

OREGON CLEAN ENERGY CENTER

APPLICATION FOR FIFTH AMENDMENT OF A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED



**SUBMITTED BY:
OREGON CLEAN ENERGY, LLC**

CASE NO: 18-1466-EL-BGA

OCTOBER 2018





COLUMBUS | CLEVELAND
CINCINNATI | DAYTON
MARIETTA

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

www.bricker.com
info@bricker.com

Dylan F. Borchers
614.227.4914
dborchers@bricker.com

October 9, 2018

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

**Re: Oregon Clean Energy, LLC,
OPSB Case No. 18-1466-EL-BGA**

Dear Ms. McNeal:

Enclosed, for filing in the above-referenced case is a copy of the Application for of Oregon Clean Energy, LLC for a Fifth Amendment of a Certificate of Environmental Compatibility and Public Need granted May 1, 2013 in Case No. 12-2959-EL-BGN. In addition, we have provided the Staff of the Ohio Power Siting Board ("Board") ten disks and five hard copies of the Application.

The only change from the initial application and the prior four amendments addresses the addition of black start capability to the Oregon Clean Energy Center if a blackout of the grid were to occur.

Pursuant to Ohio Administrative Code Rule 4906-3-11(B), the Applicant makes the following declarations:

Name of Applicant:	Oregon Clean Energy, LLC whose Project Director is Peter Rigney 816 N. Lallendorf Road Oregon, OH 43616
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Name/Location of Proposed Facility:	Oregon Clean Energy Center Municipality of Oregon, Ohio
--	--

Authorized Representatives Technical:	Peter E. Rigney Project Director Power Plant Management Services, LLC 816 N. Lallendorf Road Oregon, OH 43616 Telephone: (814) 673-1128 Email: PRigney@ppmsllc.com
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Case No. 18-1466-EL-BGA
October 9, 2018
Page 2

**Authorized Representative
Legal:**

Sally W. Bloomfield
Dylan F. Borchers
Bricker & Eckler LLP
100 South Third Street
Columbus, OH 43215
Telephone: (614) 227-2368; (614) 227-4914
Facsimile: (614) 227-2390
E-Mail: sbloomfield@bricker.com
dborchers@bricker.com

Notarized Statement:

See Attached Affidavit of Peter Rigney,
on behalf of Oregon Clean Energy, LLC

Sincerely on behalf of
OREGON CLEAN ENERGY, LLC



Dylan F. Borchers

Attachment

**BEFORE
THE OHIO POWER SITING BOARD**

In the Matter of the Application of OREGON)
CLEAN ENERGY, LLC for a Fifth Amendment)
to its Certificate of Environmental Compatibility) Case No. 18-1466-EL-BGA
and Public Need for an Electric Generating)
Facility in Oregon, Ohio, Lucas County)

AFFIDAVIT OF PETER E. RIGNEY, OREGON CLEAN ENERGY, LLC

STATE OF OHIO :

: ss.

COUNTY OF LUCAS :

I, Peter E. Rigney, 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 its project manager.
2. I have reviewed Oregon Clean Energy LLC's Application to the Ohio Power Siting Board for a Fifth Amendment to its 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.


Peter E. Rigney

Sworn to before and signed in my presence this 2nd day of October 2018.


Notary

DEANNAH LYNN KING, Notary Public
In and for the State of Ohio
My Commission Expires May 26, 2020

[SEAL]

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS	VI
4906-13-01 PROJECT SUMMARY AND FACILITY OVERVIEW	1
(A) PROJECT SUMMARY AND OVERVIEW	1
(1) General Purpose of the Facility.....	1
(2) Description of the Facility	1
(3) Site Selection Process	4
(4) Principal Environmental and Socioeconomic Considerations	4
(a) <i>Potential Construction Impacts</i>	4
(b) <i>Potential Operational Impacts</i>	4
(5) Project Schedule.....	6
4906-13-02 PROJECT DESCRIPTION AND SCHEDULE	7
(A) DETAILED DESCRIPTION OF PROPOSED GENERATION AND ASSOCIATED FACILITIES	7
(1) Project Details	7
(a) <i>Generating Units</i>	7
(b) <i>Land Area Requirements</i>	7
(c) <i>Fuel Quantity and Quality</i>	7
(d) <i>Plant Emissions</i>	7
(e) <i>Water Requirements</i>	8
(f) <i>Water Discharge Requirements</i>	8
(g) <i>Storm Water Management</i>	8
(2) Description of Major Equipment	8
(3) Transmission Line Interconnect.....	10
(4) New Gas Transmission Line	10
(B) DETAILED PROJECT SCHEDULE	10
(1) Schedule.....	10
(2) Delays	10
4906-13-03 SITE ALTERNATIVES ANALYSIS.....	11
(A) SITE SELECTION STUDY	11
(1) Site Selection Process	11
(a) <i>Description of Study Area</i>	11
(b) <i>Study Area and Site Map</i>	11
(c) <i>Siting Criteria</i>	11
(d) <i>Process for Identifying the Proposed Site</i>	11
(2) Constraint Map.....	11
(B) SUMMARY TABLE OF EVALUATED SITES	11
(C) ADDITIONAL SITE SELECTION STUDIES	11
4906-13-04 TECHNICAL DATA	12
(A) SITE	12
(1) Geography and Topography	12
(2) Aerial Photograph	12

TABLE OF CONTENTS

(3)	Site Mapping.....	12
(4)	Geology and Seismology	12
	(a) <i>Geological Issues</i>	12
	(b) <i>Soils and Soil Suitability</i>	12
(5)	Hydrology and Wind.....	12
	(a) <i>Characteristics of Directly Affected Waterbodies</i>	12
	(b) <i>Potential for Flooding or High Wind Conditions</i>	12
	(c) <i>Aquifer Mapping</i>	13
(B)	LAYOUT AND CONSTRUCTION.....	13
(1)	Site Activities.....	13
	(a) <i>Test Borings</i>	13
	(b) <i>Removal of Vegetation</i>	13
	(c) <i>Grading and Drainage</i>	13
	(d) <i>Access Roads</i>	13
	(e) <i>Removal and Disposal of Debris</i>	13
	(f) <i>Post-Construction Reclamation</i>	14
(2)	Layout	14
	(a) <i>Dimensions</i>	14
	(b) <i>Construction Materials</i>	14
	(c) <i>Color and Texture</i>	14
	(d) <i>Pictorial Sketches</i>	14
	(e) <i>Unusual Features</i>	14
(3)	Plans for Construction.....	14
(4)	Future Plans	15
(C)	EQUIPMENT	15
(1)	Description of Major Generating Equipment	15
	(a) <i>Combustion Turbine Generators</i>	15
	(b) <i>Steam Turbine Generator</i>	15
	(c) <i>Heat Recovery Steam Generators</i>	15
	(d) <i>Fuel Gas System</i>	15
	(e) <i>Steam System</i>	15
	(f) <i>Condensate System</i>	15
	(g) <i>Feedwater System</i>	15
	(h) <i>Cooling Water System/Steam Condensing</i>	15
	(i) <i>Closed Loop Auxiliary/Cooling Water System</i>	15
	(j) <i>Fire Protection System</i>	15
	(k) <i>Water System</i>	15
	(l) <i>Demineralizer</i>	16
	(m) <i>Wastewater System</i>	16
	(n) <i>Backup Generator</i>	16
	(o) <i>Transformers</i>	16
	(p) <i>Black Start Emergency Generators</i>	16
(2)	Emissions Control and Safety Equipment	16
	(a) <i>Flue Gas Emissions Control</i>	16
	(b) <i>Equipment Reliability and Efficiency Reduction</i>	16
	(c) <i>Effluent Control Equipment</i>	16
	(d) <i>Public Safety Equipment</i>	17

TABLE OF CONTENTS

(3)	Other Major Equipment	17
(a)	Combustion Turbine Air Inlet Coolers	17
(b)	Auxiliary Boiler	17
(c)	Fuel Gas Preheaters	17
(d)	Fire Water Pump – Diesel Engine Driven	17
(e)	Oil/Water Separator	17
4906-13-05	FINANCIAL DATA.....	18
(A)	OWNERSHIP	18
(B)	CAPITAL AND INTANGIBLE COSTS	18
(1)	Estimated Capital and Intangible Costs	18
(2)	Capital Cost Comparison	18
(3)	Present Worth and Annualized Capital Costs	18
(C)	OPERATION AND MAINTENANCE EXPENSES	18
(1)	Estimated Annual Operation and Maintenance Expenses	18
(2)	Operation and Maintenance Expenses Comparison	18
(3)	Present Worth and Annualized Operation and Maintenance Expenses	18
(D)	DELAYS	18
4906-13-06	ENVIRONMENTAL DATA.....	19
(A)	GENERAL	19
(B)	AIR	19
(1)	Preconstruction	19
(a)	Description of Ambient Air Quality	19
(b)	Description of Pollution Control Equipment	20
(c)	Description of Regulatory Applicability	21
(d)	Required Permits to Install and Operate Air Pollution Sources	22
(e)	Air Monitoring Stations and Major Source Mapping	23
(f)	Demonstration of Regulatory Compliance	23
(2)	Construction	23
(3)	Operation	24
(a)	Description of Air Quality Monitoring Plans	24
(b)	Estimated Air Concentration Isopleths	24
(c)	Potential Failure of Air Pollution Control Equipment	24
(C)	WATER	24
(1)	Preconstruction	25
(a)	List of Permits	25
(b)	Location of Survey Data Sources	25
(c)	Description of Data Sampling Stations	25
(d)	Water Quality of Receiving Stream	25
(e)	Water Discharge Permit Information	25
(2)	Construction	25
(3)	Operation	25

