie.

Driftmeyer Ditch, the channel located in the west portion of the Site, contained stagnant flow and appears to originate from a culvert on the east side of North Lallendorf Road between Parkway Road and the railroad track. This channel is approximately 9 feet wide on average and approximately 6 feet deep. Depth of water was approximately 3 inches. The channel enters the Site from under the railroad track through two 53-inch corrugated metal culverts. Flow was from south to north. A 25-foot wide farm road crosses the ditch conveying flow through an 84-inch concrete pipe. The ditch converges with Amolsch Ditch approximately 1,000 feet north of the Site, and is tributary to Lake Erie.

(c) Species Survey

An assessment of wildlife species and habitat was conducted at the Site during the site visit on October 12, 2012 by ARCADIS biologists. Wildlife species were identified by visual and audio observations, tracks and scat. No wildlife species were observed during the reconnaissance. The surrounding land use is active agriculture and industrial with very little or poor quality wildlife habitat.

Although Driftmeyer Ditch did contain water, it is a heavily silt-laden channel with poor substrates and likely low dissolved oxygen from stagnant flows. No aquatic species were observed.

Avian species may utilize the Site for foraging during spring and fall migration periods. There was no significant contiguous forest area on or near the Site. Riparian corridors were noted as either all herbaceous vegetation or, where woody species existed, shrubs and recovering early successional canopy species. Little quality nesting habitat was observed on the Site. Common passerines, doves and corvids would be expected to utilize this type of area for foraging and/or nesting. Representative species that could be found to utilize the Site include: house sparrow (*Paser domesticus*), European starling (*Sturnus vulgaris*), red-winged blackbird (*Agelaius phoeniceus*), song sparrow (*Melospiza melodia*), American robin (*Turdus migratorius*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), horned lark (*Eremophila alpestris*) and blue jay (*Cyanocitta cristata*).

Although no mammals or signs of mammals were observed, mammals that reasonably could utilize the Site include herbivorous species such as white-tailed deer (*Odocoileus virginianus*), woodchuck (*Marmota monax*), carnivorous species such as red fox (*Vulpes vulpes*) and omnivores such as raccoon (*Procyon lotor*), North American opossum (*Didelphis virginiana*), and striped skunk (*Mephitis mephitis*).

Although no amphibians or reptiles were noted during the site visits, species such as eastern garter snake (*Thamnophis sirtalis*) and American toad (*Bufo americanus*) would be expected to occur within the vegetated areas adjacent to the drainage ditches. Other more aquatic species such as the green frog (*Rana clamitans*), would be expected to potentially inhabit the drainage ditches.

(d) Ecological Study

Wetland Assessment

The Site is a predominantly upland area. Thirteen data points were collected to evaluate vegetation, soils and hydrology for wetland characteristics. None of the data points contained all three criteria and, therefore, no potential wetland areas were identified within the Site, with the exception of the waterways confined within the Driftmeyer and Johlin Ditch.

Ecological Impact Study Summary

The ecological impact studies conducted for the Project have used field surveys conducted during the fall of 2012 and existing information obtained from resource agencies. No wetlands have been identified within the Site. No wildlife or signs of wildlife were observed using the Site.

The Project has been carefully sited on the property to maximize avoidance of the few remaining natural habitats. No wetland impacts are proposed, as no wetlands are located on the Site. Limited impact to Driftmeyer and Johlin Ditch associated with proposed access roads will occur.

Project access will be from North Lallendorf Road and will require an access road to cross Driftmeyer Ditch. The access road will be designed to accommodate two lanes of travel, particularly due to the large equipment access required during the construction phase. It is anticipated the access road will be approximately 24 feet wide, and will be designed to maintain flow through Driftmeyer Ditch; a culvert comprised of an approximately 121 x 77 inch elliptical pipe, as specified by the City of Oregon, is anticipated to be used.

A temporary access will be required across Johlin Ditch during the construction period, as the adjacent parcel is planned for construction laydown use. The temporary access is anticipated to be approximately 16 feet wide, allowing for two travel lanes but no road shoulders. Although temporary in nature, the road crossing will be designed to maintain flow through Johlin Ditch, and is anticipated to require installation of a 36-inch culvert. Once construction of the Project is completed, OCE can determine through consultation with the City whether removal of the culvert or surface restoration with the culvert in place would be preferable.

Because the roads will extend across the on-site ditches and require placement of culverts, OCE will coordinate with the USACE to determine potential jurisdiction and the need for applicable Nationwide Permits. Approval will also be required from the City of Oregon.

(e) List of Major Species

Endangered or Threatened Species

The USFWS and the ODNR were contacted regarding the potential presence of any sensitive natural communities or rare or endangered species in the vicinity of the Site (Appendix D). The response letter from ODNR indicated that no records exist in their database of unique ecological attributes or rare or endangered species within 1 mile of the Site.

Federally listed endangered and threatened species in Lucas County Ohio include the Indiana bat (*Myotis sodalis*), Karner blue butterfly (*Lycaeides melissa samuelis*), Kirtland's warbler (*Dendroica kirtlandii*), piping plover (*Charadrius melodus*), rayed bean (*Villosa fabalis*), and the Eastern prairie fringed orchid (*Platanthera leucophaea*). No favorable habitat for these species was observed within the Site.

The USFWS correspondence indicated there were no federal wilderness areas, wildlife refuges, or designated critical habitat within the vicinity of the Project area. Additionally, the USFWS indicated that it did not anticipate any impacts to federally listed endangered, threatened or candidates species or their habitats and had no objection the Project as proposed.

Recreational or Commercial Species

Based on observation of the Site and the surrounding agricultural and industrial land use, limited recreational or commercial species are likely to be present. Terrestrial game species include white-tail deer and mourning dove. Mourning doves breed in areas of shrubs and small trees, habitats that will largely remain undisturbed. Mourning doves forage for seeds in open fields and, although the Project will affect some agricultural land, the percentage lost in the local area is small and should not reduce foraging habitat to a degree that would affect the mourning dove population.

(2) Construction

(a) Impact of Construction on Undeveloped Areas

The construction of the Project will result in both temporary and permanent impacts on plants and animals at the Site. Temporary impacts to wildlife are likely to result during the construction phase as increased noise levels and human activity may displace wildlife to surrounding habitats. After construction is complete, some of the displaced wildlife are expected to recolonize those areas of the Site that will remain undeveloped.

The Project is primarily located within existing agricultural fields. Therefore, no significant impacts to ecological resources are anticipated that would require special mitigative measures. The footprint of the proposed Project will occupy approximately 16.5 acres of the approximately 30-acre site. Approximately 13.5 acres of the Site will remain undeveloped and will be converted from active agricultural or residential use to landscaped open grass, and would continue to support the current type of terrestrial community.

No impacts to wetland resource areas are expected from construction of the Project footprint area. The access road will require crossing Driftmeyer Ditch and temporary access will be required across Johlin Ditch to access the temporary construction laydown area. OCE will coordinate with the USACE to determine potential jurisdiction and the need for applicable Nationwide Permits. Approval will be required from the City of Oregon.

(b) Impact of Construction on Major Species

Impacts to endangered or threatened species are not anticipated, based on correspondence from the ODNR and USFWS, as well as field-confirmation that Site habitat is not suitable for known federally listed species. Significant construction impacts on recreational or commercial species are also not anticipated. The limited terrestrial habitat to be altered that would be suitable for such species is not expected to affect species populations.

(c) Mitigation for Short-Term and Long-Term Construction Impacts

The following measures are proposed to ensure that short- and long-term construction impacts to ecological resources remain insignificant:

- Sediment and Erosion Control – A detailed sediment and erosion control plan will be developed prior to initiating construction at the Site. The plan will detail temporary stormwater basins as well as silt fencing or other erosion control devices proposed to limit off-site transport of sediment. The plan will be submitted to the City of

Oregon for approval. In addition, a Notice of Intent will be filed with the Ohio EPA for coverage under the NPDES General Construction Stormwater Permit.

- Dust and Particulate Control – During grading activities, dust may be generated as exposed soils dry. Water sprays or other dust suppression methods will be employed on areas of exposed soils to minimize the potential for dust generation.
- Revegetation – Areas of the Site temporarily impacted by construction activities will be revegetated as soon as possible following completion of construction to stabilize exposed areas of soil. Species proposed for the seeding will be coordinated with the City of Oregon to ensure compatibility and suitability with surrounding agricultural areas.

(3) Operation

(a) Impact of Operation on Undeveloped Areas

Project operation is expected to result in a localized increase in lighting and noise in its immediate vicinity. Wildlife species are not anticipated to significantly use the agricultural fields where the majority of the development is proposed. Wildlife species present in the vicinity of the Project are expected to become acclimated to the normal operations of the Project over time.

(b) Impact of Operation on Major Species

Threatened or endangered terrestrial or aquatic species or their habitats are not located at the Site and will, therefore, not be impacted by operation of the Project. Recreational or commercial species will also be unaffected by Project operation; the Project has been designed to limit ecological impact through its location on a Site with little terrestrial habitat diversity.

(C) Economics, Land Use and Community Development

(1) Land Uses

(a) Land Use Mapping

Figure 07-6 presents land uses within a 1-mile radius of the Site. Indicated land uses include:

- Residential;
- Commercial;
- Industrial;
- Institutional;
- Recreational; and
- Agricultural.

The land use map was developed from City of Oregon data. Figure 07-7 illustrates the City's zoning, while Figure 07-8 illustrates the City of Oregon's anticipated land use within the Project area, both as reflected in its current Master Plan.

(b) Residential Structures

Two residences are currently located on the Project Site that will be demolished in order to accommodate the Project. The closest off-site residence is a non-conforming use within the C-I zone located approximately 700 feet to the north of the Project Site, along North Lallendorf Road. Project features will be approximately 990 feet from that residence. No other residences are located within 1,000 feet of the Project Site.

(c) Land Use Impact

As shown in Figure 07-6, the Site is currently indicated as a combination of agricultural and City-owned properties. The Site is predominantly in agricultural use, with two residences and related structures located along North Lallendorf Road. However, the Site is zoned Commercial-Industrial within the Cedar Point Development Park, a designated Foreign Trade Zone.

The existing land use to the north and west of the Site is industrial and commercial in nature. The BP refinery, Bay Shore power plant and numerous other industrial and commercial businesses are clustered within this area of the City. Transmission lines extending through the area just to the north of the Site provide the opportunity to limit the Project's electrical interconnection needs. This is consistent with existing zoning; the Site is surrounded by industrially or commercial-industrially zoned land.

The southern boundary of the Site is defined by railroad tracks that were formerly used for delivery of fuel to the Bay Shore facility. Areas south of the Site are more mixed in character, with some commercial and industrial land uses intermixed with agricultural and residential properties. Several institutional land uses exist at the further extent of the 1-mile radius (for example, the Challenger Learning Center of Lucas County, located at the intersection of Seaman Road and North Wynn Road), and the Pearson Metropark – part of the Toledo Area Metropark system comprised of diverse wetland ecosystems including wooded wetlands – is also located at and beyond the southerly 1-mile radius.

A similar mix of agricultural, residential and commercial land uses extends in the area to the east of the Project Site.

Figures 07-7 and 07-8, which shows the City's zoning and planned future land use from its Master Plan, illustrate the compatibility of the Project within its proposed setting.

Table 07-10 presents land uses within a l-mile radius of the Site.

TABLE 07-10

Land Use within a One-Mile Radius of the Site

Land Use	Approximate Acres	Approximate Percentage of Total Area
Industrial	972.89	34.57
Agricultural	882.60	29.23
Commercial	435.03	15.46
City of Oregon (Economic Development)	156.08	5.55

Land Use	Approximate Acres	Approximate Percentage of Total Area
Residential	277.11	9.85
Utility Easement	119.62	4.25
Institutional	18.48	0.66
Lucas County/City of Toledo	12.09	0.43
Total		100

(d) Structures to be Removed or Relocated

Two residences and associated structures currently located on the Site along North Lallendorf Road will be demolished to accommodate the Project. The southernmost property includes a residence plus two outbuildings (a freestanding garage and a gambrel barn), while the northernmost property includes one residential structure. The two properties share a common driveway and address at 816 North Lallendorf Road.

(e) Formally Adopted Plans for Future Use of the Site and Surrounding Lands

The City of Oregon has identified this area of the City for commercial and industrial development and as a Foreign Trade Zone. In fact, as shown on Figure 07-6 a portion of the Site is currently owned by the City for the purpose of facilitating economic development. OCE understands that, in addition to other properties shown within City ownership, the City is pursuing other properties in order to move towards the future land use plan reflected in its Master Plan and shown in Figure 07-8.

(f) Applicant Plans for Concurrent or Secondary Uses of the Site

There are no planned concurrent or secondary commercial uses of the Site other than for the proposed Project and its associated facilities, such as natural gas pipelines and tie-ins to existing overhead transmission lines. The adjacent site may be considered, however, for an additional electric generating facility in the future, should conditions warrant.

(2) Economics

(a) Annual Total and Present Worth of Construction and Operation Payroll

OCE's construction activities on the proposed Oregon Clean Energy Center are scheduled to take place during the period from the summer of 2013 to May 2016. An estimated labor $134.9 million in labor income (or $53.9 million each year of the construction period) will be earned in Lucas County as a result of construction of the Project, including secondary and tertiary multiplier impacts. Annual labor income will increase by $3.9 million in Oregon and by an additional $1.6 million in other parts of Ohio as a result of annual Project operations. See Appendix E for additional analysis of this information. OCE has not hired any workers at this time.

(b) Construction and Operation Employment

The number of employees and the duration of construction activities will vary on a monthly basis in accordance with the Project schedule; the maximum number at the Site at any one time is estimated to be in the range of 500 to 550, with a total of 986 jobs within Lucas County directly supported, on average, in each year of the construction effort (see Appendix E). Lucas County investment by the Oregon Clean Energy Project will result in an additional 370 jobs within Ohio, but outside of Lucas County. Approximately 25 employees will be employed during Project operation. OCE will seek to use local labor where practical.

(c) Increase in Local Revenue

OCE has begun and will continue discussing tax payments with local and state economic development officials. Property tax negotiations have, however, not been concluded.

(d) Economic Impact on Local Commercial and Industrial Activities

Construction and operation of the proposed Facility will have a substantial positive effect on local commercial and industrial activities. The Oregon Clean Energy Center will affect local commercial and industrial activities directly and indirectly. They will benefit via direct purchases related to construction activities and indirect purchases.

The major equipment that comprises the Facility, such as the Siemens or Mitsubishi combustion turbines, will be purchased from outside the local region.

However, the local commercial and industrial communities are anticipated to benefit from direct purchases that will include construction materials and general supplies purchased from local vendors. The same communities will also benefit indirectly from the expenditures by operating personnel for locally supplied goods and services.

OCE has retained an independent firm, Calypso Communications LLC, to analyze both the direct and indirect economic impact of building and operating of the planned Project (Appendix E). Key findings of this study were:

- Of the approximately $750 million Project construction and development costs ($860 million total Project cost), a conservative estimate of $225 million of direct expenditures to construction the Project will be made in Lucas County.
- Construction will directly support a total of 986 jobs in Lucas County, on average, in each year of construction, including an estimated 532 direct jobs in the construction industry. The indirect and induced job (multiplier) impacts of the construction activity will create or support a total of an additional 454 jobs in Lucas County, in each year of the construction phase. This new construction activity in Lucas County will further stimulate new jobs in Ohio (outside of Lucas County) so that the total annual job creation impact within Ohio will be 1,356 jobs, during each construction year.
- Construction will increase the forecasted rate of job growth in Lucas County by an average of nearly 0.5 percent each year of construction

and contribute more than 20 percent of the Toledo MSA's forecasted job growth.

- Project construction and its associated economic activity will produce \$15.4 million in additional state and local tax revenues during the construction phase.
- The 25 full-time operational workers will result in creation of an additional 27 jobs in the Lucas County region.
- The operation of the Project will generate economic activity throughout Ohio that will increase state and local revenues by \$1.6 million annually and payments by OCE for water and sewer services may reach \$1 million annually.

This analysis is provided in Appendix E. These economic impacts do not include the effect of local Property tax payments that will be made by the Project.

(3) Public Services and Facilities

The proposed Project will provide significant economic value to the region. However, since the Project will have new employment in the range of 25 to 30 during operations, and does not place major demands on local infrastructure, there will not be a significant impact on local services. The basis for this estimate is the presumption that the staffing of construction and operation jobs can be met locally, with no significant need for workers to relocate into the area.

Workers will commute to the Site on a daily basis. Hiring of non-resident workers is expected to be limited to highly specialized skills for brief periods of time; it is expected that such workers would stay in local motels and would not require new housing.

The Oregon Clean Energy Center represents a favorable economic impact to the local community because the region receives the benefit of added employment and purchases of material, supplies, and services without having to expend public capital or expand existing municipal services. The economic impacts ($800 million) from the construction and first 20 years of operation of the Oregon Clean Energy Center have been determined by Calypso in a study commissioned by OCE. This study is attached as Appendix E.

