

Staff Report of Investigation

Meldahl Hydroelectric Project
138 kV Transmission Line and Substation

Case Numbers
10-2439-EL-BSB
and
10-2440-EL-BTX

September 28, 2011

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John Kasich, Governor

Todd Snitchler, Chairman



**Power Siting
Board**

In the Matter of Applications by the City of Hamilton,)	
Ohio, and American Municipal Power, Inc., for a)	Case Numbers
Certificate of Environmental Compatibility and Public)	10-2439-EL-BSB
Need for the Meldahl Hydroelectric Project 138 kV)	10-2440-EL-BTX
Transmission Line and Substation)	

Staff Report of Investigation

Submitted to the
OHIO POWER SITING BOARD

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BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

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Certificate of Environmental Compatibility and Public)	10-2439-EL-BSB
Need for the Meldahl Hydroelectric Project 138 kV)	10-2440-EL-BTX
Transmission Line and Substation)	

Members of the Board:

Todd Snitchler, Chairman, PUCO
Christiane Schmenk, Director, ODD
Dr. Ted Wymyslo, Director, ODH
Jim Zehringer, Director, ODA
Scott Nally, Director, Ohio EPA
Scott A. Zody, Interim Director, ODNR
Dr. Ali Keyhani, Public Member

Louis Blessing, Jr., State Representative
Jay Goyal, State Representative
Tom Sawyer, State Senator
David Daniels, State Senator

To the Honorable Power Siting Board:

In accordance with provisions of the Ohio Revised Code (ORC) Section 4906.07(C), and the Commission's rules, the Staff has completed its investigation in the above matter and submits its findings and recommendations in this staff report for consideration by the Ohio Power Siting Board (Board).

The *Staff Report of Investigation* has been prepared by the Staff of the Public Utilities Commission of Ohio. The findings and recommendations contained in this report are the result of Staff coordination with the Ohio Environmental Protection Agency, the Ohio Department of Health, the Ohio Department of Development, the Ohio Department of Natural Resources, and the Ohio Department of Agriculture. In addition, the Staff coordinated with the Ohio Department of Transportation, the Ohio Historic Preservation Office, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the Federal Aviation Administration.

In accordance with ORC Sections 4906.07 and 4906.12, copies of this staff report have been filed with the Docketing Division of the Public Utilities Commission of Ohio on behalf of the Ohio Power Siting Board and served upon the Applicant or its authorized representative, the parties of record, and the main public libraries of the political subdivisions in the project area.

The staff report presents the results of the Staff's investigation conducted in accordance with ORC Chapter 4906 and the rules of the Board, and does not purport to reflect the views of the Board nor should any party to the instant proceeding consider the Board in any manner constrained by the findings and recommendations set forth herein.

Respectfully submitted,


Klaus Lambeck, Chief
Facilities, Siting, & Environmental Analysis Division

ACRONYMS

AGL	above ground level
AMP	American Municipal Power, Inc.
BMP	best management practices
dBA	decibels (A-weighted)
DOW	ODNR Division of Wildlife
FAA	Federal Aviation Administration
HHEI	Headwater Habitat Evaluation Index
kV	kilovolts
MW	megawatts
NERC	North American Electric Reliability Corporation
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OAC	Ohio Administrative Code
ODA	Ohio Department of Agriculture
ODD	Ohio Department of Development
ODH	Ohio Department of Health
ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transportation
Ohio EPA	Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Office
OPSB	Ohio Power Siting Board
ORC	Ohio Revised Code
PUCO	Public Utilities Commission of Ohio
QHEI	Qualitative Habitat Evaluation Index
r-o-w	right-of-way
SPCC	Spill Prevention, Containment, and Countermeasure
SWPPP	Storm Water Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

I. POWERS AND DUTIES

OHIO POWER SITING BOARD

The Ohio Power Siting Board (Board or OPSB) was created on November 15, 1981, by amended Substitute House Bill 694 as a separate entity within the Public Utilities Commission of Ohio (PUCO). The authority of the Board is outlined in Ohio Revised Code (ORC) Chapter 4906.

The Board is authorized to issue certificates of environmental compatibility and public need for the construction, operation, and maintenance of major utility facilities as defined in ORC Section 4906.01. Included within this definition are: electric generating plants and associated facilities designed for, or capable of, operation at 50 megawatts (MW) or more; electric transmission lines and associated facilities of a design capacity greater than or equal to 125 kilovolts (kV); and gas and natural gas transmission lines and associated facilities designed for, or capable of, transporting gas or natural gas at pressures in excess of 125 pounds per square inch. In addition, per ORC Section 4906.20, the Board authority applies to economically significant wind farms, defined in ORC 4906.13(A) as wind turbines and associated facilities with a single interconnection to the electrical grid and designed for, or capable of, operation at an aggregate capacity of five MW or greater but less than 50 MW.

Membership of the Board is specified in ORC Section 4906.02(A). The voting members include: the Chairman of the PUCO who serves as Chairman of the Board; the directors of the Ohio Environmental Protection Agency (Ohio EPA), the Ohio Department of Health (ODH), the Ohio Department of Development (ODD), the Ohio Department of Agriculture (ODA), and the Ohio Department of Natural Resources (ODNR); and a member of the public, specified as an engineer, appointed by the Governor from a list of three nominees provided by the Ohio Consumers' Counsel. Ex-officio Board members include two members (with alternates) from each house of the Ohio General Assembly.

NATURE OF INVESTIGATION

The OPSB has promulgated rules and regulations, found in Chapter 4906 of the Ohio Administrative Code (OAC), which establish application procedures for major utility facilities and wind farms.

Application Procedures

Any person that wishes to construct a major utility facility or economically significant wind farm in this state must first submit to the OPSB an application for a certificate of environmental compatibility and public need.¹ The application must include a description of the facility and its location, summary of environmental studies, a statement explaining the need for the facility and how it fits into the applicant's energy forecasts (for transmission projects), and any other information the OPSB may consider relevant.²

Within 60 days of receiving an application, the OPSB must determine whether the application is sufficiently complete to begin an investigation.³ If an application is considered complete, the Chairman of the OPSB will cause a public hearing to be held 60 to 90 days after the official

¹ ORC 4906.04 and 4906.20

² ORC 4906.10(A)(1) and 4906.20(B)(1)

³ OAC 4906-5-05(A)

filing date of the completed application. At the public hearing, any person may provide written or oral testimony and may be examined by the parties.⁴ Parties include the Applicant, public officials, and any person who has been granted a motion of leave for intervention.⁵

Staff Investigation and Report

The Chairman will also cause each application to be investigated and a report published not less than 15 days prior to the public hearing. The report sets forth the nature of the investigation and contains the findings and conditions recommended by Staff. The Board's Staff, which consists of career professionals drawn from the Staff of the PUCO and other member agencies of the OPSB, coordinates its investigation among the agencies represented on the Board and with other interested agencies such as the Ohio Department of Transportation (ODOT), the Ohio Historical Society, and the U.S. Fish and Wildlife Service (USFWS).

The technical investigations and evaluations are conducted under guidance of the OPSB rules and regulations in OAC Chapter 4906. The recommended findings resulting from the Staff's investigation are described in the staff report pursuant to ORC Section 4906.07(C). The report does not represent the views or opinions of the OPSB and is only one piece of evidence that the Board may consider when making its decision. Once published, the report becomes a part of the record and is served upon all parties to the proceeding and is made available to any person upon request.⁶ A record of the public hearings and all evidence, including the staff report, may be examined by the public at anytime.⁷

Board Decision

The OPSB may approve, modify and approve, or deny an application for a certificate of environmental compatibility and public need. If the OPSB approves, or modifies and approves an application, it will issue a certificate subject to conditions. The certificate is also conditioned upon the facility being in compliance with standards and rules adopted under the ORC.⁸

Upon rendering its decision, the OPSB must issue an opinion stating its reasons for approving, modifying and approving, or denying an application for a certificate of environmental compatibility and public need.⁹ A copy of the OPSB's decision and its opinion is memorialized upon the record and must be served upon all parties to the proceeding.¹⁰ Any party to the proceeding that believes its issues were not adequately addressed by the OPSB may submit within 30 days an application for rehearing.¹¹ An entry on rehearing will be issued by the OPSB within 30 days and may be appealed within 60 days to the Supreme Court of Ohio.¹²

⁴ ORC 4906.07

⁵ ORC 4906.08(A)

⁶ ORC 4906.07(C) and 4906.10

⁷ ORC 4906.09 and 4906.12

⁸ ORC 4906.10(A) and (B)

⁹ ORC 4906.11

¹⁰ ORC 4906.10(C)

¹¹ ORC 4903.10 and 4906.12

¹² ORC 4903.11, 4903.12, and 4906.12

CRITERIA

The recommendations and conditions in this *Staff Report of Investigation* were developed pursuant to the criteria set forth in ORC Section 4906.07(C), which requires, in part, that the staff report shall contain recommended findings with regard to ORC Section 4906.10(A).

Section 4906.10(A) of the ORC reads in part:

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 gas or natural gas transmission line;
- (2) The nature of the probable environmental impact;
- (3) That 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 or generation facility, that the 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) That the facility will comply with Chapters 3704., 3734., and 6111. of the Revised Code and all rules and standards adopted under those chapters and under Sections 1501.33, 1501.34, and 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under Section 4561.32 of the Revised Code, the Board shall consult with the ODOT Office of Aviation of the Division of Multi-Modal Planning and Programs of the Department of Transportation under Section 4561.341 of the Revised Code.
- (6) That the facility will serve the public interest, convenience, and necessity;
- (7) In addition to the provisions contained in divisions (A)(1) through (A)(6) of this section and rules adopted under those divisions, what its impact will be 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 utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternate site.
- (8) That the facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of the various alternatives.

II. APPLICATION

APPLICANT

In this proceeding, the City of Hamilton, Ohio, and American Municipal Power, Inc., individually and as agent for Meldahl, LLC, are the joint Applicant for the proposed Meldahl Hydroelectric Project 138 kV Transmission Line and Substation.

American Municipal Power, Inc. (AMP), was founded in 1971 by forming a group of municipally-owned electric systems. These strategic partnerships joined forces to provide the generation, transmission, and distribution of electric power to its members at lower costs.

HISTORY OF THE APPLICATION

Prior to formally submitting its application, the Applicant consulted with the Staff and representatives of the Board, including the Ohio EPA, regarding application procedures. In most instances, unless otherwise specified, the items referenced are common to both 10-2439-EL-BSB and 10-2440-EL-BTX.

On January 18, 2011, the Applicant filed a motion for waiver of certain information pertaining to the Alternate Transmission Line Route.

On January 26, 2011, the Applicant held a public information meeting regarding the proposed electric transmission line and substation.

On February 1, 2011, the Applicant filed to withdraw their waiver request.

On May 4, 2011, the Applicant filed both the transmission line and substation applications.

On July 1, 2011, the Applicant was issued a letter of compliance regarding the applications from the Chairman of the PUCO.

On July 1, 2011, the Applicant filed clarifying information regarding the substation, and also filed a memorandum in support to consolidate proceedings.

On July 27, 2011, an Entry was issued ordering that the motion to consolidate the proceedings be granted and scheduled the Public Hearing in this case for October 13, 2011.

On September 7, 2011, T. Ruwe filed a petition for leave to intervene on behalf of Lee R. Eubanks.

On September 26, 2011, the Applicant filed a waiver request and memorandum in support for information pertaining to the alternate substation site, and filed an addendum including additional information for secondary substation sites.

On September 27, 2011, the Applicant filed responses to Staff clarification questions.

On September 27, 2011, Staff filed a response to the Applicant's waiver request.

This summary of the history of the application does not include every filing in case number 10-2439-EL-BSB and 10-2440-EL-BTX. The docketing record for this case, which lists all documents filed to date, can be found in the Appendix to this report and online at <http://dis.puc.state.oh.us>.

PROJECT DESCRIPTION

In this proceeding, the Applicant is seeking approval to construct the Meldahl 138 kV Transmission Line and Substation. The City of Hamilton and AMP are presently constructing a 105 MW hydroelectric power generating facility on the Ohio River at the existing Meldahl Locks and Dam. A 138 kV electric transmission line from the new hydroelectric facility to the existing 345 kV Zimmer-Spurlock Transmission Line, approximately two miles inland from the Ohio-side landing of the river crossing, is proposed in case number 10-2440-EL-BTX. An application for a substation to interconnect the new proposed 138 kV transmission line with the existing 345 kV transmission line was filed under case number 10-2439-EL-BSB. This staff report includes an analysis of both the transmission line and substation, jointly referred to as the “project.” The Applicant proposes to commence construction in 2012 with the proposed transmission line and substation completed and placed in service by June 2013.

Preferred Transmission Line Route and Substation Site

The Preferred Substation Site is located at the point of interconnection between the Preferred Transmission Line Route and the existing Zimmer-Spurlock Transmission Line. The site is 3.4 acres, with a 3.4-acre construction staging area and secondary substation site, and a 1.6-acre site for interconnection. This site is situated approximately 1,400 feet west of the intersection between Chilo Cemetery McKendree Chapel Road and Bear Creek Road in Franklin Township. The Preferred Substation Site is located along the southwest side of the existing transmission line.

