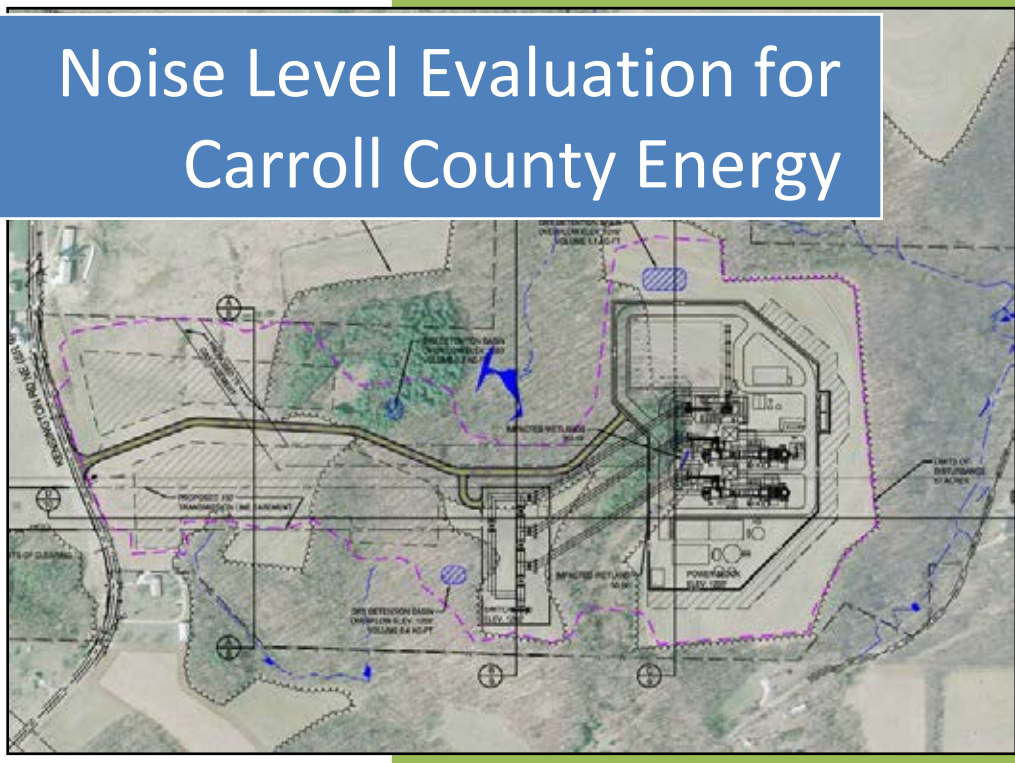
Appendix K: Operational Sound Level Impact Report

2013

Noise Level Evaluation for Carroll County Energy



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Report No. 1905

November 2013

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Abbreviations

ACC	Air Cooled Condenser
ACHE	Air Cooled Heat Exchanger
Aux	Auxiliary
CCE	Carroll County Energy
CT	Combustion Turbine
CTG	Combustion Turbine Generator
dB	Decibels
dBA	A-weighted Decibels
GE	General Electric
GSU	Generator Step-Up
HRSG	Heat Recovery Steam Generator
HVAC	Heating, Ventilation and Air Conditioning
ISO	International Organization for Standardization
L_{EQ}	Equivalent Energy Level
Lp	Sound Pressure Level
LP	Low Pressure
Lw	Sound Power Level
mbar	Millibars
MTA	Michael Theriault Acoustics, Inc.
NSA	Noise Sensitive Area
OPSB	Ohio Power Siting Board
Facility	Carroll County Energy
PWL	Sound Power Level
SJAE	Steam Jet Air Ejector
SPL	Sound Pressure Level
SrcType	Source Type
STC	Sound Transmission Class

1.0 Executive Summary

Carroll County Energy LLC is proposing to construct and operate Carroll County Energy (the Facility), a combined-cycle power generation plant in Carroll County, Ohio. An analysis was conducted to evaluate Facility noise levels and recommend mitigation measures to meet suitable noise level criteria. The general scope consisted of: 1) selecting an appropriate noise level design goal for the Facility (the Design Goal); 2) developing a computer-generated acoustical model specific to the site; 3) predicting noise levels at property boundaries and residential locations; and 4) assessing any need for noise control measures in order to achieve the Design Goal.

A noise level design goal of 45 dBA at nearby residences was selected for the Facility during full load operation, since this limit is considerably lower than the most-restrictive levels approved for prior OPSB projects, and appreciably lower than many laws, ordinances, regulations and standards promulgated throughout the U.S. for the control of industrial noise at residential land uses. Moreover, the limit is consistent with: 1) levels historically recommended by acoustical consultants as acceptable for indoor settings; 2) criteria for the avoidance of speech interference and sleep disturbance; and 3) general community noise guidelines.

Analysis results showed that noise levels for a 'conventional' outdoor facility would exceed the Design Goal at residential receivers by up to ten (10) decibels, and therefore an acoustical mitigation plan was developed to achieve 45 dBA. Although the specific noise mitigation plan implemented will be selected during the detailed engineering phase of the project, a successful program will likely consist of high-performance silencers within the air intake ductwork of the combustion turbines; acoustically insulated combustion turbine air intake weather hoods; close-fitted acoustical barriers around the combustion turbine generators and duct burner skids; silencers installed on fans providing ventilation air for the turbine compartments; combustion turbine exhaust noise attenuated via the HRSG units and HRSG stack silencing; acoustical shrouds and/or thicker walls for the HRSG transition ducts and boiler sections; low-noise air cooled condenser; low-noise air cooled heat exchanger; enclosures around boiler feedwater pumps; a building enclosing the steam turbine and associated equipment; acoustically treated ventilation openings for the steam turbine building; low-noise ammonia forwarding pumps; low-noise fuel gas metering and regulating equipment; and a building enclosing water treatment equipment.

1.1 General Information on Noise

The following section briefly introduces some commonly used environmental noise terms.

Noise. Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that interferes with or disrupts normal activities. Noise is measured using a standardized instrument called a 'sound level meter'. All sound level meters are equipped with small microphones that detect minute changes in atmospheric pressure caused by the vibration of air molecules. Healthy human hearing can detect pressures as low as 0.00002 Pascals (threshold of hearing) to more than 100 Pascals (threshold of pain).[1] Since this dynamic range is enormous (greater than one million to one) sound pressures are reported using a logarithmic scale, which compresses the numbers to keep them more manageable. Once converted, they are referred to as sound pressure levels, followed by 'decibels' (abbreviated dB) as the unit of measure. On a logarithmic scale, the threshold of hearing and the threshold of pain become 0 and about 130 decibels, respectively.

A-Weighted Levels. Noise is generally characterized by amplitude (level) and by frequency (pitch). Amplitude can be reported using various human-perception scales, similar to reporting temperature in terms of wind chill or humidity in terms of dew point. The latter are better indicators of perceived cold or dampness, respectively. Similarly, sound level measurements are often reported using the 'A-weighting' scale of a sound level meter. A-weighting slightly boosts high frequency sound, while reducing low frequency components (similar to the way stereo bass and treble controls work) providing a better indicator of perceived loudness at relatively modest volumes. These measures are called A-weighted levels (abbreviated dBA). Table 1 provides A-weighted noise levels for familiar noise sources and activities.

1 - A Pascal is a unit of pressure (one Pascal is equivalent to about 0.02 lbs/ft^2). One Pascal of pressure will produce a sound pressure level of 94 dB.

Table 1: Common Sound Levels/Sources and Subjective Human Responses		
Thresholds/ Noise Sources	**Noise Level (dBA)**	**Subjective Evaluations**
Human Threshold of Pain Carrier Jet Takeoff (50 feet)	140	Deafening
Siren (100 feet) Loud Rock Band	130	
Jet Takeoff (200 feet) Auto Horn (3 feet)	120	
Chain Saw Noisy Snowmobile	110	
Lawn Mower (3 feet) Noisy Motorcycle (50 feet)	100	
Heavy Truck (50 feet)	90	Very Loud
Pneumatic Drill (50 feet) Busy Urban Street, Daytime	80	
Normal Automobile at 50 mph Vacuum Cleaner (3 feet)	70	Loud
Large Air Conditioning Unit (20 feet) Conversation (3 feet)	60	
Quiet Residential Area Light Auto Traffic (100 feet)	50	Moderate
Library Quiet Home	40	
Soft Whisper	30	Faint
Slight Rustling of Leaves	20	
Broadcasting Studio	10	Very Faint
Threshold of Human Hearing	0	

Berger, 2004; Harris, 1991; Beranek, 1988

Sound Power and Sound Pressure Levels. Sound power level (PWL) is a single number that ranks how much sound energy is produced by a piece of equipment, independent of the surroundings or environment, and allows one piece of equipment to be directly compared with another. Sound pressure level (SPL) is the measureable vibration of air molecules at a specific location, *as a result of sound power*. As discussed in Section 3.1

(General Modeling Procedures), sound power levels for each major piece of equipment were used in a computer-generated acoustical model of the Facility to predict property line and off-site sound pressure levels.

Sound power level is analogous to the wattage of a light bulb, whereas sound pressure level is analogous to brightness. Sound power is independent of the environment and distance from a source; sound pressure is dependent on the environment as well as on distance from the source. When a 75-watt light bulb is placed in a room painted white or black, it still radiates the same amount of energy. In other words, its power level always remains the same. However, the apparent brightness of the light bulb changes as the room color changes or the distance to the light bulb changes. In a room painted white, many reflections cause the apparent brightness of the bulb to increase, and in a room painted black, much of the light is absorbed, so the apparent brightness decreases. The bulb's brightness also changes depending on the distance from it. Similarly, sound pressure levels change depending on the type of environment a noise source is placed in (e.g., a large reverberant hall or a small absorptive recording studio) and also changes with distance from the noise source. Again however, the sound power of the noise source does not change, just like the wattage of a light bulb does not change.

For sound, a room painted white is analogous to a contemporary home with sparse furnishings and hardwood floors, i.e., little absorbing material and many reflections. A room painted black is analogous to a colonial home with rugs, overstuffed chairs, and paintings on the wall, i.e., many absorbing materials and few reflections. A blender or vacuum cleaner would have a higher sound pressure level in the contemporary home versus the colonial one. Similar to light bulb wattage however, the sound power level of either appliance would remain the same regardless of the room it was placed in.

2.0 Site Environment

The proposed Facility is sited on a parcel of land between Route 9 (Kensington Road Northeast) and Route 275 (Mobile Road Northeast) in Carroll County Ohio, as shown in Figure 1. The parcel is on privately owned land that is partially forested and partially used for agricultural purposes. Surrounding land uses are generally agricultural with few residential properties located in the vicinity of the Facility Site.

2.1 Facility Description

Facility equipment will consist of two General Electric (GE) 7F 5-Series natural gas-fired combustion turbine generators (CTGs) with associated heat recovery steam generators (HRSGs), a steam turbine generator enclosed within a building, an air cooled condenser (ACC), air cooled heat exchanger (ACHE), generator step-up (GSU) transformers, and various motors, pumps and equipment skids. Table 2 summarizes noise-emitting equipment.

2.2 Nearby Noise-Sensitive Areas

Residential dwellings are generally considered noise sensitive areas (NSAs), since indoor and/or outdoor activities at these locations may be subject to interference from noise. Industrial, commercial, and agricultural land uses are generally not sensitive to noise. As summarized in Table 3 and shown in Figure 2, the nearest residences to the site are single-family homes along Mobile Road Northeast to the south and east of the Facility. Additional residences lie to the west along Route 9.[2]

2 - Residences were identified during a site reconnaissance and baseline ambient noise survey conducted in May 2013 by Tetra-Tech, "Baseline Sound Survey Report", June 2013 (*see Appendix*).

Table 2: Major Sources of Noise	
Equipment Description	**Quantity [3]**
Air Cooled Condenser (35 Cells)	1
Air Cooled Condenser Condensate Pump	2
Air Cooled Heat Exchanger (24 Cells)	1
Ammonia Forwarding Pump	2
Ammonia Injection Skid	2
Auxiliary Transformer	2
Boiler Feedwater Pump (Enclosed)	2
Cycle Booster Pump	1
Demineralization Water Pumps	1
Fuel Gas Metering and Regulating Station	1
Fuel Gas Performance Heater	2
GE 7F 5-Series Combustion Turbine Generator	2
GSU Transformer	3
HRSG	2
HRSG Duct Burner Skids	2
HRSG Exhaust Stack	2
LP Recirculation Pump	2
Miscellaneous Small Transformers	6
Potable Water Pump	1
Roof-Mounted HVAC Fans	12
Service Water Pump	1
SJAE Skid	1
Steam Turbine Generator (Within a Building)	1
Vacuum Pump Skid	1
Water Treatment Equipment (Within a Building)	1

3 - Quantity active during full load operation. Unless otherwise noted, for pumps and compressors installed in sets of 2 or 3, it is assumed that one of the set will be reserved for backup and remain idle. Auxiliary boilers and other equipment that will operate intermittently are assumed to be offline during baseload operation.

Table 3: Nearest Noise-Sensitive Areas			
Designation	**Description**	**Approximate Distance from HRSG Stacks**	**Direction from Facility Site**
R1	Residence on Mobile Road Northeast	1900 feet	Northeast
R2	Residence on Mobile Road Northeast	1100 Feet	Northeast
R3	Residence on Mobile Road Northeast	700 Feet	East
R4	Residence on Mobile Road Northeast	580 Feet	South
R5	Residence on Mobile Road Northeast	1000 Feet	South
R6	Residence on Route 9	2100 Feet	West
R7	Residence on Route 9	2700 Feet	West

2.3 Noise Level Design Goal

In order to establish a noise level design goal for the Facility, it was useful to review: 1) applicable laws, ordinances, regulations and standards (LORS) for the control of noise; 2) regulatory agency (e.g., Ohio Power Siting Board) approvals for similar projects; and 3) more general noise control criteria.

Applicable Laws, Ordinances, Regulations and Standards. There are no numerical (decibel) limits applicable to the CCE at the local, county, state or federal level.

Previous OPSB Approvals. A noise level limit of 50 dBA at residential receivers was generally identified as the most restrictive performance standard to be achieved, based on a review of OPSB approvals for combustion turbine merchant power projects similar to the Facility, (including Dresden, Fremont, Hanging Rock, Oregon, Rolling Hills, Washington, and Waterford). Additionally, this level is widely promulgated by state and local jurisdictions throughout the U.S. in LORS for the control of industrial noise at residential receivers.

Table 4 – Summary of Residential Noise Levels/Limits from OPSB Approvals				
Project Name	**Case**	**Type**	**Rating (MWe)**	**Noise Level Allowed at Nearest Residences (dBA)**
Dresden	00-686-EL-BGN	CCGT	550	< 60
Fremont	00-1527-EL-BGN	CCGT	700	≤ 50
Hanging Rock	01-175-EL-BGN	CCGT	1240	51 – 59
Oregon	12-2959-EL-BGN	CCGT	799	57 – 65
Rolling Hills	00-1616-EL-BGN	SCGT	800	61 – 62
Washington	00-0670-EL-BGN	CCGT	620	< 50
Waterford	00-0723-EL-BGN	CCGT Mode	850	< 50
Waterford	00-0723-EL-BGN	SCGT Mode	167	< 58

CCGT – Combined Cycle Gas Turbine
SCGT – Simple Cycle Gas Turbine

Speech Interference Criteria. Interference with speech communication has long been recognized as an important consideration of noise control. Speech spoken in relaxed conversation is fairly well intelligible when background (i.e., Facility) noise levels do not exceed 55 dBA.[4]

Similarly, to be able to hear and understand spoken messages indoors, it is recommended that background sound levels do not exceed 45 dBA (L_{EQ}). Since the noise reduction for typical homes with partially open windows is about fifteen (15) decibels, an exterior noise level up to 60 dBA would result in acceptable levels of indoor noise for speech communication, (i.e., 45 dBA $_{\text{Interior Noise Level}}$ + 15 dBA $_{\text{Window Noise Reduction}}$ = 60 dBA $_{\text{Exterior Noise Level}}$).

4 - *Community Noise*, Archives of the Center for Sensory Research, Berglund, B., & Lindvall, T. (Eds.), 1995

Sleep Interference Criteria. In order to avoid negative effects on sleep, indoor sound levels (L_{EQ}) should not exceed 30 to 35 dBA.[5] Since noise reduction for typical homes with partially open windows is 15 decibels, exterior noise levels of 45 to 50 dBA result in indoor levels consistent with recommended criteria, (i.e., 35 dBA $_{\text{Interior Noise Level}}$ + 15 dBA $_{\text{Window Noise Reduction}}$ = 50 dBA $_{\text{Exterior Noise Level}}$). Moreover, interior levels of about 35 dBA are consistent with those historically recommended by acoustical consultants as acceptable for indoor settings. [6]

Community Noise Guidelines. During the daytime, few people are seriously annoyed when noise levels are less than 55 dBA, or moderately annoyed when less than 50 dBA. In 1999, the World Health Organization recommended that sound levels during nighttime periods should not exceed 45 dBA, to allow people to sleep with bedroom windows open. [7]

Design Goal. An exterior noise level design goal of 45 dBA at nearby residences during full load operation was selected for the Facility, since this limit is considerably lower than the most-restrictive levels approved for prior OPSB projects, and appreciably lower than many laws, ordinances, regulations and standards promulgated throughout the U.S. for the control of industrial noise at residential land uses. Moreover, the limit is consistent with: 1) levels historically recommended by acoustical consultants as acceptable for indoor settings; 2) criteria for the avoidance of speech interference and sleep disturbance; and 3) general community noise guidelines.

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5 - *Community Noise*, Archives of the Center for Sensory Research, Berglund, B., & Lindvall, T. (Eds.), 1995

6 - *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, United States Environmental Protection Agency, Office of Noise Abatement and Control, USEPA Report 550/9-74-004 (March 1974).

7 - *Guidelines For Community Noise*, World Health Organization, Berglund, B., & Lindvall, T. Schwela, D. (Eds.), 1999

3.0 Acoustical Modeling

In order to evaluate expected Facility noise levels and identify any need for mitigation measures, SoundPLAN® 7.2 was used to create a three-dimensional, computer-generated acoustical model of the Facility to predict property line and off-site residential noise levels. The model is based on site plans provided by Kiewit Power Engineers (*see Figures 3 and 4*). SoundPLAN® 7.2 is an internationally distributed software package designed for estimating noise emissions from industrial facilities.

3.1 General Modeling Procedures

Sound power levels (PWL) for all major noise sources (combustion turbine generators, air cooled condenser, HRSG exhaust stacks, etc.) were estimated using noise level data from manufacturers, in-house measurement data, and data from industry-standard prediction algorithms.[8] As discussed in Section 1.1, sound power levels provide a convenient means to rate the total amount of noise produced by a source, regardless of distance or effects of the environment. Table 5 summarizes modeled Facility equipment noise levels.

8 - Edison Electric Institute, "Electric Power Plant Environmental Noise Guide", 1978.

Table 5: Equipment Noise Levels as Modeled		
Equipment Description	**Noise Level Per Unit (dBA)[9]**	**SPL/PWL**
Air Cooled Condenser (35 Cells)	52	SPL at 400 feet
Air Cooled Condenser Condensate Pump	90	SPL at 3 feet
Air Cooled Heat Exchanger (24 Cells)	49	SPL at 400 feet
Ammonia Forwarding Pump	75	SPL at 3 feet
Ammonia Injection Skid	85	SPL at 3 feet
Auxiliary Transformer	89	PWL
Boiler Feedwater Pump (Enclosed)	75	SPL at 3 feet
Cycle Booster Pump	85	SPL at 3 feet
Demineralization Water Pumps	85	SPL at 3 feet
Fuel Gas Metering and Regulating Station	85	SPL at 3 feet
Fuel Gas Performance Heater	85	SPL at 3 feet
GE 7F 5 Series Combustion Turbine Generator	54	SPL at 400 feet
GSU Transformer	103	PWL
HRSG	50	SPL at 400 feet
HRSG Duct Burner Skids	91	PWL
HRSG Exhaust Stack	40	SPL at 400 feet
LP Recirculation Pump	85	SPL at 3 feet
Miscellaneous Small Transformers	83	PWL
Potable Water Pump	85	SPL at 3 feet
Roof-Mounted HVAC Fans	80	SPL at 3 feet
Service Water Pump	85	SPL at 3 feet
SJAE Skid	85	SPL at 3 feet
Steam Turbine Generator (Inside Building)	85	SPL at 3 feet
Vacuum Pump Skid	85	SPL at 3 feet
Water Treatment Equipment (Inside Building)	80	SPL at 3 feet

Equipment power levels were adjusted for the reduction of sound by distance (*geometrical spreading*); the molecular absorption of sound by air (*air absorption*); and the absorption and reflection of sound by the ground (*ground effect*). Sound levels were further modified by the effects of shielding, (i.e., via terrain, tanks, buildings, etc.);

9 - Free-field conditions. Levels include mitigated acoustical design.

attenuation by forested land areas; and by changes in source levels with direction (*directivity*) to estimate property line and off-site noise levels.

3.2 Modeling Parameters

Acoustical modeling was based on ISO 9613-2, "Attenuation of Sound During Propagation Outdoors" adopted by the International Organization for Standardization (ISO) in 1996. This standard provides a widely accepted method for the calculation of outdoor noise levels from sources of known sound emission. The following sections briefly discuss the conditions under which the predictions are considered valid.

Meteorology. ISO 9613 is designed to estimate far-field noise levels under favorable sound-propagation conditions (that is, when wind is blowing from the Facility towards receivers, or under well-developed temperature inversions, which commonly occur on clear, calm nights).[10] For other weather patterns, such as during upwind conditions, or for ground based temperature lapses (*see Footnote 10)* observed noise levels would generally be less than predicted.

Air Absorption. Absorption/attenuation of sound by air is dependent on the frequency of sound as well as on temperature and to a lesser degree, relative humidity. In general, high temperatures and low humidity increase high-frequency sound absorption, which tends to reduce far-field predicted noise levels. Specific values used in the model for temperature (10^{o}C), relative humidity (70%), and barometric pressure (1013 mbar),

10 - Temperature inversions typically develop during calm, cloudless nights, when the ground is no longer being heated by the sun. As a result, air near the ground begins to cool, forming a thicker and thicker 'blanket' as the evening progresses. In practical terms, this means that temperature is ***increasing*** with elevation (i.e., the air is actually warmer at higher elevations, as compared to near the ground) and hence the term *temperature inversion*. The effect of temperature inversion on sound propagation is to 'bend' sound waves back towards the ground, producing near worse-case noise levels at a receiver. In contrast, *temperature lapse* commonly develops during calm, cloudless ***daytime*** periods, when the ground is being heated by the sun, which in turn produces a warm layer of air next to the ground, as opposed to at higher elevations. This means that temperature ***decreases*** with elevation, causing sound waves to bend upwards and reducing noise levels observed at a far-field observer.

represent cold and humid conditions, resulting in a generally conservative estimate of atmospheric attenuation.

Ground Absorption. Noise level predictions are dependent on both the type and extent of ground condition assumed for the site and receiver areas. Areas of ground at the Facility site were modeled as 'hard', or completely reflective, which is typical of surfaces common to industrial installations such as pavement, poured concrete, and tamped soil. Off-site ground areas were conservatively assumed to be 50% absorptive, which is typical of moderately vegetated land.

Reflections. For complex industrial installations with a large number of obstacles (such as buildings, tanks, equipment, etc.), reflected energy components can be considerable. Therefore, the number of reflections for the model was conservatively set at two, allowing the effects of multiple acoustic ray paths from a single source to be accounted for.

Area Attenuation. Attenuation of sound due to areas of land around the Facility site that are densely forested was calculated in accordance with ISO 9613 standards for foliage.

Directivity. A vertical directivity correction was used to account for changes in source levels with direction, such as occurs with the HRSG stack exhausts and air-cooled condenser fans.

Model Accuracy. ISO 9613 predictions are expected to agree with field measurements within a $\pm$ 3 dBA range out to a distance of 1,000 meters for the meteorological and environmental conditions described. As such, noise levels presented in this analysis represent a 'best estimate' of worst-case operating noise emissions (i.e., all units operating at nominal full capacity and favorable sound propagating conditions).

3.3 Noise Level Assessment

'Conventional' Plant Design. An analysis was conducted using only noise controls that are typically provided by manufacturers as standard equipment. These controls would include high-performance silencers within the air intake ductwork of the combustion turbines to reduce high-frequency compressor and turbine blade aerodynamic noise emissions; silencers installed on fans providing ventilation air for the turbine compartments; combustion turbine exhaust noise attenuation provided via the HRSG units; enclosures around the HRSG boiler feedwater pumps; a building around the steam turbine and associated equipment; and a building around water treatment equipment.

As summarized in Table 6, Facility noise levels using 'standard' equipment are predicted to exceed the Design Goal (45 dBA) by up to ten (10) decibels at nearby residential receivers. Modeling results for this case are also presented as a series of noise level contours in Figure 5, and detailed modeling results are provided in the Appendix.

Table 6: Predicted Noise Levels Using 'Standard' Plant Design

Receiver	Loudest Predicted CCE Noise Level (dBA)	CCE Noise Level Design Goal (dBA)	Exceedence (+) /Margin (-)
R1	49	45	+4
R2	53	45	+8
R3	55	45	+10
R4	55	45	+10
R5	51	45	+6
R6	47	45	+2
R7	49	45	+4

3.4 Mitigated Acoustical Design

Since predicted noise levels using a 'standard' plant design would exceed 45 dBA at residential receivers, the acoustical model was iteratively run to determine additional mitigation measures that would achieve the Design Goal. One such mitigated design includes close-fitted acoustical barriers around the CTGs to reduce casing radiated noise from the generators, turbine compartments, load compartments, inlet plenums, exhaust diffusers and duct burner skids; CTG air inlet noise further attenuated by acoustically insulated weather hoods; low-noise air cooled condenser and air cooled heat exchangers; HRSG casing radiated noise reduced by means of acoustical shrouds on transition ducts and boiler sections and/or increasing the thickness of steel plate used in sidewall construction; HRSG exhaust noise further attenuated by absorptive silencers placed either in the HRSG ductwork leading to the stacks, or hung within the stacks themselves; low noise ammonia forwarding pumps and fuel gas metering/regulating equipment; and STG building ventilation openings fitted with acoustical-grade louvers. Table 7 summarizes the mitigated acoustical design.

As presented in Table 8, Facility noise levels using this mitigated design are predicted to be equal to or less than 45 dBA at all residential receivers. Moreover, Facility noise emissions along the property line will range from about 38 to 51 dBA, and therefore be substantially less than often required for an industrial emitter within an industrial land use zone (70 to 75 dBA), as well as consistent with limits imposed at industrial property lines when emitters are abutted by residential land use zones (50 to 55 dBA). Modeling results using the mitigated acoustical design are also presented as a series of noise level contours in Figure 6, and detailed modeling results are provided in the Appendix.

Table 7: Mitigated Acoustical Design	
Noise Source	**Mitigation Method**
Air Cooled Condenser	Low-Noise Design
Air Cooled Heat Exchanger	Low-Noise Design
Ammonia Forwarding Pumps	Low-Noise Design
Boiler Feedwater Pumps	Enclosures
CTG Air Inlets	Silencers in Ductwork; Insulated Weather Hoods
CTG Casing	Close-Fitted Acoustical Barriers
CTG Exhausts	Attenuation by HRSG Units; Stack Silencing
CTG Turbine Compartment Ventilation	Ventilation Fan Silencing
Fuel Gas Metering Area	Low-Noise Design
HRSG	Acoustical Shrouds and/or Thicker Wall Plating
Steam Turbine Generator	Enclosed Within a Building Utilizing Acoustical Ventilation Louvers
Water Treatment Equipment	Enclosed Within a Building

Table 8: Predicted Residential Noise Levels Using Mitigated Acoustical Design			
Receiver	**Highest Predicted CCE Noise Level (dBA)**	**CCE Noise Level Design Goal (dBA)**	**Exceedence (+) /Margin (-)**
R1	39	45	-6
R2	44	45	-1
R3	45	45	0
R4	45	45	0
R5	43	45	-2
R6	39	45	-6
R7	41	45	-4

4.0 Summary

Carroll County Energy LLC is proposing to construct and operate Carroll County Energy (the Facility), a combined-cycle power generation plant in Carroll County, Ohio. An analysis was conducted to evaluate Facility noise levels and recommend mitigation measures to meet suitable noise level criteria.

A noise level design goal of 45 dBA at nearby residences was selected for the Facility during full load operation, since this limit is considerably lower than the most-restrictive levels approved for prior OPSB projects, and appreciably lower than many laws, ordinances, regulations and standards promulgated throughout the U.S. for the control of industrial noise at residential land uses. Moreover, the limit is consistent with: 1) levels historically recommended by acoustical consultants as acceptable for indoor settings; 2) criteria for the avoidance of speech interference and sleep disturbance; and 3) general community noise guidelines.

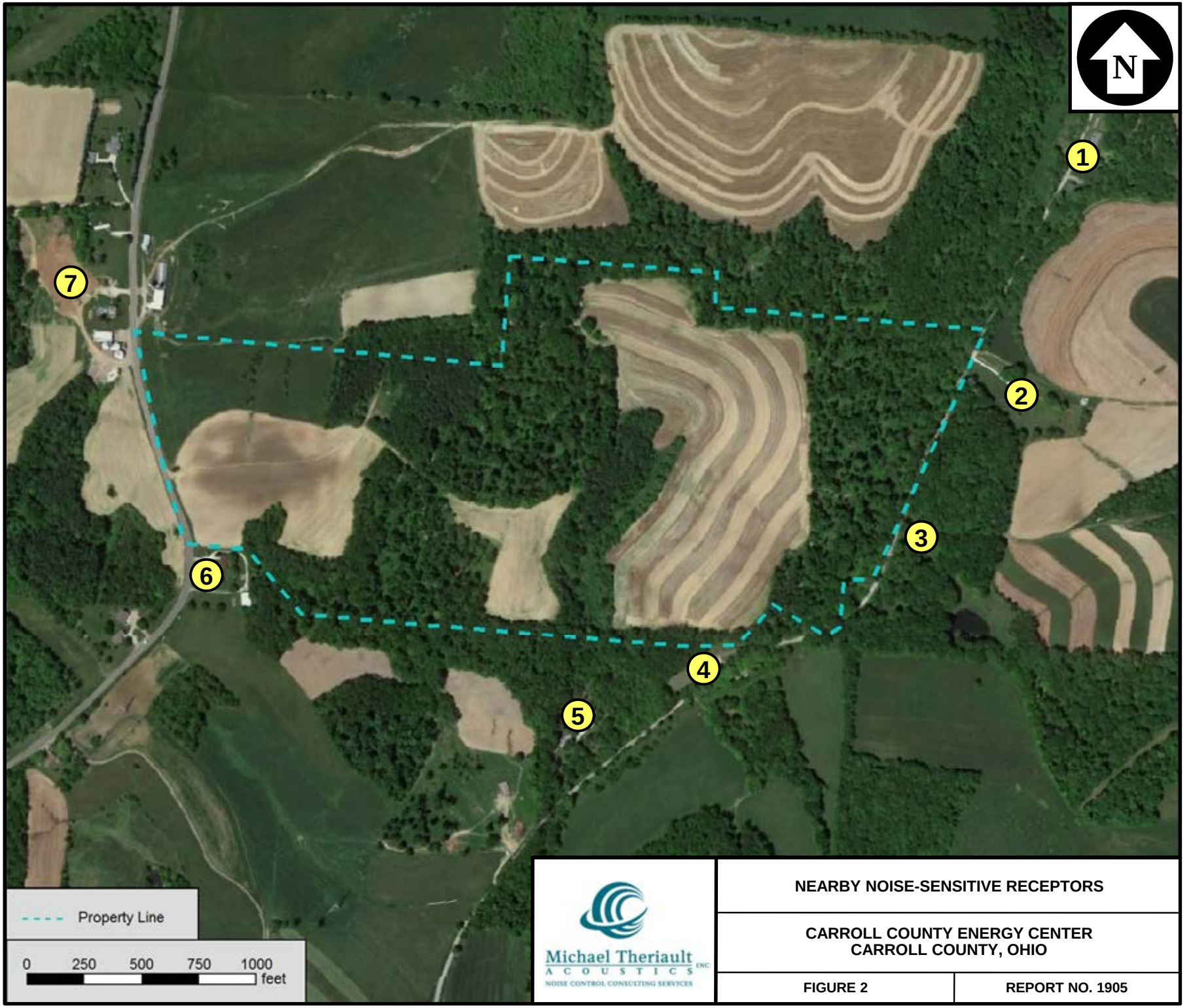
Analysis results showed that Facility noise levels are predicted to achieve the 45 dBA Design Goal at all receivers by using high-performance silencers within the air intake ductwork of the combustion turbines; acoustically insulated combustion turbine air intake weather hoods; close-fitted acoustical barriers around the combustion turbine generators; silencers installed on fans providing ventilation air for the turbine compartments; combustion turbine exhaust noise attenuated via the HRSG units and HRSG stack silencing; acoustical shrouds and/or thicker walls for the HRSG transition ducts and boiler sections; low-noise air cooled condenser; low-noise air cooled heat exchanger; enclosures around the boiler feedwater pumps; a building enclosing the steam turbine and associated equipment; acoustically treated ventilation openings for the steam turbine building; low-noise ammonia forwarding pumps; low-noise fuel gas metering and regulating equipment; and a building enclosing water treatment equipment.

Michael Theriault INC
ACOUSTICS
NOISE CONTROL CONSULTING SERVICES

SITE AREA MAP

CARROLL COUNTY ENERGY CENTER
CARROLL COUNTY, OHIO

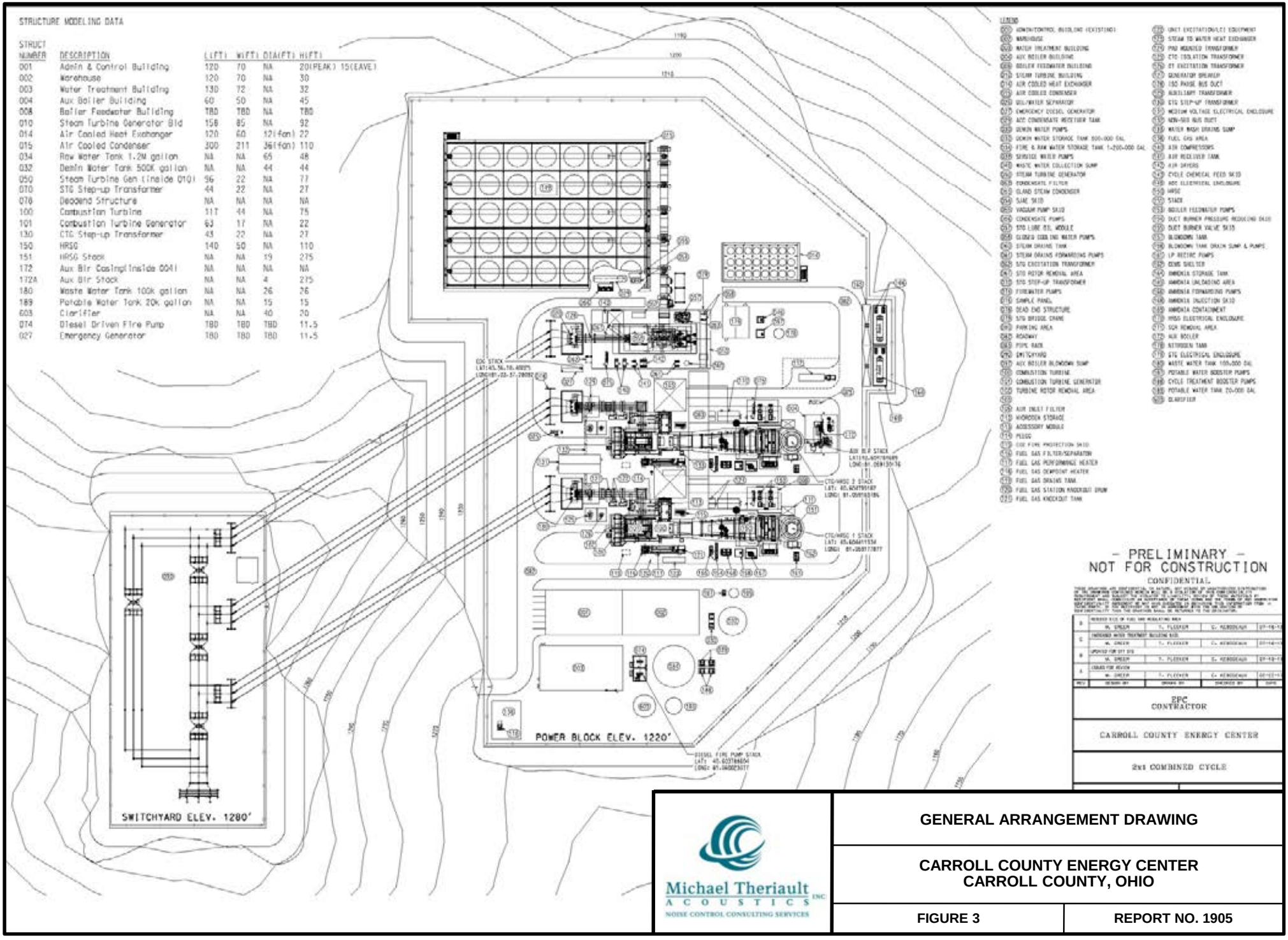
FIGURE 1	REPORT NO. 1905

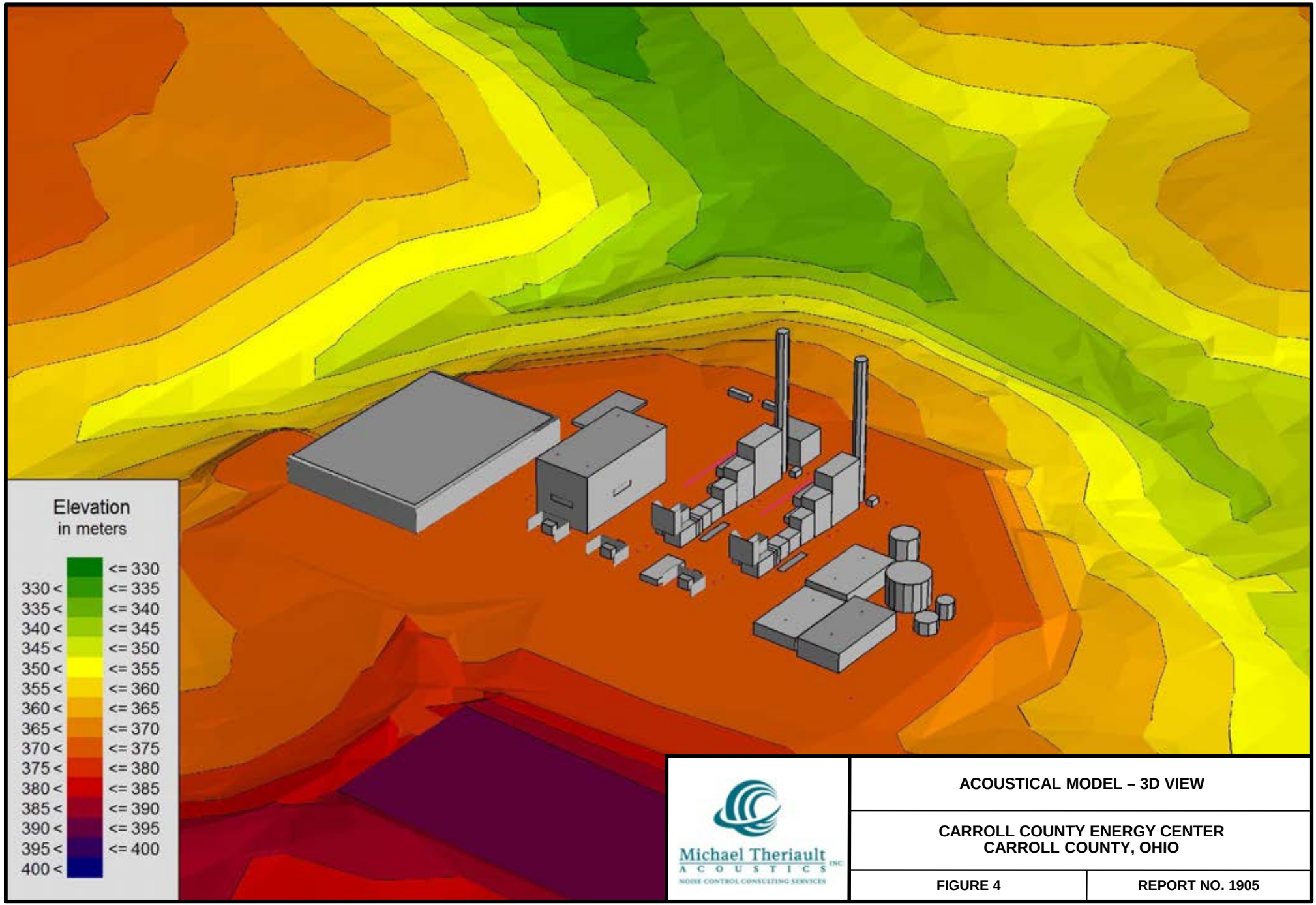


NEARBY NOISE-SENSITIVE RECEPTORS

CARROLL COUNTY ENERGY CENTER
CARROLL COUNTY, OHIO

FIGURE 2 | **REPORT NO. 1905**


STRUCTURE MODELING DATA
STRUCT NUMBER | DESCRIPTION | (LFT) | WIFT) | DIA(FT) | HIFT)
001 | Admin & Control Building | 120 | 70 | NA | 20(PEAK) 15(EAVE)
002 | Warehouse | 120 | 70 | NA | 30
003 | Water Treatment Building | 130 | 72 | NA | 32
004 | Aux Boiler Building | 60 | 50 | NA | 45
008 | Boiler Feedwater Building | TBD | TBD | NA | TBD
010 | Steam Turbine Generator Bld | 158 | 85 | NA | 92
014 | Air Cooled Heat Exchanger | 120 | 60 | 12(fan) | 22
015 | Air Cooled Condenser | 300 | 211 | 36(fan) | 110
034 | Raw Water Tank 1.2M gallon | NA | NA | 65 | 48
032 | Demin Water Tank 500K gallon | NA | NA | 44 | 44
050 | Steam Turbine Gen (inside 010) | 96 | 22 | NA | 77
070 | STG Step-up Transformer | 44 | 22 | NA | 27
078 | Deadend Structure | NA | NA | NA | NA
100 | Combustion Turbine | 117 | 44 | NA | 75
101 | Combustion Turbine Generator | 63 | 17 | NA | 22
130 | CTG Step-up Transformer | 43 | 22 | NA | 27
150 | HRSG | 140 | 50 | NA | 110
151 | HRSG Stack | NA | NA | 19 | 275
172 | Aux Blr Casing(inside 004) | NA | NA | NA | NA
172A | Aux Blr Stack | NA | NA | 4 | 275
180 | Waste Water Tank 100k gallon | NA | NA | 26 | 26
189 | Potable Water Tank 20k gallon | NA | NA | 15 | 15
603 | Clarifier | NA | NA | 40 | 20
074 | Diesel Driven Fire Pump | TBD | TBD | TBD | 11.5
027 | Emergency Generator | TBD | TBD | TBD | 11.5
LEGEND
ADMIN/CONTROL BUILDING (EXISTING)
WAREHOUSE
WATER TREATMENT BUILDING
AUX BOILER BUILDING
BOILER FEEDWATER BUILDING
STEAM TURBINE BUILDING
AIR COOLED HEAT EXCHANGER
AIR COOLED CONDENSER
OIL/WATER SEPARATOR
EMERGENCY DIESEL GENERATOR
ACC CONDENSATE RECEIVER TANK
DEMIN WATER PUMPS
DEMIN WATER STORAGE TANK 500,000 GAL
FIRE & RAW WATER STORAGE TANK 1,200,000 GAL
SERVICE WATER PUMPS
WASTE WATER COLLECTION SUMP
STEAM TURBINE GENERATOR
CONDENSATE POLISHER
GLAND STEAM CONDENSER
SJAE SKID
VACUUM PUMP SKID
CONDENSATE PUMPS
STG LUBE OIL MODULE
GLOBAL COOLING WATER PUMPS
STEAM DRAINS TANK
STEAM DRAINS FORWARDING PUMPS
STG EXCITATION TRANSFORMER
STG ROTOR REMOVAL AREA
STG STEP-UP TRANSFORMER
FIREWATER PUMPS
SAMPLE PANEL
DEAD END STRUCTURE
STG BRIDGE CRANE
PARKING AREA
ROADWAY
PIPE RACK
SWITCHYARD
AUX BOILER BLOWDOWN SUMP
COMBUSTION TURBINE
COMBUSTION TURBINE GENERATOR
TURBINE ROTOR REMOVAL AREA
AIR INLET FILTER
HYDROGEN STORAGE
ACCESSORY MODULE
PLUGS
FUEL GAS FILTER/SEPARATOR
FUEL GAS PERFORMANCE HEATER
FUEL GAS DEWPOINT HEATER
FUEL GAS DRAINS TANK
FUEL GAS STATION KNOCKOUT DRUM
FUEL GAS KNOCKOUT TANK
UNIT EXCITATION/LCI EQUIPMENT
STEAM TO WATER HEAT EXCHANGER
PAD MOUNTED TRANSFORMER
CTG ISOLATION TRANSFORMER
GT EXCITATION TRANSFORMER
GENERATOR BREAKER
ISO PHASE BUS DUCT
AUXILIARY TRANSFORMER
STG STEP-UP TRANSFORMER
MEDIUM VOLTAGE ELECTRICAL ENCLOSURE
NON-ISO BUS DUCT
WATER WASH DRAINS SUMP
FUEL GAS AREA
AIR COMPRESSORS
AIR RECEIVER TANK
AIR DRYERS
CYCLE CHEMICAL FEED SKID
ADC ELECTRICAL ENCLOSURE
HRSG
STACK
BOILER FEEDWATER PUMPS
DUCT BURNER PRESSURE REDUCING SKID
DUCT BURNER VALVE SKID
BLOWDOWN TANK
BLOWDOWN TANK DRAIN SUMP & PUMPS
LP ELECTRIC PUMPS
SCWE SHELTER
AMMONIA STORAGE TANK
AMMONIA UNLOADING AREA
AMMONIA FORWARDING PUMPS
AMMONIA INJECTION SKID
AMMONIA CONTAINMENT
HRSG ELECTRICAL ENCLOSURE
SCR REMOVAL AREA
AUX BOILER
RETROFEED TANK
STG ELECTRICAL ENCLOSURE
WASTE WATER TANK 100,000 GAL
POTABLE WATER BOOSTER PUMPS
CYCLE TREATMENT BOOSTER PUMPS
POTABLE WATER TANK 20,000 GAL
CLARIFIER
EDC STACK
AUX BLR STACK
CTG/HRSG 2 STACK
CTG/HRSG 1 STACK
DIESEL FIRE PUMP STACK
POWER BLOCK ELEV. 1220'
SWITCHYARD ELEV. 1280'
- PRELIMINARY -
NOT FOR CONSTRUCTION
CONFIDENTIAL
EPC CONTRACTOR
CARROLL COUNTY ENERGY CENTER
2x1 COMBINED CYCLE
Michael Theriault ACOUSTICS INC
NOISE CONTROL CONSULTING SERVICES
GENERAL ARRANGEMENT DRAWING
CARROLL COUNTY ENERGY CENTER
CARROLL COUNTY, OHIO
FIGURE 3
REPORT NO. 1905

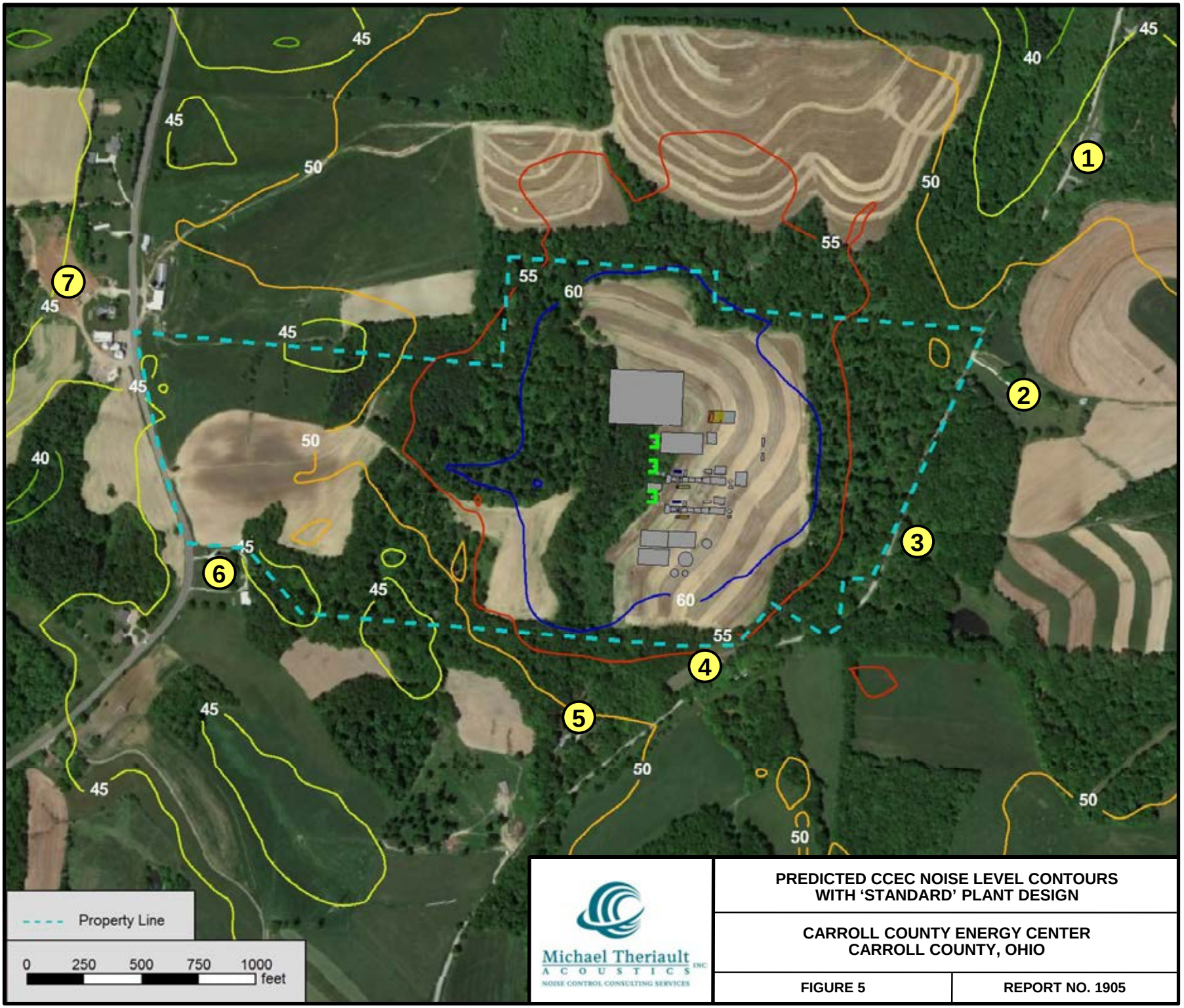


Michael Theriault INC
ACOUSTICS
NOISE CONTROL CONSULTING SERVICES

ACOUSTICAL MODEL – 3D VIEW

CARROLL COUNTY ENERGY CENTER
CARROLL COUNTY, OHIO

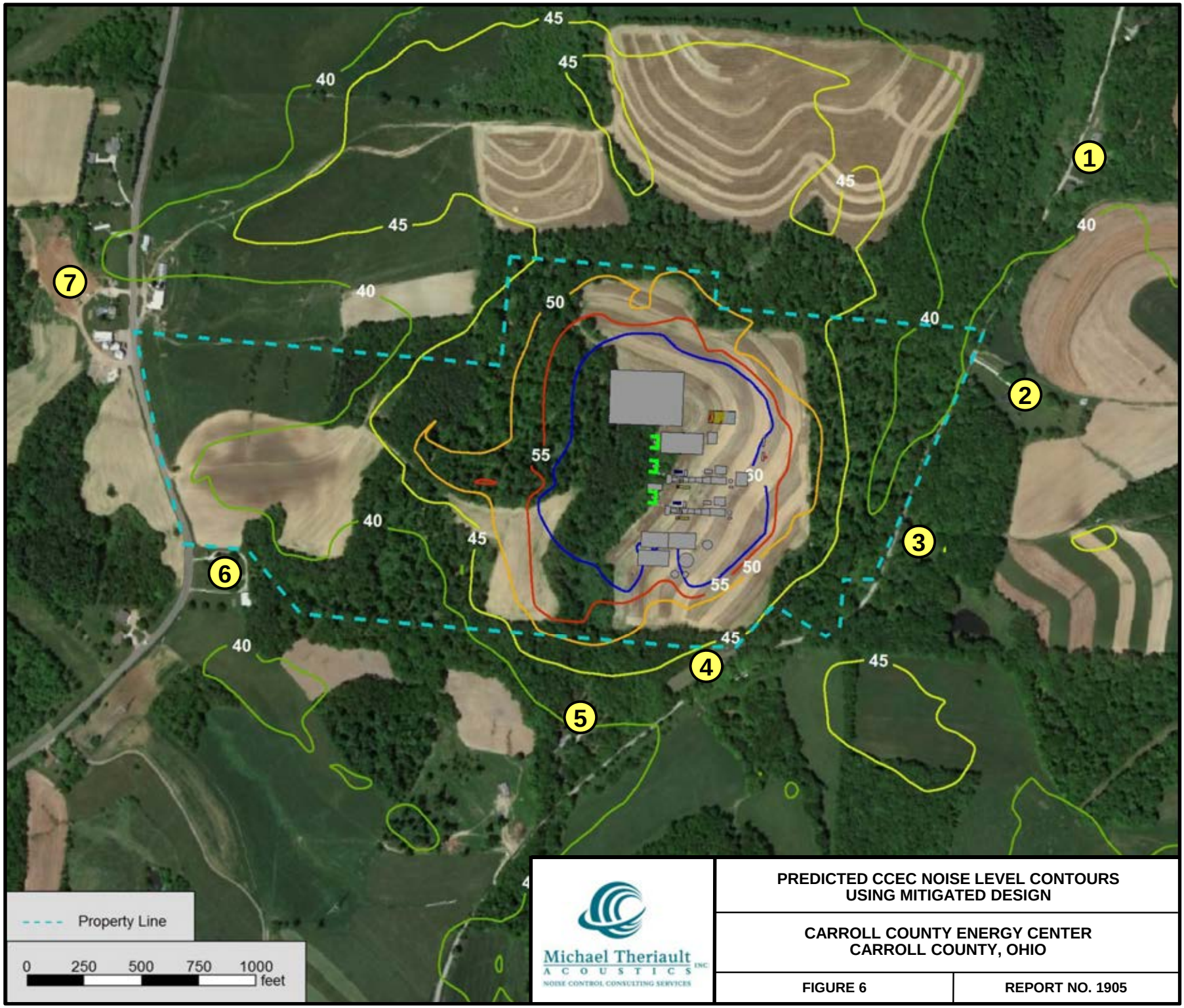
FIGURE 4	REPORT NO. 1905



PREDICTED CCEC NOISE LEVEL CONTOURS WITH 'STANDARD' PLANT DESIGN

CARROLL COUNTY ENERGY CENTER
CARROLL COUNTY, OHIO

FIGURE 5	REPORT NO. 1905



Michael Theriault INC
ACOUSTICS
NOISE CONTROL CONSULTING SERVICES

PREDICTED CCEC NOISE LEVEL CONTOURS USING MITIGATED DESIGN

CARROLL COUNTY ENERGY CENTER
CARROLL COUNTY, OHIO

FIGURE 6	REPORT NO. 1905

Appendices

- **OPSB Approvals**
- **Baseline Sound Survey Report**
- **SoundPLAN Modeling Results - Standard Plant Design**
- **SoundPLAN Modeling Results - Mitigated Acoustical Design**
- **Decibel Addition**

OPSB Approvals

Dresden

BEFORE

THE OHIO POWER SITING BOARD

In the Matter of the Application of Dresden Energy, LLC, for a Certificate of Environmental Compatibility and Public Need for a Merchant Power Plant in Muskingum County, Ohio.	)))))	Case No. 00-686-EL-BGN

OPINION, ORDER AND CERTIFICATE

The Ohio Power Siting Board (Board), coming now to consider the above-entitled matter; having appointed its administrative law judge to conduct public hearings; having reviewed the evidence presented at the hearings held in this matter; having reviewed the proposed stipulation, and being otherwise fully advised in the premises, hereby waives the necessity for an administrative law judge's report and issues its Opinion, Order and Certificate in this case as required by Section 4906.10, Revised Code.

APPEARANCES:

Bricker & Eckler LLP, by Sally W. Bloomfield and Julie L. Dorrian, 100 South Third Street, Columbus, Ohio 43215-4291, on behalf of Dresden Energy, LLC.

Betty D. Montgomery, Attorney General, by Jodi J. Bair and Thomas Lindgren, Assistant Attorneys General, Public Utilities Section, 9th Floor, 180 East Broad Street, Columbus, Ohio 43215, and by Margaret A. Malone and Summer J. Koladin, Assistant Attorneys General, Environmental Enforcement Section, State Office Tower, 25th Floor, 30 East Broad Street, Columbus, Ohio 43215-3428, on behalf of the staff of the Ohio Power Siting Board.

OPINION:

I. Summary of the Proceedings

All proceedings before the Board are conducted according to the provisions of Chapter 4906, Revised Code, and Chapter 4906, Ohio Administrative Code (O.A.C.).

On April 13, 2000, Dresden Energy, LLC (Dresden or applicant), filed a motion for waiver of certain filing requirements associated with its upcoming application for a certificate of environmental compatibility and public need. Dresden sought to waive the two-year notice provision of Section 4906.06(A), Revised Code, and the filing of some alternative site information under Chapter 4906, O.A.C. The waiver request was granted in part by entry dated April 28, 2000. On June 23, 2000, Dresden filed the application seeking authority to construct an electric generating facility in Cass Township, Muskingum County, Ohio (Applicant Ex. 1). The project will provide electric capacity to Ohio and the surrounding region. The proposed project is a major utility facility as defined in Section 4906.01(B)(1), Revised Code. Dresden was formed as a joint venture between subsidiaries of Dominion Resources, Inc.

On August 24, 2000, the Board notified Dresden that, pursuant to Rule 4906-1-14, O.A.C., the application had been found to be complete. That same day, Dresden served copies of the application upon local government officials and filed proof of service with the Board (Applicant Ex. 2).

The administrative law judge scheduled both a non-adjudicatory and an ajudicatory hearing regarding this application by entry dated September 15, 2000. The non-ajudicatory hearing was scheduled to take place on November 21, 2000, in Dresden, Ohio and the adjudicatory hearing was scheduled to take place on November 22, 2000, in Columbus, Ohio. Pursuant to Rule 4906-5-08, O.A.C., the applicant caused notice of the hearings to be published in The Dresden Transcript and The Times Recorder, newspapers of general circulation in Muskingum County. The applicant filed proof of the publications of the notices with the Board on September 29, November 15, and November 28, 2000 (Applicant Exs. 3 and 4). The staff of the Board (staff) conducted an investigation concerning the environmental and social impacts of the proposed project. The staff filed its report of investigation with the Board on November 7, 2000 (Staff Ex. 1).

The administrative law judge convened the non-adjudicatory (local) hearing on November 21, 2000, as scheduled. At this hearing, six people presented statements, three people in support and three in opposition to the proposed project. Two of the statements were unsworn. The adjudicatory hearing commenced on November 22, 2000. The applicant presented the testimony of one witness. The parties indicated that they had resolved nearly all issues, but would like additional time to conduct a study associated with an outstanding concern regarding noise emissions from the proposed project. The administrative law judge agreed to allow the parties more time to explore the one outstanding issue, but decided that the issue must get resolved by January 15, 2001, or the hearing would resume. On December 20, 2000, Dresden filed a noise study. On January 9, 2001, Dresden and the staff filed a stipulation and recommendation intended to resolve all issues in this case.

II. Proposed Facility

In the application before the Board, Dresden proposes to construct an electric generating facility in Muskingum County, Ohio to generate electricity. The total output of the facility will be 550 megawatts (MWs) of electric power (Applicant Ex. 1, at 1). The facility is projected to operate 6,600 hours per year (*Id.* at 14). The plant is being proposed for construction as a merchant (i.e., non-utility) power plant with the generation to be sold in the wholesale market in the East Central Area Reliability (ECAR)[1] Region (*Id.* at 1). Dresden anticipates the facility being commercially operational by September 2003 (Tr. II, 12).

Basically, the plant will be composed of two combustion gas turbines, two heat recovery steam generators, one steam turbine, three step-up transformers, cooling towers, several metal buildings, a fuel oil storage tank, three water storage tanks, and a switchyard (Applicant Ex. 1, at 18-20, 41-42, 44, Figure 04-08A; Staff Ex. 1, at 7). The plant will operate as a combined-cycle facility, operating on natural gas but with fuel

[1] The ECAR region is composed of Ohio, Michigan, Kentucky, Indiana, West Virginia, and parts of Maryland, Pennsylvania, and Virginia.

oil as a back-up fuel (Applicant Ex. 1, at 2, 44). The turbine and steam generators will be designed for outdoor installation, but include self-contained, weatherproof enclosures (*Id.* at 41, 42). The water tank will hold 2.25 million gallons of demineralized water (*Id.* at 19). The fuel oil tank will also be capable of storing the same amount of fuel oil (*Id.*). The two remaining water tanks will be used for fire protection and general service and will hold 350,000 gallons each (*Id.*). A gas metering and regulating station will also be part of the plant (*Id.* at 20). The plant's water needs will be supplied by the Muskingum River (*Id.* at 7). A security fence will be constructed around the facility (*Id.* at 47).

The applicant has proposed two potential installation sites for the proposed project. Both proposed sites are located in Cass Township, two miles south of the city of Dresden, Ohio (Applicant Ex. 1, at 2). They both encompass approximately 30 acres on unzoned property (*Id.* at 2, 27, 29). The preferred site is bordered by wooded areas on the west and south, by McGlade School Road on the east, and by undeveloped and agricultural fields on the north (*Id.* at 15). It is currently used for residential and agricultural purposes (*Id.* at 29, 86). To the northeast (approximately 0.45 mile) is an existing American Electric Power Company (AEP) electrical substation (*Id.* at 2, 31, Figure 04-5A). Two 3,200-foot "tie-in" transmission lines will be constructed to allow the electricity generated from the proposed facility to be interconnected with the electric grid (*Id.* at 2, 21). A natural gas pipeline owned by Dominion Transmission is approximately 150 feet north of the preferred site (*Id.* at 15). A new, 200-foot "tap-in" gas pipeline will be needed to access the natural gas supply (*Id.* at 3, 21).

The alternate site is located approximately 100-125 feet to the northwest of the preferred site (Applicant Ex. 1, at 15, 30). The alternate site is heavily wooded land and the surrounding land is also heavily wooded (*Id.* at 39; Staff Ex. 1, at 4). The applicant states that the alternate site is more visible because of its higher elevation. Also, the alternate site would impact an old coal strip mine that has been developed into wetlands (Staff Ex. 1, at 4).

A third parcel of land is involved with the proposed facility. A 26-acre site along the Muskingum River will be used for water supply intake and discharge for handling the water requirements of the facility (Applicant Ex. 1, at 16, 36). This parcel is surrounded by the river on the east, Dresden Road on the west, agricultural farmland to the north, and undeveloped wooded property to the south (*Id.*). A number of cottages and homes are located along the riverbank at this site (*Id.* at 90). Two 4,000-foot long water pipelines (one for supply and the other for wastewater) will be constructed from this 26-acre site to either the preferred or alternate site (*Id.* at 31). At the time the application was filed, two routes were being considered and, later, Dresden decided to use an existing McGlade School Road right-of-way (*Id.* at 3, 16, 41; Staff Ex. 1, at 17).

III. Certification Criteria

Pursuant to Section 4906.10(A), Revised Code, the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines:

(1) The basis of the need for the facility;[2]

(2) The nature of the probable environmental impact;

(3) The facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;

(4) In the case of an electric transmission line, such facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and such facilities will serve the interests of electric system economy and reliability;

(5) The facility will comply with Chapters 3704, 3734, and 6111, Revised Code, all rules and standards under those chapters, and under Sections 1501.33, 1501.34, and 4561.32, Revised Code;

(6) The facility will serve the public interest, convenience, and necessity;

(7) The probable impact of the facility on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Revised Code that is located within the site and alternative site of the proposed major facility; and

(8) The facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of various alternatives.

