

**4906-15-05 FINANCIAL DATA**

This section of the application provides information on the current and proposed ownership status of the proposed Biers Run-Circleville 138 kV Transmission Line, and includes estimated costs for the development of the Project.

**(A) OWNERSHIP**

AEP Ohio Transco will construct, own, operate, and maintain the proposed Biers Run-Circleville 138 kV Transmission line.

**(B) ELECTRIC CAPITAL COST**

Estimates of applicable intangible and capital costs for both the Preferred and Alternate Routes of the Biers Run-Circleville 138 kV Transmission Line are identified in Table 5-1.

**TABLE 5-1**

Estimates of Applicable Intangible and Capital Costs for Both the Preferred and Alternate Sites

FERC Account Number	Description	Preferred Route	Alternate Route
355	Poles and Fixtures	\$14,350,270	\$13,372,326
356	Overhead Conductors and Devices	\$8,483,987	\$8,227,991

**(C) GAS CAPITAL COST**

The Project includes the development of a 138 kV electric transmission line; therefore, the capital cost of gas is not applicable to this Project.

**4906-15-06 SOCIOECONOMIC AND LAND USE IMPACT ANALYSIS**

This section of the Application provides information about land use and socioeconomic conditions along the two proposed Route alternatives for the Project proposed by AEP Ohio Transco. This section includes data collected from literature searches and on-site investigations. It also provides descriptions of anticipated construction activities, public outreach, health, safety, aesthetic information, and noise emission data associated with the construction, operation, and maintenance of the Project.

**(A) SOCIOECONOMIC CHARACTERISTICS**

A study of the general socioeconomic characteristics of the Project Area was conducted as part of this Application. The study used data available from the United States Census Bureau as well as other state and local agencies. Results from the study are summarized below.

Both Routes, including all areas within 1,000 feet of the centerlines, are located within Pickaway and Ross counties. The Preferred Route crosses Circleville, Wayne, Jackson, Deer Creek, Deerfield, and Union townships. The Alternate Route crosses Circleville, Wayne, and Union townships. Both Routes begin within the City of Circleville at the Circleville Station. Demographic data for these areas, including population, average household size, and median household income, are presented in Tables 6-1 and 6-2.

**TABLE 6-1**

Study Area Demographics of the Preferred Route

<b>Municipality</b>	<b>2010 Population</b>	<b>2000 Population</b>	<b>Percent Change (%)</b>	<b>Average Household Size (2010)</b>	<b>Median Household Income (\$) (2011)</b>
<b>Pickaway County</b>	<b>55,698</b>	<b>52,727</b>	<b>5.6</b>	<b>2.61</b>	<b>51,418</b>
City of Circleville	13,314	13,485	-1.3	2.36	36,546
Circleville Township	2,389	2,300	3.9	2.42	51,354
Deer Creek Township	1,700	1,644	3.4	2.87	53,563
Jackson Township	1,132	916	23.6	2.90	80,664
Wayne Township	527	565	-6.7	2.53	51,438
<b>Ross County</b>	<b>78,064</b>	<b>73,345</b>	<b>6.4</b>	<b>2.48</b>	<b>44,577</b>
Deerfield Township	1,058	1,096	-3.5	2.63	51,042
Union Township	13,345	11,750	13.6	2.70	55,792

Source: U.S. Department of Commerce (USDOC), 2013a, b, c, d

**TABLE 6-2**

Study Area Demographics of the Alternate Route

Municipality	2010 Population	2000 Population	Percent Change (%)	Average Household Size (2010)	Median Household Income (\$) (2011)
<b>Pickaway County</b>	<b>55,698</b>	<b>52,727</b>	<b>5.6</b>	<b>2.61</b>	<b>51,418</b>
City of Circleville	13,314	13,485	-1.3	2.36	36,546
Circleville Township	2,389	2,300	3.9	2.42	51,354
Wayne Township	527	565	-6.7	2.53	51,438
<b>Ross County</b>	<b>78,064</b>	<b>73,345</b>	<b>6.4</b>	<b>2.48</b>	<b>44,577</b>
Union Township	13,345	11,750	13.6	2.70	55,792

Source: USDOC, 2013a, b, c, d

Based on the data presented in Tables 6-1 and 6-2, there is no significant difference in demographic characteristics between the Preferred and Alternate Routes.

Although both the Preferred and Alternate Routes are within 100 feet of residential structures (see Table 6-7), construction of the Routes will not directly affect any residential structures, or result in the relocation of any individuals. It is not expected that construction, operation, or maintenance of either of the proposed Routes will significantly affect the general socioeconomic characteristics of the Project area.

## **(B) ROUTE ALIGNMENTS AND LAND USE**

### **(1) Proposed Routing Alignments and Turning Points**

A Preferred and Alternate transmission line Route are required by OAC Rule 4906-5-04(A) for all applications to the OPSB for a Certificate of Environmental Compatibility and Public Need for electric transmission facilities. A description each Route, from north to south, is provided in the following sections. Maps at 1:24,000-scale, including the area 1,000 feet on either side of the centerline are presented as Figures 4-1A through 4-1E.

#### **(a) Preferred Route**

The Preferred Route (see Figures 4-1A through 4-1E) consists of a single-circuit 138 kV transmission line that exits the Circleville Station to the south for approximately 950 feet before turning west to cross US-23 and the Scioto River and paralleling first the south, then the north side of US-22. The Preferred Route crosses back to the south side of US-22 near the intersection of US-22 and Mill Road, and continues for approximately 3,000 feet. At this point, the Preferred Route turns to the southwest through agricultural fields, and then west, running to the south side of Calamus Swamp. The Preferred Route eventually turns south and parallels SR-104 at a point adjacent to the southwest edge of Calamus Swamp. It continues to parallel SR-104 for approximately 1.1 miles before turning southwest and continuing for approximately 1.3 miles

through agricultural fields, crossing over Sisk Road and Hickory Bend Road. It then parallels Westfall Road for approximately 8.6 miles, with minor deviations to avoid structures, passing through agricultural fields and occasional residential parcels. At this point, the Route turns to the south and runs cross-country, passing over Egypt Pike, Albright Mill Road and Biers Run Road before terminating at the Proposed Biers Run Station. The final 3.8 miles of the Preferred Route parallels the Don Marquis-Bixby 345 kV line. The total length of the Preferred Route is 19.0 miles.

**(b) Alternate Route**

The Alternate Route (see Figures 4-1A through 4-1E) consists of a single-circuit 138 kV transmission line that leaves the Circleville station and heads south, paralleling the west side of US-23 to the point where it crosses US-23 and parallels the east side of a railroad track. After approximately 2,000 feet, the Alternate Route turns southwest to parallel an abandoned railroad grade and crosses the Scioto River. The river crossing is co-located with a crossing by an existing transmission line on steel H-frame structures. It continues to the west, crossing the former Erie Canal (the Circleville Canal Wilderness Area), passing a residence and a working gravel quarry, adjacent to a woodlot and across agricultural fields. The woodlot also contains a War of 1812 cemetery, which is well tended with replacement headstones, and some originals. There are limited opportunities to head either south or west from this location because of the combination of an active gravel quarry, the Scioto River and the Erie Canal and its designated wildlife area. This segment then heads southwest, follows a farm track and passes adjacent to a dairy farm milking barn and close to or within the radius of several rotary irrigation systems. Land use within this area is agricultural.

The Route crosses the Maysville-Rolling Hills 765 kV transmission line then heads southwest cross-country, crossing two roads before crossing a woodlot and ending on the north/west bank of the Scioto River where it parallels SR-104 for approximately 4.1 miles. It crosses two unnamed creeks as well as Yellowbud Creek and an unnamed tributary to Yellowbud Creek. At the intersection of SR-104 and Swaney Road, the proposed Alternate Route jogs to the west and follows Swaney Road before turning to the south/southwest across farm fields and woodlots. It crosses Williamsport Pike, Egypt Pike, Deer Creek, Dry Run, Mad Run, and several unnamed creeks before terminating at the proposed Biers Run Station. The total length of the Alternate Route is 18.5 miles.

**(2) Substations**

The Project will connect the existing Circleville Station to the proposed Biers Run Station as indicated on Figures 4-1A through 4-1E. The Biers Run Station is the subject of a separate filing to the OPSB (OPSB Case No. 12-1361-EL-BSB). No new substations are proposed as part of this Application.

**(3) General Land Use**

The Project is located in a generally rural setting, and crosses land that consists primarily of agricultural parcels and open land, with scattered residential areas, woodlots, and minimal

commercial, industrial, and recreational land uses. Comparisons of the various land use characteristics are included in Tables 6-3 through 6-6.

**(a) Residential**

Preferred Route: The Preferred Route is located with 1,000 feet of 175 residences, five of which are within 100 feet. As shown in Table 6-4, residential areas make up approximately 2.0 percent of the Preferred Route ROW.

Alternate Route: The Alternate Route is located within 1,000 feet of 270 residences, one of which is within 100 feet. As shown in Table 6-4, residential areas make up approximately 2.5 percent of the Alternate Route ROW.

**(b) Commercial**

Preferred Route: Six small buildings at the corner of US-22 and SR-56 comprise a small commercial complex. The commercial properties in this area include a veterinary clinic, an automotive repair shop, and an office for the Pickaway County Job and Family Services office. The Preferred Route does cross within approximately 50 feet of the commercial property boundaries northwest of US-22.

Alternate Route: Based on aerial photography, four small commercial facilities were identified along the Alternate Route, south of the Circleville Station along US-23. These facilities appear to be an American Legion post, a grocery store, a restaurant, and an auto parts dealer.

**(c) Industrial**

Preferred Route: Three industrial areas are located within 1,000 feet of the Preferred Route. A cluster of industrial properties owned by Bialy Properties and Circlegreen LLC was identified north and south of the Circleville Station, just east of US-23. The Preferred Route crosses over the property owned by Circlegreen and the Route is within approximately 200 feet of Bialy Properties. The Circleville Waste Water Treatment facility is located west and north of the Scioto River, on the south side of US-22. The Preferred Route is approximately 150 feet from the facility.

Alternate Route: Three industrial areas were identified within 1,000 feet of the Alternate Route. A cluster of industrial properties owned by Bialy Properties and Circlegreen LLC was identified north and south of the Circleville Station, just east of US-23. The Alternate Route crosses over the property owned by Circlegreen and the Route is within approximately 200 feet of Bialy Properties. Circlegreen also owns an additional industrial property south of the Scioto River and west of US-23; this property is approximately 200 feet from the Alternate Route. Finally, there is a quarry property owned by Richards Land Company west of the Scioto River off SR-104, in which the Alternate Route crosses over the property but would not affect current mining operations.

**(d) Cultural**

Data for known cultural resource landmarks were obtained Ohio Historic Preservation Office's (OHPO) Online Mapping System.

Preferred Route: Six previously recorded archaeological sites were identified within 1,000 feet of the Preferred Route, two of which are within 100 feet. As shown in Table 6-5, the Preferred Route is within 1,000 feet of 38 OHI structures, one of which is within 100 feet. One NRHP structure or district was identified within 1,000 feet of the Preferred Route.

Alternate Route: The Alternate Route is within 1,000 feet of 19 previously recorded archaeological sites, two of which are within 100 feet. As shown in Table 6-5, 46 OHI structures were identified within 1,000 feet, one of which is within 100 feet. One NRHP structure or district was identified within 1,000 feet of the Alternate Route.

**(e) Agricultural**

As shown in Table 6-3, approximately 43 percent of the Preferred Route and 68 percent of the Alternate Route ROW cross agricultural fields. The majority of agricultural land crossed by the Preferred Route is located in Pickaway County, while agricultural land crossed by the Alternate Route is evenly dispersed over Pickaway and Ross counties. A discussion of Agricultural District Land is provided in Section (B)(7).

**(f) Recreational**

Preferred Route: The Preferred Route crosses within 100 feet of two recreational areas, Calamus Swamp and the Elmon Richards Scioto River Access. Calamus Swamp is a nature preserve owned by the Audubon Society, Columbus Chapter. The Elmon Richards Scioto River Access has been designated by the State of Ohio as a public wildlife area, and is used by fishermen for boat access to the Scioto River.

Alternate Route: The Alternate Route crosses the Circleville Canal Wilderness Area, a public fishing water under the jurisdiction of the ODNR DOW. The Alternate Route is within 1,000 feet of the Elmon Richards Scioto River Access. It is also within 1,000 feet of a golf course located in Ross County.

**(g) Institutional**

Preferred Route: The Preferred Route is within 1,000 feet of three cemeteries and two historic school sites, no longer being used as schools.

Alternate Route: The Alternate Route is within 1,000 feet of eight cemeteries and one historic school site and within 100 feet of a cemetery and a historic school site.

**TABLE 6-3**

Length and Percent of Land Uses Crossed by Route Alternatives

Land Use	Preferred Route		Alternate Route	
	Linear Feet	Percent	Linear Feet	Percent
Agriculture	43,028	42.9	66,315	67.8
Industrial	1,048	1.0	2,001	2.0
Old Field	4,047	4.0	4,037	4.1
Open Land/Pasture	3,064	3.1	64	0.1
Recreation	1,496	1.5	488	0.5
Residential	4,009	4.0	5,220	5.3
Road Right-of-Way	1,489	1.5	858	0.9
Utility Right-of-Way	30,152	30.0	8,765	9.0
Railroad	40	<0.1	52	0.1
Scrub Shrub	517	0.5	1,409	1.4
Woodlot	10,842	10.8	8,198	8.4
Water	612	0.6	475	0.5
<b>Total</b>	<b>100,343</b>	<b>100</b>	<b>97,882</b>	<b>100</b>

**TABLE 6-4**

Acreage and Percent of Land Uses within Route Alternative Rights-of-Way

Land Use	Preferred Route		Alternate Route	
	Acres	Percent	Acres	Percent
Agriculture	113.4	55.8	147.6	72.5
Industrial	2.3	1.1	3.5	1.7
Old Field	9.5	4.7	9.2	4.5
Open Land/Pasture	7.5	3.7	0.2	0.1
Quarry	N/A	N/A	0.2	0.1
Recreation	3.4	1.7	0.6	0.3
Residential	4.0	2.0	5.1	2.5
Road Right-of-Way	4.2	2.1	2.4	1.2
Utility Right-of-Way	31.4	15.5	11.8	5.8
Railroad	0.1	0.0	0.1	0.1
Scrub Shrub	1.1	0.6	3.1	1.5

**TABLE 6-4**

Acreage and Percent of Land Uses within Route Alternative Rights-of-Way

Land Use	Preferred Route		Alternate Route	
	Acres	Percent	Acres	Percent
Woodlot	24.9	12.3	18.4	9.0
Water	1.4	0.7	1.2	0.6
<b>Total</b>	<b>203.3</b>	<b>100</b>	<b>203.5</b>	<b>100</b>

**TABLE 6-5**

Summary of Land Use Factors of the Route Alternatives

	Route Alternatives	
	Preferred	Alternate
Length (in miles)	19.0	18.5
<b>Features within 100 feet of Route Alternatives</b>		
Threatened and Endangered Species	5 <sup>a,b</sup>	3
Historic Structures (OHI)	1	1
Previously Identified Archaeological Sites	2	2
NWI Wetlands	16	11
Residences	5	1
Other Sensitive Land Uses <sup>c</sup>	3	4
<b>Features within 1,000 feet of Route Alternatives</b>		
Threatened and Endangered Species	5 <sup>a,b</sup>	7 <sup>a,b</sup>
Historic Structures (OHI)	38	46
National Register of Historic Places	1	1
Archaeological Sites	6	19
NWI Wetlands	53	60
Residences	175	270
Other Sensitive Land Uses <sup>c</sup>	7	12

a Tippecanoe Darter counted twice because two different crossing locations.

b Only T&amp;E considered (P, SC species are located within 100 and/or 1,000 feet).

c Other sensitive land uses include airports, parks, state forests, schools, hospitals, churches, and cemeteries.

**(4) Transportation Corridors**

Below is a description of major transportation corridors such as railroads, highways, and major roads crossed by the Preferred and Alternate Routes or within the Project area.



Both Preferred and Alternate Routes cross the same Chesapeake and Ohio Railroad (CSX Transportation) track near the Circleville Station. Two additional railroad corridors are located within 500 feet east of the Circleville Station; both are owned by Norfolk and Western Railroad (Norfolk Southern Railway).

Major roads crossed by the Preferred Route include US-23 (crossed and paralleled briefly) in Pickaway County, US-22 (crossed and paralleled) in Pickaway County, SR-56 in Pickaway County, and SR-104 in Pickaway County, and SR-207 in Ross County.

Major roads crossed by the Alternate Route include US-23 (crossed and paralleled) in Pickaway County, SR-104 crossed several times (and paralleled) in Pickaway County and paralleled in Ross County, and SR-207 in Ross County.

The terminus of the Project, the proposed Biers Run Station in Ross County, is located approximately 1,000 feet north of US-35.

#### **(5) Existing Utility Corridors**

Seventy-four percent of the Preferred Route will consist of paralleling or overbuilding an existing ROW. The Alternate Route will parallel or overbuild an existing ROW for 28 percent of its length (see Table 6-6).

The proposed Biers Run-Circleville 138 kV transmission line crosses or parallels/overbuilds numerous electric transmission and distribution ROW. The Preferred Route crosses and parallels/overbuilds existing electric transmission or distribution lines in nine locations. The Alternate crosses and parallels/overbuilds existing electric transmission or distribution lines in seven locations. Three existing transmission lines are located within the study area, and within 1,000 feet of the Preferred and/or Alternate Routes.

- The Don Marquis-Bixby 345 kV line heads south to north through the proposed Biers Run Station site and continues to the north northwest. The Preferred Route parallels the Don Marquis-Bixby line from the point where it crosses Westfall Road to the Biers Run Station. The Alternate Route only comes within 1,000 feet of this line as it enters the Biers Run Station.
- The Gavin-Marysville 765 kV line crosses the study area from southeast to northwest and crosses both the Preferred and Alternate Routes just north of the village of Westfall on SR-104.
- The Scioto Trail-Circleville 138 kV line heads south from the Circleville Station. The Preferred and Alternate Routes briefly double circuit with the Scioto Trail-Circleville line as it heads south from the Circleville Station.

No major natural gas or product pipelines were identified within 1,000 feet of the Preferred or Alternate Routes. Table 4-1 in Section 4 summarizes the existing major electric transmission or distribution lines paralleled by the Project. The Preferred Route crosses a private oil/gas

production well pipeline at a point immediately west of SR-104 and 1.7 miles south of US-22. The Alternate Route crosses a private oil/gas production well pipeline at a point approximately 700 feet east of SR-104 and 1.4 miles south of US-22 (Figure 4-1A). Existing tanks of unknown content were also identified east of the Preferred Route on the west side of SR-104. The alignments of existing electric transmission or distribution lines are shown on Figures 4-1A through 4-1E.

**TABLE 6-6**

Paralleling or Overbuilding Existing ROW

Route Alternatives		
	Preferred	Alternate
Length (miles) paralleling or overbuilding existing ROW	13.98	5.13
Percent of Length paralleling or overbuilding existing ROW	74	28

**(6) Noise Sensitive Areas**

Noise sensitive areas in the Project Area consist of residences, institutional land uses, and recreational areas. An assessment of noise impact during construction and operation of the transmission line is provided in Section 4906-15-06(G).

Preferred Route: Noise sensitive areas within 1,000 feet of the Preferred Route include 175 residences, five of which are within 100 feet, and three cemeteries.

Alternate Route: Noise sensitive areas within 1,000 feet of the Alternate Route include 270 residences, two of which is within 100 feet, and seven cemeteries.

**(7) Agricultural Land (Agricultural District Land)**

CH2M HILL contacted the Pickaway and Ross County Auditors to obtain information on Agricultural District land (Few, 2014, personal communication; Martin, 2014, personal communication). The centerline of the Preferred Route crosses 10 Agricultural District parcels (nine in Pickaway County and one in Ross County). The Preferred Route is within 1,000 feet of 25 Agricultural District Parcels (22 in Pickaway County and three in Ross County). The centerline of the Alternative Route crosses 14 Agricultural District parcels (five in Pickaway County and nine in Ross County). The Alternative Route is within 1,000 feet of 41 Agricultural District Parcels (21 in Pickaway County and 20 in Ross County). The data was received from the Pickaway County Auditor on April 24, 2014. The data from the Ross County Auditor was received on April 29, 2014. The provided data fulfills the requirement of OAC 4906-15-06 (B)(7), which states this data must be collected not more than 60 days prior to submittal.

**(C) LAND USE IMPACTS OF THE PROPOSED PROJECT****(1) Number of Residential Structures**

Based on review of aerial photography and field reconnaissance, 175 residences were identified within 1,000 feet of the Preferred Route, and 270 residences were identified within 1,000 feet of

the Alternate Route. Seven residences were identified within 100 feet of the Preferred and Alternate Routes are listed in Table 6-7, including parcel numbers for each.

**TABLE 6-7**

Residential Structures within 100 Feet of the Route  
Alternatives

Parcel Number	Route
360912125000	Preferred
090705021000	Preferred
090709027000	Preferred
P33-0-001-00-186-00	Preferred
360904009000	Preferred
P33-0-001-00-100-01	Alternate
P33-0-001-00-116-01	Alternate

## **(2) Impact of Construction**

### **(a) Residential**

No residences were identified within the proposed ROW of the Preferred and Alternate Routes. No residences are expected to be removed in order to construct the proposed Project along either Route. It is expected that some incremental increase in noise will be audible during some portions of construction of the new transmission line. However, the current ambient noise levels associated with local roads and the distance to the residences are expected to mitigate overall noise impacts during construction.

### **(b) Commercial**

No adverse impacts to commercial land uses are anticipated because of the Project.

### **(c) Industrial**

No adverse impacts to industrial land uses are anticipated because of the Project.

### **(d) Cultural**

Cultural resources studies of the Project area were conducted on behalf of AEP Ohio Transco. These included:

- A Phase I Cultural Resources Assessment of the Preferred Route
- A Geomorphological survey of selected portions of the Preferred and Alternate Route
- An Architectural History Survey of the Preferred Route

The finding of each of these studies is briefly summarized below.

### Phase I Cultural Resources Assessment

In late 2013 and into March of 2014, Weller & Associates, Inc. (Weller) conducted Phase I archaeological investigations for the Preferred Route. The survey conducted for the Preferred Route used five methods of sampling and testing to identify and evaluate cultural resources. These included shovel test unit excavation, shovel probe excavation, deep shovel testing, surface collection, and visual inspection. Surface collection strategies were used whenever practical for the Project. Deep shovel testing was conducted in two floodplain locations.

The fieldwork identified 21 previously unrecorded archaeological sites (33RO1219 through 1229 and 33PI1244 through 1253). Based on the data collected, it is considered unlikely the Project will adversely affect any historic properties. Weller's recommendation is that no further archaeological work is necessary and "no historic properties affected" for the Preferred Route (Weller, 2014).

### Geomorphological Assessment

GAI Consultants (GAI) conducted a Geomorphological Assessment for the Preferred and Alternate Route from January 13 to 17, 2014. The purpose of the Geomorphological Assessment was to evaluate the valley floor for the potential of deeply buried cultural resources, and to provide a geoarchaeological context for any artifacts recovered from these areas. The field investigation included a reconnaissance of the Preferred and Alternate Routes, followed by 18 hand auger soundings at locations selected during the reconnaissance. (GAI, 2014a)

The Project area occurs on the valley floors of the Scioto River and its larger tributaries. The valley floors consist mostly of historic-age alluvial sediments overlying coarser-textured alluvial/outwash sediments. The historic age alluvial sediments are dark-colored and loamy-textured, and result from agricultural erosion of nearby Mollisol uplands. This environment is not conducive to the formation of buried soils; the sediments are added in small increments at a slow enough rate that the result is over thickened A horizons. Such environments have little to no potential for intact, deeply buried cultural resources. (GAI, 2014a)

Quicker episodes of sediment deposition results in the burial of surface soils and the consequential formation of buried A horizons. The only portion of the Project area corridor where this has occurred is along the Alternate Route between the Ohio-Erie Canal towpath and the active railroad near US-23 at Circleville. This area is the active floodplain of the Scioto River. The floodplain still consists of the braided stream deposits of an outwash plain as the valley served as a major drainageway for glaciers during the waning of the Pleistocene. Braided stream deposits are coarse-textured and often hummocky with gravel/cobble bars separated by former channels. The proximity of the floodplain to the Scioto River resulted in the former channels being periodically filled with alluvial sediments during the Holocene and during historic times. The result is an environment where the potential exists for buried soils containing cultural resources. (GAI, 2014a)

Architectural History Study

GAI conducted the architectural and historical resource survey to determine if the Project would affect architectural and historical resources that are potentially eligible for the NRHP. The architectural and historical resources survey consisted of five phases:

- Establishment of an Area of Potential Effect (APE)
- Literature and background research
- Field Survey
- Completion of OHI forms and evaluation of select architectural and historical resources
- Assessment of effects/impacts to known and potential historic properties from the proposed Project

GAI identified 114 architectural and historical resources located within the Project APE. Of these resources, 40 were previously recorded on OHI forms, and 74 were newly identified. Of the previously recorded resources, three (PIC-00095-10, PIC-00669-13, and PIC-00670-09) are currently NRHP-listed. The remaining previously recorded resources had not been formally evaluated for NRHP eligibility by the OHPO. GAI recommends that five (PIC-00004-09, PIC-00019-09, PIC-00101-10, PIC-00109-09, and PIC-00115-09) of the previously recorded resources are NRHP-eligible. (GAI, 2014b)

Of the 74 newly identified resources, GAI recommends that four (ROS-00870-01, ROS-00871-01, PIC-00720-13, and PIC-00721-13) are NRHP-eligible. The remaining resources are recommended not NRHP-eligible due to lack of historic integrity and/or significance. This results in a total of three NRHP-listed resources (PIC-00095-10, PIC-00669-13, and PIC-00670-09), nine recommended NRHP-eligible resources (ROS-00870-01, ROS-00871-01, PIC-00004-09, PIC-00019-09, PIC-00101-10, PIC-00109-09, PIC-00115-09, PIC-00720-13, and PIC-00721-13), and 102 recommended NRHP-ineligible resources located within the Project APE. (GAI, 2014b)

GAI completed updated OHI forms for all previously recorded resources located within the Project APE. Of the newly recorded resources, GAI completed OHI forms for 31 resources that retained sufficient historic integrity to warrant NRHP evaluation. This approach for documenting select resources on OHI forms was conducting in consultation with the OHPO. GAI also conducted an evaluation of potential effects introduced by the proposed Project on the 12 identified historic properties by applying the Criteria of Adverse Effect. (GAI, 2014b)

Based on these findings, GAI recommends that the Project will have No Adverse Effect on identified historic properties. GAI further recommends that development of the Preferred Route proceed as planned with no additional architectural investigations. (GAI, 2014b)

**(e) Agricultural**

Potential impacts of constructing the proposed Project on agricultural land use primarily occur in the ROW of the transmission line. The potential impacts include potential damage to current

crops, disturbance of underground field drainage systems, compaction of soils and potential for temporary reduction of productivity. Compaction is typically a temporary issue and is resolved within several seasons. Damage to field tile systems is unlikely given the relatively short construction duration and limited scope, but AEP Ohio Transco will restore damaged systems to their pre-construction condition. AEP Ohio Transco will also work with the agricultural landowners to resolve conflicts with irrigation systems that are crossed by the Project, where necessary.

**(f) Recreational**

No adverse impacts to recreational land uses are anticipated because of the Project.

**(g) Institutional**

No adverse impacts to institutional land uses are anticipated because of the Project.

**(3) Impact of Operation and Maintenance**

**(a) Residential**

The likely limited impacts of operating and maintaining the proposed Project on residential land are associated with a prohibition of installing new residential related structures within the ROW and continued removal of incompatible vegetation. In order to meet the North American Electric Reliability Corporation's (NERC's) mandatory Reliability Standards and the clearance requirements of the National Electric Safety Code, it is the Applicants' practice to prohibit new structures from being located within the ROW of transmission lines. In order to meet NERC's mandatory Reliability Standards and the clearance requirements of the National Electric Safety Code, vegetative maintenance, consisting of the removal of incompatible plant species that pose a risk to the operation and maintenance of the transmission line is expected to occur generally on a 5-year cycle.

**(b) Commercial**

No impacts to commercial land uses are expected due to operation and maintenance of the transmission line. Positive impacts are more likely because of increased reliability for commercial users.

**(c) Industrial**

Impacts to industrial land uses associated with operation and management of the proposed Project are not anticipated. In fact, the increase in reliability resulting from the Project will likely have a positive, rather than negative impact on the Project.

**(d) Cultural**

Impacts to cultural land use areas associated with operation and maintenance of the proposed Project are not anticipated.

**(e) Agricultural**

The potential impacts of operating and maintaining the proposed Project on agricultural land are minor and include possible disruption of plow patterns and temporary impacts from vehicle traffic during operation and maintenance activities.

**(f) Recreational**

No impacts to recreational land uses are expected due to operation and maintenance of the transmission line.

**(g) Institutional**

Impacts to institutional land uses from operation and maintenance of the transmission line are not anticipated.

**(4) Mitigation Procedures**

A SWPPP for the Project will be developed to mitigate the potential for erosion and sedimentation. BMPs for erosion and sedimentation control will be implemented as required. Disturbed surface areas will be revegetated after construction and final grading is completed. Damage resulting from Project construction will be repaired to preconstruction conditions where appropriate.

**(a) Residential**

Potential removal of residential structures within the proposed ROW was mitigated through the routing of the Preferred and Alternate Routes. The closest residences to the Preferred Route and Alternate Route are 61 feet and 66 feet, respectively. It is unlikely that construction of the Preferred and Alternate Routes will require the removal of any residential structures. Mitigation for the prohibition of the future installation of structures within the ROW, and vegetative clearing and maintenance activities for the transmission line, will be determined as part of AEP Ohio Transco's acquisition of the ROW for this Project, as part of the negotiated settlement between AEP Ohio Transco and the property owner, or as determined in appropriation proceedings. In the event that an existing septic system located in the transmission ROW is impacted by construction, operation, or maintenance of the proposed Project, the septic system will be repaired or replaced by AEP Ohio Transco as necessary to meet the appropriate installation requirements.

**(b) Commercial**

Impacts to commercial facilities are not anticipated. Therefore, no mitigation is proposed.

**(c) Industrial**

Impacts to industrial facilities are not anticipated. Therefore, no mitigation is proposed.

**(d) Cultural**

Based on the results and recommendations from Weller, and GAI, no impacts to cultural or historic resources are anticipated as a result of the project; therefore, no mitigation is proposed.

**(e) Agricultural**

Mitigation for damage to current crops and compaction of soils is typically provided as a payment provided to the property owner as specified in the easement for the ROW. The specific terms of the easement regarding crop damage are determined as part of the AEP Ohio Transco's acquisition of the ROW for the Project, as provided as part of the negotiated settlement between AEP Ohio Transco and the property owner, or as determined in appropriation proceedings. Additionally, AEP Ohio Transco and the contractors they typically hire to construct transmission lines have extensive experience in transmission line construction projects and will work to minimize agricultural impacts during construction of the Project.

AEP Ohio Transco will provide mitigation for damage to underground drainage systems from construction, operation, and maintenance activities by repairing or replacing damaged sections of the drainage systems as necessary.

Disruption of plow patterns, and creation of areas for weeds and other non-crops to grow in from construction of the transmission line will be minimized on the Project primarily by both placing poles beyond or at the edges of agricultural fields to the extent practical and by primarily installing single tangent poles to support the transmission line. However, the basic mitigation for this limited impact will be provided in the compensation provided to the property owner for the ROW.

Concerns over interference with irrigation systems will be addressed on a case-by-case basis with the individual property owner.

**(f) Recreational**

Impacts to recreational areas are not anticipated. Therefore, no mitigation is proposed for recreational areas.

**(g) Institutional**

Impacts to institutional facilities are not anticipated. Therefore, no mitigation is proposed for institutional properties.

**(D) PUBLIC INTERACTION INFORMATION****(1) Counties, Townships, Cities and Villages within 1,000 feet of the Site Alternatives**

Both Routes, including all areas within 1,000 feet of the centerlines, are located within Pickaway and Ross counties. The Preferred Route crosses Circleville, Wayne, Jackson, Deer Creek, Deerfield, and Union townships. The Alternate Route crosses Circleville, Wayne, and Union townships. Both Routes begin within the City of Circleville at the AEP Ohio's Circleville Station.

**(2) Public Officials Contacted**

AEP Ohio Transco's Project team has contacted local officials to discuss the Project. Appendix 6-1 provides a list of the local public officials, including their office addresses and office telephone numbers, who have been contacted to date, or will be provided a copy of the Application.



**(3) Public Information Programs**

To keep the public informed of the Project, and as part of the OPSB Application process, AEP Ohio Transco conducted two public information sessions.

The first Public Information Meeting was held on October 16, 2013 from 6 to 8 p.m. at the Pioneer School of Developmental Disabilities in the Chillicothe area (11268 County Road 550, Chillicothe, OH 45601).

The second Public Information meeting was held on October 17, 2013 from 6 to 8 p.m. at Amvets Post 2256 in the Circleville area (818 Tarlton Road, Circleville, OH 43113).

AEP Ohio Transco presented three routes at the two public Information meetings (Purple East, Purple West, and Green) for the Project on October 16 and 17, 2013. Detailed maps of all three routes were presented on aerial photographs. Property boundaries were also indicated with unique parcel identification numbers referenced to ownership spreadsheets. In doing so, attendees were able to identify their properties on the aerial photographs. Fifty-three attendees signed in to the October 16 meeting and 39 for the October 17 meeting. In addition, 33 comment cards were filled out and submitted.

Understandably, when faced with the choice, most residential attendees expressed a preference for the option that was furthest from their own house or property. Reasons most often cited were concerns over property value and the health effects of electromagnetic fields (EMF). Farm owners generally expressed concern over property value where the line split farmland, and effects on irrigation systems at the northern end of the Project (the location of the “common route”). Other concerns expressed included avoidance of oil well gathering lines and tanks, and potential effects on gravel rights near the existing quarry.

AEP Ohio Transco encouraged those attendees with specific objections to routes across their property to suggest less disruptive alternatives. AEP Ohio Transco representatives expressed that objection to the Project as a whole could be communicated. However, the attendees should also convey their preference for one Route over another. In addition, they should state, if the Route were to cross their property, was there a better option for doing so than that proposed. This did elicit several suggested options.

In addition to the public information meetings, AEP Ohio Transco provided information on a Project website (<http://aeptransmission.com/ohio/BiersRun-Circleville/>), including summary Project information, maps, schedule, frequently asked questions, and a toll free telephone number. Informational materials available on the website are included in Appendix 6-2.

**(4) Liability Compensation**

AEP’s insurance program for construction and operation of the proposed facility is outlined below:

- For bodily injury and property damage, the Federal Insurance Company insures AEP for the first \$1,000,000 for each person or occurrence.

- For bodily injury and property damage, AEP presently carries additional public liability insurance of \$649,000,000, as the result of any one occurrence or account of personal injury, property damage, or advertising offense or combination thereof.

AEP is a self-insuring employer under the State of Ohio Worker's Compensation law. This insurance is renewed each year as required by the Industrial Commission of Ohio.

#### **(5) Serving the Public Interest**

The Project will serve the public interest by helping to ensure that increased demands for electricity are met in the future and that existing and future electrical service reliability is enhanced throughout the Project area and expanded region. A more detailed discussion of the need for this Project and how it will serve the public interest is included in Section 4906-15-02 of this Application.

#### **(6) Tax Revenues**

The Preferred and Alternate Routes are located within Pickaway and Ross counties and Circleville, Wayne, and Union townships. The Preferred Route is also located within Deerfield Township. Local school districts, park districts, and fire departments will also receive tax revenue from the Project. AEP Ohio Transco will pay property taxes on utility facilities in each jurisdiction. The approximate annual property taxes associated with the Preferred and Alternate Routes over the first year after the Project is completed are \$1,109,130 and \$1,082,981, respectively.

Based on the 2013 tax rates, the following is an estimated distribution of taxes by township, county, and other tax districts:

##### **Preferred Route:**

Pickaway County	\$128,401
Circleville Township	\$549
Wayne Township	\$31,700
Ross County	\$134,915
Deerfield Township	\$12,110
Union Township	\$44,672
Circleville Consolidated School District	\$487,094
Adena Local School District	\$193,983
Union-Scioto Local School District	<u>\$75,706</u>
<b>TOTAL</b>	<b>\$1,109,130</b>

**Alternate Route:**

Pickaway County	\$117,351
Circleville Township	\$4,327
Wayne Township	\$24,489
Ross County	\$146,515
Union Township	\$60,785
Circleville Consolidated School District	\$447,498
Adena Local School District	\$47,841
Union-Scioto Local School District	\$234,175
	<b>TOTAL \$1,082,981</b>

**(7) Impact on Regional Development**

This project will likely have a positive impact on regional development in Pickaway and Ross counties through increased reliability and availability of electric power to residential, commercial, institutional, and industrial users throughout the region. No negative impacts on regional development are foreseen for this project. A more detailed discussion of the need for this Project and how it will affect regional development is included in Section 4906-15-02 of this Application.

**(E) HEALTH AND SAFETY****(1) Compliance with Safety Regulations**

The construction and operation of the Project will comply with the requirements specified in the NERC mandatory Reliability Standards, the National Electrical Safety Code, the Public Utilities Commission of Ohio, and will meet all applicable safety standards established by the Occupational Health and Safety Administration (OSHA).

Safety is the highest priority for AEP. This priority of AEP towards employee and public safety is exemplified by Company policy as stated in the Company Safety Manual:

The American Electric Power system holds in high regard the safety and health preservation of its employees. Accidents injure people, damage equipment, destroy materials, and cause needless personal suffering, inconvenience, and expense. We believe, "No operating condition or urgency of service can ever justify endangering the life of anyone."

To this end, we will constantly work toward the following:

- The maintenance of safe and healthful working conditions
- Consistent adherence to proper operating practices and procedures designed to prevent injuries and illnesses
- Conscientious observance of governmental and company safety regulations

AEP also administers a contractor safety program. Contractors are required to maintain internal safety programs and to provide safety training.

**(2) Electric and Magnetic Fields**

In accordance with the OPSB procedural filing requirements specified in Chapter 4906-15, Section 06 (E)(2), following is the analysis of EMF associated with the Project.

**(a) Calculated Electric and Magnetic Field Levels:**

Calculations are provided for the single-circuit line configurations representative of two structure designs planned for the Project. These configurations, representing the “davit arm” and “braced post” designs, are shown in Figures 6-1 and 6-2, respectively. EMF levels were computed within the ROW of each line configuration at the point of minimum ground clearance, where EMF is the highest. Lower EMF levels are expected beyond the ROW edge. Since the line configurations associated with the Preferred and Alternate Routes are identical, EMF levels produced by these configurations in any route selected for the project would be the same.

Factors that affect EMF include the ROW width, operating voltage, current flow magnitude, phase configuration, conductor height above ground, electrical unbalance, and other nearby objects. Nominal voltages and balanced conditions are assumed, with line conductors arranged in a modified “delta” configuration depicted in Figures 6-1 and 6-2. No trees, shrubs, buildings or other objects that can block EMF are assumed in proximity to the proposed line.

All calculations were obtained at the height of 3.28 feet (one meter) above ground using the Electric Power Research Institute (EPRI) EMF Workstation computer program. Three loading conditions were modeled: (i) normal maximum loading, (ii) emergency line loading, and (iii) winter normal conductor rating. Normal maximum loading represents the peak load expected to be carried when all system facilities are in service; typical daily/hourly loads fluctuate below this loading level. Emergency loading is the maximum current flow during unusual (contingency) conditions, which exist only for short periods of time.

Winter normal conductor rating represents the maximum current flow that a line, including its terminal equipment, can withstand continuously during winter conditions. It is not anticipated that this line would operate at its winter normal rating in the foreseeable future.

Loading levels used in the EMF calculations, along with key line design data, are presented in Table 6-8. These levels are based on the 2019 projected system conditions.

TABLE 6-8

**Ground Clearances, Right-of-Way, and Projected Loading**

Biers Run- Circleville 138 kV Line Design	Phase Cond. (kCM ACSR)	Ground Clear <sup>a</sup>		Right-of-Way		Line Loading (A)		
		A (feet)	B (feet)	Width (feet)	Edge <sup>b</sup> (feet)	Normal Max.	Emerg. Load	Winter Rating
Single-Ckt. Delta Davitt Arm	1590	32	24	100	50	477	716	2061
Single-Ckt. Delta Braced Post	1590	32	29	100	50	477	716	2061

aMinimum ground clearance: A – normal maximum and emergency load; B – winter normal rating.

bDistance from centerline to ROW edge.

The calculated electric and magnetic fields for the two line configurations are summarized in Table 6-9. The corresponding EMF cross-section profiles calculated at normal maximum loading conditions are illustrated in Figures 6-3 and 6-4.

TABLE 6-9

**EMF Calculations**

Biers Run- Circleville 138 kV Line Design	Electric Field (kV/m) <sup>a</sup>	Magnetic Field (mG) <sup>a</sup>		
		Normal Max Load	Emergency Load	Winter Normal Rating
Single-Ckt. Delta Davitt Arm	0.5/1.3/0.4	21/65/20	31/97/30	102/474/101
Single-Ckt. Delta Braced Post	0.3/0.9/0.2	13/42/12	19/63/18	56/220/54

aEMF levels (Left ROW Edge/Maximum/Right ROW Edge) calculated one meter above ground assuming balanced currents and nominal voltages. Electric fields reflect normal & emergency operation.

**(b) Current State of EMF Knowledge**

Electric and magnetic fields occur naturally in the environment. An electric field is present between the earth and its atmosphere, and can discharge as lightning during thunderstorms. The earth also has a magnetic field, which provides an operating basis for the magnetic compass. EMF exists wherever there is a flow of electricity, including electrical appliances and power equipment.

Electric fields are produced by voltage or electric charge. A lamp cord that is plugged in produces an electric field even if the lamp is turned off. These fields commonly are measured in kilovolts per meter (kV/m); higher voltages produce stronger electric fields. Magnetic fields are created by the flow of current in a wire. As current increases, the magnetic field strength also increases; these fields are measured in units known as gauss, or milligauss (mG).

Electric fields are blocked by trees, shrubs, buildings and other objects. Magnetic fields are not easily blocked and can pass through most objects. The strength of these fields decreases rapidly with distance from the source.

EMF associated with power lines and household appliances oscillate at the power frequency – 60 Hz in the U.S. When people are exposed to these fields, small electric currents are produced in their bodies. These currents are weaker than natural electric currents in the heart and nervous system.

Possible health effects from exposure to EMF have been studied for several decades. Initial research, focused on electric fields, found no evidence of biologic changes that could lead to adverse health effects. Subsequently, a large number of epidemiologic studies examined the possible role of magnetic fields in the development of cancer and other diseases in adults and children. While some studies have suggested an association between magnetic fields and certain types of cancer, researchers have been unable to consistently replicate those results in other studies. Similarly, inconclusive or inconsistent results have been reported in laboratory studies of animals exposed to magnetic fields that are representative of common human exposures. A summary of such exposures, found in residential settings, is provided in Table 6-10.

**TABLE 6-10**

Magnetic Fields from Household Electrical Appliances and Devices

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2 inches (0.1 feet)	12 inches (1.0 feet)	User Distance
AC Adapters	3	1.4 – 863	0 -7.5	0 – 0.8
Blood Pressure Monitors	4	4.2 – 39.6	0 – 0.3	0 -0.2
Bluetooth Headsets	3	0	0	0
Coffee Grinders	3	60.9 – 779	0.3 – 6.5	0.8 – 40.9
Compact Fluorescent Bulbs	15	0 – 32.8	0 – 0.1	0 – 0.6
Compact Fluorescent Bulb Ballast	1	8.5 – 23.5	0 – 0.1	0 -0.1
Computers, Desktop	3	3.8 – 68.9	0 – 1.1	0.1 – 0.5
Computers, Laptop	4	0 – 5.1	0	0 – 0.1
Digital Cameras	3	0	0	0
Digital Photo Frames	5	0	0	0
Digital Video Recorders	4	0 – 29.6	0 – 0.2	0
Dimmer Switches	4	11.5 – 32.1	0 – 0.8	0 – 0.8
DVD Players	5	0 – 28.9	0 – 0.5	0
Electric Lawn Mower	1	1939	156	14.1
Electric Leaf Blowers	4	272 – 4642	17.1 - 155	28.3 – 61.5

**TABLE 6-10**

Magnetic Fields from Household Electrical Appliances and Devices

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2 inches (0.1 feet)	12 inches (1.0 feet)	User Distance
Electric Toothbrushes	5	3.6 – 742	0 – 4.8	3.6 - 742
Electric Toothbrush Chargers	5	0 – 4.2	0	0
External Hard Drives	4	0.6 – 1.7	0	0
Gaming Consoles	10	0 – 215	0 – 0.5	0 – 0.6
GPS, Handheld	5	0 – 0.1	0	0
Hobby Tools	2	126 – 438	1.4 – 2.4	1.4 – 438
Hot Glue Guns	3	0 – 0.9	0	0
LCD Computer Monitors	4	0 – 4.5	0	0
LCD Televisions	4	1.1 – 3.9	0 – 2.5	0 – 0.6
Massagers/Massage Chairs	3	81.9 – 500	0.6 – 2.3	214 – 500
MP3 Players	5	0	0	0
Noise Cancellation Headphones	1	0	0	0
Paper Shredders	4	11.0 – 4841	0.5 – 102	0.5 – 33.4
Plasma Televisions	2	45.1 – 73.6	1.4 – 2.2	0 – 0.1
Power Tools – Corded	3	784 – 982	8.8 – 31.3	46.8 - 123
Power Tools – Cordless	6	9.0 – 227	0 – 2.2	0 – 13.7
Printers	5	0.1 – 6.2	0 – 0.3	0 – 0.3
Scanners	3	0.6 – 6.7	0 – 0.3	0
Security System Panels	3	0 – 0.3	0	0
Tankless Hot Water Heater	1	10.1 – 21.9	1.2	0.2
Track Lighting	5	0.2 – 4.0	0 – 0.3	0
Vacuum Cleaners, Personal/Car	3	75.5 – 2226	0.6 – 23.3	0.1 – 23.1
Wireless Game Controllers	11	0	0	0
Wireless Routers	4	0 – 0.5	0	0 – 0.3

Source: Electric Power Research Institute, 2010

As part of the National Energy Policy Act of 1992, U.S. Congress enacted the Electric and Magnetic Fields Research and Public Information Dissemination (EMF RAPID) program. The National Institute of Environmental Health Sciences (NIEHS) was charged with overseeing the health research and conducting an EMF risk evaluation. In its final report to Congress, issued in 1999, NIEHS concluded that power-frequency “EMF exposure cannot be recognized at this time as

entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard.” Nonetheless, the report stated that “this finding is insufficient to warrant aggressive regulatory concern.” (NIEHS, 1999)

In 2001, the Standing Committee on Epidemiology of International Commission on Non-Ionizing Radiation Protection (ICNIRP) wrote in its review of the epidemiologic literature on EMF and health that “given the methodological uncertainties and in many cases inconsistencies of the existing epidemiologic literature, there is no chronic disease outcome for which an etiological [causal] relation to EMF exposure can be regarded as established.” (ICNIRP, 2001)

Also, in 2001, International Agency for Research on Cancer (IARC) published the results of an EMF health risk evaluation conducted by an expert scientific working group, which concluded that power-frequency “magnetic fields are ‘possibly carcinogenic to humans,’ based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood leukemia” (IARC, 2001). IARC assigns its “possibly carcinogenic to humans” classification (Group 2B) if there is “limited evidence” of carcinogenicity in both humans and experimental animals, or if there is “sufficient evidence” in animals, but “inadequate evidence” in humans. Group 2B includes some 285 “agents” such as coffee, pickled vegetables, carpentry, textile manufacturing and gasoline, among others.

A comprehensive assessment of the EMF health risks was published by the World Health Organization (WHO) in 2007. In its assessment, WHO wrote: “Scientific evidence suggesting that everyday, chronic, low-intensity (above 0.3-0.4  $\mu$ T) [3-4 mG] power-frequency magnetic field exposure poses a possible health risk is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia” (WHO, 2007). It added, however, that “virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF [extremely low frequency] magnetic fields and changes in biological function or disease status. Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern.”

Regarding acute effects, WHO noted, “Acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz that may have adverse consequences on health. Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. Compliance with these guidelines provides adequate protection for acute effects” (WHO, 2007).

In summary, some studies have reported an association between long-term magnetic field exposure and particular types of health effects, while other studies have not. The nature of the reported association remains uncertain as no known mechanism or laboratory animal data exist to support the cause-and-effect relationship.

In view of the scientific evidence, the Institute of Electrical and Electronics Engineers (IEEE) and other organizations have established guidelines limiting EMF exposure for workers in a controlled environment and for the general public. These guidelines focus on prevention of acute neural



stimulation. No limits have been established to address potential long-term EMF effects, as the guideline organizations consider the scientific evidence insufficient to form the basis for such action. For power-frequency EMF, IEEE Standard C95.6<sup>TM</sup>-2002 recommends the following limits (IEEE, 2002):

	General Public	Controlled Environment
Electric Field Limit (kV/m)	5.0	20.0*
Magnetic Field Limit (mG)	9040	27,100

\*10.0 kV/m within power line ROW.

To address public concerns about EMF, the Government of Canada in 2012 updated its website with the latest knowledge on the subject. It contains the following statements on the EMF health-related risks: “Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at ELFs. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors” (Healthy Canadians, 2012). Similarly, in 2013, the updated website of the WHO concludes: “to date there is no evidence to conclude that exposure to low level electromagnetic fields is harmful to human health” (WHO, 2013).

AEP has been following the EMF scientific developments worldwide, participating in and sponsoring EMF studies, and communicating with customers and employees on the subject. In addition, AEP is a member of EPRI, an independent, non-profit organization sponsoring and coordinating EMF epidemiological, laboratory and exposure studies.

### (c) Line Design Considerations

Line construction associated with the Project is proposed in locations that would not place it in close proximity to existing residential areas and, therefore, will not significantly increase EMF exposure of the public. Each new line design planned in the project will be compliant with the EMF limits specified in IEEE Standard C95.6<sup>TM</sup>-2002.

### (d) EMF Public Policy

Information on electric and magnetic fields is available on AEP Ohio’s website (<https://www.aepohio.com/info/projects/emf/>); it describes the basics of electromagnetic field theory, scientific research activities, and EMF exposures encountered in everyday life. Similar material will be made available for those affected by the construction activities in this project.

AEP occasionally receives requests from customers for EMF measurements on their properties. These measurements are provided free of charge to the customers.

### (3) Aesthetic Impact

The construction of the proposed transmission line would impact the existing visual aesthetics of the area through which the transmission line passes primarily due to the removal of trees from the ROW of the transmission line and the introduction of a new man-made element in the

landscape. The degree of visual impact of a new man-made element will vary with the viewer and the setting and can be evaluated by comparing the amount of contrast resulting from the construction of the new element and the existing landscape. For example, if the transmission line is screened from view, then the aesthetic impact would be minimal, and if the transmission line were placed in an existing open area, it would have a comparatively higher aesthetic impact. In areas where the transmission line follows or replaces similar facilities, the aesthetic impact would be reduced as it would create only an incremental visual change in the existing visual setting. Utilizing poles rather than steel lattice towers to support the transmission line, as well as utilizing a compact conductor arrangement, provides a more common structure as well as a streamlined structure that may blend better with the existing landscape.

**(a) Views of the Proposed Facility**

Viewsheds along both the Preferred and Alternate Routes from residences and potentially sensitive vantage points may be altered by the presence of the transmission line. The area is mostly farmland and gently rolling most areas. Existing transmission lines cross the area, including a large 765 kV line, a 345 kV line, and a 138 kV line. Most roads in the area are paralleled by wood pole supported distribution lines. On balance, the addition of the proposed Project will not have a significant negative impact on the overall visual landscape. At select locations, there may be an incremental change in the viewshed, including some residences, the War of 1812 Cemetery (Alternate Route), river crossings, and where tree clearing is required.

**(b) Structure Design Features**

Transmission line structures, conductors, associated hardware, and guy and anchor arrangements are primarily dictated by engineering requirements. The conductor arrangements and structure designs proposed for the Project are described in Section 4 of this Application. The majority of the line will be composed of a tangent, braced post, delta structure (see Figure 4-2) with an estimated above ground height of 95 feet. The next most common structure type will be a tangent, davit arm, delta structure (see Figure 4-3). This structure will have an estimated aboveground height of 110 feet. During final design, where the Preferred and Alternate Routes of the transmission line are located along existing distribution circuits, if any, the transmission line may be designed to support distribution circuits as well.

**(c) Facility Effect on Site and Surrounding Area**

**(d) Visual Impact Minimization**

The ability to minimize the visual impacts of the proposed transmission line is constrained by engineering requirements, existing land use, and the Project length. AEP Ohio Transco has limited the potential aesthetic impacts of the transmission line to the extent possible through the Route selection process, and where practical, paralleling or overbuilding existing transmission and distribution lines.

**(4) Estimate of Radio and Television Interference**

Radio interference can be experienced in the AM broadcast band (535-1605 kHz) and FM band (88-108 megahertz [MHz]), caused by transmission line gap-type discharge (1-1000 MHz). Dielectric discharge due to air ionization, known as "corona," is not a concern with 138 kV transmission planned in this project. Gap-type discharge, such as that emitted by loose or defective transmission hardware, typically is localized and can be readily detected and corrected, or additional mitigation measures can be applied to eliminate the interference source.

Today's digital television signals react differently to interference than the pre-2009 analog signals. Common problems with analog television included ghosting of images, noise from weak signals, and other problems, which degraded the quality of the image and sound, although the programming was still watchable. With digital TV, reception of the signal must be very nearly complete. Otherwise, audio and video are not usable. Television signals, which are transmitted at frequencies above 50 MHz, can be affected by gap discharges if received from air broadcasts (via "rabbit ears"). These problems have largely been addressed with the use of cable television.

**(F) CULTURAL IMPACTS OF THE PROPOSED PROJECT****(1) Archaeological Resources and Correspondence with Agency**

Data for known cultural resource landmarks shown on Figures 4-1A through 04-1E was obtained from OHPO's Online Mapping System.

Cultural resources are discussed in (C)(2)(d) of this chapter.

**(2) Construction Impacts on Cultural Resources**

Cultural resources are discussed in (C)(2)(d) of this chapter.

**(3) Operation and Maintenance Impacts on Cultural Resources**

Cultural resources are discussed in (C)(3)(d) of this chapter.

**(4) Mitigation Procedures**

Mitigation procedures are discussed in (C)(4).

**(G) NOISE****(1) Construction****(a) Dynamiting or blasting activities**

Dynamiting and blasting activities are not anticipated.

**(b) Operation of earth moving or excavating equipment**

During the construction phase of the transmission line installation, a temporary increase in noise will result from the equipment used to excavate and install equipment. Standard construction techniques will be used, and procedures will comply with applicable OSHA standards. Therefore,

the noise impact on nearby sensitive areas is anticipated to be minimal. The total duration of construction of the proposed Project is estimated at approximately 24 months.

**(c) Driving of piles**

Driving of piles is not anticipated.

**(d) Erection of structures**

Structures will be erected by vehicle-mounted cranes.

**(e) Truck traffic**

An increase in truck traffic is anticipated during the construction of the Project for equipment access and pole and hardware equipment delivery. No other additional truck traffic is anticipated for the Project.

**(f) Installation of equipment**

The equipment will be installed using standard practices and equipment.

**(2) Operation and Maintenance**

As the anticipated operational noise from the proposed transmission line is comparatively low, no significant noise impacts are anticipated from the operation of the proposed transmission line. Periodic maintenance of the transmission line will include visual helicopter inspections of the line, currently anticipated to occur twice per year. Maintenance will also include labor and equipment access to the transmission line for periodic clearing of the ROW, expected to occur on a 5-year cycle, and maintenance work on the structures, conductor, and hardware of the transmission line, expected to occur rarely but as needed. These activities will be of temporary and infrequent nature and are not anticipated to a significant source of noise impact.

**(3) Mitigation Procedures**

Mitigation procedures will include properly maintained construction equipment with mufflers, construction activities typically limited to occur during daylight hours, and noise-related levels, procedures, and practices following OSHA requirements. No additional noise mitigation is expected as noise sources are primarily associated with operation of construction equipment and will be temporary in nature.

**(H) OTHER SIGNIFICANT ISSUES**

There are no other significant socioeconomic or land use impact issues anticipated beyond those addressed elsewhere in this Application.

**(I) REFERENCES**

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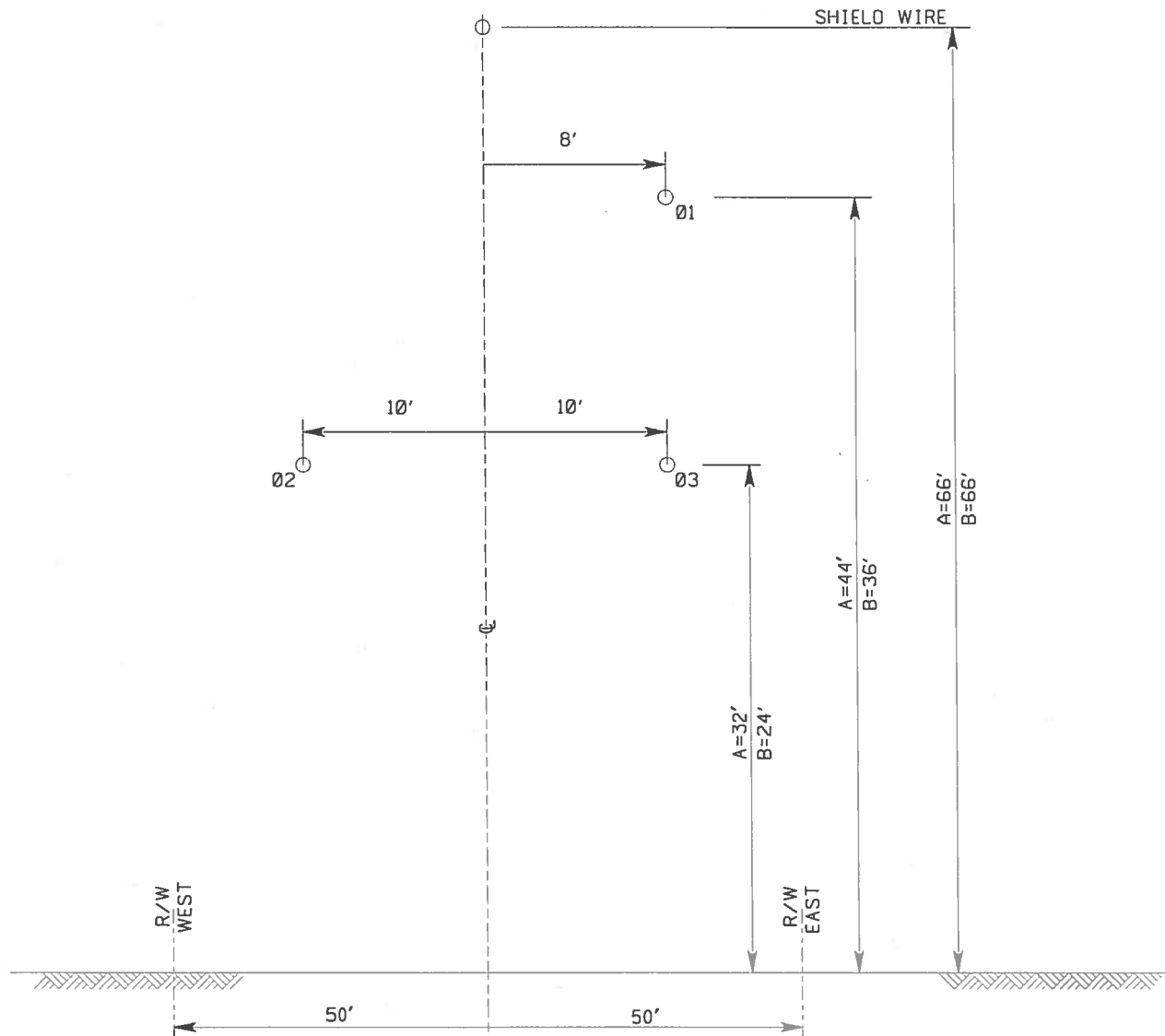
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**FIGURES**

CIRCLEVILLE - BIERS RUN  
138kV CIRCUIT

1590 kcm ACSR (54/19) FALCON CONDUCTOR  
7 NO. 8 ALUMOWELD



DIMENSION "A" - SINGLE CIRCUIT DELTA CONFIGURATION (STEEL POLE)  
(UNDER NORMAL MAX. LINE LOADING AND WINTER NORMAL CONDUCTOR RATING)  
DIMENSION "B" - SINGLE CIRCUIT DELTA CONFIGURATION (STEEL POLE)  
(UNDER EMERGENCY LINE LOADING)



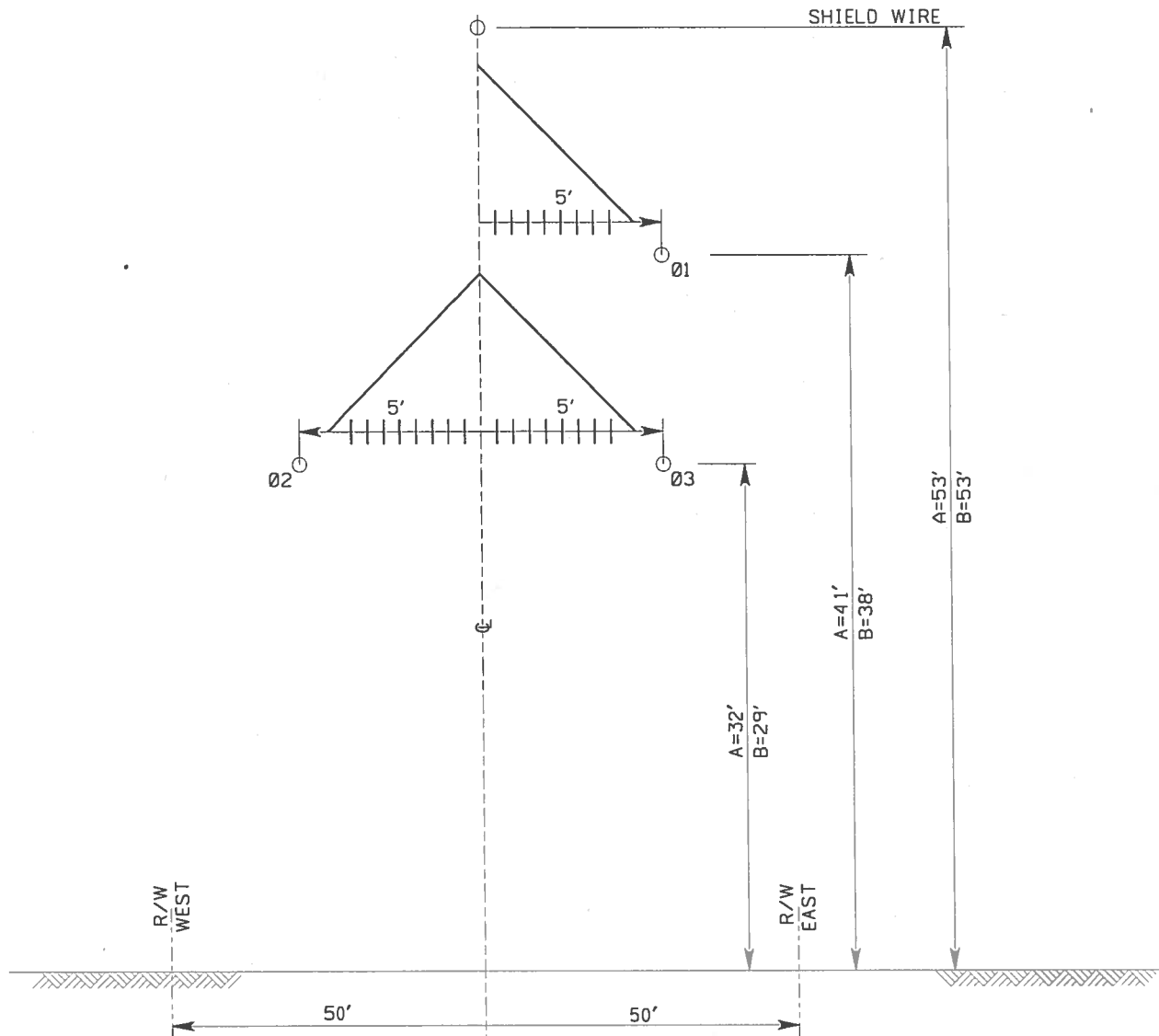
SINGLE CIRCUIT DELTA  
DAVIT ARM TANGENT STRUCTURE  
BIERS RUN - CIRCLEVILLE 138kV LINE

NOT TO SCALE

Figure 06-1



CIRCLEVILLE - BIERS RUN  
138kV CIRCUIT  
1590 kcm ACSR (54/19) FALCON CONDUCTOR  
7 NO. 8 ALUMOWELD



DIMENSION "A" - SINGLE CIRCUIT DELTA CONFIGURATION (STEEL POLE)  
(UNDER NORMAL MAX. LINE LOADING AND WINTER NORMAL CONDUCTOR RATING)  
DIMENSION "B" - SINGLE CIRCUIT DELTA CONFIGURATION (STEEL POLE)  
(UNDER EMERGENCY LINE LOADING)



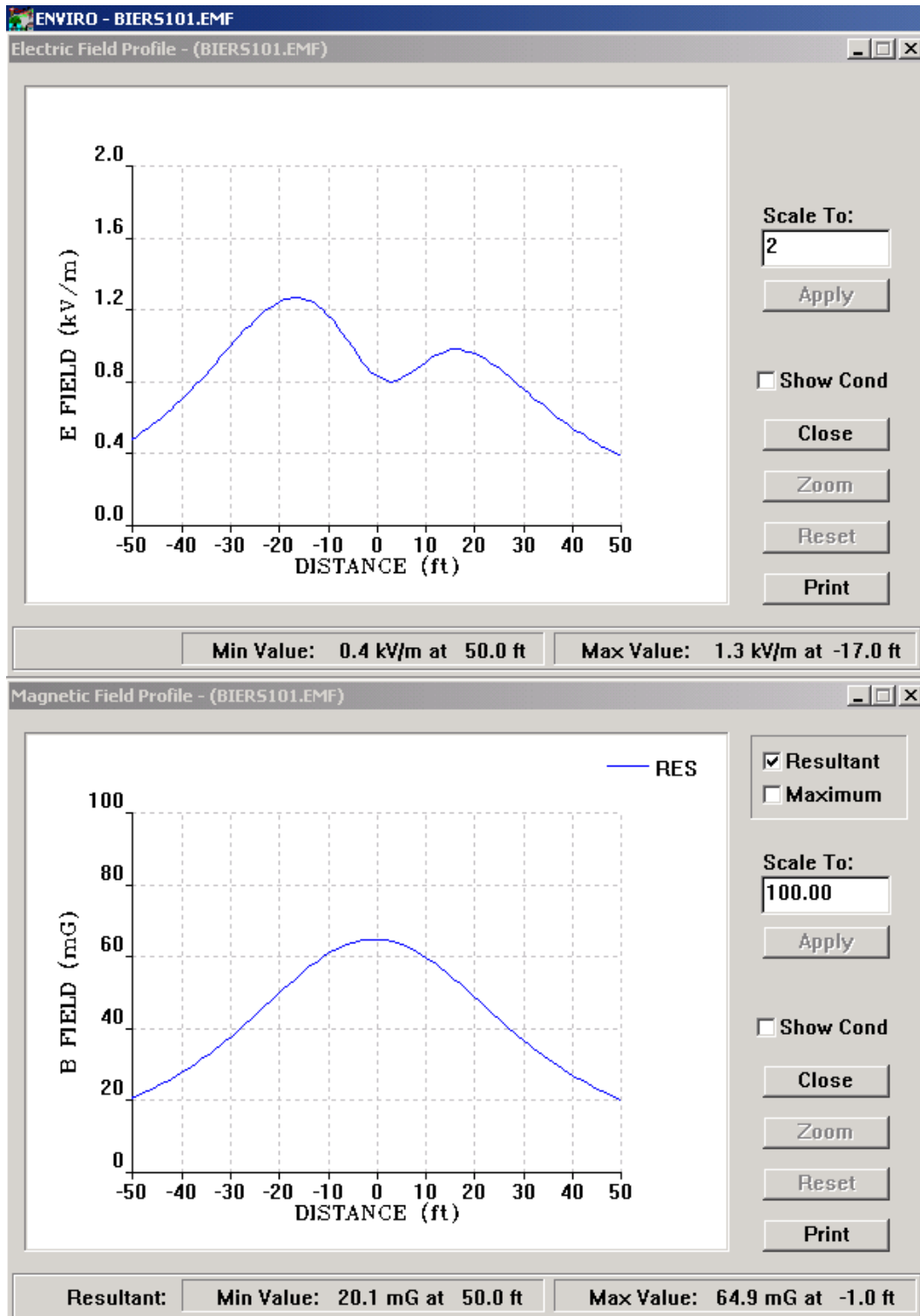
SINGLE CIRCUIT DELTA  
BRACED POST TANGENT STRUCTURE  
BIERS RUN - CIRCLEVILLE 138kV LINE

NOT TO SCALE

Figure 06-2

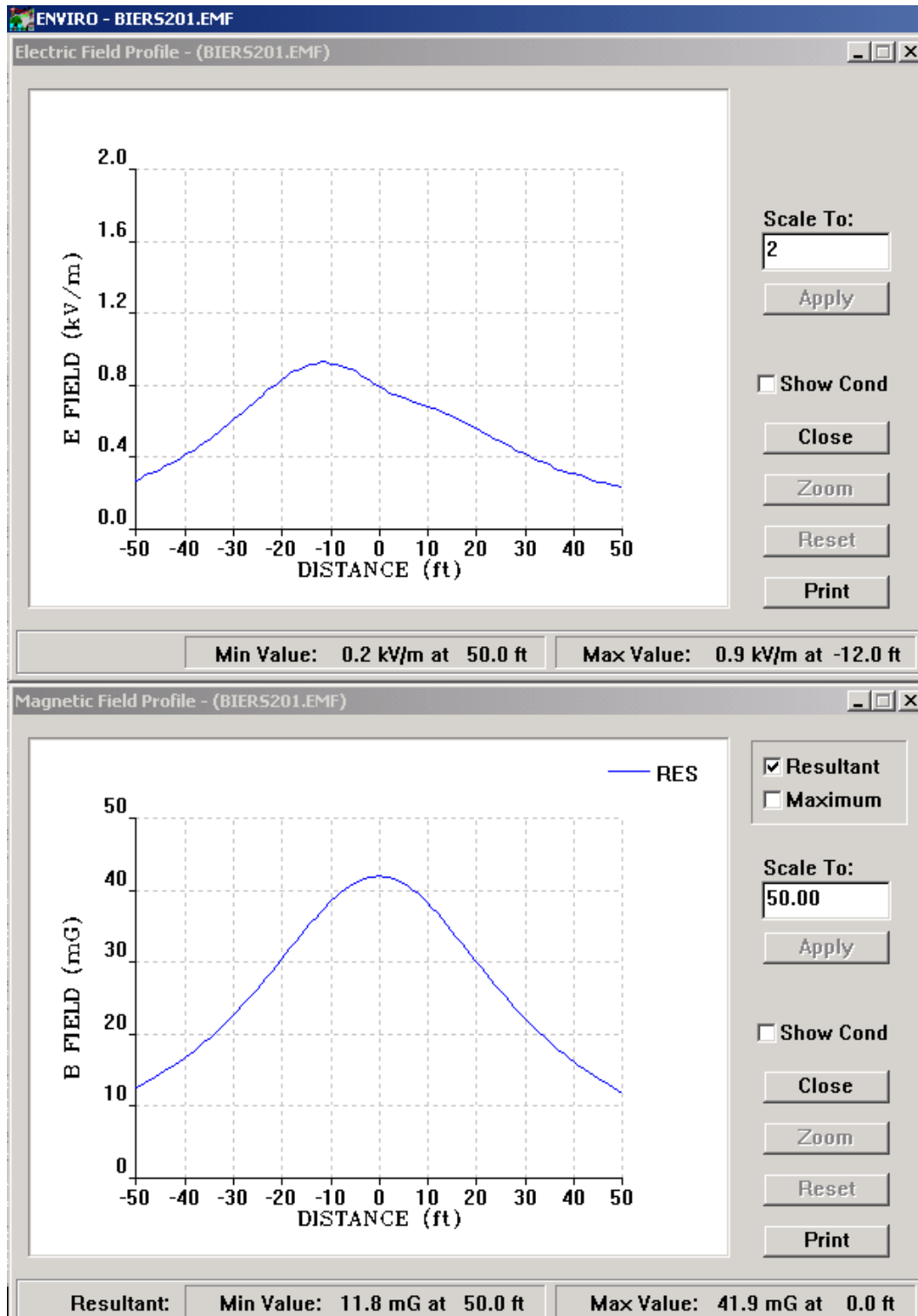
**Figure 6-3**  
**Biers Run - Circleville 138 kV Line EMF Profile**  
**(Davit Arm Structure)**

Normal Maximum Loading



**Figure 6-4**  
**Biers Run - Circleville 138 kV Line EMF Profile**  
**(Braced Post Structure)**

Normal Maximum Loading



**APPENDIX 6-1**

## **APPENDIX 6-1**

### **Biers Run - Circleville 138 kV Transmission Line Project Public Officials Contacted and Officials to be Served A Copy of Certified Application**

#### **Pickaway County:**

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The Honorable Brian Stewart  
Pickaway County Commissioner  
139 West Franklin Street  
Circleville, OH 43113

The Honorable Jay Wippel  
Pickaway County Commissioner  
139 West Franklin Street  
Circleville, OH 43113

The Honorable Harold Henson  
Pickaway County Commissioner  
139 West Franklin Street  
Circleville, OH 43113

Mr. Terry Frazier  
Director, Office of Development & Planning  
124 West Franklin Street  
Circleville, OH 43113

Mr. Sterlin C. Mullins, P.E., P.S.  
County Engineer  
121 West Franklin Street  
Circleville, OH 43113

#### **City of Circleville:**

The Honorable Don McIlroy  
Mayor, City of Circleville  
130 South Court Street  
Circleville, OH 43113

Mr. John Ankrom, Director  
Dept. of Public Services  
Planning & Zoning  
104 East Franklin Street  
Circleville, OH 43113

Mr. David M. Crawford, President  
Circleville City Council  
431 North Court Street  
Circleville, OH 43113

#### **Circleville Township:**

Jeffrey R. Palm  
Circleville Township Fiscal Officer  
934 South Washington Street  
Circleville, OH 43113

Dale E. Bower  
Circleville Township Trustee  
934 South Washington Street  
Circleville, OH 43113

Ernest G. Martin  
Circleville Township Trustee  
934 South Washington Street  
Circleville, OH 43113

Bob Kuhlwein  
Circleville Township Trustee  
934 South Washington Street  
Circleville, OH 43113

**Deer Creek Township:**

Cindy K. Miller  
Deer Creek Township Fiscal Officer  
304 South Water Street  
Williamsport, OH 43164

C. Randall Metzger  
Deer Creek Township Trustee  
6950 Hunsicker Rd.  
Williamsport, OH 43164

Charles O. Galloway  
Deer Creek Township Trustee  
6860 U.S. Route 22 West  
Williamsport, OH 43164

Mr. John A. Cook  
26155 Chillicothe Pike  
Williamsport, OH 43164

**Jackson Township:**

Barbara A. Knox  
Jackson Township Fiscal Officer  
5534 Yankeetown Pike  
Circleville, OH 43113

L. Jay Welsh  
Jackson Township Trustee  
4470 Anderson Road  
Circleville, OH 43113

James W. Beathard, Jr.  
Jackson Township Trustee  
21010 London Road  
Circleville, OH 43113

Paul B. Thompson  
Jackson Township Trustee  
19590 Florence Chapel Pike  
Circleville, OH 43113

**Wayne Township**

John D. Hoffman,  
Wayne Township Fiscal Officer  
24737 State Route 104  
Circleville, OH 43113

Kenny Davis  
Wayne Township Trustee  
27487 Westfall Road  
Circleville, OH 43113

Brenna Gibson  
Wayne Township Trustee  
4480 U.S. Rt. 22W  
Circleville, OH 43113

William P. Hamman  
Wayne Township Trustee  
26898 Westfall Road  
Circleville, OH 43113

**Ross County:**

---

The Honorable Jim Caldwell  
Ross County Commissioner  
306 Fairway Avenue  
Chillicothe, OH 45601

The Honorable Steve Neal  
Ross County Commissioner  
72 Sharon Road  
Chillicothe, OH 45601

The Honorable Doug Corcoran  
Ross County Commissioner  
271 Granite Cliff Drive  
Sandusky, OH 44870

Charles R. Ortman, P.E., P.S.  
Ross County Engineer's Office  
755 Fairgrounds Road  
P.O. Box 458  
Chillicothe, OH 45601

Ross County Building Department  
15 N. Paint Street, Suite 200  
Chillicothe, OH 45601

**Deerfield Township**

Mr. Dan Ater  
Deerfield Township Trustee  
1702 Stingy Lane  
Clarksburg, OH 43115

Mr. Chip Chenoweth  
Deerfield Township Trustee  
193 Brown Road  
Clarksburg, OH 43115

Ms. James Grabill  
Deerfield Township Trustee  
10894 Water Street  
PO Box 58  
Clarksburg, OH 43115

Ms. Cassie Lynette Long  
Deerfield Township Fiscal Officer  
4529 Bush Mill Road  
Frankfort, OH 45628

**Union Township**

Mr. Harold Bennett  
Union Township Trustee  
379 Shiloh Road  
Frankfort, OH 45628

Mr. Donald Arledge  
Union Township Trustee  
210 Yellowbud Road  
Chillicothe, OH 45601

Mr. Robert Whitten  
Union Township Trustee  
216 Andersonville Road  
Chillicothe, OH 45601

Ms. Karen Rittinger Gossman  
Union Township Fiscal Officer  
9254 Williamsport Pike  
Chillicothe, OH 45601

**APPENDIX 6-2**



# NOTICE OF PUBLIC INFORMATION MEETING FOR PROPOSED MAJOR UTILITY FACILITY

## **AEP Ohio Schedules Open House to Outline Plans to Reinforce Transmission System in Ross and Pickaway Counties**

AEP Ohio, a unit of American Electric Power (AEP), and the AEP Ohio Transmission Company invite residents of Ross and Pickaway counties to attend an informational open house regarding plans to construct a new high-voltage, 138-kilovolt (kV) electric transmission line in Ross and Pickaway counties. Two open houses will be conducted for this project — one in Ross County and one in Pickaway County.

**The Ross County public open house to discuss the proposed Biers Run-Circleville line will take place from 6 to 8 p.m. Oct. 16, 2013, at Pioneer School of Developmental Disabilities, 11268 County Road 550, Chillicothe, Ohio 45601.**

**The Pickaway County open house will take place from 6 to 8 p.m. Oct. 17, 2013, at Amvets Post 2256, 818 Tarlton Road, Circleville, Ohio 43113.**

The proposed Biers Run-Circleville transmission line is part of the overall Biers Run Project, which also includes the proposed Biers Run Station and the Biers Run-Hopetown-Delano 138-kV transmission line. AEP's application for the proposed Biers Run Station is pending before the Ohio Power Siting Board. AEP expects to file its application for the Biers Run-Hopetown-Delano line with the siting board in the fourth quarter of 2013.

The new Biers Run-Circleville line will extend from the proposed Biers Run Station to the existing Circleville Station. Circleville Station is approximately 16 miles to the north of the proposed Biers Run Station.

The Biers Run-Circleville line will be approximately 19 miles long depending on the route selected and will traverse Deerfield and Union townships in Ross County, and Circleville and Wayne townships in Pickaway County.

AEP will invest an estimated \$97 million in the overall Biers Run Project — a major transmission reinforcement effort to help AEP maintain adequate transmission reliability in south-

ern Ohio. The total project will allow the company to address reliability concerns about potential low voltages and thermal overloads under certain conditions. 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 its customers expect.

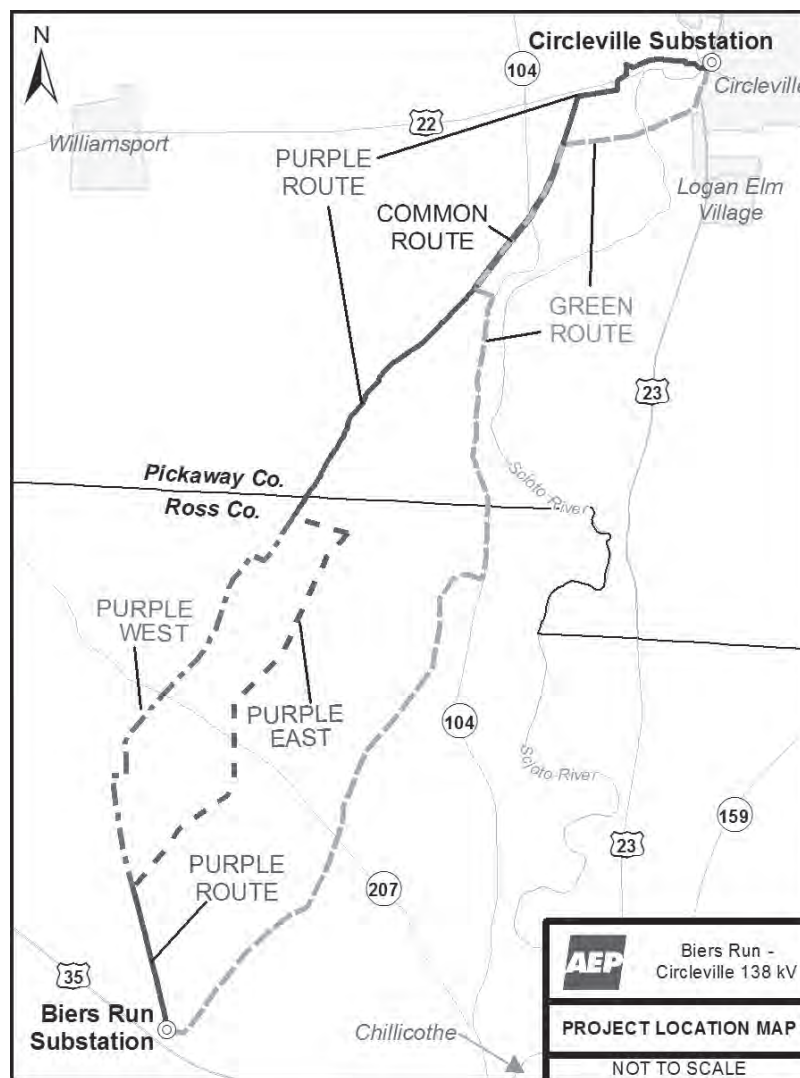
The Biers Run-Circleville line will be an approximate \$20 million investment and is projected to provide approximately \$1 million in additional tax revenue for local schools and communities. The Biers Run-Hopetown-Delano line investment will be approximately \$11.25 million. AEP estimates this will provide between \$450,000 and \$550,000 in additional tax revenue for

local schools and communities. The Biers Run Station investment is approximately \$16 million and is estimated to contribute between \$550,000 to \$650,000 in tax revenue to Ross County, Union Township and the local community.

The Ohio Power Siting Board is responsible for reviewing information related to the project — including input from the public — and determining whether the proposed project should be approved. AEP is required to propose two routes to the siting board. The siting board will make the final decision regarding which route is selected. The accompanying concept map depicts the proposed routes the company will submit to the siting board as the Purple Route and the Green Route. It should be noted that due to reduced scale and limited detail, this map should be used only as a general guide.

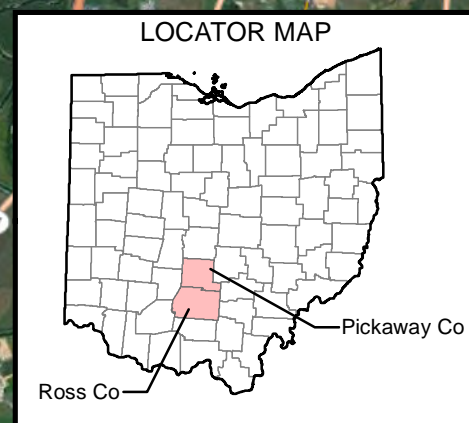
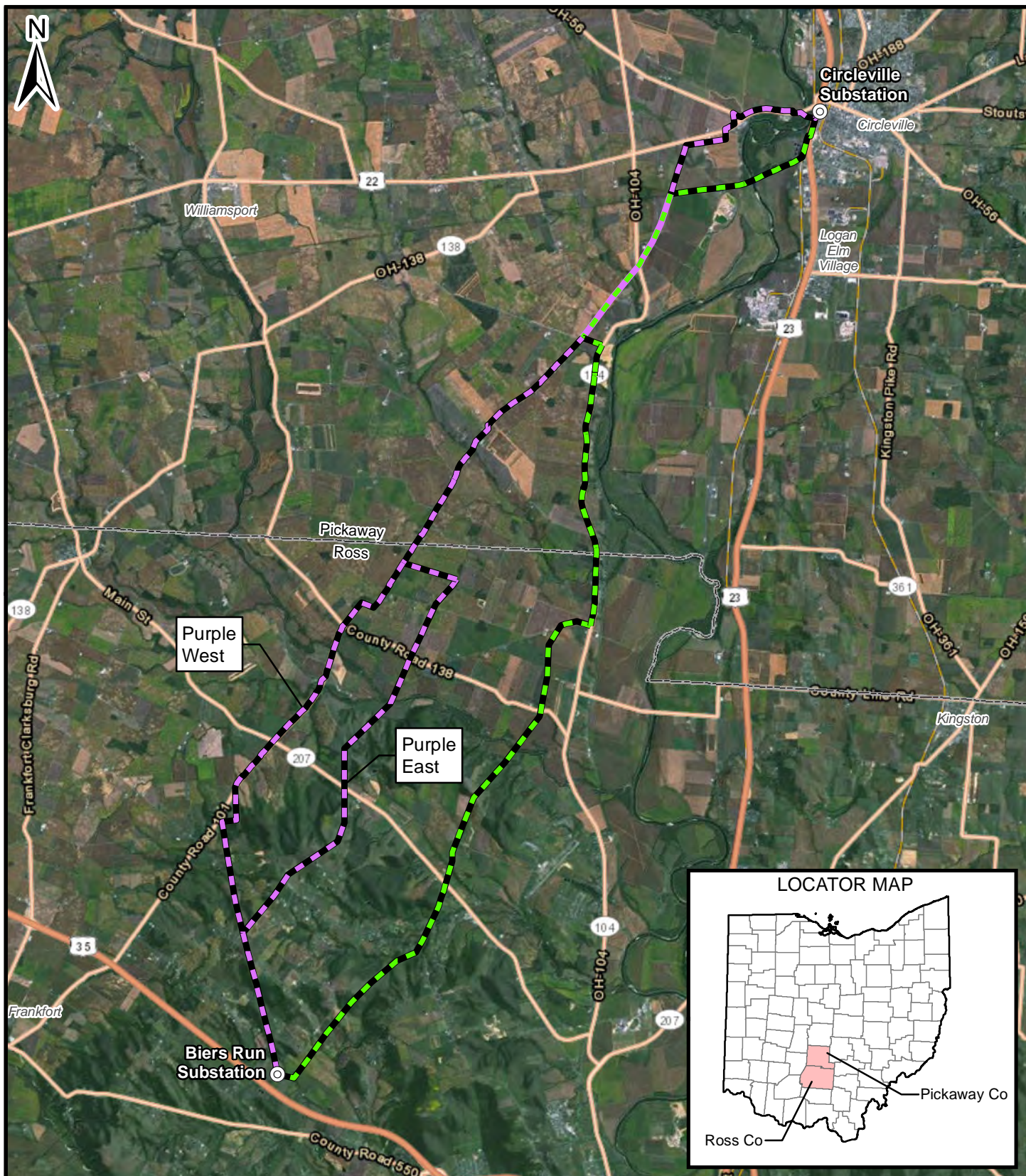
AEP plans to file its formal application for the Biers Run-Circleville transmission line with the siting board in January 2014. If the application is approved, construction of the line could begin in fall 2015 and would be targeted for completion in spring 2017.

Additional information about this project can be found online at [AEPOhio.com/BiersRunCircleville](http://AEPOhio.com/BiersRunCircleville). The public also can ask questions, make comments or express concerns about the project by leaving a message on the AEP Ohio Transmission Project Information Line toll free at 1-877-215-9261. A project representative will return the call.



AEP Ohio Transmission Company  
700 Morrison Road  
Gahanna, Ohio 43230  
Attention: Shawn Malone, Project Manager





**LEGEND:**

- ⊙ Project Substation
- Green Route
- - - Purple Route
- - - Common Route
- County Boundary

0 2 4



Scale In Miles

BASE MAP SOURCE:  
ESRI, Imagery - Microsoft, 2011



Biers Run - Circleville 138 kV  
Transmission Line

**PROJECT OVERVIEW**

PN: 474959

DATE: 9/20/2013





## Q & A

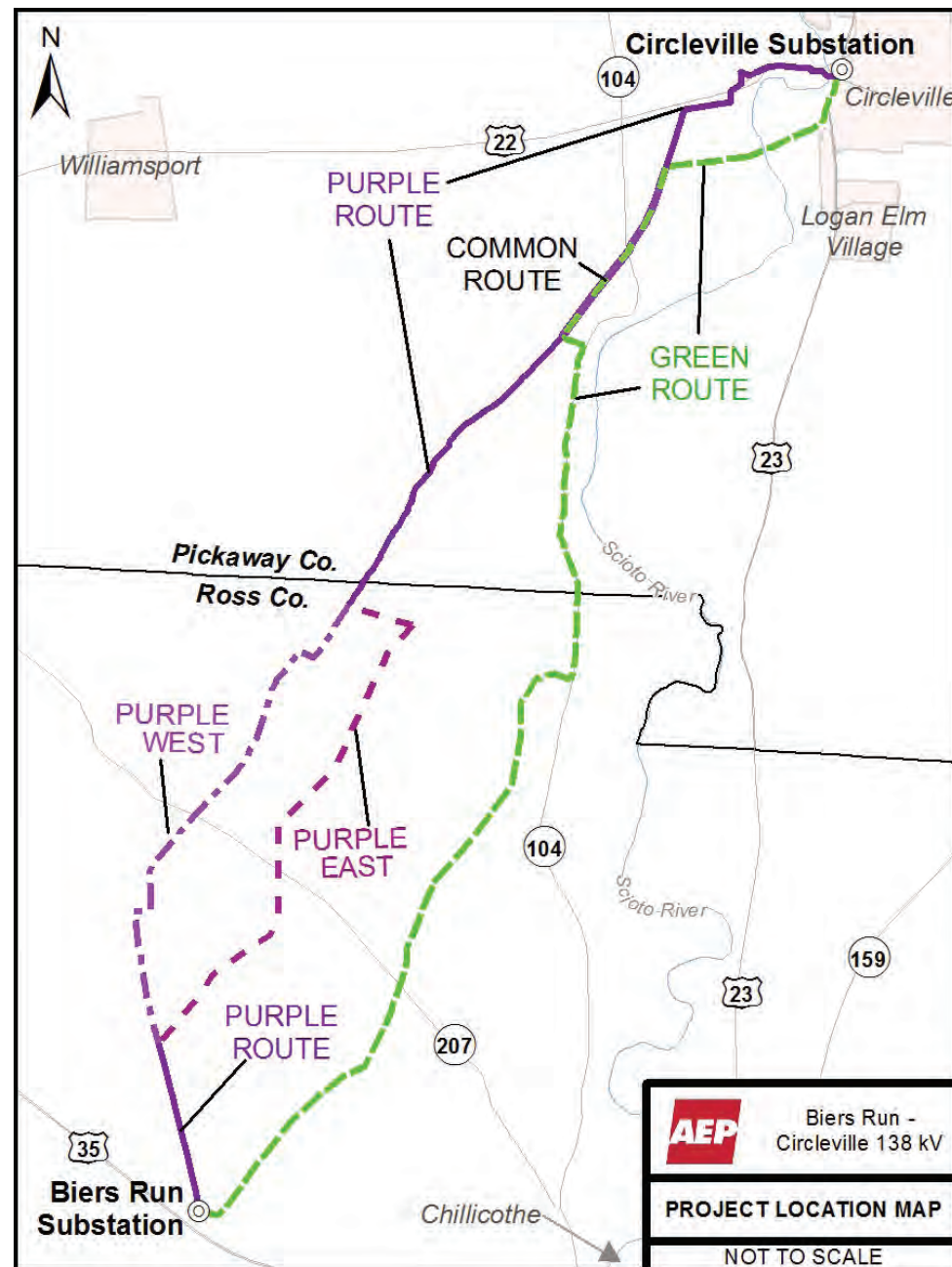
Information about this project also is available online at <http://aepohio/BiersRunCircleville>. Information about the Biers Run Station is available at <http://aepohio.com/go/BiersRun>. Information about the Biers Run-Hopetown-Delano line is available at <http://aepohio.com/BiersRunDelano>.

The public also can ask questions, make comments or express concerns about the project by calling the toll-free AEP Ohio Transmission Project Information Line at 1-877-215-9261 or by sending an email inquiry through "contact us" on AEPOhio.com. The public is asked to leave a detailed message and their contact information. An AEP project representative will respond. We value your opinion. Let us know what you think.

**AEP Ohio Transmission Project Information Line: 1-877-215-9261**

## Proposed Routes

(NOTE: Concept map only to show approximate locations of proposed purple and green transmission line routes.)



## Biers Run Project Biers Run-Circleville Transmission Line

### Need

AEP has a critical need to reinforce its transmission system in southern Ohio, specifically between Chillicothe in Ross County and Circleville in Pickaway County.

The Biers Run Project is a major transmission reinforcement effort to help AEP maintain adequate transmission reliability in southern Ohio. The total project will allow the company to address reliability concerns about potential low voltages and thermal overloads under certain conditions. Without these upgrades, in a worst-case scenario, uncontrolled widespread power outages affecting major portions of southern Ohio may materialize.

### Biers Run-Circleville Transmission Line

The proposed Biers Run-Circleville 138-kilovolt (kV) transmission line is part of the overall Biers Run Project, which includes the proposed Biers Run Station and the proposed Biers Run-Hopetown-Delano 138-kV transmission line. AEP's application for the proposed Biers Run Station is pending before the Ohio Power Siting Board (OPSB). AEP expects to file its application for the Biers Run-Hopetown-Delano line with the siting board in the fourth quarter of 2013. Together, these three projects will maintain and improve the reliability and quality of electric service to southern central Ohio.

The proposed Biers Run-Circleville line also will originate from the proposed Biers Run Station and will extend to the existing Circleville Station approximately 16.2 miles to the northeast in Pickaway County.

The Biers Run-Circleville line will be approximately 19 miles long depending on the route selected and will traverse Deerfield and Union townships in Ross County, and Circleville and Wayne townships in Pickaway County.

The Biers Run-Hopetown-Delano Line will be approximately 12 miles long depending on the route selected and will be located in Ross County. The line will run primarily through Union Township with a short section in Green Township. The proposed 345/138/69-kV Biers Run Station will be located about nine miles northwest of Chillicothe in Union Township between Biers Run Road and State Route 35.

Currently, three 138-kV transmission lines serve the area encompassing Chillicothe and Circleville. These lines deliver power from one substation to another and are known individually as Harrison-Circleville, Poston-Ross and Waverly-Ross. Simultaneous outages on any two of these circuits could result in extremely low voltage levels throughout the area. AEP's proposed system improvements will address these issues and will accommodate future improvements as the area grows and conditions warrant.

AEP will invest an estimated \$97 million in the overall project, which will provide millions of dollars in additional tax revenue for local schools and communities.

(continued on next page)

Siting Process

Before construction can begin on the Biers Run-Circleville line, AEP must obtain a Certificate of Environmental Compatibility and Public Need from OPSB, a multi-agency board led by the chairman of the Public Utilities Commission of Ohio (PUCO).

To obtain this certificate, AEP must complete the siting process, which includes a public informational meeting for residents in the project area. