



American Electric Power
700 Morrison Road
Gahanna, OH 43230
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January 6, 2014

Mr. Todd Snitchler, Chairman
Ohio Power Siting Board
State of Ohio
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, Ohio 43215-3793

RE: Biers Run - Hopetown - Delano 138 kV Transmission Line Project
Case No. 13-0429-EL-BTX

Dear Mr. Snitchler:

In accordance with the rules and regulations of the Ohio Power Siting Board, AEP Ohio Transmission Company, Inc. submits an Application for a Certificate of Environmental Compatibility and Public Need for the Biers Run - Hopetown - Delano 138 kV Transmission Line Project.

The following information is included as per the requirements of the Code of Rules and regulations, 4906-5-03(A)(3) as contained in the Ohio Administrative Code;

(a) Applicant:

AEP Ohio Transmission Company, Inc.
c/o American Electric Power
Energy Transmission
700 Morrison Road
Gahanna, Ohio 43230

(b) Facility to be Certified:

Biers Run - Hopetown - Delano 138 kV Transmission Line Project.

(c) Applicant's authorized representative with respect to this application is:

Mr. Shawn Malone
Project Manager
American Electric Power
700 Morrison Road
Gahanna, Ohio 43230


Sincerely,

AEP Ohio Transmission Company, Inc.




Scott P. Moore
Vice President – Transmission Engineering and Project Services
American Electric Power Service Corporation,
as agent for AEP Ohio Transmission Company, Inc.
an Ohio corporation, (“Owner”).

Now comes Scott P. Moore and says that the information and material contained in the attached Application is true to the best of his knowledge and belief.


Scott P. Moore

Sworn to and subscribed before me this 6th day of January, 2014.


Notary

Nancy Spencer
Notary Public, State of Ohio
My Commission Expires 05-10-2016

**APPLICATION TO THE OHIO POWER SITING BOARD
FOR A CERTIFICATE OF ENVIRONMENTAL
COMPATIBILITY AND PUBLIC NEED**

**OPSB CASE NO.
13-0429-EL-BTX**

**Biers Run-Hopetown-Delano
138 kV Transmission Line Project
January 2014**

**Prepared by:
URS Corporation**



**Prepared for:
American Electric Power –
Ohio Transmission Company**



Chapter 4906-15

Instructions for the Preparation of Certificate Applications for Electric Power, Gas and Natural Gas Transmission Facilities

4906-15-01	Project summary and facility overview.
4906-15-02	Review of need for proposed project.
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4906-15-07	Ecological impact analysis

4906-15-01 **Project summary and facility overview**

- (A) An applicant for a certificate to site a major electric power, gas, or natural gas transmission facility shall provide a project summary and overview of the proposed project. In general, the summary should be suitable as a reference for state and local governments and for the public. The summary and overview shall include the following:
- (1) A statement explaining the general purpose of the facility.
 - (2) A description of the proposed facility.
 - (3) A description of the site or route selection process, including descriptions of the major alternatives considered.
 - (4) A discussion of the principal environmental and socioeconomic considerations of the preferred and alternate routes or sites.
 - (5) An explanation of the project schedule (a bar chart is acceptable).
- (B) Information filed by the applicant in response to the requirements of this section shall not be deemed responses to any other section of the application requirements.
- (C) If the applicant has prepared the required hard copy maps using digital, geographically referenced data, an electronic copy of all such data, excluding data obtained by the applicant under a licensing agreement which prohibits distribution, shall be provided to the board staff on computer disk concurrent with submission of the application.

Effective: 1/25/09

119.032 review dates: 11/30/13

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 12/27/76, 10/10/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15-02 **Review of need for proposed project**

- (A) The applicant shall provide a statement explaining the need for the proposed facility, including a listing of the factors upon which it relied to reach that conclusion and references to the most recent long-term forecast report (if applicable). The statement shall also include but not be limited to, the following:
- (1) A statement of the purpose of the proposed facility.

- (2) Specific projections of system conditions, local requirements or any other pertinent factors that impacted the applicant's opinion on the need for the proposed facility.
 - (3) Relevant load flow studies and contingency analyses, if appropriate, identifying the need for system improvement.
 - (4) For electric power transmission facilities, load flow data shall be presented in the form of transcription diagrams depicting system performance with and without the proposed facility.
 - (5) For gas or natural gas transmission projects, one copy in electronic format of the relevant base case system data on diskette, in a format acceptable to the board staff, with a description of the analysis program and the data format.
- (B) Expansion plans.
- (1) For the electric power transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term electric forecast report and the regional plans for expansion, including, but not limited to, the following:
 - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term electric forecast report of the applicant.
 - (b) If no description was contained in the most recent long-term electric forecast report, an explanation as to why none was filed in the most recent long-term electric forecast report.
 - (c) Reference to regional expansion plans, including East Central Area Reliability Coordination Agreement bulk power plans, when applicable (if the transmission project will not affect regional plans, the applicant shall so state).
 - (2) For gas transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term gas forecast report, including the following:
 - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term gas forecast report of the applicant.
 - (b) If no description was contained in the most recent long-term gas forecast report, an explanation as to why none was filed in the most recent long-term gas forecast report.
- (C) For electric power transmission facilities, the applicant shall provide an analysis of the impact of the proposed facility on the electric power system economy and reliability. The impact of the proposed facility on all interconnected utility systems shall be evaluated, and all conclusions shall be supported by relevant load flow studies.
- (D) For electric power transmission lines, the applicant shall provide an analysis and evaluation of the options considered which would eliminate the need for construction of an electric power transmission line, including electric power generation options and options involving changes to existing and planned electric power transmission substations.
- (E) The applicant shall describe why the proposed facility was selected to meet the projected need.
- (F) Facility schedule.
- (1) Schedule. The applicant shall provide a proposed schedule in bar chart format covering all applicable major activities and milestones, including:
 - (a) Preparation of the application.

- (b) Submittal of the application for certificate.
 - (c) Issuance of the certificate.
 - (d) Acquisition of rights-of-way and land rights for the certified facility.
 - (e) Preparation of the final design.
 - (f) Construction of the facility.
 - (g) Placement of the facility in service.
- (2) Delays. The applicant shall describe the impact of critical delays on the eventual in-service date.

Effective: 1/25/09

Replaces: part of 4906-15-04

119.032 review dates: 11/30/13

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4906-15-03 Site and route alternatives analyses

- (A) The applicant shall conduct a site and route selection study prior to submitting an application for an electric power transmission line, electric power transmission substation, gas or natural gas transmission line, or a gas compressor station. The study shall be designed to evaluate all practicable sites, routes, and route segments for the proposed facility identified within the project area.
- (1) The applicant shall provide the following:
 - (a) A description of the study area or geographic boundaries selected, including the rationale for the selection.
 - (b) A map of suitable scale which includes the study area and which depicts the general routes, route segments, and sites which were evaluated.
 - (c) A comprehensive list and description of all qualitative and quantitative siting criteria, factors, or constraints utilized by the applicant, including any evaluation criteria or weighting values assigned to each.
 - (d) A description of the process by which the applicant utilized the siting criteria to determine the preferred and alternate routes and sites.
 - (e) A description of the routes and sites selected for evaluation, their final ranking, and the factors and rationale used by the applicant for selecting the preferred and alternate routes and sites.
 - (2) The applicant shall provide one copy of any constraint map utilized for the study directly to the board staff for review.
- (B) The applicant shall provide a summary table comparing the routes, route segments, and sites, utilizing the technical, financial, environmental, socioeconomic, and other factors identified in the study. Design

and equipment alternatives shall be included where the use of such alternatives influenced the siting decision.

- (C) The applicant may provide a copy of any route and site selection study produced by or for the applicant for the proposed project as an attachment to the application. The study may be submitted in response to paragraphs (A) and (B) of this rule, provided that the information contained therein is responsive to the requirements of paragraphs (A) and (B) of this rule.