The Preferred Transmission Line Route is approximately 2.2 miles long, passing through Washington and Franklin townships. After crossing the Ohio River, the route crosses U.S. Highway 52 to the northeast and crosses Bert Reed Memorial Road. The route heads eastward into Franklin Township to the Preferred Substation Site, crossing Bear Creek.

Alternate Transmission Line Route and Substation Site

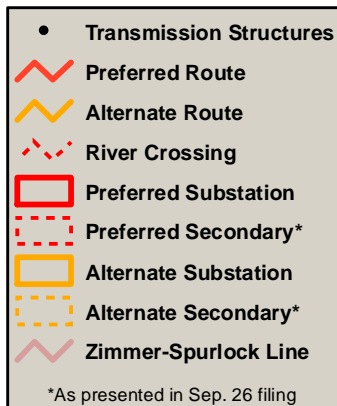
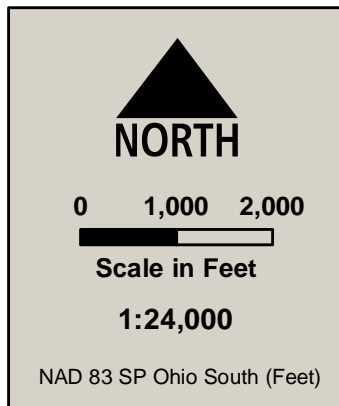
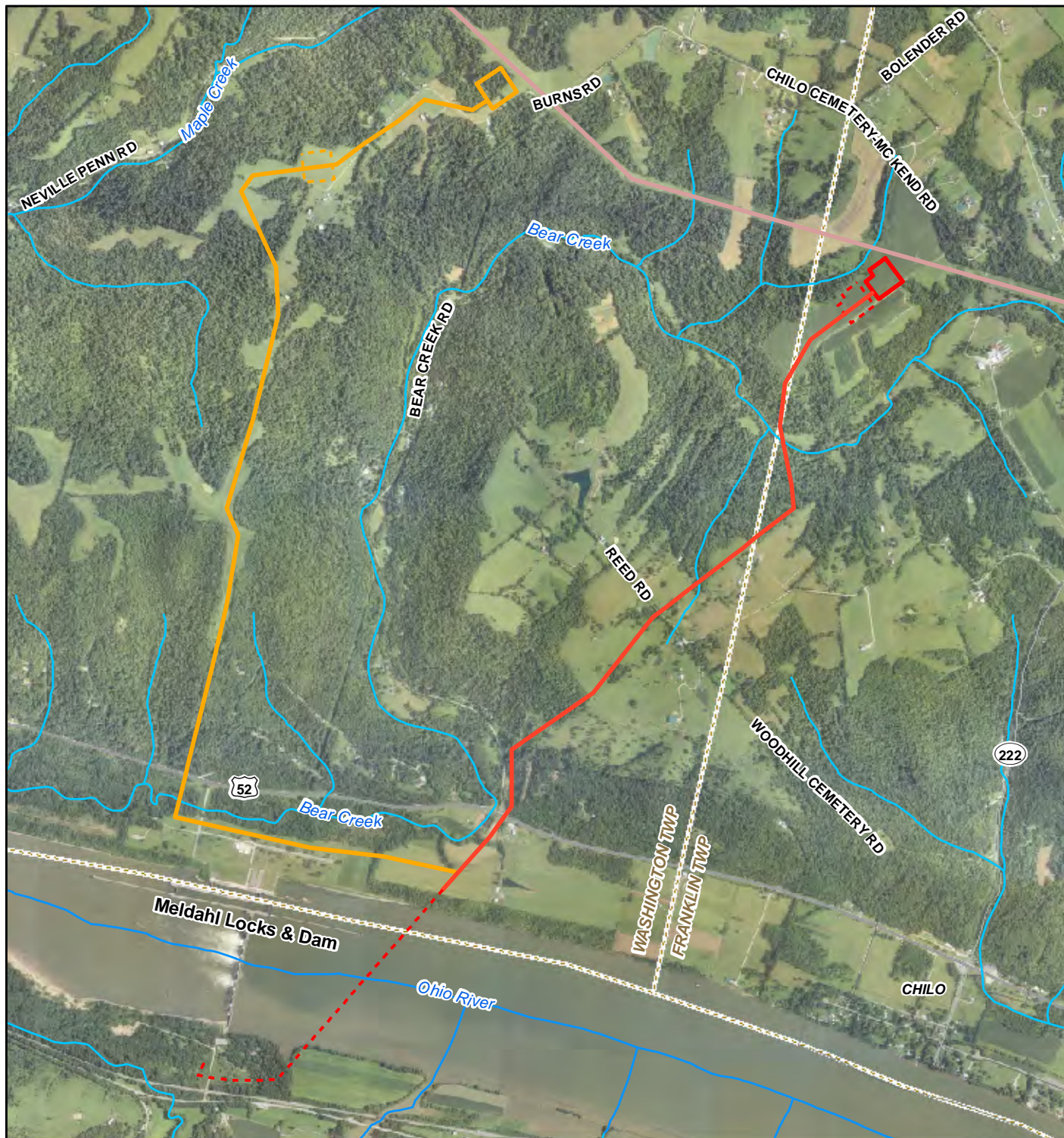
The Alternate Substation Site is located at the point of interconnection between the Alternate Transmission Line Route and the existing Zimmer-Spurlock Transmission Line. The site and a secondary site are 3.7 acres, with a 3.4-acre construction staging area and a 0.7-acre site for interconnection. The Applicant also proposed a 12.4-acre alternate staging area. This site is situated approximately 2,000 feet southeast of the intersection of Burns Road and Neville Penn Schoolhouse Road. The Alternate Substation Site is adjacent to Burns Road in Washington Township and is on the southwest side of the existing transmission line.

The Alternate Transmission Line Route is approximately 3.4 miles long in Washington Township. After crossing the Ohio River, the route heads in a westerly direction along U.S. Highway 52. The route then crosses U.S. Highway 52 and runs cross-country through generally wooded and hilly terrain to the Alternate Substation Site.

Both transmission line routes and the substation sites are depicted in the maps in the next section of this report.

PROJECT MAPS

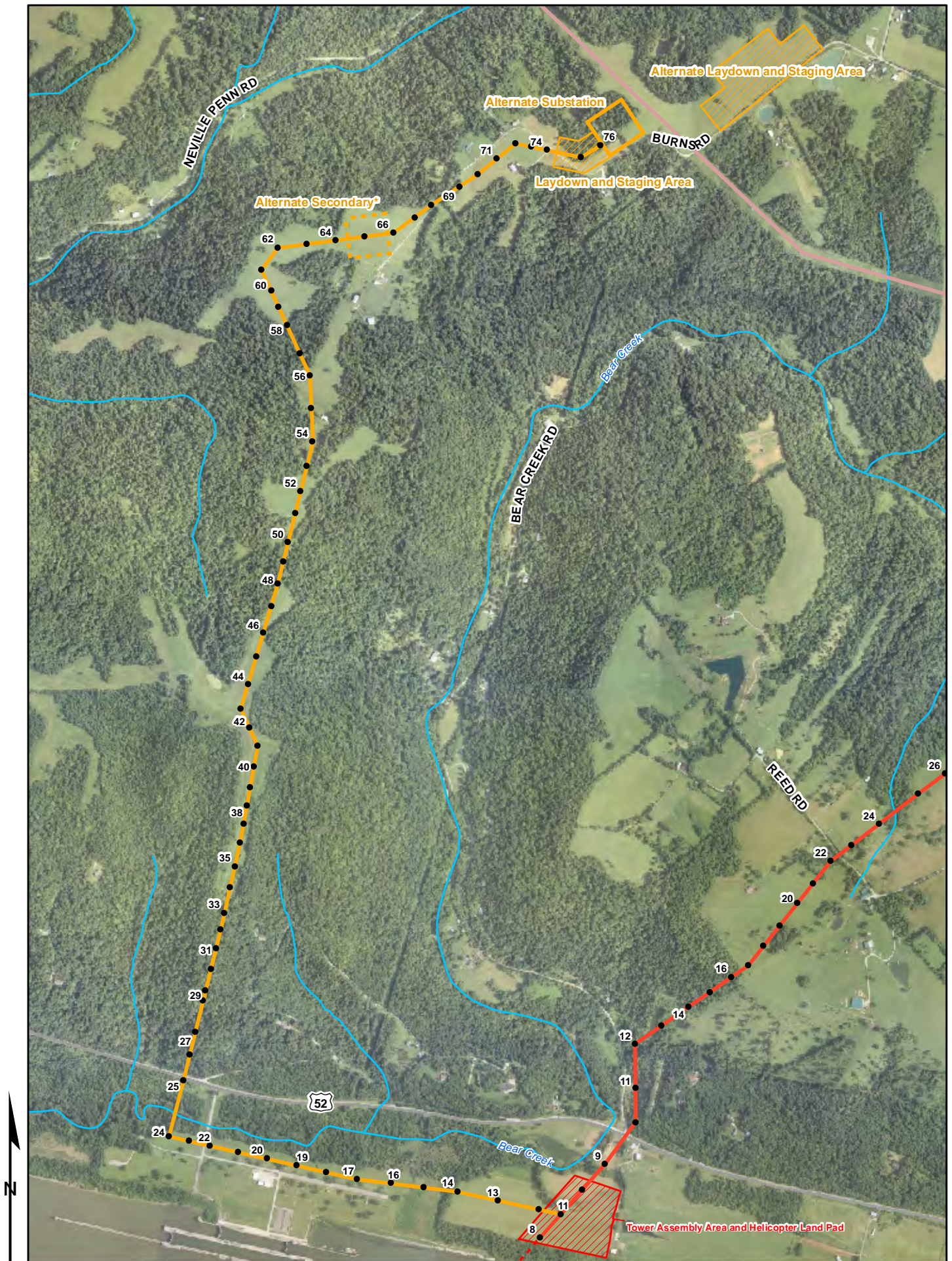
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10-2439-EL-BSB
10-2440-EL-BTX

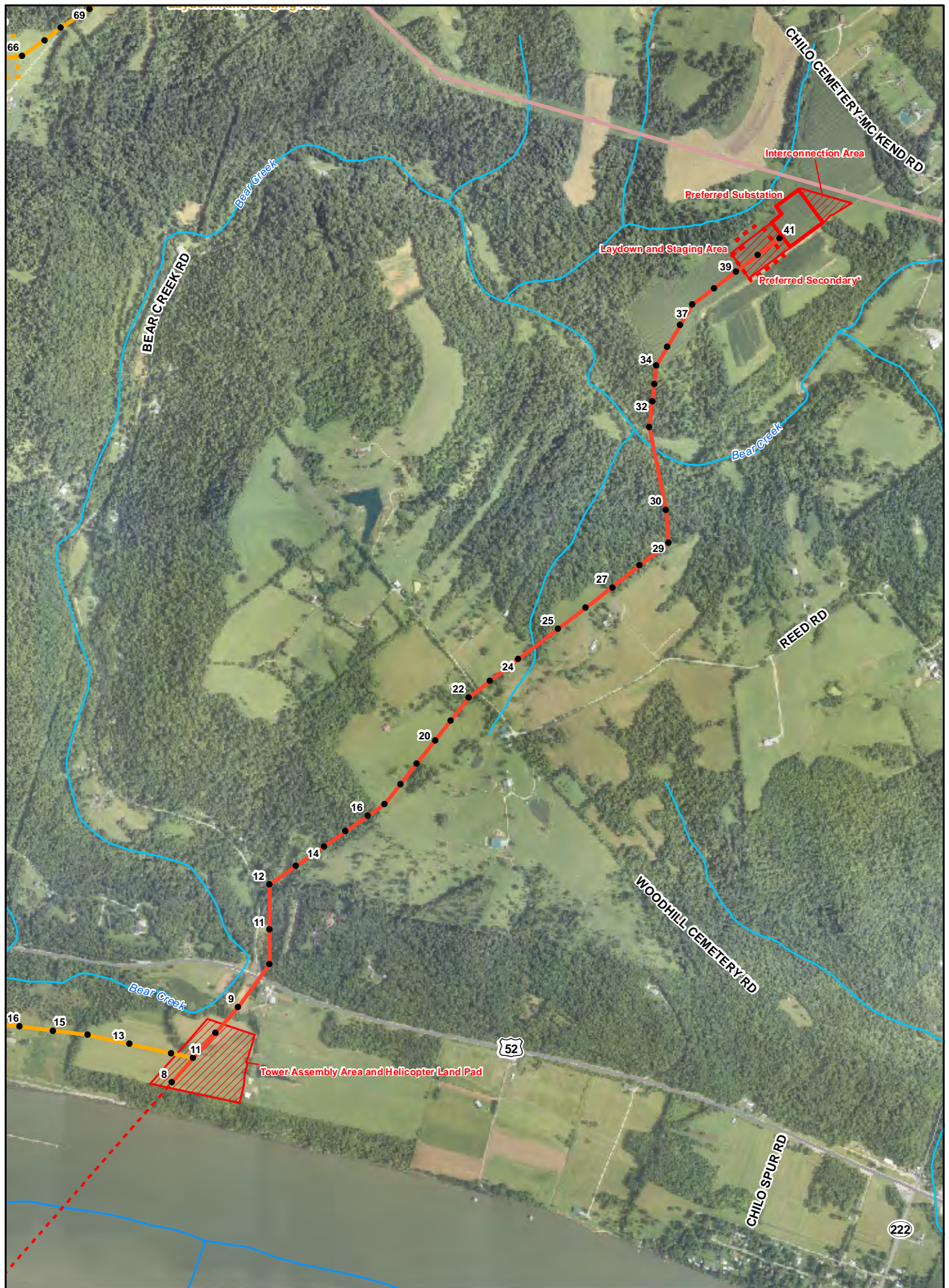
**Meldahl 138 kV
Transmission Line &
Substation**

Maps are presented solely for the purpose of providing a visual representation of the project in the staff report, and are not intended to modify the project as presented by the Applicant in its certified application and supplemental materials.



Alternate Route and Sites

1 inch equals 1,250 feet



1 inch equals 1,250 feet

Preferred Route and Sites

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III. CONSIDERATIONS AND RECOMMENDED FINDINGS

In the matter of the applications of the City of Hamilton, Ohio, and American Municipal Power, Inc., the following considerations and recommended findings are submitted pursuant to ORC Section 4906.07(C) and ORC Section 4906.10(A).

Considerations for ORC Section 4906.10(A)(1)

BASIS OF NEED

Purpose of Proposed Facility

The Applicant is currently constructing a 105 MW hydroelectric generating facility at the Meldahl Locks and Dam (Meldahl) on the Ohio River. The Applicant states that the transmission line and transmission substation project is necessary to carry the energy from Meldahl to the electric grid to serve the energy demands of their customers. The proposed single-circuit 138 kV transmission line would extend from Meldahl to the proposed substation then to the existing 345 kV Zimmer-Spurlock Transmission Line. This would allow the generation output of Meldahl to reach the local and regional grid.

Long Term Forecast

AMP and the City of Hamilton are not regulated by the PUCO. Therefore, they are not required to prepare a long-term forecast or regional expansion plans of transmission facilities.

System Economy and Reliability

PJM Interconnection LLC (PJM), a Regional Transmission Organization, is charged with the operation of the regional transmission system and administers the interconnection process of new generation to the system. PJM has completed the Feasibility Study and the System Impact Study, which show the reliability impacts that Meldahl would have on the electric grid. These studies show that the Applicant's project does not require any system upgrades and would not harm the grid. The PJM System Impact Study is discussed in detail in the staff report section 4906.10(A)(4), Electric Grid. The Applicant would be unable to supply energy through the proposed line and substation to the local and regional electric system without signing an interconnection agreement.

Conclusion

The proposed transmission project is not being constructed to relieve congestion or improve the electric grid. The project is an integral part of the Meldahl Hydroelectric Project, which would be unable to carry the generation output to the local and regional grid without a transmission line and transmission substation. Staff believes that the basis of need has been demonstrated.

Recommended Findings

Staff recommends that the Board find that the basis of need for the project has been demonstrated and therefore complies with the requirements specified in ORC Section 4906.10(A)(1), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

Considerations for ORC Section 4906.10(A)(2)

NATURE OF PROBABLE ENVIRONMENTAL IMPACT

Pursuant to ORC Section 4906.10(A)(2), the Board must determine the nature of the probable environmental impact of the proposed facility. As a result, the Staff has found the following with regard to the nature of the probable environmental impact:

- (1) This project includes the construction and operation of a 138/345 kV substation and a 138 kV transmission line. The transmission line would have a permanent right-of-way (r-o-w) of 125 feet. The transmission line structures would include a combination of H-frame wood and steel pole structures, single-pole steel structures, and three-pole wood structures. Heights would vary from 52 to 100 feet, except for the steel lattice structure at the Ohio River crossing, which would be 255 feet tall. The Applicant filed a complete list of structure types on the docket on September 27, 2011. Line structures would be pre-assembled at the construction staging area. They would then be flown into their position by helicopter, or, where possible without creating adverse environmental impacts, lifted onto the foundation with a crane.
- (2) The project area is sparsely populated and is not expected to change dramatically. Townships containing the project area have an average population density of 88 persons per square mile, compared to 428.7 persons per square mile in all of Clermont County.¹³ Population in the Clermont County townships that contain the project area has grown by an average of two percent annually, compared to a 10.3 percent population increase for the entire county.¹⁴ The project is unlikely to limit future population growth or have an impact on the demographics of the region.
- (3) Residential structures are scattered throughout the project area. A total of 19 residences are within 1,000 feet of the Preferred Transmission Line Route, ten of which are within 500 feet. One structure is within 100 feet of the Preferred Transmission Line Route. There are 26 residences within 1,000 feet of the Alternate Transmission Line Route, 17 of which are within 500 feet, and one within 100 feet. The construction and operation of a substation at either the Preferred or Alternate substation sites would not permanently impact nearby residences. Both sites are located on agricultural parcels. The closest residence to the Preferred Substation Site is over 1,000 feet away. The Alternate Substation Site is approximately 390 feet from the closest residence. Impacts would be limited to temporary construction noise. No residences would be removed for this project.
- (4) The Preferred Transmission Line Route would require the clearing of approximately 38 acres of land for construction. The Alternate Transmission Line Route would require the clearing of approximately 56 acres of land. The substation at either site would require the clearing of approximately four acres of land. Nearly all of this land is agricultural and would be returned to its current use after construction, with the exception of the footprint of the transmission line structures and the substation. Approximately 0.3 acres would be

¹³ Ohio Department of Development. (May 2011). *2008 Population Estimates by County, City, Village, and Township*. Retrieved May 16, 2011, from the ODO web site:

<http://www.development.ohio.gov/research/documents/p103000004.pdf>

¹⁴ Ohio Department of Development. (May 2011). *Ohio County Indicators*. Retrieved May 16, 2011, from the ODO web site: <http://www.development.ohio.gov/research/files/s101.pdf>

permanently occupied by the Preferred Transmission Line Route structures, and 0.7 acres for the Alternate Transmission Line Route structures.

- (5) No commercial, industrial, or recreational land uses would be impacted by this project. No parks are located within 1,000 feet of the Preferred or Alternate transmission line routes or substation sites. The nearest institutional land use is the Meldahl Locks and Dam, which also provides public access for fishing, boating, picnics, and other activities. These recreational uses of the Meldahl Locks and Dam would not be impacted by the project.
- (6) No historic, cultural, or archaeological resources have been identified that would be disturbed by the construction, operation, or maintenance of project facilities. Portions of the project may be visible from historic resources near the project. However, visual impacts to these sites would not affect their historic value, as the view would include existing industrial structures located at the Ohio River crossing.
- (7) Aesthetic impacts of the project would be reduced by the relatively isolated nature of the project area, the abundance of natural screening, and the siting of project facilities away from area residences. The line would be most visible at the Ohio River crossing near the Meldahl Locks and Dam, where existing structures evoke an industrial character.
- (8) The Applicant estimates the construction cost for the Preferred Transmission Line Route and Preferred Substation Site to be approximately \$30.6 million. The Alternate Transmission Line Route and Alternate Substation Site is estimated to cost approximately \$32.2 million.
- (9) The Applicant estimates that the project would generate several hundred thousand dollars annually in state and local tax revenue for the first five years of operation of the transmission line and substation.
- (10) The project area is accessible through state, local, and county roads. The nearest highway is U.S. Highway 52, which is located approximately 1.8 miles south of the Preferred Substation Site. There are no railroads within 1,000 feet of the Preferred Substation Site. These roads would provide access for construction vehicles into the project area.
- (11) The Preferred Transmission Line Route crosses 12 stream channels, while the Alternate Transmission Line Route crosses six stream channels. No streams would be crossed by the Preferred Substation Site. The Alternate Substation Site would permanently impact one dry stream channel. The transmission structures for both routes would be sited as to avoid placement in or immediately adjacent to stream channels. Impacts associated with stream channel crossings may include erosion from vegetation clearing, sedimentation from storm water runoff, water temperature increase, loss of habitat, and the placement of culverts or channel fords. The Applicant would avoid direct impacts to the Ohio River and Bear Creek with regard to the Preferred Transmission Line Route by spanning the transmission conductors over these resources, at sufficient clearance heights and at OPSB pre-approved crossing locations, utilizing a helicopter. The placement of fill in waters of the U.S.¹⁵ will

¹⁵ Waters of the U.S. include those waters listed in 33 CFR 328.3(a). The lateral limits of jurisdiction in those waters may be divided into three categories, including the territorial seas, tidal waters, and non-tidal waters (see 33 CFR 328.4 (a), (b), and (c), respectively). Water resources considered by the USACE as waters of the U.S. are subject to USACE 404 permitting if impacted below the ordinary high water mark.

require authorization from the U.S. Army Corps of Engineers (USACE) through a nationwide permit.

- (12) No lakes, ponds, or reservoirs are located within 1,000 feet of either transmission line route or substation site.
- (13) There are no wetlands located within the Preferred Transmission Line Route r-o-w or at either substation site. There is one wetland located within the Alternate Transmission Line Route r-o-w. The size of this wetland is 0.05 acres. The Alternate Transmission Line Route would span over this wetland and the Applicant would place structures so as to avoid this wetland.
- (14) Approximately 14 acres of deciduous woodland and approximately five acres of old field/pioneer habitat would be cleared for the Preferred Transmission Line Route. Additionally, 19 acres of agricultural field would be cleared and would not be available for farming during construction activities for the Preferred Transmission Line Route. A small portion of agricultural land surrounding existing farm roads would also be disturbed to accommodate expansion of existing farm roads to support construction activities associated with the Preferred Transmission Line Route. The Preferred Substation Site is located entirely within agricultural croplands and would permanently impact 3.4 acres, with an additional 3.4 acres of impact for a laydown yard and 1.6 acres to support the connection between the substation and the existing Zimmer-Spurlock Transmission Line. Approximately 19 acres of deciduous woodland and approximately eight acres of old field/pioneer habitat would be cleared for the Alternate Transmission Line Route. Approximately 29 acres of agricultural fields would be cleared and would not be available for farming during construction activities associated with the Alternate Transmission Line Route and only one farm road would need to be expanded to accommodate construction activities. The Alternate Substation Site would impact 2.7 acres of deciduous woodland and 1.0 acres of agricultural pasture land. An additional 3.4 acres around the Alternate Substation Site would be temporarily cleared of woody vegetation and herbaceous vegetation during construction of the substation. The Applicant indicates that all vegetation and trees adjacent to the constructed transmission line and substation r-o-w that present a danger to the transmission line or substation, or restrict access to the transmission line or the substation facility, would be cleared, and the r-o-w would be permanently maintained. The Applicant also states that all vegetation waste from clearing activities would be disposed of off site at an approved facility, unless disposal within the proposed corridor is approved by OPSB Staff.
- (15) A high-quality riparian corridor and mature hillside forest is located within the Preferred Transmission Line Route r-o-w, along a segment of Bear Creek, an Ohio EPA-designated warm water habitat stream and a direct tributary to the Ohio River. The Applicant proposed to span the transmission conductors over Bear Creek and the associated high-quality riparian corridor and mature hillside to eliminate the need to clear any vegetation between structures 30 and 31. However, the Applicant also indicates that a 50-foot long area near these two structures would need to be cleared of vegetation and any tree exceeding 40 feet in height would need to be topped due to conductor sag, which could adversely impact a number of the taller existing trees.