TABLE OF CONTENTS

(D)	SOLID WASTE	26
(1)	Preconstruction	26
(2)	Construction	26
(3)	Operation.....	26
(4)	Licenses and Permits.....	26
4906-13-07	SOCIAL AND ECOLOGICAL DATA.....	27
(A)	HEALTH AND SAFETY	27
(1)	Demographic Characteristics	27
(2)	Atmospheric Emissions	27
(3)	Noise	27
	(a) <i>Metric Descriptions</i>	27
	(b) <i>Applicable Noise Level Regulations</i>	27
	(c) <i>Ambient Noise Level Survey</i>	27
	(d) <i>Noise Monitoring Data Summary</i>	27
	(e) <i>Construction Noise Levels</i>	28
	(f) <i>Operational Noise Levels</i>	28
	(g) <i>Identification of Noise-Sensitive Areas</i>	28
	(h) <i>Description of Equipment and Noise Mitigation Measures Construction</i> <i>Noise</i>	28
(4)	Water.....	29
	(a) <i>Construction and Operation Impact to Public and Private Water</i> <i>Supplies</i>	29
	(b) <i>Impact of Pollution Control Equipment Failures on Public and Private</i> <i>Water Supplies</i>	29
(B)	ECOLOGICAL IMPACT	29
(1)	Site Information	29
	(a) <i>Mapping</i>	29
	(b) <i>Vegetation Survey</i>	29
	(c) <i>Species Survey</i>	29
	(d) <i>Ecological Study</i>	29
	(e) <i>List of Major Species</i>	30
(2)	Construction	30
	(a) <i>Impact of Construction on Undeveloped Areas</i>	30
	(b) <i>Impact of Construction on Major Species</i>	30
	(c) <i>Mitigation for Short-Term and Long-Term Construction Impacts</i>	30
(3)	Operation.....	30
	(a) <i>Impact of Operation on Undeveloped Areas</i>	30
	(b) <i>Impact of Operation on Major Species</i>	31
(C)	ECONOMICS, LAND USE AND COMMUNITY DEVELOPMENT	31
(1)	Land Uses.....	31
	(a) <i>Land Use Mapping</i>	31
	(b) <i>Residential Structures</i>	31
	(c) <i>Land Use Impact</i>	31
	(d) <i>Structures to be Removed or Relocated</i>	31
	(e) <i>Formally Adopted Plans for Future Use of the Site and Surrounding</i> <i>Lands</i>	31
	(f) <i>Applicant Plans for Concurrent or Secondary Uses of the Site</i>	31

TABLE OF CONTENTS

(2)	Economics.....	31
	(a) <i>Annual Total and Present Worth of Construction and Operation Payroll.....</i>	<i>31</i>
	(b) <i>Construction and Operation Employment.....</i>	<i>31</i>
	(c) <i>Increase in Local Revenue.....</i>	<i>31</i>
	(d) <i>Economic Impact on Local Commercial and Industrial Activities.....</i>	<i>32</i>
(3)	Public Services and Facilities	32
(4)	Impact on Regional Development	32
	(a) <i>Impact on Regional Development.....</i>	<i>32</i>
	(b) <i>Compatibility with Regional Plans.....</i>	<i>32</i>
(D)	CULTURAL IMPACT	32
(1)	Cultural Resource Mapping	32
(2)	Cultural Resource Impacts.....	32
(3)	Cultural Resource Landmarks.....	32
(4)	Land and Water Recreation Areas	32
(5)	Recreational Areas and Potential Impacts	32
(6)	Measures to Minimize Visual Impacts	32
(E)	PUBLIC RESPONSIBILITY	32
(1)	Public Interaction Program	32
(2)	Liability Compensation Plans	33
(F)	AGRICULTURAL DISTRICT IMPACT	33
(1)	Agricultural Land Mapping	33
(2)	Potential Impact to Agricultural Lands.....	33
	(a) <i>Potential Construction, Operation and Maintenance Impacts.....</i>	<i>33</i>
	(b) <i>Agricultural Mitigation Practices</i>	<i>33</i>
(3)	Potential Impact on Agricultural Viability	33

APPENDICES

Appendix A: Preliminary Noise Analysis

FIGURES

Figure 01-1: Proposed Black Start Generators Plot Plan

Figure 01-2: Black Start Emergency Generator's Project Schedule

Figure 02-1: Proposed Black Start Emergency Generator and Construction Laydown Yard
(Aerial Photo)

LIST OF ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
%	percent
°F	degrees Fahrenheit
µg/m	micrograms per cubic meter
BACT	Best Available Control Technology
BAT	Best Available Technology
CO	carbon monoxide
CSAPR	Cross-State Air Pollution Rule
CT	Combustion Turbine
dBA	A-weighted decibel
GHG	greenhouse gas
H ₂ SO ₄	sulfuric acid
kV	kilovolt
lb/hr	pounds per hour
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
OCE	Oregon Clean Energy, LLC
OCEC	Oregon Clean Energy Center
Ohio EPA	Ohio Environmental Protection Agency
OPSB	Ohio Power Siting Board
PJM	the regional electric transmission Independent System Operator
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
the Project	Oregon Clean Energy Center
Project Site	30-acre parcel proposed for the location of the OCEC
PSD	Prevention of Significant Deterioration
PTI	Permit-to-Install
R1	nearest noise sensitive receptor
R2	next nearest noise sensitive receptor
SIL	Significant Impact Level
SO ₂	sulfur dioxide
Switchyard Parcel	An approximately 7.5-acre parcel, adjacent to the Project Site, proposed for the location of the Project switchyard
tpy	tons per year
ULSD	Ultra-Low Sulphur Diesel
USEPA	United States Environmental Protection Agency
VOC	volatile organic compounds

4906-13-01 PROJECT SUMMARY AND FACILITY OVERVIEW

(A) PROJECT SUMMARY AND OVERVIEW

No change from the Application.

(1) General Purpose of the Facility

No change from the Application.

(2) Description of the Facility

The original filing (the Application) addressed the Oregon Clean Energy Center (OCEC) generating facility (the Project), a nominal 799 megawatt (MW) natural gas-fired combined cycle electric generating facility located at 816 N. Lallendorf Road in Oregon, Ohio (the Project Site).

As documented in prior application amendments, updates to the Project's air permit have occurred to reflect emissions guarantees, allow generation of additional output, allow for greater operational flexibility through simultaneous combustion turbine starts, and allow use of duct firing under colder temperature conditions than originally considered. The modified Air Permit-to-Install (PTI), Permit No. P0117413, was issued by the Ohio Environmental Protection Agency (Ohio EPA) on September 30, 2014. Further modifications were documented within Administrative Permit Modification, PTI P0122016, issued on March 21, 2017 to incorporate changes to equipment specifications and emission rates for the emergency generator (P003), emergency fire pump (P004), auxiliary boiler (B001) and the duct burners (P001) and (P002). The most recent Administrative Permit Modification, PTI P0123811, was issued on February 14, 2018 to address the following: revise startup and shutdown emissions limits for the combined cycle combustion turbines (P001 and P002); revise the definition of startup to be based on the start of combustion; revise the H₂SO₄ limits for P001 and P002; clarify the three-hour

averaging time for applicable P001 and P002 limits; and revise the maximum circulating water flow rate and reduce PM emission rates for P005.

This amendment addresses the addition of black start capability to the OCEC. If a blackout of the electrical grid were to occur, it would be necessary to have a means to support bringing the electrical grid back into operation. The deployment of emergency generators in strategic locations throughout PJM¹ including the State of Ohio will allow for a rapid response to blackout conditions, facilitating the safe re-energizing of the electrical grid. OCEC completed an initial design concept and submitted a proposal to PJM on May 31, 2018 in response to PJM's recent request for black start services to provide additional reliability to the electrical grid in case of a blackout. OCEC's proposal is currently under evaluation by PJM. Completion of the evaluation and contract award is expected in December 2018.

This amendment addresses the proposed installation of one of the following diesel fired emergency generator (genset) combinations: five (5) 3.9-MW Caterpillar C175-20 engines or six (6) 3.25-MW Cummins C3250e engines. At the time this amendment is being submitted, both engine scenarios are still under consideration. Therefore, appropriate notices will be filed with the Ohio Power Siting Board (OPSB) when construction plans are final and the selected engines are procured. The proposed location for the black start gensets is within a small building to be located within the existing developed footprint of the property boundaries. Under normal conditions, the black start gensets would not

¹PJM is a regional transmission organization that coordinates the movement of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. PJM operates a competitive wholesale electricity market and manages the high-voltage electricity grid to ensure reliability for more than 61 million people.

operate other than for preventative maintenance and routine testing. Routine testing would involve monthly operation of each individual unit of the black start genset and annual operation of the entire black start genset to demonstrate readiness to PJM. During these periods of operation, the units would only operate for limited periods of time, approximately 30 to 60 minutes and then remain idle until the next routine testing or preventative maintenance. When the facility is in operation, the energy generated during testing of the black start gensets will be used to offset the parasitic load of the facility.

Addition of black start capability to OCEC will allow PJM to improve the reliability and responsiveness of the regional electric grid in the event of a blackout. In blackout conditions, PJM would call upon OCEC to initiate the black start protocol. Under these circumstances, the black start gensets would function to provide the energy required to initially start the plant auxiliary equipment, followed by a start of one of the facility's two (2) combustion turbines (CTs). Once one unit is operating and the black start emergency generators are no longer needed, the first CT can provide the energy required to restart the second unit. The CTs would then be capable of delivering the generated electricity to the electrical grid to repower from blackout conditions.

The proposed black start gensets will be located within the facility's developed footprint in a new pre-engineered metal building (shown on Figure 01-1). The black start gensets will be fueled by ultra-low sulfur diesel (ULSD, Fuel Oil No. 2), which will be supplied to the facility via truck delivery. Fuel storage tanks are integral parts of each individual genset unit. The addition of the black start gensets will require review by the Ohio Environmental Protection Agency (Ohio EPA) under the Permit-by-Rule (PBR) program. The proposed black start gensets are located within areas already developed at

OCEC, are compatible with OCEC's existing operations, result in a minor change to existing environmental impacts, and provide a considerable benefit to the electrical distribution grid, PJM, the surrounding community, and the State of Ohio.

(3) Site Selection Process

No change from the Application.

**TABLE 01-1
Proposed Site Characteristics**

No change from the First Amendment.

(4) Principal Environmental and Socioeconomic Considerations

No change from the First Amendment.

(a) Potential Construction Impacts

Addition of the proposed black start gensets will not result in any change to the facility's area of disturbance. As shown in Figure 01-1, the black start gensets will be located on unused land north of the cooling tower. A pre-engineered building will sit on a poured concrete slab floor.

The construction impacts of the installation of the proposed black start gensets will be negligible in comparison to the construction related impacts identified in the original Application. During installation, air quality impacts will be limited to relatively minor emissions from the construction equipment required to prepare the area as well as fugitive dust emissions. OCEC will continue to implement Best Management Practices (BMPs) to maintain water quality standards and minimize erosion and sediment control.