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4906-15-04 Technical data

- (A) Site/route alternatives. Information on the location, major features, and the topographic, geologic, and hydrologic suitability of site/route alternatives shall be submitted by the applicant . If this information is derived from reference materials, it shall be derived from the best available and current reference materials.

- (1) Geography and topography. The applicant shall providemap(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission line alignment, and the area within the immediate vicinity of a substation site or compressor station site, which shall include the following features:

- (a) The proposed transmission line alignments, including proposed turning points.
- (b) The proposed substation or compressor station site locations.
- (c) Major highway and railroad routes.
- (d) Identifiable air transportation facilities, existing or proposed.
- (e) Utility corridors.
- (f) Proposed permanent access roads.
- (g) Lakes, ponds, reservoirs, streams, canals, rivers, and swamps.
- (h) Topographic contours.
- (i) Soil associations or series.
- (j) Population centers and legal boundaries of cities, villages, townships, and counties.

- (2) Slope and soil mechanics. The applicant shall:

- (a) Provide a brief, but specific description of the soils in the areas depicted on the above map(s) where slopes exceed twelve per cent. This information may be extracted from published sources.
- (b) Discuss the rationales as to suitability of the soils for foundation construction.

- (B) Layout and construction. The applicant shall provide information on the proposed layout and preparation of route/site alternatives, and the description of the proposed major structures and their installation as detailed below.
- (1) Site activities. The applicant shall describe the proposed site clearing, construction methods and reclamation operations, including:
 - (a) Surveying and soil testing.
 - (b) Grading and excavation.
 - (c) Construction of temporary and permanent access roads and trenches.
 - (d) Stringing of cable and/or laying of pipe.
 - (e) Post-construction reclamation.
 - (2) Layout for associated facilities. The applicant shall:
 - (a) Provide a map of 1:2,400 scale of the site of major transmission line associated facilities such as substations, compressor stations and other stations, showing the following proposed features:
 - (i) Final grades after construction, including the site and access roads.
 - (ii) Proposed location of major structures and buildings.
 - (iii) Fenced-in or secured areas.
 - (iv) Estimated overall dimensions.
 - (b) Describe reasons for the proposed layout and any unusual features.
 - (c) Describe plans for any future modifications in the proposed layout, including the nature and approximate timing of contemplated changes.
- (C) Transmission equipment. The applicant shall provide a description of the proposed transmission lines, as well as switching, capacity, metering, safety and other equipment pertinent to the operation of the proposed electric power and gas transmission lines and associated facilities. Include any provisions for future expansion.
- (1) Provide the following data for electric power transmission lines:
 - (a) Design voltage.
 - (b) Tower designs, pole structures, conductor size and number per phase, and insulator arrangement.
 - (c) Base and foundation design.
 - (d) Cable type and size, where underground.
 - (e) Other major equipment or special structures.
 - (2) Provide a description for electric power transmission substations that includes a single-line diagram and a description of the proposed major equipment, such as:
 - (a) Breakers.

- (b) Switchgear.
 - (c) Bus arrangement and structures.
 - (d) Transformers.
 - (e) Control buildings.
 - (f) Other major equipment.
- (3) Provide the following data for gas transmission lines:
- (a) Maximum allowable operating pressure.
 - (b) Pipe material.
 - (c) Pipe dimensions and specifications.
 - (d) Other major equipment.
- (4) Provide a description of gas transmission facilities such as:
- (a) Control buildings.
 - (b) Heaters, odorizers, and above-ground facilities.
 - (c) Any other major equipment.
- (D) Environmental and aviation compliance information. The applicant shall provide:
- (1) A list and brief discussion of all permits that will be required for construction of the facility.
 - (2) A description, quantification and characterization of debris that will result from construction of the facility, and the plans for disposal of the debris.
 - (3) A discussion of the process that will be used to control storm water and minimize erosion during construction and restoration of soils, wetlands, and streams disturbed as a result of construction of the facility.
 - (4) A discussion of plans for disposition of contaminated soil and hazardous materials generated or encountered during construction.
 - (5) The height of tallest anticipated above ground structures. For construction activities within the vicinity of airports or landing strips, provide the maximum possible height of construction equipment as well as all installed above ground structures.
 - (6) A description of the plans for construction during excessively dusty or excessively muddy soil conditions.

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4906-15-05 **Financial data.**

- (A) Ownership. The applicant shall state the current and proposed ownership status of the proposed facility, including sites, rights-of-way, structures, and equipment. The information shall cover sole and combined ownerships, any leases, options to purchase, or franchises, and shall specify the extent, terms, and conditions of ownership, or other contracts or agreements.
- (B) Electric capital costs. The applicant shall submit estimates of applicable capital and intangible costs for the various components of electric power transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for the utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:
- (1) Land and land rights.
 - (2) Structures and improvements.
 - (3) Substation equipment.
 - (4) Poles and fixtures.
 - (5) Towers and fixtures.
 - (6) Overhead conductors.
 - (7) Underground conductors and insulation.
 - (8) Underground-to-overhead conversion equipment.
 - (9) Right-of-way clearing and roads, trails, or other access.
- (C) Gas capital cost. The applicant shall submit estimates of applicable capital and intangible costs for the various components of gas transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:
- (1) Land and land rights.
 - (2) Structures and improvements.
 - (3) Pipes.
 - (4) Valves, meters, boosters, regulators, tanks, and other equipment.
 - (5) Roads, trails, or other access.

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Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 3/14/83, 1/15/85, 7/7/88, 6/5/93, 8/28/98

4906-15-06 Socioeconomic and land use impact analysis

- (A) The applicant shall conduct a literature search and map review for the area within one thousand feet on each side of each proposed transmission line centerline and within one thousand feet of the perimeter of each substation or compressor station designed to identify specific land use areas as required in paragraph (B)(3) of this rule. On-site investigations shall be conducted within one hundred feet of each side of each proposed transmission line centerline and within one hundred feet of the perimeter of each substation or compressor station to characterize the potential effects of construction, operation, and maintenance of the proposed facility.
- (B) The applicant shall provide, for each of the site/route alternatives and adjacent areas, map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission alignment, and the area within the immediate vicinity of a substation site, which map(s) shall include the following features:
 - (1) Proposed approximate centerline for each transmission line alternative being proposed.
 - (2) Proposed substation or compressor station locations.
 - (3) General land use, depicted as areas on the maps, including, but not limited to:
 - (a) Residential use.
 - (b) Commercial use.
 - (c) Industrial use.
 - (d) Cultural use (as identified in paragraph (F) of this rule).
 - (e) Agricultural use.
 - (f) Recreational use.
 - (g) Institutional use (e.g., schools, hospitals, churches, government facilities, etc.).
 - (4) Transportation corridors.
 - (5) Existing utility corridors.
 - (6) Noise-sensitive areas.
 - (7) Agricultural land (including agricultural district land) existing at least sixty days prior to submission of the application located within each transmission line right-of-way or within each site boundary.
- (C) The applicant shall provide for each of the site/route alternatives, a description of the impact of the proposed facility on each land use identified in paragraph (B)(3) of this rule. As it relates to agricultural land, the description shall include the acreage impacted and the applicant's evaluation of impacts to cultivated land, permanent pasture land, managed wood lots, orchards, nurseries, and agricultural-related structures.