- (16) There are no nature preserves, state parks, wildlife areas, or scenic rivers in the vicinity of the project site. Further, there are no federal wilderness areas, wildlife refuges, or designated Critical Habitat within the vicinity of the proposed transmission line routes or substation sites.
- (17) The transmission line routes and substation sites contain habitat supporting numerous common reptile, amphibian, bird, and mammal species. Species along the routes would likely be impacted, both directly and indirectly, during the construction and operation of the proposed transmission line and substation. Impacts to wildlife could include the loss of habitat, increased habitat fragmentation, temporary and permanent displacement, and direct mortality due to construction activities. Interior forest species would be most negatively impacted by the cleared r-o-w in wooded areas, while species which tolerate and/or prefer edge habitats may be impacted positively.
- (18) The Applicant requested information from the ODNR and the USFWS regarding state and federally listed threatened and endangered plant and animal species. Additionally, during field assessments of the survey corridor,¹⁶ Jackson Environmental Consulting Services, LLC (Jackson Environmental), a consulting firm retained by the Applicant, identified plant and wildlife species. The following are the results of the data request and field assessments:
- (a) Plants: This project is within the known range of the federally endangered running buffalo clover (*Trifolium stoloniferum*), and the following state endangered species: Virginia-mallow (*Sida hermaphrodita*), smooth buttonwood (*Spermacoce giabra*), and Southern black-haw (*Viburnum rufidulum*). Jackson Environmental conducted a survey of the transmission line routes and substation sites and did not find any of these species or suitable habitat. Due to the project type, location, and lack of suitable habitat within the project area, the USFWS and the ODNR Division of Wildlife (DOW) concluded that no impacts to these listed plant species would be expected.
 - (b) Birds: This project is within the known range of the loggerhead shrike (*Lanius ludovicianus*), a state endangered bird species. The ODNR recommends that if grassland or prairie habitat is present, construction must not occur in this habitat during the species' nesting period of April 1 to August 1. If this habitat will not be impacted, then the project is not likely to impact this species.
 - (c) Reptiles and Amphibians: There are no records for listed reptile or amphibian species within this project area.
 - (d) Mammals:
 - (i) Indiana bat: This project lies within the known range of the state and federally endangered Indiana bat (*Myotis sodalis*). There are no known or suspected hibernacula located within 10 miles of this project. Bat mist-netting surveys conducted by Jackson Environmental on the Preferred Transmission Line Route corridor did not result in any captures of this species. Additionally, no over

¹⁶ *Survey corridor* refers to the physical extent in which Jackson Environmental conducted ground-level reconnaissance of plants, birds, reptiles, amphibians, mammals, aquatic species, waters of the U.S., and waters of the state. The reconnaissance was conducted to verify the presence and approximate extent of such features within the area that could be directly disturbed for construction, operation, or maintenance of the project. The survey area is larger than the area that would be disturbed by all facets of the facility.

wintering habitat was identified for this species. Based on this information, the USFWS has determined that “take”¹⁷ is not expected while Indiana bats would be utilizing their summer roosting and maternity roost tree habitat pursuant to the Endangered Species Act (ESA) Section 9 provisions. The Applicant also determined that trees that exhibit suitable Indiana bat summer habitat, such as roosting and maternity roost trees, would be removed as a result of constructing either transmission line route and/or the Alternate Substation Site. OPSB Staff and the DOW would require that the Applicant adhere to seasonal cutting dates (September 30 to April 1) for the clearing of trees that exhibit suitable Indiana bat summer habitat, such as roosting and maternity roost trees.

- (ii) Other Mammals: This project is within the range of the state endangered bobcat (*Lynx rufus*). Due to the mobility of this species, the project is not likely to have an impact on this species.

(e) Aquatic Species:

- (i) Freshwater Mussels: This project is within the range of the following state endangered and federally proposed endangered mussel species: the rayed bean (*Villosa fabalis*), the sheepnose (*Plethobasus cyphus*), and the snuffbox (*Epioblasma triquetra*); the following state and federally endangered mussel species: the fanshell (*Cyprogenia stegaria*), and the pink mucket (*Lampsilis orbiculata*); and, the following state endangered mussel species: the washboard (*Megaloniais nervosa*), the ebonyshell (*Fusconaia ebena*), the butterfly (*Ellipsaria lineolata*), the elephant-ear (*Elliptio crassidens crassidens*), the Ohio pigtoe (*Pleurobema cordatum*), the monkey face (*Quadrula metanevra*), and the wartyback (*Quadrula nodulata*). The DOW states that this project must not have an impact on freshwater native mussels in this area. If mussels are impacted, then the Applicant must work with the DOW to determine the appropriate compensatory mitigation for what would be considered an “unlawful taking.” If no in-stream work is proposed, then this project is not likely to impact these mussel species.
- (ii) Fish: This project is within the range of the state endangered shovelnose sturgeon (*Scaphirhynchus platyrhynchus*), and the state endangered goldeye (*Hiodon alosoides*) fish species. The DOW recommends no in-water work in perennial streams at least between April 15 to June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed, then this project is not likely to impact these species.

- (19) Noise impacts from the project would be most intense during proposed rock drilling¹⁸ and helicopter operations¹⁹ or situations which could warrant blasting. The impacts of these

¹⁷ Take is to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct [ESA §3(19)]. Harm is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the USFWS as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering [50 CFR 17.3] (USFWS, 1998).

¹⁸ 98 dBA typical noise level at a distance of 50 feet from the rock drill.

¹⁹ 89-99 dBA L_{MAX} at an altitude of 200 feet and a distance of 50 feet.

operations to residents could be reduced through limiting the acceptable times of helicopter use, rock drilling, and blasting operations to Monday-Friday, 10:00 a.m. to 5:00 p.m. These times are ostensibly consistent with first-shift working hours.

- (20) Three public-use airports exist within 20 miles of the proposed transmission line and substation. Because of the distance and limited number of structures greater than 200 feet above ground level (AGL), the construction and operation of the proposed facility is not expected to have an impact on public-use airport facilities.
- (21) The Applicant states that radio or television interference should not result from the operation of the proposed substation or transmission line, except from faulty substation equipment that could occur for short periods. Impacts to microwave or wired telephone communications are not known at this time and should be studied prior to construction.

Recommended Findings

The Staff recommends that the Board find that the nature of the probable environmental impact has been determined for the proposed facility, and therefore complies with the requirements specified in ORC Section 4906.10(A)(2), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

Considerations for ORC Section 4906.10(A)(3)

MINIMUM ADVERSE ENVIRONMENTAL IMPACT

Pursuant to ORC Section 4906.10(A)(3), the proposed facility must represent the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, along with other pertinent considerations.

Site Selection

The Applicant evaluated potential transmission line routes in conjunction with possible substation sites. Prospective transmission corridors were designed to avoid contact with wetlands, streams, water bodies, and sensitive natural habitats; minimize overall route length; and maximize distance from incompatible land uses, road crossings, and cultural resources. The Applicant designed 10 prospective transmission line routes. These routes were evaluated against several criteria, including overall corridor length, route length adjacent to existing r-o-w, proximity to buildings, and number of stream, property, and road crossings. Route topography, line constructability, and overall cost were also considered. The Applicant developed a ranking system consisting of 11 attributes taken from their evaluation criteria. The two highest scoring options were finally selected as the Preferred and Alternate transmission line routes.

The Applicant identified five potential substation sites based on the endpoints of the prospective transmission line corridors. Criteria used to evaluate these options included proximity to the Zimmer-Spurlock Transmission Line, access to roadways, topography, and distance from residences, water bodies, and cultural resources. The Preferred and Alternate substation sites were chosen based on these considerations.

The site selection study entailed the consideration of multiple factors and constraints. Staff has reviewed and evaluated the materials presented by the Applicant and accepts that the selection process has led to the choice of the appropriate Preferred and Alternate routes and sites.

Socioeconomic Impacts

Land Use

Land use in the project area is primarily agricultural. The Applicant has minimized land use impacts by jointly siting the transmission line and substation to reduce the overall length of the routes. The Preferred Transmission Line Route and Preferred Substation Site would have the least impact to land use because the route is over one mile shorter than the Alternate Transmission Line Route and would therefore require less land for construction and operation.

Recreational Areas

The nearest park is approximately two miles to the east of the proposed facility, in Chilo, Ohio. The proposed facility would not impact this park. The Meldahl Locks and Dam provides access for fishing, boating, picnics, and other activities, but these recreational uses would not be impacted by the project.

Cultural and Archaeological Resources

The Applicant provided a literature review of known cultural and archaeological resources within three kilometers of the project area, including the Preferred and Alternate transmission line routes and a third route that was later dropped from consideration. No known resources were found within 100 feet of the Preferred Transmission Line Route. Three sites listed in the Ohio

Archaeological Inventory (OAI) were found within 1,000 feet of the Preferred Transmission Line Route. Two OAI sites were found within 100 feet of the Alternate Transmission Line Route, and three within 1,000 feet. No sites from the National Register of Historic Places (NRHP) or the Ohio Historic Inventory (OHI) were found within 1,000 feet of the Preferred Transmission Line Route. One OHI site was found within 1,000 feet of the Alternate Transmission Line Route. The literature review suggested that unknown resources were likely to be encountered along either route, especially prehistoric archaeological sites.

The Applicant conducted an archaeological field survey within the construction r-o-w of the Preferred Transmission Line Route and Preferred Substation Site. As a result of the field survey, the Applicant documented nine archaeological sites. Three of these sites were considered potentially eligible for listing in the NRHP. The Preferred Transmission Line Route alignment was adjusted in order to avoid impacts to these three archaeological sites. The three sites include a historic-era farmstead with a limestone cellar, and two sites that contain fire-cracked rock, pottery, and other signs that the sites may contain earth ovens. These sites appear to be Early Woodland Period settlements that could be useful for archaeological research.

The remaining six sites were considered to be unlikely to contain significant resources. The Alternate Transmission Line Route is more likely to impact archaeological resources because of its longer section near the Ohio River, where artifacts are more likely to occur. If the Alternate Transmission Line Route and Substation Site are chosen, the Applicant would conduct archaeological field surveys in those areas.

Both the Preferred and Alternate transmission line routes and substation sites were field surveyed for historic and cultural resources. Three resources identified in the survey were considered eligible for the NRHP. The Meldahl Locks & Dam is considered eligible because of its engineering significance and contribution to Ohio River navigation, but it would not be adversely affected because the transmission line is compatible with the resource and the dam was built with hydroelectric power envisioned at the site.

The Woods Hill Cemetery is considered eligible for NRHP listing because it is one of the oldest cemeteries in Clermont County, with intact features including grave markers and an iron fence, and it is associated with early settlers of the area and their descendants. It would not be adversely impacted because it is more than ¼ mile from the Preferred Transmission Line Route, and it is largely shielded from view by mature trees around the perimeter.

The Reid Farm is considered eligible for listing in the NRHP because of its distinctive English style/bank barn, dairy shed, and well. The Reid Farm would have limited to no visibility of the transmission line.

Several properties in the town of Chilo were documented, and five may be considered eligible for NRHP listing with further study. However, no impact is expected to historic properties in Chilo due to obstructions in the viewshed of the transmission line and overall compatibility with the dam and surrounding commercial/industrial features.

Aesthetics

Portions of both the Preferred and Alternate transmission line routes would be visible from several public roads and area residences. The magnitude of visual impact would vary by location, depending on topography, woodland screening, and settlement patterns. The line would be most visible at the Meldahl Locks and Dam where it would span the Ohio River and U.S Highway 52.

The Applicant has provided a viewshed analysis of the project area, which indicates that the line's river crossing towers would be visible five miles upstream and ten miles downstream, assuming no vegetative screening exists. The towers would thus be visible from a county park and historic plantations located two miles upstream. However, it is unlikely that views of the towers would severely compromise the aesthetic quality of these locations. The project area's remote location, steep terrain, and abundance of undeveloped woodland would reduce the overall visibility of both the Preferred and Alternate transmission line routes.

The potential visual impacts of both the Preferred and Alternate substation sites have been minimized. While the facilities would be visible from some households, the distance from area residences, woodland screening, and lack of major road access would diminish their visibility.

Economics

The estimated capital costs for the Preferred and Alternate transmission line route are \$22.182 million and \$23.611 million, respectively. The estimated capital costs for the interconnecting substation are \$8.648 million, for either site. The construction of the facility would have a direct and indirect economic benefit to the region during construction and operation of the project. Construction employment would vary each month. The Ohio portion of the project would last approximately eight months and would employ approximately 50 construction workers. The local economy would benefit from direct and indirect purchases for locally-supplied goods and services.

All state and local tax revenues associated with the project have not been determined. Initial estimates are several hundred thousand dollars annually in state and local tax revenue for the first five years of operation.

Any project delay could incur unnecessary costs to the project. There are delay costs due to the high carrying cost of equipment, lost construction days, and costs associated with idle contractors and equipment. Additionally, there could be penalties incurred for failing to meet production deadlines under a potential power purchase agreement.

Ecological Impacts

Surface Waters – Preferred Transmission Line Route

The Preferred Transmission Line Route crosses 12 stream channels and would not impact any wetlands, ponds, lakes, or reservoirs. Six of the stream crossings were assessed by a qualified biologist using the Ohio EPA Qualitative Habitat Evaluation Index (QHEI) or Primary Headwater Habitat Evaluation Index (HHEI) scoring data forms. Based on a scale of 0-100, 0 being the lowest and 100 being the highest, the QHEI and HHEI scores for these six stream crossings along the Preferred Transmission Line Route are as follows:

<u>Stream</u>	<u>QHEI/HHEI score</u>
BC-4	77 - QHEI
200	59.25 - QHEI
202	67 - QHEI
203	37.5 - QHEI
HW-2	49 - HHEI
201	18 - HHEI

The Applicant only identified and assessed wetted stream reaches and headwaters at the time of survey. Dry channels were not assessed using the QHEI or HHEI protocols. OPSB Staff would require the Applicant to provide the appropriate data forms for the remainder of stream reaches that would be impacted by the final approved transmission line route and substation site thirty (30) days prior to the pre-construction conference.