IV. Summary of the Evidence

A. Local Hearing

Four people gave sworn statements at the local hearing. Two others gave unsworn statements. One woman objects to the proposed facility because of several concerns about the proposed facility' noise levels and air emissions (and their effects upon those that live close and those who live in the city of Dresden) (Tr. I, 3-4). She also stated that the company's plans to extract water from the Muskingum River required too much disturbance of the river rocks, thereby allowing mercury in the rocks to escape and harm the fish and recreational water users (*Id.* at 4). One man stated that he supports the proposed project because of its economic impact on the

[2] Since the proposed facility constitutes a "major utility facility", as defined in Section 4906.01(B)(1), Revised Code, the Board is required to presume the need for the facility as that need is stated in the application. Section 4906.10(A)(1), Revised Code.

community through construction and operation jobs (*Id.* at 7). Additionally, he stated that the proposed project should benefit the area by increasing the electric supply and by helping ensure that the desired electricity will be available (*Id.* at 8). Another gentleman expressed his support for the proposed project because it will generate funds for the schools and provide tax revenues for the local township and community (*Id.* at 8-9). Lastly, another man indicated similar support for the proposed project because of the funds for the local school district (*Id.* at 9). He noted that, in his opinion, the environmental concerns would be evaluated through the different government permit processes and, for that reason, he feels that those concerns will be addressed (*Id.* at 9-10).

B. Basis of Need (Section 4906.10(A)(1), Revised Code)

The applicant states that there is a need for electric peaking capacity in Ohio and in the ECAR region and it is willing to privately finance the construction (Applicant Ex. 1, at 9-10). In its application, Dresden asserts that several recent studies have established the need for generating capacity in Ohio and the ECAR region (*Id.* at 10). The applicant points out that the reports expect capacity margins to decline, even taking into consideration the expected additional new generation supplies (*Id.* at 10-11). In particular, Dresden states that, if the 1999 actual demand figures are used and an expected growth rate of 1.9 percent is used, an additional 2,830 MWs will be needed in ECAR by 2008, in order to maintain a 10 percent capacity margin (*Id.*). Dresden further states that much of ECAR's generation facilities will be 30 years or older by 2007 and will need increased maintenance and will experience lengthened outages, both which affect capacity margins (*Id.* at 12).

Dresden next contends that several new or proposed environmental regulations are likely to impact existing electrical generating units in ECAR (Applicant Ex. 1, at 12). Those include proposed fine particulate standards, regional haze regulations, new ozone standards, the ozone transport issue, and initiatives under the Clean Air Act (*Id.*). Dresden believes that changes to solid and hazardous waste regulation will impose additional conditions upon some generating units as well and impact capacity margins (*Id.*). Dresden further cites to a Federal Energy Regulatory Commission (FERC) staff report[3], which found that growth in ECAR is surpassing other regions while transmission limitations are limiting the options to bring power into ECAR from other regions (*Id.* at 13). Lastly, Dresden points to price spikes in the Midwest region in the summers of 1998 and 1999 as highlighting the urgent need for generating capacity within the region (*Id.*). Based upon this information, Dresden contends that there is a public need in the region for the proposed generation.

The staff points out in its staff report in this docket that the more recent ECAR report issued August 2000, Assessment of ECAR-Wide Capacity Margins 2000-2009, projects that loads are expected to grow at a rate of 1.7 percent per year (Staff Ex. 1, at 13). The staff adds that the 2000 ECAR report also indicates that more capacity is projected, but it is still not enough to keep pace with projected load growth (*Id.*). Per this report, capacity margins are expected to decline to 7 percent in 2009 (*Id.*). The staff acknowledges the aging existing generating units, the past price spikes in the region,

[3] Staff Report to the Federal Energy Regulatory Commission on the Causes of the Pricing Abnormalities in the Midwest during June 1998.

and the possible impact from new and proposed environmental regulations (*Id.* at 14). The staff agrees with Dresden that load continues to grow in the region and that additional capacity is still needed (*Id.* at 14 and 15). The staff emphasizes, however, that establishing that there is a regional need for capacity and energy from this Dresden project does not mean that such a need exists for any specific Ohio utility (*Id.* at 14).

C. Nature of Probable Environmental Impact and Minimum Adverse Environmental Impact (Sections 4906.10(A)(2) and (3), Revised Code)

Dresden explained that, in selecting the two proposed sites, the area considered includes the Dominion Transmission gas pipeline corridors that stretch from Cincinnati, Ohio to Albany, New York (Applicant Ex. 1, at 24). Also critical to an initial evaluation was proximity to electric transmission lines (*Id.* at 25). Dresden considered the electric market a critical factor too (*Id.*). All areas that met those three initial qualifications were then evaluated based upon the availability of water supplies, property availability, and evidence of community support (*Id.* at 25-26). Proximity to residential areas, schools and public facilities was also important (*Id.* at 25). Dresden determined that the two proposed sites were the most appropriate.

Dresden noted that the area surrounding the proposed sites includes highways, a railroad, a utility right-of-way, an electric transmission line, and a throughway (Applicant Ex. 1, at 30). Both sites are located between a 100-year and 500-year floodplain (*Id.* at 37). Dresden plans to grade and slope either site to facilitate drainage (*Id.* at 40). Ditches and swales will be provided to capture storm water so that it flows to a natural drainage area to the east of the site (*Id.*). Debris resulting from construction will be collected and hauled off-site by a licensed waste hauler (*Id.*).

As noted earlier, water will be needed for injection into the combustion chambers to reduce nitrogen oxide (NOx) emissions when firing with fuel oil (Applicant Ex. 1, at 44, 45).[4] For the plant's needs, the sites are poorly suited for groundwater withdrawal and the aquifer is not capable of providing significant amounts of water (*Id.* at 38). Therefore, Dresden has decided to obtain process water from the Muskingum River (*Id.*). Based upon an Ohio EPA study, Dresden believes the river water is acceptable in quality for use at the proposed facility (*Id.* at 67). Dresden anticipates withdrawing a maximum of 13.3 cubic feet per second (cfs) and discharging 4.5 cfs, which is less than 0.2 percent of the average flow rate of the river (*Id.* at 36). The wastewater generated from the process will be adequately treated, in compliance with all regulations, before being discharged back into the Muskingum River (*Id.* at 46-47). Potable water will be obtained from an onsite well, with sanitary waste disposed of in an onsite septic system (*Id.* at 38, 46, 82). Any waste oils and wash solutions collected during the cleaning process will be collected and removed by a qualified waste contractor (*Id.* at 47). Dresden plans to install four water pollution control facilities at the proposed facility. They are: (1) a tank for collecting and neutralizing demineralizer wastes and spills from the chemical storage areas; (2) curbs and containment facilities for areas where chemicals are stored or the potential for spills exists; (3) a settling pond will reduce sediments from low volume wastes; and (4)

[4] Each turbine will use advanced DLN combustion controls while fueled by natural gas, in order to control air pollution (Applicant Ex. 1, at 44, 45, 54-55, 64).

oil water separators for treating wastewater from areas where oil contamination potential exists (*Id.* at 69, 82-83).

Dresden acknowledged that some dredging and filling would occur during installation of the surface water intake and discharge facilities (Applicant Ex. 1, at 68). Dresden plans to minimize the disturbance by working during periods of low flow and reduce siltation in the river through use of grading and hay bales (*Id.*). Dresden will re-establish vegetation after construction (*Id.*). Also, construction of the water pipelines and the intake/discharge structures will be done in accordance with an approved sediment and erosion control plan, using best management practices (*Id.* at 104, 107-108).

Dresden notes in the application that two small streams and likely wetland areas are within 0.5 miles of the site (Applicant Ex. 1, at 92, 102). The streams follow the northern and southern borders of the property (*Id.*). As for the likely northern wetland area, Dresden states that no construction is planned in that area and surface runoff will not be discharged to that wetland (*Id.* at 93). On the southern border, there is very little wetland habitat and it will likewise not be disturbed (*Id.* at 93, 102). A small pond located on the property also has slight marsh vegetation along the shoreline, but apparently will not be disturbed (*Id.*). Finally, there are wetlands located at the alternate site (*Id.* at 94). The water pipelines will cross one of the streams at the western edge of the preferred site (*Id.* at 104). Dresden contends that the construction will be a short-term disturbance without causing long-term or permanent loss of wetland habitat or wildlife in that spot (*Id.*).

Dresden pointed out that the bald eagle and Indiana bat have been identified as possibly being in the project area, but field visits did not confirm such at the preferred and alternate sites (Applicant Ex. 1, at 98). Foraging and nesting for the bald eagle may exist near the proposed location of the water intake/discharge facility, however (*Id.*). Additionally, four rare mollusks (mussels) are located within 0.5-mile radius of the intake/discharge site (*Id.* at 100). Dresden also conducted a mollusk habitat screening assessment, which identified eight species (not on the endangered list) along the banks of the river within the project area (*Id.* at 112, Appendix 07-3). Dresden concludes that construction of the facility will not impact major species of plants and animals because there will be a minimal loss of native vegetation or habitat and because there are few or no major species present (*Id.* at 105-106, 109). Dresden will only cut, if necessary, any mature trees at the water intake/discharge site between September 15 and April 15, when the Indiana Bat is unlikely to be present in that area (*Id.* at 107, 108). Dresden further states that the impact upon aquatic life in the Muskingum River will be managed by the Ohio EPA, Ohio Department of Natural Resources (ODNR), and Army Corp of Engineers because of their regulations (*Id.* at 109-110, 111-112).

Dresden conducted a cultural impact study and identified no noise sensitive areas (such as, schools, nursing homes, hospitals, or recreation areas) within one mile of the preferred site (Applicant Ex. 1, at 79, 119). However, a bible church is located 0.92 miles from the center of the property (*Id.* at 115). No sites that are listed in the National Register of Historic Places are located within one mile of the proposed facility (*Id.*). Eleven archeological sites were identified within one mile of the facility, but only one was within the area to be impacted by the construction and operation of the proposed facility (*Id.*). That one site was found, through previous testing, not eligible for the

National Register (*Id.* at 115, 118). Two prehistoric sites are located along the route for the water intake pipeline and they contain potentially significant findings (*Id.* at 116, 118).

At the preferred site, the nearest residence is located 1,100 feet from the center of the plant (Applicant Ex. 1, at 75).[5] The second closest residence is 2,300 feet from the center of the plant and the third closest residence is 3,300 feet (*Id.*). Dresden noted that, currently, noises around the proposed sites are largely generated from vehicle traffic (*Id.* at 75). Dresden also stated that a highway is under construction in close proximity to the facility site, which will increase background noise levels (*Id.*). After completion of this highway, background noises are estimated to be above 60 decibels (dBAs) (*Id.*). During construction, Dresden estimates that noise levels at the closest residence will range from 50 to 62 dBAs (*Id.* at 76). For the next two closest residences, Dresden states that the plant construction noises are estimated to be at or below existing, ambient noise levels (*Id.* at 77). Truck traffic is expected to increase during construction (*Id.* at 78).

The applicant noted in the application that estimated sound levels from the operation of the proposed plant would be 72 dBAs at 400 feet with all turbine units, the steam generator, boiler feed pumps, and cooling tower in operation (Applicant Ex. 1, at 79). At the three closest residences, the operational noise level drops to 63.2 dBAs, 56.8 dBAs, and 53.67 dBAs (*Id.*). Dresden contends that those figures are conservative because they do not account for any barriers, such as trees or shrubs (*Id.*). Dresden further stated that daily vehicle traffic associated with the operation of the facility should be minimal because of the limited number of employees and limited need for supply/maintenance support (*Id.*). Dresden plans the following mitigation measures to reduce noise during construction and operation of the proposed facility:

(1) Standard noise buffers on all construction equipment and trucks;

(2) Maintenance of equipment in good mechanical repair;

(3) Construction activities will take place mostly during daylight hours;

(4) If an accelerated schedule requires work during other hours, it will be for relatively short periods;

(5) The combustion turbines will employ the best practical measures to minimize operational noise levels and will be placed in insulated enclosures; and

(6) The steam turbine will be in an enclosed structure.

Id. at 80.

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[5] An unaffiliated, commercial firm has expressed interest in purchasing the closest residence to the proposed facility (Staff Ex. 1, at 19; Tr. II, 11-12). No sale has taken place.

The staff reviewed the environmental information contained in the record compiled as of the date of its Report of Investigation and made site visits to the project areas. In addition to a number of the facts summarized above, the staff found the following with regard to the nature of the probable environmental impact of constructing the proposed generation facility:

(1) The project will require approximately 30 acres.

(2) The natural gas turbines are to be equipped with advanced dry-low NOx combustors to reduce NOx emissions to 9 parts per million-volume dry (ppmvd). The project will use selective catalytic reduction to further reduce NOx levels to 3.5 ppmvd while operating on natural gas and 21.8 ppmvd on fuel oil.

(3) The facility will use inlet-air fogging when operating on fuel oil to control NOx emissions.

(4) Drift eliminators will be used to minimize water droplets escaping from the cooling towers and help prevent fogging problems.

(5) The three transformers, oil-filled, will have dikes around them to contain any potential spills.

(6) An earthen dike will be built around the fuel oil tank to contain any possible leaks or spills.

(7) Two 138-kilovolt radial transmission lines will be constructed between the generating station's electric switchyard and the existing AEP substation. While most of this alignment has been previously disturbed, some small stream and associated wetland areas are still present.

(8) An emergency diesel generator may be provided to supply power to the facility when auxiliary power is not available from the local utility.

(9) Both sites would require extensive grading. The terrain would be properly sloped to facilitate drainage. Ditches and swales would be provided to capture storm water and direct it by gravity flow to natural drainage to the east of the preferred site. Special measures are provided by Dresden to stabilize the planned fill slopes.

(10) Seasonal cottages and house trailers with short term leases will be removed from the 26-acre site along the Muskingum River where Dresden proposes to locate the water intake/discharge structures for the facility. The present landowner has agreed to

work with the tenants to relocate the seasonal cottages and trailers to another site.[6]

(11) Dresden would build a permanent access road from McGlade School Road to the facility. Construction of the road is not expected to significantly impact local area wildlife habitat. Additionally, the route of the proposed road has been selected to avoid/minimize the number of trees that will be required to be removed.

(12) Dresden plans to install a 12-inch water supply line and an eight-inch wastewater discharge line, in the same trench, from the plant to the Muskingum River. The pipes will run along the existing McGlade School Road right-of-way. Open cut trenching methodology would be used. One crossing of a stream and its associated wetland vegetation will be required, and some mature trees along the right-of-way will likely be removed, though this should be fairly limited.

(13) Portions of the intake and discharge structures will be installed on the west bank of the Muskingum River, while the actual intake itself will be located in the riverbed. The total area of vegetation to be disturbed is less than 0.25 acres, including some limited amount of riparian trees.

(14) The 32-year average stream flow for the section of the Muskingum River that will serve as the water intake area for the facility is 6,470 cfs.

(15) Thermal shock that would result from a sudden cessation of wastewater discharge, should it occur, is expected to be limited to a small area.

(16) The river water would be processed prior to use for cooling purposes. The sludge generated by the process will be dewatered and disposed of off-site.

(17) The applicant proposes to construct an on-site wastewater treatment system for the purpose of treating sanitary water generated at the facility. The system would include a septic tank and associated on-site leach field. The accumulated septic tank water would be pumped out by a tank truck by a licensed septic waste hauler and properly disposed.

(18) The applicant's application for a permit to install an air pollutant source for the preferred site is pending.[7]

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6 Those cottages and trailers would be moved further away from the site (Tr. II, 10-11).

7 At the time of the adjudicatory hearing in late November, that permit application was still pending (Tr. II, 11).

(19) Potential construction emissions include volatile organic compounds, sulfur dioxide, carbon monoxide, NOx, and particulate matter less than 10 microns in diameter. These emissions should be relatively minor and are not expected to cause any significant environmental impacts at or beyond the site area.

(20) Storm water runoff would be managed through a national pollutant discharge elimination system (NPDES) general permit during construction. A spill prevention control and countermeasure plan would be required to manage site runoff during operation.

(21) The equipment would be washed periodically. The waste stream would be collected and stored in an underground tank. This waste stream, consisting of water, soap, and oily residue, would be removed and disposed of by a qualified contractor.

(22) The bald eagle is not believed to be present in the area, while the Indiana bat, if present at all, would be unlikely to be affected by the project activity (though no trees with exfoliating bark will be removed between April 15 and September 15, as a precautionary measure). A variety of special measures associated with construction and operation of the intake and discharge facilities will be employed to prevent or minimize impacts to aquatic organisms, including any endangered mussel species that may be present.

(23) Construction noise would vary considerably. The fact that construction noise will be short-term, be limited to daytime activities, and occur in a relatively isolated area should help minimize any adverse impacts.

(24) The applicant plans to use landscaping around the plant boundary to help reduce the noise emanating from the plant toward the next two closest residences.

(25) Fuel oil is the alternative fuel and would be delivered by truck. However, fuel oil deliveries to the plant are anticipated to be of a limited nature given the facility's access to a reliable natural gas supply.

(26) Construction of the preferred facility as proposed in the applicant's filing should not result in a loss of or a significant impact to Ohio wetlands.

(27) The applicant conducted a Phase I archeological survey of the preferred site and along the proposed route for the water intake/discharge pipeline. The survey identified a total of seven

prehistoric archeological sites in the projected area. Of the seven sites identified, two may be potentially eligible for listing in the National Register and, hence, a Phase II survey would be required.

(28) The applicant estimates that capital and intangible costs for this project would total $258,000,000. The applicant estimates the cost per kilowatt would be $470, based upon anticipated electrical output production at the generating plant.

(29) Staffing at the facility will be between four to six employees per shift with the applicant anticipating three or four shifts per day. The addition of these few employees and their families to the surrounding area's existing populations is not anticipated to result in a significant impact on local public services and facilities.

Staff Ex. 1, at 16-20.

The staff commented on several differences between the preferred and the alternate site (Staff Ex. 1, at 21-24). First, the staff found that, if the alternate site were used, more trees would be removed and, thus, a greater potential impact would result on the potential habitat of the Indiana Bat, as well as other animals (*Id.* at 21, 23). Also, the tap-in to the nearby Dominion Transmission pipeline will require crossing steeper terrain if the alternate site is used (*Id.* at 22). Third, the transmission lines need to connect the facility to the nearby AEP substation would span 3,200 feet from the preferred site (*Id.*). Use of the alternate site would require shorter connecting lines, but require that more trees be removed (*Id.*). Fourth, the elevation level at the preferred site is lower than the alternate site and, therefore, the preferred site would be less noticeable (and more aesthetically pleasing) to the surrounding area (*Id.* at 23). Next, use of the preferred site would require a shorter access road and disturb less area than use of the alternate site (*Id.*). Sixth, construction at the alternate site would disturb an old coal mine pit that was recently developed into wetlands (*Id.*). The staff concluded that the social and environmental impacts anticipated from the proposed facility are similar for both proposed sites (*Id.* at 24). Overall, the staff believes that the preferred site would have less ecological impact, would be less noticeable to the surrounding area, would require less contouring of the land, would require removal of fewer trees, and would require less wildlife habitat destruction (*Id.*).

D. Electric Power Grid (Section 4906.10(A)(4) Revised Code)

Since this application seeks authority to construct an electric generating station and not a transmission line, this statutory condition is not an issue in this case. However, the staff did find that the proposed facility is consistent with plans for expansion of the regional power grid and will serve the interests of electric system economy and reliability (Staff Ex. 1, at 25).

E. Air and Water Permits and Solid Waste Disposal (Section 4906.10(A)(5) Revised Code)

Dresden stated that each heat recovery steam generator will be equipped with selective catalytic reduction for NOx control and reduce emission levels to 3.5 parts per million (Applicant Ex. 1, at 44, 55). A continuous, emissions monitoring system will also be installed to monitor air emission concentrations (*Id.* at 45). Dresden acknowledged that it must obtain a permit to install under Ohio EPA regulations, an acid rain permit under Clean Air Act, and a "Title V" permit under Ohio EPA regulations (*Id.* at 57-61).

Dresden plans to obtain the necessary Ohio EPA permit to manage stormwater during construction and operation activities (Applicant Ex. 1, at 65). The applicant states it will also have to obtain several other water permits for: (1) discharge of water during operation; (2) construction and operation of an on-site well, if well water is used for potable purposes; (3) water withdrawal registration for intake from Muskingum County; and (4) construction of surface water intake and discharge structures (*Id.* at 66, 67, 68-69).

Dresden noted that there is no solid waste on the property currently because it is undeveloped (Applicant Ex. 1, at 70). Solid waste generated by site preparation, facility construction and operation will be disposed by licensed contractor(s) (*Id.*). The applicant plans to dispose of sanitary waste through an on-site septic system (*Id.*). Dresden contends that no new permits or licenses for waste generation, storage, treatment, transportation, or disposal are required (*Id.* at 71).

In the staff's report, the staff noted that Dresden plans to install a septic tank system and leach field in order to handle waste from the lavatory (Staff Ex. 1, at 26).

F. Public Interest, Convenience, and Necessity (Section 4906.10(A)(6) Revised Code)

Dresden states that the proposed facility is in the public interest and convenience because the region will benefit from needed generation (Applicant Ex. 1, at 1). The staff agrees with this assessment (Staff Ex. 1, at 27). The staff found that noise levels from the proposed facility would be attenuated by planned landscaping, the possible purchase of an additional 30 acres, and the future highway that will be in close proximity (*Id.*). The staff next found that electric and magnetic fields would be confined to the site (*Id.* at 27-28).

Additionally, the staff found that the preferred site is strategically located for access to an ample natural gas supply and that pipeline's capacity does not become constrained until well east of Ohio (*Id.* at 28). Moreover, the staff reviewed system impact studies and short circuit and stability studies, which found the proposed facility could integrate into the existing regional transmission system under normal conditions without adverse impact (*Id.* at 29-30). However, AEP will have to make some changes at its nearby substation, at the Conesville Substation, the North Newark Substation, and the Zanesville Substation (*Id.* at 32). The staff believes, overall, the facility will benefit Ohio consumers by providing additional commercial power (*Id.* at 32).

G. Agricultural Districts and Agricultural Lands (Section 4906.10(A)(7), Revised Code)

According to Dresden and the staff, the proposed sites are not enrolled in agricultural district programs (Applicant Ex. 1, at 120; Staff Ex. 1, at 34). Dresden further stated that construction and operation of the facility would not impact the viability of any surrounding land for agricultural district purposes (Applicant Ex. 1, at 121). As noted earlier, the preferred site currently is used for residential and agricultural production. Therefore, little vegetation will be removed during construction (Staff Ex. 1, at 17). Also, as noted earlier, construction of the proposed facility will permanently remove 30 acres at the preferred site from agricultural use (Applicant Ex. 1, at 2, 27, 29, 86).

H. Water Conservation Practices (Section 4906.10(A)(8), Revised Code)

Dresden contends that the facility will incorporate maximum feasible water conservation practices, considering available technology and the nature and economics of the various alternatives through three features (Applicant Ex. 1, at 69). First, the plant will use cooling towers for heat rejection (*Id.*). Second, the plant will use a high efficiency, water treatment process (reverse osmosis and ion exchange) for high purity product water (*Id.*). Finally, Dresden cites the fact that low NOx burners would be used for combustion turbine operation (when fueled by natural gas) to minimize water injection requirements (*Id.*).

The staff noted in its report that Dresden's selection of wet cooling will require three mgd, as compared to over 200 mgd for a once-through cooling system (Staff Ex. 1, at 35). Additionally, the staff stated that the combined-cycle generation technology will have major benefits, in comparison with once-through cooling, to the aquatic life and water quality of the Muskingum River (*Id.*). Another difference is that the proposed cooling tower requires a few acres, while a once-through system would require the development of a cooling pond possibly as large as 100 acres (*Id.* at 22). Furthermore, the staff pointed out that small amounts of water would be needed for personal use and for the periodic cleaning of the equipment (*Id.* at 32).

V. Stipulation of the Parties

Dresden and the staff believe that Dresden has provided ample evidence to demonstrate that construction of the proposed facility at the preferred site meets the statutory criteria of Section 4906.10(A)(1) – (8), Revised Code (Jt. Ex. 1, at 8-10). Dresden and the staff recommend that the Board issue it a certificate for the proposed facility at the preferred site, subject to the recommended conditions (*Id.* at 1, 3).

At the time the staff filed its report of investigation, the staff recommended that 27 conditions become part of any certificate issued for the proposed facility (Staff Ex. 1, at 33-35). Dresden and the staff have agreed in the stipulation that 27 conditions are appropriate and they include, for the most part, the 27 initially recommended by the staff:

(1) The facility be installed on the applicant's preferred site as presented in the application filed on June 23, 2000, and as modified by the applicant's supplemental data submitted to the staff.

(2) The applicant shall utilize the equipment described in the application in Sections 4906-13-04(B) and (C) and as modified by supplemental data filed with the staff.

(3) The applicant shall utilize the mitigation measures described in the application and the supplemental data, unless modified by conditions to the certificate or applicable federal and state permits.

(4) The applicant shall maintain sound levels resulting from the operation of the facility below 60 dBAs at the nearest existing residence during the operation of the facility. During construction, in the event that dynamiting becomes necessary, applicant shall limit the use of dynamite work to daylight hours. The applicant shall comply with all state and federal laws concerning blasting. The type of charge and blasting pattern shall be submitted as part of the information for the pre-construction conference.

(5) The applicant shall properly install erosion and sedimentation control measures for all portions of the project site, including along permanent access roads, in steep slope areas, along the water intake and discharge line right-of-way, and between construction sites and any streams, wetlands, woodlands, or other environmentally sensitive areas. All such erosion control measures shall be inspected after each rainfall event and promptly repaired and maintained until permanent vegetative cover has been established on disturbed areas.

(6) Prior to construction of the generating facility, the applicant shall file the required applications and obtain approval for the natural gas transmission pipeline and the electric transmission lines, including all necessary measures to avoid, minimize, and/or mitigate potential adverse impacts to environmental resources.

(7) The applicant shall not remove any exfoliating trees, for any portion of the proposed project, between April 15 and September 15. The applicant will save trees with exfoliating bark wherever possible. Furthermore, the applicant shall, to the greatest extent possible, configure the generating facility layout to avoid removing the trees (and impacting the small headwater stream) located along the southern and western portions of the site, as well as aligning and constructing the water intake and discharge lines and structures in such a way as to avoid tree

removal, particularly the mature riparian trees present along the banks of the Muskingum River.

(8) Prior to construction, the applicant shall submit the final route map of suitable scale and a description of impacts, mitigation measures and construction techniques for the water intake and discharge structures to the staff for review and acceptance. The submission shall describe in-stream construction techniques including all measures taken to protect the four state-listed species of mollusks identified by ODNR. These structures will be installed accordingly, unless modified by Army Corp of Engineers and/or Ohio EPA permit(s). The plans shall place special emphasis during construction on in-stream sedimentation control, riparian vegetation protection, and streambank stabilization, as well as focusing on design features intended to minimize impingement/entrainment of aquatic organisms by the intake structure and lessen any adverse impacts on aquatic life associated with thermal shock from cooling water discharge. An in-stream survey of the proposed intake site, prior to construction, may also be required to check for the presence of endangered mussel species.

(9) The applicant shall obtain the necessary ODNR permits for water withdrawal from the Muskingum River.

(10) During construction of the facility, the applicant shall seed all disturbed soil within seven days of final grading with a seed mixture acceptable to the appropriate County Cooperative Extension Service. Denuded areas, including spoils piles, shall be seeded and stabilized within seven days, if they will be undisturbed for more than 45 days. Reseeding shall be done within several days of emergence of seedlings as necessary until vegetation in all areas has been established.

(11) The applicant shall employ the following construction methods in proximity to any environmentally sensitive areas (streams, wetlands, woodlands, etc.):

(a) Structures are to be located outside of environmentally sensitive areas, except for necessary work within the Muskingum River associated with the water intake and discharge structures, and any unavoidable stream crossing work required for installation of the water and wastewater discharge pipes;

(b) With the exceptions noted in Condition (11)(a) above, all construction equipment shall avoid crossing or working within wetlands, woodlands, and watercourses, including any to

be spanned by the proposed electric transmission line interconnection; and

(c) All storm water runoff is to be diverted away from fill slopes and other exposed surfaces to the greatest extent possible, and directed instead to appropriate catchment structures, sediment ponds, etc., using diversion berms, temporary ditches, check dams, or similar measures.

(12) The applicant shall not dispose of excavated rock and any bedding material during or following construction of the facility by spreading the material on agricultural land.

(13) The applicant shall dispose of all contaminated soil and construction debris in approved landfills in accordance with Ohio EPA regulations.

(14) Prior to construction, the applicant shall submit to the Board for approval the appropriate applications for the natural gas transmission pipeline from the tap to the Dominion Transmission pipeline and the 138-kilovolt electric transmission lines to the AEP Ohio Central Substation.

(15) The applicant shall obtain all applicable permits and authorizations as required by federal and state entities for any activities where such permit or authorization is required, including, an NPDES Permit for a discharge of process wastewater from a new source, a Clean Water Act 401 permit, plan approvals and permits-to-install for new water and wastewater lines, an NPDES General Permit for Storm Water Management and a permit to install Air Contaminant Sources(s), to be obtained through Ohio EPA. The applicant may then proceed with construction in conformance with Ohio EPA laws and requirements. A copy of each permit or authorization, including terms and conditions, shall be provided to the staff within seven days of receipt.

(16) The applicant shall develop a Grading and Drainage Plan in coordination with the Muskingum Soil and Water Conservation Service. A copy of the plan, along with a copy of any separate Storm Water Pollution Prevention Plan required to comply with Ohio EPA's General NPDES Permit noted in Condition (15) above, shall be submitted to the staff for review at least 30 days prior to the pre-construction conference. This plan, as well as any other site plans associated with construction of the generating facilities, shall include details of any special construction techniques (e.g., retaining walls, diversion channels, structure relocations, etc.) to be used for avoiding

impacts to any streams, woodlands, and other environmentally sensitive features.

(17) The applicant shall design and install a fire protection system in accordance with the National Fire Protection Association standards.

(18) The applicant shall coordinate with fire, safety and emergency personnel during all stages of the project to promote efficient and timely emergency preparedness and response.

(19) For non-firm capacity, the applicant or its designated operator will seek and contract for transmission service through the OASIS as specified in FERC Orders 888, 889, and any subsequent OASIS-related orders, or through any successor OASIS system. If, in the reasonable exercise of judgment by the control area operator, generation by the proposed facility might adversely impact the reliability of the transmission system, the control area operator may discontinue interconnection service until the condition has been corrected.

(20) Prior to the operation of the facility, the applicant shall submit the interconnection agreement to the staff for review.

(21) The construction and ongoing maintenance of the natural gas handling system and associated facilities shall comply in all respects with state and federal laws and regulations pertaining to gas pipeline safety.

(22) The applicant shall consult with the State Historic Preservation Office to develop a preservation plan for sites 33-MU-1150 and 33-MU-1151. The plan shall be submitted to the staff for review and acceptance. In its review of the plan, the staff will consult with the State Historic Preservation Office. The plan will set forth commitments by the applicant to: (a) determine if the sites are eligible for inclusion in the National Register of Historic Places, and (b) specify the appropriate treatment measures to be completed by the applicant to preserve the property, if necessary.

(23) The applicant shall provide to the staff the following information as it becomes known: (a) the date on which construction will begin; (b) the date on which construction was completed; and (c) the date on which the facility began commercial operation.

(24) At least 30 days before the pre-construction conference, the applicant shall submit to the staff, for review and approval, one set of construction drawings of the certified facility, including all construction lay-down areas, so that the staff can determine

that the final project design is in compliance with the terms of the certificate.

(25) The applicant shall have an environmental specialist, selected by the applicant and accepted by the staff, on site at all times that construction is being performed in or near sensitive areas such as steep slopes, headwater streams, designated wetlands, forested areas, the Muskingum River, etc.

(26) The applicant shall conduct a pre-construction conference prior to the start of any site work, which the staff shall attend and discuss how environmental concerns will be satisfactorily addressed.

(27) The certificate shall become invalid if the applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate.

VI. Discussion and Conclusion

The staff and Dresden have agreed that the record is sufficient for the Board to issue a certificate for the proposed facility (Jt. Ex. 1, at 1). Although not binding upon the Board, stipulations are given careful scrutiny and consideration, particularly where no party is objecting to the stipulation. We have reviewed the record in this proceeding and we conclude that the proposed stipulation (including the proposed conditions) is reasonable and should be adopted.

Several concerns were raised by the public regarding the plant's noise and air emissions, and the use of river water. During construction, it is acknowledged that noise levels in the area will increase. We consider that noise impact to be short-lived and not determinative of the issue. There is also no dispute that the proposed facility will make noise. Testing indicated that the current noise levels experienced by the closest residents can be as high as the noise levels anticipated by the proposed facility (Applicant Ex. 1, 75, 79). Thus, the residents in the area are already experiencing similar noise impacts. Additionally, the newly constructed highway in that same area will certainly increase existing noise levels by the time this proposed plant is operational. The record further demonstrates that several different measures will be taken by Dresden to mitigate the expected noise levels (i.e., insulated enclosures and landscaping to attenuate the plant's noise levels). Thus, Dresden will take measures to lessen the impact of the anticipated noise from the proposed facility. Given the nature of the surrounding area and these additional mitigation measures, we believe the added noise caused by the proposed facility will be slight or negligible.

Regarding the concerns raised over health and air emissions, we point out that Dresden's facility is designed using the most current technology, including a number of features specifically to address air emissions. The plant's design mitigates the extent to which air emissions may affect health. Furthermore, we would be remiss not to recognize that the facility will not operate unless additional air permits (from other governmental agencies) are received. Thus, additional evaluations will be made on

this issue. We, therefore, are not convinced that the concerns raised on this point should warrant our denial of a certificate.

Also, for the water intake/discharge facility, one person stated that it would disturb too much of the river rock and allow mercury in those rocks to escape. Dresden has acknowledged that some dredging and filling will occur. Dresden plans to minimize disturbances by working during periods of low flow and by using best management practices to reduce siltation (Applicant Ex. 1, at 68). Also, Dresden will construct the water intake/discharge structures in accordance with an approved sediment and erosion control plan (*Id.* at 104, 107-108). We believe such an approach appropriately takes into consideration (and mitigates) concerns for disturbing the Muskingum River. Given these conditions, we again do not feel that the concern raised on this point rises to a level to justify denial of the requested certificate.

Finally, we note that we have reviewed the stipulated conditions and agree they are reasonable. Based upon all of the above, we are approving the application in this case and granting a certificate of environmental compatibility and public need for construction, operation, and maintenance of the proposed generating station at the preferred site (subject to the conditions set forth in the stipulation).

FINDINGS OF FACT AND CONCLUSIONS OF LAW:

(1) Dresden is a joint venture between subsidiaries of Dominion Resources, Inc. Dresden is a "person" under Section 4906.01(A), Ohio Revised Code.

(2) The proposed project is a "major utility facility" as defined in Section 4906.01(B)(1), Ohio Revised Code.

(3) On April 13, 2000, Dresden filed a motion for waivers of the two-year notice provisions of Section 4906.06(A)(6), Revised Code, and the filing of certain alternative site information.

(4) By Entry dated April 28, 2000, the administrative law judge granted Dresden's waiver requests in part.

(5) A public informational meeting was held in Dresden, Ohio, on May 2, 2000, as required by Rule 4906-05-08, O.A.C.

(6) Dresden formally submitted its application for a certificate of environmental compatibility and public need on June 23, 2000.

(7) On August 24, 2000, the Board notified Dresden that, pursuant to Rule 4906-1-14, O.A.C., the application had been found to be complete.

(8) Dresden filed proof that it served copies of the application upon the requisite government officials and affected landowners on August 24, 2000.

(9) On September 29, November 15, and November 28, 2000, the applicant filed proofs that notices of the hearings regarding the application in this case were published as required by Rule 4906-5-08(B)(1) and (2), O.A.C., in The Dresden Transcript and The Times Recorder, newspapers of general circulation in Muskingum County, Ohio.

(10) The staff report of investigation was filed on November 7, 2000.

(11) The local public hearing was held as scheduled on November 21, 2000, in Dresden, Ohio.

(12) The adjudicatory hearing regarding this application was held as scheduled on November 22, 2000, in Columbus, Ohio.

(13) The applicant has provided adequate data on the project for the Board to determine the basis of need for the proposed facility as required by Section 4906.10(A)(1), Revised Code. The record of this proceeding demonstrates that there is a need for the proposed facility.

(14) From the evidence of record, the Board has determined the nature of the proposed facility's probable environmental impact as required by Section 4906.10(A)(2), Revised Code.

(15) The record establishes that the proposed generating facility (at the preferred location and subject to the conditions adopted) represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations under Section 4906.10(A)(3), Revised Code.

(16) Section 4906.10(A)(4), Revised Code, is not an issue in this case, since the application seeks authority to construct an electric generating station.

(17) The record contains adequate data on the project for the Board to determine that the proposed facility (at the preferred location and subject to the conditions adopted) will comply with Chapters 3704, 3734, and 6111 and Sections 1501.33 and 1501.34, Revised Code, and all regulations thereunder, as required by Section 4906.10(A)(5), Revised Code.

(18) The record contains adequate data on the project for the Board to determine that the proposed facility (at the preferred location and subject to the conditions adopted) will serve the public interest, convenience, and necessity, as required by Section 4906.10(A)(6), Revised Code.

(19) The record contains adequate data on the project for the Board to determine the facility's impact on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929, Revised Code, as required by Section 4906.10(A)(7), Revised Code.

(20) The record contains adequate data on the project for the Board to determine that the facility as proposed (at the preferred location and subject to the conditions adopted) incorporates maximum feasible water conservation practices considering available technology and the nature and economics of the various alternatives, as required by Section 4906.10(A)(8), Revised Code.

(21) The record evidence in this matter provides sufficient factual data to enable the Board to make an informed decision.

ORDER:

It is, therefore,

ORDERED, That the joint stipulation and recommendation is approved in its entirety. It is, further,

ORDERED, That a Certificate of Environmental Compatibility and Public Need for the above-captioned project is issued to Dresden for the construction, operation, and maintenance of the proposed facility at the preferred site. It is, further,

ORDERED, That the certificate contain the 27 conditions set forth in Section V of this Opinion, Order, and Certificate. It is, further,

ORDERED, That a copy of this Opinion, Order, and Certificate be served upon each party of record.

THE OHIO POWER SITING BOARD

Alan R. Schriber, Chairman of the
Public Utilities Commission of Ohio

Joseph C. Robertson, Board Member
and Interim Director of the Ohio
Department of Development

Samuel W. Speck, Board Member
and Director of the Ohio Department
of Natural Resources

Nick Baird, M.D., Board Member and Director of the Ohio Department of Health

Christopher Jones, Board Member and Director of the Ohio Environmental Protection Agency

Fred L. Dailey, Board Member and Director of the Ohio Department of Agriculture

Stephen A. Sebo, Board Member and Public Member

GLP/vrm

Entered in the Journal
FEB 12 2001
A True Copy
Gary E. Vigorito
Secretary

Fremont

BEFORE

THE OHIO POWER SITING BOARD

In the Matter of the Application of Fremont Energy Center LLC for a Certificate of Environmental Compatibility and Public Need for a Merchant, Combined Cycle, 704-Megawatt Power Plant in Sandusky County, Ohio.	))))))	Case No. 00-1527-EL-BGN

OPINION, ORDER AND CERTIFICATE

The Ohio Power Siting Board (Board), coming now to consider the above-entitled matter; having appointed its administrative law judge to conduct public hearings; having reviewed the evidence presented at the hearings held in this matter; having reviewed the proposed stipulation, and being otherwise fully advised in the premises, hereby waives the necessity for an administrative law judge's report and issues its opinion, order and certificate in this case as required by Section 4906.10, Revised Code.

APPEARANCES:

Bricker & Eckler, by Sally W. Bloomfield and Amy S. Bartemes, 100 South Third Street, Columbus, Ohio 43215, on behalf of Fremont Energy Center, LLC.

Betty D. Montgomery, Ohio Attorney General, by Steven Nourse and Kimberly A. Danosi, Assistant Attorneys General, Public Utilities Section, 9th Floor, 180 East Broad Street, Columbus, Ohio 43215, and by Margaret A. Malone and Brian T. Waltz, Assistant Attorneys General, Environmental Enforcement Section, State Office Tower, 25th Floor, 30 East Broad Street, Columbus, Ohio 43215-3428, on behalf of staff of the Ohio Power Siting Board.

OPINION:

I. Summary of the Proceedings

All proceedings before the Board are conducted according to the provisions of Chapter 4906, Revised Code, and Chapter 4906, Ohio Administrative Code (O.A.C.).

On August 21, 2000, Fremont Energy Center LLC (Fremont or applicant) filed a motion for waivers of certain filing requirements under Rule 4906-1-03, O.A.C., including a waiver of the requirement to file an application two years prior to commencement of construction under Section 4906.06(A)(6), Revised Code. On September 29, 2000, Fremont filed its application for a certificate of environmental compatibility and public need to construct a 704-megawatt (MW) electric generating station located in Sandusky Township, Sandusky County, Ohio (Applicant Ex. 1). The proposed project is a "major utility facility" as defined in Section 4906.01(B)(1), Revised Code. Fremont's waiver request was granted in part by entry dated December 12, 2000.

On December 22, 2000, the Board notified Fremont that, pursuant to Rule 4906-1-14, O.A.C., the application had been found to be complete. Fremont served copies of the

application upon local government officials and filed proof of service with the Board on January 2, 2001 (Applicant Ex. 2). By entry of January 8, 2001, the administrative law judge scheduled the nonadjudicatory (local) public hearing for March 27, 2001, in Fremont, Ohio, and the adjudicatory hearing for March 28, 2001, in Columbus, Ohio. The entry also set the effective date of the application as January 8, 2001. On January 23 and March 12, 2001, the applicant filed proofs of publication of the Board hearings that were made in *News Messenger*, a newspaper of general circulation in Sandusky County (Applicant Ex. 3). The Board staff (staff) conducted an investigation concerning the environmental and social impacts of the proposed project. Staff filed its report of investigation with the Board on March 12, 2001 (Staff Ex. 1).

The administrative law judge convened the local hearing on March 27, 2001, as scheduled. At the hearing, 10 members of the public presented sworn statements and three presented unsworn statements. The adjudicatory hearing took place on March 28, 2001, at which the parties indicated that they had reached an agreement on the issues. Also at the hearing, George Bacon testified on behalf of the applicant in response to the issues raised at the public hearing in opposition to the project. On March 29, as amended on May 11, 2001, the parties filed a joint stipulation and recommendation (stipulation) resolving all of the issues (Jt. Ex. 1).

II. Proposed Facility

Fremont proposes to construct an energy facility that will utilize advanced gas/steam turbines and combined-cycle technology to generate electricity (Applicant Ex. 1, at 2). The maximum net-plant winter output will be 760 MWs and the maximum net-plant summer output will be 680 MWs. The plant is designed to operate solely on natural gas and Fremont will arrange for the construction of a natural gas transportation line from nearby natural gas pipelines (*Id.*). The plant will use potable water from the city of Fremont and will discharge its treated process wastewater to the city of Fremont's existing wastewater collection system (*Id.* at 2, 3). The city of Fremont plans to build a 5,000-foot extension of its existing water distribution system to meet the facility's wastewater requirements (Staff Ex. 1, at 4).

Fremont has identified two proposed sites for the project, both of which are located in Sandusky Township, Sandusky County (Applicant Ex. 1, at 2). The preferred site is approximately 80 acres and located approximately two miles northwest of the City of Fremont. It is situated on the east side of County Road 138, by U.S. Route 20 on the south, Local Route 73 to the north, and State Route 19 to the east (Staff Ex. 1, at 3). The majority of the area within the preferred site is cultivated farmland and open fields. Land surrounding the preferred site is primarily used for agricultural production. An abandoned railroad corridor extends diagonally northwest to southeast, through the southwestern corner of the site (Applicant Ex. 1, at 3). The generating facility would connect with both FirstEnergy Corp.'s (FE) West Fremont substation and American Electric Power's (AEP) Fremont substation (Staff Ex. 1, at 3). The preferred site is immediately adjacent to a FE substation and the AEP substation is located approximately 5,000 feet from the center of the preferred site. The preferred site is also located on essentially flat land that slopes gently to the northeast. One residential home site is located 200 feet west of the proposed construction site (which is under negotiation for purchase). The applicant stated that the air quality of this location is currently in

attainment for all criteria pollutants. The alternate site is approximately 3,500 feet northwest of the preferred site and consists of approximately 20 acres of flat farmland. The same abandoned railroad corridor that crosses the preferred site is located on the southwest side of the alternate site and Route 73 abuts the alternate site to the north and farmland is located in the areas east and south of the site. The two sites are similar in character from a geographic and topographic perspective (Staff Ex. 1, at 3, 4).

III. Certification Criteria

Pursuant to Section 4906.10(A), Revised Code, the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines:

(1) The basis of the need for the facility;[1]

(2) The nature of the probable environmental impact;

(3) The facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;

(4) In the case of an electric transmission line, such facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and such facilities will serve the interests of electric system economy and reliability;

(5) The facility will comply with Chapters 3704, 3734, and 6111, Revised Code, all rules and standards under those chapters and under Sections 1501.33, 1501.34, and 4561.32, Revised Code;

(6) The facility will serve the public interest, convenience, and necessity;

(7) The probable impact of the facility on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Revised Code, that is located within the site and alternative site of the proposed major facility; and

(8) The facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of various alternatives.

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[1] Since the proposed facility constitutes a "major utility facility", as defined in Section 4906.01(B)(1), Revised Code, the Board is required to presume the need for the facility as that need is stated in the application.

IV. Summary of the Evidence

A. Hearings

Thirteen people gave statements at the local hearing. In sworn testimony, one individual voiced opposition to the project because he claimed that it will be located adjacent to a private park area named the Christy Farm Nature Preserve which was not identified by the applicant. He also indicated that he opposed the project because he claimed the project would decrease traffic safety and cause air, noise, and visual pollution. Another person questioned where the power generated from the facility will go and where the water for the project will come from (Tr. I, 5-19). Nine other persons gave sworn testimony in support of the project, including the mayor of Fremont, and representatives of the Sandusky Park District, Sandusky Township, Sandusky County Economic Development Corporation, Ohio Small Business Development Centers, and Sandusky County. They believed that the project would benefit the residents of Sandusky Township and improve economic development and employment opportunities in the area (Tr. I, 20-44). Three persons gave unsworn statements both in support and in opposition to the project.

At the evidentiary hearing, Mr. Bacon testified that, the applicant did not identify the Christy Nature Preserve in its application because it is a private area and not an officially designated as a preserve by the state, county, or city (Tr. II, 11). He also testified that there is nothing unique about the preserve that would have caused the environmental impacts to be substantially different that the area located within the one-mile radius described in the application (*Id.*). Mr. Bacon described Fremont's efforts in addressing the air emissions, water, noise and visual pollution issues raised at the hearing and noted that each of these areas has been addressed in the application (*Id.* at 14-16, 26). He also noted that the applicant has agreed to work with Sandusky County and Township in addressing all traffic safety issues (*Id.* at 16). Mr. Bacon also testified that the facility will not be using groundwater for the project and that all water will be provided by the city of Fremont (*Id.* at 18).

B. Basis of Need (Section 4906.10(A)(1), Revised Code)

The applicant states that there is a need for new natural gas-fired generation in the East Central Area Reliability (ECAR) region (Applicant Ex. 1, at 13). In its application, Fremont claims that much of the new announced generation is not viable and capacity gaps remain for both peaking and combined-cycle plants. The applicant notes that natural gas-fired combined-cycle generation is needed in the 2003 timeframe to supplement the existing baseload fleet and help meet peak demand (*Id.* at 14). The applicant points out that, based on the draft assessment of ECAR region-wide capacity margins for the years 1998 and 2002, ECAR will satisfy its regional generation reliability criteria only if all planned generation is constructed and a number of other assumptions are realized. Further, by 2007, 61 percent of the capacity within ECAR will be 30 or more years old and the need to maintain generator availability will become increasingly difficult to schedule and perform (*Id.* at 16). Applicant contends that, because there are uncertainties surrounding electric industry restructuring, most utilities have not built the generation required to meet their expected demand and, instead, have opted to rely on the imports

from other regions and curtailment of interruptible load to manage regional supply shortages (*Id.* at 17).

Fremont contends that proposed new environmental regulations are likely to impact electrical generating units in the ECAR region (*Id.* at 18). These include limitations on the amount of nitrogen oxides (NOx) and carbon emissions from fossil-fired plants. Fremont also notes that, because 80 percent of ECAR's generation mix is fired by fossil fuels, mostly coal, ECAR has the potential to be significantly impacted by any NOx or carbon reductions (*Id.* at 18). Based upon this information, Fremont contends there is a public need in the region for the proposed generation.

In its investigative report, staff points out, as applicant noted, several reports predict projected peak demand would increase, but capacity margins will decrease (Staff Ex. 1, at 14, 15). Staff agrees with Fremont that, as load continues to grow in the region, additional capacity will be needed (*Id.* at 15). Staff emphasizes, however, that establishing that there is a regional need for capacity and energy from the Fremont project does not mean that such a need exists for any specific Ohio utility (*Id.*).

C. Nature of Probable Environmental Impact and Minimum Adverse Environmental Impact (Sections 4906.10(A)(2) and (3), Revised Code)

Fremont explained that an initial screening of Indiana, Michigan, and Ohio was performed for the identification of prospective sites that could be utilized for the development of 500 to 800-MW combined-cycle power facilities (Applicant Ex. 1, at 4). The Fremont area was specifically included in this review and was concluded to be a favorable location for the project. Fremont initially selected two 20-acre sites in Sandusky County, but the preferred site was later expanded to include an additional 60 acres to allow for onsite parking and construction laydown (*Id.*). Fremont states that the preferred site was selected over the alternate site due to the favorable technical features of the preferred site. The preferred site was larger than the alternate site. The preferred site was closer to AEP's Fremont substation than the alternate site and closer to the city of Fremont's water main and wastewater pipeline (*Id.* at 5, 6).

Fremont also evaluated the impacts of the project's construction and operation on the environment and on the community. It noted that many of the construction impacts have been minimized through the selection of a site that is relatively flat and requires minimal tree clearing and has no wetlands or floodplains (*Id.*). Further, Fremont notes that, although the site is in active agricultural use, it is not designated as an agricultural district and no impact to any designated agricultural district will occur as a result of the construction of the project (*Id.* at 6, 7). There will also be no impacts to cultural resources, including archaeological artifacts and no negative impact to recreational resources as a result of the project (*Id.*).

Fremont reported that air quality impacts during construction will be limited to relatively minor emissions from the construction equipment required for site preparation and from fugitive dust emissions (*Id.*). Fremont stated in its application that impacts to water quality will be extremely limited with no direct impacts to wetlands or surface waters. Fremont explained that it will obtain a general permit for construction under the National Pollutant Discharge Elimination System (NPDES) program and will implement

best management practices to maintain water quality standards, minimize erosion, and control sediment (*Id.* at 8). The applicant also notes in the application that noise impact will also be minimized as all power generating equipment will be located within totally enclosed structures and other sound attenuation features will be included in the project (*Id.*). All solid waste generated during operation of the facility will be minimized through recycling efforts, and removed from the site by licensed haulers and disposed of at local landfills (*Id.* at 9).

Staff reviewed the environmental information contained in the record compiled as of the date of its report and made site visits to the project areas. In its report, staff recommends the Board find that the nature of the probable environmental impact has been determined for the facility (*Id.* at 16-20). In addition to a number of the facts summarized above, staff found the following with regard to the nature of the probable environmental impact of the facility:

(1) The project involves the construction of a combined-cycle facility consisting of two natural gas-fired combustion turbine generators, two-heat recovery steam generators and associated equipment.

(2) The gas turbines would be equipped with dry low-NOx burners to reduce NOx emissions to 9 parts per million, dry volume (ppmvd). Selective catalytic reduction (SCR) systems would be installed on each of the two heat recovery steam generators resulting in a further reduction of NOx emissions to 3.5 ppmvd.

(3) The multi-cell cooling towers would have high efficiency drift eliminators to minimize particulate emissions from the towers.

(4) The stacks for the gas turbines would be 164 feet tall and 18.5 feet in diameter.

(5) Each generator would be connected to a step-up transformer to increase the voltage. The transformers would be oil-filled and have containment enclosures to prevent any potential spills to the surrounding area.

(6) A generator would be provided to safely shut the facility down in the event of a disruption of power delivery.

(7) Containment devices would be used to ensure that oil and chemicals used during construction and operation would not contaminate groundwater sources.

(8) Two 15,000-gallon steel tanks would store the aqueous ammonia for use in the SCRs. A sodium hypochlorite storage tank and a sulfuric acid storage tank would also be located at the preferred site. All four tanks would be placed within a

concrete spill containment berm or vault sized to contain 100 percent of the tanks contents in case of a spill.

(9) Two 170,000 gallon demineralized water tanks would be erected on-site to hold demineralized water for combustion turbine inlet air-cooling and as makeup water to the steam cycle.

(10) The facility would be designed to operate on natural gas only. Natural gas would be supplied to the site by Dominion East Ohio Gas (Dominion).

(11) Demineralized, process, and sanitary wastewater would be treated at the city of Fremont's existing wastewater treatment plant. The applicant estimates the generating facility would discharge approximately 1.2 million gallons per day (mgd) of wastewater under normal operating conditions.

(12) Demineralized wastewater would be treated by the facility's neutralization system prior to discharge to and treatment at the city of Fremont's wastewater treatment plant. Process wastewater would be collected and routed to the equalization basin prior to treatment at Fremont's wastewater treatment plant. Sanitary wastewater, estimated to be 3,600 gallons per day, would be discharged directly and treated at the city's existing wastewater treatment plant.

(13) The generating plant would use an average of approximately 5.6 mgd of water. Maximum usage is expected to be approximately 6.8 mgd, with minimum usage occurring in the winter at an estimated 3.9 mgd. The city's water plant capacity would be expanded to meet the increased demand for water but the expansion would not require any modifications to the existing water intake structure.

(14) Water needs for the facility, including potable, cooling towers and demineralized water makeup would be provided by the city of Fremont's municipal water system, which relies on Sandusky River water. The city would need to extend its existing water line approximately 5,000 feet to serve the preferred project site. The impacts associated with this water line extension would be essentially the same as those for the proposed wastewater collection system extension, as the two lines would generally follow the same alignment on an abandoned railroad corridor. A new wastewater line in a separate trench along the same alignment will connect to the city's wastewater treatment plant.

(15) Waste oil and equipment washwater would be collected on-site in an underground tank and trucked off-site for proper disposal by a licensed contractor.

(16) Stormwater would be routed to an on-site detention basin for equalization and solids settlement prior to discharge to the county drainage ditch system.

(17) A general NPDES permit would be required for the handling of stormwater during the construction phase of the project. A Spill Prevention Control and Countermeasure (SPCC) plan would be required to manage stormwater runoff during operation.

(18) The generating facility would interconnect to both the FE West Fremont Substation and the AEP Fremont Substation. Two 138-kilovolt (kV) radial transmission lines would be installed between the generating station's electric switchyard and the FE substation immediately adjacent to the preferred site. In turn, the FE substation would connect to the AEP substation via an upgrade to the existing 69-kV transmission line that currently connects the two substations. Two new 138-kV transmission lines within the existing right-of-way (r-o-w) would connect the FE substation to the AEP substation. The two new transmission lines between the two substations will be considered in another application to the Board.

(19) Natural gas would be supplied to the proposed facility via a connecting tap line to an existing Dominion pipeline that runs in an east-to-west direction approximately 1 mile north of the preferred site. The proposed alignment of the facility's connecting gas tap line would take it through open agricultural fields, require the removal of a few trees and result in the loss of a small amount of terrestrial habitat. If needed, a separate gas transmission line application will be submitted to the Board.

(20) Both sites are generally flat and therefore would require minimal grading. The applicant intends to maintain existing drainage patterns to the extent possible, in order to minimize impacts on the surrounding areas. Ditches and swales would be provided to capture stormwater and direct it by gravity flow to the on-site detention basin. A grading and drainage plan would be developed in coordination with the Sandusky County Soil and Water Conservation Service.

(21) The applicant anticipates no geologic constraints to the safe construction and operation of the facility at the preferred site.

(22) The preferred and alternate sites are located in an agricultural production area that is used to grow row crops. A spring/summer crop would not be planted in 2001, in planning for the construction of the facility. Existing vegetation at the preferred site would be removed and appropriately disposed, either on-site or off-site.

(23) The applicant estimates that approximately 10 trees would be removed from the abandoned Penn Central Railroad corridor to provide an open area for the construction of the facility's access road. Removal of the trees and construction of the road is not expected to significantly impact local area wildlife habitat.

(24) Construction at the preferred site would result in the permanent conversion of some Ohio farmland to non-agricultural use. A fence would be erected around the proposed facility, enclosing an area of approximately 28 acres. The remaining area of the preferred property would be returned to farming, its pre-construction usage.

(25) Construction of the project would not result in a loss or impact to Ohio wetlands.

(26) No building or structures would be removed or relocated from either site. The applicant is negotiating for the purchase of a home on County Road 138 immediately west of the preferred site, which will be donated to the Sandusky County Parks District.

(27) Potential construction emissions include volatile organic compounds (VOC), sulfur dioxide (SO_2), carbon monoxide (CO), NOx, and particulate matter less than 10 microns in diameter (PM10). These emissions are not expected to cause any significant environmental impacts at or beyond the site area, which is currently in attainment for all criteria pollutants.

(28) The applicant submitted an application for a Permit to Install an Air Pollutant Source for the preferred site to the Ohio Environmental Protection Agency (OEPA) on November 27, 2000. The application is pending.

(29) Noise levels would vary considerably during construction of the generating station depending on type, number and duration of machines operated at different phases of construction. The construction noise would be short-term and limited to daytime hours, so this, combined with the site's relatively isolated location, should help minimize any adverse impacts to the area.

(30) The applicant does not anticipate the need for any dynamiting at the preferred site. If blasting should be required, it would be done during daytime hours, and surrounding residents would be notified in advance of this activity.

(31) Driving of piles is not expected to be required, but would be done during daytime hours if it is necessary.

(32) The applicant has undertaken a computer simulated noise study to estimate the operational noise impacts associated with the two proposed combustion turbines and their ancillary equipment. Based on the results of the noise study, the applicant estimates the operational noise level at the six closest sensitive noise receptors would be 50 decibels A scale (d.b.a.) or less, with the generating station in full operation.

(33) The applicant identified endangered species that could be present within the vicinity of the project primarily through information obtained from the United States Fish and Wildlife Service (USFWS), as well as the Ohio Department of Natural Resources (ODNR)–Division of Natural Areas and Preserves. The USFWS identified four federally endangered species as potentially occurring within the vicinity of the project. Those species included prairie-fringed orchid, massasauga rattlesnake, bald eagle and Indiana bat. However, habitat suitable for any of the identified threatened or endangered species was not found on or near the preferred site. As such, the project is not expected to impact those species.

(34) The applicant conducted a Phase 1 archaeological study of the entire 80 acres that comprises the preferred site. No significant archaeological or historic properties were located on or near the property.

(35) An abandoned Penn Central Railroad corridor extends diagonally through the southwestern comer of the site. The corridor is to be converted to a recreational trail by the Sandusky County Park District. The applicant would pay a fee to the Park District for the r-o-w over the proposed trail and the Park District would use the money to defray part of the expense associated with the trail development.

(36) The applicant identified Little Muddy Creek and Muskellunge Creek as two recreational sites within one mile of the preferred site. Woodlands, commercial uses, and residential areas buffer the two recreational areas from the project sites. Therefore, it is anticipated that neither the construction nor the operation of the generating facility would have any adverse impact on the activities of users of the recreational facilities.

(37) The applicant estimates a total of 25 employees would be required to staff the facility, once completed. Fremont believes that most of the employees required to operate the generating station are already in residence. As such, no significant impact on local public services and facilities is anticipated.

(38) The applicant asserts that both the preferred and alternate sites are within an area of minimal flooding as defined by FEMA, and are not within the 100-year floodplain.

Staff Ex. 1, at 16-23. The staff concluded that the preferred site represents the minimum adverse impact (*Id.* at 23).

D. Electric Power Grid (Section 4906.10(A)(4) Revised Code)

The proposed project is not a transmission line. Therefore, this statutory condition is not an issue in this case. However, interconnection of the facility would include the construction of transmission line interconnections. Review of a request to construct the interconnection transmission line, when requested, would occur under a separate filing before the Board (Staff Ex. 1, at 24).

E. Air and Water Permits and Solid Waste Disposal (Section 4906.10(A)(5) Revised Code)

In its application, Fremont indicated that the facility will require four federal air permits, including a Permit to Install New Source of Pollution, Title V Operating Permit, Title IV Acid Rain Permit, and Federal NOx Budget Trading Program (Applicant Ex. 1, at 91). Fremont also noted that 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 which will be minimized with periodic watering (*Id.*). The applicant also noted that, potential emissions that could be generated during construction of the facility include VOC, SO_2, CO, NOx, and PM (*Id.*).

Fremont reported that no new water source is required for the project and that the project will rely on the city of Fremont's existing municipal system as its sole source of water. Wastewater discharge will also utilize the city of Fremont system and adequate capacity exists within the existing treatment facility to accommodate the project wastewater flows (*Id.* at 95). Fremont noted that three permits related to water resources will need to be obtained from OEPA, including a general NPDES permit for stormwater discharges associated with construction, a general NPDES permit for stormwater discharges associated with operation, and a permit associated with industrial discharge to the city Fremont (*Id.* at 95). Staff noted that a SPCC plan would be required to manage stormwater runoff during operation (Staff Ex. 1, at 25).

The preferred and alternate sites are both undeveloped and used for agricultural purposes. No debris was noted during on-site inspections (Applicant Ex. 1, at 100). Fremont notes that, during construction, solid waste will be generated and all waste will be removed from the site by licensed contractors in accordance with applicable regulatory requirements (*Id.*). In its report, staff noted that Fremont provided staff with

documentation from the Ohio Office of Aviation (OOA) and that the OOA supported its claim that the facility would not detrimentally affect local area support operations (Staff Ex. 1, at 25).

F. Public Interest, Convenience, and Necessity (Section 4906.10(A)(6) Revised Code)

Fremont states that the facility will have a sizeable positive impact on regional development because it will contribute to the flow of investments into the local economy (Applicant Ex. 1, at 134). Staff agreed with this assessment and found that the facility would serve the public interest, convenience and necessity by providing additional electrical generation when needed (Staff Ex. 1, at 26). Staff also noted that the construction of this facility would help to alleviate the gap between growing electricity demand and existing generation capacity, thereby enhancing the reliability of electric supply in Ohio and the surrounding states (*Id.*). A review of several independent studies demonstrated that Ohio, as well as surrounding states, is in need of additional generation capacity and electricity reserve margins are at historic lows. Staff found that, during construction, noise would vary considerably depending on the type, number, and duration of machines operated at different phases of construction. Construction noise would occur during an anticipated 24-month construction schedule. Noise sources would include earthmoving equipment, erection of equipment, truck traffic, and installation of equipment. Pile driving, if determined to be necessary, would be limited to daytime activities (*Id.*).

Additionally, staff found that elevated electric and magnetic fields resulting from the generation equipment would be confined to the site and would be attenuated to near background levels at the property lines (*Id.* at 27). Staff determined that the facility would be served by Dominion's natural gas and pipeline system and that adequate supplies of natural gas and pipeline capacity are available to this facility (*Id.*). At the time of the report, staff recommended that the Board find that, with the exception of the grid interconnection, the facility would serve the public interest (*Id.* at 30). Staff further recommended that the Board find that, with information currently available, it is not possible to determine if the facility is consistent with plans for expansion of the regional power grid. In addition, stafff concluded that the facility cannot be found to serve to benefit the electric system economy and reliability until the applicant has provided the Board with proof that system upgrade requirements, as identified, have been adequately addressed in agreements between the applicant and regional transmission owners (*Id.*).

G. Agricultural Districts and Agricultural Lands (Section 4906.10(A)(7), Revised Code)

According to Fremont and staff, there are no agricultural district lands located within the preferred or alternate sites (Applicant Ex. 1, at 140; Staff Ex. 1, at 31). Fremont further noted that there would be no impacts to field operations, irrigation, or field drainage system as a result of the project (Applicant Ex. 1, at 140).

H. Water Conservation Practices (Section 4906.10(A)(8), Revised Code)

Fremont states that there will be no impact to public or private water supplies during construction and operation of the facility or as a result of pollution control equipment failures (*Id.* at 114). The project will obtain water from the city of Fremont's municipal water system during facility commissioning, start-up, and operation. Fremont reports that an adequate water supply is available from that source to meet the project's needs without constraining its existing use (*Id.* at 115). Staff found that the facility is designed to use approximately 5.6 mgd and that Fremont would provide water for the generating station (Staff Ex. 1, at 32). According to staff, the applicant will also use wet cooling, as opposed to once-through cooling, which will reduce water intake requirements.

V. Stipulation of the Parties

In the stipulation, Fremont and staff believe that ample evidence has been provided to demonstrate that construction of the facility at the preferred site meets the statutory criteria of Section 4906.10(A)(1)–(8), Revised Code (Jt. Ex. 1). Fremont and staff recommend that the Board issue it a certificate for the proposed facility at the preferred site, subject to the recommended 25 conditions identified below (*Id.* at 3-7).[2]

(1) At least 30 days before the pre-construction conference, the applicant shall submit to staff, for review and approval, one set of engineering drawings of the certificated facility, including all construction laydown areas, so that staff can determine that the final project design is in compliance with the terms of the certificate.

(2) The applicant shall develop a grading and drainage plan in coordination with the Sandusky County Soil and Water Conservation District. Applicant shall submit a copy of the plan to staff for review at least 15 days prior to the pre-construction conference.