- (1) Provide the number of residential structures within one thousand feet of the proposed facility, and identify all residential structures for which the nearest edge of the structure is within one hundred feet of the proposed facility.
 - (2) Construction: The applicant shall estimate the probable impact of the proposed facility on each land use (including: (a) buildings that will be destroyed, acquired, or removed as the result of the planned facility and criteria for owner compensation; and (b) field operations [such as plowing, planting, cultivating, spraying, and harvesting], irrigation, and field drainage systems).
 - (3) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on each land use.
 - (4) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize impact to land use, such as effects on subsurface field drainage systems.
- (D) The applicant shall provide the following public interaction information for each of the site/route alternatives:
- (1) A list of counties, townships, villages, and cities within one thousand feet on each side of the centerline or facility perimeter.
 - (2) A list of the public officials contacted regarding the application, their office addresses, and office telephone numbers.
 - (3) A description of the program or company/public interaction planned for the siting, construction, and operation of the proposed facility, i.e. public information programs.
 - (4) A description of any insurance or other corporate program, if any, for providing liability compensation for damages, if such should occur, to the public resulting from construction or operation of the proposed facility.
 - (5) A description of how the facility will serve the public interest, convenience, and necessity.
 - (6) An estimate of the increase in tax revenues as a result of facility placement.
 - (7) A description of the impact of the facility on regional development, referring to pertinent formally adopted regional development plans.
- (E) The applicant shall provide the following health, safety, and aesthetic information for each site/route alternative:
- (1) The applicant shall provide a description of how the facility will be constructed, operated, and maintained to comply with the requirements of applicable state and federal statutes and regulations, including the 2002 edition of the "National Electrical Safety Code", applicable occupational safety and health administration regulations, U.S. department of transportation gas pipeline safety standards, and Chapter 4901:1-16 of the Administrative Code.
 - (2) For electric power transmission facilities, the applicant shall discuss the production of electric and magnetic fields during operation of the preferred and alternate site/route. If more than one conductor configuration is to be used on the proposed facility, information shall be provided for each configuration that constitutes more than ten per cent of the total line length, or more than one mile of the total line length being certificated. Where an alternate structure design is submitted, information shall also be provided on the alternate structure. The discussion shall include:

- (a) Calculated electric and magnetic field strength levels at one meter above ground, under the conductors and at the edge of the right-of-way for:
 - (i) Winter normal conductor rating.
 - (ii) Emergency line loading.
 - (iii) Normal maximum loading.

Provide corresponding current flows, conductor ground clearance for normal maximum loading and distance from the centerline to the edge of the right-of-way. Estimates shall be made for minimum conductor height. The applicant shall also provide typical cross-section profiles of the calculated electric and magnetic field strength levels at the normal maximum loading conditions.
 - (b) References to the current state of knowledge concerning possible health effects of exposure to electric and magnetic field strength levels.
 - (c) Description of the company's consideration of electric and magnetic field strength levels, both as a general company policy and specifically in the design and siting of the transmission line project including: alternate conductor configurations and phasing, tower height, corridor location and right-of-way width.
 - (d) Description of the company's current procedures for addressing public inquiries regarding electric and magnetic field strength levels, including copies of informational materials and company procedures for customer electric and magnetic field strength level readings.
- (3) The applicant shall discuss the aesthetic impact of the proposed facility with reference to plans and sketches, including the following:
- (a) The views of the proposed facility from such sensitive vantage points as residential areas, lookout points, scenic highways, and waterways.
 - (b) Structure design features, as appropriate.
 - (c) How the proposed facility will likely affect the aesthetic quality of the site and surrounding area.
 - (d) Measures that will be taken to minimize any visual impacts created by the proposed facility.
- (4) For electric power transmission facilities, the applicant shall provide an estimate of the level of radio and television interference from operation of the proposed facility, identify the most severely impacted areas, if any, and discuss methods of mitigation.
- (F) The applicant shall provide, for each of the site/route alternatives, a description of the impact of the proposed facility on cultural resources. This description shall include potential and identified recreational areas and those districts, sites, buildings, structures, and objects which are recognized by, registered with, or identified as eligible for registration by the Ohio historical society or the Ohio department of natural resources. It shall include but not be limited to the following:
- (1) Location studies: The applicant shall describe studies used to determine the location of cultural resources within the study corridor. Correspondence with the Ohio historical preservation office shall be included.
 - (2) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on cultural resources.

- (3) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on cultural resources.
 - (4) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the operation and maintenance of the proposed facility to minimize impact to cultural resources.
- (G) The applicant shall submit data and related information on noise emissions generated by the proposed transmission line and associated facilities. Construction noise information shall be submitted for only those portions of transmission line routes requiring more than four months of actual construction time to complete in residential, commercial, and other noise-sensitive areas.
- (1) Construction: To assure noise control during construction, the applicant shall estimate the nature of any intermittent, recurring, or particularly annoying sounds from the following sources:
 - (a) Dynamiting or blasting activities.
 - (b) Operation of earth moving and excavating equipment.
 - (c) Driving of piles.
 - (d) Erection of structures.
 - (e) Truck traffic.
 - (f) Installation of equipment.
 - (2) Operation and maintenance: The applicant shall estimate the effect of noise generation due to the operation or maintenance of the transmission line and associated facilities.
 - (3) Mitigation procedures: The applicant shall describe any equipment and procedures designed to mitigate noise emissions during both the site clearing and construction phase, and during the operation and maintenance of the facility to minimize noise impact.
- (H) The applicant shall provide site-specific information that may be required in a particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impact. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.

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4906-15-07 Ecological impact analysis.

- (A) The applicant shall provide a summary of any studies that have been made by or for the applicant on the natural environment in which the proposed facility will be located. The applicant shall conduct and report the results of a literature search, including map review, for the area within one thousand feet on each side of a transmission line alignment and the area within the immediate vicinity of a substation or compressor station site. On-site investigations shall be conducted within one hundred feet on each side of a transmission line centerline or within one hundred feet of a substation or compressor station site to characterize the potential effects of construction, operation, or maintenance of the proposed facility.

- (B) The applicant shall provide for each of the site/route alternatives a map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of the transmission line alignment and the area within the immediate vicinity of a substation site or compressor station site. The map(s) shall include the following:
- (1) Proposed transmission line alignments.
 - (2) Proposed substation or compressor station locations.
 - (3) All areas currently not developed for agricultural, residential, commercial, industrial, institutional, or cultural purposes including:
 - (a) Streams and drainage channels.
 - (b) Lakes, ponds, and reservoirs.
 - (c) Marshes, swamps, and other wetlands.
 - (d) Woody and herbaceous vegetation land.
 - (e) Locations of threatened or endangered species.
 - (4) Soil associations in the corridor.
- (C) The applicant shall provide for each of the site/route alternatives a description of each stream or body of water (and associated characteristics including floodplain) that is present and may be affected by the proposed facility, including but not limited to the following:
- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on streams and bodies of water. This shall include the impacts from route clearing.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on streams and bodies of water. This shall include the permanent impacts from route clearing.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on streams and bodies of water.
- (D) The applicant shall provide for each of the site/route alternatives a description of each wetland that is present and may be affected by the proposed facility. The applicant shall describe the probable impact on these wetlands, including but not limited to the following:
- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on wetlands and wildlife habitat.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on wetlands and wildlife habitat. This would include the permanent impacts from route clearing and any impact to natural nesting areas.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on wetlands and wildlife habitat.
- (E) The applicant shall provide for each of the site/route alternatives a description of the naturally occurring vegetation that is present and may be affected by the proposed facility. The applicant shall describe the

probable impact to the environment from the clearing and disposal of this vegetation, including but not limited to the following:

- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on the vegetation. This would include the impacts from route clearing, types of vegetation waste generated, and the method of disposal or dispersal.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.
- (F) The applicant shall provide for each of the site/route alternatives a description of each major species of commercial or recreational value and species designated as endangered or threatened, in accordance with U.S. and Ohio species lists, that is present and may be affected. The applicant shall describe the probable impact to the habitat of the species described above, including but not limited to the following:
- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on commercial, recreational, threatened, or endangered species. This would include the impacts from route clearing and any impact to natural nesting areas.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.
- (G) The applicant shall provide for each of the site/route alternatives a description of the areas with slopes and/or highly erodible soils (according to the natural resource conservation service and county soil surveys) that are present and may be affected by the proposed facility. The applicant shall describe the probable impact to these areas, including but not limited to the following:
- (1) Construction: The applicant shall provide a description of the measures that will be taken to avoid or minimize erosion and sedimentation during the site clearing, access road construction, facility construction process, and any other temporary grading. If a storm water pollution prevention plan is required for the proposed facility, the applicant shall include the schedule for the preparation of this plan.
 - (2) Operation and maintenance: The applicant shall describe and estimate the probable impact of the operation and maintenance of the proposed facility after construction on the environment. This would include permanent impacts from sites where grading has taken place.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during operation and maintenance of the proposed facility to minimize the impact on the environment due to erosion from storm water run-off.
- (H) The applicant shall provide site-specific information that may be required in this particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impacts. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.

4906-15

-14-

Effective: 12/15/2003

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4906-15-01 Project Summary and Facility Overview

4906-15-01 PROJECT SUMMARY AND FACILITY OVERVIEW**(A) PROJECT SUMMARY AND FACILITY OVERVIEW**

This Application seeks a Certificate of Environmental Compatibility and Public Need from the Ohio Power Siting Board (OPSB) for AEP Ohio Transmission Company, Inc.'s (AEP or Applicant) proposed Biers Run-Hopetown-Delano 138 kV Transmission Line Project (Project). AEP is proposing to construct a 138 kV electric transmission line in Ross County, Ohio. A Preferred Route and an Alternate Route for the Project are proposed in this Application.

The OPSB has jurisdiction over major electric transmission line installations located wholly within the state of Ohio. Moreover, Ohio's Power Siting Law requires AEP to file this application with the OPSB for a Certificate of Environmental Compatibility and Public Need for the proposed Project. This application contains specific project details regarding environmental, socioeconomic, technical, ecological, justification of need, and financial matters.

(1) General Purpose of the Facility

AEP has a critical need to reinforce its transmission system to maintain and improve the quality and reliability of electric service in south central Ohio. AEP studies indicate that without this reinforcement plan, the performance of the company's transmission system will be inadequate to provide the level of service that its customers expect. Without this electric transmission line, in a worst-case scenario, uncontrolled widespread power outages affecting major portions of south central Ohio may materialize.

(2) Summary Description

The new Biers Run-Hopetown-Delano 138 kV transmission line will extend from the proposed Biers Run Station to the existing Delano Station. It will pass through Hopetown Station, a proposed distribution station that will replace the existing Camp Sherman Station. The preliminary Hopetown Station site is approximately 5.2 miles southeast of the Biers Run Station site. Delano Station is approximately 3.6 miles to the northeast of the Hopetown Station site. Single-circuit construction is predominantly proposed for the new 138 kV line, although short sections of double-circuit construction may be necessary depending on which route is selected. A project overview is provided in Figure 01-1.

(3) Route Selection Process

A Route Selection Study was conducted to identify and evaluate potential routes for the Project. The goal of the Route Selection Study was to identify viable routes based on the siting criteria, while avoiding or limiting impacts to sensitive land uses, ecological resources, and cultural features in the project vicinity. Potential routes were evaluated, compared, and ranked to aid the selection of a Preferred and an Alternate Route by AEP. The Route Selection Study is provided as Appendix 03-1 of this Application.

In this Application, AEP is proposing to install a 138 kV transmission line between Biers Run Station and Delano Station, passing through Hopetown Station, a proposed distribution station that will replace the existing Camp Sherman Station. AEP is also proposing to install a 138 kV electric transmission line from Biers Run Station to Circleville Station (OPSB Case Number 13-430-EL-BTX). Although these projects are distinct and separate endeavors, route alternatives must be conducted concurrently to avoid major area reliability concerns if the two proposed circuits overlap. In fact, siting the two lines too close to one another does not alleviate the reliability concerns associated with the current electric transmission system in south central Ohio. Therefore, completely independent evaluations of the Projects were avoided to minimize reliability concerns for the area.

Potential route corridors for both the Biers Run-Hopetown-Delano and Biers Run-Circleville 138 kV transmission lines were identified. A preliminary corridor was relatively direct from Biers Run Station east toward Delano Station. Approximately 2.2 miles of this corridor crosses the Ohio Department of Natural Resources' (ODNR) Pleasant Valley Wildlife Area. As provided in the Route Selection Study, ODNR indicated that deed restrictions and their opposition would not allow for the project to cross the Pleasant Valley Wildlife Area. Based on the comments from ODNR, AEP did not fully evaluate candidate routes through this area, greatly reducing the number of alternatives available, especially when considering the planning performance requirements of the combined 138 kV projects from Biers Run Station. The resulting eight routes for the Biers Run-Hopetown-Delano transmission line, combined with the 25 potential candidates for the Biers Run-Circleville line that were entirely outside the wildlife area boundary, were both quantitatively and qualitatively assessed based on their impacts and effects on the suite of evaluation criteria.

The results of the Route Selection Study suggested that Route A-F-E'-G-H and Route A-B-C-D-E-E'-G-H/E'-F were the best candidates to become the Preferred and Alternate Routes, respectively, as shown on Figure 6 of the Route Selection Study (Appendix 03-1). These routes go south and north of the Pleasant Valley Wildlife Area. AEP held a public meeting for the Project on May 16, 2013. Route A-F-E'-G-H (Blue Route) and Route A-B-C-D-E-E'-G-H/E'-F (Red Route) were presented at this meeting. After the public meeting, AEP and its consultants met with property owners along these two routes and conducted ecological and cultural resources surveys to assess potential impacts. Adjustments to the routes were made at the requests of landowners, accommodate public comments, and to avoid potential impacts to known cultural and ecological resources. AEP evaluated the adjusted routes, accounting for the overall transmission and distribution systems in the Project vicinity, reliability concerns, and field survey results. Ultimately, a revised Route A-F-E'-G-H (Blue Route) was selected as the Preferred Route and a revised Route A-B-C-D-E-E'-G-H/E'-F (Red Route) was selected as the Alternate Route. Figure 03-1 shows the differences between the Blue and Red Routes shown at the public meeting and the submitted Preferred and Alternate Routes. The Preferred Route has fewer difficult construction spots, allows for a solely single circuit to increase reliability, and reduces overall impacts to wetlands, streams, and cultural resources.

Preferred Route: The Preferred Route begins at the proposed Biers Run Station (OPSB Case Number 12-1361-EL-BSB), and crosses a short section of the overall station property. The first 0.2 mile of the Preferred Route as it exits Biers Run Station is shared by the Alternate Route. The Preferred Route then heads south-southeast parallel to the eastern side of the Don Marquis-Bixby 345 kV line for 1.2 miles. The route then heads generally southeast for 3.3 miles across mostly agricultural fields making several turns to avoid woodlots, residences, including a subdivision, and a significant prehistoric archaeological site. The route then generally parallels Veterans Parkway and Pleasant Valley Road, heading east for approximately 1.4 miles, then crosses U.S. 35 and continues generally east for an additional 1.1 miles, avoiding Union Scioto Schools, crossing Chillicothe Correctional Institute property, and entering the proposed Hopetown distribution substation at the corner of State Route 104 and Moundville Road. From the proposed Hopetown distribution substation, the Preferred Route is the same as the Alternate Route (Common Route) and heads north for 2.1 miles parallel to State Route 104 and within the current right-of-way of the Camp Sherman-Circleville 69 kV line, which will be removed prior to construction of this portion of the Biers Run-Hopetown-Delano 138 kV transmission line. The route then turns generally east and northeast parallel to State Route 207 for 2.5 miles. The route then crosses a U.S. 23 interchange, extending east and then south across agricultural fields for the final 1.2 miles into Delano Station. The total length of the Preferred Route is 12.8 miles and would be constructed entirely as a single circuit. The Common Route shared with the Alternate Route accounts for 6.0 miles of the total length.

Alternate Route: The first 0.2 mile of the Alternate Route as it exits Biers Run Station is shared by the Preferred Route. The Alternate Route heads generally east from the proposed Biers Run Station. It primarily crosses agricultural fields while making multiple turns to follow property lines and avoid most woodlots, residences, and the Pleasant Valley Wildlife Area for 3.6 miles to Egypt Pike. East of Egypt Pike, the Alternate Route crosses a large wooded area and challenging topography for 1.3 miles to State Route 207. The route then turns generally southeast across agricultural fields for 1.3 miles before turning south for 0.7 mile along State Route 104 to a point near State Route 207, where it meets the Common Route. To this point, the Alternate Route will be constructed as a single circuit. However, the 2.1-mile portion of the Common Route parallel to State Route 104 and within the current right-of-way of the Camp Sherman-Circleville 69 kV line will require double circuit construction if the Alternate Route is selected. This is necessary to create a loop through the proposed Hopetown distribution station and back to the point where the Alternate Route and the Common Route intersect. A single circuit will extend east along the Common Route for the final 3.7 miles, as described above, into Delano Station. The total length of the Alternate Route is 12.7 miles, with 6.0 miles of the Common Route shared with the Preferred Route.

According to OPSB rule 4906-05-04(A)(2)(a)(iii), the Preferred and Alternate Routes may not have more than 20 percent of their rights-of-way in common. However, the Pleasant Valley Wildlife Area deed restrictions, planning performance requirements, and other sensitive areas in the project vicinity such as the Hopewell Culture National Historic Place, Chillicothe Veteran Affairs Medical Center, Union-Scioto Schools, Shawnee Wetlands Preserve, Goldie A. Gunlock

Memorial Park, Ross County Fairgrounds, and the City of Chillicothe greatly reduced the potential corridors for the Project. The Preferred Route and Alternate Route have commonality of 47%. AEP believed this commonality was justified given the routing constraints and increased impacts associated with other candidates. In fact, AEP asserts it would be irresponsible to propose another Alternate Route solely to reduce the commonality given the significant increase in potential impacts that would result. AEP submitted a waiver request of the 20% rule for utilizing as the Common Route as part of both the Preferred and Alternate Routes on August 9, 2013.

(4) Principal Environmental and Socioeconomic Considerations

A general socioeconomic survey of the study area was performed and included preparation of a land use map, current population estimates and projections for the area, consideration of compatibility of the Project with local and regional development plans, and a qualitative assessment of the impact of the proposed substation on the surrounding community.

(a) Land Use Impacts: The Project is located in a rural setting characterized by mixed agricultural and residential land uses, with large wooded areas. The ODNR owns large tracts of land in the vicinity, which introduce some routing limitations.

Approximately 227 residences were identified within 1,000 feet of the Preferred Route, three of which are within 100 feet. Seventy-seven residences were identified within 1,000 feet of the Alternate Route, one of which is within 100 feet. Approximately 55% of the Preferred Route and 53% of the Alternate Route cross agricultural fields. Three schools (Union-Scioto High School, Intermediate School, and Union-Scioto Primary School) were identified within 1,000 feet of the Preferred Route, none of which are within 100 feet. One church (Faith Chapel of Chillicothe) was identified within 1,000 feet of the Preferred Route. It is not within 100 feet. One church (Southern Hills Community Church) was also identified within 1,000 feet of the Alternate Route, but is not located within 100 feet. Property of the Chillicothe Correctional Institute is crossed by both the Preferred and Alternate Routes. Less than ten scattered commercial facilities were identified within 1,000 feet of the Preferred or Alternate Routes. These businesses include gas stations, auto repair facilities, a paint shop, a boarding kennel, and a warehouse. The closest of these businesses is a gas station located approximately 200 feet from the Preferred Route along Pleasant Valley Road. An apparent quarry was identified just within 1,000 feet of the Alternate Route.

One-hundred previously recorded archaeological sites were identified within 1,000 feet of the Preferred Route, 16 of which are within 100 feet. Twelve Ohio Historic Inventory (OHI) structures were identified within 1,000 feet, one of which is within 100 feet. Three National Register of Historic Places (NRHP) sites were identified within 1,000 feet of the Preferred Route, none of which are within 100 feet. One-hundred and three previously recorded archaeological sites were identified within 1,000 feet of the Alternate Route, 17 of which are within 100 feet. Fourteen OHI structures were identified within 1,000 feet, one of which is within 100 feet. Three NRHP sites were identified within 1,000 feet of the Alternate Route, none of which are within 100 feet.

In addition to the OHPO data sources above, Weller & Associates conducted a Phase I cultural resources survey for the Preferred and Alternate Routes on behalf of AEP. The Preferred Route survey included the area surrounding the Anderson Earthwork and other identified archaeological sites. Based on the currently proposed alignment, it appears likely that archaeological resources near the Preferred Route will be avoided through alignment decisions or spanned by strategically selecting pole locations. The Phase I archaeological investigations conducted for the Alternate Route identified two sensitive archaeological sites. One site consists of multiple Native American burials. Due to the sensitive nature of this finding, the location is not disclosed in this publicly available Application to protect the remains and the landowner from potential trespassers. The Alternate Route also extends through the McCafferty Run site (33RO919). This is a prehistoric site located to the east of SR 207. This site is significant and extends to the east of the existing road right-of-way far enough that it does not appear to be avoidable. Intensive investigations may be required to avoid these sites along the Alternate Route or mitigate any impacts. Based on the preliminary results, the Preferred Route appears to have fewer impacts on cultural resources compared to the Alternate Route. The full Phase I report will be provided to OPSB and OHPO under separate cover.

Based on contacts with local officials, no conflicts with zoning or development issues were identified. With the exception of the small footprints of the poles, no existing land uses are planned to be converted by the Project as proposed.

(b) Economic Impacts: The proposed Project is necessary to improve and maintain the quality of electric service to the Chillicothe area. By improving the transmission system, the Project will help meet the power requirements necessary to ensure continued business development and growth in the area. The Project will also produce additional tax revenue for local schools and communities. AEP projects that the new transmission line will contribute approximately \$550,000 in property taxes to Ross County and the local community over the first year after the Project is completed.

(c) Ecological Impacts: An ecological study of the Preferred and Alternate Routes was performed. The study included analysis of published literature and maps and a field survey to assess the presence of endangered plant and animal species and wetlands. Areas within 100 feet of the Preferred and Alternate Routes were field surveyed for vegetation, habitat of endangered plants and animals, streams, and wetlands. Ecological surveys along the Preferred and Alternate Routes were conducted from August through December 2013. The proposed right-of-way of the Preferred Route crosses five wetlands with a total area of 0.48 acre, and 20 streams with a total length of 2,718 linear feet. Approximately one linear mile and 12 acres of woodlot would be cleared along the Preferred Route. The proposed right-of-way of the Alternate Route crosses eight wetlands with a total area of 0.61 acre, and 30 streams with a total length of 3,622 linear feet. Approximately 1.9 linear miles and 23 acres of woodlot would be cleared along the proposed Alternate Route. The full results of this survey are discussed in detail in Section 7 of this Application.

Construction impacts to streams and wetlands along the Preferred Route and Alternate Route will be minimal, as the transmission line will span most of these sensitive areas. Construction access routes will be selected to minimize impacts to wetlands and streams to the extent practical. Structures will be placed outside of stream channels and, to the extent possible, structures will be installed outside of wetlands. It is not expected to be necessary to place fill material in wetlands to install the transmission line structures. Furthermore, the utilization of non-mechanized land clearing techniques to clear wetlands crossed by the right-of-way will minimize impacts in these areas. Project delineated wetlands and the stream analysis locations are shown on Figures 07-1A through 07-1K.

Based on a desktop review of records on ODNR's Biodiversity Database, and correspondence from ODNR and United States Fish and Wildlife Service (USFWS), a total of five threatened or endangered species of concern are listed within the Project area in Ross County.

The wooded portions of the Preferred and Alternate Routes provide low habitat quality for the Indiana bat, a Federal and State endangered species. AEP proposes to conduct tree clearing between October 1st and March 31st to limit potential impacts to this species.

Storm water best management practices, such as placement of silt fencing, will be employed where necessary to mitigate potential erosion and degradation during construction.

(d) Other Environmental Impacts: No other potential environmental impacts beyond those discussed above are expected as a result of this project.

(5) Project Schedule Summary

AEP plans to start construction of the transmission line in the spring or summer of 2015, with an estimated in-service date around fall of 2016. Figure 02-1 provides additional details regarding the proposed Project schedule.

(B) INFORMATION FILED IN RESPONSE TO REQUIREMENTS

The information filed in response to the requirements of section 4906-15-01 of the Biers Run-Hopetown-Delano 138 kV Transmission Line Project Application for a Certificate of Environmental Compatibility and Public Need are not deemed to be responses to any other section of the Application for a Certificate of Environmental Compatibility and Public Need.

Ohio Power Siting Board Process

The OPSB has jurisdiction over major transmission line installations located wholly within the state of Ohio. As such, AEP is required to file an application with the OPSB for a Certificate of Environmental Compatibility and Public Need. This Application contains specific project details regarding environmental, socioeconomic, technical, ecological, justification of need, and financial matters.

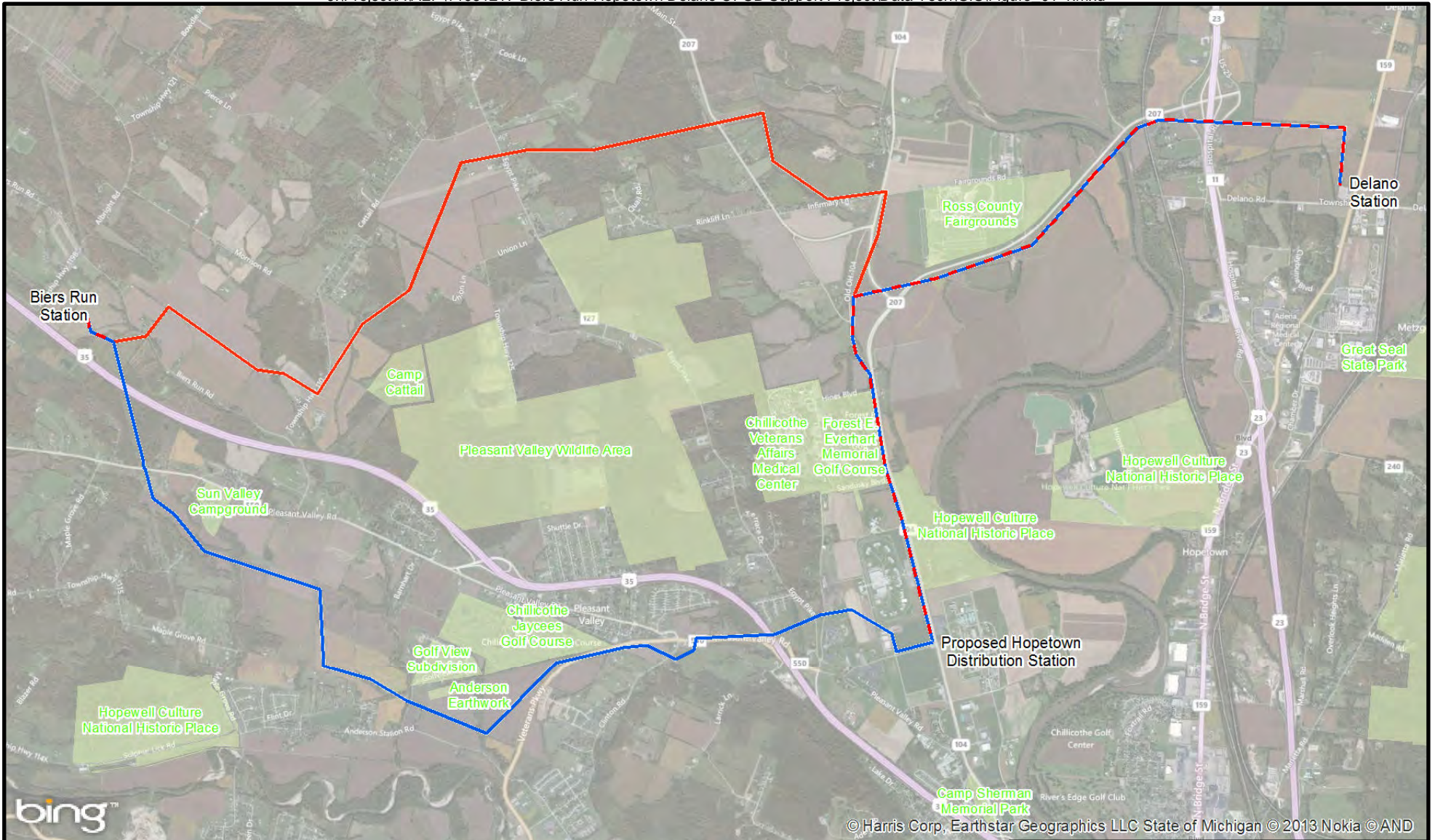
The OPSB process is initiated with a pre-application public information meeting to be held by the Applicant within the general project area. This meeting is intended to provide general project information to the local residents and to detail upcoming OPSB activities, and was held on May 16, 2013. Next, the Application is filed with the OPSB. The OPSB then has 60 days to either certify the application filing as complete, or identify the Application as incomplete and notifying the Applicant by mail of the specific grounds. Upon a certified completeness determination, the OPSB orders the Applicant to serve a copy of the certified Application on the chief executive officer of each municipal corporation and county, and the head of each public agency charged with the duty of protecting the environment or of planning land use in the area in which any portion of the project is to be located.

After certified applications have been served in the general project area, the Board schedules public hearings. The Applicant is then required to provide two separate public notices of the project and upcoming hearings in newspapers of general circulation within the project area. The first public notice is to be published within 7 days of the certified Application service date, and the second public notice is to be published at least seven but not more than 21 days prior to the public hearing. In addition, the applicant shall send a letter describing the facility to each property owner within the planned site or right-of-way of the proposed facility and to each property owner who may be approached by the applicant for any additional easement necessary for the construction, operation, or maintenance of the facility. The OPSB Staff is to conduct an investigation of the certified Application and submit a written report not less than fifteen days prior to the beginning of public hearings.

One session of the Public Hearings for the project is usually held at a convenient location within the general project area and the other session(s) held at the principal office of the OPSB. An Administrative Law Judge appointed by the Chairman of the OPSB will preside over the hearings. The Administrative Law Judge will regulate the proceedings and provide members of the public opportunity during a portion of the hearing to offer testimony. Within a reasonable time after conclusion of the hearings, the Board shall issue a final decision based on the record of the proceedings.

(C) PREPARATION OF HARD COPY MAPS

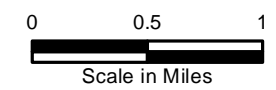
Digital, geographical referenced data used in the preparation of maps for the Biers Run-Hopetown-Delano 138 kV Transmission Line Project Application for a Certificate of Environmental Compatibility and Public Need will be provided under separate cover and submitted concurrent with the Application.



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LEGEND:
 — Preferred Route
 — Alternate Route
 - - Preferred & Alternate Routes



AEP Biers Run-Hopetown-Delano
138 kV Transmission Line

FIGURE 01-1
PROJECT OVERVIEW

JOB NO. 14951217



4906-15-02 Review of Need for Proposed Project

4906-15-02 REVIEW OF NEED FOR PROPOSED PROJECT**(A) JUSTIFICATION OF NEED****(1) Purpose of the Proposed Facility**

The purpose of the Biers Run-Hopetown-Delano 138 kV Transmission Line Project is to maintain and improve the quality of electric service and reliability to the South Central Ohio area, including AEP's load area. This area includes, but is not limited to, the communities of southern Columbus, Chillicothe, Circleville, Highland, Greenfield, Waverly, and others.