(b) Potential Operational Impacts

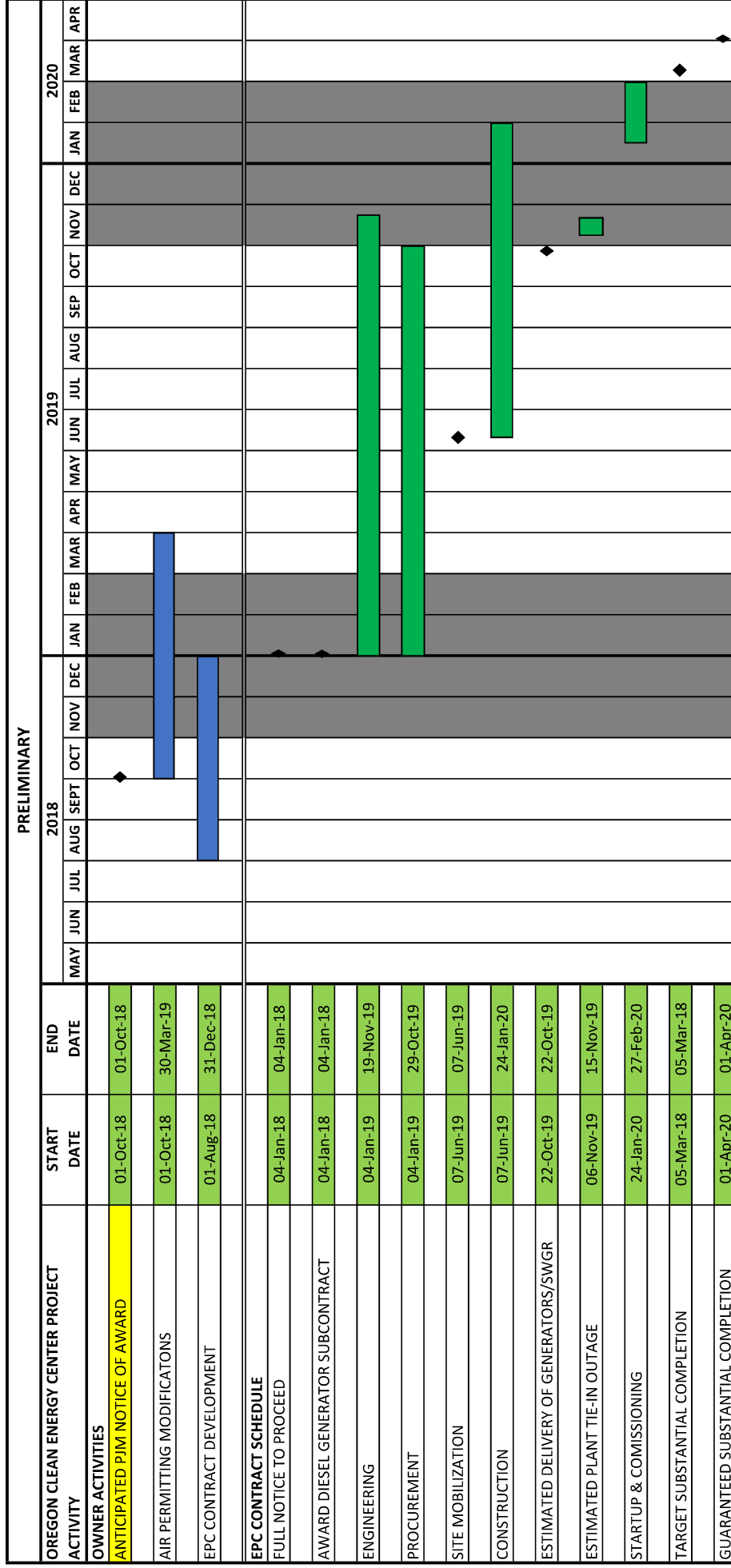
Addition of the proposed black start gensets would result in minimal impacts to regular facility operations as the proposed black start gensets would

operate infrequently under normal conditions. There are three (3) scenarios under which the black start gensets will be operated:

- *Periodic Testing and Preventative Maintenance*
 - Preventative Maintenance: Each black start genset unit will be operated for short periods of time as needed to perform maintenance activities.
 - Monthly Testing: Each black start genset unit will operate monthly for approximately 30 to 60 minutes at 50% load in order to ensure the units are functioning properly. These monthly tests will normally occur while the two existing combustion turbines are operational.
 - Annual Testing: Once a year OCEC will be required to demonstrate black start capabilities to PJM. During this annual test, all black start gensets will be operated simultaneously at up to 100% capacity.
- *Black Start Mode:* In the event of widespread failure of the electric grid, OCEC may be contacted by PJM to participate in restoration of the electrical grid. Under this circumstance, the black start gensets would restore power to the facility as part of the emergency/standby mode discussed above. All black start gensets would be required at 100% capacity during the starting cycle of one CT; once one CT is operational and the electrical grid is stable, the black start gensets would no longer be required. If the grid is unstable once the first CT is running, it may be necessary for the black start gensets to continue to operate until a stable grid has been confirmed.

(5) Project Schedule

PJM's completion of the proposal evaluation and contract award is not expected until December 2018. If OCEC is selected, the contracting of engineering services, as well as procurement and construction of the additional black start facilities will initiate immediately. The anticipated project completion date presented in the attached schedule (April 1, 2020) assumes an award date of October 1, 2018. If notification from PJM occurs after October 1, the project completion date will be adjusted accordingly. The preliminary project schedule for the black start gensets is provided as Figure 01-2.

[illegible]

4906-13-02 PROJECT DESCRIPTION AND SCHEDULE

(A) DETAILED DESCRIPTION OF PROPOSED GENERATION AND ASSOCIATED FACILITIES

Figure 02-1 is an updated aerial photograph that shows the facility and vicinity overlay.

Additional details are provided in Figure 01-1.

(1) Project Details

(a) *Generating Units*

No change from the Fourth Amendment.

(b) *Land Area Requirements*

No change from the First Amendment.

(c) *Fuel Quantity and Quality*

No change from the Application.

TABLE 02-1
Fuel Characteristics

No change from the Application.

(d) *Plant Emissions*

The impacts on air quality during construction of the proposed black start gensets and associated building will be consistent with the air quality impacts of facility construction, but at a significantly smaller scale.

Construction related air emissions will primarily result from the relatively minor emissions from the construction equipment itself (i.e., combustion of fuel in road and non-road engines). General construction vehicles (both gasoline and diesel-powered may be utilized) and other diesel-powered engines will emit insignificant amounts of volatile organic compounds (VOCs), sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM) and

greenhouse gases (GHG). These emissions are not expected to cause any adverse impacts at the facility site or surrounding areas.

Emissions during operation of the proposed black start gensets will include NO_x, VOC, PM, SO₂, sulfuric acid (H₂SO₄), lead (Pb) and GHGs. The black start gensets will meet all applicable emission regulations pursuant to state and federal law. With the operation of the proposed black start gensets, OCEC will continue to comply with the National Ambient Air Quality Standards (NAAQS), as discussed further in Section 4906-13-06(B)(3)(b).

(e) Water Requirements

No change from the Application.

(f) Water Discharge Requirements

The black start gensets will not require any additional water discharge requirements beyond what is already been permitted at the facility.

(g) Storm Water Management

The black start gensets will be installed in an area of the facility that has previously been developed; therefore, stormwater flow will be controlled using the design and BMPs implemented by OCEC for the facility. A fill station including a concrete fuel unloading pad will be installed on the eastern side of the proposed building to catch and contain any small spills from refueling activities.

(2) Description of Major Equipment

No change from the Second Amendment.

- *Gas Fuel Handling* – No change from the Application.
- *Steam System* – No change from the Application.
- *Condensate System* – No change from the Application.

- *Feedwater System* – No change from the Application.
- *Cooling Water System/Steam Condensing* – No change from the Application.
- *Closed Loop Auxiliary/Cooling Water System* – No change from the Application.
- *Fire Protection System* – The existing fire protection loop will be extended to the new black start building.
- *Stand-by Diesel Generator* – No change from the Second Amendment.
- *Water System* – No change from the Application.
- *Demineralizer* – No change from the Application.
- *Wastewater System* – No change from the Application.
- *Black Start Generators* – The black start emergency generators will be fueled with ULSD. Each individual genset unit will include an attached double-walled fuel oil storage tank. Each of the tanks will be incorporated into the design of the engine unit and refilled through a common fuel line. The fill station will be designed to catch and contain small spills from refueling activities. The fuel storage tanks will contain enough ULSD for approximately 24 hours of full load emergency operation. At this time OCEC is considering two (2) installation scenarios, which are presented below in tabular form.

Description	Cummins	Caterpillar
Engine Model	C3250e	C175-20
Engine Standby Rating (kW)	3,250	3,900
Number of Engines Proposed	6	5

(3) Transmission Line Interconnect

No changes from the Second Amendment have been made to the facility's interconnect with the 345kV Lallendorf Interconnection Switchyard (ATSI/Toledo Edison). The proposed black start gensets will deliver power to the facility's CT units and will be exclusively used to provide power to start the CTs during a black start situation. During testing of the black start gensets, energy generated will be used to offset the parasitic load of facility operations.

(4) New Gas Transmission Line

No change from the Application.

(B) DETAILED PROJECT SCHEDULE

(1) Schedule

Based on a PJM contract award date of October 1, 2018, OCEC would anticipate initiating construction in mid-2019, with commencement of commercial operations expected to occur in early 2020. Black start capability at OCEC is expected to be available by April 1, 2020, with the understanding that any delay in award of the contract by PJM will result in a delay to availability of OCEC's black start capabilities. A preliminary schedule for the installation of the black start gensets is provided as Figure 01-2.

(2) Delays

A timely review of this Amendment by the OPSB is requested to enable OCEC to begin the facility modification process upon award of the contract by PJM.



LEGEND

-  APPROXIMATE BLACK START BUILDING LOCATION
-  APPROXIMATE CONSTRUCTION LAYDOWN YARD

REFERENCE

OGRIIP / Ohio Statewide Imagery Program:
<http://ogrip.oit.ohio.gov/Home.aspx>,
ACCESSED 7/24/2018, IMAGERY DATE: 2017



Civil & Environmental Consultants, Inc.
4841 Monroe Street, Suite 103 - Toledo, OH 43623
419-724-5281 • 855-274-2324
www.cecinc.com

DRAWN BY:

MTIC

CHECKED BY:

DMB

APPROVED BY:

TDM*

AERIAL PHOTO
BLACK START PROJECT

FIGURE NO:

02-1

PROJECT NO:

182-110

SCALE:

1" = 150'

DATE: 10/02/2018

*Hand signature on file

4906-13-03 SITE ALTERNATIVES ANALYSIS

(A) SITE SELECTION STUDY

(1) Site Selection Process

(a) *Description of Study Area*

No change from the Application.

(b) *Study Area and Site Map*

No change from the Application.