(3) The applicant shall conduct a pre-construction conference prior to the start of any site work, which staff will attend, and discuss how environmental concerns relating to matters identified in the application, staff report and the conditions to the certificate will be satisfactorily addressed.

(4) The applicant shall not commence construction of the project until it has obtained and submitted to staff, for review, the facility study and signed interconnection agreement with American Transmission Systems Inc. If applicant enters into an agreement with any other transmission entity addressing transmission system modifications associated with the project, it shall provide a copy to staff.

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2 The stipulated conditions are substantially identical to the originally recommended conditions of the staff.

(5) The applicant shall obtain all applicable permits and authorizations as required by federal and state entities for any activities where such permit or authorization is required, including, an NPDES permit for stormwater discharges associated with construction; an NPDES permit for stormwater discharges associated with industrial activities operation; permit-to-install for air contaminant sources; a permit associated with industrial discharge to the existing city of Fremont wastewater treatment plant; and plan approval for water and a permit-to-install for wastewater line installation (if either or both are not obtained by the city of Fremont). The applicant shall provide a copy of each permit or authorization, including terms and conditions to staff within seven days of receipt.

(6) Prior to construction, the applicant shall cause to be filed the applications with the Board for approval of the natural gas transmission pipeline and the electric transmission line interconnections, including detailed measures for identifying and avoiding or minimizing impacts to any significant environmental resources.

(7) Prior to construction, the applicant shall provide to staff for review the city of Fremont's plan indicating the route of the proposed alignment for the water and wastewater lines, to be extended to the project site by the city of Fremont. The applicant shall also provide a satisfactory evaluation of potential impacts and proposed mitigative measures to be utilitized during construction of the lines to assist staff in determining that the potential adverse impacts associated with the project have been addressed.

(8) The applicant shall design and install a fire protection system in accordance with the National Fire Protection Association standards and local codes as required.

(9) The applicant shall provide to staff the date on which construction will begin, as it becomes known.

(10) The facility be installed on the applicant's preferred site as presented in the application filed on September 29, 2000, and as modified by applicant's supplemental data submitted to staff.

(11) The applicant shall utilize the equipment described in the application in Sections 4906-13-04(B) and (C) and as modified by supplemental data filed with staff.

(12) The applicant shall utilize the mitigative measures described in the application and the supplemental data, unless modified by conditions to the certificate or applicable federal and state permits.

(13) The applicant shall properly install erosion and sedimentation control measures at the project site. All such erosion control measures shall be inspected after each rainfall event and promptly repaired and maintained until permanent vegetative cover has been established on disturbed areas.

(14) During construction, the applicant shall seed all disturbed soil within seven days of final grading (weather permitting) with a seed mixture acceptable to the appropriate county cooperative extension service. Denuded areas, including spoils piles, shall be seeded and/or stabilized within seven days, if they will be undisturbed for more than 45 days. Reseeding shall be done within several days of emergence of seedlings as necessary until vegetation in all areas has been established.

(15) The applicant shall dispose of all contaminated soil and construction debris in approved landfills in accordance with the OEPA regulations.

(16) The applicant shall employ the following construction methods in proximity to any drainage ditches, streams and wetlands:

(a) All wetland areas, including streams, shall be delineated by fencing, flagging or other prominent means;

(b) Structures are to be located outside of the identified watercourses;

(c) All construction equipment shall avoid watercourses;

(d) Storage, stockpiling and/or disposal of equipment and materials in these sensitive areas shall be prohibited; and

(e) All storm water runoff is to be diverted away from fill slopes and other exposed surfaces to the greatest extent possible, and directed instead to appropriate catchment structures, sediment ponds, etc., using diversion berms, temporary ditches, check dams, or similar measures.

(17) The applicant shall coordinate with fire, safety and emergency personnel during all stages of the project to promote efficient and timely emergency preparedness and response. Additionally, the applicant shall coordinate with local building officials with regard to the applicant's construction of structures not directly related to the operation of the generating plant.

(18) The applicant shall assure that the construction and ongoing maintenance of the natural gas handling system and associated facilities comply in all respects with state and federal laws and regulations pertaining to gas pipeline safety.

(19) Prior to operation, the applicant shall submit a copy of the SPCC plan to staff for review.

(20) Prior to operation, the applicant shall submit to the staff a signed interconnection agreement with ATSI. If the applicant enters into an agreement with any other transmission entity addressing transmission system modifications associated with the project, it shall provide a copy to the staff.

(21) The applicant shall provide to staff the date on which construction was completed, as it becomes known.

(22) The applicant shall maintain sound levels resulting from the operation of the facility at or below 50 decibels A scale at the nearest noise sensitive receptor.

(23) For nonfirm capacity, the applicant, or its designated operator, will seek and contract for transmission service through the Open Access Same-Time Information System (OASIS), as specified in FERC Orders 888, 889, and any subsequent OASIS-related orders or through an successor OASIS system.

(24) The applicant shall provide to staff the date on which the facility began commercial operation as it becomes known.

(25) The certificate shall become invalid if the applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate.

VI. Conclusion

Staff and Fremont agree that the record is sufficient for the Board to issue a certificate for the proposed facility (Jt. Ex. 1, at 7). Although not binding upon the Board, stipulations are given careful scrutiny and consideration, particularly where no party is objecting to the stipulation. We have reviewed the record in this proceeding and we conclude that the stipulation is reasonable and should be adopted. Based upon all of the above, we are approving the application in this case and granting a certificate of environmental compatibility and public need for construction, operation, and maintenance of the proposed generating station at the preferred site (subject to the conditions set forth in the stipulation).

FINDINGS OF FACT AND CONCLUSIONS OF LAW:

(1) Fremont is a "person" under Section 4906.01(A), Revised Code.

(2) The proposed facility is a "major utility facility" as defined in Section 4906.01(B)(1), Revised Code.

(3) On August 21, 2000, Fremont filed a motion for waivers of certain filing requirements under Section 4906.06(A), Revised Code, and Rules 4906-1-13 and 4906-5-04(B), O.A.C.

(4) By entry of December 12, 2000, Fremont's waiver request was granted in part and denied in part.

(5) Fremont filed its application for a certificate of environmental compatibility and public need on September 29, 2000.

(6) On January 8, 2001, the Board notified Fremont that, pursuant to Rule 4906-1-14, O.A.C., the application was certified as complete.

(7) On January 23 and March 12, 2001, Fremont filed proofs of service of the certified application pursuant to Rule 4906-5-07, O.A.C.

(8) By entry of January 8, 2001, the effective date of the application was established as January 8, 2001. The entry also set a local public hearing for Fremont, Ohio on March 27, 2001, and an adjudicatory hearing on March 28, 2001.

(9) The staff report was filed on March 12, 2001.

(10) The local public hearing was held as scheduled on March 27, 2001, in Fremont, Ohio.

(11) The adjudicatory hearing was held as scheduled on March 28, 2001, in Columbus, Ohio.

(12) The applicant has provided adequate data on the project for the Board to determine the basis of need for the facility as required by Section 4906.10(A)(1), Revised Code. The record of this proceeding demonstrates that there is a need for the proposed facility.

(13) From the evidence of record, the Board has determined the nature of the facility's probable environmental impact as required by Section 4906.10(A)(2), Revised Code.

(14) The record establishes that the facility (at the preferred location and subject to the conditions adopted) represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations under Section 4906.10(A)(3), Revised Code.

(15) Section 4906.10(A)(4), Revised Code, is not an issue in this case, since the application seeks authority to construct an electric generating station.

(16) The record contains adequate data on the project for the Board to determine that the facility (at the preferred location and

subject to the conditions adopted) will comply with Chapters 3704, 3734, and 6111 and Sections 1501.33 and 1501.34, Revised Code, and all regulations thereunder, as required by Section 4906.10(A)(5), Revised Code.

(17) The record contains adequate data on the project for the Board to determine that the facility (at the preferred location and subject to the conditions adopted) will serve the public interest, convenience, and necessity, as required by Section 4906.10(A)(6), Revised Code.

(18) The record contains adequate data on the project for the Board to determine the facility's impact on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929, Revised Code, as required by Section 4906.10(A)(7), Revised Code.

(19) The record contains adequate data on the project for the Board to determine that the facility (at the preferred location and subject to the conditions adopted) incorporates maximum feasible water conservation practices considering available technology and the nature and economics of the various alternatives, as required by Section 4906.10(A)(8), Revised Code.

(20) The record evidence in this matter provides sufficient factual data to enable the Board to make an informed decision.

ORDER:

It is, therefore,

ORDERED, That the stipulation is approved in its entirety. It is, further,

ORDERED, That a certificate of environmental compatibility and public need for the above-captioned project is issued to Fremont for the construction, operation, and maintenance of the proposed facility at the preferred site. It is, further,

ORDERED, That the certificate contain the 25 conditions set forth in Section V of this opinion, order, and certificate. It is, further,

ORDERED, That a copy of this opinion, order, and certificate be served upon each party of record.

THE OHIO POWER SITING BOARD

Alan R. Schriber, Chairman of the
Public Utilities Commission of Ohio

Joseph C. Robertson, Board Member and Interim Director of the Ohio Department of Development

Samuel W. Speck, Board Member and Director of the Ohio Department of Natural Resources

Nick Baird, M.D., Board Member and Director of the Ohio Department of Health

Christopher Jones, Board Member and Director of the Ohio Environmental Protection Agency

Fred L. Dailey, Board Member and Director of the Ohio Department of Agriculture

Stephen A. Sebo, Board Member and Public Member

SEF;geb

Entered in the Journal
MAY 21 2001
A True Copy
Gary E. Vigorito
Secretary

Hanging Rock

BEFORE

OHIO POWER SITING BOARD

In the Matter of the Application of Duke Energy Hanging Rock, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Merchant Power Plant in Lawrence County, Ohio.	)))))	Case No. 01-175-EL-BGN

OPINION, ORDER AND CERTIFICATE

The Ohio Power Siting Board (Board), coming now to consider the above entitled-matter, having appointed an Administrative Law Judge to conduct the public hearings, having reviewed the evidence of record and the Stipulation filed by the parties and being otherwise fully advised, hereby issues its Opinion, Order and Certificate in this case as required by Section 4906.10, Revised Code.

APPEARANCES:

Bricker & Eckler, by Sally W. Bloomfield, 100 South Third Street, Columbus, Ohio 43215, on behalf of Duke Energy Hanging Rock, LLC.

Betty D. Montgomery, Ohio Attorney General, by Matthew Satterwhite, Assistant Attorney General, Public Utilities Section, 9th Floor, 180 East Broad Street, Columbus, Ohio 43215-3793, and by Peter M. Simcic, Assistant Attorney General, Environmental Enforcement Section, State Office Tower, 25th Floor, 30 East Broad Street, Columbus, Ohio 43215-3428, on behalf of Staff of the Ohio Power Siting Board (staff).

OPINION:

I. Summary of the Proceedings

All proceedings before the Board are conducted in accordance with the provisions of Chapter 4906, Revised Code, and Chapter 4906, Ohio Administrative Code (O.A.C.). On February 15, 2001, the Duke Energy Hanging Rock, LLC (Duke, Duke Energy or Applicant) conducted a public informational meeting at Rock Hill Elementary School #4, 300 Main St., Hanging Rock, Ohio. On January 24, 2001, Applicant filed a motion for waivers of specific requirements pertaining to its anticipated application. More specifically, Duke Energy requested a waiver from the two-year advanced notice provision under Section 4906.06(A), Revised Code. In addition, Duke Energy requested a waiver from filing fully developed information regarding the alternate site and the requirement to supply specific financial information classified by the Federal Energy Regulatory Commission's (FERC) Uniform System of Accounts pursuant to certain subsections of Rules 4906-13-4(A) and (B), 4906-13-05(B) and (C), 4906-13-06(B), 4906-13-07(A), (B), (C) and (D), and 4906-5-04(B), O.A.C. By entry issued March 15, 2001, Duke's request to waive the two-year advanced notice requirement and to waive the form of the financial information was granted. However, Duke's requests to waive information about the alternate site's topographic, geologic and hydrologic features, a discussion of potential air quality, and the social and ecological impacts associated with the alternate site was denied.

On February 28, 2001, Duke Energy filed its application for a certificate of environmental compatibility and public need to construct a 1,240 megawatt (MW) merchant power plant (Hanging Rock Facility) in Lawrence County, Ohio. The application was amended and supplemented by numerous correspondences filed on March 9, March 15, March 20, April 3, April 4, April 5, April 16, April 27, and May 1, 2001. By letter dated May 3, 2001, the Board notified Duke Energy that the application had been found to comply with the requirements of Chapter 4906-01, et seq., O.A.C.

By entry issued May 15, 2001, a local public hearing for this case was scheduled for July 17, 2001, at 7:00 p.m., at Rock Hill Elementary School #4, Multipurpose Room, 300 Main St., Hanging Rock, Ohio. The May 15, 2001 entry also scheduled the adjudicatory hearing for July 18, 2001, at 10:00 a.m. at the offices of the Public Utilities Commission of Ohio, 180 East Broad Street, 11th floor, Columbus, Ohio. Pursuant to Rule 4906-5-08, O.A.C., and the entry issued May 15, 2001, Duke caused notice of the hearings to be published in newspapers of general circulation in Lawrence County. Proofs of the publication of the notices were filed with the Board on May 24, and July 5, 2001.

The Staff filed its report of investigation on July 2, 2001. The hearings in this matter were held as scheduled on July 17 and 18, 2001.

II. Proposed Facility

In the application before the Board, Duke Energy requests approval to construct the Hanging Rock Facility (facility, project). The proposed facility will be a 1,240-MW natural gas combined-cycle combustion turbine. The facility will be located in Hamilton Township, Lawrence County Ohio. The proposed project site is a 130-acre tract of land leased from Dow Chemical Company. The plant will generate electricity through the utilization of advanced gas turbine and steam turbine combined-cycle technology. The facility will include four advanced-firing, combustion turbine generators; four three-pressure level heat recovery steam generators, with duct burners; and two reheat, condensing steam turbine generators. The facility is designed to operate in combined cycle mode, using only natural gas. The gas turbines will be equipped with dry low nitrogen oxide combustion burners and Selective Catalytic Reduction to control nitrogen oxide emissions. The project site will also include other structures necessary for the operation of the facility, such as a warehouse, maintenance building, administration and control building, and water pump-house.

The generating facility will be connected to the American Electric Power (AEP) 765-kilovolt (kV) Hanging Rock substation, which is located approximately one-half mile southeast of the preferred site. The Texas Eastern Transmission Company's (TETCO) and the Tennessee Pipeline Company's (Tennessee) interstate natural gas pipelines are located within nine miles from the preferred site. A pipeline tap approximately 1,000 feet in length will be constructed from an anticipated extended interstate pipeline to the preferred site.

The project's water requirements, excluding potable water requirements, would be provided from the Ohio River. The generating facility would draw process water from the

Ohio River at a maximum rate of approximately 13.45 million gallons per day (MGD) and is projected to use less than 0.5 percent of riverflow at minimum flow conditions. The facility will not utilize groundwater supplies in the area and potable water service will be provided from the local water provider. The generating facility would discharge approximately 1.4 MGD of wastewater to the Ohio River. The generating facility would have its own wastewater treatment equipment. The process waste and cooling tower blowdown would be treated to comply with all state and federal regulations with respect to discharge into the Ohio River.

As required by statute, Duke Energy presented two potential sites for the proposed project. The preferred and the alternate site each consist of 40 acres located very close to one another on an approximately 130-acre tract of land (project site). The preferred site consists of 40 acres located in the northwest quadrant of the project site and the alternate site consist of 40 acres located in the southeast quadrant of the project site. The project site is 2.3 miles west of Hanging Rock, Ohio. A Norfolk and Western Railroad track and U.S. Route 52 border the project site to the north. The Dow Chemical Hanging Rock facility is located to the west. County Road 1A borders the property to the south and agricultural land borders the project site to the east. A portion of the project site is located within the floodplain of the Ohio River. The topographic relief of the land surface surrounding the project site is attributable to drainage towards the Ohio River. The project site is relatively flat with terrain elevations ranging from 545 to 552 feet above sea level. From the preferred site, the nearest residence is located approximately 1,200 feet northwest of the center of the facility.

III. Certification Criteria

Pursuant to Section 4906.10(A), Revised Code, the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines:

(1) The basis of the need for the facility; in the case of a major utility facility defined in Section 4906.01(B)(1), Revised Code, the Board shall presume the need for the facility as that need is stated in the application pursuant to Section 4906.06(A)(3), Revised Code;

(2) The nature of the probable environmental impact;

(3) The facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;

(4) In the case of an electric transmission line, such facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and such facilities will serve the interests of electric system economy and reliability;

(5) The facility will comply with Chapters 3704, 3734, and 6111, Revised Code, all rules and standards under those chapters and under Sections 1501.33, 1501.34, and 4561.32, Revised Code;

(6) The facility will serve the public interest, convenience, and necessity;

(7) The probable impact of the facility on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929, Revised Code, that is located within the site and alternative site of the proposed major facility; and

(8) The facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of various alternatives.

IV. Discussion of Certification Criteria

A. Basis of Need

Duke Energy is proposing to construct the 1,240-MW combined-cycle facility to provide electric generating capacity for sale to the regional wholesale electric market. Duke Energy asserts a need for the proposed facility based on a variety of factors including the emergence of merchant generators in the wholesale power market, existing and projected regional capacity margins, a review of recent utility long-term forecasts, and environmental regulation factors.

Duke believes that the role of merchant generators has grown in recent years. According to Duke, merchant generators have been responsible for over 50 percent of all new generation brought on line in the United States since 1990 and Duke expects this trend to increase to 80 percent in the near future. This exodus of public utilities from the electric generation business is creating a need for new generation providers that the Applicant expects to be filled by merchant generators. Duke Energy believes that these market changes will result in an increase in competition and customer options, as well as lower wholesale electricity prices.

Duke contends that several recent independent studies and reports have established the need for a significant amount of additional capacity in the East Central Area Reliability Council (ECAR) region, in the near future and long term. Duke notes that Resource Data International, Inc. estimates the ECAR region, which includes Ohio, to need at least 23,000 MW of new capacity by 2012.[1] Further, Duke states that only about 18 percent of the 23,000 MW of capacity required in the region under construction is viable.[2]

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1 Assessment of ECAR-Wide Capacity Margins 1998-2007, ECAR, August 1998 (1998 ECAR report) and Outlook for Power in North America, Resource Data International, Inc., 2000.

2 NewGen Power Plant Database, Resource Data International, Inc., September 2000.

In addition to the information presented in the application, the Staff reviewed a more recent ECAR report on projected regional capacity margins (ECAR 2000 report).[3] The more recent ECAR report projects that summer peak demand will increase approximately 15,800 MW by the year 2009; a growth rate of about 1.7 percent per year. The ECAR 2000 report further projects capacity margins will decline to 7.0 percent by 2009. The ECAR 2000 report also contains a supplemental analysis, which focuses on the period 2000-2004, and only considers existing capacity and capacity under construction that is over 49 percent complete. This analysis indicates that by 2004, in the absence of increased transmission import capability, there will be a need for approximately 5,500 MW of additional generating capacity to be connected in the ECAR region, to maintain reliability at current levels.

Duke Energy also notes there have been electric price spikes in the midwest during the summers of 1998 and 1999. The Applicant notes that numerous reports attribute the fluctuating price of electricity to: load growth in the midwest without a corresponding increase in either generating capacity or transmission capacity, declining reserve margins in the ECAR region, and the need for additional generation in the ECAR region to meet future demand and supplement an aging generation fleet. The reports also advocate public policy which will encourage new generators into the market.[4]

As part of the need analysis, Duke reviewed the 1999 Long-term Forecast Reports for most of Ohio's investor-owned utilities. Duke concludes the reports show that most utilities intend to rely on power purchases from the wholesale market through 2004 to meet anticipated load growth.

Finally, Duke Energy asserts that new and proposed environmental regulations will likely cause a significant reduction in the availability of many electric generation facilities within the United States, especially in ECAR where approximately 80 percent of generation is coal-fired. The Applicant believes that this reduction will likely occur because some units will have extended maintenance outages for equipment retrofits while other less efficient units will be shut down as uneconomical. The Applicant further asserts that environmental regulations to reduce greenhouse gasses could result in the closure of most coal-fired generation in ECAR.

Staff agrees with Duke's reasoning that new and developing environmental regulations may have the potential to cause a significant reduction in the availability of coal-fired electric generation facilities within ECAR; however, Staff does not necessarily agree with the magnitude of the regulations. Nonetheless, Staff believes that the Applicant has adequately demonstrated a need for additional capacity in Ohio and the region. The Staff recommends that the Board find that the need for the proposed project has been demonstrated. Pursuant to Section 4906.10(A)(1), Revised Code, the Commission requires the Board to presume that the need for the facility is as stated in the application.

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3 Assessment of ECAR-Wide Capacity Margins 2000-2009, ECAR, August 2000.

4 Ohio's Electric Market June 22-26, What Happened and Why: A Report to the Ohio General Assembly, PUCO; Staff Report to the Federal Energy Regulatory Commission on the Causes of the Pricing Abnormalities in the Midwest during June 1998, FERC; Price Volatility in Electricity Wholesale Market: Lessons Learned From the Midwest Price Spikes, Electric Power Supply Association, September 18, 1998.

Thus, the Board finds that the basis of need for the project has been determined pursuant to Sections 4906.10(A)(1) and 4906.06(A)(3), Revised Code.

B. Nature of Probable Environmental Impact and Minimum Adverse Environmental Impact

Sections 4906.10(A)(2) and (3), Revised Code, require the Board to determine the nature of the probable environmental impact and whether the proposed facility represents the minimum adverse environmental impact, considering the state of available technology, the nature and economics of the various alternatives, and other pertinent considerations.

The Staff reviewed the environmental information contained in the record and supplemented its review with site visits to the project area. Staff found, among other things, the following with regard to the nature of the probable environmental impacts:

(1) The proposed facility would use natural gas for fuel. Natural gas would be obtained by connecting to existing interstate pipelines, requiring construction of approximately 9 miles of gas line not on the project site. In addition, a 1,000-foot tap will be required to serve the facility. The nature of the probable environmental impacts of the natural gas pipeline and tap will be determined after the appropriate filings have been made.

(2) The combustion turbine generators would be equipped with selective catalytic reduction systems (SCR) to reduce nitrogen oxide emissions to 3.5 ppmvd. The SCR systems would require the use of aqueous ammonia, which would be stored on-site in two storage tanks. The SCR process would result in ammonia emissions (e.g., 'ammonia slip'), not to exceed 10 ppmvd.

(3) Air emissions during construction would consist of volatile organic compounds, sulfur dioxide, carbon monoxide, nitrogen oxide, particulate matter, and fugitive dust. It is not expected that these pollutants would have any adverse impacts on-site or beyond the site boundary.

(4) The facility would include two multiple cell cooling towers and two steam surface condensers. Drift eliminators would be used to minimize particulates escaping from the cooling towers.

(5) The project stacks are expected to be 160 feet tall, with an exhaust gas exit temperature of 200° F.

(6) Seven step-up oil-filled transformers would be diked for spill containment.

(7) The generating facility's electrical output would be supplied to the local power grid through a new 765-kV transmission line

that would extend approximately one-half mile to AEP's Hanging Rock electrical substation for the preferred site or approximately one-quarter mile for the alternate site. Preliminary alignment suggests that the line would be located primarily in agricultural land and not impact streams or wetland areas.

(8) The completed facility would include two 500-kilowatt emergency diesel generators that would supply power to the facility when auxiliary power is not available from the local utility, requiring the storage of diesel fuel on site.

(9) The potable water needs for the facility would be provided by the local water provider, Scioto Water, Inc. Potable water would be accessed from an existing water main at County Road 1A, through a newly constructed water line tap that would parallel the planned facility access road. Potable water needs are estimated to be approximately 1,200 gallons per day.

(10) Duke proposes to draw 13.45 MGD from the Ohio River during peak summertime operation and an average of 7.57 MGD during winter peak operation. The Applicant indicates that at a 13.45 MGD usage level, the water drawn from the river will be less than one half of one percent of river flow at minimum flow conditions. As the facility would have the capacity to withdraw more than 100,000 gallons of water per day, the Applicant would be required to register with the Ohio Department of Natural Resources (ODNR) Division of Water pursuant to Section 1521.16, Revised Code, and file annual reports detailing actual withdrawal quantities.

(11) The river water intake structure, relying on submerged passive intake, would be constructed on the north side of the river at approximately river mile 333. The river at this location is approximately 1,750 feet wide, with maximum depths in the range of 30 to 40 feet. The screen would be located approximately three feet above the river bottom, approximately 80 feet from shore. Duke Energy anticipates that construction activities associated with the intake structure would result in only temporary disturbance of sediment within the river.

(12) The river water intake structure would utilize wedge-wire screens, with slot openings of 2 millimeter and a slot-through velocity of no greater than 0.5 feet per second. Duke Energy expects to place the intake structure in deeper water in order to minimize impacts to spawning and nesting areas. Between the equipment used and the proposed placement, Duke believes it has taken the steps necessary to minimize the potential for significant entrainment and impingement of aquatic species.

(13) A pipeline and pump-house would be installed in order to transport water from the Ohio River to the facility site. Duke proposes to utilize a 50-foot wide pipeline corridor running along the proposed facility access road to the south side of County Road 1A, westward along County Road 1A to an existing river access road and southward along the shoulder on the eastern side of the access road for approximately one-half mile. This proposed corridor would traverse an unnamed stream near its southern end and Big Thief Creek near its northern end. The proposed pump-house would be located adjacent to the Ohio River, at an elevation of 528 feet, and require two acres of land surface.

(14) The river water would be chlorinated and then clarified through a solids contact clarifier, using polymers and coagulant aids to enhance precipitation of solids. Sludge from the clarification process would be de-watered and disposed in an off-site landfill. The Applicant anticipates that approximately 35,000 pounds per day of solid waste would be generated by this process during operation of the facility.

(15) Process wastewater would be discharged to the Ohio River at a maximum rate of 1.4 MGD, approximately 100 feet down river from the intake. The wastewater would be transported to the river by a separate pipeline along the same corridor as the intake water. Sanitary wastewater would be directed to an on-site septic system. The Applicant intends to manage storm water in a manner consistent with applicable water permits.

(16) Wastewater discharged into the Ohio River may have potential thermal and chemical impacts on the aquatic environment, although these impacts are not expected to be significant. These impacts will be evaluated by the Ohio EPA in an National Pollutant Discharge Elimination System (NPDES) Permit Application that was submitted in March 2001.

(17) The project site, which includes both the preferred and alternate site, encompasses approximately 130 acres. The property site's topography is characterized as gentle to moderately sloping and ranges from 535 feet to 552 feet in elevation. The final elevation of the site would be 548 feet.

(18) Approximately 90 percent of the preferred site has typically been used for agricultural production, specifically corn and soybeans. The preferred site also includes wooden portions consisting of scrub-shrub wetland, forested wetland and upland woodlots.

(19) Duke proposes several measures to minimize impacts during construction. An erosion control plan, developed in cooperation with the Lawrence County Soil Conservation office, would be in place prior to initiating construction. The Applicant also intends to utilize water sprays or other dust suppression techniques to minimize the potential for dust generation. Duke indicates that re-vegetation would be completed soon after construction in order to minimize erosion and hedgerows would be replaced, if damaged, during construction.

(20) An access road would be located off County Road 1A, in the south-central portion of the project site. This access road would be paved following the completion of construction activities.[5] The proposed route for the access road would impact a wetland along the southern portion of the preferred site and the potential eastern spadefoot toad habitat.[6] Duke Energy also expects to develop a temporary access road for use during the construction phase of the project. This road would also be located off County Road 1A, east of the permanent access road described above. The construction access road, situated predominantly on land comprising the alternate site, would enter the proposed facility via the eastern side of the preferred site, avoiding any wetlands in that area.

(21) The Applicant found that the equivalent sound level near the site (*i.e.*, energy average sound level) during the day is approximately 63 decibels (dBa). Sources identified as contributing to the background noise levels include the traffic on U.S. Route 52 and the neighboring Dow Chemical facility. At the preferred site, construction noise impacts, which will occur primarily during the day, are modeled to generally be at or below 60 dBa. Operational noise impacts are estimated to be 59 dBa at the residence nearest the preferred site.

(22) Large boulders and bedrock may need to be removed from the project site during the preparation and excavation phases. Controlled blasting, while not Duke's preferred approach, may be used for excavation. If blasting is to be used, it would occur only during daytime hours and Duke would notify surrounding residents.

(23) The Applicant expects that, during operation, impacts to local traffic would be minimal. However, the Applicant expects that there could be temporary traffic impacts during the construction phase of the project. The Applicant expects that

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5 The proposed route for this permanent access road is illustrated on Figure 2 of the Staff Report.

6 The mitigation plans addressing these impacts are discussed later in this section of the order.

existing nearby roads, specifically U.S. Route 52 and County Road 1A, should generally be able to accommodate the increased traffic flow. Some traffic management of County Road 1A may be required during construction.

(24) Duke Energy identified the following recreational areas within five miles of the proposed site: the Ohio River, Holiday Point Marina, Wayne National Forest, Ironton Country Club, and Dow Chemical recreational facilities. Of these areas, the Ohio River and the Dow Chemical recreational facilities are within one mile of the proposed project site. The Applicant does not expect the proposed facility to negatively impact water and/or land activities at any of these recreational areas.

(25) The project site, consisting of the preferred and alternate site as well as the water pipeline corridors, contains 18 separate wetlands with a combined area of approximately 3.5 acres. The Applicant estimates that development of the preferred site would result in the loss or disturbance of approximately 0.35 acres of wetlands and surface areas, while approximately 1.05 acres would be impacted if development occurred at the alternate site. The Applicant proposes to purchase mitigation credits at a wetland mitigation bank in accordance with the U.S. Army Corps of Engineer and Ohio Environmental Protection Agency standards.

(26) A literature search was performed at the Ohio Historic Preservation Office of the Ohio Historical Society, the results of which suggested that the project site had a high probability for both prehistoric and historic sites. A Phase I cultural resources inventory was completed in mid-January 2001, revealing ten previously unidentified archaeological resources and two historic resources. A Phase II Study was conducted in March and April 2001. The Phase II Study results provided sufficient findings to recommend that portions of the site be included in the National Register of Historic Places. The Phase II Study ultimately concluded that, if the specific area deemed potentially eligible for the National Register of Historic Places could not be avoided by the project, Phase III data recovery excavations should be pursued. Accordingly, a Memorandum of Agreement is being developed to guide future activities at the project site. The Agreement is expected to contain specific requirements with which Duke would comply, including extensive mitigation measures. Parties to the Agreement would include the Applicant, U.S. Army Corps of Engineers and the Ohio Historic Preservation Office.

The Staff has studied Duke Energy's description of the ecological, social and economic impacts that are expected to result from the construction and operation of the

proposed generating facility. Board Staff also requested and received additional information from the Applicant to complete its review of the environmental impacts of the proposed project. Staff conducted field visits to both the preferred and alternate sites to supplement the information contained in the filings. Based on the information available to the Staff, Staff recommends that the Board find that the nature of the probable environmental impact has been determined for the proposed facility.

Sections 4906.10(A)(3), Revised Code, requires the Board to determine whether the proposed facility represents the minimum adverse environmental impact, considering the state of available technology, the nature and economics of the various alternatives, and other pertinent considerations.

The project site is approximately 130 acres, with the preferred site comprising approximately 40 acres of this total acreage. Both the preferred and alternate sites are comprised mainly of land that in the past has been used for agricultural purposes. The terrain at both sites is relatively flat. Wetlands exist at both sites, however, Duke expects the wetland impacts to be minimal. The Applicant estimates that development of the preferred site would result in the loss or disturbance of approximately 0.35 acres of wetlands and surface waters, while approximately 1.05 acres would be impacted if development occurred at the alternate site.

Some of the proposed project falls within the 100-year floodplain and floodway of the Ohio River. However, the Applicant has stated that all major construction at the preferred site would be in upland areas that are outside of the 100-year floodplain, except for the access roads, pipelines and the pumphouse associated with the facility. Any construction of facilities within the floodplain would be conducted in accordance with good engineering practices and in a manner consistent with the minimum flood protection criteria of the National Flood Insurance Program. Further, Duke Energy analyzed the project site to determine the proposed facility's effect in regards to: (1) endangered species; (2) historic preservation; (3) water supply; (4) wastewater; and (5) air emissions.

1. Threatened/Endangered Species

In order to identify potential threatened or endangered species on the project site, the Applicant sent inquiries to ODNR and the United States Fish and Wildlife Services (USFWS). According to the Applicant, ODNR indicated that they had no records of rare or endangered species within the project area. However, ODNR indicated that this lack of records did not establish that rare species or unique features were absent from the project site. The USFWS indicated that the following three federally endangered species may be present within Lawrence County: Indiana bat (*Myotis sodalis*); running buffalo clover (Trifolium toloniferum); and pink mucket pearly mussel (Lampsilis abrupta).

A consultant for the Duke Energy performed field surveys to determine if the project site contains habitats consistent with the needs of the species mentioned by the USFWS. Habitats consistent with that of the Indiana bat (i.e., trees with exfoliating bark) were identified on the project site. Although

the Applicant expects minimal tree clearing related to this project, removal of trees with exfoliating bark would be limited to the period of September 15th through April 15th. Such an approach is consistent with a USFWS recommendation. The Applicant's site analysis suggests that the habitat at the site does not provide ideal conditions for running buffalo clover. In January 2001, a consultant for Duke Energy conducted a mussel habitat survey in the Ohio River in the vicinity of the proposed water intake structure. Based on the results, the consultant concluded that suitable mussel habitat was not present at the study area. Recognizing that the initial study was completed at a time of year when the river's water temperatures would preclude the identification of mussel presence in the area, Duke caused a second survey to be completed during June 2001. The second survey yielded a shell of only one pink mucket pearly mussel, and no evidence of any living mussels. Duke, therefore, does not expect any impacts to the pink mucket pearly mussel as a result of the proposed facility.

One state endangered species, the eastern spadefoot toad (Scaphiopus holbrookii), has been identified within proximity of the project site. Habitat for the eastern spadefoot toad could exist within the project site, and some of this habitat would be disturbed by construction activities. In an effort to mitigate any impacts to the eastern spadefoot toad habitat, Duke has avoided the more sensitive areas on the preferred site. In addition, Duke has offered to work with ODNR and fund, in part, a permanent, protected habitat for the eastern spadefoot toad population at another location.

Although not identified by the Applicant, two potentially threatened plant species, Virginia mallow (Sida hermaphrodita) and cross-vine (Bignonia capreolata), are known to exist less than one mile south and southeast of the preferred site, although none are known to be present on the preferred site. The locations at which these species have been identified are further from the preferred site than from the alternate site. Construction activities at the preferred site, as described in the application, should have no detrimental affects on these species.

2. Historic Preservation

A literature search was performed at the Ohio Historic Preservation Office of the Ohio Historical Society, the results of which suggested that the project site had a high probability for both prehistoric and historic sites. A Phase I cultural resources inventory was completed in mid-January 2001, revealing ten previously unidentified archaeological resources and two historic resources. Phase II testing was completed in March and April 2001 on four of the archaeological resources. Of the four areas surveyed, one area was recommended as eligible for inclusion in the NRHP. Because this area could not be avoided by the facility's development, the consultant recommended Phase III data recovery excavations. As a result of this finding, a Memorandum of Agreement (Agreement) is being developed to guide future activities at the project site. The Agreement is expected to contain specific

requirements with which Applicant would comply, including extensive mitigation measures. Parties to the Agreement would include the Applicant, U.S. Army Corps of Engineers, and Ohio Historic Preservation Office. Cultural resource testing was not conducted on the alternate site, so the cultural resources present at that site are not known.

3. Water Supply

Duke proposes to construct a combined-cycle facility; therefore, the close proximity to an adequate water source was an important criterion when evaluating potential sites. The Applicant's preferred and alternate site are located less than one mile north of the Ohio River. The Applicant proposes to draw water from the river to meet all of its process water requirements, with an intake structure constructed at approximately river mile 333.

The facility would utilize wet cooling, which Duke asserts results in significantly less water consumption than a similarly-sized facility employing once-through cooling. The Applicant estimates that the proposed facility would draw water from the Ohio River at a maximum rate of 13.45 MGD. The Applicant indicates that at a 13.45 MGD usage level, water drawn from the river would be less than one half of one percent of river flow at minimum flow conditions. Given this, the effects on water supply should be negligible.

The Applicant would construct a water pumphouse along the Ohio River at the intake structure. The pumphouse is expected to utilize approximately two acres of land. The area of the proposed pumphouse construction is a disturbed open woodlot.

The Applicant proposes to install the water supply pipeline along existing rights-of-way to the extent practicable, using a 50-foot wide pipeline corridor running along the proposed access road from the facility site to the Ohio River. This corridor would exit the southern edge of the facility and cross to the south side of County Road 1A, continue westward along County Road 1A for about one-fourth mile to an existing river access road, and continue southward along the shoulder on the eastern side of the access road for approximately one-half mile. This alignment has been designed to minimize impacts to streams and wetland areas.

The intake structure would employ submerged passive water intake technology. The pipeline would be installed below the river bottom, while a wedge wire screen would be situated 3 feet above the river bottom. The screen would be located approximately 80 feet into the river, with the intent of avoiding shallow water spawning areas. Duke Energy expects that the wedge wire screen, with slot openings of 2 millimeters and a slot-through velocity of no greater than 0.5 feet per second, will significantly reduce the potential for impingement and entrainment of aquatic species.

4. Wastewater

Duke proposes to discharge process wastewater to the Ohio River at a location approximately 100 feet downstream of the intake structure. In March, 2001, the Applicant submitted to the Ohio EPA an application for an NPDES permit to discharge this process wastewater. Discharge to the river would be accomplished via a newly-constructed pipeline, along the same corridor as the above-described water supply line. Under normal operating procedures, maximum discharge levels are estimated at 1.4 MGD. Water discharge would occur above the river's surface, with the wastewater exiting to an installed stone rip-rap area or the river's surface, depending on the river depth.

Potential thermal and chemical impacts associated with the discharged process wastewater are evaluated by the Applicant in its NPDES permit application. Process wastewater that may be contaminated with oil would be segregated and routed to an oil/water separator in order to remove the oil. The treated effluent would then be combined with the process wastewater and would be discharged in accordance with the terms of the NPDES permit.

Sanitary wastewater would be segregated from process wastewater and directed to an on-site septic system.

During construction, the Applicant intends to use temporary measures to divert storm water around disturbed areas, thus minimizing sediment loading in the storm runoff. Swales and detention ponds would be installed early in the construction phase to minimize off-site discharge of sediment. The Applicant also intends to use temporary sediment traps as necessary. In addition, permanent seed mix would be added to disturbed areas as soon as practicable to further reduce sedimentation. This plan will be detailed in the Applicant's construction storm water pollution prevention plan (SWPPP), which would be part of the NPDES general permit requirements. After construction, the Applicant intends to use sheet flow and culverts to route storm water to existing drainage paths conforming with the requirements of the NPDES general storm water permit.

5. Air Emissions

Operating the facility will result in emissions of criteria pollutants including nitrogen oxide, sulfur dioxide, carbon monoxide, particulate matter and violatile organic compounds. Although the facility's operation will result in air emissions, these emissions are minimized by such factors as the fuel utilized, the plant's design, and the technologies employed at the facility. Duke Energy proposes the exclusive use of natural gas to fuel the generating station. The Applicant has also proposed to install LNB and SCRs to further reduce nitrogen oxide emissions to a level of 3.5 ppmvd.

The Staff determined that environmental impacts anticipated from construction of the proposed facility are quite similar in many respects for either the preferred or alternate site. Construction at the preferred site would have less of an impact on wetland areas than would construction at the alternate site. Further, Staff notes that the preferred site is farther from residential areas than is the alternate site, so potential noise impacts would be lower at the preferred site. The Staff recommends that the Board find that the preferred site represents the minimum adverse environmental impact.

Accordingly, the Board finds that the nature of the probable environmental impact of the proposed Duke Energy Hanging Rock facility has been determined and the preferred site represents the minimum adverse environmental impact.

C. Compliance with Section 4906.10(A)(4), Revised Code

Section 4906.10(A)(4), Revised Code, pertains to the siting and construction of electric transmission lines. The proposed Duke Energy Hanging Rock project is a generation facility not a transmission line. However, interconnection of the generation facility proposed with the existing transmission system will require the construction of a 765-kV transmission line of less than one mile. The potential impacts associated with the transmission line was presented above as part of the nature of probable environmental impacts. Review of a request to construct the interconnecting transmission line would occur under a separate filing before the Board.

The introduction of generation from the proposed facility to the electric grid could have impacts on the electric grid. Discussion of the potential impacts of the facility on the electric transmission system and overall system reliability is addressed as part of the Public Interest, Convenience, and Necessity section below.

D. Compliance with Section 4906.10(A)(5), Revised Code

Section 4906.10(A)(5), Revised Code, requires that the Board find that the proposed facility will comply with Chapters 3704, 3734, and 6111, Revised Code, concerning air and water permits, solid waste disposal and all rules and standards adopted thereunder, as well as under Sections 1501.33, 1501.34, and 4561.32, Revised Code.

Staff investigated the compliance requirements of the proposed Hanging Rock facility pursuant to Chapters 3704, 3734, and 6111, Revised Code, for the proposed facility and reviewed Duke Energy's compliance requirements under Sections 1501.33 and 1501.34, Revised Code.

Potential emissions generated during construction of the facility include volatile organic compounds, sulfur dioxide, carbon monoxide, nitrogen oxides, and particulate matter. These emissions are not expected to cause any unusual environmental impacts at or beyond the site area. Based on projected emission rates of the above specified pollutants during operation, the proposed facility would be subject to federal Clean Air Act regulations. On March 5, 2001, Duke Energy submitted an application to the Portsmouth Local Air Agency for a Permit to Install an Air Contaminant Source. The permit application is currently under review with the Ohio EPA.

During construction of the facility, storm water runoff would be managed through a NPDES general permit. The Applicant has committed to use best management practices and a construction SWPPP to minimize the potential for erosion and the discharge of sediment during construction. During operation, an individual NPDES permit would be utilized for discharge of industrial wastewater into the Ohio River. The wastewater discharge stream would include cooling tower blowdown, oil/water separator effluent, and demineralizer regeneration waste flow. The Applicant anticipates that maximum discharge would be 1.4 MGD. The Applicant proposes to install an on-site septic system for purposes of handling the sanitary wastewater generated at the facility.

Duke Energy estimates that approximately 15,000 cubic yards of solid waste would be generated during construction of the facility. Construction waste that cannot be reused or recycled would be disposed offsite by licensed contractors. The Applicant intends to develop programs for the proper segregation, storage and disposal of any hazardous wastes that would be generated during construction. Duke informed Staff that approximately 35,000 pounds of solid waste would be generated per day from the clarifier process during operation of the facility. Such waste, composed essentially of river water sediment, will be removed from the water during its processing and the solid waste generated during operation will be removed by a licensed contractor.

Staff contacted the Ohio Office of Aviation during review of this application in order to coordinate review of potential impacts the facility might have on local airports. No aviation-related concerns associated with Ohio airports have been identified. However, there is a nearby airport across the Ohio River in Kentucky. The Applicant provided notice of the proposed facility to the Federal Aviation Administration in April 2001.

In the Staff Report, Staff recommended that the Board find that a determination of compliance with Chapters 3704, 3734 and 6111, Revised Code, and Sections 1501.33 and 1501.34, Revised Code, and all regulations and standards adopted thereunder, could not be made because all required permits had not been issued. Further, Staff recommended that the facility would comply with Section 4561.341, Revised Code.

The Board notes that, in the Stipulation, the Staff agreed that prior to construction Duke must obtain all applicable permits and authorizations required by federal and state law, including but not limited to the permits required pursuant to Section 4906.10(A)(5), Revised Code. Therefore, as part of the Stipulation, the parties have agreed that adequate data on the proposed facility has been submitted to determine that the facility will comply with Chapters 3704, 3734 and 6111 and Sections 1501.33 and 1501.34, Revised Code, and all regulations thereunder as required by Section 4906.10(A)(5), Revised Code. Accordingly, the Board finds that the proposed Duke Energy Hanging Rock facility will comply with the requirements of Section 4906.10(A)(5), Revised Code.

E. Consideration of Section 4906.10(A)(6), Revised Code

Section 4906.10(A)(6), Revised Code, requires that the Board find that the facility will serve the public interest, convenience, and necessity.

The Staff report notes that the facility would serve the public interest, convenience and necessity by providing additional electrical generation when needed in the region. A review of several independent studies demonstrates that Ohio, as well as the surrounding states, are in need of additional generation capacity. Electric reserve margins have been at historic lows. The construction of this facility would help to alleviate the gap between growing electricity demand and existing generation capacity, thereby enhancing the reliability of electric supply in Ohio and the surrounding states.

To further support its application pending before the Board, Duke Energy submitted detailed information on relative items of public interest, such as noise, aesthetics, environmental concerns, social and economic impacts, and health and safety considerations.

1. Noise

During construction, noise would vary considerably depending on type, number and duration of machines operated at different phases of construction. The construction noise would occur during an anticipated 10-month construction schedule. Noise sources would include earthmoving equipment, erection of equipment, truck traffic, and installation of equipment. The Applicant has stated that construction activities with significant noise production, such as pile driving, blasting and rock drilling, would be conducted only during daytime hours.

In order to evaluate the effect of operational noise on the potential receptors in the surrounding area, Duke conducted both an ambient noise level study and an operational noise level assessment. The ambient noise level study included measurement of ambient daytime, evening, and nighttime noise levels for four locations of residences, ranging from 1,500 to 2,500 feet from the center of the preferred site. This study showed that the energy average ambient daytime noise levels at those receptors in the vicinity of the preferred site ranged from 61-65 dBa. Existing contributors to the ambient noise conditions included U.S. Route 52 and two rail lines at the northern boundary of the site, and the Dow Chemical facility located approximately 1,500 feet west of the project site. Average ambient evening and nighttime noise levels measured in the Applicant's study, although lower than daytime levels, still generally ranged above 50 dBa.

The Applicant further modeled the noise emissions to be anticipated during operation of the proposed facility. The modeling results showed that noise levels anticipated to emanate from the facility would range from 51 to 59 dBA at the four receptor locations that were discussed in the preceding paragraph. The Applicant also evaluated anticipated facility generated noise levels for two religious institutions and several cemeteries that exist within one mile of the preferred site. At all of these locations, facility generated noise levels are expected to be below 55 dBa.

2. Electric and Magnetic Fields

Elevated electric and magnetic fields (EMF) resulting from the generation equipment would be confined to the project site and would be attenuated to near background levels at the property line. Power would be transported from the generation facility to an AEP substation, less than one mile away from the preferred site, via a new 765-kV transmission line to be constructed over land controlled by the Applicant or AEP. The new transmission line would emanate EMF when transporting electrical energy from the generating facility. Any EMF issues associated with the new electric transmission line would be covered in the required filing with the Board.

3. Gas Supply

TETCO and Tennessee both operate interstate natural gas pipelines that are located within nine miles of the proposed generating facility. TETCO manages three pipelines, 30 inches and above, in the area and Tennessee has three 26-inch transmission lines and one 36-inch line identified in the area. The seven transmission lines have a combined capacity of approximately 3,815 MMcf/day or 159 MMcf/hour. An extension of one or more of TETCO and/or Tennessee interstate pipelines would be necessary to meet the fuel requirements of the proposed generating facility. A new tap and isolation valve will be installed along an existing pipeline(s) and a new transmission line will be extended to the property line of the proposed Hanging Rock facility. The maximum natural gas consumption of the proposed generating facility is 7.52 MMcf/hour.

4. Gas Pipeline Safety

In order to operate the natural gas interconnection and associated equipment safely, reliably, and to minimize the possibility of failure in the gas supply system, the equipment should be built, operated, and maintained to meet the requirements in Title 49 C.F.R. Part 191 and Part 192, the Federal Minimum Pipeline Safety Standards, Part 199, the Drug and Alcohol Regulations, Sections 4905.90 through 4905.96, Revised Code, Natural Gas Pipeline Safety Standards, and Rules 4901:1-16-01 through 4901:1-16-14, O.A.C., Gas Pipeline Safety.

5. Electric Power Grid

Duke Energy plans for the proposed facility to begin commercial operation June 1, 2003. The generating facility would be interconnected to the regional electric transmission grid through AEP's 765-kV Hanging Rock substation located approximately 0.5 miles east of the preferred site. The Hanging Rock 765-kV Station is a high voltage switching station and has no transformers. A new single-circuit 765-kV transmission line would be built from the generation site to the AEP substation.

Duke Energy has signed an Interconnection and Operating Agreement (Interconnection Agreement) with Ohio Power, a wholly-owned subsidiary of AEP, for interconnection of the proposed facility to the regional electric transmission system. The Interconnection Agreement provides for the physical interconnection of the proposed facility and all system upgrades that are necessary to prevent overloads, short circuit and system stability problems caused by adding the proposed facility to the regional transmission system.

AEP's system impact studies only addressed the feasibility of integrating the proposed facility into the regional transmission system and did not address the availability of transmission capacity to deliver the output of the proposed Hanging Rock facility to specific points of delivery. The transmission service requests must be made in accordance with AEP's Open Access Transmission Tariffs (OATT) as filed with FERC, under which AEP offers transmission service. AEP makes no guarantees in its Interconnection Agreement with Duke for transmission service available under the OATT. Separate requests must be made to reserve transmission service, per the provisions of the OATT. Power delivery from the units must comply with the Duke Interconnection Agreement with AEP and coordinated by AEP through its System Control Center. The Applicant plans to sell 100 percent of the capacity and energy from the proposed facility into the competitive wholesale market. The Applicant plans to enter into an agreement with an affiliate, Duke Energy Trading and Marketing, LLC, to market the power.

AEP conducted system impact studies that modeled adding 1,300 MW at the preferred site during the summer 2002 with normal and contingency system operating conditions. These studies looked at load flow, short circuit and transmission system stability requirements. Because AEP determined that the proposed facility was imbedded within the AEP system, AEP concluded that the impact of the proposed facility would not impact neighboring transmission systems. The specific equipment for system upgrades or changes identified by the studies and the estimated costs are addressed in AEP's Facilities Study for the project. Four 765-kV circuits emanate from the Hanging Rock 765-kV Station. The four circuits are connected to AEP substations at Marquis, Jefferson, Baker and North Proctorville. There is also a 138-kV substation at Hanging Rock. However, there is no connection between the 765-kV and 138-kV transmission systems at Hanging Rock.

The system impact studies and the Facilities Study for the project indicated that no system upgrades are required to interconnect the proposed facility to the existing 765-kV transmission system.

Duke has described the proposed facility as a base load/peaking facility and claims it would be capable of operating 8,322 hours per year, or 95 percent of the year. That would mean that the facility could operate as a base load plant providing power to the regional transmission grid on a continuous basis. Typical operation is expected to be approximately 16 hours per day, between 7

a.m. to 11 p.m., during the weekdays, primarily during the summer peaking months from June through September.

The Applicant would construct and own the proposed facility along with the associated 765-kV interconnection substation located on the preferred site and the transmission line from the proposed facility to AEP's 765-kV Hanging Rock Station. The Interconnection Agreement between Duke and Ohio Power provides for system upgrades required as a result of adding the proposed facility to the regional transmission system. Studies conducted by AEP for the proposed facility indicated that no system upgrades are required.

The Staff believes the proposed facility is consistent with regional plans for expansion of the regional power grid and would serve to benefit the electric system economy and reliability. Further, Staff believes that the proposed facility could benefit the Ohio economy and Ohio consumers by providing additional commercial power available to Ohio consumers. Thus, the Staff recommends that the Board find that the proposed facility will serve the public interest, convenience and necessity. Accordingly, the Board concludes that the proposed facility will serve the public interest, convenience and necessity.

F. Consideration of Section 4906.10(A)(7), Revised Code

Section 4906.10(A)(7), Revised Code, concerns agricultural districts and agricultural lands. Classification as Agricultural District land is achieved through an application and approval process that is administered through the local county auditor offices. Duke Energy's consultant confirmed through the Farm Service of Lawrence and Gallia Counties, Lawrence County Soil and Water Conservation District Office, that there are no Agricultural District lands located within the preferred or alternate sites. There would, therefore, be no impact on Agricultural District lands if the facility were constructed at either site. Both sites have, however, been used for agricultural production. Construction of the proposed generation facility at either site would remove approximately 40 acres of farmland from potential agricultural use. Additional acreage would be utilized temporarily during construction of the generating facility.

In performing an assessment of the proposed project on agricultural land use, the Staff has evaluated potential impacts on agricultural production. Both direct and indirect impacts to farmland have been reviewed. Direct impacts include the taking of farmland for project use, the purchase of easements for right-of-way or access, the destruction of field drainage systems and the placement of structures and associated equipment in agricultural fields that require a change in cultivation patterns or access. Indirect impacts include the loss of crop productivity due to soil disturbance and redistribution, the migration of undesirable plant species and loss of market value for farmland.

The Staff recommends that the Board find that the impact of the proposed facility on the viability of existing farmlands and Agricultural Districts has been determined. Likewise, the Board finds that the project's impact on agricultural lands has been determined as required by Section 4906.10(A)(7), Revised Code.

G. Consideration of Section 4906.10(A)(8), Revised Code

The Staff has reviewed the information pertaining to the consumption of water for the construction and operation of the proposed facility. The facility, as proposed by Duke, would withdraw a maximum of 13.45 MGD of water from the Ohio River during peak summertime periods of operation. Wintertime operation would require less water, with average peak wintertime withdraws at approximately 7.57 MGD. Duke Energy notes that these usage levels would be well below levels of a comparable once-through cooling system, which would use up to 500 MGD.

Under summertime maximum usage conditions, cooling tower evaporative loss would account for approximately 11.65 MGD of water consumption, while approximately 1.4 MGD of cooling tower blowdown water would be returned to the Ohio River. The balance of the 13.45 MGD water intake would be lost through miscellaneous water treatment and usage processes.

The Applicant has included several water conservation features in its water system design. Most of the water from the clarifier filter backwash and clarifier sludge blowdown processes would be recycled through the clarifier. Decant water from the sludge thickener and dewatering processes would also be recycled to the clarifier. Further, heat recovery steam generator blowdown water would be recycled to the cooling tower system.

In addition, small amounts of water would be needed for personal use by employees at the facility. The Applicant intends for this water to be supplied by Scioto Water, Inc. On-site wells would not be used at the facility.

The Staff recommends that the Board find that the proposed facility will comply with Section 4906.10(A)(8), Revised Code. The Board finds that the project complies with Section 4906.10(A)(8).

V. Hearings

The public hearing was held as scheduled on July 17, 2001 in Hanging Rock, Ohio. At the hearing, 13 public witnesses offered testimony in support of the project. One public witness, Mr. Haney, expressed concern for the archeological value of the project site. At the public hearing, a representative of Duke Energy testified that Duke Energy Hanging Rock worked with the U.S. Army Corps of Engineers and the Ohio Historical Preservation Office to address archeological concerns and indicated that the Ohio Historical Preservation Office is satisfied with the procedures Duke Energy Hanging Rock is implementing to protect the archeological value of the project site. Subsequently, Mr. Haney stated that he was not against the project and that Duke Energy had adequately responded to his questions and concerns.

The adjudicatory hearing was held on July 18, 2001 in Columbus, Ohio. At the adjudicatory hearing, admitted into evidence was the application (Company Ex. 1); the proof of publication filed February 13, 2001, as amended February 15, 2001 (Company Ex. 2); and the proof of publication filed July 5, 2001 (Company Ex. 3). Also admitted into evidence was the Staff Report filed July 2, 2001 (Staff Ex. 1). Counsel for Staff also

indicated that the description of the mussel on page 23 of the Staff Report was not exactly accurate and said that a late-filed letter would be docketed correcting the description of the mussel. The letter revising the description of the mussel in the Staff Report was filed July 26, 2001. The letter shall be marked Staff Ex. 2 and admitted into the record. The parties also indicated at the adjudicatory hearing that, while they had been negotiating a stipulation to resolve this matter, they required additional time to finalize the stipulation.

VI. Stipulation of the Parties

On July 18, 2001, as amended August 13, 2001, the Staff and Duke Energy filed a Joint Stipulation and Recommendation (Stipulation or Joint Ex. 1) resolving all issues in this matter. The parties recommend that the Board issue a certificate of environmental compatibility and public need for Duke to construct the proposed Hanging Rock facility on the preferred site subject to the following conditions:

(1) Duke shall install the facility on the preferred site as presented in the application filed on February 28, 2001, and as modified by the Applicant's supplemental data submitted to the Staff.

(2) Duke shall utilize the equipment described in the application in Sections 4906-13-04(B) and (C) and as modified by supplemental data filed with the Staff.

(3) Duke shall utilize the mitigative measures described in the application and the supplemental data, unless modified by conditions of the certificate or applicable federal and state permits.

(4) The Applicant shall maintain noise levels resulting from the operation of the facility at or below levels as presented in the Applicant's noise study.

(5) The Applicant shall properly install erosion and sedimentation control measures at the project site. The Applicant shall inspect all such erosion control measures after each rainfall event and promptly repair and maintain them until permanent vegetative cover has been established on disturbed areas.

(6) Ten days prior to commencing construction of the generating facility, the Applicant shall submit the required applications to the Board to obtain approval for the necessary electric transmission line.

(7) The Applicant will cause a meeting with the Staff to discuss the routing and impacts of the proposed pipeline. Any impacts or issues relating to the construction of the pipeline will be considered separately by the Staff.

(8) During construction of the facility, the Applicant shall seed all disturbed soil within seven days of final grading (weather permitting) with a seed mixture acceptable to the appropriate County Cooperative Extension Service. Denuded areas, including spoils piles, shall be seeded and stabilized within seven days, if they will be undisturbed for more than 45 days. Reseeding shall be done within several days of emergence of seedlings as necessary until vegetation in all areas has been established.

(9) The Applicant shall employ the following construction methods in proximity to any streams and wetlands:

(a) All wetland areas, including streams, shall be delineated by fencing, flagging, or other prominent means;

(b) All construction equipment shall avoid wetlands and watercourses, except for the access road areas as agreed to by Staff;

(c) Storage, stockpiling and/or disposal of equipment and materials in sensitive areas shall be prohibited;

(d) Structures shall be located outside of the identified wetlands and watercourses;

(e) All storm water runoff is to be diverted away from fill slopes and other exposed surfaces to the greatest extent possible, and directed instead to appropriate catchment structures, sediment ponds, etc., using diversion berms, temporary ditches, check dams, or similar measures.

(10) Duke shall conduct any construction of facilities within the Ohio River floodplain in accordance with good engineering practices and in a manner consistent with the minimum flood protection criteria of the National Flood Insurance Program.

(11) The Applicant shall not conduct any tree cutting, and particularly shall not remove any trees with exfoliating bark, during the time period from April 15th to September 15th.

(12) At least 30 days prior to commencement of construction activities, Duke shall complete a mitigation plan for potential impacts to the eastern spadefoot toad and submit the plan for Staff approval.

(13) Prior to commencement of construction activities, the Applicant, in consultation with the U.S. Army Corps of Engineers and the Ohio Historic Preservation Office, shall complete all necessary archaeological site investigations and shall develop and implement appropriate recovery and/or avoidance plans, and shall submit its executive summary of the mitigation investigation as required by the Memorandum of Agreement filed June 22, 2001 to the Staff for review. When the Applicant receives a copy of the final report, it will submit a copy to the Staff within seven days of receipt.

(14) The Applicant shall dispose of all contaminated soil and construction debris in approved landfills in accordance with Ohio EPA regulations.

(15) Prior to construction, Duke shall obtain all applicable permits and authorizations as required by federal and state entities for any activities where such permit or authorization is required, including but not limited to an NPDES Permit for a discharge of process wastewater and for control of storm water runoff, permits to install Air Contaminant Sources and a permit to install wastewater discharge lines to be obtained through Ohio EPA. A copy of each permit or authorization, including terms and conditions, shall be provided to the Staff within seven days of receipt. At least 30 days prior to construction, the construction Storm Water Pollution Prevention Plan shall be submitted to the Staff for review and acceptance.

(16) The Applicant shall design and install a fire protection system for the generating station in accordance with the National Fire Protection Association standards.

(17) The Applicant shall coordinate with fire, safety and emergency personnel during all stages of the project to promote efficient and timely emergency preparedness and response.

(18) For non-firm capacity, the Applicant, or its designated operator, will seek and contract for transmission service through the OASIS as specified in FERC Orders 888, 889, and any subsequent OASIS-related orders, or through any successor OASIS system. If, in the reasonable exercise of judgment by the control area operator, generation by the proposed facility might adversely impact the reliability of the transmission system, the control area operator may discontinue interconnection service until the condition has been corrected.

(19) The Applicant shall comply in all respects with state and federal laws and regulations pertaining to gas pipeline safety

during the construction of the natural gas handling system and associated facilities.

(20) The Applicant shall provide to the Staff the following information as it becomes known:

(a) the date on which construction will begin;

(b) the date on which construction was completed; and

(c) the date on which the facility began commercial operation.

(21) The Applicant shall conduct a pre-construction conference with the Staff prior to the start of any site work, and shall discuss with Staff how environmental concerns on the project site will be satisfactorily addressed.

(22) At least 30 days before the pre-construction conference, the Applicant shall submit to the Staff, for review and approval, one set of construction drawings of the certificated facility, including all construction laydown areas, so that the Staff can determine that the final project design is in compliance with the terms of the certificate.

(23) The certificate shall become invalid if the Applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate.

The recommendations agreed to by the parties in the Stipulation are substantially similar to the conditions made by the Staff in the Staff Report; however, condition number 7 is an addition to the conditions suggested in the Staff Report.

VII. Conclusion

Based on the application, the Staff Report of Investigation, and the evidence of record, the Board finds that all the criteria established in Section 4906.10(A), Revised Code, have been satisfied. Accordingly, the Board finds that Duke Energy Hanging Rock should be issued a certificate for the construction, operation and maintenance of the project in the preferred location, subject to the conditions set forth in the Stipulation submitted by Staff and Duke Energy.

FINDINGS OF FACT AND CONCLUSIONS OF LAW:

(1) Duke Energy Hanging Rock is a limited liability company organized under the laws of the state of Delaware as a merchant power plant developer.

(2) The proposed Duke Energy Hanging Rock project is a "major utility facility" as defined in Section 4906.01(B)(1), Revised Code.

(3) On January 24, 2001, Duke Energy Hanging Rock filed a motion for waivers of certain filing requirements, including the requirement to file an application two years prior to commencement of construction under Section 4906.06(A)(6), Revised Code; certain provisions requiring the filing of fully developed information for the alternate site; and the requirement to file financial information in accordance with the uniform system of accounts.

(4) On February 28, 2001, Duke Energy filed its application for a certificate of environmental compatibility and public need to construct the Hanging Rock Facility.

(5) By entry issued March 15, 2001, Duke Energy's request for waivers was granted in part and denied in part.

(6) On February 13, 2000, as amended on February 15, 2001, the Applicant filed proof of publication of the public informational meeting in Lawrence County, Ohio.

(7) The Board notified Duke Energy by letter dated May 3, 2001 that the application had been certified as complete pursuant to Chapter 4906, O.A.C.

(8) By entry issued May 15, 2001, the local public hearing was scheduled for July 17, 2001, and an adjudicatory public hearing on July 18, 2001.

(9) On May 7, 2001, Duke Energy filed proof of notice of the application in accordance with Rule 4906-5-08(B)(3), O.A.C.

(10) The Staff Report was filed on July 2, 2001.

(11) On May 24, 2001 and July 5, 2001, Duke Energy filed proof of publication of the project in newspapers of general circulation in accordance with Rule 4906-5-08(B)(1), O.A.C.

(12) The local public hearing was held on July 17, 2001, in Hanging Rock, Lawrence County, Ohio and the adjudicatory hearing was held on July 18, 2001, in Columbus, Ohio.

(13) Duke Energy filed adequate data on the proposed Hanging Rock facility for the Board to determine the basis of need for the facility as required by Section 4906.10(A)(1), Revised Code.

(14) Adequate data on the project has been provided to determine the nature of the probable environmental impact as required by Section 4906.10(A)(2), Revised Code, and to determine that the preferred site represents the minimum adverse environmental impact, considering the available technology, nature and economics of the various alternatives, and other pertinent considerations as required by Section 4906.10(A)(3), Revised Code.

(15) The proposed Duke Energy Hanging Rock project is a generation facility. Section 4906.10(A)(4), Revised Code, is applicable to the siting and construction of electric transmission lines and, therefore, does not pertain to this application to construct a generation facility.

(16) Adequate data on the Duke Energy Hanging Rock facility has been provided to determine that the facility will comply with Chapters 3704, 3734, and 6111 and Sections 1501.33 and 1501.34, Revised Code, and all regulations thereunder as required by Section 4906.10(A)(5), Revised Code.

(17) Adequate data on the Duke Energy Hanging Rock facility has been provided to determine that the facility will serve the public interest, convenience, and necessity, as required by Section 4906.10(A)(6), Revised Code.

(18) The proposed Hanging Rock facility's impact on the viability of agricultural land of any land in an exiting agricultural district has been determined as required by Section 4906.10(A)(7), Revised Code.