The principal impact on public services would be short-term increases in traffic on routes leading to the Site due to deliveries of equipment and materials during construction. Workers arriving and departing during construction would also increase traffic. Some traffic management during the construction phase may be necessary in the immediate vicinity of the Site to ensure safe and efficient maintenance of existing traffic patterns and usages.

OCE does not expect that upgrading of local roads/bridges will be necessary for transportation of construction vehicles and Facility equipment, as the City of Oregon has considerable industrial traffic within this area and has upgraded road bearing capacities within its port district. Once the Project is operational, related traffic would be minimal and would not be expected to impact the Project vicinity.

Potential emergency service requirements will be coordinated with local officials. Local emergency response personnel will be trained to be familiar with the Facility's emergency response system.

(4) Impact on Regional Development

(a) Impact on Regional Development

The Oregon Clean Energy Center will have a sizeable positive impact on regional development because it will contribute to the flow of investments into the local economy, without the need for governmental investment.

Construction of the Project will employ workers both directly and indirectly in Lucas County. Table 9 of the Calypso economic study provided in Appendix E notes that there will be an annual labor enhancement of $53.9 million for the 2½ to 3-year construction period.

Since regional human and material resources are abundant and mobile, no scarcities in labor or materials and equipment are likely. Accordingly, any requirement for non-regional resources, with the exception of major equipment, is expected to be negligible. Additional housing and other services, such as education, public health and public safety, are very unlikely to be required because the labor force for the Project is already locally available.

Transportation facilities will not require expansion as a result of the Project because the impacts of construction will be temporary. Commuting by the approximately 25 - 30 operating personnel is not expected to have a significant impact on local roads.

Compatibility with Regional Plans

The City of Oregon Master Plan clearly indicates through zoning and other measures that the Project site is located within a portion of the City designated for the encouragement of commercial and industrial development. The Project is also consistent with regional energy planning, as evidenced by the review ongoing by PJM that indicates favorable interconnection into the existing 345 kV transmission grid located just north of the Site. PJM has determined that that the Oregon Clean Energy Center can interconnect with the need for only limited system upgrades. The PJM System Impact Study is anticipated to be completed in February 2013. As additional PJM studies are completed, they will be made available for OPSB Staff review.

(D) Cultural Impact

A Phase I archaeological survey of the Site, including a literature review, was submitted to the OHPO for its review on November 28, 2012 (Appendix F). In correspondence dated December 26, 2012, OHPO has requested some additional clarification and information to follow up on the submitted materials. This information is currently being gathered and will be provided to the OHPO and OPSB Staff when available. It is not anticipated the additional information will change the findings of the investigation which are described below.

(1) Cultural Resource Mapping

The map provided in Figures 07-9A through 07-9G depicts Cultural Resources within a 5-mile radius of the Project Site.

(2) Cultural Resource Impacts

Phase I archaeological investigations were conducted in the Project area (Appendix F). These investigations involved surface collection, subsurface testing, and visual inspection. The work resulted in the identification of two previously unrecorded archaeological sites; however, these two sites lack sufficient integrity to be regarded as significant. No further work is recommended for the archaeological sites in the Project Area and they are not eligible for the National Register of Historic Places (NRHP).

Two architectural resources were identified in western part of the Project Area. These resources have been severely modified or are of too common a construction type to be regarded as significant; they lack integrity. These resources are not considered to be eligible for the NRHP.

Based on the historical land use throughout almost half of the Project area, characterized by refineries, industrial development, transportation corridors and utilities; as well as on the result of field investigations, the proposed Project is not anticipated to result in any visual impact to historic sites.

(3) Cultural Resource Landmarks

A total of 29 Ohio Historic Inventory sites were identified within the eastern study area of the Area of Potential Effect. Most of the sites were recorded by the

Northwest OHPO in a 1979 survey of Oregon Township. None of the sites recorded by the Northwest OHPO will be affected by the Project. No rural landscape features were documented or noted, nor were any observed when revisited by field survey for the proposed Project. No historic agriculture landscape features were identified that would constitute a negative visual impact to any of the aforementioned properties by the proposed Project. The property is not part of an established or potential rural landscape.