(2) System Conditions, Local Requirements and Other Pertinent Factors

The Circleville/Chillicothe load area of the transmission system provides service to approximately 200 megawatts (MW) of peak summer electric demand, and also helps support other neighboring transmission systems. The area load is summer peaking and mainly consists of residential and commercial load, with some industrial load.

The Circleville-Chillicothe load area is served primarily by three 138 kV lines originating from the Columbus, Waverly, and Athens areas. Loss of any two of these lines (N-2 contingency) can result in system criteria violations for the area. The applicable criteria for this area include the following requirements:

- Voltage levels must be maintained between 95-105% of nominal for normal conditions.
- Voltage levels must be maintained between 92-105% of nominal for contingency conditions.
- Contingency-caused voltage changes of more than 8% are deemed unacceptable.
- No facility may exceed its normal rating under normal conditions.
- No facility may exceed its emergency rating under contingency conditions.

Under the worst likely voltage scenario, the N-2 voltage experienced in the area is 61% of nominal on the 138 kV system and 66% of nominal on the 69 kV system. Under the worst likely thermal scenario, the worst N-2 loading on an element is 125% of the emergency rating on the 138 kV system and 150% of the emergency rating on the 69 kV system.

AEP proposes to improve the transmission reliability by constructing new transmission facilities in the South Central Ohio area as shown on Figure 02-1. This includes, but is not limited to the following:

- Construct Biers Run Station with a 345/138 kV, 675 MVA transformer, and 138/69 kV, 130 MVA transformer. This substation will be inserted into the Bixby-Don Marquis 345 kV line and will integrate into the South Central Ohio grid via two new 138 kV lines (one to Circleville Station and one to Delano Station via the proposed Hopetown Station), and a double circuit 69 kV extension of the Highland-Ross 69 kV line. This will form three 138 kV circuits on two lines: Biers Run – Hopetown, Hopetown – Delano, and Biers Run – Circleville. The existing Adena-Buckskin 69 kV circuit on the Highland-Ross line will be divided into a Biers Run-Adena circuit and a Biers Run-Buckskin circuit. The Biers Run Station siting application has already been filed and approved. This application is for the Biers Run-Hopetown-Delano 138 kV line. A separate application will be filed for the Biers Run-Circleville 138 kV line.
- Construct Hopetown distribution station with a 138/12 kV 20 MVA transformer, 138 kV facilities, and 12 kV feeders.
- Retirement of existing Circleville-Ross 69 kV, Camp Sherman 69/12 kV station, and two customer delivery points (Andersonville and Kinderhook).

(3) Load Flow Studies

Power flow analysis was performed using the PTI PSS/E power system simulator. Load flow analysis identified several double contingency conditions that would result in low voltage and thermal loading criteria violations. Table 02-1 below summarizes the results of the load flow analysis depicting the summer 2016 peak load conditions. The most severe forecasted issues are summarized in this table. The table shows South Central Ohio area facility thermal overloads for credible double contingency outage conditions. In order to meet AEP Transmission Planning Criteria, system voltage must be maintained at or above 92% of nominal for contingencies, and equipment thermal loadings may not exceed 100% of the equipment's emergency rating. Furthermore, normal system voltages should not go below 95% for steady state conditions and should not change by more than 8% for any applicable contingency condition. If equipment is allowed to remain in service when loaded above its permissible loading, it may produce an unsafe operating condition and can lead to system/customer outages.

**TABLE 02-1
South Central Ohio Area Transmission System Performance
Summer 2016 Conditions with Existing System**

Issue	N-2 Outage Scenario	Other Factors	Affected Facility	2016 Base Case Before Improvements
Voltage	Circleville-Harrison 138 kV Line + Poston-Ross 138 kV Line	Cap banks at Ross, Delano, and Circleville not yet switched in manually. All 3 banks are needed to alleviate voltage violations.	Circleville/Ross Area 138 kV & 69 kV	73.1% & 80.0%
		Cap banks at Delano and Circleville not yet switched in manually. Cap bank at Ross switched in.	Circleville/Ross Area 138 kV & 69 kV	14.1% V drop & 11.3% V drop
	Circleville-Harrison 138 kV Line + Rozelle-Waverly 138 kV Line	Area cap banks assumed already switched in.	Circleville/Ross Area 138 kV & 69 kV	61.5% & 66.3%
	Poston-Ross 138 kV Line + Rozelle-Waverly 138 kV Line	Area cap banks assumed already switched in.	Circleville/Ross Area 138 kV	85.5%
Thermal	Circleville-Harrison 138 kV Line + Rozelle-Waverly 138 kV Line	Area cap banks assumed already switched in.	Poston-Ross 138 kV	125% (emergency)
		Area cap banks assumed already switched in.	Ross-Ginger 69 kV	150% (emergency)
	Poston-Ross 138 kV Line + Rozelle-Waverly 138 kV Line	Area cap banks assumed already switched in.	Circleville-Harrison 138 kV	106% (emergency)
		Area cap banks assumed already switched in.	Ross-Ginger 69 kV	110% (emergency)

Voltage performance in the South Central Ohio area mentioned above was substantiated in load flow analysis. Analysis has shown that voltage levels after the specified double contingency would subject portions of South Central Ohio to transmission voltages below the 0.92 PU planning criteria level for emergency conditions, in some cases would produce voltage drops greater than 8%, and could produce equipment overloads.

(4) Base Case Model Data

An electronic copy of the base case will be provided upon request of the OPSB staff.

(5) Base Case Data for Natural Gas Transmission Line

As the proposed Project is an electric transmission line project, this section does not apply.

(B) EXPANSION PLANS**(1) Long-Term Forecast; and Regional Transmission Planning****(a) Reference in Long Term Forecast**

The proposed Biers Run-Delano line (Biers Run-Hopetown and Hopetown-Delano circuits) is listed in the 2013 "AEP Ohio Transmission Company Long Term Forecast report to the Public Utilities Commission of Ohio", Form FE-T9.

(b) Explanation if Not Referenced

Not applicable. The proposed facility is referenced in the aforementioned report.

(c) Effect on Regional Expansion Plans

This project is direct mitigation for reliability, voltage and thermal concerns of the South Central Ohio AEP transmission system and thus should not adversely impact neighboring utilities or regional bulk transmission planning. PJM has approved this project as a Baseline Project and has studied the impact of the Biers Run Project on the Regional Transmission System. PJM has not identified any issues for other neighboring electric utilities.

(2) Gas Transmission Lines and Associated Facilities

This application is for an electric transmission line; therefore this section is not applicable.

(C) SYSTEM ECONOMY AND RELIABILITY

The proposed improvements will reinforce the AEP transmission system in the South Central Ohio area by providing 345/138 kV and 138/69 kV transformer capacity, two additional 138 kV outlets/connections (Circleville/Delano Stations), and two 69 kV outlets/connections (Buckskin/Adena Stations). These new sources to the area transmission system will result in (1) improved grid reliability by adding additional 138 kV and 69 kV sources and protective devices, (2) improved South Central Ohio transmission system voltage profile so voltages are maintained within AEP Planning Criteria, and (3) rectified forecasted thermal overloads on area transmission facilities maintaining equipment loading levels with AEP Planning Criteria.

Table 02-2 compares the existing system (with credible double contingency outage conditions) to the same system incorporating the proposed transmission system facilities as recommended in this proposal. System voltages violations and equipment overloads will be alleviated with the proposed system upgrades.

TABLE 02-2
Proposed South Central Ohio Area Transmission System Performance
Summer 2016 Conditions with 2016 Base Case before Improvements and 2016 Base Case
with the Proposed Biers Run Improvements in Place

Issue	N-2 Outage Scenario	Other Factors	Affected Facility	2016 Base Case Before Improvements	2016 Base Case After Improvements
Voltage	Circleville-Harrison 138 kV Line + Poston-Ross 138 kV Line	Cap banks at Ross, Delano, and Circleville not yet switched in manually. All 3 banks are needed to alleviate voltage violations.	Circleville/Ross Area 138 kV & 69 kV	73.1% & 80.0%	98.6% & 97.4%
		Cap banks at Delano and Circleville (and Biers Run) not yet switched in manually. Cap bank at Ross switched in.	Circleville/Ross Area 138 kV & 69 kV	14.1% V drop & 11.3% V drop	0.5% V drop & 0.4% V drop
	Circleville-Harrison 138 kV Line + Rozelle-Waverly 138 kV Line	Area cap banks assumed already switched in.	Circleville/Ross Area 138 kV & 69 kV	61.5% & 66.3%	97.4% & 97.7%
	Poston-Ross 138 kV Line + Rozelle-Waverly 138 kV Line	Area cap banks assumed already switched in.	Circleville/Ross Area 138 kV	85.5%	97.4%
Thermal	Circleville-Harrison 138 kV Line + Rozelle-Waverly 138 kV Line	Area cap banks assumed already switched in.	Poston-Ross 138 kV	125% (emergency)	9% (emergency)
		Area cap banks assumed already switched in.	Ross-Ginger 69 kV	150% (emergency)	20% (emergency)
	Poston-Ross 138 kV Line + Rozelle-Waverly 138 kV Line	Area cap banks assumed already switched in.	Circleville-Harrison 138 kV	106% (emergency)	46% (emergency)
		Area cap banks assumed already switched in.	Ross-Ginger 69 kV	110% (emergency)	23% (emergency)

(D) OPTIONS TO ELIMINATE THE NEED FOR THE PROPOSED PROJECT

AEP considered rebuilding the Circleville-Harrison 138 kV line and upgrading facilities at each terminal station to increase 138 kV through path capability, and installing capacitor banks at various 138 kV and 69 kV locations in the area. This solution shows promise “on paper” in solving the stated problems in the load flow model in extremely limited fashion and for a very short term. It will not, however, provide the robust solution the system requires in the long term, will not be flexible enough to handle large system changes (such as planned generation retirements), does almost nothing to improve reliability for area loads, and is very difficult to manage effectively in real time. This solution shows merit as incremental improvements, and

will be implemented as additional enhancements apart from the proposed solution currently under consideration.

(E) FACILITY SELECTION RATIONALE

The plan to establish a new 345/138/69 kV substation (Biers Run), two 138 kV circuits (Biers Run to Circleville and Biers Run to Delano), and two 69 kV circuit (Biers Run to Adena and Biers Run to Buckskin) was selected over the other alternative considered because it is the most effective and robust solution that will address the reliability, voltage and thermal issues on the South Central Ohio transmission system under a wide range of potential system conditions. This solution will be built upon for future improvements as conditions warrant. The other alternative considered is only effective under extremely limited circumstances and for a very limited time frame. When the alternative solution is no longer viable, the chosen solution will be required with no other available solutions with a shorter available siting/construction time frame.

(F) FACILITY SCHEDULE

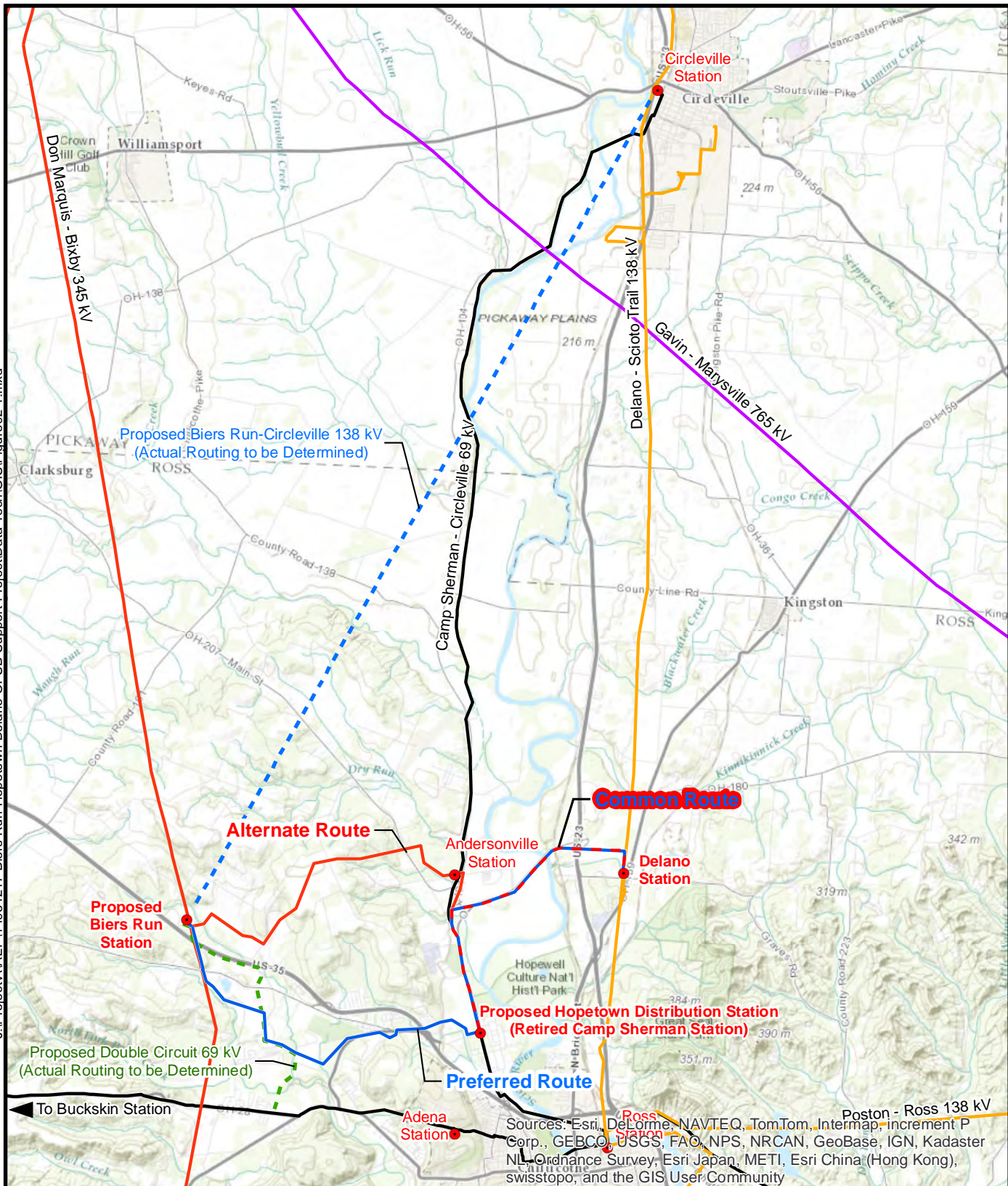
(1) Schedule Bar Chart

The major scheduled activities associated with the Preferred and Alternate Sites are shown in bar chart form on Figure 02-2.

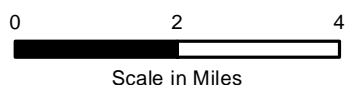
(2) Delays

Any critical delays that affect the major activities as outlined in the schedule would further delay the in-service date of the project. This would put approximately 200 MW of load at an increased risk of an area-wide extended service interruption and low voltages, while some facilities may fail due to thermal overloads.

J:\Project\A\AEP\14951217 Biers Run-Hopetown Delano OP&B Support Project\Data-Tech\GIS\Figure02-1.mxd



Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, Increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community



Biers Run-Hopetown-Delano
138 kV Transmission Line

FIGURE 02-1
BIERS RUN-HOPETOWN-DELANO
PROJECT OVERVIEW AND OTHER
MAJOR CONSTRUCTION ITEMS



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Summary: Application Biers Run-Hopetown-Delano 138kV Transmission Line Project electronically filed by Mr. Yazen Alami on behalf of AEP Ohio Transmission Company