The Applicant states that tree clearing would be required at all 12 stream crossings to allow for construction, operational, and maintenance access. The clearing along streams increases the direct sunlight to the streams, increases water temperature, and reduces the food sources for birds, mammals, and aquatic species. Although lower-growing vegetation species would eventually re-establish, these species would not provide the same type and amount of shading or food supply as do the existing trees. Riparian vegetation removal would also lead to increased downstream sedimentation because of stream bank erosion. Sediment from erosion impacts the overall health of a stream because it can reduce water quality through turbidity. The Applicant also states that streams would need to be crossed by construction equipment. Where equipment must cross streams, permanent culverts would be placed. Furthermore, the Applicant has designed the Preferred Transmission Line Route structure heights at the Bear Creek crossing with the assumption of a maximum tree height of 40 feet, so any tree exceeding 40 feet would need to be topped due to conductor sag.

To ensure the minimum environmental impact to these streams, OPSB Staff would require that equipment crossing of streams is avoided wherever possible, and no equipment ford through any streams. All stumps will be left in place to help maintain bank stability. Where the natural seed bank does not re-establish satisfactorily, the Applicant would replant appropriate vegetation along all stream banks. To further limit impacts to streams, tree clearing, which would be conducted by hand, would be limited to those trees and tree species that are perceived as posing an imminent risk to the construction and operation of the facility. OPSB Staff would also require the Applicant to provide a construction and operation access plan to OPSB Staff for review and approval prior to the pre-construction conference.

Furthermore, in order to eliminate the need to clear or top trees between structures 30 and 31, at stream crossing BC-4 (Bear Creek), OPSB Staff would require the Applicant to use taller structures than currently proposed in the Application, in combination with shifting the proposed centerline of the Preferred Transmission Line Route.

Surface Waters - Alternate Transmission Line Route

The Alternate Transmission Line Route crosses six stream channels, and would not impact any ponds, lakes, or reservoirs. Only one wetted channel stream was assessed by the Applicant for this route. This stream is labeled as BC-5 and received a score of 56.25 using the QHEI protocol. As stated above, the Applicant did not assess dry channels during the time of survey. The Alternate Transmission Line Route has fewer stream crossings than the Preferred Transmission Line Route.

The quality of streams crossed by the Preferred Transmission Line Route appears higher than the Alternate Transmission Line Route. Therefore, potential adverse impacts to streams are greater along the Preferred Transmission Line Route.

Surface Water – Substation Sites

The Preferred Substation Site would not impact any stream channels. There is one nearby stream channel, but none within the proposed Preferred Substation Site. There is one dry headwater stream channel identified within the Alternate Substation Site. An HHEI was completed and this stream was identified as HW-25. This stream is a drainage swale without an ordinary high water mark. A portion of HW-25 would be permanently filled as part of the development of the Alternate Substation Site.

The Preferred Substation Site does not cross any streams. The Alternate Substation Site would permanently impact a portion of one stream. Thus, the Alternate Substation Site would have a greater impact on stream channels than the Preferred Substation Site.

Wetlands

The Preferred Transmission Line Route and both substation sites do not impact any wetlands. There is one palustrine emergent wetland located within the 125-foot wide r-o-w of the Alternate Transmission Line Route. This wetland was classified as a Category 1 wetland and is 0.05 acres. Impacts to this wetland would be avoided by spanning the conductor over the wetland.

In order to minimize environmental impacts, no tracked vehicles should cross this wetland. Vegetative clearing within this wetland would destroy wildlife habitat. Therefore, to minimize habitat impacts, OPSB Staff would require that the vegetation clearing width would be kept to the minimum necessary to complete construction activities. The existing seed banks would likely regenerate the wetland plant community in the next growing season.

The Preferred Transmission Line Route and both substation sites do not cross any wetlands. The Alternate Transmission Line Route may impact one wetland. Thus, the Alternate Transmission Line Route may have a greater impact on wetlands than the Preferred Transmission Line Route and both substation sites equally avoid impacts to wetlands.

Wildlife and Vegetation

The Applicant took many steps when planning its Preferred Transmission Line Route and Preferred Substation Site that resulted in a reduction to potential wildlife and plant impacts. Certain segments of the Preferred Transmission Line Route were adjusted during the planning stages to avoid some of the most environmentally-sensitive areas, including spanning streams and eliminating the clearing of a high-quality riparian corridor and hillside deciduous woodland. The Applicant is also working to identify access routes for construction equipment that would minimize any additional direct environmental impacts to sensitive habitats, the end result of which should be the retention of habitat available for wildlife.

Despite these efforts, construction of either transmission line route or substation site is expected to introduce both direct and indirect impacts to plants and wildlife. The impacts would include the loss of habitat, increased habitat fragmentation, temporary and permanent displacement, and direct mortality due to construction activities. The Alternate Transmission Line Route and Alternate Substation Site have the potential to produce greater negative wildlife impacts than the Preferred Transmission Line Route and Preferred Substation Site, as a result of the amount of different habitat types that would be impacted. Some of the key ecological differences supporting this conclusion are summarized below:

- The Applicant expects to clear approximately 14 acres of deciduous woodland, 19 acres of agricultural land, and five acres of old field/prairie for the Preferred Transmission Line Route, as compared to 19 acres of deciduous woodland, 20 acres of agricultural land, and eight acres of old field/prairie for the Alternate Transmission Line Route;
- The Preferred Transmission Line Route would impact 96 plant species, as compared to 114 plant species for the Alternate Transmission Line Route; and
- The Preferred Substation Site is located entirely within agricultural croplands and would permanently impact 3.4 acres with an additional 1.6 acres of impact for a laydown area to support the connection between the substation and the existing Zimmer-Spurlock Transmission Line, as compared to the Alternate Substation Site impacting 2.7 acres of deciduous woodland and 1.0 acres of agricultural pasture land. An additional 3.4 acres around the Alternate Substation Site would be temporarily cleared of woody vegetation and herbaceous vegetation for a laydown area during construction of the substation.

Records indicate the historical existence of a number of threatened or endangered species in the project vicinity. As explained previously, most of these species are not expected to be negatively impacted by the proposed project. However, the loss of suitable habitat may introduce the potential for the project to negatively impact the Indiana bat and the loggerhead shrike, if present within the project areas.

The Indiana bat (*Myotis sodalis*), a state and federally endangered species, has a historical range that includes the project areas. As a tree-roosting species during the non-winter months, the Indiana bat, if present at the sites, could be negatively impacted as a result of the tree clearing associated with construction and maintenance of the project. While some segments of both transmission line routes and the Alternate Substation Site do appear to provide suitable potential habitat for the Indiana bat, other wooded portions do not possess the characteristics typically associated with Indiana bat habitat. Limiting tree removal, particularly in the areas identified as potential Indiana bat habitat, would help reduce potential impacts to this species. In addition, conducting any necessary tree clearing outside of the Indiana bat's typical summer roosting season (September 30 to April 1), as recommended by the DOW, would help to minimize potential direct impacts to the Indiana bat. Leaving any tree snags that do not present safety or reliability concerns for the transmission line and substation operation would also retain potential habitat.

In order to ensure the minimum environmental impact to interior woodland trees and suitable Indiana bat habitat, OPSB Staff would require the Applicant to shift the centerline of the Preferred Transmission Line Route, between structures 12 and 17, to the edge of existing deciduous woodlands located to the east of the proposed Preferred Transmission Line Route centerline. Additionally, OPSB Staff would require that the Applicant adhere to seasonal cutting dates (September 30 to April 1) for the clearing of trees that exhibit suitable Indiana bat summer habitat, such as roosting and maternity roost trees.

The loggerhead shrike (*Lanius ludovicianus*) is a state endangered bird that utilizes grassland or prairie habitat to forage and nest. This transmission and substation project could negatively impact this species through a reduction of suitable habitat primarily associated with construction

activities. Limiting construction in this habitat during the species' nesting period of April 1 to August 1 would help minimize negative impacts to this species, if present.

Geology, Soils, and Seismology

Geology

Clermont County lies within the glaciated region of Ohio. Glacial drift of Illinoian age covers the entire county. The surface of Clermont County is referred to as a "peneplain" that is 800 to 900 feet above sea level (ASL). The erosion of the peneplain has dissected the Illinoian till plain, with the larger streams cutting valleys that are 200 to 400 feet deep.

The surface of the county is characterized by deep, narrow valleys and by level interstream areas that are remnants of the old peneplain. Most of Clermont County drains into the Little Miami River, a tributary of the Ohio River. The drainage waters in the southern third of Clermont County flow directly into the Ohio River. Bear Creek is a local example of this and is the watershed just to the west of the Preferred Transmission Line Route for the Meldahl Hydroelectric Project.

Slope and Soil Mechanics

The soil associations and series in the project area, according to the *Soil Survey of Clermont County, Ohio*, lists 11 different soils with slopes greater than 12 percent along the Preferred Transmission Line Route corridor and seven soils with slopes greater than 12 percent within the Alternate Transmission Line Route corridor. The site-specific engineering qualities and characteristics of the soils have been determined.

The Applicant does not anticipate any restrictions or hazards that would prevent construction of either transmission line corridor. However, the *Soil Survey of Clermont County, Ohio*, has identified five factors that commonly cause landslides to occur in Clermont County, including: poor vegetative cover, poor soil drainage, a source of water, the presence of the Kope bedrock formation or till, and a slope greater than 15 percent. Slopes of greater than 15 percent have been susceptible to failure in Clermont County. Clermont County has about 28 percent of its land on slopes steeper than 15 percent.

Although many slides have occurred on forested land, poor vegetative cover is a trigger mechanism for many slides. Plant roots, especially from ground shrubs and trees, help to anchor a soil in place and stabilize slopes, although a good vegetative cover alone cannot stop the development of a landslide.

Source water in Clermont County, either naturally occurring from rainfall or snowmelt, or from man-made sources such as a broken water line or storm runoff breaching a culvert or blocked road ditch, can create an unstable environment for landslides to occur. Without a source of water, landslides would not occur in Clermont County.

Poor internal drainage is a requirement for slope movement. The soil must retain the water until it reaches the saturation point for a landslide to develop. Subsurface drains, rock line ditches, terraces, etc., are examples of construction methods that can prevent a slide from occurring.

The Kope bedrock formation is an Ordovician age gray shale with interbedded thin layers of limestone that, upon exposure, the shale rapidly weathers, slaking into a highly plastic clay. This clay mass along a slope is then highly unstable and susceptible failure. This formation is found along valley sides throughout most of the county.

Glacial till in the area is generally a gray gravelly loam. It may also be interbedded with layers of sand, gravel, and silt. Landslides can occur due to naturally occurring vertical fractures in the till and by water infiltrating through the sand, gravel, and silt layers.

The Applicant proposes to place the transmission pole structures on stable ridges rather than on steep slopes. No active landslides are known to be present along the proposed transmission corridor.

Seismology

Clermont County does not have a recent history of any seismic activity. There were three epicenters where seismic activity was recorded in the early to mid 1800's. One epicenter was located in Stonelick Township along the border with Batavia Township and the other two were located nearby on the northern end of Batavia Township. All three locations are well north of the project area.

Public Services and Facilities

Roads and Bridges

The project area is accessible through state, local, and county roads. These roads would provide access for construction vehicles into the project area. Line structures would be pre-assembled at the construction staging area. They would then be flown into their position by helicopter, or where possible without creating adverse environmental impacts, lifted onto the foundation with a crane. The Applicant will be required to coordinate all traffic issues with the appropriate entities prior to construction and provide a final traffic plan.

Noise

Any noise impacts associated with the transmission line would be confined to the six- to eight-month construction period and post-construction maintenance of the r-o-w. The substation could have long-term low-frequency noise associated with operation. This noise output can be quantified through a low-frequency sound study. Staff has requested such a study and is awaiting results. Noise impacts from the project would be most intense during proposed helicopter use and rock drilling operations, or situations that could warrant blasting. The impacts of these operations to residents could be reduced through limiting the acceptable times of helicopter use, rock drilling, and blasting operations, if needed, to Monday-Friday, 10:00 a.m. to 5:00 p.m. These times are ostensibly consistent with first-shift working hours.

The Applicant does not anticipate the use of blasting for construction of the substation, but may need to blast for transmission line structure foundations. If conditions arise where blasting becomes necessary, Staff believes that general sound and vibration levels associated with the type of blasting proposed should be provided to Staff prior to construction. Further, once a blasting contractor is selected and plan drafted, specific sound and vibration levels at all nearby residences should be provided to Staff for review and acceptance at least 60 days prior to any blasting operations.