Several National Register properties are within the 5-mile radius of the Project site; however, existing development in the area including aerial utility lines and industrial parks, serve as a collective buffer that would block any viewshed elements from National Register properties toward the proposed Project.

Based on the historical land use throughout almost half of the Project area, characterized by refineries, industrial development, transportation corridors and utilities; as well as on the result of field investigations, the proposed Project is not anticipated to result in any visual impact to historic sites.

The records of Determinations of Eligibility that have been identified within 5 miles of the Project have been reviewed to determine whether any Project effect is anticipated. Two sites were identified; however, no visual impacts to these areas are anticipated by the Project. Numerous Determinations of Eligibility are located within the city of Toledo; however, due to the urbanized environment and existing obstructions within the immediate vicinity, further investigations for visual impacts were not recommended for those sites.

(4) Land and Water Recreation Areas

Over 27 parks, recreation, areas and/or golf courses exist within 5 miles of the Project Site, as shown in Figures 07-9A through 07-9G. This includes portions of state and federal Wildlife Areas, most notably the Maumee Bay State Park. However, none of these recreation areas are in immediate proximity to the Project. No impact to land or water recreation is anticipated to result.

(5) Recreational Areas and Potential Impacts

The proposed Project is not expected to have a negative impact on land and water recreational resources identified within a 5-mile radius. The closest recreational feature is the Pearson Metropark, located just within 1 mile to the south.

(6) Measures to Minimize Visual Impacts

Figure 02-4 (A through C) presents an artist's rendering of the proposed Project. The Project's location within a commercial-industrial zoning district, proximate to compatible uses minimizes the potential visual effect.

(E) Public Responsibility

(1) Public Interaction Program

Project-related work within the community has been on-going since 2010, when informal discussions with interested parties began associated with exploring potential sites. In May of 2011, an option was signed on the property and additional evaluation and interaction with local economic development and other officials was undertaken.

OCE developed a number of Project-related handouts and presentations for various meetings, and has met with reporters from the local newspaper to advise them of the status of the Project. OCE intends to create a Project web-site in conjunction with the City, as a means of keeping the community informed and connected to the Project.

On October 17, 2012, a pre-application conference meeting was held with the OPSB Staff in Columbus, Ohio to introduce OCE and the Project. On November 29, 2012, OCE held a public information meeting as required by OAC Rule 4906-5-08. The meeting was properly noticed in the local newspapers. OCE personnel, including the Project development manager, and Project representatives staffed the meeting, which included a display of Project information and an opportunity to speak one-on-one with Project representatives. In addition, OCE and its representatives have held numerous meetings with local public officials to discuss the Project.

OCE will continue to engage in active public outreach prior to, during and after construction of the Project. Once the Project is in commercial operation, OCE intends that its local personnel maintain a high level of community involvement.

During the construction phase of the Project, an on-site construction manager will be available to respond to local issues.

To the extent individuals would like to tour the Project, once operational, OCE will host and provide complimentary tours of the Facility. This is anticipated to be an excellent tool for educating the public about electric generation technology.

(2) Liability Compensation Plans

OCE carries significant amounts of liability insurance. The Project will be covered under OCE's liability insurance programs for general commercial liability insurance and automobile liability insurance during the construction and operation of the Oregon Clean Energy Center.

(F) Agricultural District Impact

(1) Agricultural Land Mapping

Figure 07-9 illustrates agricultural land located within and proximate to the boundaries of the proposed Project Site. No agricultural district land is located within the Project boundaries.

(2) Potential Impact to Agricultural Lands

(a) Potential Construction, Operation and Maintenance Impacts

No impacts to field operations, irrigation or field drainage systems associated with agricultural district lands will occur as a result of construction, operation, or maintenance of the proposed Facility on agricultural district lands. No such lands were identified on the Site and measures will be taken to ensure that no impact will occur to adjacent properties.

(b) Agricultural Mitigation Practices

Mitigation procedures will not be necessary since no agricultural districts were identified on the Site and, should drainage tile systems utilized by adjoining parcels be affected, they will be either relocated or restored.

(3) Potential Impact on Agricultural Viability

No impacts will occur as a result of construction, operation, or maintenance of the proposed Facility on agricultural district lands since no such lands were identified on the Site. Where field tile disruptions are necessary, OCE will work with the City and appropriate land owners to repair or relocate such drainageways, or to facilitate suitable drainage alternatives.