(c) *Siting Criteria*

No change from the Application.

(d) *Process for Identifying the Proposed Site*

No change from the Application.

(2) Constraint Map

No change from the Application.

(B) SUMMARY TABLE OF EVALUATED SITES

No change from the Application.

(C) ADDITIONAL SITE SELECTION STUDIES

No change from the Application.

4906-13-04 TECHNICAL DATA

(A) SITE

(1) Geography and Topography

No change from the Application.

(2) Aerial Photograph

Figure 02-1 provides an updated aerial photograph showing the location of the facility and the proposed black start building and construction laydown yard in relation to surface features. As stated previously, the proposed black start gensets will be located entirely within prior limits of disturbance within the facility site.

(3) Site Mapping

No change from the Application.

(4) Geology and Seismology

(a) *Geological Issues*

No change from the Application.

(b) *Soils and Soil Suitability*

No change from the First Amendment.

TABLE 04-1
Soil Properties and Characteristics

No change from the Application.

TABLE 04-2
General Boring Information

No change from the Application.

(5) Hydrology and Wind

(a) *Characteristics of Directly Affected Waterbodies*

No change from the Third Amendment.

(b) *Potential for Flooding or High Wind Conditions*

No change from the Application.

(c) *Aquifer Mapping*

No change from the Application.

(B) **LAYOUT AND CONSTRUCTION**

No change from the Application.

(1) **Site Activities**

(a) *Test Borings*

No change from the Application.

(b) *Removal of Vegetation*

No change from the Application. The proposed black start genset installation will be entirely located in an area previously cleared and disturbed for construction of the facility. No existing vegetation is anticipated to be removed for installation of the black start gensets.

(c) *Grading and Drainage*

No change from the Application. The proposed black start gensets will be located on an area of the facility site that has been graded and properly sloped for construction of the facility's major components and structures. Ditches, swales and drainage structures of the facility site will be used to capture stormwater from the location of the black start gensets and direct it to the existing stormwater management system for the facility. The black start gensets will be fueled through a common line, and the fill station will be designed to catch and contain small spills that may occur during refueling activities.

(d) *Access Roads*

No change from the Application.

(e) *Removal and Disposal of Debris*

No change from the Application.

(f) Post-Construction Reclamation

No change from the Application.

(2) Layout

The overall layout of the facility with the black start genset addition is provided on the Figure 02-1 and Figure 01-1.

(a) Dimensions

There have been no changes to the dimensions of the facility's major structures since the Second Amendment. The black start gensets will be enclosed in a single building, sized appropriately to the number of black start gensets that will be utilized. Exact building and stack dimensions for both proposed scenarios are currently under consideration.

(b) Construction Materials

The black start gensets will be enclosed in a pre-engineered building consisting of weatherproof metal. All materials and construction practices used will meet or exceed safe and reliable power plant engineering and design standards.

(c) Color and Texture

Ribbed siding materials will be used for the black start genset metal enclosure. Design colors for the enclosure will be selected to match those of the Facility's major components and structures.

(d) Pictorial Sketches

No change from the Application.

(e) Unusual Features

No change from the Application.

(3) Plans for Construction

No change from the Application.

(4) Future Plans

No change from the Application.

(C) EQUIPMENT

(1) Description of Major Generating Equipment

No change from the Second Amendment.

(a) *Combustion Turbine Generators*

No change from the Application.

(b) *Steam Turbine Generator*

No change from the Application.

(c) *Heat Recovery Steam Generators*

No change from the Third Amendment.

(d) *Fuel Gas System*

No change from the Application.

(e) *Steam System*

No change from the Application.

(f) *Condensate System*

No change from the Application.

(g) *Feedwater System*

No change from the Application.

(h) *Cooling Water System/Steam Condensing*

No change from the Application.

(i) *Closed Loop Auxiliary/Cooling Water System*

No change from the Application.

(j) *Fire Protection System*

No change from the Application.

(k) *Water System*

No change from the Application.

(l) *Demineralizer*

No change from the Application.

(m) *Wastewater System*

No change from the Application.

(n) *Backup Generator*

No change from the Application.

(o) *Transformers*

No change from the Application.

(p) *Black Start Emergency Generators*

The proposed black start gensets will function to restore facility power in the event of a blackout. The black start gensets will improve grid reliability and responsiveness during a black out situation in which operation of the electric grid must be restarted.

As previously discussed, the individual black start gensets will each be capable of producing up to 3.9 MW of electricity. The black start gensets will be fueled by ULSD stored in integrated double-walled tanks. The fuel tanks will be fueled via a common line, and the fill station will be designed to catch and contain small spills from refueling activities.

(2) *Emissions Control and Safety Equipment*

(a) *Flue Gas Emissions Control*

No change from the Application.

(b) *Equipment Reliability and Efficiency Reduction*

No change from the Application.

(c) *Effluent Control Equipment*

No change from the Application.

(d) *Public Safety Equipment*

No change from the Application.

(3) *Other Major Equipment*

No change from the Application.

(a) *Combustion Turbine Air Inlet Coolers*

No change from the Application.

(b) *Auxiliary Boiler*

No change from the Application.

(c) *Fuel Gas Preheaters*

No change from the Second Amendment.

(d) *Fire Water Pump – Diesel Engine Driven*

No change from the Second Amendment.

(e) *Oil/Water Separator*

No change from the Application.

4906-13-05 FINANCIAL DATA

(A) OWNERSHIP

No change from the First Amendment.

(B) CAPITAL AND INTANGIBLE COSTS

(1) Estimated Capital and Intangible Costs

The total estimated engineering, procurement, and construction cost associated with adding the black start facilities to OCEC is \$30.7 million.

(2) Capital Cost Comparison

No change from the Application.

(3) Present Worth and Annualized Capital Costs

No change from the Application.

(C) OPERATION AND MAINTENANCE EXPENSES

(1) Estimated Annual Operation and Maintenance Expenses

The proposed black start capability is estimated to add approximately \$150,000 per year in incremental operation and maintenance expenses.

(2) Operation and Maintenance Expenses Comparison

No change from the Application.

(3) Present Worth and Annualized Operation and Maintenance Expenses

No change from the Application.

(D) DELAYS

No change from the Application.

4906-13-06 ENVIRONMENTAL DATA**(A) GENERAL**

No change from the Application.

(B) AIR**(1) Preconstruction****(a) Description of Ambient Air Quality**

No change from the Application except as noted below.

TABLE 06-1
Background Air Quality Monitoring Stations

Pollutant	2013 Modeling			2018 Updates		
	Station Location		Station ID	Station Location		Station ID
PM ₁₀	Lee and Front, Toledo	Lucas County	39-095-1003 ⁽¹⁾	2728 Viking Ln, Moraine, OH	Montgomery County	39-113-7001
PM _{2.5}	600 Collins Park, Toledo Updated: 3040 York St.	Lucas County	39-095-0028	N/A	N/A	N/A
NO ₂	7760 Blackburn Rd, Athens	Athens County	39-009-0004 ⁽²⁾	7560 Smokey Row Rd, Columbus, OH	Franklin County	39-049-0038
CO	901 W Fairview, Dayton	Montgomery County	39-113-0028 ⁽²⁾	117 S Main St, Dayton, OH	Montgomery County	39-113-0034
SO ₂	N/A	N/A	N/A	2850 Bible Rd, Lima, OH	Allen County	39-003-0009

⁽¹⁾ Active 1990-1996

⁽²⁾ Active 2007-2011

Table 06-1 above details changes to background monitoring stations for PM₁₀, NO₂, CO and SO₂. These changes have been incorporated into the air quality dispersion modeling.

TABLE 06-2
Background Air Quality Data

Pollutant	Averaging Period	Background Concentration ^{(1) (2)}	Station ID
PM ₁₀	24-hour	37.8 µg/m ³	39-113-7001
	Annual	Not applicable ⁽³⁾	
PM _{2.5}	24-hour	21 µg/m ³	39-095-0028
	Annual	9.6 µg/m ³	

Pollutant	Averaging Period	Background Concentration ^{(1) (2)}		Station ID
NO ₂	1-hour	46 ppb	86.48 µg/m ³	39-049-0038
	Annual	12 ppb	22.48 µg/m ³	
CO	1-hour	1.2 ppm	1,380 µg/m ³	39-113-0034
	8-hour	0.9 ppm	1,035 µg/m ³	
SO ₂	1-hour	9 ppb	23.58 µg/m ³	39-003-0009
	3-hour	9 ppb	23.58 µg/m ³	
	24-hr	Not applicable ⁽³⁾		
	Annual	Not applicable ⁽³⁾		

⁽¹⁾ <https://www.epa.gov/air-trends/air-quality-design-values#report> (2016); with the exception of PM10.

⁽²⁾ NO₂: 1 ppb = 1.88 µg/m³; CO: 1 ppm = 1.15 mg/m³ = 1,150 µg/m³; SO₂: 1 ppb = 2.62 µg/m³.

<https://www.cdc.gov/niosh/npg/search.html>

⁽³⁾ This averaging period does not have a NAAQS. Background concentrations are only considered for NAAQS pollutants.

The table above provides background air quality by pollutant. Ozone and lead background concentrations have not changed from the Application.

(b) Description of Pollution Control Equipment

No changes have been made to the pollution control equipment detailed in previous applications. Pollution/emissions controls for the proposed black start gensets are discussed below.

Nitrogen Oxides (NO_x), Volatile Organic Compounds (VOC), Carbon Monoxide (CO) and Particulate Matter (PM)

The proposed black start gensets will be manufacturer tested and certified to comply with all applicable emissions standards, as set forth in the federal regulations (i.e., NSPS IIII). Regulations applicable to the black start gensets are discussed further in Section 4906-13-06(B)(1)(c). No additional pollution control equipment is required to be installed on the proposed units.

Sulfur Dioxide

No change from the Application.

(c) ***Description of Regulatory Applicability***

Regulatory applicability for the facility has not changed; additional requirements associated with the proposed black start gensets is discussed below.

Prevention of Significant Deterioration Review and New Source Review

No change from the Application.

40 CFR 60, Subpart IIII – New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines (NSPS IIII)

The proposed black start gensets will be required to meet the emissions certification criteria for NO_x, CO, VOC and PM, in accordance with NSPS IIII. Pursuant to 40 CFR 89.112, emissions from new emergency diesel generators must comply with size-specific non-road engine emission limits. New non-road, stationary units greater than 560 mechanical kilowatts (kWm) must meet the “Tier 2” limits below:

- 6.4 grams per kilowatt-hour (g/kWhr) NO_x and VOC (measure of Non-methane hydrocarbons);
- 3.5 g/kWhr CO; and
- 0.2 g/kWhr PM.

In accordance with the standard, engines are tested using USEPA-defined load cycle testing in order for manufacturers to certify compliance with the required non-road emissions limits. NSPS IIII also requires that new emergency diesel engines burn ULSD.

NSPS IIII limits non-emergency operation of each new emergency generator to 100 hours per year. Non-emergency operation is defined as routine testing or operation of emergency units during construction or

maintenance activities in order to supply power. NSPS IIII further limits non-emergency and periodic testing operation to 50 hours per calendar year. There is no limit for hours of operation during an emergency. OCEC will limit non-emergency operation of the proposed black start gensets to meet NSPS IIII requirements.

OAC Rule 3745-31-06 – Completeness determinations, processing requirements, public participation, public notice and issuance

No change from the Application.

OAC Rule 3745-31-11 – Ambient Air Ceilings and Increments

No change from the Application.

OAC Rule 3745-31-13/OAC Rule 3745-31-14 – Ambient Monitoring Requirements

No change from the Application.

OAC Rule 3745-31-16 – Impact Analysis

No change from the Application.

OAC Rule 3745-31-17 – Additional Impact Analysis

No change from the Application.

Other Regulatory Requirements

(d) *Required Permits to Install and Operate Air Pollution Sources*
Permit-by-Rule

The proposed black start gensets qualify for permitting under the Ohio EPA's Permit-by-Rule (PBR) program (OAC 3745-31-03(C)(2)(a): Permit By Rule for Emergency Electrical Generators). In order to obtain coverage under the PBR for Emergency Electric Generators OCEC will submit a PBR notice to Ohio EPA containing information on the planned

installation, and comply with all requirements of the PBR provisions for emergency generators.

The PBR requirements specify that emergency generators may not operate for more than 500 hours in any 12-month time period, this time limit is inclusive of both emergency and non-emergency situations. NSPS IIII is more restrictive and specifies that emergency generators may not operate from more than 100 hours in any 12-month time period. OCEC will comply with these operational restrictions. Further requirements of the PBR specify that the permitted units must satisfy the requirements of NSPS IIII, as well as 40 CFR 63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, or, the RICE MACT). For new emergency generators, the requirements of the RICE MACT are satisfied if the units comply with NSPS IIII.

Title V Permits

No change from the Application.

Title IV

No change from the Application.

(e) Air Monitoring Stations and Major Source Mapping

No change from the Application.

(f) Demonstration of Regulatory Compliance

No change from First Amendment.

(2) Construction

The construction impacts on air quality from the installation of the proposed black start gensets will be negligible compared to the impacts from construction of the facility.

General construction impacts from construction equipment and from fugitive dust emissions will be relatively minor.

(3) Operation

(a) *Description of Air Quality Monitoring Plans*

No change from the Application.

(b) *Estimated Air Concentration Isopleths*

Although not required under the PBR, the ambient air quality impacts of the proposed black start gensets were assessed by dispersion modeling, using the USEPA model AERMOD in accordance with Ohio EPA's modeling guidance as set forth in *Engineering Guide #69: Air Dispersion Modeling Guidance*. Results of this modeling show that maximum predicted total impacts are below the corresponding Ohio EPA Generally Acceptable Incremental Impacts (GAI) for all pollutants, and the facility emissions continue to demonstrate compliance with the NAAQS and PSD Increments.

TABLE 06-3

Maximum Calculated Project Impacts for Criteria Pollutants

No change from the Application.

(c) *Potential Failure of Air Pollution Control Equipment*

No changes have been made to the facility's air pollution control equipment or its reliability, safety and effectiveness. There will be no additional air pollution control equipment installed with this project, as black start gensets will be guaranteed by the manufacturer meet the emissions requirements pursuant to NSPS III.

(C) WATER

No change from the Application.

(1) Preconstruction

(a) *List of Permits*

No change from the Application.

(b) *Location of Survey Data Sources*

No change from the Application.

(c) *Description of Data Sampling Stations*

No change from the Application.

(d) *Water Quality of Receiving Stream*

No change from the Application.

(e) *Water Discharge Permit Information*

Construction and operation of the proposed black start gensets will not change the facility's discharge of wastewater and will not materially change the facility's discharge of stormwater. Stormwater collected from the vicinity of the Black Start Building will flow into the facility's existing stormwater collections system and be managed under the existing stormwater and National Pollutant Discharge Elimination System (NPDES) requirements. The fill station, where ULSD will be delivered to refuel the black start gensets, will be designed to catch and contain small spills that may occur during refueling activities.

(2) Construction

No change from the Application.

(3) Operation

There are no changes to the facility's water pollution control equipment or NPDES requirements and schedule from the Application. No wastewater will be generated during operation of the proposed black start gensets, and any stormwater that originates in the

vicinity of the new Black Start Building will be managed with the BMPs and stormwater management system already in place at the facility.

Table 06-4
Project Consistency with POTW Standards

No change from the Application.

(D) SOLID WASTE

(1) Preconstruction

No change from the Application.

(2) Construction

Installation of the black start gensets and construction of the Black Start Building will generate solid waste that is typical of normal construction efforts. Anticipated wastes include (but are not limited to): office wastes and packing materials, scrap lumber, metals, cables, glass and cardboard containers. All waste will be removed from the site by licensed contractors in accordance with applicable regulatory requirements and managed in licensed facilities.

(3) Operation

No change from the Application.

(4) Licenses and Permits

No change from the Application.

No change from the Application.

(A) HEALTH AND SAFETY

(1) Demographic Characteristics

No change from the Application.

**TABLE 07-1
Existing and Projected Populations**

No change from the Application.

(2) Atmospheric Emissions

No impact to the population is anticipated as a result of atmospheric emissions from the proposed black start gensets. The black start gensets will operate infrequently and be in full compliance with all applicable air quality standards and permit requirements.

(3) Noise

(a) *Metric Descriptions*

No change from the Application.

(b) *Applicable Noise Level Regulations*

No change from the Application.

**TABLE 07-2
City of Oregon Fixed Source Noise Threshold Limits**

No change from the Application.

(c) *Ambient Noise Level Survey*

No change from the Application.

**TABLE 07-3
Existing Ambient Noise Levels at Measurement Location 1 - October 2012**

No change from the Application.

(d) *Noise Monitoring Data Summary*

No change from the Application.

TABLE 07-5
Measured Existing 15-minute Noise Levels at Sensitive Receptors on October 16, 2012
No change from the Application.

- (e) ***Construction Noise Levels***
No change from the Application.

TABLE 07-6
Proposed Construction Equipment Sound Levels
No change from the Application.

TABLE 07-7
Oregon Clean Energy Construction Noise Impacts
No change from the Application.

- (f) ***Operational Noise Levels***
The proposed black start gensets are anticipated to operate infrequently for testing or if required during emergency conditions. A noise study was conducted on the operation of the black start gensets. The Preliminary Sound Analysis (Appendix A) focused on both the routine testing events and emergency events. See Appendix A for additional details regarding anticipated operational noise levels.

Operational Noise Impact Assessment

No change from the Application.

- (g) ***Identification of Noise-Sensitive Areas***
No change from the Application.

- (h) ***Description of Equipment and Noise Mitigation Measures Construction Noise***
No change from the Application.

Operational Noise

In order to bring the overall project into compliance at the residential and onsite receivers, mitigation considerations for the black start gensets could include a sound wall(s) and silencers for ventilation openings and

radiator outlet louvers. Additional details regarding design options and mitigation layouts are available in Appendix A.

(4) Water

No impacts to water bodies are anticipated as a result of the proposed black start gensets. The black start gensets have no water needs and will not generate wastewater. Stormwater flows in the area surrounding the proposed black start building will be directed to the existing facility stormwater management system.

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

No change from the Application.

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

No change from the Application.

(B) ECOLOGICAL IMPACT

(1) Site Information

(a) Mapping

No change from First Amendment.

(b) Vegetation Survey

No change from First Amendment.

TABLE 07-9

Vegetation Recorded On and Adjacent to the Site

No change from the Application.

(c) Species Survey

No change from the First Amendment.

(d) Ecological Study

Wetland Assessment

No change from First Amendment.

Ecological Impact Study Summary

No change from First Amendment.

(e) ***List of Major Species***

Endangered or Threatened Species

No change from the Application.

Recreational or Commercial Species

No change from the Application.

(2) Construction

(a) ***Impact of Construction on Undeveloped Areas***

The proposed black start gensets will be located within an area of the facility previously disturbed during construction of the facility's major structures; therefore, there will be minimal disturbance of and impact upon undeveloped area associated with this installation.

(b) ***Impact of Construction on Major Species***

No change from the Application.

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

Measures identified in the original filing (application) will be utilized to mitigate short-term and long-term impacts of the proposed black start gensets. Mitigation measures are expected to include sediment and erosion control, dust and particle control and revegetation where appropriate.

(3) Operation

(a) ***Impact of Operation on Undeveloped Areas***

Operation of the black start gensets will result in a localized increase in noise. As previously stated, the proposed black start gensets will operate infrequently, and noise impacts will not be a regular occurrence.

(b) *Impact of Operation on Major Species*

No change from the Application.

(C) ECONOMICS, LAND USE AND COMMUNITY DEVELOPMENT

(1) Land Uses

(a) *Land Use Mapping*

No change from the Application.

(b) *Residential Structures*

No change from the Application.

(c) *Land Use Impact*

No change from the Application.

TABLE 07-10

Land Use within a One-Mile Radius of the Site

No change from the Application.

(d) *Structures to be Removed or Relocated*

No change from the Application.

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

No change from the Application.

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

No change from the Application.

(2) Economics

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

No change from the Application.

(b) *Construction and Operation Employment*

No change from the Application.

(c) *Increase in Local Revenue*

No change from the Application.

(d) ***Economic Impact on Local Commercial and Industrial Activities***

No change from the Application.

(3) **Public Services and Facilities**

No change from the Application.

(4) **Impact on Regional Development**

(a) ***Impact on Regional Development***

No change from the Application.

(b) ***Compatibility with Regional Plans***

No change from the Application.

(D) **CULTURAL IMPACT**

No change from First Amendment.

(1) **Cultural Resource Mapping**

No change from the Application.

(2) **Cultural Resource Impacts**

No change from the Application.

(3) **Cultural Resource Landmarks**

No change from the Application.

(4) **Land and Water Recreation Areas**

No change from the Application.

(5) **Recreational Areas and Potential Impacts**

No change from the Application.

(6) **Measures to Minimize Visual Impacts**

No change from the Application.

(E) **PUBLIC RESPONSIBILITY**

(1) **Public Interaction Program**

No change from the Application.

(2) Liability Compensation Plans

No change from the Application.

(F) AGRICULTURAL DISTRICT IMPACT

(1) Agricultural Land Mapping

No change from the Application.

(2) Potential Impact to Agricultural Lands

(a) *Potential Construction, Operation and Maintenance Impacts*

No change from the Application.

(b) *Agricultural Mitigation Practices*

No change from the Application.

(3) Potential Impact on Agricultural Viability

No change from the Application.

Appendix A: Preliminary Noise Analysis

Memorandum



Date: April 27, 2018

To: Ben Kuisle, Burns & McDonnell

From: Ian Brewe, Burns & McDonnell

Subject: Oregon Clean Energy

Burns & McDonnell conducted a preliminary sound analysis for Power Plant Management Service, LLC (PPMS) of the addition of five black start generators to the existing Oregon Clean Energy Center (Oregon) combined cycle power plant facility. The five black start generators are proposed to be located inside of a building to the east of the combined cycle facility.

The analysis is considered preliminary, as limited vendor data is available at this time. Predictive modeling has been completed using historical data for auxiliary equipment. Vendor data for the 3.9 MW Caterpillar engine was provided from a previous project. The following sections detail the preliminary sound assessment. Existing facility sound levels have been established by Black & Veatch's 2017 Noise Emissions Performance Test Report¹ and will be logarithmically added to the black start generator sound levels to estimate the combined, predicted sound level. Sound levels provided within this report are preliminary and not to be guaranteed.

REQUIREMENTS

According to the 2017 Black & Veatch study, Oregon has Sound Level Minimum Acceptance Criteria (MAC) at property boundary (PB) and residential (R) locations as provided in Table 1.

Table 1: MAC Criteria

Measurement Location	MAC Criteria
Property Boundary	≤ 75 dBA
Residential Locations	≤ 55 dBA

The facility also has a near-field in-plant sound level MAC of ≤ 85 dBA at 3 feet from equipment and 5 feet above ground or personal platform for all measurements. Areas that experience sound levels exceeding 85 dBA require warning signs prescribing hearing protection.

EXISTING SOUND LEVELS

The 2017 Black & Veatch study was performed to measure sound levels emitted from the existing Oregon combined cycle facility and compare them to the MAC criteria. Measurements in the 2017 Black & Veatch report were performed at six locations (PBSW, PBSE, PBE, PBN, R2, and R63) which are shown in Attachment A. The sound levels of the existing combined

¹ Black & Veatch, Oregon Clean Energy Center Noise Emissions Performance Test Report, June, 30, 2017

April 27, 2018

Page 2

cycle facility measured by Black & Veatch at PBSW, PBSE, PBE, PBN, R2, and R63 are provided in Table 2. PBNE was added in addition to the Black & Veatch measurement points to model the property line sound level emitted from the black start generators. The existing sound level of PBNE was assumed to be the same as PBN (70 dBA).

Table 2: Existing Oregon Sound Level

Measurement Location	Sound Pressure Level (dBA)	
	Measured Sound Level	MAC Criteria
PBSW	63	≤ 75
PBSE	69	≤ 75
PBE	66	≤ 75
PBN	70	≤ 75
PBNE	70 ^a	≤ 75
R2	51	≤ 55
R63	48	≤ 55

(a) Measured Sound Level was assumed to be 70 dBA

PREDICTIVE MODELING

Using industry-accepted sound modeling software, Computer Aided Design for Noise Abatement (CadnaA) version 2018, the black start generator sound levels were predicted. The software is a scaled, three-dimensional program, which takes into account each piece of sound-emitting equipment on a site and predicts sound pressure levels over an area of interest. The model calculates sound propagation based on International Organization for Standardization (ISO) 9613-2:1996, General Method of Calculation. ISO 9613-2 is used to assess the sound level propagation based on the octave band center-frequency range from 31.5 to 8,000 hertz (Hz). In the model, the atmospheric conditions were assumed to be calm, and the temperature and relative humidity were left at the program default values. Ground attenuation was assumed to be 0.5 for all areas in the vicinity of the project. The existing structures for Oregon were included in the model, but no existing sound sources were included. The modeled results are for the black start generator project only.

To provide PPMS with sufficient information to discuss the sound impacts of the facility, an unmitigated and mitigated design has been analyzed under two different operating scenarios. Scenario 1 is defined to be one black start generator operating at 50% load and the combined cycle facility in full operation. Scenario 1 is the likely scenario that will occur during the monthly testing. Scenario 2 is defined to be all five black start generators operating at 100% load and the combined cycle facility in full operation. This is considered an emergency black start

April 27, 2018

Page 3

scenario. Table 3 provides a summary of each operating scenario.

Table 3: Summary of Operating Scenarios

Operating Scenario	Mode	Combined Cycle Operations	Black Start Generators
1	Monthly Testing	Fully Operational	One Generator at 50% Load
2	Emergency Black Start	Fully Operational	Five Generators at 100% Load

Mitigation was designed for the black start generators, including a sound wall located to the north and south of the black start generator building per discussions with PPMS. This is expected to bring the overall project into compliance at the residential and on-site receivers. The summary of base and mitigation design options are provided in Table 4. Barrier locations and mitigation layouts can be found in Attachment B.

April 27, 2018

Page 4

Table 4: Summary of Mitigation Design Options

Design Component ^a	Base Design	Mitigation Design
Generator Hall Walls/Roof STC	29	29
Generator Hall Walls/Roof NRC	0.5	0.5
Height of South Sound Wall	N/A	20 feet
STC of South Sound Wall	N/A	40
NRC of South Sound Wall	N/A	0.6
STC of East Roll Up Door	25	25
Exhaust Stack Silencer	45 dBA	45 dBA
North Exhaust Fan	N/A	15 dBA
North Side Air Inlets (Silencer/Louver)	N/A	25 dBA
South Side Radiator Openings (Silencer/Louver)	N/A	N/A
Building Ventilation Openings (Silencer/Louver)	N/A	15 dBA

(a) STC = Sound Transmission Class; NRC = Noise Reduction Coefficient

MODELING RESULTS

Predictive Modeling was performed for the base and mitigation design for both operational scenarios. For comparative purposes, the overall A-weighted sound levels for the black start generators and the existing facility are provided in the tables below. The modeled sound levels were combined with the measured sound levels at the receptors identified in the 2017 Black & Veatch report. Near-field receivers were placed in the model 3 feet away from black start generator building. Average and maximum near-field levels for each design scenario are found in the tables below. Table 5 and Table 6 show the predicted sound pressure levels for Scenario 1 Base Design and Scenario 2 Base Design respectively. Table 7 and Table 8 show the predicted sound pressure levels for Scenario 1 Mitigated Design and Scenario 2 Mitigated Design respectively.

April 27, 2018

Page 5

Table 5: Predicted Sound Pressure Levels at Nearby Receivers for Base Design under Scenario 1 Operating Conditions

Location	Sound Pressure Level (dBA)		
	Measured Sound Level from Combined Cycle Facility ^a	Estimated Sound Level from Black Start Generators ^b	Estimated Combined Sound Level from Combined Cycle Facility & Black Start Generators
PBSW	63	60	65
PBSE	69	68	72
PBE	66	45	66
PBN	70	63	71
PBNE	70	79	79
R2	51	38	51
R63	48	35	48
Average near-field sound level = 91 dBA			
Maximum near-field sound level = 109 dBA			

(a) Combined cycle facility is fully operational

(b) One black start generator operating at 50% load

Table 6: Predicted Sound Pressure Levels at Nearby Receivers for Base Design under Scenario 2 Operating Conditions

Location	Sound Pressure Level (dBA)		
	Measured Sound Level from Combined Cycle Facility ^a	Estimated Sound Level from Black Start Generators ^b	Estimated Combined Sound Level from Combined Cycle Facility & Black Start Generators
PBSW	63	67	68
PBSE	69	77	78
PBE	66	56	66
PBN	70	74	75
PBNE	70	93	93
R2	51	48	53
R63	48	49	51
Average near-field sound level = 104 dBA			
Maximum near-field sound level = 112 dBA			

(a) Combined cycle facility is fully operational

(b) Five black start generators operating at 100% load

April 27, 2018

Page 6

Table 7: Predicted Sound Pressure Levels at Nearby Receivers for Mitigation Design under Scenario 1 Operating Conditions

Location	Sound Pressure Level (dBA)		
	Measured Sound Level from Combined Cycle Facility ^a	Estimated Sound Level from Black Start Generators ^b	Estimated Combined Sound Level from Combined Cycle Facility & Black Start Generators
PBSW	63	43	63
PBSE	69	51	69
PBE	66	45	66
PBN	70	50	70
PBNE	70	62	71
R2	51	27	51
R63	48	29	48
Average near-field sound level = 74 dBA			
Maximum near-field sound level = 84 dBA			

(a) Combined cycle facility is fully operational

(b) One black start generator operating at 50% load

Table 8: Predicted Sound Pressure Levels at Nearby Receivers for Mitigation Design under Scenario 2 Operating Conditions

Location	Sound Pressure Level (dBA)		
	Measured Sound Level from Combined Cycle Facility ^a	Estimated Sound Level from Black Start Generators ^b	Estimated Combined Sound Level from Combined Cycle Facility & Black Start Generators
PBSW	63	51	63
PBSE	69	60	69
PBE	66	54	66
PBN	70	57	70
PBNE	70	73	74
R2	51	37	51
R63	48	39	48
Average near-field sound level = 85 dBA			
Maximum near-field sound level = 93 dBA			

(a) Combined cycle facility is fully operational

(b) Five black start generators operating at 100% load

April 27, 2018

Page 7

After mitigation design, there were no overall sound levels that exceeded the requirements outlined in the 2017 Black & Veatch Study. Hearing protection may be required in and around black start generator building due to levels exceeding MAC of 85 dBA. Sound contours for the base and mitigation design for both operational scenarios are provided in Attachment C.

IRB

Attachments:


- Attachment A - Receiver Locations


- Attachment B - Barrier Layout


- Attachment C - Sound Level Contours


ATTACHMENT A - RECEIVER LOCATIONS




**Residential Receivers (R)**

**Property Boundary Receivers (PB)**


**Existing Facility**

**Black Start Building**



500 250 0 500

Scale in Feet



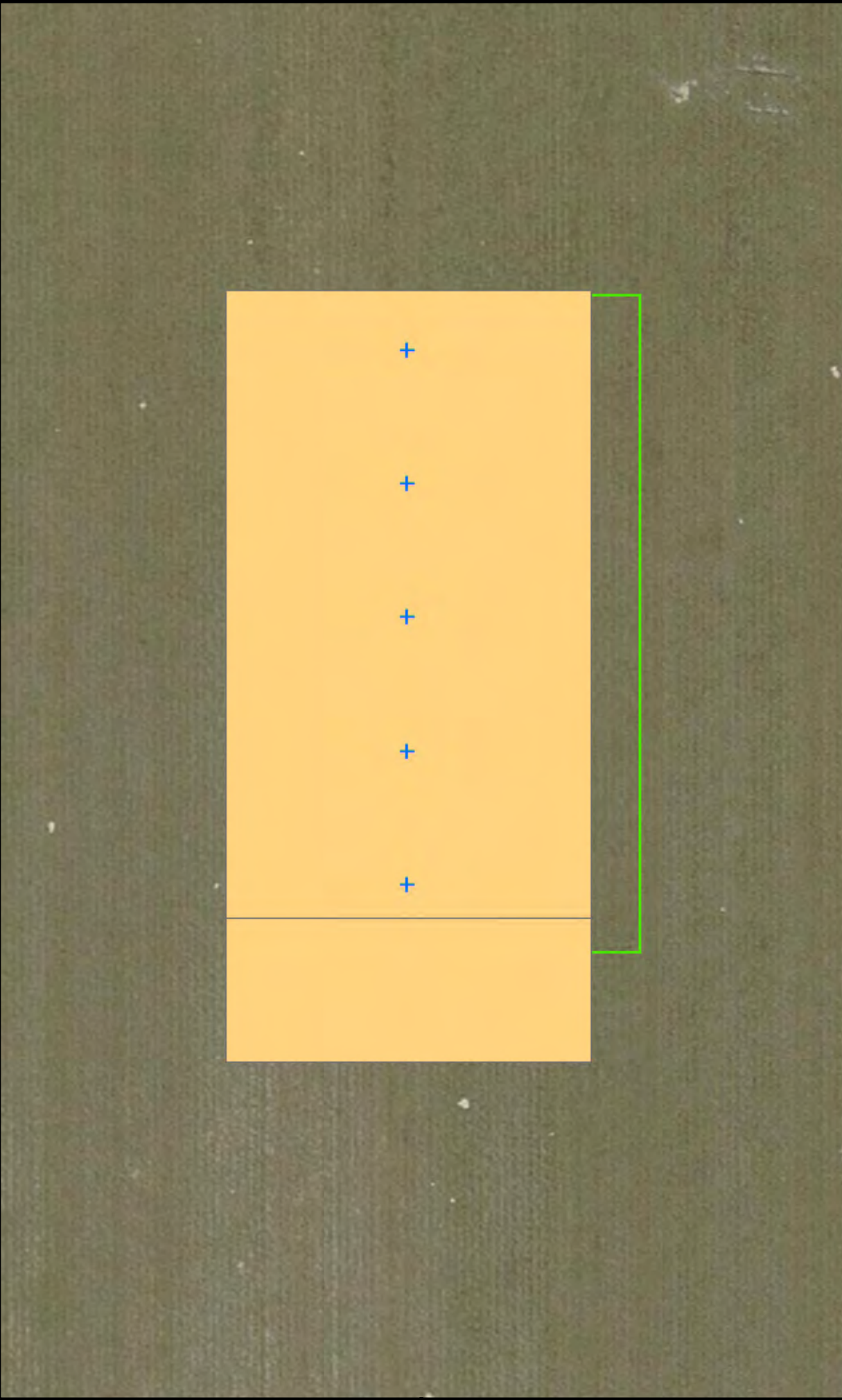
Attachment A




PPMS

Oregon Clean Energy Center

Receiver Locations

ATTACHMENT B - BARRIER LAYOUT



<p>+ Generator Exhaust</p> <p>Black Start Building</p> <p>20-ft, 0.6 NRC Barrier</p>		  Scale in Feet	<p>Attachment B PPMS Oregon Clean Energy Barrier Layout</p>
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ATTACHMENT C- SOUND LEVEL CONTOURS

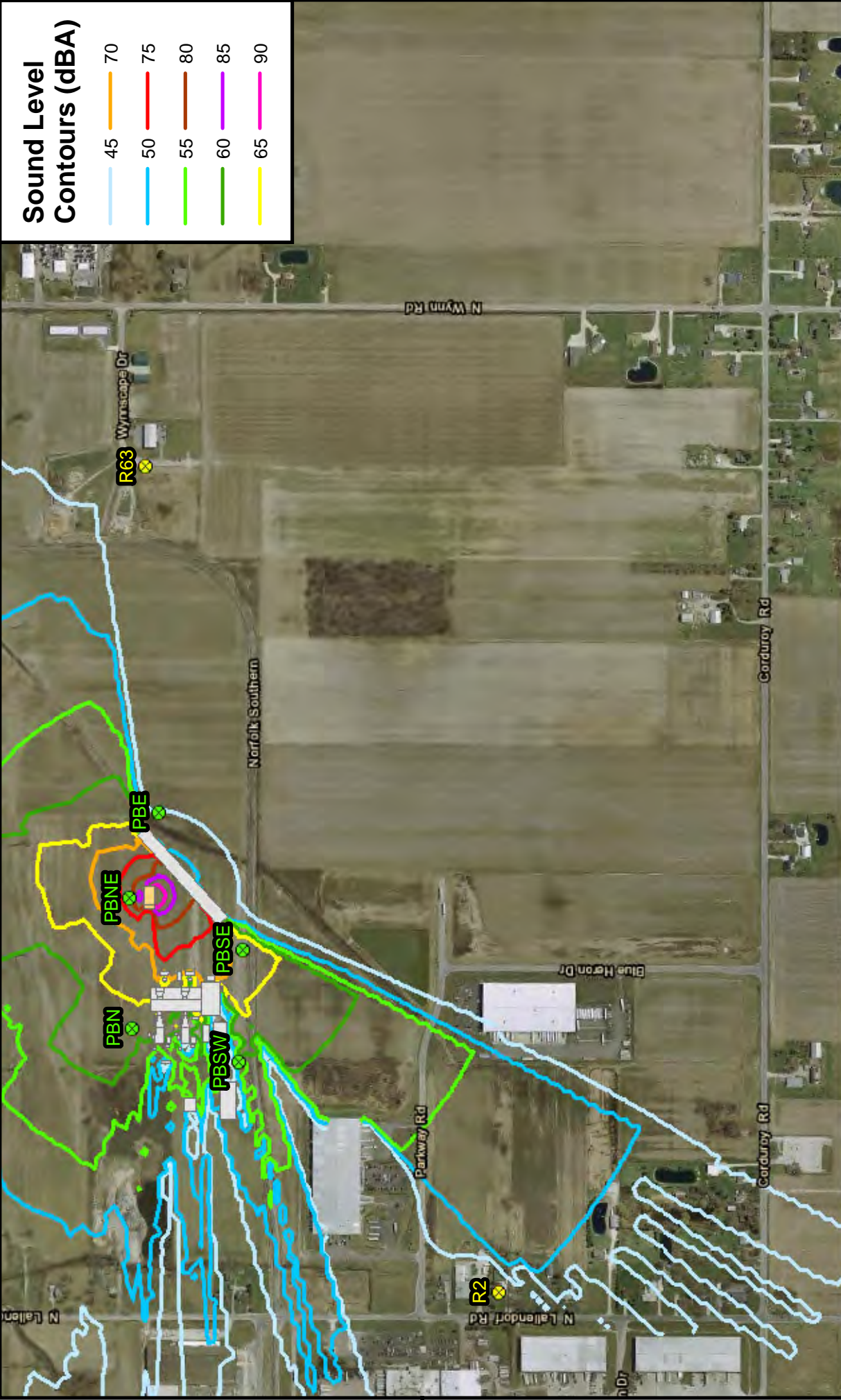


Figure C-1
PPMS
Oregon Clean Energy
Sound Level Contours
Scenario 1 Unmitigated

Scale in Feet

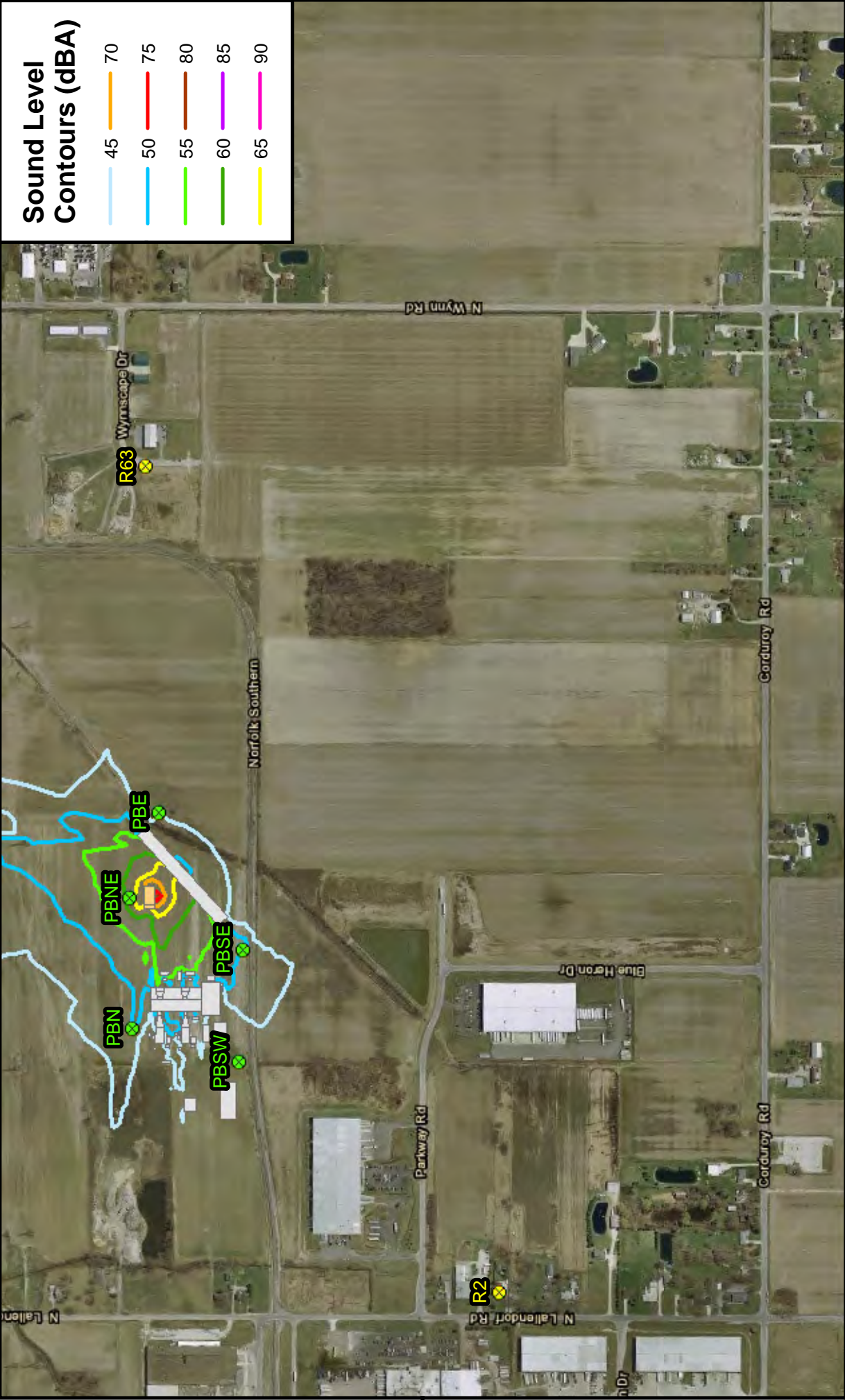
700 350 0 700

Residential Receivers (R)

Property Boundary Receivers (PB)

Existing Facility

Black Start Building



- Residential Receivers (R)
- Property Boundary Receivers (PB)
- Existing Facility
- Black Start Building

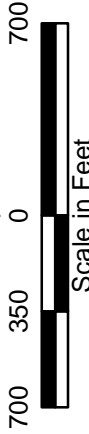
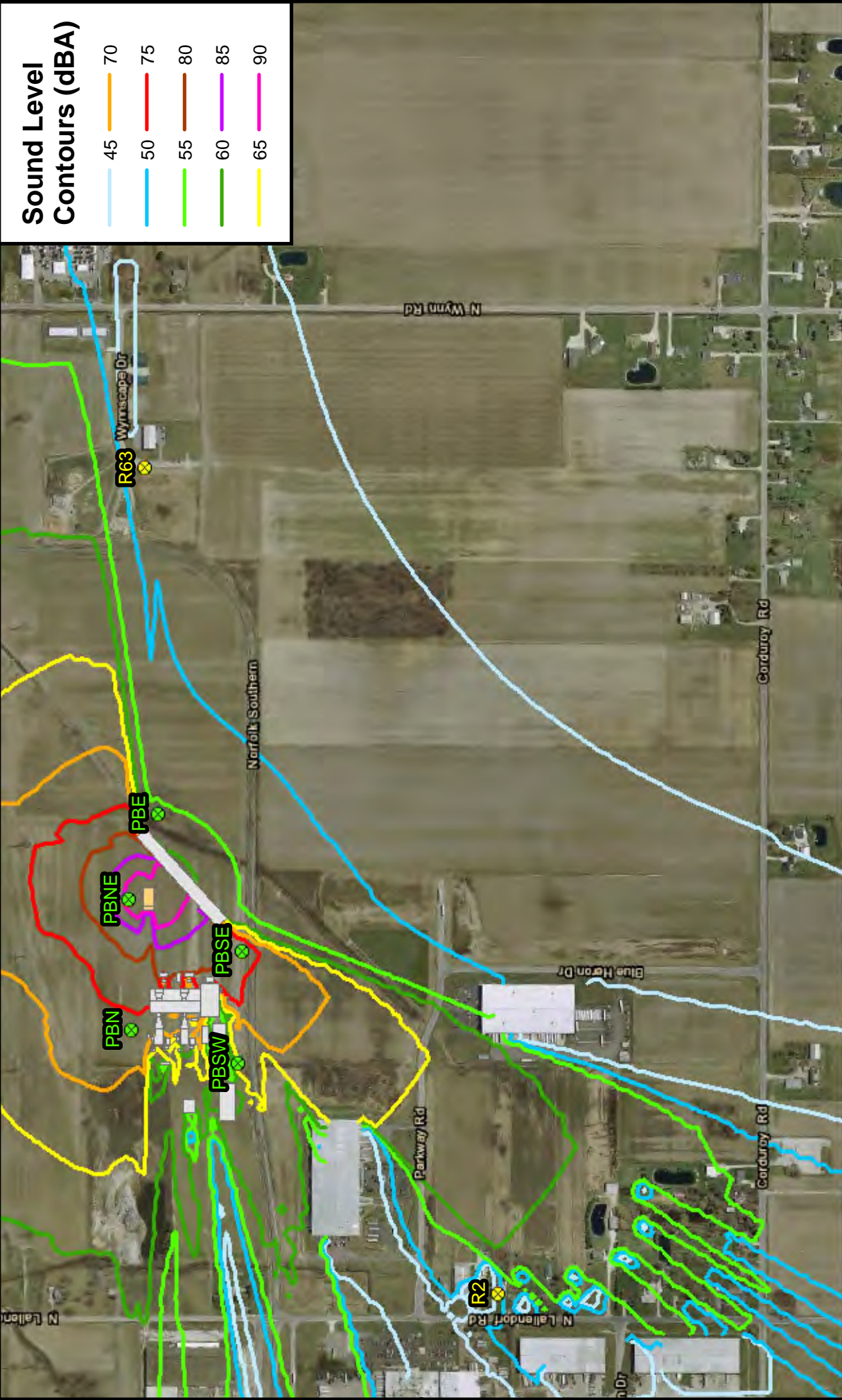


Figure C-2
PPMS
Oregon Clean Energy
Sound Level Contours
Scenario 1 Mitigated





**Sound Level
Contours (dBA)**

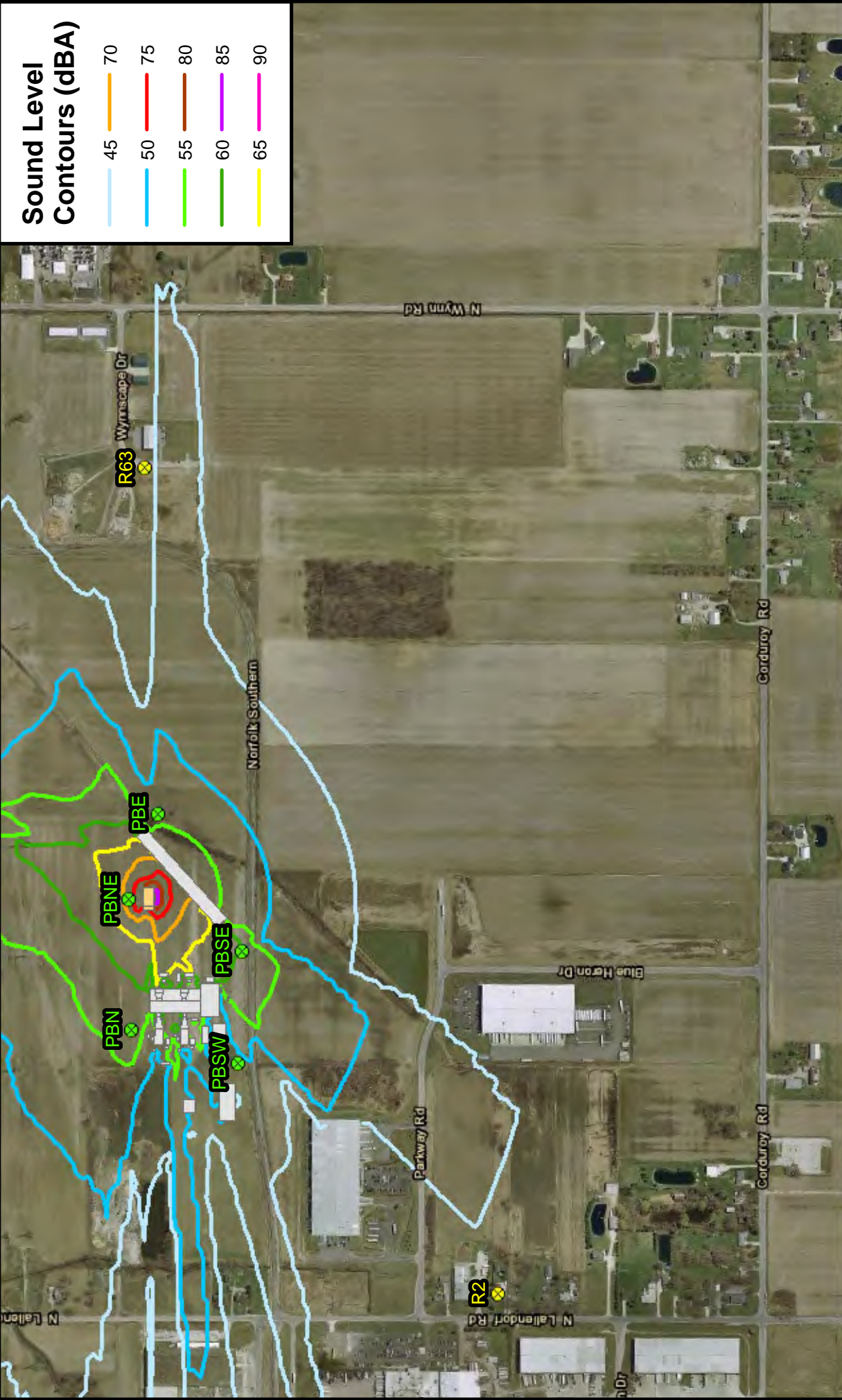
- 45
- 50
- 55
- 60
- 65
- 70
- 75
- 80
- 85
- 90

- Residential Receivers (R)
- Property Boundary Receivers (PB)
- Existing Facility
- Black Start Building



Figure C-3
PPMS
Oregon Clean Energy
Sound Level Contours
Scenario 2 Unmitigated





Residential Receivers (R)

Property Boundary Receivers (PB)

Existing Facility

Black Start Building

Figure C-4
PPMS
Oregon Clean Energy
Sound Level Contours
Scenario 2 Mitigated

**BURNS
McDONNELL**

NORTH

700 350 0 700

Scale in Feet

This foregoing document was electronically filed with the Public Utilities

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Case No(s). 18-1466-EL-BGA

Summary: Application of Oregon Clean Energy, LLC for Fifth Amendment of its Certificate of Environmental Compatibility and Public Need electronically filed by Teresa Orahod on behalf of Dylan F. Borchers