Communication Interference

The Applicant states that radio or television interference should not result from the operation of the proposed transmission line or substation. They do provide that defective substation hardware can cause corona/gas discharges, which could cause localized television and radio signal degradation. They state that this is easily identifiable and correctable through component replacement, thereby eliminating the interference. They further provide that, based on site

observations and data gathered from Clermont County, there are no communication towers or antennas within 2,500 feet of the centerline of either proposed transmission line route. However, the Applicant makes no mention of microwave communication paths or wired telephone circuit noise created by electrical interference. Microwave paths rely on clear and unobstructed paths from the emitter to end-point receiver. Staff believes that the Applicant should conduct a worst-case microwave path survey for the proposed transmission line routes and substation sites, and avoid impacts to any existing microwave paths. Further, Staff believes that the Applicant should consult and work with the local telephone provider(s) to ensure no degradation to wired telephone service occurs or is acceptably mitigated.

Conclusion

Staff concludes that the project, as proposed, would result in both temporary and permanent impacts to the project area and surrounding areas. Staff further concludes that the Preferred Transmission Line Route and Preferred Substation Site represent the minimal adverse environmental impact in its entirety, and has recommended several conditions in order to address and minimize these impacts. With the recommended conditions, Staff concludes that minimum adverse environmental impacts would be realized.

Recommended Findings

The Staff recommends that the Board find that the proposed facility represents the minimum adverse environmental impact, and therefore complies with the requirements specified in ORC Section 4906.10(A)(3), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

Considerations for ORC Section 4906.10(A)(4)

ELECTRIC GRID

Pursuant to ORC Section 4906.10(A)(4), the Board must determine that the proposed electric 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.

The Applicant is currently constructing a 105 MW hydroelectric generating facility at the Meldahl Locks and Dam located in Kentucky on the Ohio River. This section will evaluate the impact of connecting the associated 138 kV transmission line to the transmission substation and interconnecting with the existing 345 kV Zimmer-Spurlock Transmission Line that serves the local and regional electric transmission system. The proposed transmission facilities would be located in the PJM Interconnection control area.

PJM Interconnection Analysis

PJM is a Regional Transmission Organization that coordinates the movement of wholesale electric in all or parts of 13 states, including Ohio and the District of Columbia. In addition, PJM administers the interconnection process of new generation to the system. Generators wanting to interconnect to the bulk electric transmission system located in the PJM control area are required to submit an interconnection application for review of potential impacts to the system and system upgrades necessary to maintain system reliability. The Applicant submitted its application for the related Meldahl generating facility to PJM on September 29, 2009. PJM assigned the application a queue number of V3-045.²⁰

PJM has completed the Feasibility Study and System Impact Study for the Meldahl generating facility. These studies include local and regional transmission system impacts and stability and short circuit analysis. The studies summarized the impacts of adding 105 MW to the regional bulk power system and identified any transmission system upgrades required by the project to maintain the reliability of the transmission system. The Applicant has not yet signed a Construction Service Agreement or an Interconnection Service Agreement with PJM for the generating facility. These agreements will need to be completed before the Applicant will be allowed to interconnect the proposed project to the bulk electric transmission system.

Staff reviewed the System Impact Study Report prepared by PJM. The study was evaluated for compliance with reliability criteria for PJM summer peak load conditions for 2014. The 105 MW project was analyzed as a capacity resource. A capacity resource may be utilized by PJM Load Serving Entities to meet capacity obligations.

North American Electric Reliability Corporation Standard Requirements

The North American Electric Reliability Corporation (NERC) is responsible for the development and enforcement of the federal government's approved reliability standards, which are applicable to all owners, operators, and users of the bulk power system. NERC requires planners of the bulk electric transmission system to meet Reliability Standards²¹ TPL-001-0.1 through TPL-004-0. According to NERC, category A is a system operating under normal conditions. An unexpected

²⁰ Generation Interconnection Queue, Active Cases, Queue No. V3-045. www.pjm.com

²¹ North American Electric Reliability Corporation, Reliability Standards, Transmission Planning (TPL-001-0.1-TPL-004-0). Retrieved August 3, 2011, from <http://www.nerc.com/page.php?cid=2|20>

failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch, or other electrical element are covered under category B, C, and D contingencies.

Under category B (single contingency outage), the planning authority and transmission planner shall demonstrate that the interconnected transmission system can operate to supply projected customer demands and firm transmission service at all demand levels over the range of forecast system demand. Under category C (multiple contingency outages), the planning authority shall demonstrate that the interconnected transmission system can operate to supply projected customer demands and firm transmission service at all demand levels over the range of forecast system demand and may rely upon the controlled interruption of customers or curtailment of firm transmission service. Finally, under category D (extreme events resulting in multiple contingencies), the planning authority shall demonstrate that its portion of the interconnected transmission system is evaluated for the risks and consequences of a number of each of the extreme contingencies that are listed in the standard.

PJM conducted a System Impact Study that analyzed the bulk electric system for all of the above categories with the proposed new facility using a 2014 summer peak power flow model. The analysis did not reveal any reliability or stability problems. A summary of the results of the System Impact Study are as follows:

Generator Deliverability

Category A and Category B: No Contingencies and Single Contingencies

- Studied for the capacity portion (105 MW)
- PJM Region: No problems identified
- DP&L System: No problems identified

Multiple Contingencies

Category C and Category D

- Studied for the full energy output (105 MW)
- PJM Region: No problems identified
- DP&L System: No problems identified

Short Circuit Analysis

The short circuit analysis study evaluates the interrupting capabilities of circuit breakers located at the proposed plant site and other circuit breakers impacted by the proposed generation addition. No problems were identified on the DP&L system or in the PJM region.

Stability and Reactive Power Requirement

The stability analysis evaluates the ability of the power system to withstand disturbances or contingencies and maintain stable operation of the bulk electric grid. In the PJM Region, no stability problems were identified.

Previously Identified Overloads

The PJM study for the Meldahl generating facility was evaluated for its contribution to other previously identified overloads (i.e., “Network Impacts”) recognized for earlier generation and transmission interconnection projects in the PJM Queue. No problems were identified.

Previously Identified System Reinforcements

PJM studied overloads initially caused by projects in prior Queue positions with additional contribution to overloading by the Meldahl generating facility. Proposed projects could be allocated a portion of the cost to alleviate overloading found in the “Previously Identified Overloads” section. No problems were identified.

New System Reinforcements

PJM did not find any upgrades required to mitigate criteria violations, such as network impacts, initially caused by the addition of the Meldahl generating facility.

Conclusion

The Applicant provided PJM’s generation interconnection analysis to Staff for review of the impacts of connecting the proposed electric transmission line and transmission substation for Meldahl to supply energy to the local and regional transmission grid. These studies were performed by PJM and comply with NERC standards for adding new facilities. The studies indicated that Meldahl would cause no new reliability or stability problems. The proposed facilities are consistent with plans for expansion of the regional power system, and serve the interests of electric system economy and reliability.

Recommended Findings

The Staff recommends that 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, the facility complies with the requirements specified in ORC Section 4906.10(A)(4), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

Considerations for ORC Section 4906.10(A)(5)

AIR, WATER, SOLID WASTE, AND AVIATION

Pursuant to ORC Section 4906.10(A)(5), the facility must comply with specific sections of the ORC regarding air and water pollution control, withdrawal of waters of the state, solid and hazardous wastes, and air navigation.

Air

Air quality permits are not required for construction of the proposed facility. However, fugitive dust rules adopted pursuant to the requirements of ORC Chapter 3704 (air pollution control laws) may be applicable to the proposed facility. The Applicant has indicated that fugitive dust would be controlled, where necessary, through watering or application of calcium chloride and/or other palliatives. Staff believes that these methods of dust control would be sufficient to comply with fugitive dust rules.

Water

Neither construction nor operation of the proposed facility would require the use of significant amounts of water, so requirements under ORC Sections 1503.33 and 1501.34 are not applicable to this project.

The Applicant currently has coverage with the USACE Clean Water Act Section 404 permit to discharge dredged or fill material, and a Section 401 water quality certification issued by the State of Kentucky for the Meldahl hydroelectric generating station. For potential wetland and stream impacts associated with the transmission line and substation project, the Applicant indicates that it will seek coverage/authorization by modifying its existing Section 404 permit and obtaining an individual Section 401 water quality certification from the Ohio EPA.

A portion of the transmission line routes is within the Ohio River 100-year floodplain. The Applicant indicates that the installation and operation of the transmission line structures would not affect the base flood elevation. Staff has found that the Applicant needs to consult with the Clermont County floodplain administrator to determine if floodplain permits are required. The Applicant should submit a copy of any Floodplain Development Permit to the OPSB prior to the pre-construction conference.

The Applicant has indicated that a Storm Water Pollution Prevention Plan (SWPPP) will be developed for the project, pursuant to Ohio EPA regulations, which will include a detailed construction access plan. Following the SWPPP, as well as using best management practices for construction activities, would help minimize any erosion-related impacts to streams and wetlands. Staff believes that construction of this facility will comply with requirements of ORC Chapter 6111, and the rules and laws adopted under this chapter.

Solid Waste

The Applicant indicates that solid waste generated from construction activities would include items such as conductor scrap, construction material packaging including boxes, insulator crates, conductor reels, and wrapping. All construction-related debris would be disposed of in Ohio EPA approved landfills, or other appropriately licensed and operated facilities. Any contaminated soils discovered or generated during construction would be handled in accordance with applicable regulations. Vegetation waste from clearing activities would be disposed of off site at an approved facility, unless disposal within the proposed corridor is approved by OPSB

Staff. Staff believes that the Applicant's solid waste disposal plans will comply with solid waste disposal requirements in ORC Chapter 3734, and the rules and laws adopted under this chapter.

Aviation

There are three public-use air transportation facilities within 20 miles of the proposed transmission line. The nearest identified public-use airports include the Gene Snyder Airport, approximately 13 miles to the southwest, the Brown County Airport, approximately 14.6 miles to the northeast, and the Clermont County Airport, approximately 19.25 miles to the northwest. Because of the distance and limited number of structures greater than 200 feet above ground level (AGL), the construction and operation of the proposed facility is not expected to have an impact on public-use airport facilities. Further, towers within the vicinity already exist at heights of 1,000 to 1,300 feet AGL. These values are inclusive of nearby W.H. Zimmer Generating Station's cooling tower, which is 479 feet AGL.

In accordance with ORC Section 4561.32, 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. As of the date of preparation of this report, no such concerns have been identified. The Applicant has yet to file any coordinates or heights with the Ohio Office of Aviation or Federal Aviation Administration for structures to exceed 200 feet AGL. This filing should be required before construction.

Recommended Findings

The Staff finds that the proposed facility complies with the requirements specified in ORC Section 4906.10(A)(5), provided that any certificate issued by the Board for the certification of the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

Considerations for ORC Section 4906.10(A)(6)

PUBLIC INTEREST, CONVENIENCE, AND NECESSITY

Pursuant to ORC Section 4906.10(A)(6), the Board must determine that the facility will serve the public interest, convenience, and necessity.

The project's purpose is to connect the Meldahl Hydroelectric Project, currently under construction, with the existing 345 kV Zimmer-Spurlock Transmission Line in the PJM regional transmission system.

EMF

Transmission lines, when energized, generate electromagnetic fields (EMF). While laboratory studies have failed to establish a relationship between exposure to EMF and leukemia, there have been concerns that EMF may be detrimental to human health.

Because these concerns exist, the Applicant is required to compute the EMF associated with the new circuits. The fields were computed based on the maximum loadings of the lines, which would lead to the highest EMF values that might exist. The magnetic fields are a function of the electric current, the configuration of the conductors, and the distance from the transmission lines. The electric field is a function of the voltage, the line configuration, and the distance from the transmission lines.

The magnetic fields were estimated at the r-o-w edge to be less than 19 milligauss and the electric field would be less than 0.5 volt/meter. The maximum magnetic field scenarios are listed in the application (Table 06-4). The EMF profiles are shown in Figure 06-2 through Figure 06-3 of the application. Daily current load levels will normally operate below the maximum load conditions, thereby further reducing nominal EMF values. The electric fields are easily shielded by physical structures such as the walls of a house, foliage, etc. The magnetic fields generated by the substation are attenuated very rapidly as the distance from the substation increases. Past experience has shown that within 100 feet of the fence line, the magnetic field is not of sufficient strength to be measureable because the background effects overwhelm the measurements. The nearest residence is over 1,000 feet from the Preferred Substation Site, and about 390 feet from the Alternate Substation Site. Along both the Preferred and Alternate transmission line routes, each has only one building that is within 100 feet from the center of the r-o-w.

The Applicant will comply with safety standards set by the Occupational Safety and Health Administration (OSHA), the Public Utilities Commission of Ohio, and equipment specifications. The Applicant has designed the facility to meet or exceed the requirements of the National Electric Safety Code.

Recommended Findings

Staff recommends that the Board find that the proposed facility would serve the public interest, convenience, and necessity, and therefore complies with the requirements specified in ORC Section 4906.10(A)(6), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

Considerations for ORC Section 4906.10(A)(7)

AGRICULTURAL DISTRICTS

Pursuant to ORC Section 4906.10(A)(7), the Board must determine the facility's impact on the viability as agricultural land of any land in an existing agricultural district within the site of the proposed utility facility.