(19) Adequate data on the Duke Energy Hanging Rock facility has been provided to determine that the facility, as proposed, incorporates maximum feasible water conservation practices considering available technology and the nature and economics of the various alternatives as required by Section 4906.10(A)(8), Revised Code.

(20) The record evidence in this matter provides sufficient factual data to enable the Board to make an informed decision.

ORDER:

It is, therefore,

ORDERED, That the Stipulation is approved in its entirety. It is, further,

ORDERED, That a certificate of environmental compatibility and public need for the above-captioned project is issued to Duke Energy Hanging Rock for the construction, operation, and maintenance of the proposed facility at the preferred site. It is, further,

ORDERED, That the certificate contain the 23 conditions set forth in Section VI of this opinion, order, and certificate. It is, further,

ORDERED, That a copy of this opinion, order and certificate be served upon the parties and their counsel and all other interested persons of record.

THE OHIO POWER SITING BOARD

Alan R. Schriber, Chairman of the Public Utilities Commission of Ohio

J. Robertson, Board Member and Interim Director of the Ohio Department of Development

Samuel W. Speck, Board Member and Director of the Ohio Department of Natural Resources

Nick Baird, M.D., Board Member and Director of the Ohio Department of Health

Christopher Jones, Board Member and Director of the Ohio Environmental Protection Agency

Fred L. Dailey, Board Member and Director of the Ohio Department of Agriculture

Stephen A. Sebo, Board Member and Public Member

Entered in the Journal
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Secretary

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Oregon

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 to Construct an Electric Generation Facility.	)))))	Case No. 12-2959-EL-BGN

OPINION, ORDER, AND CERTIFICATE

The Ohio Power Siting Board (Board), coming now to consider the above-entitled matter, having appointed its administrative law judge (ALJ) to conduct the hearings, having reviewed all of the evidence presented, and being otherwise fully advised, hereby issues its opinion, order, and certificate in this case, as required by Section 4906.10, Revised Code.

APPEARANCES:

Bricker & Eckler LLP, by Sally W. Bloomfield, 100 South Third Street, Columbus, Ohio 43215-4291, on behalf of Oregon Clean Energy, LLC.

Mike DeWine, Ohio Attorney General, by Steven L. Beeler, Assistant Attorney General, Public Utilities Section, 180 East Broad Street, 6th Floor, Columbus, Ohio 43215, on behalf of the Board Staff.

OPINION:

I. SUMMARY OF THE PROCEEDING

All proceedings before the Board are conducted according to the provisions of Chapter 4906, Revised Code, and Chapter 4906, Ohio Administrative Code (O.A.C).

On November 13, 2012, Oregon Clean Energy, LLC (Oregon Energy or Applicant) filed a preapplication notification letter. Subsequently, Oregon Energy filed its proof of publication of the notice of the public information meeting, in *The Toledo Blade* and *The Press*, on November 26, 2012 and November 28, 2012, respectively (Oregon Energy Exs. 2A and 2B). The public information meeting was held on November 29, 2012, in Oregon, Ohio.

On November 13, 2012, Oregon Energy filed with the Board a motion for waivers and a request for expedited ruling pursuant to Rule 4906-7-12, O.A.C. Oregon Energy requested waivers of Rule 4906-13-03(A) and (B), O.A.C., which requires an applicant to provide an extensive site selection study, and Rule 4906-13-04(A)(4), O.A.C., which

requires that an applicant provide information relating to cross-sectional views and the location of test borings on the project area. On November 30, 2012, the Board's Staff (Staff) filed a letter stating that Staff did not object to Oregon Energy's request for waivers. By entry issued December 5, 2012, Oregon Energy's motion for waivers was granted.

On January 17, 2013, as supplemented on March 6, 13 and 15, 2013, Oregon Energy filed its application for a certificate of environmental compatibility and public need to construct an electric generation facility in Oregon, Ohio. On February 5, 2013, Oregon Energy filed a certificate of service of its accepted and complete application, in accordance with the requirements of Rule 4906-5-07, O.A.C. (Oregon Energy Ex. 3). On that same day, Oregon Energy also submitted the application fee to the Board, pursuant to Rule 4906-5-11, O.A.C.

By entry dated February 6, 2013, a local public hearing was scheduled for April 2, 2013, at 6:00 p.m., at the Oregon City Council Chambers, in Oregon, Ohio. The February 6, 2013, entry also scheduled an evidentiary hearing to commence on April 9, 2013, at 10:00 a.m., 11th floor, Hearing Room C, at the offices of the Board, 180 East Broad Street, Columbus, Ohio. Further, the February 6, 2013, entry directed Oregon Energy to publish notice of the application and hearings, as required by Rule 4906-5-08, O.A.C., and directed that petitions to intervene by interested persons be filed within 30 days following publication of the first notice required by Rule 4906-5-08, O.A.C., but by no later than March 25, 2013.

Oregon Energy filed its proofs of publication of the hearings, pursuant to Rule 4906-5-09, O.A.C., on February 14, 2013, and March 21, 2013 (Oregon Energy Exs. 4 and 7). Notice of the hearings was published in *The Toledo Blade*, a newspaper of general circulation in Lucas County, and also published in *The Press*, a newspaper of general circulation in Lucas, Ottawa, Sandusky, and Wood Counties, Ohio.

At the local public hearing, 12 witnesses offered testimony in support of the proposed project. At the evidentiary hearing, Oregon Energy and Staff each presented the testimony of one witness.

On March 18, 2013, Staff filed its report of investigation of the application (Staff Report) (Staff Ex. 1). No motions for intervention were filed in this matter.

II. PROPOSED FACILITY

Oregon Energy seeks certification to construct, own, and operate a power plant. As proposed, the generation facility would consist of two natural gas fired, combined-cycle turbines and a heat recovery steam generator with a total capacity of 799 megawatts (MW). The facility would be located on approximately 30 acres in Lucas County, Oregon, Ohio. The proposed site is currently farm land, but is zoned commercial-industrial within

the Cedar Point Development Park. The Applicant proposes to commence construction in June 2013 and begin commercial operation as early as May 1, 2016. (Oregon Energy Ex. 1, at 1-2; Staff Ex. 1 at 4; Evidentiary Hearing Tr. at 13-14.)

III. CERTIFICATION CRITERIA

Pursuant to Section 4906.10(A), Revised Code, the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines all of the following:

(1) The basis of the need for the facility if the facility is an electric transmission line or natural gas transmission line.

(2) The nature of the probable environmental impact.

(3) The facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations.

(4) In case of an electric transmission line or generating facility, such facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that such facilities will serve the interests of electric system economy and reliability.

(5) The facility will comply with Chapters 3704, 3734, and 6111, Revised Code, and all rules and standards adopted under those chapters and under Sections 1501.33, 1501.34, and 4561.32, Revised Code.

(6) The facility will serve the public interest, convenience, and necessity.

(7) The impact of the facility on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929, Revised Code, that is located within the site and alternative site of the proposed major facility.

(8) The facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of various alternatives.

IV. SUMMARY OF THE EVIDENCE

A. Application

On January 17, 2013, as supplemented on March 6, 2013, Oregon Energy filed its application for a certificate of environmental compatibility and public need to construct a 799 MW electric generation facility on approximately 30 acres in a commercial and industrial park in Lucas County, Oregon, Ohio (Oregon Energy Ex. 1).

On March 13, 2013, Oregon Energy supplemented its application to detail how natural gas would be supplied and transported to the proposed facility and the energy tolling agreements. Oregon Energy represents that transportation of the natural gas necessary to operate the proposed generation facility at its daily maximum capacity would not impose additional firm capacity requirements on the a transmission facilities in the project area or cause any adverse impact on the residential, commercial, or industrial natural gas customers in Ohio. (Oregon Energy Ex. 5).

Further, on March 15, 2013, the Applicant filed its second supplement to the application to address issues raised as a result of discussions with Staff in the course of its investigation. Oregon Energy specifically supplemented the application to include provisions for the complaint resolution process, the process to be followed if threatened or endangered species are encountered during construction, a blasting plan, if necessary, and the preconstruction conference with Staff, among other provisions. (Oregon Energy Ex. 6.)

B. Hearings

1. Local Public Hearing

The local public hearing was held, as scheduled, on April 2, 2013, in Oregon, Ohio. At the local public hearing, 12 individuals offered testimony in support of the proposed project, including the mayor, members of the Oregon city council, representatives of local economic development foundations, a trade union representative, local businesses, and residents living near the proposed project site. Public witnesses offered several reasons for supporting the proposed generation project.

The mayor of the city of Oregon testified that the city's tax base consists primarily of two refineries and two hospitals, and the proposed project would be a good addition to the tax base, particularly given recent state budget cuts. The mayor also submitted that the generation facility would improve electric reliability in the area, which is key to attracting new commercial and industrial businesses (Local Hearing Tr. at 29-30). The Oregon city council president testified that, as a result of FirstEnergy Corporation (FirstEnergy) retiring some of its coal-fired generation facilities, the city of Oregon lost a multitude of well-paying jobs and this project would restore some of those jobs to the

community (Local Hearing Tr. at 27). Other witnesses also supported the proposed project for the number of construction jobs and full-time plant operation positions the project would bring to the community (Local Hearing Tr. at 10, 11, 13, 15, 24). Several of the witnesses testified that the proposed project would provide an economic boost to the local economy (Local Hearing Tr. at 15, 27, 28).

Further, another member of Oregon city council testified that this project is an opportunity for Oregon to restore revenue lost through budget cuts, reductions in government funding, and the elimination of taxes. The council member contended that the project would provide revenue to the city to maintain city services. (Local Hearing Tr. at 20-22.)

Witnesses also praised the environmentally conscience design of the proposed generation facility to use natural gas, as opposed to fossil fuel, and the state-of-the-art combustion and emissions technology (Local Hearing Tr. at 12, 22, 28).

2. Evidentiary Hearing

The evidentiary hearing was held on April 9, 2013. Oregon Energy offered the testimony of William J. Martin, managing member of North America Project Development, LLC (North America). North America is the owner of Oregon Energy. Mr. Martin has over 33 years of experience in the energy industry and, with his partner, William Siderewicz, has developed 10,000 MW of generation projects. Mr. Martin and Mr. Siderewicz were responsible for development of the proposed project. Mr. Martin testified that he was familiar with the siting process in Ohio and had developed another generation facility in Fremont, Ohio. The witness offers that gas-fired combined cycle electric generation is reliable, economical, and environmentally clean; therefore, it is the best option to replace coal fueled facilities. Further, the witness states that he is familiar with the second supplement to the application, as well as the recommended conditions contained in the Staff Report. Mr. Martin specifically accepts the five conditions contained in the Staff Report. (Evidentiary Hearing Tr. at 8-14.)

Christopher K. Cunningham, Utility Specialist in the Energy and Environment Department for the Board and lead analyst on the proposed project, testified on behalf of Staff. Mr. Cunningham contends that, in his experience, the Oregon Energy application, as supplemented, and the agreed-to Staff recommendations contained in the Staff Report are a reasonable result in this case. Staff witness Cunningham testified that the recommended conditions were based on discussions between the Applicant and Staff, and both parties are represented by experienced counsel familiar with Board proceedings. The witness states that, as a result of mercury and air toxics standards and the cross-state air pollution rules, 6 gigawatts (GW) of electric capacity are scheduled to be retired or go offline in 2015, with 2.5 GW of that lost capacity in the FirstEnergy service territory. Mr. Cunningham contends that the Oregon Energy project would serve the public interest and convenience

because the proposed project would offset a significant portion of the 2.5 GW scheduled to be retired in the FirstEnergy territory ensuring service reliability and price stability in the service area. Further, the witness notes that there are minimal environmental issues associated with the project site. In addition, Staff witness Cunningham notes the approximately 500 construction jobs and the 25 full-time operational positions the project would bring to the community. Finally, Mr. Cunningham states that the application, as supplemented, and the agreed-to conditions contained in the Staff Report, do not violate any important regulatory principle or practice. On that basis, Staff witness Cunningham recommends the Board approve the application, as supplemented, subject to the conditions contained in the Staff Report. (Evidentiary Hearing Tr. at 14-20.)

Admitted into evidence, at the hearing, was the application filed on January 17, 2013, as amended to include the systems impact study filed on March 6, 2013 (Oregon Energy Ex. 1); the proofs of publication of the public information meeting (Oregon Energy Exs. 2A and 2B); a certificate of service of its accepted and complete application, in accordance with the requirements of Rule 4906-5-07, O.A.C. (Oregon Energy Ex. 3); the proofs of publication of the hearings, pursuant to Rule 4906-5-09, O.A.C. (Oregon Energy Exs. 4 and 7); the supplement to the Oregon Energy application filed on March 13, 2013 (Oregon Energy Ex. 5); the second supplement to the application filed on March 15, 2013 (Oregon Energy Ex. 6); and the Staff Report (Staff Ex. 1).

C. Staff Report

1. Basis of Need - Section 4906.10(A)(1), Revised Code

Section 4906.10(A)(1), Revised Code, specifies that it applies only if the proposed facility is an electric transmission line or a gas or natural gas transmission line. In this case the proposed project is an electric generation facility. Accordingly, Staff recommends the Board find that Section 4906.10(A)(1), Revised Code, is not applicable to this electric generating facility (Staff Ex. 1 at 9).

2. Nature of Probable Environmental Impact - Section 4906.10(A)(2), Revised Code

According to the Staff Report, the proposed project would not affect the demographic characteristics of the communities surrounding the project site. The communities within a five-mile radius of the site are projected to lose population over the period from 2010 to 2020, except in Lake Township and the city of Northwood, where the population is projected to grow by 10 percent over the same period. (Staff Ex. 1 at 10.)

Oregon Energy proposes to construct the facility on a 30-acre parcel. The proposed site is primarily used for agricultural production, but includes two residential structures which would be removed if the facility is constructed. In addition, the Applicant proposes

to use 18 acres of an adjoining 30.5-acre parcel for construction laydown and parking. The adjoining parcel is also used for agriculture and 18 acres of that adjoining parcel would be temporarily disrupted during construction. (Staff Ex. 1 at 10.)

Land use within a one-mile radius of the project site is mostly commercial and industrial, slightly more than 50 percent, with the highest concentrations to the north and west of the proposed facility. Industrial uses to the north include the BP refinery and the Bay Shore power plant. Almost 30 percent of the land in a one-mile radius of the site is used for agricultural production and is located primarily to the south and west of the project area. Approximately 11 percent of the surrounding land within a one-mile radius of the site is comprised of residential properties, institutional uses, or owned by Lucas County and the city of Toledo. Further, the remaining less than 10 percent of the land within a one-mile radius of the project is held by the city of Oregon for economic development or used for utility easements. (Staff Ex. 1 at 10; Oregon Energy Ex. 1 at 125-126.)

As represented in the application, construction-related activities are not expected to lead to temporary impacts to land use on surrounding parcels. Operation of the facility would not interfere with the adjacent parcels which are used for agricultural, industrial, and commercial purposes. Residents in the project area are likely to experience temporary noise and traffic impacts associated with project construction activities. The nearest neighboring residence is approximately 700 feet away from the proposed facility's site, and 870 feet from the project footprint. (Staff Ex. 1 at 10.)

Construction of the proposed facility in the region is consistent with the goals in the city of Oregon's master plan, which calls for industrial and commercial development in the area. It is not expected that the project would create any impacts on housing or commercial demand. (Staff Ex. 1 at 10.)

Oregon Energy's consultant conducted a Phase I cultural resource management investigation, consisting of a literature review, surface collection, subsurface testing, and visual inspections. The study resulted in the discovery of two previously unrecorded archaeological sites. Although an historic artifact assemblage, historical artifacts, and a building foundation were discovered, the consultant concluded that the sites are ineligible for listing in the National Register of Historic Places (NRHP), because of a lack of integrity and historic significance. Further, two historic buildings were also identified in the study area; however, both structures have been significantly modified and lack evident associations with significant historic individuals or events. Therefore, the consultant determined that they are also ineligible for NRHP listing. (Staff Ex. 1 at 10-11.)

The consultant also conducted an architectural survey of historic buildings within an area of potential effect around the proposed project. In light of the existence of

industrial infrastructure and urban development to the north, west, and south of the proposed project site, the consultant defined the area of potential effect to focus on cultural resources located in the eastern portion of the study area where the potential for visual impacts was deemed to be the most significant. Overall, 29 Ohio historic inventory (OHI) buildings, five NRHP structures, and two determinations of eligibility were evaluated. Based on existing urban and industrial obstructions between these cultural resources and the project site, the consultant found that no visual impacts warranting mitigation are anticipated as a result of the proposed project. (Staff Ex. 1 at 11.)

Upon review of the archaeological and architectural surveys, the Ohio Historic Preservation Office (OHPO) agrees with the consultant's findings that the two identified archaeological sites do not warrant further study. However, as a means of preserving the historical significance of local architectural styles, the OHPO proposes that Oregon Energy establish 20 additional OHI structures in the project area, typifying these architectural forms. Furthermore, the OHPO recommends that the Applicant develop an educational booklet on these building styles and disseminate information on historic preservation practice and policy for local homeowners, historical organizations, and governments. Finally, the OHPO proposes that archaeological surveys be conducted along the project's raw water line, construction laydown area, and substation parcel. (Staff Ex. 1 at 11.)

The OHPO suggests that further consultation may be required to determine if there is a need for an additional archaeological survey along the project's gas pipeline right-of-way. Accordingly, Staff recommends that Oregon Energy provide a cultural resources plan for review prior to the preconstruction conference. (Staff Ex. 1 at 11.)

According to the application, as verified in the Staff Report, there are over 27 parks, recreation areas, and/or golf courses located within five miles of the project site, including portions of state and federal wildlife areas. However, only three recreational land uses are within the vicinity of the project: Maumee Bay State Park, Pearson Metropark, and Eagle's Landing Golf Club. Maumee Bay State Park, located 2.5 miles to the northeast of the project site, is a 1,336-acre park that offers camping, hiking, fishing, boating, and swimming, and includes the Maumee Bay Golf Course. Approximately one mile south of the project site is Pearson Metropark, part of the Metroparks of the Toledo area system. Pearson Metropark is one of the last remaining stands of northwest Ohio's Great Black Swamp and it is an important stop over 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 situated north of Starr Avenue. The Eagle's Landing Golf Club is located approximately one mile north of the project site. Major recreational and conservation parks approximately five miles from the project include the Mallard Club Marsh Wildlife Area and the Cedar Point National Wildlife Refuge. Project construction would result in temporary traffic congestion and noise increases in the area. Furthermore, at up to 240 feet tall, the project stacks would be visible from certain vantage

points at Eagle's Landing Golf Club and Pearson Metropark. However, sufficient distance and vegetative screening exists between the proposed project and these recreational uses to render project-related impacts negligible. (Staff Ex. 1 at 11-12.)

Oregon Energy has located the project site in a predominantly industrial and commercial area interspersed with large tracts of agricultural land and scattered residences. Perceptions of compatibility with surrounding development would vary by viewer and vantage point, and the generating station would be clearly visible from many surrounding residences, warehouses, and roadways. (Staff Ex. 1 at 12.)

The project site is located near major transportation and utility infrastructure. The southern boundary of the project site is bordered by an operating Norfolk Southern railroad line. A major transmission line corridor is located to the north of the proposed site, beyond which is the expansive BP-Husky Toledo Refinery. FirstEnergy's Bay Shore plant is located approximately two miles north of the proposed site. Furthermore, land immediately north of the project site is currently used to store excavated materials, and commercial and industrial warehouses are located to the south and southwest of the site along Lallendorf Road. The character of the area is largely defined by these industrial and commercial uses, as well as nearby transportation and utility infrastructure. Consequently, the presence of a large generating station would not dramatically conflict with the existing visual context. (Staff Ex. 1 at 12.)

While a utility-scale generator at the proposed site would be visible from the residences along Wynn Road, Cedar Point Road, Corduroy Road, and Lallendorf Road, project-related aesthetic impacts from these sensitive vantage points would be mitigated by distance, as well as the existing industrial and commercial structures and utility infrastructure within these viewsheds. Moreover, Maumee Bay State Park, Pearson Metropark, and Eagle's Landing Golf Course are sufficiently distant and adequately screened by existing vegetation to minimize project-related visual impacts. (Staff Ex. 1 at 12.)

The project site contains two surface water resources, Driftmeyer Ditch and Johlin Ditch. Driftmeyer Ditch extends across the western portion of the site and enters the site from the south through two 53-inch steel culverts under the railroad tracks. Project access would be from North Lallendorf Road and would require a permanent access road to cross Driftmeyer Ditch. The proposed access road is approximately 24 feet wide and would include a culvert comprised of an approximately 121 by 77-inch elliptical pipe. The proposed access road is located at an existing agricultural road crossing on Driftmeyer Ditch. There is a 25-foot long, 83-inch concrete culvert under the existing agricultural road crossing. (Staff Ex. 1 at 12.)

Johlin Ditch is located in the eastern portion of the site and enters the site through a single 36-inch culvert under the railroad tracks. A temporary construction access road is proposed to cross Johlin Ditch and it would allow access to the adjacent construction laydown area. The proposed temporary access road is approximately 16 feet wide and would include the installation of a 36-inch culvert within Johlin Ditch. The proposed access road is located on Johlin Ditch at an existing agricultural road crossing and culvert location. The Staff Report reflects that, according to the Applicant the culvert would likely remain a permanent structure, but would depend on the approval of the city of Oregon. Once construction of the project is completed, Oregon Energy would consult with the city on the maintenance of the culvert. (Staff Ex. 1 at 12.)

Oregon Energy represents and Staff verified that discussions have occurred with the United States Army Corps of Engineers (USACE) regarding the crossings of Driftmeyer and Johlin ditches. Oregon Energy stated that the USACE considers the ditches as jurisdictional resources. The roadway crossings of each ditch would result in impacts less than the 0.1-acre threshold that would trigger the need for a preconstruction notice. According to the Applicant, additional communication would occur with the USACE to formalize this information and determine the USACE's interest in conducting a site visit. In addition to coordination with the USACE, the city of Oregon's approval would be required for both crossings. (Staff Ex. 1 at 13.)

The proposed facility is not located within a Federal Emergency Management Agency (FEMA) flood zone and, therefore, the susceptibility of the proposed facility to flooding is considered to be low (Staff Ex. 1 at 13).

The Staff Report reflects that the majority of the proposed project site is an active agricultural field, and that the other vegetative communities present are old field meadows buffering the agricultural field and narrow tree/shrub corridors bordering Driftmeyer and Johlin ditches. The Driftmeyer and Johlin ditch corridors are mostly herbaceous vegetation, with shrubs and some early successional tree species. There is no significant forest area on or near the site. At this time, Staff notes that significant tree removal is not anticipated for the proposed facility; however, some shrubs and/or small tree species may be cleared to expand the access road by approximately 16 feet at Johlin Ditch. The short interconnection line that would be built from the existing 345 kilovolt (kV) transmission line to the proposed facility may require topping a few trees along Johlin Ditch. No clearing is proposed for the transmission line crossing and no habitat trees for threatened or endangered species would be impacted. (Staff Ex. 1 at 13.)

According to the Staff Report, Oregon Energy requested information from the Ohio Department of Natural Resources (ODNR) and the United States (U.S.) Field and Wildlife Service (USFWS) regarding state- and federally-listed threatened and endangered plant and animal species. ODNR's Division of Wildlife responded that there are no records in

the Natural Heritage Database of rare or endangered species in the project area, including a one-mile radius of the project site. The USFWS responded that there is no objection to the proposed project, and that impacts to federally-listed endangered, threatened, or candidate species, or their habitats, is not anticipated. Staff verifies that additional information was provided through field assessments and review of published ecological information. Staff determines that, due to the project type, size, and location no impacts are expected to any endangered or threatened animal or plant. (Staff Ex. 1 at 13-14.)

According to Staff, the Applicant has committed to construct, operate, and maintain the generation facility in accordance with applicable safety regulations, including Occupational Safety and Health Administration requirements, and industry standards. Facility personnel would be extensively trained to operate the equipment in a safe and reliable manner. Oregon Energy commits to securing pertinent federal and state environmental permits, and construct and operate the facility in accordance with all applicable environmental and safety regulations. (Staff Ex. 1 at 14.)

Further, Oregon Energy has committed to incorporate appropriate safety measures and design to prevent and contain any accidental spill of onsite chemicals such as aqueous ammonia solution, sulfuric acid, or sodium hypochlorite. (Staff Ex. 1 at 15.)

Staff reports that, in order to operate the natural gas interconnection and associated equipment safely and reliably, and to minimize the possibility of failure in the gas supply system, the equipment should be built, operated, and maintained to meet the requirements in: Title 49 Code of Federal Regulations (CFR), Parts 191 and 192, the Federal Minimum Pipeline Safety Standards; Title 40 CFR, Parts 199 and 40, the Drug and Alcohol Regulations; Sections 4905.90 through 4905.96, Revised Code, Natural Gas Pipeline Safety Standards; and Chapter 4901:1-16, O.A.C., Gas Pipeline Safety. (Staff Ex. 1 at 15.)

The Staff Report notes that Oregon Energy would have a complete fire protection and detection system for the facility. The system would include fixed water fire suppression systems, fire hose stations, hydrants, portable fire extinguishers, and detection and control systems. The system would be designed and installed in accordance with the National Fire Protection Association (NFPA) standards and insurer's recommendations. Inert gases or compressed air would be used for all cleaning of pipes during construction, which is consistent with the NFPA standards. All fire protection equipment and systems would be Underwriters' Laboratories approved, and would comply with the city of Oregon's fire department and Oregon Energy's insurance carrier requirements. (Staff Ex. 1 at 15.)

According to Staff, an emergency response plan would be prepared by the Oregon Energy, in consultation with the city of Oregon and local emergency responders, prior to construction. Staff submits that the plan should address different potential emergencies,

levels of response, and resources required such as equipment or personnel. The plan should also address coordination with fire, safety, and emergency personnel. (Staff Ex. 1 at 15.)

Staff notes that the electric and magnetic fields resulting from the generation equipment are expected to be confined to the site. The magnetic fields generated by the generation equipment are attenuated very rapidly as the distance from the equipment increases. The nearest residence is over 600 feet and the nearest commercial building is over 300 feet from the site. (Staff Ex. 1 at 15.)

The project area appears to be underlain by dolomite at an estimated depth of 84.5 feet, established in the drill log found in Boring Number B-3. Staff also points out that Oregon Energy submitted four other drill logs from randomly selected locations within the project area. According to the Staff Report, none of these borings were advanced beyond 84.5 feet or encountered bedrock. Staff also notes that much of the subsoil in the project site is characterized as sand, clay, and traces of gravel. Further drilling is planned as the project progresses toward final design and Staff states that this drilling would give a more detailed analysis of the subsurface condition. (Staff Ex. 1 at 15.)

Staff notes that soils present in the region where the facility is to be located can present challenges to building site development. Seasonal high water table, low soil strength, and shrinking and swelling in the subsoil are noted limitations. However, Staff offers that subsurface drainage systems can be used to lower the water table and the building sites can also be graded so that surface water is drained away from the building foundation. Taking these measures into consideration, Staff states that the Applicant does not anticipate any issue with siting this facility at this location. (Staff Ex. 1 at 15.)

The project area is located within Oregon Township which has a history of seismic activity, as recent as 1993. In 1984, Oregon Township experienced a seismic event of 2.6 magnitude near the project site. The Staff Report reflects that the Applicant has incorporated design parameters for both soil and rock conditions anticipated to appropriately address seismic considerations for this project. (Staff Ex. 1 at 16.)

Staff comments that the equipment delivery routes to access the proposed facility would not be determined until the turbine technology is selected. Oregon Energy anticipates utilizing various road, rail, and port deliveries to the site, with the majority of facility components to be delivered by road. Roads adjacent to the proposed site may be used as heavy haul routes with special permits from the city. The Staff Report notes that these roads have already been reinforced to accommodate local industry as a part of the city of Oregon's foreign trade zone (FTZ). Oregon Energy supplemented its application to include the development of a traffic plan in coordination with the county engineer, Ohio Department of Transportation (ODOT), local law enforcement, and health and safety

officials. In the supplement, Oregon Energy agrees that it would submit the final traffic plan to Staff for review and confirmation that it complies with the requirements established by the Board. (Oregon Energy Ex. 1-C at 3; Staff Ex. 1 at 16.)

Noise impacts from construction activities would include the operation of various trucks and heavy equipment. Staff notes that many of the construction activities would generate significant noise levels. However, the adverse impact of construction noise would be temporary and intermittent, it would occur away from most residential structures, and most construction activities normally would be limited to daytime working hours. (Staff Ex. 1 at 16.)

Oregon Energy obtained the services of a noise consultant to conduct a background ambient noise level study in order to understand the existing noise levels in the vicinity of the proposed facility. The study included measurements at the western (measurement location 1) and eastern (measurement location 2) sides of the project area. The results of that study showed that noise levels at measurement location 1 ranged from 51.1 to 62.1 DeciBels Adjusted (dBA) (Leq)[1] for daytime hours (7 a.m. to 10 p.m.) and 50.4 dBA to 58.1 dBA (Leq) for nighttime hours (10 p.m. to 7 a.m.). For measurement location 1, the Leq for the two-week monitoring period was 55.5 dBA for daytime hours and 54.6 dBA for nighttime hours. Measurement location 2 showed noise levels from 47.1 to 58.1 dBA (Leq) for daytime hours and 46.1 dBA to 60.6 dBA (Leq) for nighttime hours. For measurement location 2, the Leq for the two-week monitoring period was 51.6 dBA for daytime hours and 51.3 dBA for nighttime hours. (Staff Ex. 1 at 16.)

According to the Staff Report, the Applicant's consultant estimates the noise from the operation of the facility by using noise modeling, with the computer aided noise abatement software. The Applicant is considering using one of two turbines manufacturers, Mitsubishi or Siemens, and noise modeling was completed for each of the two potential turbine manufacturers. The sound pressure levels for the two turbine models ranged from approximately 62.8 to 64.7 dBA at the nearest residence. The nearest residence is owned by FirstEnergy. The sound pressure levels for the two turbine models ranged from approximately 56.5 to 58.5 dBA at the next nearest residence. (Staff Ex. 1 at 16.)

Oregon Energy's application specifically incorporates a provision to develop a complaint resolution process to address complaints related to noise in addition to other potential impacts (Oregon Energy Ex. 6; Staff Ex. 1 at 17.)

Based on its investigation, Staff recommends the Board find that the nature of the probable environmental impact has been determined for the proposed generation facility

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1 Leq, or equivalent continuous sound level, is a method used to describe sound levels that vary over time. It is best described as the average sound level over the period of measurement.

and, therefore, complies with the requirements set forth in Section 4906.10(A)(2), Revised Code. However, Staff further recommends that any certificate issued by the Board for the proposed facility include the conditions specified in the Staff Report. (Staff Ex. 1 at 17.)

3. Minimum Adverse Environmental Impact - Section 4906.10(A)(3), Revised Code

The Applicant's preliminary site selection criteria focused on the northwest and northeast regions of Ohio within the PJM Interconnection LLC (PJM) transmission system. According to Staff, Oregon Energy focused on this area because the planned retirement of coal-fired generation facilities would create demand for new generation. Based on its preliminary evaluation, Oregon Energy determined that several sites east of Toledo warranted further study, but, ultimately, Oregon Energy concluded that a 30-acre site on North Lallendorf Road met all specified criteria for the project. After acquiring the property, Oregon Energy entered the PJM queue at the proposed project location. The Applicant also retained consultants to conduct a series of studies identifying critical environmental and socioeconomic constraints at the site, including air quality, wetland, floodplain, threatened or endangered species, land use, and cultural resource impacts. According to the Staff Report, while the site selection methodology utilized by the Applicant lacked a formal evaluation of alternative project locations, the chosen site, nonetheless, minimizes potential ecological and socioeconomic impacts and is suitable for a large-scale generation station. (Staff Ex. 1 at 18.)

The proposed generation facility has been designed to minimize potential impacts, while meeting the need for the project. The area south and east of the project site is predominantly agricultural with sparse residential development. While some residential development exists south of the project, the project area is heavily industrialized to the north and west. Accordingly, Staff states that land use and residential impacts would be minimal. Further, the proposed site is zoned commercial and industrial and located within an FTZ called the Cedar Point Development Park. Staff explains that FTZs are secure areas within the U.S. where foreign and domestic merchandise can be stored, assembled, or manufactured without compliance with U.S. Customs and Border Protection entry requirements or payment of duties until the product is for domestic consumption or the payment of taxes. (Staff Ex. 1 at 18.)

The site is also located adjacent to existing 345 kV transmission lines, which have available capacity for power to be supplied to multiple distribution systems. Staff notes that numerous gas transmission lines in the area could provide fuel supply for the project. Furthermore, the city of Oregon has adequate capacity to supply water to the project and can process the waste water at the local waste water treatment plant. (Staff Ex. 1 at 18.)

As stated previously, Oregon Energy modeled potential noise impacts associated with operation of the facility and depending on the turbine model selected, the nearest resident, which is FirstEnergy, would be exposed to sound pressure levels of approximately 64.7 dBA. and the next closest residence would be exposed to sound pressure levels of approximately 58.5 dBA. However, Oregon Energy's application specifically incorporates a provision to develop a complaint resolution process to address complaints related to noise, in addition to other potential impacts. (Oregon Energy Ex. 6; Staff Ex. 1 at 18-19; Evidentiary Hearing Tr. at 20-21.)

Staff concludes that the project, as proposed, would result in both temporary and permanent impacts to the project area and surrounding areas. However, as a result of the proposed generation facility's low potential to impact land use, cultural resources, streams, wetlands, and nonparticipating residents, as well as Oregon Energy's incorporation of the Staff-recommended conditions to mitigate these impacts, Staff concludes that the project represents the minimal adverse environmental impact. Therefore, Staff recommends the Board find that the proposed facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives and, therefore complies with the requirements specified in Section 4906.10(A)(3), Revised Code, provided that any certificate issued by the Board include the recommended conditions set forth in the Staff Report. (Staff Ex. 1 at 19.)

4. Electric Grid - Section 4906.10(A)(4), Revised Code

According to the Staff Report, the proposed Oregon Clean Energy Center was evaluated by PJM and was also reviewed for compliance with the North American Electric Reliability Corporation reliability standards to the system. The Oregon Clean Energy Center would be located in the American Transmission Systems, Inc. (ATSI) control area and interconnect to the local and regional grid via the Bay Shore-Fostoria Central and Bay Shore-Monroe 345 kV transmission lines. (Staff Ex. 1 at 20.)

Staff evaluated PJM's Feasibility Study and System Impact Study (SIS) for compliance with reliability criteria for PJM summer peak load conditions forecast for the summer of 2015. The SIS revealed that some existing transmission lines would become overloaded with the addition of the proposed generating facility. The overloads to the system were under single contingency outage conditions and contingencies that this project caused on earlier projects in the PJM queue. (Staff Ex. 1 at 20.)

The SIS revealed 12 circuit breaker problems and two transmission line overloads. Staff notes that Oregon Energy would only be responsible for three of the 12 circuit breaker problems, as nine circuit breakers are part of an ATSI Regional Transmission Plan baseline upgrade. According to the Staff Report, the overloads of the Ottawa-Lakeview

138 kV and Lakeview-Greenfield 138 kV transmission lines would be mitigated by new system reinforcements. The new system reinforcements are ATSI-required baseline upgrades and the costs would not be allocated to the Applicant; however, the reinforcements are not expected to go online until 2018. Staff states that, if Oregon Energy wants to advance the upgrades, it can work with PJM and ATSI at Oregon Energy's expense. (Staff Ex. 1 at 21- 22.)

In the Staff Report, Staff concludes that, with the upgrades identified in the PJM studies, the proposed facility is expected to provide reliable generation to the bulk electric transmission system, is consistent with plans for expansion of the regional power system, and would serve the interests of electric system economy and reliability. According to Staff, the facility would serve the public interest, convenience, and necessity by providing additional electrical generation to the regional transmission grid. (Staff Ex. 1 at 22.)

Staff recommends the Board find that the proposed facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facility would serve the interests of electric system economy and reliability. Therefore, Staff believes the proposed generation facility complies with the requirements specified in Section 4906.10(A)(4), Revised Code, provided that any certificate issued by the Board for the proposed facility include the conditions specified in the Staff Report. (Staff Ex. 1 at 22.)

5. Air, Water, and Solid Waste - Section 4906.10(A)(5), Revised Code

According to the Staff Report, Lucas County has reached full attainment for all six National Ambient Air Quality Standards criteria air pollutants: ozone, sulfur dioxide, particulate matter, nitrogen dioxide, carbon monoxide, and lead. Staff notes that Oregon Energy attests that operational impacts of the proposed generation facility on air quality would be minimized through the use of efficient new gas turbine technology, and by incorporating dry-low nitrogen (DLN) burners, oxidation catalysts, and selective catalytic reduction. Further, the turbines would use natural gas which produces less nitrogen oxides and carbon dioxide, than burning coal or oil, and also minimize particulate matter and sulfur dioxide. (Staff Ex. 1 at 23.)

Staff also states that Oregon Energy plans to install air pollution controls to minimize impacts to air quality. The primary air pollution control devices include DLN burners in the gas turbines and selective catalytic reduction systems and oxidation catalysts in the heat recovery steam generators. The selective catalytic reduction systems would reduce emissions of nitrogen oxides to two parts per million by volume. An oxidation catalyst system would be located within the heat recovery steam generators to control emissions of carbon monoxide and volatile organic compounds. The oxidation catalysts would reduce emissions of carbon monoxide to two parts per million by volume

and volatile organic compounds to between 1.0 and 3.5 parts per million by volume. Emissions from the facility would be tracked using a continuous emissions monitoring system, which is designed to detect a deterioration of performance before a failure of the catalyst occurs. The unit would not operate if its respective selective catalytic reduction system is not functioning properly. The Staff Report reflects that, according to Oregon Energy, facility emissions under all operating conditions would comply with permit requirements. Moreover, in addition to the primary air pollution control devices, the facility would use a drift eliminator in order to minimize particulate emissions from the cooling tower. (Staff Ex. 1 at 23-24.)

Staff states that Oregon Energy submitted its air permit-to-install application and the dispersion modeling documentation to the Ohio Environmental Protection Agency (EPA) for the proposed project. Staff notes that the Applicant must apply for a Title V air operating permit within 12 months after initial startup and must submit a Title IV Acid Rain Program permit application for emissions of sulfur dioxide and nitrogen oxides. Furthermore, Staff points out that Oregon Energy's application specifically incorporates a provision to obtain and comply with permits and authorizations required by federal or state laws and regulations prior to the commencement of construction activities. (Staff Ex. 1 at 24; Oregon Energy Ex. 6 at 4.)

According to the Staff Report, construction impacts on air quality consist mostly of relatively minor emissions from the construction equipment and from fugitive dust emissions. Construction vehicles would emit insignificant amounts of volatile organic compounds, sulfur dioxide, carbon monoxide, nitrogen oxides, and particulate matter, which are not expected to cause any significant adverse impacts to air quality. Staff notes that fugitive dust rules adopted pursuant to the requirements of Chapter 3704, Revised Code, are applicable to the proposed facility; however, Oregon Energy indicates that fugitive dust would be controlled, where necessary, through best management practices. (Staff Ex. 1 at 24; Oregon Energy Ex. 6 at 4.)

Staff offers that the requirements under Sections 1503.33 and 1501.34, Revised Code, are not applicable to this project (Staff Ex. 1 at 24, 30). Oregon Energy intends to submit a notice of intent for coverage under Ohio EPA's National Pollutant Discharge Elimination System (NPDES) general permit for storm water discharges associated with construction and industrial activities, including a Storm Water Pollution Prevention Plan (SWPPP) as part of the NPDES permit. This SWPPP would be developed in accordance with Ohio EPA regulations and ODNR's Rainwater and Land Development Manual. According to the Staff Report, stormwater flows from the developed site would be controlled through the use of two detention ponds and other best management practices identified in the SWPPP. (Staff Ex. 1 at 24.)

Staff reports that the industrial and sanitary wastewater from the facility would be directed to the city of Oregon's publicly-owned treatment works (POTW), consistent with pretreatment requirements and in accordance with the city's existing NPDES requirements. In addition, Oregon Energy would install water pollution control equipment at the generation site, including, but not limited to, a pH meter, a neutralization tank, oil/water separators, and spill containment areas for bulk chemical storage tanks and unloading areas. (Staff Ex. 1 at 25.)

Staff notes that, under normal baseload operating conditions, the generation facility is expected to discharge a maximum of 1.7 million gallons per day (MGD) on the hottest summer days to a minimum of 0.6 MGD on a cold winter day into the Oregon municipal system. The effluent quality of the wastewater discharge from the facility to the POTW would comply with local standards outlined in the city of Oregon's sanitary sewer discharge limitations and prohibitions contained in Chapters 925 and 927, Oregon Municipal Code. (Staff Ex. 1 at 25.)

According to the Staff Report, the facility would use raw water supplies from the city of Oregon, eliminating the need for a new surface water intake or groundwater well. The facility operator would purchase a lesser amount of potable water from the city for use in the internal steam cycle, as well as for sanitary purposes. Cooling and fire protection water for the facility would use raw water from the city of Oregon that is withdrawn from Lake Erie under the city's existing permit. The raw water for the proposed project would be diverted from the headworks of the city's water treatment plant and the city would 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. Staff notes, that the city would be responsible for identifying and securing the needed rights-of-way to construct the new city-owned raw water pipe that would transport water form the city's water treatment plant to the eastern boundary of the project site. In fact, commercial arrangements between the Oregon Energy and the city are currently being developed. Once the facility is operational, Oregon Energy would then purchase raw water from the city. (Staff Ex. 1 at 25.)

Staff states that the generation facilities raw water needs would range from approximately 6.7 MGD in the summer to 2.6 MGD in the winter. Raw water is required when the facility is operational, which is initially expected to be 70 to 75 percent of the year. The city of Oregon would also supply potable water to the facility estimated to range from 70,000 gallons per day (GPD) to 152,000 GPD and would be used for sanitary purposes, as well as the heat recovery steam generator and auxiliary boiler, used to generate steam for heating and start-up. The city has confirmed that supplying raw water would not adversely affect its ability to serve other water needs in the community. (Staff Ex. 1 at 25.)

The proposed facility design incorporates significant water conservation measures including: a cooling water system to cycle cooling water five times in the cooling tower to reduce water intake requirements; and high efficiency drift eliminators in the cooling towers to remove as many water droplets as practical from the air before exiting the cooling tower. (Staff Ex. 1 at 25.)

Oregon Energy indicates that solid waste generated during construction and preoperational cleaning, would be recycled and reused where feasible. Staff notes that solid waste that can be neither recycled nor reused would be stored in on-site containers for disposal and trucked off site by licensed contractors in accordance with applicable regulatory requirements. Selective catalytic reduction catalysts would be removed and returned to a catalyst vendor for regeneration, salvage, or disposal. According to the Staff Report, Oregon Energy would develop programs to ensure that potentially hazardous wastes are separated from normal waste, including segregation of storage areas and proper labeling of containers. (Staff Ex. 1 at 26.)

According to Staff, the Applicant would have a Spill Prevention, Containment, and Countermeasure Plan in place and would follow manufacturers' recommendations for any spill cleanup. Based on its investigation, Staff states that the Applicant's solid waste disposal plans comply with solid waste disposal requirements in Chapter 3734, Revised Code. (Staff Ex. 1 at 26.)

Staff contacted the ODNR Office of Aviation (ODNR-OA) during review of this application, in order to coordinate review of potential impacts the facility might have on local airports. According to Staff, Culver Field Airport is the closest airport and it is two miles southeast of the project site. Culver Field Airport is privately owned and privately used. Staff notes that a determination of no hazard to navigation for the proposed project has been received from the Federal Aviation Administration. Additional coordination with the ODOT is necessary to clarify the marking and lighting requirements for the stacks on the generation facility. The ODNR-OA had not, as of the date of the Staff Report, identified any concerns associated with the proposed facility. (Staff Ex. 1 at 26.)

Staff recommends the Board find that the proposed Oregon Energy generation facility complies with the requirements in Section 4906.10(A)(5), Revised Code, and that any certificate issued by the Board include the conditions set forth in the Staff Report. (Staff Ex. 1 at 26.)

6. Public Interest, Convenience, and Necessity - Section 4906.10(A)(6), Revised Code

Staff notes the opportunities for the public to be informed and comment on the proposed project, and points out that Oregon Energy has been engaged with various city officials about the proposed generation facility since 2010 and held a public information

meeting on November 29, 2012. Information about the proposed generation project has been available on the city of Oregon's website and featured in local newspaper articles, in addition to the required legal notices required by the Board. As previously noted, a local public hearing was held in Oregon, Ohio on April 2, 2013, where the Board was available to accept written and oral testimony from any person and the evidentiary hearing was held on April 9, 2013, at the Board's offices in Columbus, Ohio. (Staff Ex. 1 at 27.)

In its report, Staff contends that the proposed facility would have an overall positive impact on the local economy because of the increase in wages, purchasing of goods and services, construction spending, and local tax revenues. According to Staff, there are direct, indirect, and induced economic benefits to the region during construction and operation of the project, including purchases of construction materials from local vendors and the use of goods and services by facility personnel. The proposed facility would generate revenue from construction spending, permanent employment, and local and state taxes. Of the approximately $750 million in project construction and development costs, $225 million of direct expenditures to construct the facility would be made in Lucas County. Staff notes that, according to the Applicant, construction of the proposed generation facility would create an estimated 532 construction industry jobs, and an additional 454 jobs would be created by indirect/induced multiplier impacts. The forecasted rate of job growth is expected to positively impact the Toledo metropolitan area, which includes the counties of Fulton, Lucas, Ottawa, and Wood during the construction phase of the project. Once operational, the project would employ 25 full-time workers and create an additional 27 ancillary jobs in the Lucas County. The Staff Report reflects that the Applicant expects the annual labor income to increase by $3.9 million in Oregon and by an additional $1.6 million in other parts of Ohio, as a result of annual facility operations. Moreover, an additional $15.4 million in state and local tax revenue would be generated as a result of the project. (Staff Ex. 1 at 27-28.)

Therefore, Staff recommends the Board find that the proposed facility would serve the public interest, convenience, and necessity, and that it complies with the requirements specified in Section 4906.10(A)(6), Revised Code, subject to the conditions set forth in the Staff Report (Staff Ex. 1 at 28.).

7. Agricultural Districts - Section 4906.10(A)(7), Revised Code

In accordance with provisions of Chapter 929, Revised Code, land is classified as agricultural district land through an application and approval process that is administered through the local county auditor's office. As noted in the application, Oregon Energy states that there are no agricultural districts within or adjacent to the proposed project site. Therefore, no agricultural district would be impacted by the proposed facility. (Staff Ex. 1 at 29.)

In the report, Staff notes that the project site and an adjacent parcel, which the Applicant proposes to use for construction laydown and parking, were previously used for agricultural production. Thus, 46 acres of land currently used for agricultural production would no longer be available as farmland. (Staff Ex. 1 at 29.)

Staff recommends the Board find that the impact of the proposed facility on the viability of existing agricultural land in an agricultural district has been determined and, therefore, complies with the requirements in Section 4906.10(A)(7), Revised Code. Further, Staff recommends that any certificate issued by the Board include the conditions set forth in the Staff Report. (Staff Ex. 1 at 29.)

8. Water Conservation Practice - Section 4906.10(A)(8), Revised Code

Staff reviewed the Applicant's proposed water balance and water consumption for the proposed generation facility. In its report, Staff concluded that construction of the proposed facility would not require significant amounts of water. However, operation of the proposed project would require the use of significant amounts of water which would be acquired through the city of Oregon water treatment plant. Accordingly, the requirements under Sections 1503.33 and 1501.34, Revised Code, are not applicable to this project. (Staff Ex. 1 at 30.)

As noted previously, Staff finds that the proposed project would use raw water supplies for cooling and fire protection from the city of Oregon that is withdrawn from Lake Erie under the city's existing permit. The proposed generation facility incorporates significant water conservation measures including cycling the water through the cooling tower five times and high efficiency drift eliminators. Oregon Energy would also purchase potable water from the city for use in the internal steam cycle as well as for sanitary purposes. Thus, the Staff recommends that the Board find that the requirements specified in Section 4906.10(A)(8), Revised Code, are not applicable to this project. (Staff Ex. 1 at 30.)

9. Staff Recommended Conditions

Staff recommends that any certificate issued by the Board in this matter include the following conditions:

(1) The facility shall be installed at the Applicant's site as presented in the application, and as modified and/or clarified by the Applicant's supplemental filings and further clarified by recommendations in the Staff Report.

(2) The Applicant shall utilize the equipment and construction practices as described in the application and as modified

and/or clarified in supplemental filings, replies to data requests, and recommendations in the Staff Report.

(3) The Applicant shall implement the mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in the Staff Report.

(4) The certificate shall become invalid if the Applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate.

(5) The Applicant shall develop a cultural resources mitigation plan that addresses the concerns outlined in the Staff Report. The plan shall be provided to Staff within 30 days of Board's certification of the facility. Prior to the preconstruction conference, the Applicant shall submit to Staff a final cultural resources report that details the work completed, for review and confirmation that it complies with this condition.

(Staff Ex. 1 at 31.)

V. CONCLUSION

The Board finds that the record establishes that all the criteria set forth in Section 4906.10(A), Revised Code, applicable to this project are satisfied for the construction, operation, and maintenance of the Oregon Clean Energy Center at the proposed site as described in the application, as supplemented, and subject to the conditions set forth in the Staff Report. Oregon Energy testified that the Applicant accepts the recommended conditions included in the Staff Report. Further, Staff witness Cunningham and Oregon Energy witness Martin both testified that the project would be beneficial to the community and the public interest. Further, Staff recommends that, based upon the record and the Applicant's consent to the recommended conditions in the Staff Report, the Board should issue a certificate for the Oregon Clean Energy Center, as described in the supplemented application, subject to the conditions included in the Staff Report.

Based on the record presented, the Board approves Oregon Energy's application and hereby issues a certificate to Oregon Energy for the construction, operation, and maintenance of the project, as proposed in its application, as supplemented, subject to the conditions set forth in Section IV.C.9 of this opinion, order and certificate.

FINDINGS OF FACT AND CONCLUSIONS OF LAW:

(1) Oregon Energy is a person under Section 4906.01(A), Revised Code.

(2) The proposed electric generation facility is a major utility facility, as defined in Section 4906.01(B), Revised Code.

(3) On November 13, 2012, Oregon Energy filed its preapplication notice of its application.

(4) On November 13, 2012, Oregon Energy filed a motion for waivers of Rule 4906-13-03(A) and (B), O.A.C., regarding the site selection study, and Rule 4906-13-04(A)(4), O.A.C., regarding the submission of information relating to cross-sectional views and the location of test borings in the project area.

(5) By entry issued December 5, 2012, Oregon Energy's motion for waivers was granted.

(6) On November 26, 2012, and November 28, 2012, Oregon Energy filed proofs of publication of the public information.

(7) On January 17, 2013, as supplemented on March 6, 13, and 15, 2013, Oregon Energy filed its application for a certificate to construct an electric generation facility in Lucas County.

(8) By letter dated February 5, 2013, the Board notified Oregon Energy that its application had been found to be sufficiently complete, pursuant to Rule 4906-1, *et seq.*, O.A.C., to permit Staff to commence its review and investigation of the application.

(9) Oregon Energy served copies of the application upon local government officials and filed proof of service of the application, pursuant to Rule 4906-5-06, O.A.C., on February 5, 2013.

(10) By entry issued February 6, 2013, a local public hearing was scheduled for April 2, 2013, in Oregon, Ohio and the evidentiary hearing was scheduled for April 9, 2013, at the offices of the Board, in Columbus, Ohio.

(11) On March 18, 2013, Staff filed its report of investigation of the Oregon Energy application.

(12) Notice of the hearings was published and the proofs of publication were filed on February 14, 2013 and March 21, 2013.

(13) A local public hearing was held on April 2, 2013, at 6:00 p.m., at the Oregon City Council Chambers, in Oregon, Ohio. At the local public hearing, 12 individuals offered testimony on the proposed generation project.

(14) The evidentiary hearing was held on April 9, 2013, at the offices of the Board, in Columbus, Ohio. Two witnesses, one for Oregon Energy and one for Staff, offered testimony at the evidentiary hearing.

(15) Adequate data on the proposed generation facility has been provided to make the applicable determinations required by Section 4906.10(A), Revised Code.

(16) The record evidence in this matter provides sufficient factual data to enable the Board to make an informed decision.

(17) The record establishes that the basis of need, under Section 4906.01(A)(1), Revised Code, is not applicable to this project.

(18) The record establishes the nature of the probable environmental impact from construction, operation, and maintenance of the facility under Section 4906.10(A)(2), Revised Code.

(19) The record establishes that the site for the proposed generation facility, subject to the conditions set forth in the Staff Report, represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations under Section 4906.10(A)(3), Revised Code.

(20) The record establishes that, subject to the conditions set forth in the Staff Report, the generation facility is sited to be consistent with regional plans for expansion of the electric power grid and will serve the interests of electric system economy and reliability, under Section 4906.10(A)(4), Revised Code.

(21) The record establishes, as required by Section 4906.10(A)(5), Revised Code, that the generation facility will comply with Chapters 3704, 3734, and 6111, Revised Code, and Sections 1501.33 and 1501.34, Revised Code, and all rules and standards adopted under these chapters and under Section 4561.32, Revised Code.

(22) The record establishes that the generation facility will serve the public interest, convenience, and necessity, as required under Section 4906.10(A)(6), Revised Code.

(23) The record establishes that the generation facility will not impact the viability as agricultural land of any land in an existing agricultural district, under Section 4906.10(A)(7), Revised Code.

(24) The record establishes that the water conservation practices under Section 4906.10(A)(8), Revised Code, are not applicable to the proposed generation facility.

(25) Based on the record, the Board should approve the application, as amended and supplemented, and issue a certificate, pursuant to Chapter 4906, Revised Code, for the construction, operation, and maintenance of the generation facility at the preferred site, subject to the conditions set forth in this opinion, order, and certificate.

ORDER:

It is, therefore,

ORDERED, That Oregon Energy's application, as supplemented, be approved and a certificate be issued to Oregon Energy for the construction, operation, and maintenance of the generation facility at the proposed site subject to the conditions set forth in this order. It is, further,

ORDERED, That the certificate contain the five conditions set forth above in Section VI.C.9 of this opinion, order, and certificate. It is, further,

ORDERED, That a copy of this opinion, order, and certificate, be served upon all interested persons of record.

THE OHIO POWER SITING BOARD

Todd A. Snitchler, Chairman
Public Utilities Commission of Ohio

David Goodman, Board Member
and Director of the Ohio
Development Services Agency

James Zehringer, Board Member
and Director of the Ohio
Department of Natural Resources

Theodore Wymyslo, Board
Member and Director of the
Ohio Department of Health

Scott Nally, Board Member
and Director of the Ohio
Environmental Protection Agency

David Daniels, Board Member
and Director of the Ohio
Department of Agriculture

Jeffrey J. Lechak, Board Member
and Public Member

GNS/vrm

Entered in the Journal
MAY 01 2013

Barcy F. McNeal
Secretary

Rolling Hills - Simple Cycle

BEFORE

THE OHIO POWER SITING BOARD

In the Matter of Application of Rolling Hills Generating, LLC, a Subsidiary of Dynegy Power Corporation Generation, LLC, for a Certificate of Environmental Compatibility and Public Need for the Rolling Hills Generating Project, Vinton County.	))))))	Case No. 00-1616-EL-BGN

OPINION, ORDER, AND CERTIFICATE

The Ohio Power Siting Board (hereinafter Board), coming now to consider the above-entitled matter, having appointed its administrative law judge to conduct both public and adjudicatory hearings, having reviewed the report of investigation and the stipulation, and being otherwise fully advised, hereby issues its opinion, order, and certificate in this case as required by Section 4906.10, Revised Code.

APPEARANCES:

M. Howard Petricoff, Esq., and Stephen M. Howard, Esq., Vorys, Sater, Seymour and Pease LLP, 52 East Gay Street, Columbus, Ohio 43216-1008, on behalf of Rolling Hills Generating, LLC (hereinafter applicant).

Betty D. Montgomery, Attorney General, by Duane W. Luckey, Section Chief, William L. Wright and Thomas Lindgren, Assistant Attorneys General, Public Utilities Section, 180 East Broad Street, Columbus, Ohio 43266-0572, and by Margaret Malone and Summer J. Koladin, Assistant Attorneys General, Environmental Enforcement Section, State Office Tower, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215, on behalf of the Board's staff (hereinafter staff).

OPINION:

All proceedings before the Board were conducted in accordance with the provisions of Chapter 4906, Revised Code, and Chapter 4906, Ohio Administrative Code (hereinafter O.A.C.). On October 24, 2000, applicant filed an application for a certificate of environmental compatibility and public need with the Board to construct a generating facility in Vinton County, Ohio. Applicant is a limited liability corporation organized under the laws of Delaware, and a "person" within the definition of Section 4906.01(A), Revised Code. The project is a "major utility facility" as defined in Section 4906.01(B)(1), Revised Code.

Prior to filing the application, applicant filed a motion for waivers of certain filing requirements. On December 8, 2000, the applicant was granted a waiver of certain filing requirements under Rule 4906-1-03, O.A.C., including a waiver of the requirement to file an application two years prior to commencement of construction under Section 4906.06(A)(6), Revised Code. On December 22, 2000, the Board notified applicant that,

pursuant to Rule 4901-1-14, O.A.C., the application had been found to be complete, whereupon copies of the application were served upon local government officials.

The staff of the Board conducted an investigation concerning the environmental and social impacts of the project and filed its report of investigation with the Board on March 27, 2001. The staff report was technically filed out of time by one day, in violation of Section 4906.07(C), Revised Code. However, the administrative law judge recommends that the Board find the filing was substantially in compliance, since the staff report was only filed one day out of time and no party objected to the late filing.

A local public hearing was held on April 10, 2001, in Wilkesville, Ohio. At the public hearing, eleven witnesses testified; the public testimony focused primarily on either the use of local labor and/or union labor in the construction of the proposed facility, and the tax abatement (Tr. I, 5-30). At the scheduled adjudicatory hearing on April 12, 2001, the staff and applicant requested that the adjudicatory hearing be continued so that they could engage in further settlement discussions (Tr. II, 5). On April 27, 2001, staff and the applicant filed a joint stipulation and recommendation (hereinafter stipulation), which resolved all the issues in this case. On May 3, 2001, the hearing resumed for the purpose of entering the stipulation into the record. In accordance with Rule 4906-5-08, O.A.C., public notices of the hearings were published in the Vinton County Courier.

I. PROPOSED FACILITY:

Applicant proposes to construct, own, and operate a 800-megawatt (hereinafter MW), simple-cycle, natural gas-fired, merchant power plant, to be located in Vinton County, Wilkesville Township, Ohio at the southwest corner of state routes 160 and 689 (App. Ex. 1, at 01-1). The proposed facility will consist of five Siemens-Westinghouse 501FD combustion turbine generators (*Id.*). Each generator will be capable of generating 160 MWs (*Id.*). Applicant has determined that, due to the proximity of natural gas pipelines, a back-up fuel will not be required (*Id.* at 01-2). The applicant proposes to tap into the two 30-inch Texas Eastern natural gas pipelines that cross the southeast quarter of the property at the preferred site (App. Ex. 1, at 02-9; Staff Ex. 1, at 3). Each generator will be connected to its own 18-kilovolt (hereinafter kV) to 765-kV step-up transformer (App. Ex. 1, at 02-13; Staff Ex. 1, at 6). The proposed facility will be interconnected to the American Electric Power (hereinafter AEP) 765-kV single circuit Marysville-Gavin transmission line, which is located on the northeast portion of the preferred site (App. Ex. 1, at 04-2; Staff Ex. 1, at 6).

Each generator will be equipped with an inlet air filter, outdoor enclosures, exhaust stack, fuel, lubrication, starting and fire protection systems, and a fogging-type evaporative cooler (App. Ex. 1, at 02-2; Staff Ex. 1, at 5-6). Each generator will be equipped with dry-low nitrogen oxide (hereinafter NOx) combusters to control emissions; in addition, applicant proposes to install selective catalytic reduction (hereinafter SCR) systems on two of the generators to further reduce NOx emissions (App. Ex. 1, at 04-14 ; Staff Ex. 1, at 5). Each generator will be constructed on reinforced concrete foundations and enclosed in weatherproof metal enclosures, which will help reduce noise levels and facilitate maintenance (App. Ex. 1, at 04-11; Staff Ex. 1, at 6). A diesel generator, which will supply emergency back-up electric power to the facility, and firewater pumps will also be

constructed on the site (App. Ex. 1, at 04-15; Staff Ex. 1, at 6). In addition to the generators and firewater pumps, the applicant proposes to construct a pre-engineered metal administration/control/maintenance building and a pre-engineered metal electrical building on reinforced concrete foundations (App. Ex. 1, at 04-11; Staff Ex. 1, at 6).

Both the preferred and alternate sites are located in close proximity to the Village of Wilkesville, Ohio (Staff Ex. 1, at 5). The preferred site, which is rectangularly shaped, is located at the southwest corner of the intersection of State Routes 160 and 689, adjacent and northwest of the Village of Wilkesville (App. Ex. 1, at 04-1; Staff Ex. 1, at 5). On the preferred site, the proposed facility will be constructed centrally on a 120-acre parcel (App. Ex. 1, at 04-1; Staff Ex. 1, at 5). The switchyard will be constructed on an additional 17 acres (App. Ex. 1, at 04-13; Staff Ex. 1, at 5). The southern portion of the property will be used for parking and lay-down during construction (Staff Ex. 1, at 5). The majority of the preferred site is flat, consisting primarily of agricultural land and wooded lots (*Id.*). Two small streams cross the property (App. Ex. 1, at 04-3; Staff Ex. 1, at 5). Three natural gas pipelines and the AEP 765-kV Marysville-Gavin transmission line cross the preferred site (App. Ex. 1, at 04-2; Staff Ex. 1, at 5).

The alternate site consists of approximately 110 acres, which is approximately 1,500 feet south of the preferred site, adjacent to the western edge of the Village of Wilkesville (App. Ex. 1, at 04-3; Staff Ex. 1, at 5). The acreage at the alternate site consists of woodlands, scrub and agricultural land (App. Ex. 1, at 04-3; Staff Ex. 1, at 5). The terrain at the alternate site slopes down northwest to southeast (App. Ex. 1, at 04-3; Staff Ex. 1, at 5). An intermittent tributary of Flatlick Run borders the alternate site on the wide side of the parcel (App. Ex. 1, at 04-4; Staff Ex. 1, at 5). High Street borders the alternate site on the east side of the parcel (App. Ex. 1, at 04-3; Staff Ex. 1, at 5). A Texas Eastern natural gas pipeline is approximately 200 feet from the northwest corner of the alternate site, and the AEP Marysville-Gavin 765kv electric transmission line is located approximately 3,800 feet north of the alternate site (App. Ex. 1, at 04-4; Staff Ex. 1, at 5).

II. CERTIFICATION CRITERIA, STAFF FINDINGS, AND STIPULATED FINDINGS:

Pursuant to Section 4906.10(A), Revised Code, the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines:

(1) The basis of the need for the facility;

(2) The nature of the probable environmental impact;

(3) The facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;

(4) In the case of an electric transmission line, that such facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and

interconnected utility systems, and that such facilities will serve the interests of electric system economy and reliability;

(5) The facility will comply with Chapters 3704, 3734, and 6111, Revised Code, all rules and standards under those chapters, and under Sections 1501.33, 1501.34, and 4561.32, Revised Code;

(6) The facility will serve the public interest, convenience, and necessity;

(7) The probable impact of the facility on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Revised Code that is located within the site and alternative site of the proposed major facility; and

(8) The facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of various alternatives.

The application addresses each of the criteria set forth above, as does the staff's report of investigation. Each criterion is discussed below.

A. Basis of Need:

Section 4906.10(A)(1), Revised Code, requires the Board to presume that the need for the facility is as stated in the application, since the proposed facility constitutes a "major utility facility," as defined in Section 4906.01(B)(1), Revised Code. In its application, applicant states that the proposed generating facility will be a merchant plant designed to meet the projected peak electric capacity needs in Ohio and the rest of the East Central Area Reliability Council (hereinafter ECAR) region (App. Ex. 1, at 02-1). Applicant asserts that weather-related demand spikes, such as those examined in the May 25, 1999 Public Utilities Commission of Ohio's staff report entitled Ohio's Electric Service: The Outlook for Summer 1999, can be addressed with peaking plants such as the proposed facility (*Id.* at 02-2). Next, applicant asserts that there is a need for merchant plants, such as the proposed facility, for consumers to be able to shop for power pursuant to Ohio Amended Substitute Bill 3 (*Id.* at 02-3).

While not providing direct cites to any specific ECAR report,[1] other than attaching the North American Electric Reliability Council's May 2000, report entitled Reliability Assessment 1999-2008: The Reliability of Bulk Electric Systems in North America, applicant asserts that ECAR is projected to have a mere 9.4 percent summer capacity margin in 2008 (*Id.*). Applicant further asserts that the capacity margins for total internal demand will reach a low of 7.4 percent in 2002, based on total internal demand, and reach

[1] It should be noted that the Staff Report contains a discussion of a more recent ECAR report. However, the Board is required by Section 4906.10(A)(2) and (3), Revised Code, to examine the basis of need as stated in the application, since the proposed facility is a major facility.

a ten-year low of 1.8 percent in 2008 (*Id.*). Next, applicant points out that the age of existing base generating units (by 2008, 67 percent of generating capacity in ECAR will be 30 years old, and 27 percent will be over 40 years old) is another reason that new capacity is needed in ECAR (*Id.* at 02-4).

Finally, applicant asserts that the U.S. Environmental Protection Agency's proposed NOx emission rules could have a significant impact on capacity in the ECAR region (*Id.*). At a minimum, applicant asserts that the proposed rules could require Ohio's coal-fired generators to be taken off-line to construct necessary emission control devices; applicant asserts that the proposed facility could be on-line in time to fill the gap that will exist in capacity while the emission control devices are installed (*Id.* at 02-5).

In its report, staff agrees with applicant that load continues to grow within ECAR, and that new and proposed environmental regulations could cause a significant reduction in the availability of coal-fired generation within ECAR (Staff Ex. 1, at 15). Therefore, staff recommends that the Board find that the need for the proposed project has been demonstrated (*Id.*). Moreover, the staff and applicant have stipulated that adequate data has been provided to determine the basis of need for the facility (Jt. Ex. 1, at 10).

B. Nature of Probable Environmental Impact and Minimum Adverse Environmental Impact:

The staff has reviewed the environmental information contained in the record in this proceeding and has made site visits to the project area. As a result, staff found, among other things, the following with regard to the nature of the probable environmental impact:

(1) Minor emissions of ammonia will result from the operation of the SCR control systems. Such emissions are subject to the applicant's pending air permit.

(2) Each generator will be connected to its own oil-filled, step-up transformer, which will have dikes built around them to contain any potential spills.

(3) The facility will use only pipeline grade natural gas for fuel. The applicant believes connecting the facility to the natural gas pipeline will have few potential impacts.

(4) The generating facility's electrical output will be supplied to the local power grid through a connection with the existing AEP 765-kV transmission lines that cut across the northeast corner of the preferred site. To facilitate this interconnection, the applicant proposes to add two new turning towers to direct the transmission lines into the facility's switchyard.

(5) Water needs, including potable water, for the proposed facility will be supplied by the Leading Creek Conservancy District

from a connection with an existing 6-inch water pipeline running along State Route 160 on the eastern boundary of the site. The applicant estimates the facility will require 70 gallons per minute when it is operating, or 50,400 gallons per day, assuming a standard 12-hour on-peak operating schedule. Applicant plans to recycle and reuse treated contact stormwater and process wastewater to reduce the fresh water demand from the local water district.

(6) Two of the combustion turbine generators will be equipped with SCR systems. Each SCR will have its own dedicated 30,000-gallon aqueous ammonia storage tank.

(7) The applicant proposes to construct three water storage tanks at the facility site, one for raw water and two for process water. Water from these tanks primarily will be used for air inlet fogging and equipment cleaning, but will also be available for fire suppression, if necessary.

(8) The preferred site had been used principally for agriculture, so there will be little vegetative waste removed from the site. However, a limited amount of trees and brush located on the northern, western and southwest portion of the northern half of the preferred site will require removal. The selection of the alternate site will require the removal of greater amounts of vegetative waste.

(9) Both the preferred and alternate sites, like the surrounding terrain, slope down generally in a northwest to southeast direction. Extensive grading will be required to facilitate construction on a level surface regardless of the building site selected. However, the alternate site will be somewhat more difficult for construction activities in terms of grading requirements. The potential for water erosion and airborne dust could be significant during construction. Therefore, control measures, such as silt fencing for erosion control and water spraying for dust control, will be required during construction.

(10) Excess soil material will be used as backfill as required throughout the site. Debris generated during the construction phase of the project will be collected in containers and hauled off-site to a suitable landfill by a licensed solid waste or construction and demolition debris contractor.

(11) The applicant proposes to construct an on-site wastewater treatment system for the purpose of treating the 350 gallons per day of sanitary waste that the facility is estimated to generate. The system will include a 500-gallon storage tank and

associated on-site leach field. The accumulated septic tank waste will be pumped out by a licensed septic waste handler and properly disposed.

(12) The applicant submitted an application for a permit to install an air pollutant source for the preferred site to the Ohio Environmental Protection Agency (hereinafter OEPA), September 2000.

(13) Potential construction emissions include volatile organic compounds, sulfur dioxide, carbon monoxide, NOx, fugitive dust, and particulate matter less than 10 microns in diameter. These emissions should be relatively minor and are not expected to cause significant adverse environmental impacts at or beyond the site area.

(14) Storm water runoff will be managed through a National Pollutant Discharge Elimination System (hereinafter NPDES) general permit during construction of the facility.

(15) The equipment will be washed periodically. The waste stream will be collected and stored in an underground tank. This waste stream, consisting of water, soap and oily residue, will be removed and disposed of by a qualified contractor.

(16) The Ohio Department of Natural Resources (hereinafter ODNR) and the U.S. Forest and Wildlife Service have identified two federally endangered species as being potentially within the vicinity of the project: the Indiana bat and the American burying beetle. The applicant states that there is a low probability of either species being present on the preferred site or in areas adjacent to the site. However, as a precautionary measure, applicant will not cut trees with exfoliating bark, which is a potential bat habitat, between April 15 and September 15. The applicant's entomologist has determined that the location and current condition of the preferred site does not make it a prime habitat for the beetle. As such, applicant does not believe construction of the project will adversely affect the American burying beetle.

(17) Construction noise will vary considerably during construction of the facility depending on type, number and duration of machines operated at different phases of construction. The construction noise will occur during an anticipated 12-month construction schedule.

(18) Some bedrock and large boulders may have to be removed during site preparation and excavation phases of the project.

This matter may be removed by means of controlled dynamite blasting. Dynamiting, if determined to be necessary, will be limited to daytime hours.

(19) Based on applicant's studies, noise levels anticipated to emanate from the facility will be approximately 61-62 decibels at sensitive receptors that are located within 1,300 feet of the center of the project.

(20) State Route 160 is a well-traveled, high-speed transportation route for local area motorists and coal trucks. Construction traffic will use this road to access the site, adding to the traffic volume. As such, some traffic control will be required during the construction of the proposed facility.

(21) The applicant's investigation found no recreational areas within five miles of the proposed site.

(22) Construction of the proposed project will not impact Ohio wetlands, as none are present on either site.

(23) The applicant has submitted an application for a Section 404 Nationwide Permit No. 12 to the U.S. Corps of Engineers, which if granted, could allow for the relocation of up to 200 linear feet of the unnamed tributary of Flatlick Run located on the northern portion of the preferred site. The same permit will allow for the backfill of the intermittent stream that flows west to east through the central portion of the preferred site. The length of this stream impacted will be as much as 2,000 feet. The applicant will be required to engineer a new storm water drainage management system for the property.[2]

(24) The applicant conducted a Phase I archaeological survey of the preferred site in July of 2000. The initial survey discovered seven isolated find sites, and two historic sites, one of which was a domestic homestead and outbuilding and the other was an early twentieth century dance hall. Upon further investigation, it was determined that none of the isolated find sites or historic sites was eligible for inclusion in the National Register of Historic Places. No further work was deemed necessary for the site.

(25) Installation of the new segment of transmission line may require removal or cutting of some trees along the stream. Diminished canopy cover along the stream could elevate water

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2 While applicant has submitted the permit application, its current plans no longer call for relocating any segment of the stream (Staff Ex. 1, at 19, 21).

temperatures and possibly impact local invertebrate populations. Restoration activities could produce erosion and help replace shade to the impacted stream.

(26) Cooling of the generators and lube oil system during operation will be accomplished with a dry cooling system, so no water will be consumed for cooling purposes.

(27) At the preferred site, excess soil and other materials obtained from grading could be used for berming along the eastern and southeastern side of the facility to mitigate noise.

(Staff Ex. 1, at 16-23).

The staff recommends that the Board find that the nature of the probable environmental impact has been determined for the proposed facility (Staff Ex. 1, at 19). The staff concluded that the preferred site is closer to the electric transmission line, the natural gas pipelines, and a major highway, while being further away from a concentration of residences within the Village of Wilkesville (*Id.* at 20, 21). Construction of at the preferred site will remove fewer trees and be less intrusive to the surrounding area, in staff's view (*Id.* at 20). Therefore, the staff concluded that the preferred site is expected to cause less adverse environmental impacts (*Id.* at 20, 23). Moreover, the staff and applicant have stipulated that, as required by Section 4906.10(A)(3), Revised Code, the record establishes that the project at the preferred site represents the minimum adverse environmental impact considering the state of technology and the nature and economics of the various alternatives, and other pertinent considerations (Jt. Ex. 1, at 10).

C. Compliance with Section 4906.10(A)(5), Revised Code:

In its application, the applicant states that the following air quality permits will be required for the proposed facility: 1) acid rain permit; 2) permit to install; and 3) operating permit (App. Ex. 1, at 06-2). Applicant further states that, in September 2000, it submitted a permit to install application and all necessary information to meet all the requirements for the acid rain permit (*Id.*). Applicant further avers that it will submit an NPDES operating permit application within 12 months after the commencement of operation (*Id.*).

In its application, the applicant states that the following water-related permits will be required before construction: 1) OEPA permit to install the septic system; and 2) a general NPDES permit for storm water discharges associated with construction activity (*Id.* at 6-3). Applicant states that a general storm water permit, pursuant to Chapter 3745-38, O.A.C., has been established (*Id.*). The staff's review of these items is contained in Section B of this order.

In its application, the applicant states that, during preconstruction, some hauling and disposal of solid waste by a licensed solid waste contractor is anticipated (*Id.* at 06-5). Further, the applicant notes that, during construction, licensed solid waste contractors will remove all construction debris (*e.g.*, packing materials, office waste, scrap lumber, excess concrete, metals, cables, glass, cardboard containers, miscellaneous debris from

personnel), in accordance with local, state and federal requirements, to either a local or regionally approved facility (*Id.*). In addition, the applicant states in its application that little nonhazardous solid waste will be generated, with the exception of office and kitchen waste, inlet air filters, used oils, plant refuse, and other maintenance wastes (*Id.*). Finally, in its application, the applicant states that the operators will receive proper environmental training regarding accepted waste handling procedures (*Id.* at 06-6).

After reviewing the information *supra*, the staff recommends that the Board find that a determination of compliance with Chapter 3704 and 6111, Revised Code, and Sections 1501.33 and 1501.34, Revised Code, and all regulations and standards adopted thereunder, cannot be made until all required permits have been issued (Staff Ex. 1, at 25) Furthermore, the staff recommends that the Board find that the facility will comply with Section 4561.341, Revised Code (*Id.*). The staff and applicant have agreed that adequate data has been provided to determine that the proposed facility will comply with Section 4906.10(A)(5), Revised Code (Jt. Ex. 1, at 9).

D. Consideration of Sections 4906.10(A)(4), and 4906.10(A)(6), Revised Code:

In its application, the applicant states that, in order to interconnect with the AEP Marysville-Gavin 765-kV transmission line, it will need to construct two turning towers (App. Ex. 1, at 02-9). The actual application to construct the transmission line will be considered in a separate proceeding before the Board. After reviewing the application, staff recommends that the Board find that the proposed facility is not a transmission line, but is sited to be consistent with the expansion plans for the regional power grid (Staff Ex. 1, at 24).

The staff determined that the project will serve the public interest, convenience and necessity by providing reliable electrical generation when needed (*Id.* at 30). The staff based its analysis on several independent studies (*Id.* at 26). In addition, staff reviewed information contained in the application pertaining to: 1) noise; 2) aesthetics; 3) environmental concerns; 4) social and economic impacts; and 5) health and safety concerns (*Id.*). Discussion of the staff's review of these issues is contained in section B of this order. Finally, the staff and applicant stipulated that the requirements of Sections 4906.10(A)(4) and (6), Revised Code, have been met (Jt. Ex. 1, at 9).

E. Consideration of Section 4906.10(A)(7), Revised Code:

In its application, the applicant states that neither the preferred nor alternate site is listed as agricultural district land (App. Ex. 1, at 07-23). In its report, the staff found that construction of the proposed facility will remove approximately 27 acres of farm land from potential agricultural use (Staff Ex. 1, at 31). Moreover, the staff and applicant stipulated that the facility's impact on the viability of any agricultural land is consistent with the requirements of Section 4906.10(A)(7), Revised Code (Jt. Ex. 1, at 10).

F. Consideration of Section 4906.10(A)(8), Revised Code:

The staff reviewed the information pertaining to the consumptive use of water for the construction and operation of the proposed facility. After performing its analysis, staff

recommends that the Board find that the proposed facility will comply with Section 4906.10(A)(8), Revised Code (Staff Ex. 1, at 32). Moreover, the staff and applicant have agreed that adequate data has been provided to find the proposed facility will comply with Section 4906.10(A)(8), Revised Code (Jt. Ex. 1, at 10).

III. RECOMMENDED CERTIFICATE CONDITIONS:

In addition to the stipulated matters discussed above, the staff and the applicant stipulated that a certificate of environmental compatibility and public need for the proposed project, using the preferred site, should be issued to the applicant and conditioned as follows:[3]

(1) The facility be installed on the applicant's preferred site as presented in the application filed on October 24, 2000, and as modified by the applicant's supplemental data submitted to the staff on December 21, 2000.

(2) Applicant shall utilize the equipment described in the application in Sections 4906-13-04(B) and (C) and as modified by supplemental data filed with the staff.

(3) Applicant shall utilize the mitigative measures described in the application and the supplemental data, unless modified by conditions to the certificate or applicable federal and state permits.

(4) Applicant shall properly install erosion and sedimentation control measures at the project site. All such erosion control measures shall be inspected after each rainfall event and promptly repaired and maintained until permanent vegetative cover has been established on disturbed areas.

(5) Applicant shall maintain noise level increases resulting from the operation of the facility at or below levels depicted in the acoustical evaluation performed by Power Acoustics, Inc. on behalf of applicant.

(6) Prior to commencing construction of the generating facility, the applicant shall make, or cause an application to be made, to the Board to obtain approval for the necessary electric transmission line and gas pipelines, including detailed measures for identifying and avoiding or minimizing impacts to any significant environmental resources.

(7) During construction of the facility, the applicant shall seed all disturbed soil within seven days of final grading with a seed

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[3] These stipulated conditions include, for the most part, the recommended conditions presented by the staff in its investigative report (*See*, Staff Ex. 1, at 33-36).

mixture acceptable to the appropriate County Cooperative Extension Service. Denuded areas, including spoils piles, shall be seeded and stabilized within seven days, if they will be undisturbed for more than 45 days. Reseeding shall be done within seven days of emergence of seedlings as necessary until vegetation in all areas has been established.

(8) Applicant shall remove all gravel and other laydown area material from the preferred site within ten days of completing construction activities.

(9) Applicant shall employ the following construction methods in proximity to any streams and waterways:

(a) Structures are to be located outside of waterways, except the portion of the intermittent stream proposed to be backfilled;

(b) All storm water runoff is to be diverted away from fill slopes and other exposed surfaces to the greatest extent possible, and directed instead to appropriate catchment structures, sediment ponds, etc., using diversion berms, temporary ditches, check dams, or similar measures;

(c) All waterways, except the portion of the intermittent stream proposed to be backfilled, shall be delineated by fencing, flagging, or other prominent means;

(d) Storage, stockpiling and/or disposal of equipment and materials in waterways or other environmentally sensitive areas shall be prohibited;

(e) All construction and grading equipment shall avoid waterways except the portion of the intermittent stream proposed to be backfilled;

(10) Applicant shall dispose of all contaminated soil and construction debris in approved landfills in accordance with OEPA regulations.

(11) Prior to construction, the applicant shall obtain all permits and authorizations required by federal and state entities for proper activities, including an NPDES permit for control of stormwater runoff during construction and permits to install air contaminant sources to be obtained through OEPA, and a Section 404 Nationwide Permit No. 12 to be obtained from the U.S. Army Corps of Engineers. A copy of each permit or authorization, including terms and conditions, shall be

provided to the staff within seven days of receipt. Prior to construction, the storm water pollution prevention plan shall be submitted to the staff for review and acceptance.

(12) Prior to construction of an on-site leachfield or other sanitary waste water system, the applicant shall obtain a permit for such installation from OEPA.

(13) At least 30 days prior to the preconstruction conference, the applicant shall submit to staff for review and acceptance, its site-specific soil erosion and sediment control plan.

(14) Prior to operation, applicant shall submit for staff review and acceptance its spill prevention control and countermeasure plan.

(15) Applicant shall design and install a fire protection system in accordance with the National Fire Protection Association standards.

(16) Applicant shall coordinate with fire, safety and emergency personnel during all stages of the project to promote efficient and timely emergency preparedness and response. Additionally, the applicant shall coordinate with local building officials with regard to the construction of structures not directly related to the operation of the generating facility.

(17) Prior to the operation of the facility, the applicant shall submit for staff review an Interconnection Agreement with AEP, and documentation that system upgrades required by the Agreements have been completed which include the construction, operation and maintenance of system upgrades necessary to reliably and safety integrate the proposed generating facility into the regional transmission system.

(18) For nonfirm capacity, the applicant, or its designated operator, will seek and contract for transmission through the Open Access Same-Time Information System (hereinafter OASIS) as specified in the Federal Energy Regulatory Commission Orders 888, 889, and any subsequent OASIS-related orders or through any successor OASIS system.

(19) Construction and ongoing maintenance of the natural gas handling system and associated facilities shall comply in all respects with state and federal laws and regulations pertaining to gas pipeline safety.

(20) Applicant shall provide to the staff the date on which:

(a) construction will begin;

(b) construction is completed; and

(c) the facility begins commercial operation.

(21) At least 30 days before the preconstruction conference, the applicant shall submit to the staff, for review and approval, one set of engineering drawings of the certificated facility, including all construction laydown areas, so that the staff can determine that the final project design is in compliance with the terms of the certificate.

(22) Applicant shall have an environmental specialist on site at all times that construction is being performed in or near sensitive areas, such as the unnamed tributary to Flatlick Run located on the northern portion of the preferred site, the intermittent stream on the center section of the site, and the woodlands on the western portions of the site.

(23) Applicant shall conduct a preconstruction conference prior to the start of any project work, which the staff will attend, to discuss and review measures to mitigate environmental concerns.

(24) Applicant will not recontour or otherwise disturb the unnamed tributary to Flatlick Run located in the northern portion of the site, either as part of generation facility construction or the electric transmission line work.

(25) Applicant shall, if it determines the need to utilize dynamite during construction, conduct such activities in accordance with state and federal regulations. The applicant shall conduct an appropriate preblast survey on nearby structures prior to any dynamiting activities. Any dynamiting activities shall be limited to the daytime hours of 8:00 a.m. to 5:00 p.m.

(26) Applicant may disturb no more than 11 acres in the aggregate of trees and brush for construction of the facility.

(27) The certificate shall become invalid if the applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate.

(28) To ensure that construction at the preferred site has minimal environmental impact, the applicant shall engage an independent consultant to survey for existence of the Indiana bat and the American burying beetle, during appropriate times

of the year and utilizing techniques acceptable to the U.S. Fish & Wildlife Service. The applicant shall submit to both the U.S. Fish and Wildlife Service and the staff a copy of the report produced by the independent consultant on the results of the survey. If the survey finds either species on the location, the applicant shall undertake avoidance and/or mitigation measures acceptable to both the U.S. Fish & Wildlife Service and the staff.

(29) To ensure that the preferred site has minimal environmental impact, the applicant shall submit to the staff, for review and acceptance, a report detailing measures to be taken to minimize construction impacts on the mature trees located in the northwest quadrant of the preferred site, on the western side of the proposed turbine foundation footprints. Such measures shall include, but not be limited to reevaluation of the possible reconfiguration of the proposed facility layout and mitigation measures such as on-site reforestation or offsite woodland preservation. Such mitigation shall include measures to prevent impacting the unnamed tributary to Flatlick Run on the northern portion of the site.

Jt. Ex. 1, at 3-11.

IV. CONCLUSION:

The staff and applicant agree that the record is sufficient for the Board to issue a certificate for the proposed facility (Jt. Ex. 1, at 11). Although not binding upon the Board, stipulations are given careful scrutiny and consideration, particularly where no party is objecting to the stipulation. Based on the application, staff investigation and report, stipulation, and hearings, the Board finds that all the criteria established in Section 4906.10(A), Revised Code, are satisfied for the construction, operation, and maintenance of the project in the preferred location, subject to the conditions set forth in the stipulation. Accordingly, the Board adopts the stipulation and hereby issues a certificate of environmental compatibility and public need to construct the Rolling Hills Generating Project, which will be located in Vinton County, Ohio, subject to the conditions listed in section III of this order.

FINDINGS OF FACT AND CONCLUSIONS OF LAW:

(1) Applicant is a limited liability company organized under the laws of the state of Delaware.

(2) The proposed facility is a "major utility facility" as defined by Section 4906.01(B)(1), Revised Code.

(3) On September 22, 2000, applicant filed a motion for waivers.

(4) On December 8, 2000, the administrative law judge issued an entry granting applicant's waiver requests.

(5) On September 7, 2000, applicant held an informal public meeting in accordance with Rule 4906-05-08, O.A.C., at the Wilkesville Community Center.

(6) On October 24, 2000, applicant formally submitted its application for a certificate of environmental compatibility and public need in regard to the Rolling Hills Generating Project.

(7) On December 22, 2000, the chairman of the Board sent a letter to applicant informing applicant that the application was found to comply with Chapter 4906, O.A.C.

(8) On January 22, 2001, the administrative law judge issued an entry setting the dates for the local and adjudicatory hearings.

(9) On December 29, 2000, and January 5, 2001, the applicant filed proofs of letter mailing and submission of homeowner mailings in accordance with Rule 4906-5-05, O.A.C.

(10) On January 31, 2001, applicant published notice of the application in the Vinton County Courier in compliance with Rule 4906-5-08, O.A.C.

(11) The staff report was filed on March 27, 2001, in substantial compliance with the filing requirements of Section 4906.07(C), Revised Code.

(12) On April 4, 2001, notice of the local and public hearings were published in the Vinton County Courier.

(13) On April 10, 2001, a local public hearing was held at the Wilkesville Community Center in Vinton County.

(14) On April 12, 2001, the adjudicatory hearing was held in Columbus, Ohio.

(15) Adequate data on the project has been provided to determine the basis of need for the facility as required by Section 4906.10(A)(1), Revised Code.

(16) Adequate data on the project has been provided to determine the nature of the probable environmental impact from construction, operation and maintenance of the facility as required by Section 4906.10(A)(2), Revised Code.

(17) Adequate data on the project has been provided to determine that the preferred site (subject to the conditions adopted) represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations under Section 4906.10(A)(3), Revised Code.

(18) Section 4906.10(A)(4), Revised Code, is not an issue in this case, since the application seeks authority to construct an electric generating station.

(19) Adequate data on the project has been provided to determine that construction of the proposed facility on the preferred site (subject to the conditions adopted) will comply with Chapters 3704, 3734, and 6111, Revised Code, Sections 1501.33, 1501.34, and 4561.32, Revised Code, and all rules and standards adopted thereunder, as required by Section 4906.10(A)(5), Revised Code.

(20) Adequate data on the project has been provided to determine that the facility (at the preferred site and subject to the conditions adopted) will serve the public interest, convenience and necessity as required by Section 4906.10(A)(6), Revised Code.

(21) Adequate data on the project has been provided to determine that the facility's impact on the viability of agricultural land and any land in an existing agricultural is consistent with the requirements of Section 4906.10(A)(7), Revised Code.

(22) Adequate data on the project has been provided to determine that the facility as proposed (at the preferred site and subject to the conditions adopted) incorporates maximum feasible water conservation practices considering available technology and the nature of the economics of the various alternatives, as required by Section 4906.10(A)(8), Revised Code.

(23) The record evidence in this matter provides sufficient factual data to enable the Board to make an informed decision.

(24) Applicant is a "person" under Section 4906.01(A), Revised Code.

ORDER:

It is, therefore,

ORDERED, That the stipulation be approved in its entirety. It is, further,

ORDERED, That a certificate of environmental compatibility and public need for the above-captioned project be issued for the construction, operation, and maintenance of such facility at the preferred site. It is, further,

ORDERED, That the certificate shall contain the conditions set forth in Section III of this decision. It is, further,

ORDERED, That a copy of this opinion, order, and certificate be served upon all parties of record.

THE OHIO POWER SITING BOARD

Alan R. Schriber, Chairman of the
Public Utilities Commission of Ohio

Joseph C. Robertson, Board Member and
Interim Director of the Ohio Department
of Development

Samuel W. Speck, Board Member
and Director of the Ohio Department
of Natural Resources

Nick Baird, M.D., Board Member
and Director of the Ohio Department
of Health

Christopher Jones, Board Member and
Director of the Ohio Environmental
Protection Agency

Fred L. Dailey, Board Member and
Director of the Ohio Department
of Agriculture

Stephen A. Sebo, Board
Member and Public Member

Entered in the Journal
JUN 18 2001
A True Copy
Gary E. Vigorito
Secretary

MBL;geb

ORDERED, That a copy of this order on certificate amendment be served upon all interested persons of record.

THE OHIO POWER SITING BOARD

Todd A. Snitchler, Chairman
Public Utilities Commission of Ohio

David Goodman, Board Member
and Director of the Ohio
Development Services Agency

James Zehringer, Board Member
and Director of the Ohio
Department of Natural Resources

Theodore Wymyslo, Board
Member and Director of the
Ohio Department of Health

Scott Nally, Board Member
and Director of the Ohio
Environmental Protection Agency

David Daniels, Board Member
and Director of the Ohio
Department of Agriculture

Jeffrey W. Lechak, Board Member
and Public Member

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Entered in the Journal

MAY 01 2013

Barcy F. McNeal
Secretary

Washington

BEFORE

THE OHIO POWER SITING BOARD

In the Matter of the Application of Duke Energy Washington, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Merchant Power Plant in Washington County, Ohio.	)))))	Case No. 00-670-EL-BGN 0023

OPINION, ORDER, AND CERTIFICATE

The Ohio Power Siting Board (Board), coming now to consider the above-entitled matter, having appointed its administrative law judge to conduct a public hearing, having reviewed the public statements submitted to the Board, having reviewed the report of investigation and the stipulation of the parties, and being otherwise fully advised, hereby waives the necessity for an administrative law judge's report and issues its Opinion, Order, and Certificate in this case as required by Section 4906.10, Revised Code.

APPEARANCES:

Ms. Sally W. Bloomfield and Julia L. Dorrian, Bricker & Eckler LLP, 100 South Third Street, Columbus, Ohio 43215-4291, on behalf of Duke Energy Washington, LLC.

Ms. Betty D. Montgomery, Attorney General, by Duane W. Luckey, Section Chief, Jodi J. Bair and Matthew J. Satterwhite, Assistant Attorneys General, Public Utilities Section, 180 East Broad Street, Columbus, Ohio 43215-3793 and by Margaret A. Malone and Summer J. Koladin, Assistant Attorneys General, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3428, on behalf of the staff of the Board.

OPINION:

All proceedings before the Board are conducted in accordance with the provisions of Chapter 4906, Revised Code, and Chapter 4906, Ohio Administrative Code (O.A.C.). In anticipation of an upcoming certificate application, Duke Energy Washington, LLC (Duke) filed a motion for waivers of several filing requirements on April 11, 2000. Duke's waiver requests were granted in part and denied in part on April 28, 2000. On April 19, 2000, Duke filed an application for a certificate of environmental compatibility and public need with the Board. Duke proposes to construct, own, and operate a 620-megawatt (MW) combined-cycle natural gas fueled merchant power plant, to be located in Waterford Township, Washington County, Ohio. Duke is an indirect subsidiary of Duke Energy Corporation (Duke Energy) and a wholly owned subsidiary of Duke Energy North America LLC (DENA). DENA engages in a variety of energy related services. These services include electric generation and transmission industries. DENA also conducts business operations in energy such as natural gas processing and transportation.

Duke Energy, which is headquartered in Charlotte, North Carolina, sold over 81 million megawatt-hours (MWH) of electricity and transported nearly 1,900 trillion British thermal units (Btu) of natural gas in 1999. For the year ending December 31, 1999, Duke Energy held over $33 billion in total assets. Duke Energy's electric utility business unit,

Duke Power, serves nearly 2 million customers in a 22,000 square mile area covering portions of North Carolina and South Carolina. Duke Power maintains a generation system capacity of 19,300 MWs, as well as approximately 12,900 miles of electric transmission lines.

On June 16, 2000, the Board notified Duke that its application for the project had been certified as complete, whereupon copies of the application were served upon local government officials and certain public agencies. Pursuant to Rule 4906-5-05, O.A.C., Duke filed proof of service of the certified application on June 20, 2000 (Company Ex. 2).

In substantial compliance with Rule 4906-5-08, O.A.C., public notice was published in The Marietta Times (Company Ex. 3). The staff of the Board (staff) conducted an investigation concerning the environmental and social impacts of the proposed project and filed its report of investigation with the Board on August 21, 2000 (Staff Ex. 1).

A public hearing was held on September 5, 2000, in Beverly, Ohio. Several persons from the public appeared in order to give testimony regarding this matter. The adjudicatory hearing was held in Columbus, Ohio on September 6, 2000, at which time, the parties submitted a joint stipulation of findings, conclusions, and recommendations (Jt. Ex. 1). The stipulation, if adopted, would resolve all matters at issue.

I. PROPOSED FACILITY

Duke proposes to construct, own and operate a 620-MW combined-cycle natural gas fueled merchant power plant, to be located in Waterford Township, Washington County, Ohio. The plant will generate electricity through the utilization of advanced gas turbine and steam turbine combined-cycle technology. The plant will be designed to operate only on natural gas. Major equipment at the facility will include two advanced firing General Electric 7FA gas turbine generators, mechanical chillers for inlet air cooling, two duct-fired three-pressure-level heat recovery steam generators, and one reheat condensing steam turbine generator. Each gas turbine is capable of generating 170 MWs. Dry low nitrogen oxide (NO_x) combustors will be used to control turbine NO_x emissions to 9 parts per million volume dry (ppmvd) and selective catalytic reduction (SCR) will be used to further reduce NO_x emissions to 3.5 ppmvd. The steam turbine will be able to generate 170 MWs from the heat recovery steam generator (HRSG) without duct firing and 280 MWs with duct firing. The combustion turbine generators, HRSGs, and steam turbine generator will be installed on reinforced concrete foundations and will be enclosed in a large building. The two stacks, each 160 feet tall, will be the highest visible structures. The next highest structures will be the twelve cooling cells. In addition, there will be eight other buildings ranging from 18 feet to 35 feet in height. A total of two acres will be enclosed. The cooling cells require approximately another acre of land, yielding approximately three acres of land to be covered with concrete.

The SCR requires aqueous ammonia as an agent to reduce the NO_x. The SCR support facilities will include an aqueous ammonia delivery system and a 20,000-gallon tank. The tank is 26 feet tall and 12 feet in diameter. Other auxiliary plant equipment will include a natural gas fired steam boiler for providing steam during plant startup and transformer/switchgear systems for providing auxiliary power needs.

Both the preferred and the alternate sites will require approximately 30 acres and both are on the same parcel. The parcel is located 0.5 mile south of the Washington/Morgan County line, 0.3 mile east of the Muskingum River, and about 0.7 mile north of the intersection of State Routes (SR) 60 and 83. The parcel is crossed by an existing American Electric Power (AEP) 345-kilovolt (kV) transmission line, in an east/west orientation, and a set of three Texas Eastern Transmission Company interstate natural gas lines, which traverse the west side of the property.

The applicant estimates the capital and intangible cost for the Washington Energy Facility to be $220 million, or $355 per kilowatt (kW). Annual nonfuel operation and maintenance expenses are anticipated to be $1.5 million in the year 2002, reflecting a partial year of operation, and $3 million in the year 2003 under full year operation. Comparable industry averages presented by the applicant show that capital costs for similar facilities range from $350 per kW to $500 per kW.

II. CERTIFICATION CRITERIA AND STAFF FINDINGS

Pursuant to Section 4906.10(A), Revised Code, the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines:

(1) the basis of the need for the facility;[1]

(2) the nature of the probable environmental impact;

(3) the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;

(4) in the case of an electric transmission line, such facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facility will serve the interests of electric system economy and reliability;

(5) the facility will comply with Chapters 3704, 3734, and 6111, Revised Code, all rules and standards under those chapters, and under Sections 1501.33, 1501.34, and 4561.32, Revised Code;

(6) the facility will serve the public interest, convenience, and necessity;

(7) the probable impact of the facility on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929, Revised Code, that is located

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1 Since the proposed facility constitutes a "major utility facility", as defined in Section 4906.01(B)(1), Revised Code, the Board is required to presume the need for the facility as that need is stated in the application. Section 4906.10(A)(1), Revised Code.

within the preferred site and alternative site of the proposed major facility; and

(8) the facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of various alternatives.

The application addresses each of the criteria set forth above, as does the staff's report of investigation. The statutory criteria will be discussed below.

A. Basis of Need

In the staff's report of investigation, the staff determined that there exists a need for additional capacity in the Ohio region (Staff Report at 14). The staff noted that such need for capacity and energy from the proposed facility did not establish that a need exists for any specific Ohio utility (*Id.*). However, the staff agreed with Duke that new and proposed environmental regulations might reduce the availability of coal-fired electric generation facilities within East Central Area Reliability Region (ECAR) (*Id.*). Staff did note that capacity is being added in Ohio and the ECAR region. The ECAR report 2000 Summer Assessment of Load and Capacity[2] projected capacity resources of 111,525 MWs in July 2000 compared to 105,418 MWs in July 1999. Consequently, the capacity margin in ECAR is projected to increase to 11.2 percent in 2000, compared to 10.8 percent in 1999 and 9.3 percent in 1998. In Ohio, this Board has granted certificates in the past 15 months to Duke Energy Madison, Columbus Power Partners, Mid-Atlantic Energy Development, DPL Energy (Greenville and Tait) and Troy Energy for 2,370 MWs of capacity. Eleven hundred MWs of this capacity is already in operation. Nonetheless, staff believes additional capacity is needed (Staff Report at 14, 15). The staff recommended that the Board find that the basis of need for the facility has been demonstrated (*Id.*).

B. Nature of Probable Environmental Impact and Minimum AdverseEnvironmental Impact

Sections 4906.10(A)(2) and (3), Revised Code, require the Board to determine the nature of the probable environmental impact and whether the proposed facility represents the minimum adverse environmental impact, considering the state of available technology, the nature and economics of the various alternatives, and other pertinent considerations. After reviewing the company's application and conducting its investigation, the staff found the following:

(1) The project involves the construction of a nominal 620-MW combined-cycle facility consisting of two simple-cycle combustion turbines and a condensing steam turbine.

(2) The gas turbines, 170 MW each, are equipped with advanced dry-low NO_x combustors to reduce NO_x emissions to 9 ppmvd.

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2 2000 Summer Assessment of Load and Capacity, ECAR, May 2000

The project will use an SCR system to further reduce NO_x levels to 3.5 ppmvd.

(3) Support facilities for the SCR system will include an aqueous ammonia delivery system and a 20,000-gallon tank for storing the aqueous ammonia.

(4) The facility will install mechanical chillers for inlet-air cooling, which utilizes R-717 (gaseous ammonia) as the coolant.

(5) The steam turbine is capable of generating 160 MWs without duct firing and 280 MWs with duct firing. Two three-pressure level HRSGs, with duct burners will be used to furnish the steam.

(6) The facility will install a multiple cell cooling system and a steam surface condenser. Drift eliminators will be used to minimize water droplets escaping from the cooling towers. This represents the best available control technology for particulate emissions from the cooling towers.

(7) The stacks for the gas turbines will be 160 feet tall. The gases, after passing through the HRSG, will be emitted at approximately 200°F.

(8) Three 18-kV to 345-kV step-up transformers will be installed, one for each of three generators. The oil-filled transformers, will have dikes to contain any potential spills.

(9) Natural gas will be the only fuel. A tap to an interstate gas transmission line, which crosses the property, will be required. The natural gas pipeline will be reviewed under a separate filing.

(10) The facility will connect to AEP's Muskingum-Tidd 345-kV transmission line, which traverses the property. The connection to the 345-kV transmission line from the switchyard will be reviewed under a separate filing to the Board.

(11) A 600-kW diesel engine driven generator will be installed to bring the facility down safely in case of a disruption in power delivery. The generator will provide power for essential services to protect the equipment.

(12) The plant will use six million gallons of water per day (mgd). This will represent approximately 1.7 percent of the total river flow during low flows. However, during average annual summer flows, i.e. the normal dry season, this quantity would be 0.3 percent of the river volume.

(13) The applicant plans to install a 24-inch water supply line and an eight-inch wastewater discharge line, in the same trench, from the Muskingum River to the plant site, a distance of approximately 5,700 feet. A portion of the common alignment will traverse a long steep slope and a 50-foot wide wooded corridor will have to be cleared. The installation of these lines necessitates special erosion control and slope stabilization measures.

(14) The river intake water will utilize a bullet screen with wedge-wire slots, with the screen axis parallel to the river flow. The maximum approach velocity will be approximately 0.5 feet per second. The intake design will minimize both impingement and entrainment of aquatic species.

(15) The facility will discharge approximately 0.9 mgd wastewater into the river, primarily spent cooling water. The applicant utilized the Cornell Mixing Zone Expert System (CORMIX) model to predict that the thermal plume will not reach the far shoreline, nor have a significant impact on the near shoreline. The model further predicts that the thermal plume will drop within two degrees of the background temperature within 60 feet and within one degree by 120 feet of the discharge point.

(16) The river water will be processed prior to use. The water will be chlorinated and processed through a clarifier. The sludge generated by the process will be de-watered and disposed of offsite.

(17) The thermal shock resulting from a sudden cessation of wastewater discharge is expected to be limited to a small area and few organisms, but will be greater during the winter months.

(18) A package wastewater treatment plant is proposed to treat sanitary wastewater, with the effluent being added to the thermal discharge water. In addition, certain chemical constituents will be added to the waste stream resulting from the biofouling and corrosion inhibitors, demineralizer regeneration wastes and other processes, including sodium, chlorides, and sulfates.

(19) The applicant identified endangered species present within the vicinity of the project primarily through review of previously conducted studies and correspondence with the U.S. Fish and Wildlife Service and the Ohio Department of Natural Resources Natural Heritage Program. The following federal or Ohio endangered species were shown to be present within the vicinity of the project: Indiana bat (*Myotis sodalis*), fanshell mussel (*Cyprogenia stegaria*), pink mucket pearly mussel (*Lampsilis or-*

biculata), goldeye (*Hiodon alosoides*), pugnose minnow (*Opsopoedus emiliae*), and sheepnose (*Plethobasus cyphyus*). Further, the applicant observed the dark-eyed Junco (*Junco hyemalis*) and Northern Harrier (*Circus cyaneus*), both listed as endangered by the Ohio Department of Natural Resources, within the vicinity of the site. If the conditions as described in the staff report are followed, the potential impacts on these species should be minimal.

(20) Three mussel species were found in the project area. However, the impact on these mussels should be minimal.

(21) No buildings or structures will be removed or relocated as part of this project.

(22) The applicant's site selection study included a review of 18 sites in the ECAR area with major emphasis in Ohio. Some of the sites defined in the study may be potential sites for future projects. The preferred and alternate sites for the proposed facility were selected from the list of sites considered suitable for a merchant generating facility.

(23) The underlying geology of the area encompassing the preferred site and the alternate site is considered suitable for the development of this project. No geological constraints are anticipated for the construction and operation of the facility.

(24) Both sites are principally used for agriculture. Thus, most vegetative waste removal will result from the removal of the surrounding trees. Approximately 54,000 cubic feet of woody vegetation would be removed from either site.

(25) The project installation at either site would result in the temporary conversion of approximately 73 acres of farmland to non-agricultural use. Both proposed locations will require 30 acres for the final plant. The remaining 43 acres will be seeded, or depending on the economic viability, could be returned to farmland.

(26) Either site will require extensive grading. The terrain will be properly sloped to facilitate drainage. Ditches and swales will be provided to capture storm water and direct it by gravity flow to the existing drainage systems. Special measures are proposed to stabilize the planned fill slopes.

(27) The applicant will build a permanent access road from SR 83 to the facility, resulting in the loss of additional trees and related habitat.

(28) Potential construction emissions include volatile organic compounds, sulfur dioxide, carbon monoxide, NO_x, and particulate matter less than 10 microns in diameter (PM10). These emissions are not expected to cause any significant environmental impacts beyond the site area.

(29) The applicant submitted an application for a permit to install an air pollutant source for the preferred site to the Ohio Environmental Protection Agency (Ohio EPA). The application is pending.

(30) Noise levels will unavoidably increase during construction, but this will be a short-term impact. There may be limited blasting required.

(31) The turbine units will be enclosed in an insulated enclosure to reduce operational noise levels. Both sites are sparsely populated, with the nearest residential property being approximately 1,800 feet from the main power block. The applicant's calculations demonstrate that the expected sound level at the closest residence will be below 50 decibels (dB), with the facility at full power.

(32) The applicant will obtain potable water from the local rural water system.

(33) Storm water runoff will be managed through a national pollutant discharge elimination system (NPDES) general permit during construction. A construction spill prevention control and countermeasure plan (SPCC) will be required to manage site runoff during operation.

(34) The applicant's proposed package wastewater treatment system for treating sanitary waste will be included in the NPDES permit. This permit will require regular monitoring of discharge constituents.

(35) The equipment will be washed periodically. The waste stream will be collected and stored in an underground tank. This waste stream, consisting of water, soap, and oily residue, will be removed and disposed of by a qualified contractor.

(36) Less than an acre of wetlands/headwater stream area is anticipated to be lost as a direct result of construction activity, mainly fill slope work along the east side of the site. Wetland creation elsewhere on site is planned to mitigate these impacts.

(37) Neither the preferred nor the alternate site will have a significant impact on existing recreational areas. There are no recreational areas within one mile of either site.

(38) A Phase I cultural resource survey was performed for both sites. A Phase II was required and will be performed as directed by the State Historic Preservation Office.

(39) The applicant estimates that capital and intangible costs for this project will total $220,000,000. The cost per kW is $355, with the industry average for this type of facility being in the range of $350 to $500 per kW.

(Staff Report at 16-19).

The staff also conducted a study, which included site visits, of the ecological, social, and economic impacts that are expected to result from the construction and operation of the facility. Duke's application included a site selection study that covered the entire ECAR area, including Ohio.

In its consideration of the site selection, Duke determined that the facility would need to be located in the near proximity of a major electrical transmission line, an interstate natural gas pipeline, and an adequate source of water. After identifying sites that met those characteristics, each location was further surveyed for suitability for this project. Additional factors and preferences that were included in the survey were that the area not require re-zoning; that the site had suitable buffers for neighboring residential areas, schools and other public institutions; that the site not require the demolition of existing structures and would require a minimum of environmental remediation. The selected preferred and alternate sites conform with the conditions needed for the combined-cycle merchant plant; with minimal environmental concerns. The applicant applied for a waiver of fully developed information for the alternate site and that waiver was granted.

A natural gas supply line crosses the property to the west of the preferred site. The preferred site would require a 1,000-foot natural gas pipeline, to fuel the plant, while the alternate site would require a 2,500-foot natural gas pipeline. The facility would require 18-kV to 345-kV transformers; a 345-kV electric transmission line crosses both the preferred site and the alternate site. The staff found that the proposed routes for both the gas supply line and the electric transmission line connection appear to minimize impacts by avoiding environmentally sensitive sites and traversing previously disturbed areas.

Duke proposes to use as its cooling system, cooling cells as opposed to a once through cooling system. Cooling cells' evaporation rate is projected to be a nominal 3,500 gallons per minute, yielding an average water consumption of six mgd, with the total space required for the entire facility, using cooling towers, is 30 acres. This may be compared to an evaporation rate of 200 to 250 mgd for a once through cooling system, and the facility would require over 100 acres for the pond alone. Thus, the staff found the planned cooling tower system appears to pose the least adverse impact.

Although construction of the proposed water supply and wastewater discharge lines could cause extensive steep slope disturbance, potential erosion problems, and the loss of a number of nature trees and associated terrestrial habitat, the impact may be mitigated by the implementation of certain conservation measures. Easement clearing should be reduced, special erosion control and slope stabilization should during pipe

installation, and immediate revegetation of all disturbed areas, especially on the steep slopes.

Since both sites are currently in agricultural use, the ecological impacts to rare, threatened or endangered species, flora or fauna are not expected to be significant. The uppermost reaches of headwater streams would be slightly impacted at both sites, as would a small (less than one acre) wetland area at the preferred location. Duke has attempted in its site design work to avoid or mitigate these issues. Further, the use of proper storm water management techniques, during and after construction, would minimize any potential impacts.

Traffic, including heavy truck traffic for short periods of time, will cause minor interruptions during construction. Traffic control, and a new road leading to the plant will be needed at either site. The new road will require some clearing of mature trees and associated vegetation, but this will be minimized to the greatest extent possible during final design.

In conclusion, social and environmental impacts are essentially similar for both sites. The staff considers the preferred site the most attractive for the project because the preferred site is further from residences, slightly more remote from the public view, requires shorter natural gas and water lines, and requires less recontouring of the land (*Id.* at 21).

The staff concluded that adequate data has been provided to determine the nature of the probable environmental impact for the facility and to determine that the minimum adverse environmental impact considering the available technology and the nature and economics of various alternatives, and other pertinent considerations, as required by Sections 4906.10(A)(2) and 4906.10(A)(3), Revised Code (*Id.* at 19, 22).

C. Compliance with Chapters 3704, 3734, and 6111, Revised Code

Section 4906.10(A)(5), Revised Code, requires that the Board find that the proposed facility will comply with Chapters 3704, 3734, and 6111, Revised Code, concerning air and water permits and solid waste disposal, and all rules and standards adopted thereunder, and under Sections 1501.33, 1501.34, and 4561.32, Revised Code. The staff has found that air quality permits are under review by the Ohio EPA (Staff Report at 24). The applicant proposes to install a septic tank system and leach field for purposes of handling the waste stream from the lavatory. The waste stream from the cleaning of the generation equipment will be stored in an underground tank and hauled off-site by a qualified contractor (*Id.*).

The staff recommended that the Board find that a determination of compliance with Chapters 3704, 3734, and 6111, Revised Code, cannot be made at this time because all required permits have not yet been issued. Further, the staff recommended that the Board find that the proposed facility will comply with Section 4561.32, Revised Code (*Id.*).

D. Consideration of Sections 4906.10(A)(4), (6), and (7), Revised Code

Under Section 4906.10(A)(4), Revised Code, the Board must determine whether the proposed facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and whether such facility will serve the interests of electric system economy and reliability. The staff found that Section 4906.10(A)(4), Revised Code, is not applicable to the certification of the proposed facility (*Id.* at 23).

Section 4906.10(A)(6), Revised Code, requires that the Board find that the proposed facility will serve the public interest, convenience, and necessity. The staff stated that Ohio, and the remaining ECAR region, is in need of additional generation capacity (*Id.* at 25). In the staff's view, the presence of the new facility will help stabilize the supply situation and help ensure regional reliability (*Id.* at 25, 29). The staff noted that the addition of the project will require some transmission upgrades (*Id.* at 25). In addition, the staff noted that electric and magnetic fields generated by the plant will increase, but the circuit in the near vicinity of the project is not located close to residential, commercial or institutional buildings (*Id.*).

Section 4906.10(A)(7), Revised Code, requires the Board to determine the impact on existing agricultural districts established under Chapter 929, Revised Code, that are within the site of the proposed facility. The staff found no agricultural districts within the boundaries of either the preferred or alternate sites of the proposed facility (*Id.* at 30). The staff explained that approximately 30 acres will be permanently removed from agricultural use and an additional 43 acres will be utilized for temporary construction purposes. Depending upon economic viability, the additional 43 acres may be returned to agricultural use. The balance of the 220-acre parcel should remain available for agricultural production (*Id.*). Therefore, the staff recommended to the Board that the impact of the facility on the viability of existing agricultural districts has been determined (*Id.*).

E. Water Conservation Practices

Section 4906.10(A)(8), Revised Code, requires the Board to determine if the facility incorporates maximum, feasible water conservation practices. The staff found that small amounts of water would be needed for sanitary purposes and for periodic equipment cleaning (Staff Report at 31). The applicant has chosen wet cooling as opposed to once-through cooling. The facility is designed to maximize cycles of concentration to reduce water intake requirements. The estimated withdrawal of water for this type of facility is approximately seven mgd, as compared to 250 mgd for a once-through cooling system. The use of this technology will have major benefits to the aquatic life and water quality of the Muskingum River (*Id.*). The staff, therefore, recommended that the Board find that the proposed facility will comply with Section 4906.10(A)(8), Revised Code (*Id.*).

III. TESTIMONY

As indicated earlier, several members of the public appeared to give testimony regarding this application. Six individuals stated that they support the proposed facility (Tr. I, 6-13). The first witness stated his support of the application based on the construction

jobs it would provide for the local workers (*Id.* at 6-7). The next witness expressed support based on the construction jobs, the permanent jobs that will follow and that the company will be a good corporate citizen (*Id.* at 7-8). A nearby resident offered support for the short-term jobs and the long-term power the plant would supply (*Id.* at 8-10). A local candidate stated the plant would be a benefit to the community (*Id.* at 10-11). The superintendent of the local schools stated his belief that the plant would benefit the community and schools (*Id.* at 11-12). The executive director of the Muskingham Valley Chamber of Commerce added that the plant would aid economic development (*Id.* at 12-13).

IV. STIPULATION

As noted earlier, the applicant and staff jointly filed a stipulation. The parties agree that the record in this proceeding contains adequate probative evidence for the Board to find that all criteria of Section 4906.10(A), Revised Code, have been satisfied and for the Board to issue a certificate for the proposed facility (Jt. Ex. 1, at 1, 8). Also, the parties agree that the proposed project is a "major utility facility", as defined by Section 4906.01(B)(3), Revised Code (*Id.* at 8).

The parties agree specifically that adequate data has been provided to determine:

(1) The basis of need, as required by Section 4906.10(A)(1), Revised Code;

(2) The nature of the probable environmental impact, as required by Section 4906.10(A)(2), Revised Code;

(3) The facility represents the minimum adverse environmental impact, as required by Section 4906.10(A)(3), Revised Code;

(4) The proposed facility will meet the requirements of Section 4906.10(A)(4), Revised Code;

(5) The facility will comply with Chapters 3704, 3734, and 6111, Revised Code, and all regulations thereunder, as required by Section 4906.10(A)(5), Revised Code;

(6) The proposed facility will serve the public interest, convenience, and necessity, as required by Section 4906.10(A)(6), Revised Code;

(7) The proposed facility meets the requirements of Section 4906.10(A)(7), Revised Code; and

(8) The proposed project will comply with Section 4906.10(A)(8), Revised Code.

(*Id.* at 9).

The parties recommend that the Board issue the Certificate of Environmental Compatibility and Public Need requested by Duke subject to the following conditions:[3]

(1) The facility be installed on the applicant's preferred site as presented in the application filed on April 19, 2000, as modified by applicant's revised drawing submitted on August 4, 2000.

(2) Duke shall utilize the equipment described in the application in Sections 4906-13-04(B) and (C).

(3) Duke shall utilize the mitigative measures described in the application, unless modified by conditions to the certificate or applicable federal and state permits.

(4) Duke shall maintain sound levels during operation as depicted in Figure 4 of the Staff Report.

(5) Duke shall properly install erosion and sedimentation control measures at the project site, including the permanent access road and the water intake and discharge line right-of-way (r-o-w). All such erosion control measures shall be inspected after each rainfall event and promptly repaired and maintained until permanent vegetative cover has been established on disturbed soils.

(6) Duke shall identify and mark mature trees within the 25-foot temporary construction easement for the intake and discharge water lines. Such trees shall not be removed unless and until staff approval has been obtained. All other mature trees within the 50-foot r-o-w that can be avoided during construction will also be saved.

(7) Duke shall not remove any exfoliating bark trees between April 15 and September 15. The applicant will save trees with exfoliating bark wherever possible.

(8) Duke shall construct the water intake and discharge as described in the application unless modified by U.S. Army Corps of Engineers permit(s). Prior to construction, the applicant shall complete a Unionid survey. The survey should be completed as described in the "Unionid Survey Work Plan – Beverly Pool, Muskingum River, Ohio" developed for this project by Earth Tech, Inc. Duke shall submit the survey to staff for review and acceptance. Construction of the water intake and discharge shall avoid impacts to endangered/threatened/special interest species identified in the survey, as per guidance

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3 The 24 conditions recommended in the stipulation are nearly identical to those recommended by the staff in its August 2000 report of investigation.

provided by Ohio Department of Natural Resources and/or U.S. Fish and Wildlife Service.

(9) Duke shall obtain the necessary Ohio Department of Natural Resources permits for water withdrawal from the Muskingum River.

(10) Duke shall exercise all necessary precautions to protect the mussels in the vicinity of the intake structure.

(11) During construction of the facility, Duke shall seed all disturbed soil within seven days of final grading with a seed mixture acceptable to the appropriate County Cooperative Extension Service. Denuded areas, including spoils piles, shall be seeded and stabilized within seven days, if they will be undisturbed for more than 45 days. Reseeding shall be done within several days of emergence of seedlings as necessary until vegetation in all areas has been established.

(12) Duke shall employ the following construction methods for the sensitive areas as identified by the staff:

(a) All wetland areas, including streams, should be delineated by fencing, flagging, or other prominent means;

(b) All structures are to be located outside of identified wetlands or watercourses;

(c) All construction equipment shall avoid wetlands and watercourses;

(d) All fill slopes are to be temporarily stabilized (e.g., seeding, mulching, matting, etc.) during construction and permanently stabilized immediately upon completion; and

(e) All storm water runoff is to be diverted away from fill slopes and other exposed surfaces to the greatest extent possible, and directed instead to appropriate catchment structures, sediment ponds, etc., using diversion berms, temporary ditches, check dams, or similar measures.

(13) Duke shall not dispose of excavated rock and any bedding material during or following construction of the facility by spreading the material on agricultural land.

(14) Duke shall dispose of all contaminated soil and construction debris in approved landfills in accordance with Ohio EPA regulations.

(15) Prior to construction, Duke shall obtain all applicable permits and authorizations as required by federal and state entities for any activities where such permit or authorization is required, including an NPDES permit for a discharge of process wastewater from a new source, and a permit to install air contaminant sources(s), to be obtained through Ohio EPA. A copy of each permit or authorization, including terms and conditions, shall be provided to the Board staff within seven days of receipt. Prior to construction, the required NPDES general construction permit storm water pollution prevention plan (SWPPP) shall be submitted to the Board staff for review and acceptance.

(16) Duke shall develop a grading and drainage plan in coordination with the Washington Soil and Water Conservation Service. A copy of the plan, if different from the SWPPP, shall be submitted to the staff for review and acceptance.

(17) Prior to the operation of the facility, the identified transmission upgrades shall be performed.

(18) Duke shall coordinate with local fire, safety, and emergency personnel during all stages of the project to promote efficient and timely emergency preparedness and response.

(19) The construction and ongoing maintenance of the natural gas handling system and associated facilities shall comply in all respects with state and federal laws and regulations pertaining to gas pipeline safety.

(20) Duke shall provide to the staff the following information as soon as it becomes known:

(a) the date on which construction will begin;

(b) the date on which construction was completed; and

(c) the date on which the facility began commercial operation.

(21) At least 30 days before construction begins, Duke shall submit to the staff, for review and approval, one set of engineering drawings of the certificated facility so that the staff can determine that the final project design is in compliance with the terms of the certificate.

(22) Duke shall have an environmental specialist on site at all times that construction is being performed in or near a sensitive area such as a designated wetland, stream, etc.

(23) Duke shall conduct a pre-construction conference prior to the start of any project work, which the staff shall attend and discuss how environmental concerns such as streams and wetlands will be satisfactorily addressed.

(24) The certificate shall become invalid if Duke has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate.

(*Id.* at 2-5).

V. CONCLUSION AND CERTIFICATE

The staff and Duke agree that the evidence is sufficient for the Board to issue a certificate for the proposed facility (Jt. Ex. 1, at 1, 9). Further there was no opposition to this project raised at the public hearing. Although not binding upon the Board, stipulations are given careful scrutiny and consideration, particularly where no party is objecting to the stipulation. Upon consideration of all of the above, we believe that the proposal is worthy of a certificate and the stipulation should be adopted. Based upon the record in this proceeding, the Board finds that the joint stipulation is reasonable, and that all the criteria established in Section 4906.10(A), Revised Code, are satisfied for the construction of the peaking facility at the preferred site, subject to the conditions set forth above in this decision.

FINDINGS OF FACT AND CONCLUSIONS OF LAW:

(1) Duke is a limited liability company organized under the laws of the state of Delaware as a merchant power plant developer.

(2) The proposed Washington Energy facility is a "major utility facility" as defined in Section 4906.01 (B)(1), Revised Code.

(3) On April 11, 2000, Duke filed a motion for waivers of certain filing requirements under Rule 4906-1-03, O.A.C., including waiver of the requirement to file an application two years prior to commencement of construction under Section 4906.06(A)(6), Revised Code.

(4) The administrative law judge by Entry on April 28, 2000, granted Duke's waiver requests subject to some modifications.

(5) On April 17, 2000, Duke filed proof of publication made on April 11, 2000, of the planned informal public meeting (held on April 18, 2000) held in accordance with Rule 4906-05-08, O.A.C., in Waterford Township.

(6) Duke formally submitted its application for a certificate of environmental compatibility and public need in regard to the Washington Energy Facility project on April 19, 2000.

(7) The application was found to be complete with Chapter 4906, O.A.C., on June 16, 2000.

(8) The administrative law judge issued an Entry on July 5, 2000, setting a local public hearing for September 5, 2000, and an adjudicatory public hearing on September 6, 2000, and accepting the application for filing as of July 5, 2000.

(9) On August 4, 2000, the applicant filed proof of letter mailings and submission of homeowner mailing listin accordance with Rule 4906-5-08(B)(3), O.A.C.

(10) On July 13, 2000, the applicant filed proof of the first hearing publication in The Marietta Times made on July 11, 2000 in accordance with Rule 4906-5-08(B)(1), O.A.C.

(11) The Staff Report was filed on August 21, 2000.

(12) Proof of the second publication of the public hearing notices in The Marietta Times were filed on August 21, 2000.

(13) A local public hearing was held on September 5, 2000, in Waterford Township, Washington County, Ohio.

(14) An adjudicatory hearing was held on September 6, 2000, in Columbus, Ohio.

(15) Adequate data on the project at the preferred site has been provided to determine the basis of need for the facility as required by Section 4906.10(A)(1), Revised Code.

(16) Adequate data on the project has been provided to determine the nature of the probable environmental impact as required by Section 4906.10(A)(2), Revised Code.

(17) Adequate data on the project has been provided to determine that the preferred site contained in the application represents the minimum adverse environmental impact, considering the available technology and nature and economics of the various alternatives, and other pertinent considerations as required by Section 4906.10 (A)(3), Revised Code.

(18) Given that Duke intends to take transmission service based upon availability as posted under the OASIS system or any successor system the requirements of Section 4906.10(A)(4), Revised Code, are met.

(19) Adequate data on the Washington Energy project has been provided to determine that the facility at the preferred site will comply with Chapters 3704, 3734, and 6111 and Sections 1501.33 and 1501.34, Revised Code, and all regulations thereunder as required by Section 4906.10(A)(5), Revised Code.

(20) Adequate data on the Washington Energy project has been provided to determine that the facility at the preferred site will serve the public interest, convenience, and necessity, as required by Section 4906.10(A)(6), Revised Code.

(21) Adequate data on the Washington Energy project has been provided to determine what the preferred site's impact will be on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929, Revised Code as required by Section 4906.10(A)(7), Revised Code.

(22) Adequate data on the Washington Energy project has been provided to determine that the facility at the preferred site as proposed incorporates maximum feasible water conservation practices considering available technology and the nature and economics of the various alternatives as required by Section 4906.10(A)(8), Revised Code.

(23) The record evidence in this matter provides sufficient factual data to enable the Board to make an informed decision.

(24) Based upon the record in this case, a certificate of environmental compatibility and public need should be issued to Duke for the construction and operation of the merchant power plant at the preferred site, subject to the conditions set forth in this Opinion, Order, and Certificate.

ORDER:

It is, therefore,

ORDERED, That the Joint Stipulation and Recommendation is hereby approved in its entirety. It is, further,

ORDERED, That a Certificate of Environmental Compatibility and Public Need is hereby issued for the construction, operation, and maintenance of 620-MW merchant power plant at the preferred site. It is, further,

ORDERED, That the certificate shall contain the conditions set forth in Sections III and IV of the Opinion, Order, and Certificate. It is, further,

ORDERED, That a copy of this Opinion, Order, and Certificate be served upon each interested person and party of record.

THE OHIO POWER SITING BOARD

Alan R. Schriber, Chairman of the
Public Utilities Commission of Ohio

C. Lee Johnson, Board Member and
Director of the Ohio Department
of Development

Samuel W. Speck, Board Member
and Director of the Ohio Department
of Natural Resources

Nick Baird M.D., Board Member
and Director of the Ohio Department
of Health

Christopher Jones, Board Member and
Director of the Ohio
Environmental Protection Agency

Fred L. Finley, Board Member and
Director of the Ohio Department
of Agriculture

Stephen A. Sebo, Board
Member and Public Member

Entered in the Journal
OCT 16 2000
A True Copy
Gary E. Vigorito
Secretary

SDL;geb

SERVICE NOTICE

CASE NUMBER 00-670-EL-BGN

CASE DESCRIPTION DUKE ENERGY WASHINGTON LLC

DOCUMENT SIGNED ON October 16, 2000

DATE OF SERVICE 10-18-2000

PERSONS SERVED

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Waterford

BEFORE

OHIO POWER SITING BOARD

In the Matter of the Application of PSEG Waterford Energy LLC for a Certificate of Environmental Compatibility and Public Need for an Electric Generating Plant in Washington County, Ohio.	)))))	Case No. 00-723-EL-BGN

OPINION, ORDER, AND CERTIFICATE

The Ohio Power Siting Board (hereinafter Board) coming now to consider the above-entitled matter, having appointed its administrative law judge to conduct a public hearing, having reviewed the report of investigation and the stipulation, and being otherwise fully advised, hereby issues its opinion, order, and certificate in this case as required by Section 4906.10, Revised Code.

APPEARANCES:

Squire, Sanders & Dempsey, LLP, by Karen A. Winters and Kendra S. Sherman, 1300 Huntington Center, 41 South High Street, Columbus, Ohio 43215, on behalf of the applicant.

Betty D. Montgomery, Attorney General, by Duane W. Luckey, Section Chief, Jodi J. Bair and Matthew J. Satterwhite, Assistant Attorneys General, Public Utilities Section, 180 East Broad Street, Columbus, Ohio 43266-0572, and by Margaret Malone and Summer J. Koladin, Assistant Attorneys General, Environmental Enforcement Section, State Office Tower, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215, on behalf of the staff of the Board.

OPINION:

All proceedings before the Board are conducted in accordance with the provisions of Chapter 4906, Revised Code, and Chapter 4906, Ohio Administrative Code (hereinafter O.A.C.). On May 2, 2000, PSEG Waterford Energy LLC (hereinafter PSEG or applicant) filed an application for a certificate of environmental compatibility and public need with the Board (App. Ex. 1). PSEG also filed a motion for waivers of certain filing requirements. Applicant seeks a certificate to construct a generating facility in Washington County, Ohio. Applicant is a Delaware corporation and a "person" within the definition of Section 4906.01(A), Revised Code. Furthermore, the project is a "major utility facility" as defined in Section 4906.01(B)(1), Revised Code.

On May 19, 2000, the applicant was granted a waiver of certain filing requirements under Rule 4906-1-03, O.A.C., including a waiver of the requirement to file an application two years prior to commencement of construction under Section 4906.06(A)(6), Revised Code. On June 30, 2000, the Board notified applicant that, pursuant to Rule 4901-1-14,

O.A.C., the application had been found to be complete, whereupon copies of the application were served upon local government officials. In accordance with Rule 4906-5-08, O.A.C., public notice of the public hearing was published in the Marietta Times, Marietta A.M., and Morgan County Herald. The staff of the Board conducted an investigation concerning the environmental and social impacts of the project and filed its report of investigation with the Board on September 18, 2000 (Staff Ex. 1).

A local public hearing was held on October 3, 2000, in Waterford, Ohio. At the public hearing, several witnesses gave public testimony supporting the application. The adjudicatory hearing was held in Columbus, Ohio, on October 4, 2000, at which staff and applicant indicated that they had negotiated a settlement of all issues and subsequently filed a joint stipulation and recommendation (hereinafter stipulation) (Jt. Ex. 1).

I. PROPOSED FACILITY:

Applicant proposes to construct, own, and operate a 850-megawatt (MW) combined cycle natural gas fueled merchant power plant, to be located in the western portion of Waterford Township, four miles west-southwest of the Village of Beverly, Washington County, Ohio. The generating plant will produce electricity through the utilization of advanced gas turbine and steam turbine combined cycle technology. The applicant believes, due to the high level of reliable natural gas delivery at the preferred site, a secondary fuel source will not be required. As such, the proposed generating facility has been designed to burn only natural gas. Major equipment at the facility will include three General Electric 7FA gas turbine generators (Model PG7241), mechanical chillers for inlet air cooling, three duct-fired three-pressure-level heat recovery steam generators and associated stacks, one reheat condensing steam turbine generator, and one multiple fan-cell cooling system. Each gas turbine is capable of generating 167 MWs. Dry low nitrogen oxide (NO_x) combustors will be used to control turbine NO_x emissions to nine parts per million volume dry (ppmvd) and selective catalytic reduction (hereinafter SCR) will be used to further reduce NO_x emissions to 3.5 ppmvd. The steam turbine will be able to generate 250 MWs from the heat recovery steam generators (hereinafter HRSG) without duct firing and 350 MWs with duct firing.

Both the preferred and alternate sites are located in northwest Washington County. The applicant's preferred site is approximately four miles west-southwest of the Village of Beverly and an equal distance east of the Village of Stockport. The site is bounded on the south by the Morgan County line. The Muskingum River is located about 1,400 feet west of the site center and forms the western boundary of the property. The preferred site encompasses a total area of approximately 140 acres, of which only about 40 acres are anticipated to be occupied by permanent structures. Applicant proposes to erect a control/administration building, a warehouse, and a water treatment building at this location. The turbine building, which will house the combustion turbine generators, HRSGs, and the steam turbine generator will be installed on reinforced concrete foundations on the west side of Township Road 103 (hereinafter TR 103). The stacks of the Phase I simple cycle will be 120 feet tall, and the stacks for the combined cycle Phase II units will be 175 feet

tall. These stacks will be the highest visible structures. The next highest structures will be the heat recovery steam generator structures, which will be 115 feet tall.

Across TR 103, on the eastern half of the preferred property, the land is also generally rolling, but slopes steeply away into a ravine formed by an intermittent tributary of the West Branch of Wolf Creek. It is on this portion of the preferred site, immediately east of TR 103 that the applicant intends to build the remaining portion of the proposed generating station. Applicant proposes to construct the cooling towers and the electrical switchyard on the east side of TR 103. A natural gas pipeline owned by Texas Eastern Transmission Corporation (hereinafter TETCO), running in a southwest to northeast direction, crosses this half of the preferred site and will serve as the fuel source for the generating facility. The natural gas will be supplied to the proposed plant via a gas metering and pressure reducing station that will be constructed on the preferred site. Additionally, the applicant proposes to connect its power supply lines to one of the existing American Electric Power Corporation (hereinafter AEP) 345-kilovolt (kV) transmission lines that runs in a north/south orientation east of the generating facility's proposed electrical switchyard. The applicant estimates the connecting line will span a distance of approximately 5,000 feet. Other auxiliary plant equipment will include a natural gas-fired steam boiler for providing steam during plant startup and a fire protection system.

The alternate site involves an area of approximately 190 acres. This site is a wooded area located west of the Muskingum River, 0.5-mile northwest of the village of Beverly, Ohio. The acreage comprising the alternate site consists mostly of woodlands and agricultural land, with some residential land use. The Muskingum River borders the site to the east and north. To the west and south are a mixture of wood lots and agricultural fields. Selection of the alternate site for the proposed facility would require the construction of an approximately 3,100 foot long natural gas pipeline to connect to the interstate natural gas pipeline located west of the site. The generating plant would be connected to the power grid via a direct electric transmission line to the existing AEP Muskingum Substation. The applicant estimates the connecting line would be 10,000 feet in length. Additionally, the electric transmission line for the alternate site would run along a route with no existing right-of-way.

II. CERTIFICATION CRITERIA, STAFF FINDINGS, AND STIPULATED FINDINGS:

Pursuant to Section 4906.10(A), Revised Code, the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines:

(1) The basis of the need for the facility;[1]

(2) The nature of the probable environmental impact;

[1] Since the proposed facility constitutes a "major utility facility", as defined in Section 4906.01(B)(1), Revised Code, the Board is required to presume the need for the facility as that need is stated in the application. Section 4906.10(A)(1), Revised Code.

(3) The facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;

(4) In the case of an electric transmission line, that such facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that such facilities will serve the interests of electric system economy and reliability;

(5) The facility will comply with Chapters 3704, 3734, and 6111, Revised Code, all rules and standards under those chapters, and under Sections 1501.33, 1501.34, and 4561.32, Revised Code;

(6) The facility will serve the public interest, convenience, and necessity;

(7) The probable impact of the facility on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Revised Code that is located within the site and alternative site of the proposed major facility; and

(8) The facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of various alternatives.

The application addresses each of the criteria set forth above, as does the staff's report of investigation. Each criterion is discussed below.

A. Basis of Need:

Applicant believes that there is a clear need for additional capacity in the East Central Area Reliability (hereinafter ECAR) region. Applicant reviewed the 1999 Long-term Forecast Reports for Ohio's investor-owned utilities, and ECAR's report entitled 1999 Summer Assessment of Load and Capacity. After staff reviewed applicant's assessment of the above-mentioned reports and the ECAR report entitled Assessment of ECAR-Wide Capacity Margins 1999-2008, it believes that applicant has established that additional capacity is needed in the ECAR region. Furthermore, staff agrees with applicant that new and proposed environmental regulations may cause a significant reduction in the availability of coal-fired electric generation facilities within ECAR.

However, the staff emphasizes that establishing there is a regional need for capacity and energy from the project does not mean that such a need exists for any specific Ohio utility. The staff recommends that the Board find that the need for the proposed project has been demonstrated. The staff and applicant have stipulated that adequate data has been provided to determine the basis of need for the facility.

B. Nature of Probable Environmental Impact and Minimum Adverse Environmental Impact:

Sections 4906.10(A)(2) and (3), Revised Code, require the Board to determine the nature of the probable environmental impact and whether the proposed facility represents the minimum adverse environmental impact, considering the state of available technology, the nature and economics of the various alternatives, and other pertinent considerations. The staff has reviewed the environmental information contained in the record in this proceeding and has made site visits to the project area. As a result, staff found the following with regard to the nature of the probable environmental impact:

(1) The project involves the construction of a combined-cycle facility consisting of three simple-cycle combustion turbines, three heat recovery steam generators with duct burners, and a single condensing steam turbine. A total of 40 acres would be required for the facility, removing that land from other productive uses.

(2) The gas turbines are equipped with advanced dry-low NO_x combustors to reduce NO_x emissions to nine ppmvd. The project would use SCR to reduce further NO_x levels to 3.5 ppmvd.

(3) The facility would install evaporative coolers for the inlet-air cooling system that would include noise abatement features to minimize noise impacts.

(4) The facility would install a multiple fan cell cooling system and a steam surface condenser. Drift eliminators would be used to minimize water droplets escaping from the cooling towers. Drift eliminators represent the best available control technology for particulate emissions from the cooling towers.

(5) The stacks of the Phase I simple cycle will be 120 feet tall, and the stacks for the combined cycled Phase II will be 175 feet tall. The exhaust gases, after passing through the HRSG, would be emitted at approximately 200°F. However, in the first year of operation, in which only simple cycle operation would be used, the gases would be emitted at approximately 980°F.

(6) Each generator would be connected to a transformer, which would increase the voltage from 18 kV to 345 kV. The transformers, oil-filled, would have dikes to contain any potential spills.

(7) Natural gas would be the only fuel used. The gas would be supplied to the proposed facility via a gas metering and pressure reducing station that would be constructed on the preferred site. The gas connection and piping facilities are to be located in open field areas, with no crossing of streams, woodlands, wetlands, or other sensitive features.

(8) The interconnection, a 345-kV transmission line, would be approximately 5,000 feet in length. The line would span three ravines, with the poles on top of the intervening ridges. While streams, wetlands, and riparian areas will be spanned without impact, clearing of trees within the right-of-way leading up to and atop the ridges will have to be removed. The double circuit loop would tie-in the AEP 345-kV electric transmission line, which runs between the Muskingum and Sporn substations.

(9) The plant would use a maximum of 7.4 million gallons of water per day (mgd). This would be less than 1.2 percent of the total river flow during low flows. However, during average annual summer flows, i.e. the normal dry season, this quantity would be 0.35 percent of the river volume.

(10) The applicant plans to install an 18-inch water supply line and a 10-inch wastewater discharge line, from the Muskingum River to the plant site, a distance of approximately 1,000 feet. The water lines will traverse an extremely steep slope, creating potentially severe erosion problems. A 40-foot wide corridor will be used for the construction of the supply and discharge lines, necessitating the clearing of existing trees and associated vegetation. Both lines will be mounted on the same support pylons for that section of the pipeline route that is above ground.

(11) The applicant would design the intake and discharge structures in cooperation with the U.S. Army Corps of Engineers and the Ohio Environmental Protection Agency (hereinaftter Ohio EPA) to ensure minimal disruption to aquatic life, including potential impingement and entrainment.

(12) The river water would be processed prior to use. The water would be chlorinated and processed through a clarifier. The sludge, generated by the process, would be dewatered and disposed of offsite. Biocides and corrosion inhibiting chemicals will also be added to the raw water. Prior to use, these chemicals will have to be approved by Ohio EPA.

(13) The facility would discharge approximately 1.5 mgd of spent noncontact cooling water. Any thermal shock resulting from a sudden cessation of wastewater discharge is expected to be limited to a small area upstream of Luke Chute Dam.

(14) The applicant proposes to construct a mound system for on-site wastewater treatment. The main components would be a septic tank for pretreatment, a dosing chamber and the mound. The accumulated septic tank waste will be pumped out by a licensed waste hauler and properly disposed.

(15) The applicant identified endangered species that could be present within the vicinity of the project primarily through office review of previously conducted studies and correspondence with the U. S. Fish and Wildlife Service and the Ohio Department of Natural Resources Natural Heritage Program. The applicant supplemented its investigation by conducting its own qualitative ecological survey, which included a field reconnaissance to document the occurrence of endemic vegetation, wildlife, and wildlife habitat within the project area. The following federal or Ohio endangered species were shown to be potentially present within the vicinity of the project, mammals: Indiana bat (Myotis sodalis); mollusks: pink mucket (Lampsilis abrupta), sheepnose (Plethobasus cyphyus), Ohio pigtoe (Pleurobema cordatum), butterfly (Ellipsaria lineolata), pyramid pigtoe (Pleurobema rubrum), snuffbox (Epioblasma triquetra), fanshell (Cyprogenia stegaria), pocketbook (Lampsilis ovata); fish: mountain madtom (Noturus eleutherus), northern madtom (Noturus stigmosus), and goldeye (Hiodon alosoides); and amphibians: eastern spadefoot toat (Scaphiopus holbrookii). The above-listed species exist below Luke Chute Dam. The applicant would use coffer dam techniques to minimize the impact on the river. Any silt disturbed by the construction activity would settle before reaching Luke Chute Dam. The above-listed fish and mollusk species, when present, were found to exist below Luke Chute Dam. Any silt disturbed by the construction activity is expected to settle before reaching Luke Chute Dam. However, the applicant will use special coffer

dam and dewatering techniques to further minimize the potential impact on these species

(16) Two residences are located within the preferred site boundary. The applicant has negotiated for the purchase of both residences. The buildings may be removed at a later time. The buildings were constructed in the early 1960s and may contain asbestos. In addition, two pole barns are located on the property.

(17) The applicant considers the underlying geology of the area encompassing the preferred site and the alternate site suitable for the development of this project.

(18) The preferred site location is in an agricultural area with some wooded areas. The construction site layout, in part, was selected to minimize tree removal and to avoid critical headwaters. The agricultural fields would not be planted in 2001, thereby reducing the amount of vegetation to be removed during the construction phase. As a result, the majority of disturbed vegetation would be redistributed and graded on-site. Surplus vegetation material would be properly disposed of off-site. Any trees cleared would be ultimately recycled as lumber or firewood.

(19) Plant installation at the preferred site would require approximately 46 acres for the plant and temporary lay-down. After construction, six acres would be returned to prior use. Similarly, about 49 acres would be required if the facility were to be built at the alternate site and nine acres would be returned to prior use.

(20) Either site would require extensive grading. The terrain would be properly sloped to facilitate drainage. Ditches and swales would be provided to capture storm water and direct it by gravity flow to the existing watercourses. Where siting grading will occur in proximity to headwater areas, it could aversely affect these sensitive features unless special precautions are taken during construction to protect them.

(21) The proposed facility is to be built on both sides of TR 103. As such, access roads would be required on both sides of the township roads.

(22) Potential construction emissions include volatile organic compounds, sulfur dioxide, carbon monoxide, nitrogen oxides, and

particulate matter less than 10 microns in diameter. These emissions are not expected to cause any significant environmental impacts beyond the site area.

(23) The applicant has submitted an application for an Amended PSD Permit/Permit to Install to the Ohio EPA. The application is currently under review.

(24) Noise levels would unavoidably increase during construction, but this would be a short-term impact. There may be limited blasting required.

(25) The turbine units would be enclosed in an insulated enclosure to reduce operational noise levels. The area around both sites is sparsely populated. The closest noise receptors to the preferred site are three residences that are approximately 1,100, 1,200, and 1,500 feet to the south. The noise model, developed by the consultant, concludes that the sound levels resulting from the plant would be less than 50 dBA, at all sensitive receptors. However, the sound level at the nearest residence for the simple cycle mode is estimated to be at 56 dBA.

(26) Storm water runoff would be managed through a National Pollutant Discharge Elimination System (hereinafter NPDES) general permit during construction. A construction spill prevention control and countermeasure plan would be required to manage site runoff during operation.

(27) The equipment would be washed periodically. The waste stream would be collected and stored in an underground tank. This waste stream, consisting of water, soap, and oily residue, would be removed and disposed of by a licensed contractor.

(28) The applicant anticipates that less than an acre of headwater stream area would be lost as a result of constructing the facility at the preferred site. A small (0.4 acre) agricultural pond would be filled to accommodate the proposed generating station.

(29) The applicant identified two recreational facilities within one mile of the preferred and alternate sites. Forested wood lots, slopes, and residential areas buffer the recreational areas from the sites. These buffers would serve to minimize any negative aesthetic and noise effects associated with the construction or operation of the proposed facility. Therefore, it is anticipated that neither the construction nor the operation of the generating

facility is expected to have any adverse impact on the activities or users of the recreational facilities.

(30) Review of records at the Ohio Historic Preservation Office, an on-line search of National Register of Historic Places computer files, and an on-site cultural resource survey failed to identify any previously identified archaeological sites on either the preferred or alternate sites. A Phase I cultural resource survey has been performed on the preferred site. That study identified ten historical sites. Of the ten sites, nine do not meet the criteria for listing on the National Register of Historic Places. The State Historic Preservation Office notes that the millstone quarry, 33-WN-402, requires further study. However, no construction is currently being proposed at the quarry site.

(31) Construction of the proposed facility is not expected to have a significant growth-inducing effect on the locales surrounding the preferred or alternate sites. As such, no significant impact on local public services and facilities is anticipated.

The staff recommends that the Board find that the nature of the probable environmental impact has been determined for the proposed facility. The staff and applicant have agreed that the record contains adequate data to determine the nature of the probable environmental impact of the proposed facility.

The staff has also studied the applicant's description of the ecological, social, and economic impacts, which would result from the construction, and operation of the facility. In addition, the staff conducted site visits to the project area. The staff and applicant have stipulated that, as required by Section 4906.10(A)(3), Revised Code, the record establishes that the project at the preferred site represents the minimum adverse environmental impact considering the state of technology and the nature and economics of the various alternatives, and other pertinent considerations.

C. Compliance with Section 4906.10(A)(5), Revised Code:

Section 4906.10(A)(5), Revised Code, requires that the Board find that the proposed facility will comply with Chapters 3704, 3734, and 6111, Revised Code, concerning air and water permits and solid waste disposal, and all rules and standards adopted thereunder, and under Sections 1501.33, 1501.34, and 4561.32, Revised Code. The applicant proposes to install a mound system, a soil absorption system constructed above grade that uses sand-fill to enhance treatment before the wastewater enters the natural soil at the site. The septic tank will be pumped out and the waste material will be hauled off-site by a qualified contractor.

The staff recommends that the Board find that a determination of compliance with Chapter 3704 and 6111, Revised Code, and Sections 1501.33 and 1501.34, Revised Code,

and all regulations and standards adopted thereunder, cannot be made until all required permits have been issued. Furthermore, the staff recommends that the Board find that the facility will comply with Section 4561.341, Revised Code.

The staff and applicant have agreed that adequate data has been provided to determine that the proposed facility will comply with Section 4906.10(A)(5), Revised Code.

D. Consideration of Sections 4906.10(A)(4), and 4906.10(A)(6), Revised Code:

Section 4906.10(A)(4), Revised Code, requires that the facility be consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability. Staff recommends that the Board find that the proposed facility is not a transmission line, but is sited to be consistent with the expansion plans for the regional power grid.

Section 4906.10(A)(6), Revised Code, requires that the Board find that the facility will serve the public interest, convenience, and necessity. The staff determined that the project will serve the public interest, convenience and necessity by providing reliable electrical generation when needed. The staff agrees with the applicant's analysis of the AEP studies that shows that the proposed facility will not restrict the regional transmission system's ability to transfer power under normal baseload operating conditions.

The staff and applicant stipulated that the requirements of Sections 4906.10(A)(4) and (6), Revised Code, have been met.

E. Consideration of Section 4906.10(A)(7), Revised Code:

There are no agricultural district lands located within the preferred or alternate sites. Both sites are used in part to produce row crops. Construction of the proposed facility will permanently remove approximately 40 acres of farmland from agricultural use. An additional nine acres will be temporarily utilized during construction of the proposed facility. Upon completion of the proposed project, the balance of the 140 acre parcel be returned to its preconstruction usage.

In performing an assessment of the proposed project on agricultural district land, the staff evaluated both direct and indirect impacts on farmland. Direct impacts include: (1) the taking of farmland for project use; (2) the purchase of easements for right-of-way or access; (3) the destruction of field drainage systems; and (4) the placement of structures and associated equipment in agricultural fields that require a change in cultivation patterns or access. Indirect impacts include: (1) the loss of crop productivity due to soil disturbance and redistribution; (2) the migration of undesirable plant species; and (3) the loss of market value for farmland. The staff and the applicant stipulated that the record establishes that the impact of the proposed facility on the viability of existing agricultural districts.

F. Consideration of Section 4906.10(A)(8), Revised Code:

The staff reviewed the information pertaining to the consumptive use of water for the construction and operation of the proposed facility. The applicant has chosen wet cooling as opposed to once-through cooling. Wet cooling will have major benefits to the aquatic life and water quality of the Muskingum River. Potable water will be obtained from the local rural water system for personnel use and for periodic cleaning of the equipment. The staff recommends that the Board find that the proposed facility will comply with Section 4906.10(A)(8), Revised Code.

The staff and applicant have agreed that adequate data has been provided to find the proposed facility will comply with Section 4906.10(A)(8), Revised Code.

III. RECOMMENDED CERTIFICATE CONDITIONS:

In addition to the stipulated matters discussed above, the staff and the applicant stipulated that a certificate of environmental compatibility and public need for the proposed project, using the preferred site, should be issued to the applicant and conditioned as follows:

(1) The facility be installed on the applicant's preferred site as presented in the application filed on May 2, 2000, as modified by applicant's supplemental data submitted on September 14 and 15, 2000.

(2) The applicant shall utilize the equipment described in the application in Rules 4906-13-04(B) and (C), O.A.C., and as modified by supplemental data submitted on September 14 and 15, 2000.

(3) The applicant shall utilize the mitigative measures described in the application, unless modified by conditions to the certificate or applicable federal and state permits.

(4) The applicant shall maintain sound levels, resulting from the operation of the facility, below 50 dBA at the nearest existing residence during operation of the facility as a combined cycle and maintain sound levels below 58 dBA during operation of the facility in simple cycle mode.

(5) The applicant shall properly install erosion and sedimentation control measures at the project site, including the permanent access roads, near headwater stream areas, and the water intake and discharge line right-of-way. All such erosion control measures shall be inspected after each rainfall event and

promptly repaired and maintained until permanent vegetative cover has been established on disturbed areas.

(6) The applicant shall identify and mark mature trees within the 40-foot construction easement for the intake and discharge water lines. Such trees shall not be removed unless staff approval has been obtained. Also, prior to any clearing work in conjunction with the proposed electric transmission line, the applicant and the staff shall review the final plans for the line and determine which trees along or within the right-of-way, besides those that are to be spanned and avoided, can be left undisturbed, or can be trimmed without completely removing them.

(7) The applicant shall not remove any exfoliating bark trees, for any portion of the proposed project, between April 15 and September 15. The applicant will save trees with exfoliating bark wherever possible.

(8) The applicant shall construct the water intake and discharge as described in the application and supplemental data submitted on September 14, 2000, including use of special instream coffer dam and dewatering techniques, unless modified by the conditions of an Ohio EPA 401 Certification and/or the U.S. Army Corps of Engineers permit(s).

(9) The applicant shall obtain the necessary Ohio Department of Natural Resources permits for water withdrawal from the Muskingum River.

(10) During construction of the facility, the applicant shall seed all disturbed soil within seven days of final grading with a seed mixture acceptable to the appropriate County Cooperative Extension Service. Denuded areas, including spoils piles, shall be seeded and stabilized within seven days, if they will be undisturbed for more than 45 days. Reseeding shall be done within several days of emergence of seedlings as necessary until vegetation in all areas has been established.

(11) The applicant shall employ the following construction methods in proximity to any sensitive areas as identified by the staff:

(a) Structures are to be located outside of the identified wetlands and watercourses;

(b) All construction equipment shall avoid crossing or working within wetlands and watercourses, including those to be spanned by the proposed electric transmission line; and

(c) All storm water runoff is to be diverted away from fill slopes and other exposed surfaces to the greatest extent possible, and directed instead to appropriate catchment structures, sediment ponds, etc., using diversion berms, temporary ditches, check dams, or similar measures.

(12) In the event that the applicant is unable to comply with any portion of Condition No. 11, applicant shall submit to staff, for review and approval, documentation of the basis for the applicant's conclusion that it cannot employ the required construction methods and its plan for use of alternative construction methods, that will minimize impacts to the greatest extent possible.

(13) The applicant shall not dispose of excavated rock and any bedding material during or following construction of the facility by spreading the material on agricultural land.

(14) The applicant shall dispose of all contaminated soil and construction debris in approved landfills in accordance with Ohio EPA regulations.

(15) Prior to construction, the applicant shall submit to the Board for approval the appropriate applications for the natural gas line from the tap to TETCO and the 345-kV loop to the AEP Muskingum-Sporn 345-kV transmission line.

(16) Prior to construction, the applicant shall obtain all applicable permits and authorizations as required by federal and state entities for any activities where such permit or authorization is required, including an NPDES permit for a discharge of process wastewater from a new source, a permit to install for a new wastewater/disposal system and a permit to install air contaminant source(s), to be obtained through Ohio EPA. A copy of each permit or authorization, including terms and conditions, shall be provided to the Board staff within seven days of receipt. Prior to construction, the construction storm water management plan shall be submitted to the Board staff for review and acceptance.

(17) The applicant shall develop a grading and drainage plan in coordination with the Washington Soil and Water Conservation Service. A copy of the plan shall be submitted to the staff for review. This plan, as well as any other site plans associated with construction of the generating facilities, shall include details of any special construction techniques (e.g., retaining walls, diversion channels, structure relocations, etc.) to be used for avoiding impacts to headwater streams and other environmentally-sensitive features.

(18) The applicant shall design and install a fire protection system in accordance with the National Fire Protection Association standards.

(19) The applicant shall coordinate with fire, safety and emergency personnel during all stages of the project to promote efficient and timely emergency preparedness and response.

(20) Prior to the operation of the facility, the applicant shall submit the interconnection agreement to the staff for review.

(21) Construction, operation and maintenance of system upgrades shall be performed that are necessary to integrate the proposed generating facility into the regional transmission system, safely and reliably.

(22) For any nonfirm capacity, the applicant, or its designated operator, will seek and contract for transmission service through the OASIS as specified in FERC Orders 888, 889, and any subsequent OASIS-related orders, or through any successor OASIS system. If, in the reasonable exercise of judgement by the control area operator, generation by the proposed facility might adversely impact the reliability of the transmission system, the control area operator may discontinue interconnection service until the condition has been corrected.

(23) The applicant shall consult with the State Historic Preservation Office to develop a preservation plan for site 33-WN-402. The plan shall be submitted to the Board staff for review and acceptance. In its review of the plan, the staff will consult with the State Historic Preservation Office. The plan will set forth commitments by the applicant to: (a) determine if 33-WN-402 is eligible for inclusion in the National Register of Historic Places, and (b) specify the appropriate treatment measures to be completed by the applicant to preserve the property, if necessary. Additionally, the applicant shall consult with the State

Historic Preservation Office regarding the submission of photographs of buildings within the project area.

(24) The applicant shall provide to the staff the following information as soon as it becomes known:

(a) the date on which construction will begin;

(b) the date on which construction was completed; and

(c) the date on which the facility began commercial operation.

(25) At least 30 days before construction begins, the applicant shall submit to the staff, for review and approval, one set of engineering drawings of the certificated facility so that the staff can determine that the final project design is in compliance with the terms of the certificate.

(26) The applicant shall have an environmental specialist on site at all times that construction is being performed in or near sensitive areas such as steep slopes, headwater streams, designated wetlands, forested areas, etc.

(27) The applicant shall conduct a preconstruction conference prior to the start of any project work, which the staff shall attend and discuss how environmental concerns will be satisfactorily addressed.

(28) The certificate shall become invalid if the applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate.

(29) The construction and ongoing maintenance of the natural gas handling system and associated facilities shall comply in all respects with state and federal laws and regulations pertaining to gas pipeline safety.

IV. CONCLUSION:

The staff and applicant agree that the record of evidence is sufficient for the Board to issue a certificate for the proposed facility (Jt. Ex. 1, at 11). Further, there was no opposition to this project raised at the public hearing. Although not binding upon the Board, stipulations are given careful scrutiny and consideration, particularly where no party is objecting to the stipulation. Based on the application, staff investigation and report,

stipulation, and hearings, the Board finds that all the criteria established in Section 4906.10(A), Revised Code, are satisfied for the construction, operation, and maintenance of the project in the preferred location, subject to the conditions set forth in the stipulation. Accordingly, the Board adopts the stipulation and hereby issues a certificate of environmental compatibility and public need to construct the PSEG Waterford Energy Facility, which will be located in Washington County, Ohio, subject to the conditions listed in section III of this order.

FINDINGS OF FACT AND CONCLUSIONS OF LAW:

(1) PSEG Waterford Energy LLC is a corporation organized under the laws of the state of Delaware.

(2) The proposed PSEG Waterford Energy LLC facility is a "major utility facility" as defined in Section 4906.01(B)(1), Revised Code.

(3) On April 25, 2000, PSEG Waterford Energy LLC filed a motion for waivers of certain filing requirements under Rule 4906-1-03, O.A.C., including waiver of the requirement to file an application two years prior to commencement of construction under Section 4906.06(A)(6), Revised Code.

(4) On May 19, 2000, the administrative law judge issued an entry granting PSEG's waiver requests.

(5) PSEG held an informal public meeting on March 23, 2000 in accordance with Rule 4906-05-08, O.A.C., in Waterford Township.

(6) PSEG formally submitted its application for a certificate of environmental compatibility and public need in regard to the PSEG Waterford Energy LLC project on May 2, 2000.

(7) On June 30, 2000, the application was found to comply with Chapter 4906, O.A.C.

(8) The administrative law judge issued an Entry on July 27, 2000, setting a local public hearing for October 3, 2000, and an adjudicatory public hearing on October 4, 2000.

(9) On September 5, 2000, the applicant filed proofs of letter mailing and submission of homeowner mailing in accordance with Rule 4906-5-08(B)(3), O.A.C.

(10) On August 11, 2000, the Applicant filed proofs of the first hearing publications which appeared in the Marietta Times.

Marietta A.M. and Morgan County Herald on August 2 or 3, 2000, in accordance with Rule 4906-5-08(B)(1), O.A.C.

(11) The staff report was filed on September 18, 2000.

(12) On September 27, 2000, the applicant filed proofs of the second hearing publications which appeared in the Marietta Times, Marietta A.M. and Morgan County Herald on September 20, 2000, in accordance with Rule 4906-508(B)(2), O.A.C.

(13) A local public hearing was held on October 3, 2000, in Waterford Township, Washington County, Ohio.

(14) An adjudicatory hearing was held on October 4, 2000, in Columbus, Ohio.

(15) Adequate data on the project has been provided to determine the basis of need for the facility as required by Section 4906.10(A)(1), Revised Code.

(16) Adequate data on the project has been provided to determine the nature of the probable environmental impact as required by Section 4906.10(A)(2), Revised Code.

(17) Adequate data on the project has been provided to determine that the preferred site contained in the application represents the minimum adverse environmental impact, considering the available technology and nature and economics of the various alternatives, and other pertinent considerations as required by Section 4906.10 (A)(3), Revised Code.

(18) Given that applicant intends to take transmission service based upon availability as posted under the OASIS system or any successor system, the requirements of Section 4906.10(A)(4), Revised Code, are met.

(19) Adequate data on the PSEG Waterford Energy LLC project has been provided to determine that the facility, at the preferred site, will comply with Chapters 3704, 3734, and 6111 and Sections 1501.33 and 1501.34, Revised Code, and all regulations thereunder as required by Section 4906.10(A)(5), Revised Code.

(20) Adequate data on the PSEG Waterford Energy LLC project has been provided to determine that the facility, at the preferred site, will serve the public interest, convenience, and necessity, as required by Section 4906.10(A)(6), Revised Code.

(21) Adequate data on the PSEG Waterford Energy LLC project has been provided to determine what the facility's impact will be on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Ohio Revised Code that is located within the preferred site and alternate site of the proposed major utility facility, as required by Section 4906.10(A)(7), Revised Code.

(22) Adequate data on the PSEG Waterford Energy LLC project has been provided to determine that the facility as proposed incorporates maximum feasible water conservation practices considering available technology and the nature and economics of the various alternatives, as required by Section 4906.10(A)(8), Revised Code.

(23) The record evidence in this matter provides sufficient factual data to enable the Board to make an informed decision.

(24) PSEG Waterford Energy LLC is a "person" under Section 4906.01(A), Revised Code.

(25) PSEG Waterford Energy LLC's application as supplemented complies with the requirements of Chapter 4906-13, O.A.C.

(26) Based upon the record, a certificate should be granted for construction, operation, and maintenance of the PSEG Waterford Energy LLC facility at the preferred site.

ORDER:

It is, therefore,

ORDERED, That the stipulation be approved in its entirety. It is, further,

ORDERED, That a certificate of environmental compatibility and public need for the above-captioned project be issued for the construction, operation, and maintenance of such facility at the preferred site. It is, further,

ORDERED, That the certificate shall contain the conditions set forth in Section III of this decision. It is, further,

ORDERED, That a copy of this opinion, order, and certificate be served upon all parties of record.

THE OHIO POWER SITING BOARD

Alan R. Schriber, Chairman of the
Public Utilities Commission of Ohio

C. Lee Johnson, Board Member and
Director of the Ohio Department
of Development

Samuel W. Speck, Board Member
and Director of the Ohio Department
of Natural Resources

Nick Baird, M.D., Board Member
and Director of the Ohio Department
of Health

Christopher Jones, Board Member and
Director of the Ohio Environmental
Protection Agency

Fred L. Dailey, Board Member and
Director of the Ohio Department
of Agriculture

Stephen A. Sebo, Board
Member and Public Member

MBL;geb

Entered in the Journal
NOV 20 2000
A True Copy
Gary E. Vigorito
Secretary

Baseline Sound Survey Report

BASELINE SOUND SURVEY REPORT

CARROLL COUNTY ENERGY
CARROLL COUNTY, OHIO

June 2013

PREPARED FOR:
Carroll County Energy LLC
31 Milk Street
Boston MA 02109

PREPARED BY:
Tetra Tech, Inc.
160 Federal Street, 3rd Floor
Boston MA 02110

TETRA TECH

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LIST OF ACRONYMS

Acronym or Abbreviation	Full Phrase
µPa	microPascal
ANSI	American National Standards Institute
CCE	Carroll County Energy
dB	decibels
dBA	A-weighted decibels
EPA	United States Environmental Policy Act
Facility Site	the 77-acre Project parcel
ft	feet
GPS	global positioning system
HVAC	heating, ventilation, and cooling
Hz	hertz
INCE	Institute of Noise Control Engineers
kHz	kilohertz
L_{eq}	Equivalent Sound Level
LT	long-term measurement
NIST	National Institute of Standards and Technology
OPSB	Ohio Power Siting Board
Project	Carroll County Energy
ST	short-term measurement

1. INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) has completed the Baseline Sound Survey Report for the Carroll County Energy LLC (CCE) proposed electric generating facility in Washington Township, Carroll County, Ohio (the Project). This survey was undertaken to assist CCE in complying with its permit application to the Ohio Power Siting Board (OPSB). OPSB Rule §4906-13-07(A)(3) defines certification requirements for the assessment of noise that must be addressed during the permitting process for electric power, gas and natural gas transmission facilities. The OPSB Rule does not define quantifiable sound limits either absolute or relative to existing conditions nor does it specifically require the completion of a baseline sound survey. However, precedent of recent energy facilities undergoing permitting has shown that the OPSB is generally requesting that applicants conduct a baseline sound survey to document existing pre-construction ambient sound levels.

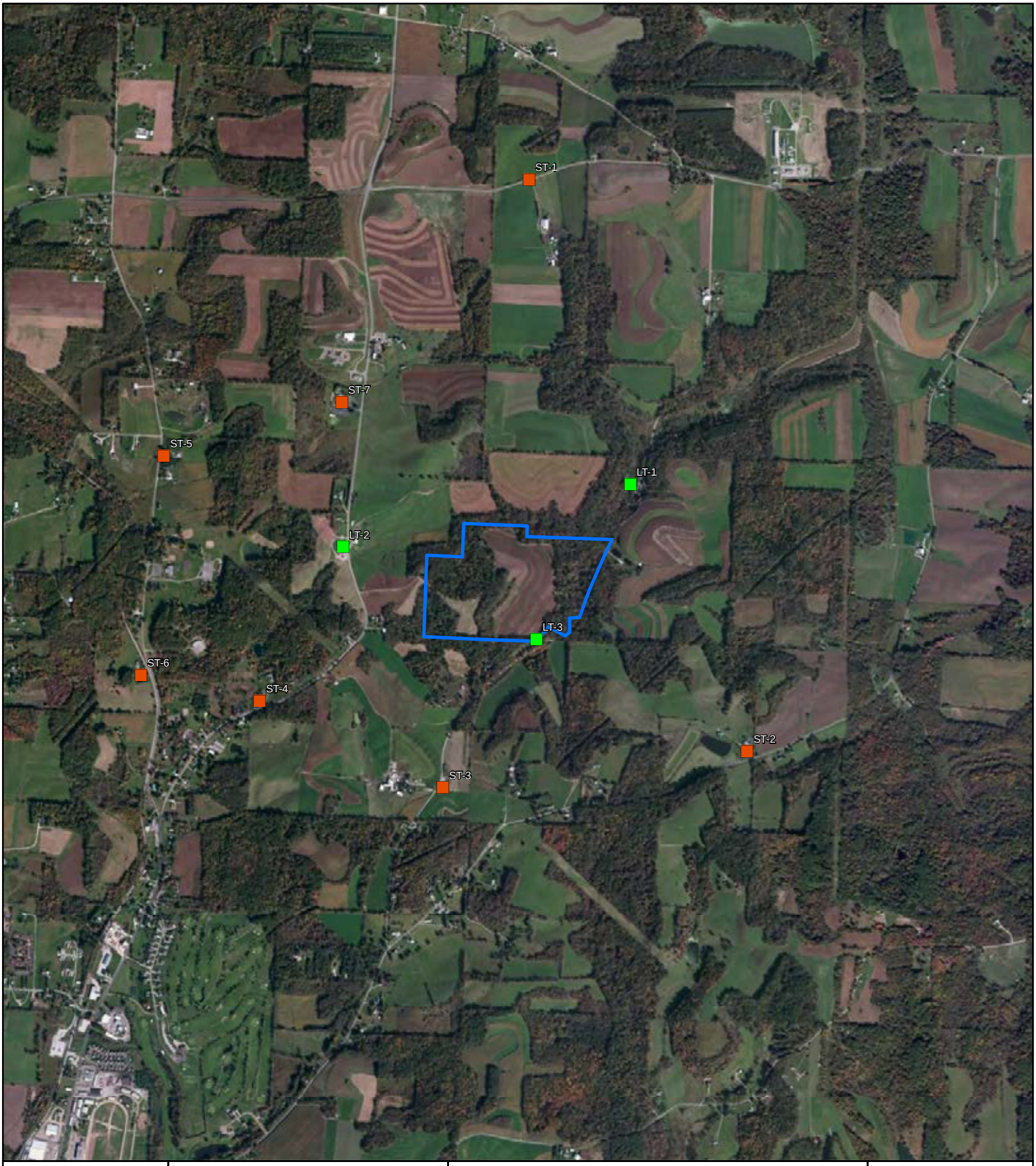
Sound pressure levels are frequently used in the assessment of compliance with regulatory limits and in determining potential impacts when used in conjunction with modeling results. Baseline sound measurements were collected in May 2013 to document existing conditions on and surrounding the Project. Resultant data can be used for comparative purposes, for impact analysis under the OPSB criteria, and for compliance with other applicable federal, state, and local ordinances or regulations. This report describes applicable noise descriptors and criteria; the baseline sound survey instrumentation and methodology; and data analysis results.

The Project is proposed to be located on an approximately 77-acre parcel (Facility Site) of privately owned lands within Carroll County, Ohio (Project Site). The Facility Site is approximately 2.5 miles northeast of the village of Carrollton. It is generally bounded by State Route 9 (Kensington Road) to west (set back approximately 0.5 mile), Mobile Road to the east, and rural agricultural lands to the north and south. An approximately 23-acre privately owned property also in agricultural use is located between the Facility Site and Route 9; this parcel will be temporarily used for construction laydown and parking and will be traversed by several easements associated with the Project.

Land uses surrounding the Facility Site are agricultural lands, consisting of soybeans, corn, pasture/grass and some livestock production and dairying, as well as patches of wooded areas. Residential density is low, with scattered homes present throughout the area; the nearest densely populated area is the village of Carrollton. Utility infrastructure (e.g., natural gas pipeline and electric transmission line corridors) extends through the vicinity of the Facility Site. North of the Facility Site, approximately 0.5-mile distant, Carroll County has designated property for commercial and industrial development, with several county-owned institutional facilities (e.g., Carroll Hills School, dog pound, Carroll County Transit, Golden Age Home) currently existing in this location. Approximately 1 mile further north and east is a Tennessee Gas Pipeline compressor station.

Background sound levels surrounding the Facility Site were found to vary both spatially and temporally depending on receptor proximity to area sound sources, roadways and natural sounds. Principal contributors to the existing acoustic environment are expected to include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, compressor station and treatment works (for example, associated with the Golden Age Home), periodic aircraft flyovers and rail movements, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions in areas near tree stands or established crops.

To document the existing ambient sound levels in the Project area, a combination of short-term and long-term sound measurements were conducted as part of baseline sound monitoring program. Locations selected such that they are distributed throughout the area surrounding the Project are expected to accurately represent the existing acoustic environment. Figure 1-1 shows the approximate Project fence line and the short-term (ST) and long-term (LT) baseline sound measurement locations.



Carroll County ENERGY

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Figure 1-1
Baseline Sound Monitoring Locations

Carroll County Energy
Carroll County, Ohio

Baseline Sound Monitoring Position

- Long-Term
- Short-Term
- Facility Site

OVERVIEW MAP

Document Path: P:\GIS\CarrollCountyEnergyCenter\GIS\Spatial\MXD\Misc\20130916_Baseline_Sound_Survey_Report.mxd

2. ENVIRONMENTAL NOISE DESCRIPTORS

Airborne sound levels are presented on a logarithmic scale to account for the large range of acoustic pressures that the human ear is exposed to and are expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micropascals (µPa). Broadband sound includes sound energy summed across the entire audible frequency spectrum. In addition to broadband sound pressure levels, analysis of the various frequency components of the sound spectrum can be completed to determine tonal characteristics. The unit of frequency is Hertz (Hz), measuring the cycles per second of the sound pressure waves; typically the frequency analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 Hz (low) to 16,000 Hz (high). One third (1/3) octave bands take these ten octave bands and split them into three, giving a higher resolution and a more detailed description of the frequency content of the sound. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system and is represented in dBA.

An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA, the result is a 3-decibel increase (or 53 dBA), not an arithmetic doubling of 100 dBA. The human ear does not perceive changes in the sound pressure level as equal changes in loudness.

The analysis of acoustic data requires special consideration of sound levels that will generally fluctuate over time. To account for the time-varying nature of environmental noise, a single descriptor known as the equivalent sound level (L_{eq}) is often used. The L_{eq} value is the sound energy averaged over a complete measurement period. It is defined as the steady, continuous sound level over a specified time that has the same acoustic energy as the actual varying sound levels over the same time. The metrics commonly used for environmental sound studies, including the L_{eq}, are reported as dBA. The equivalent sound level has been shown to provide both an effective and uniform method for describing time-varying sound levels and is widely used in acoustic assessments. Estimates of noise sources and outdoor acoustic environments, and the comparison of relative loudness are presented in Table 1-1.

Table 1-1 Sound Pressure Levels and Relative Loudness of Typical Noise Sources

Noise Source or Activity	Sound Level (dBA)	Subjective Impression
Jet aircraft takeoff from carrier (50 feet)	140	Threshold of pain
50-hp siren (100 feet)	130	
Loud rock concert near stage Jet takeoff (200 feet)	120	Uncomfortably loud
Float plane takeoff (100 feet)	110	
Jet takeoff (2,000 feet)	100	Very loud
Heavy truck or motorcycle (25 feet)	90	
Garbage disposal or food blender (2 feet) Pneumatic drill (50 feet)	80	Loud
Vacuum cleaner (10 feet)	70	Moderate
Passenger car at 65 mph (25 feet)	65	
Large store air-conditioning unit (20 feet)	60	
Light auto traffic (100 feet)	50	Quiet

Table 1-1 Sound Pressure Levels and Relative Loudness of Typical Noise Sources

Noise Source or Activity	Sound Level (dBA)	Subjective Impression
Quiet rural residential area with no activity	45	
Bedroom or quiet living room Bird calls	40	Faint
Typical wilderness area	35	
Quiet library, soft whisper (15 feet)	30	Very quiet
Wilderness with no wind or animal activity	25	Extremely quiet
High-quality recording studio	20	
Acoustic test chamber	10	Just audible
	0	Threshold of hearing

Adapted from: Beranek (1988) and United States Environmental Protection Agency (EPA) (1971)

3. AMBIENT SOUND LEVEL MEASUREMENTS

This section includes a description of the sound terminology, survey methodologies, areas surveyed, and measurement equipment used. Sound measurements were done by a full member of the Institute of Noise Control Engineers (INCE) or under their direct supervision. The locations of monitoring positions were determined by using a global positioning system (GPS) unit, and photographs were taken from the measurement points in the directions of receptors of interest and the Facility Site.

3.1 MEASUREMENT PROCEDURE AND INSTRUMENTATION

To establish existing acoustic conditions for the area surrounding the Facility Site, an ambient sound survey was conducted over a 7-day period from May 8 to May 15, 2013. The measurement locations were selected to be representative of noise sensitive areas nearest to the Facility Site in varying geographical directions. The ambient sound survey included both automated unattended long-term measurements (7-day) and short-term measurements with an engineer present (minimum 30-minute duration. Short-term measurements were made during both daytime (10:00 a.m. to 4:00 p.m.) and nighttime (10:00 p.m. to 2:00 a.m.) periods. Measurements were taken with a Larson Davis 831 real-time sound level analyzer equipped with a PCB model 377B02 ½-inch precision condenser microphone. This instrument has an operating range of 5 dB to 140 dB, and an overall frequency range of 8 to 20,000 Hz, and meets or exceeds all requirements set forth in the American National Standards Institute (ANSI) standards for Type 1 sound level meters for quality and accuracy (precision).

Table 3-1 lists the measurement equipment used. All instrumentation components, including microphones, accelerometers, preamplifiers and field calibrators, had current laboratory certified calibrations traceable to the National Institute of Standards Technology (NIST). The NIST laboratory calibration certifications for the measurement instrumentation used are in Appendix A.

Table 3-1 Measurement Equipment

Description	Manufacturer	Type
Signal Analyzer	Larson Davis	831
Preamplifier	Larson Davis	PRM902
Weather Transmitter	Vaisala	WXT520
Microphone	PCB	377B02
Windscreen	ACO Pacific	7-inch
Windscreen	Larson Davis	WS-15
Calibrator	Larson Davis	CAL200

The microphone and windscreen were tripod-mounted at an approximate height of 1.5 to 1.7 meters (4.9 to 5.6 feet) above grade away from effects of ground level noise and reflective surfaces. In addition, the sound level analyzer microphones were protected from wind-induced self-noise effects by a 180-millimeter (mm; 7 inch) diameter foam windscreen made of specially prepared open-pored polyurethane. Each sound analyzer was programmed to measure and log broadband A-weighted sound pressure levels in 10- and 1-minute time intervals, including a number of statistical parameters such as the average (L_{eq}) maximum (L_{max}), and statistical sound levels (L_{10}, L_{50}, and L_{90}). Data were collected for 1/1 and 1/3 octave bands spanning the frequency range of 8 Hz to 20 kHz. Following the completion of the measurement period, all measured data were downloaded to a computer for the purposes of storage and further analysis.

3.2 MONITORING LOCATIONS

Prior to launching the baseline sound survey, Tetra Tech consulted with CCE to select appropriate monitoring locations. Monitoring positions were selected based on their geographical location with respect to proposed Facility Site. Alternate monitoring positions were also chosen in the event that, upon arrival at any of the preferred monitoring positions, it was determined that one of the preferred monitoring positions would be unsuitable due to nearby or on-site noise sources, which could bias the results of the baseline sound survey.

Baseline sound measurements were taken at 10 monitoring locations (Figure 1-1). Table 3-2 lists the corresponding map identifier for Figure 1-1, the GPS coordinates, existing land uses, and a description of each location surveyed.

Table 3-2 Baseline Sound Monitoring Locations

Map ID	Noise Sensitive Use	Coordinates	Description
ST-1	Residential	40°37.241’ N, 81°3.566’ W	1175 Cobbler Road
ST-2	Residential	40°35.912’ N, 81°2.899’ W	1347 Andora Street
ST-3	Residential	40°35.827’ N, 81°3.828’ W	Near Residence
ST-4	Residential	40°36.028’ N, 81°4.387’ W	Near Residence
ST-5	Residential	40°36.598’ N, 81°4.680’ W	2136 Brenner Road
ST-6	Residential	40°36.088’ N, 81°4.749’ W	Near Residence
ST-7	Civic/Public	40°36.723’ N, 81°4.137’ W	School & Living Center
LT-1	Residential	40°36.533’ N, 81°3.256’W	Property Line (PL) / Near Residence
LT-2	Residential	40°36.387’ N, 81°4.133’W	PL / Near Residence
LT-3	Residential	40°36.172’ N, 81°3.543’W	PL / Near Residence

The following sections provide additional descriptions of each monitoring location as well as a photograph of where the monitoring location was established.

3.2.1 ST-1: Cobbler Road Residence

Monitoring location ST-1 (shown in the photograph to the right) is representative of farm property approximately 1,480 meters (4,880 feet) north of the Facility Site boundary, along Cobbler Road. Field observations identified sounds from local roadway traffic, birds, dogs and other natural sounds. During the daytime monitoring period, heavy trucks passed this location, which may have influenced the overall L_{eq} sound levels reported.

3.2.2 ST-2: Andora Road Residence

Monitoring location ST-2 (shown in the photograph to the left) is representative of farm residences near the pond on Bayside Court, approximately 920 meters (3,020 feet) southeast of the Facility Site boundary, along Andora Road NE. Field observations identified sounds from local traffic, dogs, crickets, frogs and other natural noises.

3.2.3 ST-3: Mobile Road NE Residence 1

Monitoring location ST-3 (shown in the photograph to the right), approximately 640 meters (2,120 feet) south of the Facility Site, is representative of several residences along Mobile Road NE. Field observations identified sounds from local roadway traffic, cows and natural sounds.

3.2.4 ST-4: Route 9 NE Residence

Monitoring location ST-4 (shown in the photograph to the right), approximately 760 meters (2,480 feet) southwest of the Facility Site boundary, is representative of several residences along Route 9. Field observations identified sounds from fairly steady traffic on Route 9 during the daytime period including heavy truck traffic, natural sounds and distant lawn maintenance activities.

3.2.5 ST-5: Brenner Road Residence 1

Monitoring location ST-5 (shown in the photograph to the left), approximately 1,650 meters (5,400 feet) west of the Facility Site boundary is representative of the residence at and near 2136 Brenner Road. Field observations identified sounds from light local traffic and natural sounds.

3.2.6 ST-6: Brenner Road Residence 2

Monitoring location ST-6 (shown in the photograph to the right) represents the residences near 1270 Brenner Road, approximately 1,220 meters (3,960 feet) west of the Project Site boundary and in proximity to the Carroll County Veterans Club playing fields. Field observations identified sounds from local traffic and distant lawnmowing activities during the daytime monitoring period. Nighttime levels were generally low with natural sounds dominating.

3.2.7 ST-7: School / Residential

Monitoring location ST-7 (shown in the photograph to the left) represents the area near Carroll Hills School and Carroll Golden Age Retreat on Route 9 northwest of the Facility Site. Field observations identified local traffic during the daytime measurement period, including heavy truck traffic. Additional elements of ambient sound at this location include heating, ventilation and cooling (HVAC) and mechanical noise from a wastewater treatment facility and nearby buildings, local traffic, dogs from local pound and natural sounds including crickets and frogs.

3.2.8 LT-1: Mobile Road NE Residence

Monitoring location LT-1 (shown in the photograph to the right) lies within the eastern portion of the Facility Site and represents a residence along Mobile Road NE.

3.2.9 LT-2: Kensington Road NE Residence

Monitoring location LT-2 (shown in the photograph below) lies within the western portion of the Project site boundary and is located at the Jenkins farm along Kensington Road NE.

3.2.10 LT-3: Mobile Road NE Residence

Monitoring location LT-3 (shown in the photograph below) represents a residence along Mobile Road NE. The monitoring station was located on southeast edge of the Facility Site. A direct line-of-site between the monitoring station and closest residences was possible through a forested buffer area.

4. SOUND SURVEY RESULTS AND CONCLUSIONS

Noise measurements were taken to document the existing baseline acoustic environment. The goal of the field program was to identify the regularly occurring baseline sound at monitoring positions near the Facility Site. Upon completion of the baseline sound survey, the results were tabulated into relevant time periods. The monitoring included the collection and reporting of the following data:

- Sound pressure level data present during daytime and nighttime test periods.
- For each time period, the following sound measurement descriptors were compiled:
    - Spectral octave-band analysis (31.5, 63, 125, 250, 500, 1K, 2K, 4K, and 8K Hz);
    - One hour L_{eq} statistical values, in dBA;
    - A narrative description of sounds audible during testing and a discussion of any anomalous or regularly occurring sounds identified during the monitoring program; and
    - A description of existing land uses near the measurement location.

Tables 4-1 and 4-2 present baseline monitoring results in terms of sound level metrics and octave band frequencies, respectively, for both short and long-term measurement locations. Figure 4-1 presents time history plots for the three long-term monitoring locations.

The analysis results contained with this report are intended to support the technical analysis required as part of the permitting process for the Project. The degree of audibility of a new or modified sound source is dependent in a large part on the relative level of the ambient noise. CCE will utilize this information to determine appropriate assumptions for assessing the potential for the Project to result in a change in the sound environment.

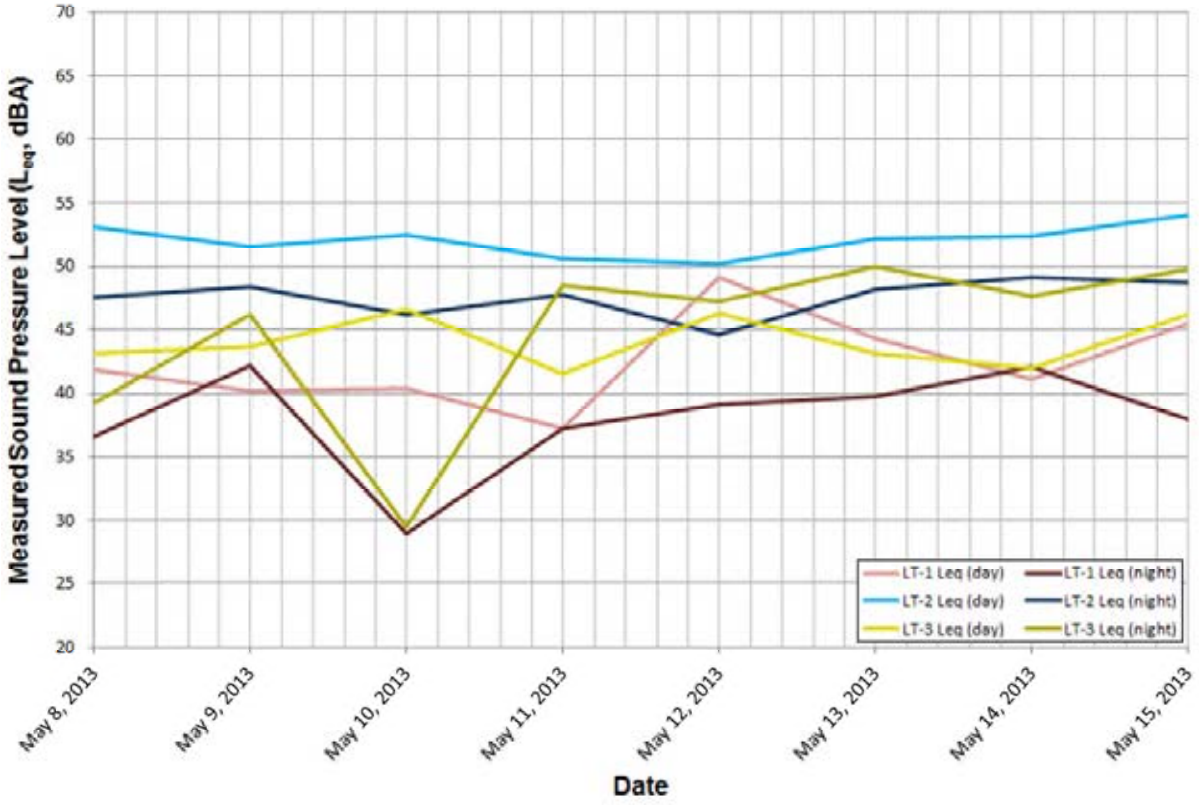
Table 4-1 Sound Monitoring Results – L_{eq}, dBA

Monitoring Location				Date	Time	Time Period	Sound Level Metrics (L_{eq}, dBA)
Map ID	Land Use	GPS Coordinates					
ST-1	Residential	40°37.241' N	81°3.566' W	5/15/2013	2:55 p.m.	Day	64
				5/15/2013	11:00 p.m.	Night	53
ST-2	Residential	40°35.912' N	81°2.899' W	5/16/2013	1:24 p.m.	Day	45
				5/16/2013	1:11 a.m.	Night	46
ST-3	Residential	40°35.827' N	81°3.828' W	5/16/2013	1:09 p.m.	Day	45
				5/7/2013	11:24 p.m.	Night	32
ST-4	Residential	40°36.028' N	81°4.387' W	5/16/2013	12:00 p.m.	Day	59
				5/8/2013	12:10 a.m.	Night	52
ST-5	Residential	40°36.598' N	81°4.680' W	5/16/2013	10:22 a.m.	Day	48
				5/15/2013	12:24 a.m.	Night	48
ST-6	Residential	40°36.088' N	81°4.749' W	5/16/2013	11:00 a.m.	Day	50
				5/8/2013	12:53 a.m.	Night	39
ST-7	Civic/Public	40°36.723' N	81°4.137' W	5/15/2013	3:40 p.m.	Day	56
				5/15/2013	11:42 p.m.	Night	52
LT-1 (Composite)	Residential	40°36.533' N	81°3.256' W	5/8/2013 to 5/15/2013		Day	42
						Night	36
LT-2 (Composite)	Residential	40°36.308' N	81°4.4152' W	5/8/2013 to 5/15/2013		Day	52
						Night	45
LT-3 (Composite)	Residential	40°36.172' N	81°3.543' W	5/8/2013 to 5/15/2013		Day	43
						Night	38

Table 4-2 Sound Monitoring Results – Composite L_{eq} Octave Band Center Frequencies

Monitoring Location		Time Period	Octave Band Sound Pressure Levels (dB)											
Map ID	Coordinates		8 Hz	16 Hz	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
S-1	40°37.241' N, 81°3.566' W	Day	72	67	61	62	61	58	56	58	53	46	49	30
		Night	45	46	51	52	50	45	46	50	46	36	26	16
S-2	40°35.912' N, 81°2.899' W	Day	58	53	49	46	42	41	36	37	39	37	33	22
		Night	56	58	58	55	54	50	45	36	29	23	20	11
S-3	40°35.827' N, 81°3.828' W	Day	57	52	50	52	45	41	39	40	37	33	23	13
		Night	50	47	48	45	38	32	30	26	20	16	15	14
S-4	40°36.028' N, 81°4.387' W	Day	58	56	58	66	65	58	56	54	51	46	36	21
		Night	52	49	49	65	54	51	47	45	42	37	32	23
S-5	40°36.598' N, 81°4.680' W	Day	51	50	49	54	58	48	44	39	39	38	39	12
		Night	42	44	47	46	39	39	42	44	39	29	21	13
S-6	40°36.088' N, 81°4.749' W	Day	48	50	50	49	50	42	42	46	40	39	39	23
		Night	38	44	46	44	40	37	33	36	32	25	19	16
S-8	40°36.723' N, 81°4.137' W	Day	70	66	61	64	60	61	50	52	49	43	38	27
		Night	42	48	49	52	52	44	46	49	46	38	28	15
LT-1	40°36.533' N, 81°3.256'W	Day	55	52	53	49	44	41	38	35	32	31	22	12
		Night	48	47	54	43	39	36	33	29	23	21	15	8
LT-2	40°36.308' N, 81°4.4152'W	Day	68	63	58	61	59	51	47	47	41	35	28	19
		Night	61	56	54	54	52	45	41	41	35	29	21	15
LT-3	40°36.172' N, 81°3.543'W	Day	51	49	50	48	43	41	39	35	34	34	28	18
		Night	44	45	49	42	37	36	32	28	26	24	20	16

Figure 4-1 LT Time Histories – Sound Pressure Levels



5. REFERENCES

American National Standards Institute ANSI Standard S12.9-1996: Quantities and Procedures for Description and Measurement of Environmental Sound – Part 4: Noise Assessment and Prediction of Long-term Community Response.

American National Standards Institute ANSI/ASA Standard S1.4-2006: American National Standard Specification for Sound Level Meters.

American National Standards Institute ANSI S12.9-1993: Quantities and Procedures for Description and Measurement of Environmental Sound – Part 3: Short-Term Measurements with an Observer Present.

American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), 1989 ASHRAE Handbook—Fundamentals, Atlanta, Georgia, 1989.

Beranek, Leo L. 1988. “Noise and Vibration Control”. Noise Control Engineering.

US Environmental Protection Agency. 1971. Community Noise. NTID300.3 (N-96-01 IIA-231). Prepared by Wylie Laboratories.

APPENDIX A

MEASUREMENT EQUIPMENT & NIST LABORATORY CALIBRATION CERTIFICATIONS

Certificate of Calibration and Conformance

This document certifies that the instrument referenced below meets published specifications per Procedure PRD-P263; ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; 61252-2002.

Manufacturer:	Larson Davis	Temperature:	75.2	°F
Model Number:	831		24	°C
Serial Number:	2442	Rel. Humidity:	22	%
Customer:	Acoustical Consulting Services	Pressure:	1009	mbars
Description:	Sound Level Meter		1009	hPa

Note: As Found / As Left: In Tolerance

Upon receipt for testing, this instrument was found to be:

Within the Stated tolerance of the manufacturer's specification

Calibration Date: 30-Jan-12 Calibration Due:

Calibration Standards Used:

Manufacturer	Model	Serial Number	Cal Due	Traceability No.
Larson Davis	LDSigGen/2239	0760/0109	4/7/2012	2011-138647

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at The Modal Shop and/or Larson Davis Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. Calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of The Modal Shop.

Technician: Ed Devlin Signature:

THE MODAL SHOP INC.
A PCB GROUP CO.

The Modal Shop, Inc.
3149 East Kemper Road
Cincinnati, OH 45241
Phone: (513) 351-9919
(800) 860-4867
www.modalshop.com

Certificate of Calibration and Conformance

This document certifies that the instrument referenced below meets published specifications per Procedure PRD-P263; ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; 61252-2002.

Manufacturer:	Larson Davis	Temperature:	72.5	°F
Model Number:	831		24	°C
Serial Number:	2258	Rel. Humidity:	23	%
Customer:		Pressure:	1007	mbars
Description:	Sound Level Meter		1007	hPa

Note: As Found / As Left: In Tolerance

Upon receipt for testing, this instrument was found to be:

Within the Stated tolerance of the manufacturer's specification

Calibration Date: 9-Jan-13 Calibration Due:

Calibration Standards Used:

Manufacturer	Model	Serial Number	Cal Due	Traceability No.
Larson Davis	LDSigGen/2239	0760/0109	4/16/2013	2012-157887

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at The Modal Shop and/or Larson Davis Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. Calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of The Modal Shop.

Technician: Tim Rarden Signature:

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Manufacturer:	Larson Davis	Temperature:	72.5	°F
Model Number:	831		24	°C
Serial Number:	2544	Rel. Humidity:	22	%
Customer:		Pressure:	993	mbars
Description:	Sound Level Meter			hPa

Note: As Found / As Left: In Tolerance

Upon receipt for testing, this instrument was found to be:

Within the Stated tolerance of the manufacturer's specification

Calibration Date: 21-Mar-13 Calibration Due:

Calibration Standards Used:

Manufacturer	Model	Serial Number	Cal Due	Traceability No.
Larson Davis	LDSigGen/2239	0760/0109	4/16/2013	2012-154016

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at The Modal Shop and/or Larson Davis Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. Calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of The Modal Shop.

Technician: Tim Rarden Signature:

THE MODAL SHOP INC.
A PCB GROUP CO.

The Modal Shop, Inc.
3149 East Kemper Road
Cincinnati, OH 45241
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(800) 860-4867
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PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2013-168871

Instrument Model 831, Serial Number 0003140, was calibrated on 18JAN2013. The instrument meets factory specifications per Procedure D0001.8310, ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985 ; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 1; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 1; 61252-2002.

New Instrument
Date Calibrated: 18JAN2013
Calibration due:

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Stanford Research Systems	DS360	61746	12 Months	06JUL2013	61746-070612

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 18 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Tested with PRM831-023866

Signed: Ron Harris

Technician: Ron Harris

Provo Engineering and Manufacturing Center, 1681 West 820 North, Provo, Utah 84601
Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2008 Certified

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A PCB GROUP COMPANY

3149 East Kemper Rd.
Cincinnati, OH 45241
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Fax: 513-458-2172
www.modalshop.com

~Certificate of Calibration~

Manufacturer: PCB
Model Number: 377B02
Serial Number: 118070
Description: Free-Field Microphone

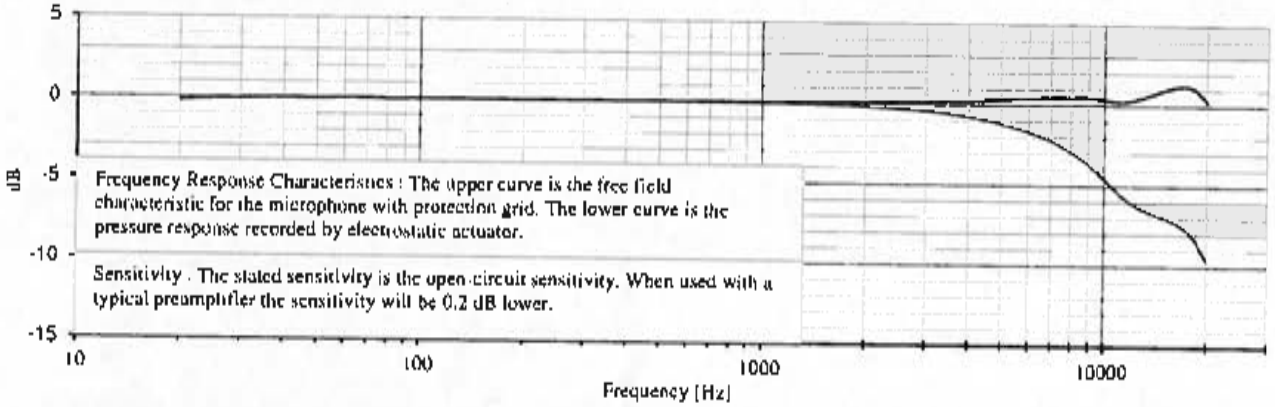
Asset ID:
Customer: TMS Rental
Calibration Date: Feb 12, 2013 14:12:23
Due Date:

Sensitivity:

250 Hz	1 kHz	
-26.31	-26.36	dB re. 1V/Pa
48.34	48.09	mV/Pa

Cal. Results: In Tolerance

Temperature:	73 (23)	°F (°C)
Humidity:	18	%
Ambient Pressure:	995.5	mbar
Polarization Voltage:	0	VDC



Traceability: The calibration is traceable through 68I/280411-11.

Notes:
- Calibration results relate only to the items calibrated.
- This certificate may not be reproduced, except in full, without written permission.
- This calibration is performed in compliance with ISO 9001, ISO 17025 and ANSI Z540.
- Measurement uncertainty (250 Hz sensitivity calibration) at 95% confidence level: 0.30 dB.
- Calibrated per procedure PRD-P204.

User Note : As Found / As Left: In Tolerance.

Frequency Response with reference to level at 250 Hz

Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)
20	-0.19	630	0.02	4500	0.31		
25	-0.08	800	0.06	5000	0.36		
31.5	-0.04	1000	0.07	5600	0.42		
40	0.01	1120	0.08	6300	0.48		
50	-0.02	1250	0.09	7100	0.53		
63	0.05	1400	0.10	8000	0.53		
80	-0.02	1600	0.10	9000	0.54		
100	0.01	1800	0.11	10000	0.39		
125	0.01	2000	0.13	11200	0.26		
160	0.00	2240	0.14	12500	0.44		
200	0.00	2500	0.17	14000	0.80		
250	0.00	2800	0.20	16000	1.21		
315	0.01	3150	0.22	18000	1.17		
400	0.01	3550	0.24	20000	0.28		
500	0.03	4000	0.26				

ACCredited

Technician: Ed Devlin

Approval: Shaun O. Devlin

Reference Equipment Used:

Manuf.	*Model*	*Serial*	*Cal. Date*	*Due Date*
GRAS	40AG	77606	9/21/2012	9/21/2013

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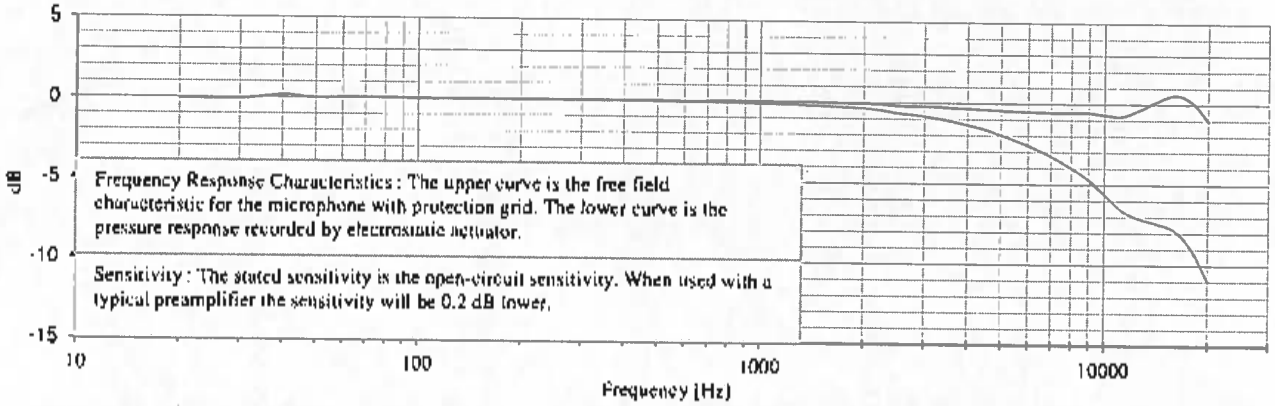
~Certificate of Calibration~

Manufacturer:	PCB	**Asset ID:**	
Model Number:	377B02	**Customer:**	TMS Rental
Serial Number:	LW135128	**Calibration Date:**	Apr 29, 2013 16:42:06
Description:	Free-Field Microphone	**Due Date:**	

Sensitivity:	**250 Hz**	**1 kHz**	
	-24.85	-24.98	dB re. 1V/Pa
	57.20	56.39	mV/Pa

Temperature:	72 (22)	°F (°C)
Humidity:	42	%
Ambient Pressure:	993.3	mbar
Polarization Voltage:	0	VDC

Cal. Results: In Tolerance



Traceability: The calibration is traceable through 681/280411-11.

Notes:
- Calibration results relate only to the items calibrated.
- This certificate may not be reproduced, except in full, without written permission.
- This calibration is performed in compliance with ISO 9001, ISO 17025 and ANSI Z540.
- Measurement uncertainty (250 Hz sensitivity calibration) at 95% confidence level: 0.30 dB.
- Calibrated per procedure PRD-P204.

User Note : As Found / As Left: In Tolerance.

Frequency Response with reference to level at 250 Hz

Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)	Frequency (Hz)	Upper (dB)
20	-0.08	630	0.02	4500	-0.37		
25	-0.08	800	0.02	5000	-0.43		
31.5	-0.04	1000	-0.01	5600	-0.47		
40	0.16	1120	0.00	6300	-0.50		
50	0.00	1250	0.00	7100	-0.54		
63	0.06	1400	-0.01	8000	-0.53		
80	0.04	1600	-0.03	9000	-0.53		
100	-0.01	1800	-0.04	10000	-0.66		
125	0.00	2000	-0.04	11200	-0.73		
160	0.00	2240	-0.09	12500	-0.36		
200	0.00	2500	-0.18	14000	0.15		
250	0.00	2800	-0.19	16000	0.58		
315	0.00	3150	-0.22	18000	0.11		
400	0.00	3550	-0.27	20000	-1.03		
500	0.01	4000	-0.33				

ACCREDITED

Technician: EAD

Approval:

Reference Equipment Used:

Manuf.	*Model*	*Serial*	*Cal. Date*	*Due Date*
GRAS	40AG	77606	9/21/2012	9/21/2013

~ Calibration Report ~

Microphone Model: 377B02 Serial Number: LW131849 Description: 1/2" Free-Field Microphone

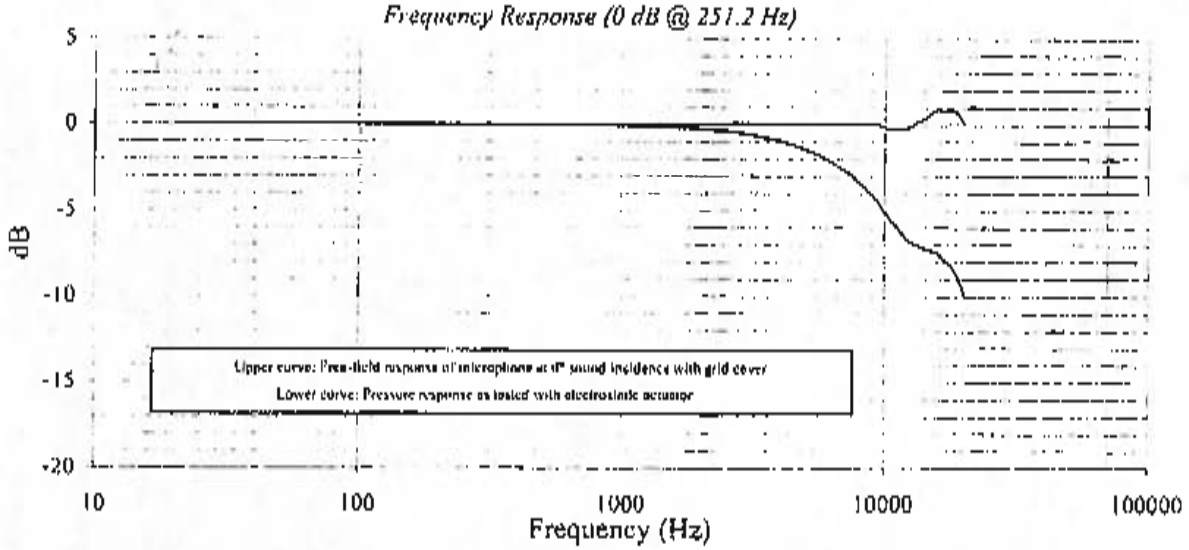
Calibration Data

Open Circuit Sensitivity @ 251.2 Hz: 56.38 mV/Pa
-24.98 dB re 1V/Pa

Polarization Voltage, External: 0 V
Capacitance: 11.8 pF

Temperature: 72 °F (22°C) Ambient Pressure: 982 mbar Relative Humidity: 48 %

Frequency Response (0 dB @ 251.2 Hz)



Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)
20.0	0.02	0.02	1584.9	-0.16	0.05	6683.4	-2.45	0.07	-	-	-
25.1	0.00	0.00	1678.8	-0.18	0.05	7079.5	-2.69	0.09	-	-	-
31.6	0.01	0.01	1778.3	-0.20	0.05	7498.9	-2.97	0.10	-	-	-
39.8	0.02	0.02	1883.7	-0.22	0.06	7943.3	-3.34	0.05	-	-	-
50.1	0.02	0.02	1995.3	-0.25	0.06	8414.0	-3.68	0.05	-	-	-
63.1	0.02	0.02	2113.5	-0.28	0.06	8912.5	-4.08	0.03	-	-	-
79.4	0.02	0.02	2238.7	-0.31	0.06	9440.6	-4.50	0.02	-	-	-
100.0	0.01	0.01	2371.4	-0.35	0.06	10000.0	-5.10	-0.15	-	-	-
125.9	0.01	0.01	2511.9	-0.38	0.08	10592.5	-5.63	-0.23	-	-	-
158.5	0.01	0.01	2660.7	-0.42	0.09	11220.2	-6.03	-0.17	-	-	-
199.5	0.00	0.00	2818.4	-0.47	0.09	11885.0	-6.53	-0.21	-	-	-
251.2	0.00	0.00	2985.4	-0.53	0.09	12589.3	-6.84	-0.07	-	-	-
316.2	0.00	0.01	3162.3	-0.61	0.07	13335.2	-7.00	0.19	-	-	-
398.1	-0.01	-0.01	3349.7	-0.69	0.05	14125.4	-7.20	0.39	-	-	-
501.2	-0.02	0.02	3548.1	-0.76	0.06	14962.4	-7.33	0.64	-	-	-
631.0	-0.03	0.01	3758.4	-0.85	0.05	15848.9	-7.44	0.91	-	-	-
794.3	-0.05	0.04	3981.1	-0.94	0.06	16788.0	-7.90	0.82	-	-	-
1000.0	-0.07	0.05	4217.0	-1.05	0.06	17782.8	-8.20	0.91	-	-	-
1059.3	-0.08	0.05	4466.8	-1.16	0.07	18836.5	-8.85	0.66	-	-	-
1122.0	-0.09	0.05	4731.5	-1.29	0.08	19952.6	-9.83	0.10	-	-	-
1188.5	-0.10	0.05	5011.9	-1.45	0.08	-	-	-	-	-	-
1258.9	-0.11	0.05	5308.8	-1.61	0.09	-	-	-	-	-	-
1333.5	-0.12	0.06	5623.4	-1.80	0.08	-	-	-	-	-	-
1412.5	-0.13	0.06	5956.6	-2.00	0.07	-	-	-	-	-	-
1496.2	-0.15	0.05	6309.6	-2.21	0.08	-	-	-	-	-	-

Technician: Lenard Lukasik Date: August 20, 2012

ACCREDITED

PCB PIEZOTRONICS
VIBRATION DIVISION
3425 Walden Avenue, Depew, New York, 14043
TEL: 888-684-0013 FAX: 716-685-3886 www.pcb.com

~ Calibration Report ~

Microphone Model: 377B02 Serial Number: LW135145 Description: 1/2" Free-Field Microphone

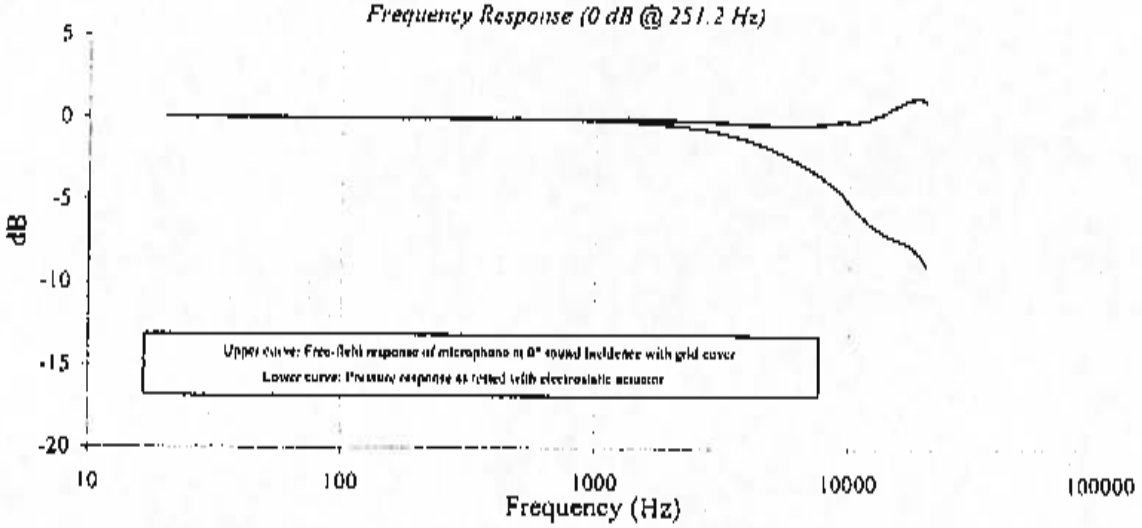
Calibration Data

Open Circuit Sensitivity @ 251.2 Hz: 49.25 mV/Pa
-26.15 dB re 1V/Pa

Polarization Voltage, External: 0 V
Capacitance: 12.5 pF

Temperature: 71 °F (22°C) Ambient Pressure: 997 mbar Relative Humidity: 29 %

Frequency Response (0 dB @ 251.2 Hz)



Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)
20.0	0.08	0.08	1584.9	-0.26	-0.05	6683.4	-2.87	-0.35	-	-	-
25.1	0.02	0.02	1678.8	-0.28	-0.05	7079.5	-3.10	-0.32	-	-	-
31.6	0.04	0.04	1778.3	-0.31	-0.06	7498.9	-3.34	-0.27	-	-	-
39.8	0.02	0.02	1883.7	-0.34	-0.06	7943.3	-3.65	-0.26	-	-	-
50.1	0.04	0.04	1995.3	-0.38	-0.07	8414.0	-3.95	-0.22	-	-	-
63.1	0.03	0.03	2113.5	-0.42	-0.08	8912.5	-4.26	-0.15	-	-	-
79.4	0.01	0.01	2238.7	-0.47	-0.10	9440.6	-4.60	-0.08	-	-	-
100.0	0.01	0.01	2371.4	-0.52	-0.11	10000.0	-5.11	-0.16	-	-	-
125.9	0.04	0.04	2511.9	-0.58	-0.12	10592.5	-5.56	-0.16	-	-	-
158.5	-0.01	-0.01	2660.7	-0.64	-0.13	11220.2	-5.89	-0.03	-	-	-
199.5	-0.01	-0.01	2818.4	-0.70	-0.14	11885.0	-6.29	0.03	-	-	-
251.2	0.00	0.00	2985.4	-0.78	-0.16	12589.3	-6.54	0.23	-	-	-
316.2	-0.02	-0.01	3162.3	-0.87	-0.19	13335.2	-6.84	0.35	-	-	-
398.1	-0.03	-0.03	3349.7	-0.96	-0.22	14125.4	-7.04	0.55	-	-	-
501.2	-0.03	0.01	3548.1	-1.06	-0.24	14962.4	-7.18	0.79	-	-	-
631.0	-0.06	-0.02	3758.4	-1.17	-0.27	15848.9	-7.36	0.99	-	-	-
794.3	-0.06	0.03	3981.1	-1.29	-0.29	16788.0	-7.53	1.19	-	-	-
1000.0	-0.11	0.01	4217.0	-1.42	-0.31	17782.8	-7.81	1.30	-	-	-
1059.3	-0.13	0.00	4466.8	-1.56	-0.33	18836.5	-8.19	1.32	-	-	-
1122.0	-0.13	0.01	4731.5	-1.70	-0.33	19952.6	-8.80	1.13	-	-	-
1188.5	-0.15	0.00	5011.9	-1.87	-0.34	-	-	-	-	-	-
1258.9	-0.17	-0.01	5308.8	-2.05	-0.35	-	-	-	-	-	-
1333.5	-0.11	0.07	5623.4	-2.23	-0.35	-	-	-	-	-	-
1412.5	-0.17	0.02	5956.6	-2.45	-0.38	-	-	-	-	-	-
1496.2	-0.23	-0.03	6309.6	-2.65	-0.36	-	-	-	-	-	-

Technician: Milton Munger Date: December 14, 2012

PCB PIEZOTRONICS
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THE MODAL SHOP INC.
3149 East Kemper Rd.
Cincinnati, OH 45241
Ph : 513-351-9919
Fax: 513-458-2172
www.modalshop.com

~Calibration Certificate~

Manufacturer:	Larson Davis	Asset ID:	
Model:	CAL200	Calibration Date:	May 06, 2013 14:22:29
Serial Number:	8807	Due Date:	
Description:	Acoustic Calibrator	Technician:	EAD
Customer:	TMS Rental	Approval:	

Calibration Results:

Temperature:	23 °C (73 °F)
Humidity:	43.30%
Pressure:	992.2 mbar

Measured SPL : 94.19 dB re. 20µPa

Measured Frequency : 1,000.00 Hz

Upon receipt for calibration, the instrument was found to be:
WITHIN the stated tolerance of the manufacturer's specification.

Note: **As Found / As Left: In Tolerance.**

Measurement uncertainty at 95% confidence level: 0.3 dB

The subject instrument was calibrated to the indicated specification using standards stated below or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the customer.

This calibration is traceable through : 681/280411-11

Notes:
The calibration was performed under operating procedures intended to implement the requirements of ISO 9001, ISO 17025 and ANSI Z540. Unless otherwise noted, the reported value is both "as found" and "as left" data. Calibration results relate only to the items calibrated. This certificate may not be reproduced, except in full, without written permission.

Reference Equipment Used:

Manuf.	*Model*	*Serial*	*Cal. Date*	*Due Date*
GRAS	40AG	77606	9/21/2012	9/21/2013

SoundPLAN Modeling Results - Standard Plant Design

Carroll County Energy Center - Receiver Sound Levels
Standard Plant Design

Name	SPL dB(A)	
Property Line - East	53.5	
Property Line - North	61.5	
Property Line - South	59.2	
Property Line - West	46.8	
Receiver R1	48.5	
Receiver R2	53.3	
Receiver R3	54.5	
Receiver R4	55.3	
Receiver R5	51.1	
Receiver R6	47.2	
Receiver R7	48.7	

Carroll County Energy Center - Receiver Spectra
Standard Plant Design

31Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Receiver Property Line - East								
71.2	69.4	64.5	54.0	49.5	47.1	36.0	23.4	-2.2
Receiver Property Line - North								
71.9	70.8	69.1	62.8	59.5	56.5	47.4	36.5	16.7
Receiver Property Line - South								
73.5	70.9	67.5	59.8	56.7	52.4	48.9	43.4	27.2
Receiver Property Line - West								
61.3	59.4	56.4	49.1	43.9	40.5	28.9	6.1	-58.2
Receiver Receiver R1								
65.2	62.8	57.9	50.4	45.8	42.2	32.2	12.5	-50.3
Receiver Receiver R2								
69.1	67.1	62.3	54.8	50.4	47.4	39.8	25.8	-18.9
Receiver Receiver R3								
71.4	69.3	64.6	55.4	50.8	48.1	42.1	32.0	-0.6
Receiver Receiver R4								
71.2	69.8	65.6	55.6	51.8	49.4	40.8	32.3	12.5
Receiver Receiver R5								
68.3	66.4	61.9	52.3	47.7	44.1	35.3	24.1	-2.5
Receiver Receiver R6								
64.6	62.3	57.2	48.9	44.2	40.5	31.2	12.8	-42.2
Receiver Receiver R7								
64.9	62.6	57.8	50.4	46.0	42.3	34.1	12.5	-57.5

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Carroll County Energy Center - Source List
Standard Plant Design

Source	PWL dB(A)	Lw'	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
ACHE - Bottom of Fan Deck	115.0	87.43	Area	0	571.94	116.5	119.0	119.1	115.4	112.9	110.3	104.5	99.0	92.9
ACHE - Top of Fan Deck	115.0	87.43	Area	0	571.94	116.5	119.0	119.1	115.4	112.9	110.3	104.5	99.0	92.9
Air Cooled Condenser -Bottom of Fan Deck	121.9	83.82	Area	0	6449.61	123.4	125.9	126.0	122.3	119.8	117.2	111.4	105.9	99.8
Air Cooled Condenser -Top of Fan Deck	121.9	83.81	Area	0	6459.52	123.4	125.9	126.0	122.3	119.8	117.2	111.4	105.9	99.8
Ammonia Forwarding Pump 1	93.0	93.00	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Ammonia Forwarding Pump 2	93.0	93.00	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Ammonia Injection Skid 1	98.1	98.10	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Ammonia Injection Skid 2	98.1	98.10	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Auxiliary Transformer 1 - Side 1	82.0	73.30	Area	3	7.42	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 1 - Side 2	82.0	71.60	Area	3	10.97	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 1 - Side 3	82.0	73.26	Area	3	7.48	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 1 - Side 4	82.0	71.60	Area	3	10.97	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 1 - Top	82.0	72.42	Area	0	9.08	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Side 1	82.0	73.30	Area	3	7.42	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Side 2	82.0	71.60	Area	3	10.97	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Side 3	82.0	73.26	Area	3	7.48	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Side 4	82.0	71.60	Area	3	10.97	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Top	82.0	72.42	Area	0	9.08	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
BFW Enclosure 1 - Roof	98.9	76.92	Area	0	158.68	115.4	112.4	109.4	104.4	92.4	86.4	82.4	74.4	68.4
BFW Enclosure 1 - Side 1	95.2	76.92	Area	3	67.84	111.7	108.7	105.7	100.7	88.7	82.7	78.7	70.7	64.7
BFW Enclosure 1 - Side 2	93.8	76.92	Area	3	49.08	110.3	107.3	104.3	99.3	87.3	81.3	77.3	69.3	63.3
BFW Enclosure 1 - Side 3	95.2	76.92	Area	3	67.57	111.7	108.7	105.7	100.7	88.7	82.7	78.7	70.7	64.7
BFW Enclosure 1 - Side 4	93.8	76.92	Area	3	48.82	110.3	107.3	104.3	99.3	87.3	81.3	77.3	69.3	63.3
BFW Enclosure 2 - Roof	98.9	76.92	Area	0	158.68	115.4	112.4	109.4	104.4	92.4	86.4	82.4	74.4	68.4
BFW Enclosure 2 - Side 1	95.2	76.92	Area	3	67.84	111.7	108.7	105.7	100.7	88.7	82.7	78.7	70.7	64.7
BFW Enclosure 2 - Side 2	93.8	76.92	Area	3	49.08	110.3	107.3	104.3	99.3	87.3	81.3	77.3	69.3	63.3
BFW Enclosure 2 - Side 3	95.2	76.92	Area	3	67.57	111.7	108.7	105.7	100.7	88.7	82.7	78.7	70.7	64.7
BFW Enclosure 2 - Side 4	93.8	76.92	Area	3	48.82	110.3	107.3	104.3	99.3	87.3	81.3	77.3	69.3	63.3
Condensate Pump 1	98.1	98.10	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Condensate Pump 2	98.1	98.10	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Cycle Booster Pumps	93.0	93.00	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Demin Water Pumps	93.0	93.00	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Fuel Gas Metering and Regulating Area	98.0	98.00	Point	0		-10.2	-10.6	-10.5	77.4	79.4	84.4	94.4	92.4	84.4

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Carroll County Energy Center - Source List
Standard Plant Design

Source	PWL dB(A)	Lw'	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Gas Performance Heater 1	103.2	85.30	Area	0	62.25	99.3	96.7	84.9	82.7	77.0	78.8	86.5	84.9	104.1
Gas Performance Heater 2	103.2	85.30	Area	0	62.25	99.3	96.7	84.9	82.7	77.0	78.8	86.5	84.9	104.1
GE 7FA05 - Accessory Module 1 - E Side	100.0	84.08	Area	3	39.11	101.0	103.6	97.6	94.6	93.6	93.6	95.6	89.6	83.6
GE 7FA05 - Accessory Module 1 - W Side	100.0	84.08	Area	3	39.11	101.0	103.6	97.6	94.6	93.6	93.6	95.6	89.6	83.6
GE 7FA05 - Accessory Module 2 - E Side	100.0	84.08	Area	3	39.11	101.0	103.6	97.6	94.6	93.6	93.6	95.6	89.6	83.6
GE 7FA05 - Accessory Module 2 - W Side	100.0	84.08	Area	3	39.11	101.0	103.6	97.6	94.6	93.6	93.6	95.6	89.6	83.6
GE 7FA05 - CTG Air Inlet 1	103.2	81.68	Area	0	141.32	112.0	115.0	115.0	99.0	93.0	94.0	97.0	90.0	78.0
GE 7FA05 - CTG Air Inlet 2	103.2	81.68	Area	0	141.32	112.0	115.0	115.0	99.0	93.0	94.0	97.0	90.0	78.0
GE 7FA05 - Exhaust Diffuser 1 - N Side	107.0	88.74	Area	3	67.05	115.9	115.9	109.9	105.9	102.9	100.9	98.9	97.9	94.9
GE 7FA05 - Exhaust Diffuser 1 - S Side	107.0	88.75	Area	3	66.89	115.9	115.9	109.9	105.9	102.9	100.9	98.9	97.9	94.9
GE 7FA05 - Exhaust Diffuser 2 - N Side	107.0	88.74	Area	3	67.05	115.9	115.9	109.9	105.9	102.9	100.9	98.9	97.9	94.9
GE 7FA05 - Exhaust Diffuser 2 - S Side	107.0	88.75	Area	3	66.89	115.9	115.9	109.9	105.9	102.9	100.9	98.9	97.9	94.9
GE 7FA05 - Generator 1 - N Side	104.0	84.59	Area	3	87.33	102.0	102.0	101.0	98.0	100.0	99.0	98.0	93.0	84.0
GE 7FA05 - Generator 1 - S Side	104.0	84.59	Area	3	87.39	102.0	102.0	101.0	98.0	100.0	99.0	98.0	93.0	84.0
GE 7FA05 - Generator 2 - N Side	104.0	84.59	Area	3	87.33	102.0	102.0	101.0	98.0	100.0	99.0	98.0	93.0	84.0
GE 7FA05 - Generator 2 - S Side	104.0	84.59	Area	3	87.39	102.0	102.0	101.0	98.0	100.0	99.0	98.0	93.0	84.0
GE 7FA05 - HRSG - Exhaust Stack 1	117.0	117.00	Point	0		124.5	123.1	121.2	114.1	114.1	114.1	105.1	98.1	93.1
GE 7FA05 - HRSG - Exhaust Stack 2	117.0	117.00	Point	0		124.5	123.1	121.2	114.1	114.1	114.1	105.1	98.1	93.1
GE 7FA05 - HRSG - Piping and Valves 1	85.5	69.15	Line	0	43.67	95.5	101.0	98.1	90.1	78.0	67.0	47.0	40.0	35.0
GE 7FA05 - HRSG - Piping and Valves 2	85.5	69.15	Line	0	43.67	95.5	101.0	98.1	90.1	78.0	67.0	47.0	40.0	35.0
GE 7FA05 - HRSG 1 - Body - N Side	95.0	67.93	Area	3	509.04	104.4	109.0	107.0	100.0	88.0	79.9	67.9	50.0	32.0
GE 7FA05 - HRSG 1 - Body - S Side	95.0	67.93	Area	3	509.49	104.4	109.0	107.0	100.0	88.0	79.9	67.9	50.0	32.0
GE 7FA05 - HRSG 1 - Stack Walls - Side 1	89.0	67.27	Area	3	148.90	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 2	89.0	66.92	Area	3	161.41	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 3	89.0	67.05	Area	3	156.78	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 4	89.0	67.20	Area	3	151.21	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 5	89.0	67.39	Area	3	144.71	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 6	89.0	66.89	Area	3	162.68	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 7	89.0	66.83	Area	3	164.91	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 8	89.0	67.30	Area	3	147.95	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 1 - T1 - N Side	100.0	79.18	Area	3	120.68	114.9	115.4	111.5	104.4	94.4	87.4	80.4	63.4	46.4
GE 7FA05 - HRSG 1 - T1 - S Side	100.0	79.18	Area	3	120.80	114.9	115.4	111.5	104.4	94.4	87.4	80.4	63.4	46.4
GE 7FA05 - HRSG 1 - T2 - N Side	100.0	76.96	Area	3	201.26	114.9	115.4	111.5	104.4	94.4	87.4	80.4	63.4	46.4

Carroll County Energy Center - Source List
Standard Plant Design

Source	PWL dB(A)	Lw'	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
GE 7FA05 - HRSG 1 - T2 - S Side	100.0	76.96	Area	3	201.45	114.9	115.4	111.5	104.4	94.4	87.4	80.4	63.4	46.4
GE 7FA05 - HRSG 2 - Body - N Side	95.0	67.93	Area	3	509.04	104.4	109.0	107.0	100.0	88.0	79.9	67.9	50.0	32.0
GE 7FA05 - HRSG 2 - Body - S Side	95.0	67.93	Area	3	509.49	104.4	109.0	107.0	100.0	88.0	79.9	67.9	50.0	32.0
GE 7FA05 - HRSG 2 - Stack Walls - Side 1	89.0	67.27	Area	3	148.90	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 2	89.0	66.92	Area	3	161.41	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 3	89.0	67.05	Area	3	156.78	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 4	89.0	67.20	Area	3	151.21	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 5	89.0	67.39	Area	3	144.71	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 6	89.0	66.89	Area	3	162.68	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 7	89.0	66.83	Area	3	164.91	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 8	89.0	67.30	Area	3	147.95	98.9	104.5	101.5	93.5	81.5	70.5	50.4	43.5	38.5
GE 7FA05 - HRSG 2 - T1 - N Side	100.0	79.18	Area	3	120.68	114.9	115.4	111.5	104.4	94.4	87.4	80.4	63.4	46.4
GE 7FA05 - HRSG 2 - T1 - S Side	100.0	79.18	Area	3	120.80	114.9	115.4	111.5	104.4	94.4	87.4	80.4	63.4	46.4
GE 7FA05 - HRSG 2 - T2 - N Side	100.0	76.96	Area	3	201.26	114.9	115.4	111.5	104.4	94.4	87.4	80.4	63.4	46.4
GE 7FA05 - HRSG 2 - T2 - S Side	100.0	76.96	Area	3	201.45	114.9	115.4	111.5	104.4	94.4	87.4	80.4	63.4	46.4
GE 7FA05 - Inlet Ducting 1 - N Side	84.0	67.21	Area	0	47.80	97.6	96.6	90.6	88.6	77.6	70.6	77.6	50.6	24.6
GE 7FA05 - Inlet Ducting 1 - S Side	84.0	67.20	Area	0	47.83	97.6	96.6	90.6	88.6	77.6	70.6	77.6	50.6	24.6
GE 7FA05 - Inlet Ducting 2 - N Side	84.0	67.21	Area	0	47.80	97.6	96.6	90.6	88.6	77.6	70.6	77.6	50.6	24.6
GE 7FA05 - Inlet Ducting 2 - S Side	84.0	67.20	Area	0	47.83	97.6	96.6	90.6	88.6	77.6	70.6	77.6	50.6	24.6
GE 7FA05 - Inlet Plenum 1 - N Side	99.0	86.54	Area	3	17.64	85.8	88.8	85.8	87.8	86.8	87.8	96.8	86.8	75.8
GE 7FA05 - Inlet Plenum 1 - S Side	99.0	86.54	Area	3	17.64	85.8	88.8	85.8	87.8	86.8	87.8	96.8	86.8	75.8
GE 7FA05 - Inlet Plenum 2 - N Side	99.0	86.54	Area	3	17.64	85.8	88.8	85.8	87.8	86.8	87.8	96.8	86.8	75.8
GE 7FA05 - Inlet Plenum 2 - S Side	99.0	86.54	Area	3	17.64	85.8	88.8	85.8	87.8	86.8	87.8	96.8	86.8	75.8
GE 7FA05 - Load Compartment 1 - N Side	102.0	90.59	Area	3	13.82	103.6	105.6	105.6	100.6	95.6	93.6	96.6	93.6	86.6
GE 7FA05 - Load Compartment 1 - S Side	102.0	90.64	Area	3	13.67	103.6	105.6	105.6	100.6	95.6	93.6	96.6	93.6	86.6
GE 7FA05 - Load Compartment 2 - N Side	102.0	90.59	Area	3	13.82	103.6	105.6	105.6	100.6	95.6	93.6	96.6	93.6	86.6
GE 7FA05 - Load Compartment 2 - S Side	102.0	90.64	Area	3	13.67	103.6	105.6	105.6	100.6	95.6	93.6	96.6	93.6	86.6
GE 7FA05 - Turbine Compartment 1 - N Sid	107.0	89.37	Area	3	57.99	108.2	109.8	103.9	102.8	99.8	97.8	102.8	98.8	93.8
GE 7FA05 - Turbine Compartment 1 - S Sid	107.0	89.37	Area	3	57.99	108.2	109.8	103.9	102.8	99.8	97.8	102.8	98.8	93.8
GE 7FA05 - Turbine Compartment 2 - N Sid	107.0	89.37	Area	3	57.99	108.2	109.8	103.9	102.8	99.8	97.8	102.8	98.8	93.8
GE 7FA05 - Turbine Compartment 2 - S Sid	107.0	89.37	Area	3	57.99	108.2	109.8	103.9	102.8	99.8	97.8	102.8	98.8	93.8
GE 7FA05 - Turbine Compartment Vent Fan	103.8	103.82	Point	0		102.5	102.0	110.1	101.1	98.0	95.0	94.0	98.0	95.0
GE 7FA05 - Turbine Compartment Vent Fan	103.8	103.82	Point	0		102.5	102.0	110.1	101.1	98.0	95.0	94.0	98.0	95.0

Carroll County Energy Center - Source List
Standard Plant Design

Source	PWL dB(A)	Lw'	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
GSU Transformer 1 - Side 1	96.0	83.65	Area	3	17.19	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 1 - Side 2	96.0	81.88	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 1 - Side 3	96.0	83.65	Area	3	17.18	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 1 - Side 4	96.0	81.88	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 1 - Top	96.0	82.72	Area	0	21.27	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Side 1	96.0	83.65	Area	3	17.19	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Side 2	96.0	81.88	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Side 3	96.0	83.65	Area	3	17.18	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Side 4	96.0	81.88	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Top	96.0	82.72	Area	0	21.27	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Side 1	96.0	83.65	Area	3	17.19	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Side 2	96.0	81.88	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Side 3	96.0	83.65	Area	3	17.18	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Side 4	96.0	81.88	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Top	96.0	82.72	Area	0	21.27	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
HRSG Duct Burner Skid 1	105.0	105.00	Point	0		98.4	108.9	103.0	103.0	100.0	98.9	97.9	96.9	92.9
HRSG Duct Burner Skid 2	105.0	105.00	Point	0		98.4	108.9	103.0	103.0	100.0	98.9	97.9	96.9	92.9
LP Recirc Pumps 1	93.0	93.00	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
LP Recirc Pumps 2	93.0	93.00	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Potable Water Pumps	93.0	93.00	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Roof-Mounted Ventilation Fan - Admin 1	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - Admin 2	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - Admin 3	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - Admin 4	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - STG 1	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - STG 2	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - STG 3	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - STG 4	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - WTB 1	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - WTB 2	87.8	87.78	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Service Water Pumps	93.0	93.00	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
SJAE Skid	98.1	98.10	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Small Transformer 1	83.0	83.00	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7

Carroll County Energy Center - Source List
Standard Plant Design

Source	PWL dB(A)	Lw'	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Small Transformer 2	83.0	83.00	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
Small Transformer 3	83.0	83.00	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
Small Transformer 4	83.0	83.00	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
Small Transformer 5	83.0	83.00	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
Small Transformer 6	83.0	83.00	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
STG Building - East Facade	89.9	61.13	Area	3	744.16	120.5	112.0	99.1	92.1	80.1	68.0	58.0	50.0	52.1
STG Building - East Vent Louver	94.0	78.49	Area	3	36.00	110.8	105.9	95.9	93.9	92.9	87.9	82.9	79.9	80.9
STG Building - North Facade	93.0	61.13	Area	3	1542.49	123.7	115.2	102.3	95.3	83.2	71.2	61.2	53.2	55.2
STG Building - North Vent Louver	94.0	78.49	Area	3	36.00	110.8	105.9	95.9	93.9	92.9	87.9	82.9	79.9	80.9
STG Building - Roof	88.1	56.13	Area	0	1569.22	118.7	110.3	97.3	90.3	78.3	66.3	56.2	48.3	50.3
STG Building - South Facade	93.0	61.13	Area	3	1542.49	123.7	115.2	102.3	95.3	83.2	71.2	61.2	53.2	55.2
STG Building - South Vent Louver	94.0	78.49	Area	3	36.00	110.8	105.9	95.9	93.9	92.9	87.9	82.9	79.9	80.9
STG Building - West Facade	89.8	61.13	Area	3	742.64	120.5	112.0	99.1	92.1	80.0	68.0	58.0	50.0	52.0
STG Building - West Vent Louver	94.0	78.49	Area	3	36.00	110.8	105.9	95.9	93.9	92.9	87.9	82.9	79.9	80.9
Vacuum Pump Skid	98.1	98.10	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Water Treatment Building - East Facade	74.6	51.70	Area	3	193.50	89.3	91.8	85.9	79.9	65.8	56.8	49.8	43.8	42.8
Water Treatment Building - North Facade	77.5	51.70	Area	3	376.38	92.2	94.7	88.8	82.7	68.7	59.7	52.7	46.7	45.7
Water Treatment Building - Roof	76.1	46.70	Area	0	869.76	90.8	93.3	87.4	81.4	67.4	58.3	51.3	45.3	44.4
Water Treatment Building - South Facade	77.5	51.70	Area	3	376.32	92.2	94.7	88.8	82.7	68.7	59.7	52.7	46.7	45.7
Water Treatment Building - West Facade	74.5	51.70	Area	3	192.63	89.2	91.8	85.9	79.8	65.8	56.8	49.8	43.8	42.8

Carroll County Energy Center - Mean Propogation
Standard Plant Design

Source	PWL dB(A)	PWL/unit dB(A)	Tone dB	Non-Sphere dB	Distance m	Spreading dB	Ground Effect dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB	SPL dB(A)
Receiver Receiver R3												
ACHE - Bottom of Fan Deck	115.0	87.4	0.0	0.0	340.0	-61.6	1.2	-3.3	-1.3	-7.3	0.1	39.2
ACHE - Top of Fan Deck	115.0	87.4	0.0	0.0	340.0	-61.6	0.9	-2.8	-1.5	-8.3	0.1	38.2
Air Cooled Condenser -Bottom of Fan Deck	121.9	83.8	0.0	0.0	439.7	-63.9	0.7	-2.6	-1.8	-7.7	0.0	44.8
Air Cooled Condenser -Top of Fan Deck	121.9	83.8	0.0	0.0	440.8	-63.9	0.7	-7.0	-1.2	-7.4	0.0	41.6
Ammonia Forwarding Pump 1	93.0	93.0	0.0	0.0	270.7	-59.6	2.5	-0.3	-2.8	0.0	0.0	27.2
Ammonia Forwarding Pump 2	93.0	93.0	0.0	0.0	281.0	-60.0	2.5	-0.3	-2.9	0.0	0.0	26.5
Ammonia Injection Skid 1	98.1	98.1	0.0	0.0	309.5	-60.8	2.6	-7.4	-2.5	0.0	0.0	27.7
Ammonia Injection Skid 2	98.1	98.1	0.0	0.0	317.7	-61.0	2.7	-7.4	-2.5	0.0	1.8	27.8
Auxiliary Transformer 1 - Side 1	82.0	73.3	0.0	3.0	376.8	-62.5	2.4	-27.0	-1.1	0.0	3.1	-1.1
Auxiliary Transformer 1 - Side 2	82.0	71.6	0.0	3.0	375.9	-62.5	2.4	-27.0	-1.1	0.0	0.4	-3.7
Auxiliary Transformer 1 - Side 3	82.0	73.3	0.0	3.0	377.4	-62.5	2.4	-27.2	-1.1	0.0	2.4	-3.7
Auxiliary Transformer 1 - Side 4	82.0	71.6	0.0	3.0	378.3	-62.5	2.4	-27.2	-1.1	0.0	3.5	-2.7
Auxiliary Transformer 1 - Top	82.0	72.4	0.0	0.0	377.2	-62.5	2.1	-26.7	-1.1	0.0	2.5	-4.7
Auxiliary Transformer 2 - Side 1	82.0	73.3	0.0	3.0	386.4	-62.7	2.5	-22.1	-0.6	0.0	3.7	4.3
Auxiliary Transformer 2 - Side 2	82.0	71.6	0.0	3.0	385.7	-62.7	2.5	-23.3	-0.6	0.0	0.9	0.4
Auxiliary Transformer 2 - Side 3	82.0	73.3	0.0	3.0	387.4	-62.8	2.5	-26.6	-1.0	0.0	2.4	-3.8
Auxiliary Transformer 2 - Side 4	82.0	71.6	0.0	3.0	388.1	-62.8	2.5	-26.4	-1.0	0.0	4.9	-0.9
Auxiliary Transformer 2 - Top	82.0	72.4	0.0	0.0	387.0	-62.7	2.1	-22.3	-0.6	0.0	3.5	0.6
BFW Enclosure 1 - Roof	98.9	76.9	0.0	0.0	297.3	-60.5	2.3	-6.8	-0.4	0.0	0.0	31.8
BFW Enclosure 1 - Side 1	95.2	76.9	0.0	3.0	295.6	-60.4	1.5	-6.2	-0.4	0.0	0.0	30.6
BFW Enclosure 1 - Side 2	93.8	76.9	0.0	3.0	289.8	-60.2	1.5	-5.8	-0.5	0.0	0.0	29.5
BFW Enclosure 1 - Side 3	95.2	76.9	0.0	3.0	298.0	-60.5	1.5	-10.8	-0.2	0.0	0.0	26.5
BFW Enclosure 1 - Side 4	93.8	76.9	0.0	3.0	304.2	-60.7	1.6	-14.5	-0.2	0.0	0.1	21.6
BFW Enclosure 2 - Roof	98.9	76.9	0.0	0.0	309.1	-60.8	2.3	-16.7	-0.2	0.0	0.0	22.4
BFW Enclosure 2 - Side 1	95.2	76.9	0.0	3.0	306.8	-60.7	1.6	-16.5	-0.2	0.0	0.0	21.3
BFW Enclosure 2 - Side 2	93.8	76.9	0.0	3.0	301.9	-60.6	1.5	-15.2	-0.2	0.0	0.0	21.2
BFW Enclosure 2 - Side 3	95.2	76.9	0.0	3.0	310.6	-60.8	1.6	-18.4	-0.2	0.0	0.0	19.2
BFW Enclosure 2 - Side 4	93.8	76.9	0.0	3.0	315.8	-61.0	1.6	-21.9	-0.2	0.0	0.0	14.0
Condensate Pump 1	98.1	98.1	0.0	0.0	397.7	-63.0	3.2	-27.9	-2.7	0.0	0.0	5.9
Condensate Pump 2	98.1	98.1	0.0	0.0	401.6	-63.1	3.2	-27.9	-2.7	0.0	0.0	5.8
Cycle Booster Pumps	93.0	93.0	0.0	0.0	316.3	-61.0	2.9	-6.5	-3.2	0.0	0.1	23.0

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Carroll County Energy Center - Mean Propogation
Standard Plant Design

Source	PWL dB(A)	PWL/unit dB(A)	Tone dB	Non-Sphere dB	Distance m	Spreading dB	Ground Effect dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB	SPL dB(A)
Demin Water Pumps	93.0	93.0	0.0	0.0	313.6	-60.9	2.9	-25.4	-1.7	0.0	8.6	14.9
Fuel Gas Metering and Regulating Area	98.0	98.0	0.0	0.0	411.7	-63.3	3.8	-21.3	-4.3	0.0	0.0	10.4
Gas Performance Heater 1	103.2	85.3	0.0	0.0	340.7	-61.6	3.7	-8.6	-16.7	0.0	0.0	16.5
Gas Performance Heater 2	103.2	85.3	0.0	0.0	347.7	-61.8	3.7	-17.6	-13.1	0.0	0.8	12.0
GE 7FA05 - Accessory Module 1 - E Side	100.0	84.1	0.0	3.0	339.3	-61.6	3.2	-28.0	-2.5	0.0	1.9	14.4
GE 7FA05 - Accessory Module 1 - W Side	100.0	84.1	0.0	3.0	342.8	-61.7	3.2	-28.1	-2.5	0.0	1.9	14.1
GE 7FA05 - Accessory Module 2 - E Side	100.0	84.1	0.0	3.0	349.0	-61.8	3.2	-27.8	-2.4	0.0	2.5	14.6
GE 7FA05 - Accessory Module 2 - W Side	100.0	84.1	0.0	3.0	352.5	-61.9	3.2	-27.9	-2.5	0.0	4.8	16.1
GE 7FA05 - CTG Air Inlet 1	103.2	81.7	0.0	0.0	366.0	-62.3	1.3	-5.3	-1.6	0.0	1.9	35.7
GE 7FA05 - CTG Air Inlet 2	103.2	81.7	0.0	0.0	374.1	-62.5	1.3	-4.7	-1.7	0.0	1.0	35.0
GE 7FA05 - Exhaust Diffuser 1 - N Side	107.0	88.7	0.0	3.0	331.8	-61.4	2.4	-26.9	-1.9	0.0	4.8	25.2
GE 7FA05 - Exhaust Diffuser 1 - S Side	107.0	88.7	0.0	3.0	330.8	-61.4	2.4	-6.2	-2.8	0.0	0.8	40.5
GE 7FA05 - Exhaust Diffuser 2 - N Side	107.0	88.7	0.0	3.0	341.1	-61.6	2.4	-24.8	-1.4	0.0	1.4	24.1
GE 7FA05 - Exhaust Diffuser 2 - S Side	107.0	88.7	0.0	3.0	339.4	-61.6	2.5	-6.1	-2.8	0.0	0.4	38.9
GE 7FA05 - Generator 1 - N Side	104.0	84.6	0.0	3.0	353.8	-62.0	2.7	-27.5	-2.1	0.0	3.2	19.0
GE 7FA05 - Generator 1 - S Side	104.0	84.6	0.0	3.0	352.5	-61.9	2.7	-7.5	-2.2	0.0	0.0	35.5
GE 7FA05 - Generator 2 - N Side	104.0	84.6	0.0	3.0	362.7	-62.2	2.7	-25.1	-1.6	0.0	3.4	21.7
GE 7FA05 - Generator 2 - S Side	104.0	84.6	0.0	3.0	360.4	-62.1	2.7	-8.0	-2.1	0.0	0.0	34.0
GE 7FA05 - HRSG - Exhaust Stack 1	117.0	117.0	0.0	0.0	296.5	-60.4	0.8	0.0	-1.1	-8.8	0.0	46.8
GE 7FA05 - HRSG - Exhaust Stack 2	117.0	117.0	0.0	0.0	306.5	-60.7	0.8	0.0	-1.1	-8.8	0.0	46.5
GE 7FA05 - HRSG - Piping and Valves 1	85.5	69.1	0.0	0.0	309.6	-60.8	0.2	-2.1	-0.3	0.0	0.0	21.2
GE 7FA05 - HRSG - Piping and Valves 2	85.5	69.1	0.0	0.0	321.6	-61.1	0.2	-7.5	-0.2	0.0	0.0	15.9
GE 7FA05 - HRSG 1 - Body - N Side	95.0	67.9	0.0	3.0	297.8	-60.5	0.1	-6.4	-0.2	0.0	0.0	30.2
GE 7FA05 - HRSG 1 - Body - S Side	95.0	67.9	0.0	3.0	296.1	-60.4	0.4	-1.3	-0.3	0.0	0.0	35.2
GE 7FA05 - HRSG 1 - Stack Walls - Side 1	89.0	67.3	0.0	3.0	287.0	-60.2	0.2	-7.4	-0.1	0.0	2.6	26.6
GE 7FA05 - HRSG 1 - Stack Walls - Side 2	89.0	66.9	0.0	3.0	285.3	-60.1	0.2	-4.8	-0.2	0.0	3.1	29.6
GE 7FA05 - HRSG 1 - Stack Walls - Side 3	89.0	67.0	0.0	3.0	283.4	-60.0	0.4	-0.4	-0.2	0.0	0.1	30.9
GE 7FA05 - HRSG 1 - Stack Walls - Side 4	89.0	67.2	0.0	3.0	282.2	-60.0	0.4	-0.4	-0.2	0.0	0.0	30.8
GE 7FA05 - HRSG 1 - Stack Walls - Side 5	89.0	67.4	0.0	3.0	282.6	-60.0	0.4	-0.4	-0.2	0.0	0.0	30.8
GE 7FA05 - HRSG 1 - Stack Walls - Side 6	89.0	66.9	0.0	3.0	284.2	-60.1	0.4	-0.4	-0.2	0.0	0.0	30.8
GE 7FA05 - HRSG 1 - Stack Walls - Side 7	89.0	66.8	0.0	3.0	286.2	-60.1	0.2	-5.9	-0.2	0.0	0.0	25.4
GE 7FA05 - HRSG 1 - Stack Walls - Side 8	89.0	67.3	0.0	3.0	287.4	-60.2	0.2	-8.7	-0.1	0.0	0.0	22.7

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Carroll County Energy Center - Mean Propogation
Standard Plant Design

Source	PWL dB(A)	PWL/unit dB(A)	Tone dB	Non-Sphere dB	Distance m	Spreading dB	Ground Effect dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB	SPL dB(A)
GE 7FA05 - HRSG 1 - T1 - N Side	100.0	79.2	0.0	3.0	322.9	-61.2	0.7	-11.8	-0.1	0.0	0.1	29.7
GE 7FA05 - HRSG 1 - T1 - S Side	100.0	79.2	0.0	3.0	321.9	-61.1	1.0	-4.0	-0.4	0.0	0.0	36.9
GE 7FA05 - HRSG 1 - T2 - N Side	100.0	77.0	0.0	3.0	313.2	-60.9	0.3	-10.7	-0.1	0.0	0.0	30.7
GE 7FA05 - HRSG 1 - T2 - S Side	100.0	77.0	0.0	3.0	311.8	-60.9	0.8	-2.3	-0.4	0.0	0.0	38.9
GE 7FA05 - HRSG 2 - Body - N Side	95.0	67.9	0.0	3.0	308.4	-60.8	0.1	-16.4	-0.2	0.0	0.0	20.0
GE 7FA05 - HRSG 2 - Body - S Side	95.0	67.9	0.0	3.0	305.6	-60.7	0.4	-1.5	-0.3	0.0	0.0	34.7
GE 7FA05 - HRSG 2 - Stack Walls - Side 1	89.0	67.3	0.0	3.0	297.2	-60.5	0.2	-7.0	-0.1	0.0	4.0	27.9
GE 7FA05 - HRSG 2 - Stack Walls - Side 2	89.0	66.9	0.0	3.0	295.3	-60.4	0.2	-4.5	-0.2	0.0	2.7	29.2
GE 7FA05 - HRSG 2 - Stack Walls - Side 3	89.0	67.0	0.0	3.0	293.4	-60.3	0.4	-1.0	-0.2	0.0	0.0	29.9
GE 7FA05 - HRSG 2 - Stack Walls - Side 4	89.0	67.2	0.0	3.0	292.5	-60.3	0.3	-1.2	-0.2	0.0	0.0	29.8
GE 7FA05 - HRSG 2 - Stack Walls - Side 5	89.0	67.4	0.0	3.0	293.1	-60.3	0.3	-1.2	-0.2	0.0	0.0	29.7
GE 7FA05 - HRSG 2 - Stack Walls - Side 6	89.0	66.9	0.0	3.0	294.9	-60.4	0.3	-1.2	-0.2	0.0	0.0	29.7
GE 7FA05 - HRSG 2 - Stack Walls - Side 7	89.0	66.8	0.0	3.0	296.9	-60.4	0.2	-6.5	-0.2	0.0	0.0	24.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 8	89.0	67.3	0.0	3.0	297.8	-60.5	0.2	-9.0	-0.1	0.0	0.6	22.6
GE 7FA05 - HRSG 2 - T1 - N Side	100.0	79.2	0.0	3.0	332.6	-61.4	0.7	-14.0	-0.1	0.0	0.0	27.2
GE 7FA05 - HRSG 2 - T1 - S Side	100.0	79.2	0.0	3.0	330.6	-61.4	1.0	-4.0	-0.4	0.0	0.0	36.4
GE 7FA05 - HRSG 2 - T2 - N Side	100.0	77.0	0.0	3.0	323.2	-61.2	0.4	-13.8	-0.1	0.0	0.0	27.4
GE 7FA05 - HRSG 2 - T2 - S Side	100.0	77.0	0.0	3.0	320.7	-61.1	0.8	-2.5	-0.4	0.0	0.1	38.3
GE 7FA05 - Inlet Ducting 1 - N Side	84.0	67.2	0.0	0.0	355.0	-62.0	1.6	-12.8	-0.4	0.0	2.0	11.4
GE 7FA05 - Inlet Ducting 1 - S Side	84.0	67.2	0.0	0.0	354.2	-62.0	1.6	0.0	-1.4	0.0	3.2	23.6
GE 7FA05 - Inlet Ducting 2 - N Side	84.0	67.2	0.0	0.0	363.6	-62.2	1.6	-7.1	-0.7	0.0	0.4	14.6
GE 7FA05 - Inlet Ducting 2 - S Side	84.0	67.2	0.0	0.0	362.3	-62.2	1.6	0.0	-1.4	0.0	4.4	24.6
GE 7FA05 - Inlet Plenum 1 - N Side	99.0	86.5	0.0	3.0	345.2	-61.8	3.1	-28.0	-3.3	0.0	4.8	14.1
GE 7FA05 - Inlet Plenum 1 - S Side	99.0	86.5	0.0	3.0	343.8	-61.7	3.2	-7.9	-3.3	0.0	0.0	29.1
GE 7FA05 - Inlet Plenum 2 - N Side	99.0	86.5	0.0	3.0	354.3	-62.0	3.2	-26.6	-3.1	0.0	3.4	13.6
GE 7FA05 - Inlet Plenum 2 - S Side	99.0	86.5	0.0	3.0	351.9	-61.9	3.2	-7.8	-3.4	0.0	0.1	27.6
GE 7FA05 - Load Compartment 1 - N Side	102.0	90.6	0.0	3.0	347.3	-61.8	2.7	-27.3	-2.4	0.0	3.4	17.5
GE 7FA05 - Load Compartment 1 - S Side	102.0	90.6	0.0	3.0	346.0	-61.8	2.7	-7.4	-2.7	0.0	0.0	33.4
GE 7FA05 - Load Compartment 2 - N Side	102.0	90.6	0.0	3.0	356.3	-62.0	2.7	-24.4	-1.5	0.0	2.2	20.1
GE 7FA05 - Load Compartment 2 - S Side	102.0	90.6	0.0	3.0	354.0	-62.0	2.7	-7.4	-2.7	0.0	0.0	32.2
GE 7FA05 - Turbine Compartment 1 - N Sid	107.0	89.4	0.0	3.0	340.0	-61.6	2.8	-27.7	-3.1	0.0	5.4	23.6
GE 7FA05 - Turbine Compartment 1 - S Sid	107.0	89.4	0.0	3.0	338.9	-61.6	2.9	-7.2	-3.5	0.0	2.1	39.9

Carroll County Energy Center - Mean Propogation
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GE 7FA05 - Turbine Compartment 2 - N Sid	107.0	89.4	0.0	3.0	349.1	-61.9	2.9	-24.9	-2.3	0.0	2.1	23.6
GE 7FA05 - Turbine Compartment 2 - S Sid	107.0	89.4	0.0	3.0	347.3	-61.8	2.9	-7.2	-3.5	0.0	1.2	37.5
GE 7FA05 - Turbine Compartment Vent Fan	103.8	103.8	0.0	0.0	339.5	-61.6	2.8	-8.4	-1.9	0.0	4.1	37.3
GE 7FA05 - Turbine Compartment Vent Fan	103.8	103.8	0.0	0.0	348.2	-61.8	2.8	-0.1	-4.2	0.0	0.0	38.4
GSU Transformer 1 - Side 1	96.0	83.6	0.0	3.0	384.5	-62.7	2.3	-26.4	-1.0	0.0	0.0	9.8
GSU Transformer 1 - Side 2	96.0	81.9	0.0	3.0	383.1	-62.7	2.3	-26.9	-1.1	0.0	0.0	8.8
GSU Transformer 1 - Side 3	96.0	83.6	0.0	3.0	385.5	-62.7	2.3	-27.0	-1.1	0.0	0.0	8.4
GSU Transformer 1 - Side 4	96.0	81.9	0.0	3.0	386.9	-62.7	2.3	-26.8	-1.1	0.0	0.0	8.4
GSU Transformer 1 - Top	96.0	82.7	0.0	0.0	385.1	-62.7	2.9	-27.1	-1.0	0.0	0.0	6.9
GSU Transformer 2 - Side 1	96.0	83.6	0.0	3.0	393.5	-62.9	2.3	-23.7	-0.7	0.0	0.0	12.2
GSU Transformer 2 - Side 2	96.0	81.9	0.0	3.0	392.5	-62.9	2.3	-25.6	-0.9	0.0	0.0	10.1
GSU Transformer 2 - Side 3	96.0	83.6	0.0	3.0	395.1	-62.9	2.3	-26.5	-1.0	0.0	0.0	7.7
GSU Transformer 2 - Side 4	96.0	81.9	0.0	3.0	396.2	-62.9	2.3	-25.5	-0.9	0.0	0.0	9.2
GSU Transformer 2 - Top	96.0	82.7	0.0	0.0	394.5	-62.9	2.9	-23.9	-0.7	0.0	0.0	9.8
GSU Transformer 3 - Side 1	96.0	83.6	0.0	3.0	403.5	-63.1	2.3	-26.9	-1.1	0.0	0.0	8.5
GSU Transformer 3 - Side 2	96.0	81.9	0.0	3.0	402.7	-63.1	2.3	-27.0	-1.1	0.0	0.0	8.4
GSU Transformer 3 - Side 3	96.0	83.6	0.0	3.0	405.5	-63.2	2.3	-27.0	-1.2	0.0	0.0	8.3
GSU Transformer 3 - Side 4	96.0	81.9	0.0	3.0	406.2	-63.2	2.3	-27.0	-1.2	0.0	0.0	8.3
GSU Transformer 3 - Top	96.0	82.7	0.0	0.0	404.6	-63.1	1.8	-26.4	-1.1	0.0	0.0	5.5
HRSG Duct Burner Skid 1	105.0	105.0	0.0	0.0	315.2	-61.0	2.7	-7.4	-2.5	0.0	0.0	34.4
HRSG Duct Burner Skid 2	105.0	105.0	0.0	0.0	322.9	-61.2	2.7	-7.4	-2.5	0.0	1.8	34.6
LP Recirc Pumps 1	93.0	93.0	0.0	0.0	276.1	-59.8	2.7	-7.4	-2.3	0.0	0.4	24.1
LP Recirc Pumps 2	93.0	93.0	0.0	0.0	284.9	-60.1	2.7	-7.5	-2.4	0.0	0.0	21.7
Potable Water Pumps	93.0	93.0	0.0	0.0	308.6	-60.8	2.9	-7.5	-2.4	0.0	2.4	25.4
Roof-Mounted Ventilation Fan - Admin 1	87.8	87.8	0.0	0.0	384.3	-62.7	3.3	-19.1	-0.8	0.0	0.0	7.2
Roof-Mounted Ventilation Fan - Admin 2	87.8	87.8	0.0	0.0	364.8	-62.2	3.2	-20.1	-0.7	0.0	0.0	6.6
Roof-Mounted Ventilation Fan - Admin 3	87.8	87.8	0.0	0.0	349.3	-61.9	1.1	-12.5	-0.8	0.0	0.0	12.2
Roof-Mounted Ventilation Fan - Admin 4	87.8	87.8	0.0	0.0	328.6	-61.3	3.1	-9.8	-0.9	0.0	0.0	17.4
Roof-Mounted Ventilation Fan - STG 1	87.8	87.8	0.0	0.0	394.7	-62.9	3.3	-10.4	-1.4	0.0	0.0	14.8
Roof-Mounted Ventilation Fan - STG 2	87.8	87.8	0.0	0.0	389.0	-62.8	3.2	-7.9	-2.0	0.0	0.0	16.5
Roof-Mounted Ventilation Fan - STG 3	87.8	87.8	0.0	0.0	356.0	-62.0	3.1	-7.8	-2.0	0.0	0.0	17.3
Roof-Mounted Ventilation Fan - STG 4	87.8	87.8	0.0	0.0	349.5	-61.9	3.1	-7.8	-2.0	0.0	0.0	17.5

Carroll County Energy Center - Mean Propogation
Standard Plant Design

Source	PWL dB(A)	PWL/unit dB(A)	Tone dB	Non-Sphere dB	Distance m	Spreading dB	Ground Effect dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB	SPL dB(A)
Roof-Mounted Ventilation Fan - WTB 1	87.8	87.8	0.0	0.0	385.8	-62.7	3.3	-16.8	-0.8	0.0	0.0	9.4
Roof-Mounted Ventilation Fan - WTB 2	87.8	87.8	0.0	0.0	364.3	-62.2	3.2	-14.2	-0.6	0.0	0.0	12.7
Service Water Pumps	93.0	93.0	0.0	0.0	316.3	-61.0	2.9	-7.2	-2.8	0.0	0.0	22.7
SJAE Skid	98.1	98.1	0.0	0.0	388.3	-62.8	3.0	-27.2	-2.4	0.0	0.0	7.0
Small Transformer 1	83.0	83.0	0.0	0.0	375.9	-62.5	2.3	-26.1	-0.9	0.0	0.0	-5.6
Small Transformer 2	83.0	83.0	0.0	0.0	370.2	-62.4	2.3	-26.3	-0.9	0.0	0.6	-5.0
Small Transformer 3	83.0	83.0	0.0	0.0	384.5	-62.7	2.3	-19.4	-0.6	0.0	4.2	5.0
Small Transformer 4	83.0	83.0	0.0	0.0	379.0	-62.6	2.3	-21.3	-0.6	0.0	4.3	3.0
Small Transformer 5	83.0	83.0	0.0	0.0	319.9	-61.1	2.1	-14.8	-0.6	0.0	0.1	6.4
Small Transformer 6	83.0	83.0	0.0	0.0	330.7	-61.4	2.1	-26.9	-1.0	0.0	2.9	-2.3
STG Building - East Facade	89.9	61.1	0.0	3.0	345.2	-61.8	2.2	-2.9	-0.1	0.0	0.0	29.1
STG Building - East Vent Louver	94.0	78.5	0.0	3.0	345.0	-61.7	0.6	-0.3	-1.7	0.0	0.0	31.2
STG Building - North Facade	93.0	61.1	0.0	3.0	376.2	-62.5	2.1	-10.9	-0.1	0.0	0.0	24.0
STG Building - North Vent Louver	94.0	78.5	0.0	3.0	373.4	-62.4	0.7	-17.0	-0.6	0.0	0.0	16.5
STG Building - Roof	88.1	56.1	0.0	0.0	371.3	-62.4	4.3	-8.9	-0.2	0.0	0.0	20.1
STG Building - South Facade	93.0	61.1	0.0	3.0	364.9	-62.2	2.2	-5.2	-0.1	0.0	0.0	29.8
STG Building - South Vent Louver	94.0	78.5	0.0	3.0	368.6	-62.3	0.7	-8.8	-0.6	0.0	0.0	24.6
STG Building - West Facade	89.8	61.1	0.0	3.0	397.3	-63.0	2.2	-15.6	-0.1	0.0	0.0	15.6
STG Building - West Vent Louver	94.0	78.5	0.0	3.0	396.9	-63.0	0.7	-22.5	-0.9	0.0	0.0	10.2
Vacuum Pump Skid	98.1	98.1	0.0	0.0	389.8	-62.8	3.0	-26.8	-2.1	0.0	0.0	7.7
Water Treatment Building - East Facade	74.6	51.7	0.0	3.0	354.3	-62.0	1.5	-10.7	-0.2	0.0	0.0	5.1
Water Treatment Building - North Facade	77.5	51.7	0.0	3.0	373.5	-62.4	1.6	-6.0	-0.3	0.0	0.0	12.0
Water Treatment Building - Roof	76.1	46.7	0.0	0.0	374.5	-62.5	2.7	-11.2	-0.2	0.0	0.0	3.8
Water Treatment Building - South Facade	77.5	51.7	0.0	3.0	374.7	-62.5	1.6	-13.5	-0.2	0.0	0.0	4.9
Water Treatment Building - West Facade	74.5	51.7	0.0	3.0	395.4	-62.9	1.7	-19.4	-0.2	0.0	0.0	-4.3

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Carroll County Energy Center - Source Contribution
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Source	SPL
Receiver Receiver R3	
GE 7FA05 - HRSG - Exhaust Stack 1	46.80
GE 7FA05 - HRSG - Exhaust Stack 2	46.50
Air Cooled Condenser -Bottom of Fan Deck	44.75
Air Cooled Condenser -Top of Fan Deck	41.63
GE 7FA05 - Exhaust Diffuser 1 - S Side	40.48
GE 7FA05 - Turbine Compartment 1 - S Sid	39.86
ACHE - Bottom of Fan Deck	39.19
GE 7FA05 - HRSG 1 - T2 - S Side	38.95
GE 7FA05 - Exhaust Diffuser 2 - S Side	38.91
GE 7FA05 - Turbine Compartment Vent Fan	38.43
GE 7FA05 - HRSG 2 - T2 - S Side	38.30
ACHE - Top of Fan Deck	38.22
GE 7FA05 - Turbine Compartment 2 - S Sid	37.52
GE 7FA05 - Turbine Compartment Vent Fan	37.30
GE 7FA05 - HRSG 1 - T1 - S Side	36.90
GE 7FA05 - HRSG 2 - T1 - S Side	36.42
GE 7FA05 - CTG Air Inlet 1	35.67
GE 7FA05 - Generator 1 - S Side	35.53
GE 7FA05 - HRSG 1 - Body - S Side	35.24
GE 7FA05 - CTG Air Inlet 2	34.99
GE 7FA05 - HRSG 2 - Body - S Side	34.66
HRSG Duct Burner Skid 2	34.61
HRSG Duct Burner Skid 1	34.39
GE 7FA05 - Generator 2 - S Side	34.03
GE 7FA05 - Load Compartment 1 - S Side	33.36
GE 7FA05 - Load Compartment 2 - S Side	32.17
BFW Enclosure 1 - Roof	31.77
STG Building - East Vent Louver	31.20
GE 7FA05 - HRSG 1 - Stack Walls - Side 3	30.87
GE 7FA05 - HRSG 1 - Stack Walls - Side 4	30.85
GE 7FA05 - HRSG 1 - Stack Walls - Side 5	30.83

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Carroll County Energy Center - Source Contribution
Standard Plant Design

Source	SPL
GE 7FA05 - HRSG 1 - Stack Walls - Side 6	30.77
GE 7FA05 - HRSG 1 - T2 - N Side	30.67
BFW Enclosure 1 - Side 1	30.61
GE 7FA05 - HRSG 1 - Body - N Side	30.20
GE 7FA05 - HRSG 2 - Stack Walls - Side 3	29.92
STG Building - South Facade	29.82
GE 7FA05 - HRSG 2 - Stack Walls - Side 4	29.81
GE 7FA05 - HRSG 2 - Stack Walls - Side 5	29.74
GE 7FA05 - HRSG 1 - T1 - N Side	29.69
GE 7FA05 - HRSG 2 - Stack Walls - Side 6	29.68
GE 7FA05 - HRSG 1 - Stack Walls - Side 2	29.61
BFW Enclosure 1 - Side 2	29.51
GE 7FA05 - HRSG 2 - Stack Walls - Side 2	29.17
GE 7FA05 - Inlet Plenum 1 - S Side	29.12
STG Building - East Facade	29.11
GE 7FA05 - HRSG 2 - Stack Walls - Side 1	27.95
Ammonia Injection Skid 2	27.85
Ammonia Injection Skid 1	27.73
GE 7FA05 - Inlet Plenum 2 - S Side	27.58
GE 7FA05 - HRSG 2 - T2 - N Side	27.36
Ammonia Forwarding Pump 1	27.18
GE 7FA05 - HRSG 2 - T1 - N Side	27.16
GE 7FA05 - HRSG 1 - Stack Walls - Side 1	26.56
BFW Enclosure 1 - Side 3	26.51
Ammonia Forwarding Pump 2	26.50
Potable Water Pumps	25.39
GE 7FA05 - HRSG 1 - Stack Walls - Side 7	25.38
GE 7FA05 - Exhaust Diffuser 1 - N Side	25.18
STG Building - South Vent Louver	24.64
GE 7FA05 - Inlet Ducting 2 - S Side	24.63
GE 7FA05 - HRSG 2 - Stack Walls - Side 7	24.46
GE 7FA05 - Exhaust Diffuser 2 - N Side	24.11

Carroll County Energy Center - Source Contribution
Standard Plant Design

Source	SPL
LP Recirc Pumps 1	24.10
STG Building - North Facade	23.99
GE 7FA05 - Turbine Compartment 2 - N Sid	23.65
GE 7FA05 - Turbine Compartment 1 - N Sid	23.61
GE 7FA05 - Inlet Ducting 1 - S Side	23.61
Cycle Booster Pumps	23.00
Service Water Pumps	22.75
GE 7FA05 - HRSG 1 - Stack Walls - Side 8	22.69
GE 7FA05 - HRSG 2 - Stack Walls - Side 8	22.59
BFW Enclosure 2 - Roof	22.42
GE 7FA05 - Generator 2 - N Side	21.70
LP Recirc Pumps 2	21.69
BFW Enclosure 1 - Side 4	21.58
BFW Enclosure 2 - Side 1	21.25
GE 7FA05 - HRSG - Piping and Valves 1	21.24
BFW Enclosure 2 - Side 2	21.21
STG Building - Roof	20.07
GE 7FA05 - Load Compartment 2 - N Side	20.06
GE 7FA05 - HRSG 2 - Body - N Side	20.01
BFW Enclosure 2 - Side 3	19.15
GE 7FA05 - Generator 1 - N Side	19.02
GE 7FA05 - Load Compartment 1 - N Side	17.53
Roof-Mounted Ventilation Fan - STG 4	17.53
Roof-Mounted Ventilation Fan - Admin 4	17.44
Roof-Mounted Ventilation Fan - STG 3	17.31
Gas Performance Heater 1	16.53
Roof-Mounted Ventilation Fan - STG 2	16.52
STG Building - North Vent Louver	16.46
GE 7FA05 - Accessory Module 2 - W Side	16.14
GE 7FA05 - HRSG - Piping and Valves 2	15.92
STG Building - West Facade	15.65
Demin Water Pumps	14.86

Carroll County Energy Center - Source Contribution
Standard Plant Design

Source	SPL
Roof-Mounted Ventilation Fan - STG 1	14.76
GE 7FA05 - Inlet Ducting 2 - N Side	14.63
GE 7FA05 - Accessory Module 2 - E Side	14.62
GE 7FA05 - Accessory Module 1 - E Side	14.44
GE 7FA05 - Inlet Plenum 1 - N Side	14.07
GE 7FA05 - Accessory Module 1 - W Side	14.07
BFW Enclosure 2 - Side 4	13.99
GE 7FA05 - Inlet Plenum 2 - N Side	13.56
Roof-Mounted Ventilation Fan - WTB 2	12.72
GSU Transformer 2 - Side 1	12.24
Roof-Mounted Ventilation Fan - Admin 3	12.23
Water Treatment Building - North Facade	12.04
Gas Performance Heater 2	11.96
GE 7FA05 - Inlet Ducting 1 - N Side	11.40
Fuel Gas Metering and Regulating Area	10.42
STG Building - West Vent Louver	10.20
GSU Transformer 2 - Side 2	10.12
GSU Transformer 1 - Side 1	9.83
GSU Transformer 2 - Top	9.83
Roof-Mounted Ventilation Fan - WTB 1	9.42
GSU Transformer 2 - Side 4	9.22
GSU Transformer 1 - Side 2	8.84
GSU Transformer 3 - Side 1	8.52
GSU Transformer 3 - Side 2	8.42
GSU Transformer 1 - Side 4	8.40
GSU Transformer 1 - Side 3	8.36
GSU Transformer 3 - Side 3	8.34
GSU Transformer 3 - Side 4	8.33
Vacuum Pump Skid	7.69
GSU Transformer 2 - Side 3	7.66
Roof-Mounted Ventilation Fan - Admin 1	7.16
SJAE Skid	6.96

Carroll County Energy Center - Source Contribution
Standard Plant Design

Source	SPL
GSU Transformer 1 - Top	6.94
Roof-Mounted Ventilation Fan - Admin 2	6.61
Small Transformer 5	6.37
Condensate Pump 1	5.94
Condensate Pump 2	5.80
GSU Transformer 3 - Top	5.45
Water Treatment Building - East Facade	5.09
Small Transformer 3	4.95
Water Treatment Building - South Facade	4.89
Auxiliary Transformer 2 - Side 1	4.35
Water Treatment Building - Roof	3.80
Small Transformer 4	3.02
Auxiliary Transformer 2 - Top	0.61
Auxiliary Transformer 2 - Side 2	0.37
Auxiliary Transformer 2 - Side 4	-0.86
Auxiliary Transformer 1 - Side 1	-1.07
Small Transformer 6	-2.28
Auxiliary Transformer 1 - Side 4	-2.66
Auxiliary Transformer 1 - Side 2	-3.73
Auxiliary Transformer 1 - Side 3	-3.74
Auxiliary Transformer 2 - Side 3	-3.81
Water Treatment Building - West Facade	-4.27
Auxiliary Transformer 1 - Top	-4.66
Small Transformer 2	-5.01
Small Transformer 1	-5.61

SoundPLAN Modeling Results - Mitigated Acoustical Design

Carroll County Energy Center - Receiver Sound Levels
Mitigated Acoustical Design

Name	SPL dB(A)	
Property Line - East	42.3	
Property Line - North	50.6	
Property Line - South	51.1	
Property Line - West	38.1	
Receiver R1	39.3	
Receiver R2	44.1	
Receiver R3	45.0	
Receiver R4	44.7	
Receiver R5	42.5	
Receiver R6	38.6	
Receiver R7	41.3	

Carroll County Energy Center - Receiver Spectra
Mitigated Acoustical Design

31Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
Receiver	Property Line - East								
63.4	59.3	53.8	44.3	37.8	33.5	24.2	13.5	-6.9	
Receiver	Property Line - North								
68.3	62.1	58.1	52.0	48.4	45.3	36.5	26.0	6.3	
Receiver	Property Line - South								
66.4	62.0	58.6	51.1	48.1	43.6	43.3	37.3	19.8	
Receiver	Property Line - West								
58.1	53.2	48.9	40.4	35.2	29.2	20.3	-2.4		
Receiver	Receiver R1								
61.2	55.8	48.9	41.3	36.1	32.0	24.0	4.9	-58.1	
Receiver	Receiver R2								
65.1	60.3	53.6	45.8	40.7	37.1	30.7	18.2	-26.0	
Receiver	Receiver R3								
66.7	61.5	55.8	46.5	40.9	36.9	31.2	22.6	-5.7	
Receiver	Receiver R4								
65.0	60.2	54.7	45.9	40.9	37.2	33.2	26.5	9.7	
Receiver	Receiver R5								
63.9	58.6	53.4	43.8	39.5	33.4	27.0	17.7	-6.9	
Receiver	Receiver R6								
59.9	54.3	48.8	40.6	35.9	30.1	21.7	3.7	-44.6	
Receiver	Receiver R7								
61.2	56.5	50.4	42.6	38.8	34.6	27.8	7.8		

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Carroll County Energy Center - Source List
Mitigated Acoustical Design

Source	PWL dB(A)	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
ACHE - Bottom of Fan Deck	105.0	Area	0	571.94	106.5	109.0	109.1	105.4	102.9	100.3	94.5	89.0	82.9
ACHE - Top of Fan Deck	105.0	Area	0	571.94	106.5	109.0	109.1	105.4	102.9	100.3	94.5	89.0	82.9
Air Cooled Condenser -Bottom of Fan Deck	110.9	Area	0	6449.61	112.4	114.9	115.0	111.3	108.8	106.2	100.4	94.9	88.8
Air Cooled Condenser -Top of Fan Deck	110.9	Area	0	6459.52	112.4	114.9	115.0	111.3	108.8	106.2	100.4	94.9	88.8
Ammonia Forwarding Pump 1	83.0	Point	0		76.4	86.9	81.0	81.0	78.0	76.9	75.9	74.9	70.9
Ammonia Forwarding Pump 2	83.0	Point	0		76.4	86.9	81.0	81.0	78.0	76.9	75.9	74.9	70.9
Ammonia Injection Skid 1	98.1	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Ammonia Injection Skid 2	98.1	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Auxiliary Transformer 1 - Side 1	82.0	Area	3	7.42	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 1 - Side 2	82.0	Area	3	10.97	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 1 - Side 3	82.0	Area	3	7.48	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 1 - Side 4	82.0	Area	3	10.97	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 1 - Top	82.0	Area	0	9.08	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Side 1	82.0	Area	3	7.42	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Side 2	82.0	Area	3	10.97	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Side 3	82.0	Area	3	7.48	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Side 4	82.0	Area	3	10.97	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
Auxiliary Transformer 2 - Top	82.0	Area	0	9.08	79.1	84.6	86.7	81.7	81.7	75.6	70.6	65.7	58.7
BFW Enclosure 1 - Roof	93.9	Area	0	158.68	110.4	107.4	104.4	99.4	87.4	81.4	77.4	69.4	63.4
BFW Enclosure 1 - Side 1	90.2	Area	3	67.84	106.7	103.7	100.7	95.7	83.7	77.7	73.7	65.7	59.7
BFW Enclosure 1 - Side 2	88.8	Area	3	49.08	105.3	102.3	99.3	94.3	82.3	76.3	72.3	64.3	58.3
BFW Enclosure 1 - Side 3	90.2	Area	3	67.57	106.7	103.7	100.7	95.7	83.7	77.7	73.7	65.7	59.7
BFW Enclosure 1 - Side 4	88.8	Area	3	48.82	105.3	102.3	99.3	94.3	82.3	76.3	72.3	64.3	58.3
BFW Enclosure 2 - Roof	93.9	Area	0	158.68	110.4	107.4	104.4	99.4	87.4	81.4	77.4	69.4	63.4
BFW Enclosure 2 - Side 1	90.2	Area	3	67.84	106.7	103.7	100.7	95.7	83.7	77.7	73.7	65.7	59.7
BFW Enclosure 2 - Side 2	88.8	Area	3	49.08	105.3	102.3	99.3	94.3	82.3	76.3	72.3	64.3	58.3
BFW Enclosure 2 - Side 3	90.2	Area	3	67.57	106.7	103.7	100.7	95.7	83.7	77.7	73.7	65.7	59.7
BFW Enclosure 2 - Side 4	88.8	Area	3	48.82	105.3	102.3	99.3	94.3	82.3	76.3	72.3	64.3	58.3
Condensate Pump 1	98.1	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Condensate Pump 2	98.1	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Cycle Booster Pumps	93.0	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Demin Water Pumps	93.0	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Fuel Gas Metering and Regulating Area	93.0	Point	0		-15.2	-15.6	-15.5	72.4	74.4	79.4	89.4	87.4	79.4

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Carroll County Energy Center - Source List
Mitigated Acoustical Design

Source	PWL dB(A)	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Gas Performance Heater 1	103.2	Area	0	62.25	99.3	96.7	84.9	82.7	77.0	78.8	86.5	84.9	104.1
Gas Performance Heater 2	103.2	Area	0	62.25	99.3	96.7	84.9	82.7	77.0	78.8	86.5	84.9	104.1
GE 7FA05 - Accessory Module 1 - E Side	100.0	Area	3	39.11	101.0	103.6	97.6	94.6	93.6	93.6	95.6	89.6	83.6
GE 7FA05 - Accessory Module 1 - W Side	100.0	Area	3	39.11	101.0	103.6	97.6	94.6	93.6	93.6	95.6	89.6	83.6
GE 7FA05 - Accessory Module 2 - E Side	100.0	Area	3	39.11	101.0	103.6	97.6	94.6	93.6	93.6	95.6	89.6	83.6
GE 7FA05 - Accessory Module 2 - W Side	100.0	Area	3	39.11	101.0	103.6	97.6	94.6	93.6	93.6	95.6	89.6	83.6
GE 7FA05 - CTG Air Inlet 1	98.1	Area	0	141.32	112.0	114.0	113.0	95.0	83.0	82.0	83.0	74.0	67.0
GE 7FA05 - CTG Air Inlet 2	98.1	Area	0	141.32	112.0	114.0	113.0	95.0	83.0	82.0	83.0	74.0	67.0
GE 7FA05 - Exhaust Diffuser 1 - N Side	94.4	Area	3	67.05	109.9	108.9	102.9	96.9	91.9	84.9	82.9	78.9	73.9
GE 7FA05 - Exhaust Diffuser 1 - S Side	94.4	Area	3	66.89	109.9	108.9	102.9	96.9	91.9	84.9	82.9	78.9	73.9
GE 7FA05 - Exhaust Diffuser 2 - N Side	94.4	Area	3	67.05	109.9	108.9	102.9	96.9	91.9	84.9	82.9	78.9	73.9
GE 7FA05 - Exhaust Diffuser 2 - S Side	94.4	Area	3	66.89	109.9	108.9	102.9	96.9	91.9	84.9	82.9	78.9	73.9
GE 7FA05 - Generator 1 - N Side	90.0	Area	3	87.33	96.0	95.0	94.0	89.0	89.0	83.0	82.0	74.0	63.0
GE 7FA05 - Generator 1 - S Side	90.0	Area	3	87.39	96.0	95.0	94.0	89.0	89.0	83.0	82.0	74.0	63.0
GE 7FA05 - Generator 2 - N Side	90.0	Area	3	87.33	96.0	95.0	94.0	89.0	89.0	83.0	82.0	74.0	63.0
GE 7FA05 - Generator 2 - S Side	90.0	Area	3	87.39	96.0	95.0	94.0	89.0	89.0	83.0	82.0	74.0	63.0
GE 7FA05 - HRSG - Exhaust Stack 1	102.0	Point	0		109.5	108.1	106.2	99.1	99.1	99.1	90.1	83.1	78.1
GE 7FA05 - HRSG - Exhaust Stack 2	102.0	Point	0		109.5	108.1	106.2	99.1	99.1	99.1	90.1	83.1	78.1
GE 7FA05 - HRSG - Piping and Valves 1	85.5	Line	0	43.67	95.5	101.0	98.1	90.1	78.0	67.0	47.0	40.0	35.0
GE 7FA05 - HRSG - Piping and Valves 2	85.5	Line	0	43.67	95.5	101.0	98.1	90.1	78.0	67.0	47.0	40.0	35.0
GE 7FA05 - HRSG 1 - Body - N Side	86.1	Area	3	509.04	94.4	99.0	97.0	91.0	82.0	73.9	55.9	38.0	19.0
GE 7FA05 - HRSG 1 - Body - S Side	86.1	Area	3	509.49	94.4	99.0	97.0	91.0	82.0	73.9	55.9	38.0	19.0
GE 7FA05 - HRSG 1 - Stack Walls - Side 1	79.0	Area	3	148.90	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 2	79.0	Area	3	161.41	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 3	79.0	Area	3	156.78	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 4	79.0	Area	3	151.21	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 5	79.0	Area	3	144.71	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 6	79.0	Area	3	162.68	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 7	79.0	Area	3	164.91	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 1 - Stack Walls - Side 8	79.0	Area	3	147.95	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 1 - T1 - N Side	92.1	Area	3	120.68	105.9	106.4	102.5	95.4	89.4	82.4	69.4	53.4	36.4
GE 7FA05 - HRSG 1 - T1 - S Side	92.1	Area	3	120.80	105.9	106.4	102.5	95.4	89.4	82.4	69.4	53.4	36.4
GE 7FA05 - HRSG 1 - T2 - N Side	93.0	Area	3	201.26	106.9	107.4	103.5	96.4	90.4	83.4	69.4	51.4	34.4

Carroll County Energy Center - Source List
Mitigated Acoustical Design

Source	PWL dB(A)	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
GE 7FA05 - HRSG 1 - T2 - S Side	93.0	Area	3	201.45	106.9	107.4	103.5	96.4	90.4	83.4	69.4	51.4	34.4
GE 7FA05 - HRSG 2 - Body - N Side	86.1	Area	3	509.04	94.4	99.0	97.0	91.0	82.0	73.9	55.9	38.0	19.0
GE 7FA05 - HRSG 2 - Body - S Side	86.1	Area	3	509.49	94.4	99.0	97.0	91.0	82.0	73.9	55.9	38.0	19.0
GE 7FA05 - HRSG 2 - Stack Walls - Side 1	79.0	Area	3	148.90	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 2	79.0	Area	3	161.41	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 3	79.0	Area	3	156.78	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 4	79.0	Area	3	151.21	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 5	79.0	Area	3	144.71	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 6	79.0	Area	3	162.68	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 7	79.0	Area	3	164.91	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 8	79.0	Area	3	147.95	88.9	94.5	91.5	83.5	71.5	60.5	40.4	33.5	28.5
GE 7FA05 - HRSG 2 - T1 - N Side	92.1	Area	3	120.68	105.9	106.4	102.5	95.4	89.4	82.4	69.4	53.4	36.4
GE 7FA05 - HRSG 2 - T1 - S Side	92.1	Area	3	120.80	105.9	106.4	102.5	95.4	89.4	82.4	69.4	53.4	36.4
GE 7FA05 - HRSG 2 - T2 - N Side	93.0	Area	3	201.26	106.9	107.4	103.5	96.4	90.4	83.4	69.4	51.4	34.4
GE 7FA05 - HRSG 2 - T2 - S Side	93.0	Area	3	201.45	106.9	107.4	103.5	96.4	90.4	83.4	69.4	51.4	34.4
GE 7FA05 - Inlet Ducting 1 - N Side	84.0	Area	0	47.80	97.6	96.6	90.6	88.6	77.6	70.6	77.6	50.6	24.6
GE 7FA05 - Inlet Ducting 1 - S Side	84.0	Area	0	47.83	97.6	96.6	90.6	88.6	77.6	70.6	77.6	50.6	24.6
GE 7FA05 - Inlet Ducting 2 - N Side	84.0	Area	0	47.80	97.6	96.6	90.6	88.6	77.6	70.6	77.6	50.6	24.6
GE 7FA05 - Inlet Ducting 2 - S Side	84.0	Area	0	47.83	97.6	96.6	90.6	88.6	77.6	70.6	77.6	50.6	24.6
GE 7FA05 - Inlet Plenum 1 - N Side	83.3	Area	3	17.64	79.8	81.8	78.8	78.8	75.8	71.8	80.8	67.8	54.8
GE 7FA05 - Inlet Plenum 1 - S Side	83.3	Area	3	17.64	79.8	81.8	78.8	78.8	75.8	71.8	80.8	67.8	54.8
GE 7FA05 - Inlet Plenum 2 - N Side	83.3	Area	3	17.64	79.8	81.8	78.8	78.8	75.8	71.8	80.8	67.8	54.8
GE 7FA05 - Inlet Plenum 2 - S Side	83.3	Area	3	17.64	79.8	81.8	78.8	78.8	75.8	71.8	80.8	67.8	54.8
GE 7FA05 - Load Compartment 1 - N Side	88.9	Area	3	13.82	97.6	98.6	98.6	91.6	84.6	77.6	80.6	74.6	65.6
GE 7FA05 - Load Compartment 1 - S Side	88.9	Area	3	13.67	97.6	98.6	98.6	91.6	84.6	77.6	80.6	74.6	65.6
GE 7FA05 - Load Compartment 2 - N Side	88.9	Area	3	13.82	97.6	98.6	98.6	91.6	84.6	77.6	80.6	74.6	65.6
GE 7FA05 - Load Compartment 2 - S Side	88.9	Area	3	13.67	97.6	98.6	98.6	91.6	84.6	77.6	80.6	74.6	65.6
GE 7FA05 - Turbine Compartment 1 - N Sid	92.5	Area	3	57.99	102.2	102.8	96.9	93.8	88.8	81.8	86.8	79.8	72.8
GE 7FA05 - Turbine Compartment 1 - S Sid	92.5	Area	3	57.99	102.2	102.8	96.9	93.8	88.8	81.8	86.8	79.8	72.8
GE 7FA05 - Turbine Compartment 2 - N Sid	92.5	Area	3	57.99	102.2	102.8	96.9	93.8	88.8	81.8	86.8	79.8	72.8
GE 7FA05 - Turbine Compartment 2 - S Sid	92.5	Area	3	57.99	102.2	102.8	96.9	93.8	88.8	81.8	86.8	79.8	72.8
GE 7FA05 - Turbine Compartment Vent Fan	96.8	Point	0		95.5	95.0	103.1	94.1	91.0	88.0	87.0	91.0	88.0
GE 7FA05 - Turbine Compartment Vent Fan	96.8	Point	0		95.5	95.0	103.1	94.1	91.0	88.0	87.0	91.0	88.0

Carroll County Energy Center - Source List
Mitigated Acoustical Design

Source	PWL dB(A)	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
GSU Transformer 1 - Side 1	96.0	Area	3	17.19	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 1 - Side 2	96.0	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 1 - Side 3	96.0	Area	3	17.18	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 1 - Side 4	96.0	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 1 - Top	96.0	Area	0	21.27	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Side 1	96.0	Area	3	17.19	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Side 2	96.0	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Side 3	96.0	Area	3	17.18	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Side 4	96.0	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 2 - Top	96.0	Area	0	21.27	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Side 1	96.0	Area	3	17.19	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Side 2	96.0	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Side 3	96.0	Area	3	17.18	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Side 4	96.0	Area	3	25.85	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
GSU Transformer 3 - Top	96.0	Area	0	21.27	93.1	98.6	100.7	95.7	95.7	89.6	84.6	79.7	72.7
HRSG Duct Burner Skid 1	91.2	Point	0		92.4	101.9	96.0	94.0	89.0	82.9	81.9	77.9	71.9
HRSG Duct Burner Skid 2	91.2	Point	0		92.4	101.9	96.0	94.0	89.0	82.9	81.9	77.9	71.9
LP Recirc Pumps 1	93.0	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
LP Recirc Pumps 2	93.0	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Potable Water Pumps	93.0	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
Roof-Mounted Ventilation Fan - Admin 1	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - Admin 2	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - Admin 3	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - Admin 4	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - STG 1	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - STG 2	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - STG 3	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - STG 4	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - WTB 1	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Roof-Mounted Ventilation Fan - WTB 2	87.8	Point	0		95.5	95.0	91.1	87.1	84.0	82.0	80.0	76.0	76.0
Service Water Pumps	93.0	Point	0		86.4	96.9	91.0	91.0	88.0	86.9	85.9	84.9	80.9
SJAE Skid	98.1	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Small Transformer 1	83.0	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7

Carroll County Energy Center - Source List
Mitigated Acoustical Design

Source	PWL dB(A)	SrcType	KO-	Size m,m²	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Small Transformer 2	83.0	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
Small Transformer 3	83.0	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
Small Transformer 4	83.0	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
Small Transformer 5	83.0	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
Small Transformer 6	83.0	Point	0		80.1	85.6	87.7	82.7	82.7	76.6	71.6	66.7	59.7
STG Building - East Facade	89.9	Area	3	744.16	120.5	112.0	99.1	92.1	80.1	68.0	58.0	50.0	52.1
STG Building - East Vent Louver	86.0	Area	3	36.00	108.8	101.9	90.9	85.9	83.9	78.9	73.9	72.9	74.9
STG Building - North Facade	93.0	Area	3	1542.49	123.7	115.2	102.3	95.3	83.2	71.2	61.2	53.2	55.2
STG Building - North Vent Louver	86.0	Area	3	36.00	108.8	101.9	90.9	85.9	83.9	78.9	73.9	72.9	74.9
STG Building - Roof	88.1	Area	0	1569.22	118.7	110.3	97.3	90.3	78.3	66.3	56.2	48.3	50.3
STG Building - South Facade	93.0	Area	3	1542.49	123.7	115.2	102.3	95.3	83.2	71.2	61.2	53.2	55.2
STG Building - South Vent Louver	86.0	Area	3	36.00	108.8	101.9	90.9	85.9	83.9	78.9	73.9	72.9	74.9
STG Building - West Facade	89.8	Area	3	742.64	120.5	112.0	99.1	92.1	80.0	68.0	58.0	50.0	52.0
STG Building - West Vent Louver	86.0	Area	3	36.00	108.8	101.9	90.9	85.9	83.9	78.9	73.9	72.9	74.9
Vacuum Pump Skid	98.1	Point	0		91.5	102.0	96.1	96.1	93.0	92.0	91.0	90.0	86.0
Water Treatment Building - East Facade	74.6	Area	3	193.50	89.3	91.8	85.9	79.9	65.8	56.8	49.8	43.8	42.8
Water Treatment Building - North Facade	77.5	Area	3	376.38	92.2	94.7	88.8	82.7	68.7	59.7	52.7	46.7	45.7
Water Treatment Building - Roof	76.1	Area	0	869.76	90.8	93.3	87.4	81.4	67.4	58.3	51.3	45.3	44.4
Water Treatment Building - South Facade	77.5	Area	3	376.32	92.2	94.7	88.8	82.7	68.7	59.7	52.7	46.7	45.7
Water Treatment Building - West Facade	74.5	Area	3	192.63	89.2	91.8	85.9	79.8	65.8	56.8	49.8	43.8	42.8

Carroll County Energy Center - Mean Propogation
Mitigated Acoustical Design

Source	PWL dB(A)	PWL/unit dB(A)	Tone dB	Non-Sphere dB	Distance m	Spreading dB	Ground Effect dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB	SPL dB(A)
Receiver Receiver R3												
ACHE - Bottom of Fan Deck	105.0	77.4	0.0	0.0	340.0	-61.6	1.2	-3.3	-1.3	-7.3	0.1	29.2
ACHE - Top of Fan Deck	105.0	77.4	0.0	0.0	340.0	-61.6	0.9	-2.8	-1.5	-8.3	0.1	28.2
Air Cooled Condenser -Bottom of Fan Deck	110.9	72.8	0.0	0.0	439.7	-63.9	0.7	-2.6	-1.8	-7.7	0.0	33.8
Air Cooled Condenser -Top of Fan Deck	110.9	72.8	0.0	0.0	440.8	-63.9	0.7	-7.0	-1.2	-7.4	0.0	30.6
Ammonia Forwarding Pump 1	83.0	83.0	0.0	0.0	270.7	-59.6	2.5	-0.3	-2.8	0.0	0.0	17.2
Ammonia Forwarding Pump 2	83.0	83.0	0.0	0.0	281.0	-60.0	2.5	-0.3	-2.9	0.0	0.0	16.5
Ammonia Injection Skid 1	98.1	98.1	0.0	0.0	309.5	-60.8	2.6	-7.4	-2.5	0.0	0.0	27.7
Ammonia Injection Skid 2	98.1	98.1	0.0	0.0	317.7	-61.0	2.7	-7.4	-2.5	0.0	1.8	27.8
Auxiliary Transformer 1 - Side 1	82.0	73.3	0.0	3.0	376.8	-62.5	2.4	-27.0	-1.1	0.0	3.1	-1.1
Auxiliary Transformer 1 - Side 2	82.0	71.6	0.0	3.0	375.9	-62.5	2.4	-27.0	-1.1	0.0	0.4	-3.7
Auxiliary Transformer 1 - Side 3	82.0	73.3	0.0	3.0	377.4	-62.5	2.4	-27.2	-1.1	0.0	2.4	-3.7
Auxiliary Transformer 1 - Side 4	82.0	71.6	0.0	3.0	378.3	-62.5	2.4	-27.2	-1.1	0.0	3.5	-2.7
Auxiliary Transformer 1 - Top	82.0	72.4	0.0	0.0	377.2	-62.5	2.1	-26.7	-1.1	0.0	2.5	-4.7
Auxiliary Transformer 2 - Side 1	82.0	73.3	0.0	3.0	386.4	-62.7	2.5	-22.1	-0.6	0.0	3.7	4.3
Auxiliary Transformer 2 - Side 2	82.0	71.6	0.0	3.0	385.7	-62.7	2.5	-23.3	-0.6	0.0	0.9	0.4
Auxiliary Transformer 2 - Side 3	82.0	73.3	0.0	3.0	387.4	-62.8	2.5	-26.6	-1.0	0.0	2.4	-3.8
Auxiliary Transformer 2 - Side 4	82.0	71.6	0.0	3.0	388.1	-62.8	2.5	-26.4	-1.0	0.0	4.9	-0.9
Auxiliary Transformer 2 - Top	82.0	72.4	0.0	0.0	387.0	-62.7	2.1	-22.3	-0.6	0.0	3.5	0.6
BFW Enclosure 1 - Roof	93.9	71.9	0.0	0.0	297.3	-60.5	2.3	-6.8	-0.4	0.0	0.0	26.8
BFW Enclosure 1 - Side 1	90.2	71.9	0.0	3.0	295.6	-60.4	1.5	-6.2	-0.4	0.0	0.0	25.6
BFW Enclosure 1 - Side 2	88.8	71.9	0.0	3.0	289.8	-60.2	1.5	-5.8	-0.5	0.0	0.0	24.5
BFW Enclosure 1 - Side 3	90.2	71.9	0.0	3.0	298.0	-60.5	1.5	-10.8	-0.2	0.0	0.0	21.5
BFW Enclosure 1 - Side 4	88.8	71.9	0.0	3.0	304.2	-60.7	1.6	-14.5	-0.2	0.0	0.1	16.6
BFW Enclosure 2 - Roof	93.9	71.9	0.0	0.0	309.1	-60.8	2.3	-16.7	-0.2	0.0	0.0	17.4
BFW Enclosure 2 - Side 1	90.2	71.9	0.0	3.0	306.8	-60.7	1.6	-16.5	-0.2	0.0	0.0	16.3
BFW Enclosure 2 - Side 2	88.8	71.9	0.0	3.0	301.9	-60.6	1.5	-15.2	-0.2	0.0	0.0	16.2
BFW Enclosure 2 - Side 3	90.2	71.9	0.0	3.0	310.6	-60.8	1.6	-18.4	-0.2	0.0	0.0	14.2
BFW Enclosure 2 - Side 4	88.8	71.9	0.0	3.0	315.8	-61.0	1.6	-21.9	-0.2	0.0	0.0	9.0
Condensate Pump 1	98.1	98.1	0.0	0.0	397.7	-63.0	3.2	-27.9	-2.7	0.0	0.0	5.9
Condensate Pump 2	98.1	98.1	0.0	0.0	401.6	-63.1	3.2	-27.9	-2.7	0.0	0.0	5.8
Cycle Booster Pumps	93.0	93.0	0.0	0.0	316.3	-61.0	2.9	-6.5	-3.2	0.0	0.1	23.0

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Carroll County Energy Center - Mean Propogation
Mitigated Acoustical Design

Source	PWL dB(A)	PWL/unit dB(A)	Tone dB	Non-Sphere dB	Distance m	Spreading dB	Ground Effect dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB	SPL dB(A)
Demin Water Pumps	93.0	93.0	0.0	0.0	313.6	-60.9	2.9	-25.4	-1.7	0.0	8.6	14.9
Fuel Gas Metering and Regulating Area	93.0	93.0	0.0	0.0	411.7	-63.3	3.8	-21.3	-4.3	0.0	0.0	5.4
Gas Performance Heater 1	103.2	85.3	0.0	0.0	340.7	-61.6	3.7	-8.6	-16.7	0.0	0.0	16.5
Gas Performance Heater 2	103.2	85.3	0.0	0.0	347.7	-61.8	3.7	-17.6	-13.1	0.0	0.8	12.0
GE 7FA05 - Accessory Module 1 - E Side	100.0	84.1	0.0	3.0	339.3	-61.6	3.2	-28.0	-2.5	0.0	1.9	14.4
GE 7FA05 - Accessory Module 1 - W Side	100.0	84.1	0.0	3.0	342.8	-61.7	3.2	-28.1	-2.5	0.0	1.9	14.1
GE 7FA05 - Accessory Module 2 - E Side	100.0	84.1	0.0	3.0	349.0	-61.8	3.2	-27.8	-2.4	0.0	2.5	14.6
GE 7FA05 - Accessory Module 2 - W Side	100.0	84.1	0.0	3.0	352.5	-61.9	3.2	-27.9	-2.5	0.0	4.8	16.1
GE 7FA05 - CTG Air Inlet 1	98.1	76.6	0.0	0.0	366.0	-62.3	1.0	-5.2	-0.3	0.0	1.8	32.0
GE 7FA05 - CTG Air Inlet 2	98.1	76.6	0.0	0.0	374.1	-62.5	1.0	-4.8	-0.3	0.0	0.7	31.1
GE 7FA05 - Exhaust Diffuser 1 - N Side	94.4	76.1	0.0	3.0	331.8	-61.4	1.8	-25.4	-0.6	0.0	2.7	13.1
GE 7FA05 - Exhaust Diffuser 1 - S Side	94.4	76.1	0.0	3.0	330.8	-61.4	1.8	-6.3	-1.0	0.0	0.8	29.4
GE 7FA05 - Exhaust Diffuser 2 - N Side	94.4	76.1	0.0	3.0	341.1	-61.6	1.8	-21.9	-0.4	0.0	0.7	14.5
GE 7FA05 - Exhaust Diffuser 2 - S Side	94.4	76.1	0.0	3.0	339.4	-61.6	1.9	-6.1	-1.0	0.0	0.4	28.2
GE 7FA05 - Generator 1 - N Side	90.0	70.6	0.0	3.0	353.8	-62.0	2.0	-26.5	-1.2	0.0	3.1	6.6
GE 7FA05 - Generator 1 - S Side	90.0	70.6	0.0	3.0	352.5	-61.9	2.1	-6.9	-1.3	0.0	0.0	22.8
GE 7FA05 - Generator 2 - N Side	90.0	70.6	0.0	3.0	362.7	-62.2	2.1	-22.6	-0.8	0.0	2.8	10.4
GE 7FA05 - Generator 2 - S Side	90.0	70.6	0.0	3.0	360.4	-62.1	2.1	-7.2	-1.3	0.0	0.0	21.6
GE 7FA05 - HRSG - Exhaust Stack 1	102.0	102.0	0.0	0.0	296.5	-60.4	0.8	0.0	-1.1	-8.8	0.0	31.8
GE 7FA05 - HRSG - Exhaust Stack 2	102.0	102.0	0.0	0.0	306.5	-60.7	0.8	0.0	-1.1	-8.8	0.0	31.5
GE 7FA05 - HRSG - Piping and Valves 1	85.5	69.1	0.0	0.0	309.6	-60.8	0.2	-2.1	-0.3	0.0	0.0	21.2
GE 7FA05 - HRSG - Piping and Valves 2	85.5	69.1	0.0	0.0	321.6	-61.1	0.2	-7.5	-0.2	0.0	0.0	15.9
GE 7FA05 - HRSG 1 - Body - N Side	86.1	59.1	0.0	3.0	297.8	-60.5	-0.1	-6.7	-0.2	0.0	0.0	20.8
GE 7FA05 - HRSG 1 - Body - S Side	86.1	59.1	0.0	3.0	296.1	-60.4	0.3	-1.2	-0.3	0.0	0.0	26.1
GE 7FA05 - HRSG 1 - Stack Walls - Side 1	79.0	57.3	0.0	3.0	287.0	-60.2	0.2	-7.4	-0.1	0.0	2.6	16.6
GE 7FA05 - HRSG 1 - Stack Walls - Side 2	79.0	56.9	0.0	3.0	285.3	-60.1	0.2	-4.8	-0.2	0.0	3.1	19.6
GE 7FA05 - HRSG 1 - Stack Walls - Side 3	79.0	57.0	0.0	3.0	283.4	-60.0	0.4	-0.4	-0.2	0.0	0.1	20.9
GE 7FA05 - HRSG 1 - Stack Walls - Side 4	79.0	57.2	0.0	3.0	282.2	-60.0	0.4	-0.4	-0.2	0.0	0.0	20.8
GE 7FA05 - HRSG 1 - Stack Walls - Side 5	79.0	57.4	0.0	3.0	282.6	-60.0	0.4	-0.4	-0.2	0.0	0.0	20.8
GE 7FA05 - HRSG 1 - Stack Walls - Side 6	79.0	56.9	0.0	3.0	284.2	-60.1	0.4	-0.4	-0.2	0.0	0.0	20.8
GE 7FA05 - HRSG 1 - Stack Walls - Side 7	79.0	56.8	0.0	3.0	286.2	-60.1	0.2	-5.9	-0.2	0.0	0.0	15.4
GE 7FA05 - HRSG 1 - Stack Walls - Side 8	79.0	57.3	0.0	3.0	287.4	-60.2	0.2	-8.7	-0.1	0.0	0.0	12.7

Carroll County Energy Center - Mean Propogation
Mitigated Acoustical Design

Source	PWL dB(A)	PWL/unit dB(A)	Tone dB	Non-Sphere dB	Distance m	Spreading dB	Ground Effect dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB	SPL dB(A)
GE 7FA05 - HRSG 1 - T1 - N Side	92.1	71.2	0.0	3.0	322.9	-61.2	0.7	-12.6	-0.2	0.0	0.1	20.9
GE 7FA05 - HRSG 1 - T1 - S Side	92.1	71.2	0.0	3.0	321.9	-61.1	1.0	-3.7	-0.5	0.0	0.0	29.1
GE 7FA05 - HRSG 1 - T2 - N Side	93.0	70.0	0.0	3.0	313.2	-60.9	0.2	-11.4	-0.2	0.0	0.0	22.9
GE 7FA05 - HRSG 1 - T2 - S Side	93.0	70.0	0.0	3.0	311.8	-60.9	0.8	-2.2	-0.4	0.0	0.0	31.9
GE 7FA05 - HRSG 2 - Body - N Side	86.1	59.1	0.0	3.0	308.4	-60.8	-0.1	-17.0	-0.2	0.0	0.0	10.3
GE 7FA05 - HRSG 2 - Body - S Side	86.1	59.1	0.0	3.0	305.6	-60.7	0.3	-1.4	-0.3	0.0	0.0	25.6
GE 7FA05 - HRSG 2 - Stack Walls - Side 1	79.0	57.3	0.0	3.0	297.2	-60.5	0.2	-7.0	-0.1	0.0	4.0	17.9
GE 7FA05 - HRSG 2 - Stack Walls - Side 2	79.0	56.9	0.0	3.0	295.3	-60.4	0.2	-4.5	-0.2	0.0	2.7	19.2
GE 7FA05 - HRSG 2 - Stack Walls - Side 3	79.0	57.0	0.0	3.0	293.4	-60.3	0.4	-1.0	-0.2	0.0	0.0	19.9
GE 7FA05 - HRSG 2 - Stack Walls - Side 4	79.0	57.2	0.0	3.0	292.5	-60.3	0.3	-1.2	-0.2	0.0	0.0	19.8
GE 7FA05 - HRSG 2 - Stack Walls - Side 5	79.0	57.4	0.0	3.0	293.1	-60.3	0.3	-1.2	-0.2	0.0	0.0	19.7
GE 7FA05 - HRSG 2 - Stack Walls - Side 6	79.0	56.9	0.0	3.0	294.9	-60.4	0.3	-1.2	-0.2	0.0	0.0	19.7
GE 7FA05 - HRSG 2 - Stack Walls - Side 7	79.0	56.8	0.0	3.0	296.9	-60.4	0.2	-6.5	-0.2	0.0	0.0	14.5
GE 7FA05 - HRSG 2 - Stack Walls - Side 8	79.0	57.3	0.0	3.0	297.8	-60.5	0.2	-9.0	-0.1	0.0	0.6	12.6
GE 7FA05 - HRSG 2 - T1 - N Side	92.1	71.2	0.0	3.0	332.6	-61.4	0.7	-14.8	-0.2	0.0	0.0	18.3
GE 7FA05 - HRSG 2 - T1 - S Side	92.1	71.2	0.0	3.0	330.6	-61.4	1.0	-3.6	-0.5	0.0	0.0	28.6
GE 7FA05 - HRSG 2 - T2 - N Side	93.0	70.0	0.0	3.0	323.2	-61.2	0.4	-14.6	-0.2	0.0	0.0	19.5
GE 7FA05 - HRSG 2 - T2 - S Side	93.0	70.0	0.0	3.0	320.7	-61.1	0.8	-2.3	-0.5	0.0	0.1	31.3
GE 7FA05 - Inlet Ducting 1 - N Side	84.0	67.2	0.0	0.0	355.0	-62.0	1.6	-12.8	-0.4	0.0	2.0	11.4
GE 7FA05 - Inlet Ducting 1 - S Side	84.0	67.2	0.0	0.0	354.2	-62.0	1.6	0.0	-1.4	0.0	3.2	23.6
GE 7FA05 - Inlet Ducting 2 - N Side	84.0	67.2	0.0	0.0	363.6	-62.2	1.6	-7.1	-0.7	0.0	0.4	14.6
GE 7FA05 - Inlet Ducting 2 - S Side	84.0	67.2	0.0	0.0	362.3	-62.2	1.6	0.0	-1.4	0.0	4.4	24.6
GE 7FA05 - Inlet Plenum 1 - N Side	83.3	70.8	0.0	3.0	345.2	-61.8	2.9	-27.8	-2.7	0.0	4.6	-0.9
GE 7FA05 - Inlet Plenum 1 - S Side	83.3	70.8	0.0	3.0	343.8	-61.7	2.9	-7.7	-2.8	0.0	0.0	14.2
GE 7FA05 - Inlet Plenum 2 - N Side	83.3	70.8	0.0	3.0	354.3	-62.0	3.0	-25.8	-2.3	0.0	2.9	-0.7
GE 7FA05 - Inlet Plenum 2 - S Side	83.3	70.8	0.0	3.0	351.9	-61.9	3.0	-7.6	-2.8	0.0	0.1	12.8
GE 7FA05 - Load Compartment 1 - N Side	88.9	77.5	0.0	3.0	347.3	-61.8	1.9	-25.7	-0.8	0.0	3.0	7.1
GE 7FA05 - Load Compartment 1 - S Side	88.9	77.5	0.0	3.0	346.0	-61.8	1.9	-6.7	-1.1	0.0	0.0	22.4
GE 7FA05 - Load Compartment 2 - N Side	88.9	77.5	0.0	3.0	356.3	-62.0	2.0	-20.5	-0.4	0.0	1.3	10.7
GE 7FA05 - Load Compartment 2 - S Side	88.9	77.5	0.0	3.0	354.0	-62.0	2.0	-6.6	-1.1	0.0	0.0	21.5
GE 7FA05 - Turbine Compartment 1 - N Sid	92.5	74.8	0.0	3.0	340.0	-61.6	2.2	-26.5	-1.4	0.0	4.1	10.5
GE 7FA05 - Turbine Compartment 1 - S Sid	92.5	74.8	0.0	3.0	338.9	-61.6	2.3	-6.8	-1.8	0.0	2.1	27.3

Carroll County Energy Center - Mean Propogation
Mitigated Acoustical Design

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GE 7FA05 - Turbine Compartment 2 - N Sid	92.5	74.8	0.0	3.0	349.1	-61.9	2.3	-21.8	-0.8	0.0	1.0	12.6
GE 7FA05 - Turbine Compartment 2 - S Sid	92.5	74.8	0.0	3.0	347.3	-61.8	2.3	-6.8	-1.8	0.0	1.2	25.3
GE 7FA05 - Turbine Compartment Vent Fan	96.8	96.8	0.0	0.0	339.5	-61.6	2.8	-8.4	-1.9	0.0	4.1	30.3
GE 7FA05 - Turbine Compartment Vent Fan	96.8	96.8	0.0	0.0	348.2	-61.8	2.8	-0.1	-4.2	0.0	0.0	31.4
GSU Transformer 1 - Side 1	96.0	83.6	0.0	3.0	384.5	-62.7	2.3	-26.4	-1.0	0.0	0.0	9.8
GSU Transformer 1 - Side 2	96.0	81.9	0.0	3.0	383.1	-62.7	2.3	-26.9	-1.1	0.0	0.0	8.8
GSU Transformer 1 - Side 3	96.0	83.6	0.0	3.0	385.5	-62.7	2.3	-27.0	-1.1	0.0	0.0	8.4
GSU Transformer 1 - Side 4	96.0	81.9	0.0	3.0	386.9	-62.7	2.3	-26.8	-1.1	0.0	0.0	8.4
GSU Transformer 1 - Top	96.0	82.7	0.0	0.0	385.1	-62.7	2.9	-27.1	-1.0	0.0	0.0	6.9
GSU Transformer 2 - Side 1	96.0	83.6	0.0	3.0	393.5	-62.9	2.3	-23.7	-0.7	0.0	0.0	12.2
GSU Transformer 2 - Side 2	96.0	81.9	0.0	3.0	392.5	-62.9	2.3	-25.6	-0.9	0.0	0.0	10.1
GSU Transformer 2 - Side 3	96.0	83.6	0.0	3.0	395.1	-62.9	2.3	-26.5	-1.0	0.0	0.0	7.7
GSU Transformer 2 - Side 4	96.0	81.9	0.0	3.0	396.2	-62.9	2.3	-25.5	-0.9	0.0	0.0	9.2
GSU Transformer 2 - Top	96.0	82.7	0.0	0.0	394.5	-62.9	2.9	-23.9	-0.7	0.0	0.0	9.8
GSU Transformer 3 - Side 1	96.0	83.6	0.0	3.0	403.5	-63.1	2.3	-26.9	-1.1	0.0	0.0	8.5
GSU Transformer 3 - Side 2	96.0	81.9	0.0	3.0	402.7	-63.1	2.3	-27.0	-1.1	0.0	0.0	8.4
GSU Transformer 3 - Side 3	96.0	83.6	0.0	3.0	405.5	-63.2	2.3	-27.0	-1.2	0.0	0.0	8.3
GSU Transformer 3 - Side 4	96.0	81.9	0.0	3.0	406.2	-63.2	2.3	-27.0	-1.2	0.0	0.0	8.3
GSU Transformer 3 - Top	96.0	82.7	0.0	0.0	404.6	-63.1	1.8	-26.4	-1.1	0.0	0.0	5.5
HRSG Duct Burner Skid 1	91.2	91.2	0.0	0.0	315.2	-61.0	1.9	-6.6	-1.1	0.0	0.0	22.4
HRSG Duct Burner Skid 2	91.2	91.2	0.0	0.0	322.9	-61.2	1.9	-6.6	-1.1	0.0	1.3	22.4
LP Recirc Pumps 1	93.0	93.0	0.0	0.0	276.1	-59.8	2.7	-7.4	-2.3	0.0	0.4	24.1
LP Recirc Pumps 2	93.0	93.0	0.0	0.0	284.9	-60.1	2.7	-7.5	-2.4	0.0	0.0	21.7
Potable Water Pumps	93.0	93.0	0.0	0.0	308.6	-60.8	2.9	-7.5	-2.4	0.0	2.4	25.4
Roof-Mounted Ventilation Fan - Admin 1	87.8	87.8	0.0	0.0	384.3	-62.7	3.3	-19.1	-0.8	0.0	0.0	7.2
Roof-Mounted Ventilation Fan - Admin 2	87.8	87.8	0.0	0.0	364.8	-62.2	3.2	-20.1	-0.7	0.0	0.0	6.6
Roof-Mounted Ventilation Fan - Admin 3	87.8	87.8	0.0	0.0	349.3	-61.9	1.1	-12.5	-0.8	0.0	0.0	12.2
Roof-Mounted Ventilation Fan - Admin 4	87.8	87.8	0.0	0.0	328.6	-61.3	3.1	-9.8	-0.9	0.0	0.0	17.4
Roof-Mounted Ventilation Fan - STG 1	87.8	87.8	0.0	0.0	394.7	-62.9	3.3	-10.4	-1.4	0.0	0.0	14.8
Roof-Mounted Ventilation Fan - STG 2	87.8	87.8	0.0	0.0	389.0	-62.8	3.2	-7.9	-2.0	0.0	0.0	16.5
Roof-Mounted Ventilation Fan - STG 3	87.8	87.8	0.0	0.0	356.0	-62.0	3.1	-7.8	-2.0	0.0	0.0	17.3
Roof-Mounted Ventilation Fan - STG 4	87.8	87.8	0.0	0.0	349.5	-61.9	3.1	-7.8	-2.0	0.0	0.0	17.5

Carroll County Energy Center - Mean Propogation
Mitigated Acoustical Design

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Roof-Mounted Ventilation Fan - WTB 1	87.8	87.8	0.0	0.0	385.8	-62.7	3.3	-16.8	-0.8	0.0	0.0	9.4
Roof-Mounted Ventilation Fan - WTB 2	87.8	87.8	0.0	0.0	364.3	-62.2	3.2	-14.2	-0.6	0.0	0.0	12.7
Service Water Pumps	93.0	93.0	0.0	0.0	316.3	-61.0	2.9	-7.2	-2.8	0.0	0.0	22.7
SJAE Skid	98.1	98.1	0.0	0.0	388.3	-62.8	3.0	-27.2	-2.4	0.0	0.0	7.0
Small Transformer 1	83.0	83.0	0.0	0.0	375.9	-62.5	2.3	-26.1	-0.9	0.0	0.0	-5.6
Small Transformer 2	83.0	83.0	0.0	0.0	370.2	-62.4	2.3	-26.3	-0.9	0.0	0.6	-5.0
Small Transformer 3	83.0	83.0	0.0	0.0	384.5	-62.7	2.3	-19.4	-0.6	0.0	4.2	5.0
Small Transformer 4	83.0	83.0	0.0	0.0	379.0	-62.6	2.3	-21.3	-0.6	0.0	4.3	3.0
Small Transformer 5	83.0	83.0	0.0	0.0	319.9	-61.1	2.1	-14.8	-0.6	0.0	0.1	6.4
Small Transformer 6	83.0	83.0	0.0	0.0	330.7	-61.4	2.1	-26.9	-1.0	0.0	2.9	-2.3
STG Building - East Facade	89.9	61.1	0.0	3.0	345.2	-61.8	2.2	-2.9	-0.1	0.0	0.0	29.1
STG Building - East Vent Louver	86.0	70.5	0.0	3.0	345.0	-61.7	0.9	-0.8	-1.9	0.0	0.0	22.9
STG Building - North Facade	93.0	61.1	0.0	3.0	376.2	-62.5	2.1	-10.9	-0.1	0.0	0.0	24.0
STG Building - North Vent Louver	86.0	70.5	0.0	3.0	373.4	-62.4	0.9	-15.1	-0.3	0.0	0.0	11.1
STG Building - Roof	88.1	56.1	0.0	0.0	371.3	-62.4	4.3	-8.9	-0.2	0.0	0.0	20.1
STG Building - South Facade	93.0	61.1	0.0	3.0	364.9	-62.2	2.2	-5.2	-0.1	0.0	0.0	29.8
STG Building - South Vent Louver	86.0	70.5	0.0	3.0	368.6	-62.3	0.9	-7.4	-0.4	0.0	0.0	18.7
STG Building - West Facade	89.8	61.1	0.0	3.0	397.3	-63.0	2.2	-15.6	-0.1	0.0	0.0	15.6
STG Building - West Vent Louver	86.0	70.5	0.0	3.0	396.9	-63.0	1.0	-20.8	-0.5	0.0	0.0	4.8
Vacuum Pump Skid	98.1	98.1	0.0	0.0	389.8	-62.8	3.0	-26.8	-2.1	0.0	0.0	7.7
Water Treatment Building - East Facade	74.6	51.7	0.0	3.0	354.3	-62.0	1.5	-10.7	-0.2	0.0	0.0	5.1
Water Treatment Building - North Facade	77.5	51.7	0.0	3.0	373.5	-62.4	1.6	-6.0	-0.3	0.0	0.0	12.0
Water Treatment Building - Roof	76.1	46.7	0.0	0.0	374.5	-62.5	2.7	-11.2	-0.2	0.0	0.0	3.8
Water Treatment Building - South Facade	77.5	51.7	0.0	3.0	374.7	-62.5	1.6	-13.5	-0.2	0.0	0.0	4.9
Water Treatment Building - West Facade	74.5	51.7	0.0	3.0	395.4	-62.9	1.7	-19.4	-0.2	0.0	0.0	-4.3

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Carroll County Energy Center - Source Contribution
Mitigated Acoustical Design

Source	SPL
Receiver Receiver R3	
Air Cooled Condenser -Bottom of Fan Deck	33.75
GE 7FA05 - CTG Air Inlet 1	32.04
GE 7FA05 - HRSG 1 - T2 - S Side	31.89
GE 7FA05 - HRSG - Exhaust Stack 1	31.80
GE 7FA05 - HRSG - Exhaust Stack 2	31.50
GE 7FA05 - Turbine Compartment Vent Fan	31.43
GE 7FA05 - HRSG 2 - T2 - S Side	31.28
GE 7FA05 - CTG Air Inlet 2	31.09
Air Cooled Condenser -Top of Fan Deck	30.63
GE 7FA05 - Turbine Compartment Vent Fan	30.30
STG Building - South Facade	29.82
GE 7FA05 - Exhaust Diffuser 1 - S Side	29.44
ACHE - Bottom of Fan Deck	29.19
STG Building - East Facade	29.11
GE 7FA05 - HRSG 1 - T1 - S Side	29.06
GE 7FA05 - HRSG 2 - T1 - S Side	28.56
ACHE - Top of Fan Deck	28.22
GE 7FA05 - Exhaust Diffuser 2 - S Side	28.18
Ammonia Injection Skid 2	27.85
Ammonia Injection Skid 1	27.73
GE 7FA05 - Turbine Compartment 1 - S Sid	27.31
BFW Enclosure 1 - Roof	26.77
GE 7FA05 - HRSG 1 - Body - S Side	26.14
BFW Enclosure 1 - Side 1	25.61
GE 7FA05 - HRSG 2 - Body - S Side	25.56
Potable Water Pumps	25.39
GE 7FA05 - Turbine Compartment 2 - S Sid	25.32
GE 7FA05 - Inlet Ducting 2 - S Side	24.63
BFW Enclosure 1 - Side 2	24.51
LP Recirc Pumps 1	24.10
STG Building - North Facade	23.99

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Carroll County Energy Center - Source Contribution
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Source	SPL
GE 7FA05 - Inlet Ducting 1 - S Side	23.61
Cycle Booster Pumps	23.00
STG Building - East Vent Louver	22.95
GE 7FA05 - HRSG 1 - T2 - N Side	22.87
GE 7FA05 - Generator 1 - S Side	22.77
Service Water Pumps	22.75
HRSG Duct Burner Skid 1	22.43
HRSG Duct Burner Skid 2	22.43
GE 7FA05 - Load Compartment 1 - S Side	22.39
LP Recirc Pumps 2	21.69
GE 7FA05 - Generator 2 - S Side	21.59
GE 7FA05 - Load Compartment 2 - S Side	21.53
BFW Enclosure 1 - Side 3	21.51
GE 7FA05 - HRSG - Piping and Valves 1	21.24
GE 7FA05 - HRSG 1 - T1 - N Side	20.90
GE 7FA05 - HRSG 1 - Stack Walls - Side 3	20.87
GE 7FA05 - HRSG 1 - Stack Walls - Side 4	20.85
GE 7FA05 - HRSG 1 - Stack Walls - Side 5	20.83
GE 7FA05 - HRSG 1 - Body - N Side	20.80
GE 7FA05 - HRSG 1 - Stack Walls - Side 6	20.77
STG Building - Roof	20.07
GE 7FA05 - HRSG 2 - Stack Walls - Side 3	19.92
GE 7FA05 - HRSG 2 - Stack Walls - Side 4	19.81
GE 7FA05 - HRSG 2 - Stack Walls - Side 5	19.74
GE 7FA05 - HRSG 2 - Stack Walls - Side 6	19.68
GE 7FA05 - HRSG 1 - Stack Walls - Side 2	19.61
GE 7FA05 - HRSG 2 - T2 - N Side	19.54
GE 7FA05 - HRSG 2 - Stack Walls - Side 2	19.17
STG Building - South Vent Louver	18.72
GE 7FA05 - HRSG 2 - T1 - N Side	18.33
GE 7FA05 - HRSG 2 - Stack Walls - Side 1	17.95
Roof-Mounted Ventilation Fan - STG 4	17.53

Carroll County Energy Center - Source Contribution
Mitigated Acoustical Design

Source	SPL
Roof-Mounted Ventilation Fan - Admin 4	17.44
BFW Enclosure 2 - Roof	17.42
Roof-Mounted Ventilation Fan - STG 3	17.31
Ammonia Forwarding Pump 1	17.18
BFW Enclosure 1 - Side 4	16.58
GE 7FA05 - HRSG 1 - Stack Walls - Side 1	16.56
Gas Performance Heater 1	16.53
Roof-Mounted Ventilation Fan - STG 2	16.52
Ammonia Forwarding Pump 2	16.50
BFW Enclosure 2 - Side 1	16.25
BFW Enclosure 2 - Side 2	16.21
GE 7FA05 - Accessory Module 2 - W Side	16.14
GE 7FA05 - HRSG - Piping and Valves 2	15.92
STG Building - West Facade	15.65
GE 7FA05 - HRSG 1 - Stack Walls - Side 7	15.38
Demin Water Pumps	14.86
Roof-Mounted Ventilation Fan - STG 1	14.76
GE 7FA05 - Inlet Ducting 2 - N Side	14.63
GE 7FA05 - Accessory Module 2 - E Side	14.62
GE 7FA05 - Exhaust Diffuser 2 - N Side	14.47
GE 7FA05 - HRSG 2 - Stack Walls - Side 7	14.46
GE 7FA05 - Accessory Module 1 - E Side	14.44
GE 7FA05 - Inlet Plenum 1 - S Side	14.19
BFW Enclosure 2 - Side 3	14.15
GE 7FA05 - Accessory Module 1 - W Side	14.07
GE 7FA05 - Exhaust Diffuser 1 - N Side	13.11
GE 7FA05 - Inlet Plenum 2 - S Side	12.79
Roof-Mounted Ventilation Fan - WTB 2	12.72
GE 7FA05 - HRSG 1 - Stack Walls - Side 8	12.69
GE 7FA05 - Turbine Compartment 2 - N Sid	12.64
GE 7FA05 - HRSG 2 - Stack Walls - Side 8	12.59
GSU Transformer 2 - Side 1	12.24

Carroll County Energy Center - Source Contribution
Mitigated Acoustical Design

Source	SPL
Roof-Mounted Ventilation Fan - Admin 3	12.23
Water Treatment Building - North Facade	12.04
Gas Performance Heater 2	11.96
GE 7FA05 - Inlet Ducting 1 - N Side	11.40
STG Building - North Vent Louver	11.14
GE 7FA05 - Load Compartment 2 - N Side	10.68
GE 7FA05 - Turbine Compartment 1 - N Sid	10.52
GE 7FA05 - Generator 2 - N Side	10.37
GE 7FA05 - HRSG 2 - Body - N Side	10.35
GSU Transformer 2 - Side 2	10.12
GSU Transformer 1 - Side 1	9.83
GSU Transformer 2 - Top	9.83
Roof-Mounted Ventilation Fan - WTB 1	9.42
GSU Transformer 2 - Side 4	9.22
BFW Enclosure 2 - Side 4	8.99
GSU Transformer 1 - Side 2	8.84
GSU Transformer 3 - Side 1	8.52
GSU Transformer 3 - Side 2	8.42
GSU Transformer 1 - Side 4	8.40
GSU Transformer 1 - Side 3	8.36
GSU Transformer 3 - Side 3	8.34
GSU Transformer 3 - Side 4	8.33
Vacuum Pump Skid	7.69
GSU Transformer 2 - Side 3	7.66
Roof-Mounted Ventilation Fan - Admin 1	7.16
GE 7FA05 - Load Compartment 1 - N Side	7.08
SJAE Skid	6.96
GSU Transformer 1 - Top	6.94
GE 7FA05 - Generator 1 - N Side	6.61
Roof-Mounted Ventilation Fan - Admin 2	6.61
Small Transformer 5	6.37
Condensate Pump 1	5.94

Carroll County Energy Center - Source Contribution
Mitigated Acoustical Design

Source	SPL
Condensate Pump 2	5.80
GSU Transformer 3 - Top	5.45
Fuel Gas Metering and Regulating Area	5.42
Water Treatment Building - East Facade	5.09
Small Transformer 3	4.95
Water Treatment Building - South Facade	4.89
STG Building - West Vent Louver	4.76
Auxiliary Transformer 2 - Side 1	4.35
Water Treatment Building - Roof	3.80
Small Transformer 4	3.02
Auxiliary Transformer 2 - Top	0.61
Auxiliary Transformer 2 - Side 2	0.37
GE 7FA05 - Inlet Plenum 2 - N Side	-0.72
Auxiliary Transformer 2 - Side 4	-0.86
GE 7FA05 - Inlet Plenum 1 - N Side	-0.92
Auxiliary Transformer 1 - Side 1	-1.07
Small Transformer 6	-2.28
Auxiliary Transformer 1 - Side 4	-2.66
Auxiliary Transformer 1 - Side 2	-3.73
Auxiliary Transformer 1 - Side 3	-3.74
Auxiliary Transformer 2 - Side 3	-3.81
Water Treatment Building - West Facade	-4.27
Auxiliary Transformer 1 - Top	-4.66
Small Transformer 2	-5.01
Small Transformer 1	-5.61

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Summary: Application Appendix K: Operational Sound Level Impact Report electronically filed by Ms. Miranda R Leppla on behalf of Carroll County Energy LLC