The agricultural district program was established under ORC Chapter 929. Agricultural land is classified as an agricultural district through an application and approval process that is administered through local county auditors' offices.

The proposed transmission line and substation would permanently impact less than five acres of agricultural land, and would not impact any agricultural districts.

Recommended Findings

The Staff recommends that 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 specified in ORC Section 4906.10(A)(7), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

Considerations for ORC Section 4906.10(A)(8)

WATER CONSERVATION PRACTICE

Pursuant to ORC Section 4906.10(A)(8), the proposed facility must incorporate maximum feasible water conservation practices, considering available technology and the nature and economics of the various alternatives.

Because the facility will not require the use of water for operation, water conservation practice as specified under ORC 4906.10(A)(8) is not applicable to the project.

Recommended Findings

The Staff recommends that the Board find that the proposed facility would incorporate maximum feasible water conservation practices, and therefore complies with the requirements specified in ORC Section 4906.10(A)(8).

IV. RECOMMENDED CONDITIONS OF CERTIFICATE

Following a review of the applications filed by the City of Hamilton, Ohio, and American Municipal Power, Inc., and the record compiled to date in this proceeding, the Staff recommends that a number of conditions become part of any certificate issued for the proposed facility. These recommended conditions may be modified as a result of public or other input received subsequent to issuance of this report. At this time the OPSB Staff recommends the following conditions:

- (1) That the facility be installed at the Applicant's Preferred Transmission Line Route and Preferred Substation Site as presented in the application filed on May 4, 2011, and as modified and/or clarified by the Applicant's supplemental filings and further clarified by recommendations in this *Staff Report of Investigation*.
- (2) That 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 this *Staff Report of Investigation*.
- (3) That 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 this *Staff Report of Investigation*.
- (4) That prior to the commencement of construction, the Applicant shall obtain and comply with all applicable permits and authorizations as required by federal and state laws and regulations for any activities where such permit or authorization is required. Copies of permits and authorizations, including all supporting documentation, shall be provided to OPSB Staff within seven (7) days of issuance or receipt by the Applicant.
- (5) That the Applicant shall conduct a pre-construction conference prior to the start of any construction activities. The pre-construction conference shall be attended by OPSB Staff, the Applicant, and representatives from the prime contractor and all sub-contractors for the project. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by OPSB Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for OPSB Staff review.
- (6) That at least thirty (30) days prior to the pre-construction conference and subject to OPSB Staff review and approval, the Applicant shall have in place a complaint resolution procedure in order to address potential operational concerns experienced by the public. The Applicant shall work to resolve any issues with those who file a complaint. Any complaint submitted must be immediately forwarded to OPSB Staff.
- (7) That the Applicant shall not commence construction of the facility until it has a signed Interconnection Service Agreement with PJM, which includes construction, operation, and maintenance of system upgrades necessary to reliably and safely integrate the proposed generating facility into the regional transmission system. The Applicant shall provide a letter stating that the Agreement has been signed or a copy of the signed Interconnection Service Agreement to OPSB Staff.

- (8) That if the Alternate Transmission Line Route or Alternate Substation Site is chosen, prior to construction, the Applicant shall prepare a Phase I cultural resources survey program for archaeological work within the construction disturbance area, acceptable to OPSB Staff. If the resulting survey work discloses a find of cultural or archaeological significance, or a site that could be eligible for inclusion in the National Register of Historic Places, then the Applicant shall submit an amendment, modification, or mitigation plan for OPSB Staff's acceptance. Any such mitigation effort shall be developed in coordination with the Ohio Historic Preservation Office and submitted to OPSB Staff for review and acceptance.
- (9) That the Applicant shall avoid, where possible, or minimize to the maximum extent practicable, any damage to field tile drainage systems and soils resulting from construction, operation, and/or maintenance of the facility in agricultural areas. Damaged field tile systems shall be promptly repaired to at least original conditions at the Applicant's expense. If applicable, excavated topsoil shall be segregated and restored in accordance with the Applicant's lease agreement with the landowner. Severely compacted soils shall be plowed or otherwise de-compacted, if necessary, to restore them to original conditions unless otherwise agreed to by the landowner.
- (10) That at least seven (7) days before the pre-construction conference, the Applicant shall submit to OPSB Staff a copy of all NPDES permits including its approved SWPPP, approved SPCC procedures, and its erosion and sediment control plan for review and acceptance. Any soil issues must be addressed through proper design and adherence to the Ohio EPA BMPs related to erosion and sedimentation control.
- (11) That the Applicant shall employ the following erosion and sedimentation control measures, construction methods, and BMPs when working near environmentally-sensitive areas and/or when in close proximity to any watercourses, in accordance with the Ohio NPDES permit(s) and SWPPP obtained for the project:
- (a) During construction of the facility, seed all disturbed soil, except within actively cultivated agricultural fields, within seven (7) 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 (7) days, if they will be undisturbed for more than twenty-one (21) days. Re-seeding shall be done within seven (7) days of emergence of seedlings as necessary until sufficient vegetation in all areas has been established.
 - (b) Inspect and repair all erosion control measures after each rainfall event of one-half of an inch or greater over a twenty-four (24) hour period, and maintain controls until permanent vegetative cover has been established on disturbed areas.
 - (c) Delineate all watercourses, including wetlands, by fencing, flagging, or other prominent means.
 - (d) Avoid entry of construction equipment into watercourses, including wetlands, except at specific locations where construction has been approved.
 - (e) Prohibit storage, stockpiling, and/or disposal of equipment and materials in these sensitive areas.

- (f) Locate structures outside of identified watercourses, including wetlands, except at specific locations where construction has been approved.
 - (g) Divert all storm water runoff away from fill slopes and other exposed surfaces to the greatest extent possible, and direct instead to appropriate catchment structures, sediment ponds, etc., using diversion berms, temporary ditches, check dams, or similar measures.
- (12) That the Applicant shall remove all temporary gravel and other construction staging area and access road materials after completion of construction activities, as weather permits, unless otherwise directed by the landowner. Impacted areas shall be restored to pre-construction conditions in compliance with the NPDES permit(s) obtained for the project and the approved SWPPP created for this project.
- (13) That the Applicant shall not dispose of gravel or any other construction material during or following construction of the facility by spreading such material on agricultural land. All construction debris and all contaminated soil shall be promptly removed and properly disposed of in accordance with Ohio EPA regulations.
- (14) That the Applicant shall assure compliance with fugitive dust rules by the use of water spray or other appropriate dust suppressant measures whenever necessary.
- (15) That the Applicant shall have an OPSB Staff-approved environmental specialist on site during construction activities that may affect sensitive areas as mutually agreed upon between the Applicant and OPSB Staff, and as shown on the Applicant's final approved construction plan, including vegetation clearing, areas such as a designated wetland or stream, and threatened or endangered species or their identified habitat. The environmental specialist shall be familiar with water quality protection issues and potential threatened or endangered species of plants and animals that may be encountered during project construction.
- (16) That thirty (30) days prior to the pre-construction conference, the Applicant shall provide OPSB Staff with appropriate data forms for the remainder of stream reaches that would be impacted by the final approved transmission line route and substation site.
- (17) That the Applicant shall not work in the types of streams listed below during fish spawning restricted periods (April 15 to June 30), unless a waiver is sought from and issued by the ODNR and approved by OPSB Staff releasing the Applicant from a portion of, or the entire restriction period.
- (a) Class 3 primary headwater streams (watershed < one mi²)
 - (b) Exceptional Warmwater Habitat
 - (c) Coldwater Habitat
 - (d) Warmwater Habitat
 - (e) Streams supporting threatened or endangered species
- (18) That the Applicant shall adhere to seasonal cutting dates of September 30 through April 1 for removal of suitable Indiana bat habitat trees, if avoidance measures cannot be achieved.

If suitable Indiana bat habitat trees must be cut during the summer season of April 2 through September 29, a mist-netting survey must be conducted in May or June prior to cutting. Net surveys shall incorporate either two net sites per square kilometer of project area with each net site containing a minimum of two nets used for two consecutive nights, or one net site per kilometer of stream within the project limits with each net site containing a minimum of two nets used for two consecutive nights. OPSB Staff and the ODNR shall be contacted to discuss methodologies prior to commencement of any mist-netting surveys proposed by the Applicant. All mist-netting results shall be reviewed and approved by OPSB Staff and the ODNR prior to the cutting of any Indiana bat habitat trees during the summer season.

- (19) That the Applicant shall cease all construction activities in or adjacent to suitable habitat for the loggerhead shrike during the species' nesting period of April 1 to August 1.
- (20) That OPSB Staff, the DOW, and the USFWS shall be immediately contacted if state or federal threatened or endangered species are encountered during construction activities. Construction activities that could adversely impact the identified plants or animals shall be halted until an appropriate course of action has been agreed upon by the Applicant, OPSB Staff, and the DOW in coordination with the USFWS. Nothing in this provision shall preclude agencies having jurisdiction over the facility with respect to threatened or endangered species from exercising their legal authority over the facility consistent with law.
- (21) That, for both construction and future r-o-w maintenance, the Applicant shall limit to the greatest extent possible the use of herbicides in proximity to surface waters, including wetlands along the r-o-w. Individual treatment of tall-growing woody plant species is preferred, while general, widespread use of herbicides during initial clearing or future r-o-w maintenance should only be used where no other options exist, and with prior approval from the Ohio EPA. The Applicant shall submit a plan describing the planned herbicide use for all areas in or near any surface waters during initial project construction and/or future r-o-w maintenance for review and approval by OPSB Staff prior to initiation of construction.
- (22) That the Applicant shall install taller structures than those proposed in the original application and its subsequent updates, in combination with shifting the proposed centerline of the Preferred Transmission Line Route, to eliminate the need to clear or top trees between structures 30 and 31, at stream crossing BC-4 (Bear Creek). In addition, the riparian areas and hillside woodland in this area shall be clearly marked so as to prevent construction vehicle access and unapproved tree clearing.
- (23) That the Applicant shall shift the centerline of the Preferred Transmission Line Route, between structures 12 and 17, to the edge of existing deciduous woodlands located to the east of the proposed Preferred Transmission Line Route centerline, to minimize forest habitat fragmentation and avoid degradation of existing headwater streams located in the woodlots.
- (24) That the Applicant shall permanently limit clearing in all riparian areas, and specifically within at least 25 feet from the top of the bank on each side of all streams. Vegetation clearing in these areas shall be selective hand clearing of taller-growing trees only, leaving all low-growing plant species, particularly woody ones (including other trees), undisturbed unless otherwise directed by OPSB Staff. All stumps shall be left in place.

- (25) That the Applicant shall conform to any drinking water source protection plan for any part of the facility that is located within drinking water source protection areas of the local villages and cities.
- (26) That the Applicant shall restrict public access to the site with appropriately placed warning signs or other necessary measures.
- (27) That the Applicant shall obtain all required county and township transportation permits and all necessary permits from ODOT. Any temporary or permanent road closures necessary for construction and operation of the proposed facility shall be coordinated with the appropriate entities including, but not limited to, the Clermont County Engineer, ODOT, local law enforcement, and health and safety officials.
- (28) That the Applicant shall provide a final traffic plan prior to the pre-construction conference, for OPSB Staff review and acceptance.
- (29) That the Applicant shall provide a noise study prior to the pre-construction conference which conforms to the parameters outlined within data requests forwarded to the Applicant on September 12, 2011. Any concerns raised by OPSB Staff in regard to low-frequency noise shall be sufficiently addressed and/or mitigated to the satisfaction of OPSB Staff, the affected resident(s), and the Applicant prior to construction.
- (30) That if pre-construction acoustic modeling indicates a facility contribution that exceeds the ambient L_{EQ} by greater than five dBA at the exterior of any residences within one mile of the facility, the facility shall be subject to further study of the potential impact and possible mitigation prior to construction. Mitigation, if required, shall consist of either reducing the impact so that the facility contribution does not exceed the ambient L_{EQ} by greater than five dBA, or other means of mitigation approved by OPSB Staff in conjunction with the affected receptor(s).
- (31) That after commencement of commercial operation, the Applicant shall conduct further review of the impact and possible mitigation of all project noise complaints. Mitigation shall be required if the project contribution at the exterior of any residence within one mile of the project boundary exceeds the validly measured ambient L_{EQ} plus five dBA at the location of the complaint and during the same time of day or night as that identified in the complaint. Mitigation, if required, shall consist of either reducing the impact so that the project contribution does not exceed the validly measured ambient L_{EQ} plus five dBA, or other means of mitigation approved by OPSB Staff in coordination with the affected receptor(s).
- (32) That general construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 pm. Impact pile driving, helicopter use, rock drilling, and blasting operations, if required, shall be limited to the hours between 10:00 a.m. to 5:00 p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary. The Applicant shall notify property owners or affected tenants within the meaning of Rule 4906-5-08(C)(3), OAC, of upcoming construction activities including potential for nighttime construction activities.

- (33) That at least thirty (30) days prior to the pre-construction conference, the Applicant shall complete a baseline television reception and signal strength study and provide the results to OPSB Staff for review and acceptance.
- (34) That the Applicant must meet all Federal Communications Commission and other federal agency requirements to construct an object that may affect communications and, subject to OPSB Staff approval, mitigate any effects or degradation caused by transmission line operation or placement. For any residence that is shown to experience a degradation of TV reception or interference of wired telephone service due to facility operation the Applicant shall provide, at its own expense, cable or direct broadcast satellite TV service or other mitigation acceptable to the affected resident(s), the Applicant, and OPSB Staff.
- (35) That at least thirty (30) days prior to the pre-construction conference, the Applicant shall conduct a telephone noise survey in coordination with the local service provider(s) and provide the results to OPSB Staff for review and acceptance.
- (36) That at least thirty (30) days prior to the pre-construction conference, the Applicant shall conduct a microwave path study which should identify all existing microwave paths which intersect the project area, and a worst-case Fresnel zone analysis for each path. A copy of this study shall be provided to the path licensee(s), for review, and to OPSB Staff for review and acceptance. The assessment shall conform to the following requirements:
 - (a) An independent and registered surveyor, licensed to survey within the State of Ohio, shall determine the exact location and worst-case Fresnel zone dimensions of the above-referenced paths, the center point and boundaries of the proposed transmission line routes and substation sites within 1,000 feet of the worst-case Fresnel zone of each path, using the same survey equipment.
 - (b) Provide the distance (feet) between the surveyed center point of each route and boundary identified within section (a) above and the surveyed worst-case Fresnel zone of each microwave path.
 - (c) Provide a map of the surveyed microwave paths, center points, and boundaries at a legible scale.
 - (d) Describe the specific, expected impacts of the project on all paths and systems considered in the assessment.
- (37) That all existing licensed microwave paths and communication systems shall be subject to avoidance or mitigation. The Applicant shall complete avoidance or mitigation measures prior to construction for impacts that can be predicted in sufficient detail to implement appropriate and reasonable avoidance and mitigation measures. After construction, the Applicant shall mitigate all observed impacts of the project to existing microwave paths and systems within seven (7) days or within a longer time period approved by OPSB Staff. Avoidance and mitigation measures for any known point-to-point microwave paths shall consist of either shifting the location of the transmission line, substation, or associated structures so as to not affect any known microwave paths, or other measures acceptable to OPSB Staff, the Applicant, and the affected path owner, operator, or licensee(s). If interference with an omni-directional or multi-point system is observed after construction, mitigation would be required only for the affected receptor(s).

- (38) That, should site-specific conditions warrant blasting, the Applicant shall submit a blasting plan, at least sixty (60) days prior to blasting, to OPSB Staff for review and acceptance. The Applicant shall submit the following information as part of its blasting plan:
- (a) The name, address, and telephone number of the drilling and blasting company.
 - (b) A detailed blasting plan for dry and/or wet holes for a typical shot. The blasting plan shall address blasting times, blasting signs, warnings, access control, control of adverse effects, and blast records.
 - (c) A plan for liability protection and complaint resolution.
- (39) That prior to the use of explosives, the Applicant or explosive contractor shall obtain any required license or temporary permit from the local county authority or county sheriff. The Applicant shall submit a copy of the license or permit to OPSB Staff within seven days of obtaining it from the local authority.
- (40) That the blasting contractor shall utilize two blasting seismographs that measure ground vibration and air blast for each blast. One seismograph should be placed at the nearest dwelling and the other placed at the discretion of the blasting contractor.
- (41) That at least thirty (30) days prior to the initiation of blasting operations, the Applicant must notify, in writing, all residents or owners of dwellings or other structures within 1,000 feet of the blasting site. The Applicant or explosive contractor shall offer and conduct a pre-blast survey of each dwelling or structure within 1,000 feet of each blasting site, unless waived by the resident or property owner. The survey must be completed and submitted to OPSB Staff at least ten (10) days before blasting begins.
- (42) That the Applicant must meet all recommended and prescribed FAA and ODOT Office of Aviation requirements to construct an object that may affect navigable airspace. This includes submitting coordinates and heights for all towers exceeding 200 feet AGL for ODOT Office of Aviation and FAA review prior to construction, and the non-penetration of any FAA *Part 77* surfaces.
- (43) That at least thirty (30) days prior to construction, the Applicant shall provide to OPSB Staff all FAA 7460-1 "Determination Letters" for review and acceptance.
- (44) That thirty (30) days prior to any construction, the Applicant notify, in writing, any owner of an airport located within 20 miles of the project boundary, whether public or private, whose operations, operating thresholds/minimums, landing/approach procedures and/or vectors are expected to be altered by the siting, operation, maintenance, or decommissioning of the facility.
- (45) That all applicable structures, including construction equipment, be lit in accordance with FAA circular 70/7460-1 K Change 2, *Obstruction Marking and Lighting*; or as otherwise prescribed by the FAA. This includes all cranes and construction equipment.
- (46) That at least thirty (30) days before the pre-construction conference, the Applicant shall submit to OPSB Staff, for review and acceptance, the following documents:
- (a) One set of detailed engineering drawings of the final project design, including all electric tower and pole locations, access roads, any crane routes, substations,

construction staging areas, and any other associated facilities and access points, so that OPSB Staff can determine that the final project design is in compliance with the terms of the certificate. The final project layout shall be provided in hard copy and as geographically-referenced electronic data. The final design shall include both temporary and permanent access routes, as well as the measures to be used for restoring the area around all temporary sections, and a description of any long-term stabilization required along permanent access routes.

- (b) A separate construction and maintenance access plan, based on final plans for the access roads, transmission line, substation facilities, and types of equipment to be used, shall be provided for OPSB Staff review and approval prior to construction. The plan shall consider the location of streams, wetlands, wooded areas, and sensitive plant species (as identified by the DOW), and explain how impacts to all sensitive resources will be avoided or minimized during construction, operation, and maintenance. The plan shall provide specific details on all wetlands, streams, and/or ditches to be crossed by the transmission line, including those where construction or maintenance vehicles and/or facility components such as access roads cannot avoid crossing the waterbody. In such cases, specific discussion of proposed crossing methodology for each wetland and stream crossing (such as culverts), and post-construction site restoration, must be included.
 - (c) In addition, the Applicant shall provide, for OPSB Staff review and approval, a Vegetation Management Plan identifying all areas of proposed vegetation clearing for the project, specifying the extent of the clearing, and describing how trees and shrubs around structures, along access routes, in the transmission line corridor, at construction staging areas, at the substation, during maintenance operations, and in proximity to any other project facilities will be protected from damage, and, where clearing cannot be avoided, how such clearing work will be done so as to minimize removal of woody vegetation. Priority should be given to protecting mature trees throughout the project area, and all woody vegetation in wetlands and riparian areas, both during construction and during subsequent operation and maintenance of all facilities; low-growing trees and shrubs in particular should be protected wherever possible within the proposed r-o-w. The Vegetation Management Plan should also explore various options for disposing of downed trees, brush, and other vegetation during initial clearing for the project, and recommend methods that minimize the movement of heavy equipment and other vehicles within the r-o-w that would otherwise be required for removing all trees and other woody debris off site.
- (47) That if any changes are made to the project layout after the submission of final engineering drawings, all changes shall be provided to OPSB Staff in hard copy and as geographically-referenced electronic data. All changes outside the environmental survey areas and any changes within environmentally-sensitive areas will be subject to OPSB Staff review and approval prior to construction.
- (48) That within sixty (60) days after the commencement of commercial operation, the Applicant shall submit to OPSB Staff a copy of the as-built specifications for the entire facility. If the Applicant demonstrates that good cause prevents it from submitting a copy of the as-built specifications for the entire facility within 60 days after commencement of commercial operation, it may request an extension of time for the filing of such as-built

specifications. The Applicant shall use reasonable efforts to provide as-built drawings in both hard copy and as geographically-referenced electronic data.

- (49) That the certificate shall become invalid if the Applicant has not commenced a continuous course of construction of the proposed facility within five (5) years of the date of journalization of the certificate.
- (50) That the Applicant shall provide to OPSB Staff the following information as it becomes known:
 - (a) The date on which construction will begin;
 - (b) The date on which construction was completed;
 - (c) The date on which the facility began commercial operation.

APPENDIX

1. DOCKETING RECORD

CASE NUMBER: 10-2439-EL-BSB and 10-2440-EL-BTX

DESCRIPTION: City of Hamilton, Ohio, and American Municipal Power, Inc.

FILINGS AS OF: 9/27/2011

09/27/2011	Responses to Additional Clarification Questions from OPSB staff filed by April Bott on behalf of the City of Hamilton and American Municipal Power Inc.
09/26/2011	Application for consolidated pending cases 10-2439-EL-BSB and 10-2440-EL-BTX filed by April Bott on behalf of the City of Hamilton and American Municipal Power Inc.
09/26/2011	Motion for waiver and memorandum in support filed by April Bott on behalf of the City of Hamilton and AMP.
09/16/2011	Correspondence serving as notice that the City of Hamilton and American Municipal Power, Inc. has served notification letters to property owners and public officials as required filed by A. Bott.
09/14/2011	Correspondence of the Motta's concerns on behalf of Pamela and Alan Motta by T. Chappars.
09/14/2011	Notice of change of address filed on behalf of the City of Hamilton and American Municipal Power, Inc. by A. Botts.
09/08/2011	Correspondence stating issues pertaining to the adverse impact on Pamela and Alan Motta's property in Clermont County, Ohio attributable to the Meldahl Hydroelectric 138 kV Transmission Line filed by T. Chappars.
09/07/2011	Petition for leave to intervene of Lee R. Eubanks and memorandum in support filed by T. Ruwe.
09/06/2011	Motion to intervene and memorandum in support of Lee R. Eubanks filed by Thomas J. Ruwe for Mr. Eubanks.
09/02/2011	Correspondence from the Ohio Historic Preservation Office filed on behalf of the City of Hamilton and American Municipal Power, Inc. by A. Bott.
09/02/2011	Response to OPSB staff questions filed by A. Bott.
08/12/2011	Proof of publication; Clermont and Bracken counties filed by A. Bott on behalf of the City of Hamilton and American Municipal Power, Inc.
07/27/2011	Service Notice
07/27/2011	Entry ordering that the motion to consolidate the proceedings in 10-2440 and 10-2439 be granted; the hearings be scheduled at the times and places designated in finding (7); notices of the applications and hearings be published by applicants in accordance with findings(8) and (9); Staff file Staff Report pursuant to finding(10); all parties file their expert and factual testimony in accordance with finding (10). (MLW)
07/19/2011	Letter notifying the Commission that the application fees have been paid to the Fiscal Office on July 19, 2011, filed by A. R. Bott on behalf of the City of Hamilton and American Municipal Power, Inc.
07/14/2011	Letter stating that copies of the complete applications for each case were served in compliance with the requirements filed A.Bott on behalf of the City of Hamilton and American Municipal Power, Inc.
07/07/2011	Correspondence stating that the Staff does not object to the motion to consolidate cases for purpose of investigation and hearing submitted by the City of Hamilton and American Municipal Power, Inc., as agent for Meldahl LLC filed on behalf of PUCO AG Staff, S. Beeler.
07/01/2011	Motion and memorandum in support to consolidate proceedings filed on behalf of the City of Hamilton by A. Bott.
07/01/2011	OPSB Letter Regarding Compliance filed by Chairman Todd A. Snitchler on behalf of the Ohio Power Siting Board.
05/04/2011	Application continued. (Part 4)
05/04/2011	Application Continued (Part 3)
05/04/2011	Application continued. (Part 2)
05/04/2011	In the matter of the Application of the City of Hamilton and American Municipal Power, Inc. for a certificate of environmental compatibility and public need for a 138 kV transmission line and substation project in Franklin and Washington Townships, Clermont County, Ohio. (Part 1)
02/01/2011	Notice of withdrawal of motion for waiver filed A. Bott on behalf of the City of Hamilton and AMP.
01/18/2011	Motion for waiver and memorandum in support filed by A. Bott on behalf of the City of Hamilton and J. Bentine on behalf of American Municipal Power-Ohio, Inc.
01/18/2011	Notice of appearance of John W. Bentine on behalf of American Municipal Power Inc, filed by A. Bott.
01/18/2011	Notice of appearance filed by A. Bott on behalf of American Municipal Power Inc.
01/11/2011	Letter giving a broad overview for the City of Hamilton/American Municipal Power, Inc. Meldahl Hydro Project.
10/27/2010	In the matter of the application of the City of Hamilton for a new transmission line and substation in Clermont County, Ohio, associated with Hamilton and American Municipal Power, Inc.'s approximately 105 megawatt Meldahl Dam hydroelectric project at the Ohio River.

This foregoing document was electronically filed with the Public Utilities

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9/28/2011 3:25:42 PM

in

Case No(s). 10-2439-EL-BSB, 10-2440-EL-BTX

Summary: Report of Investigation electronically filed by T B on behalf of Staff of the Ohio Power Siting Board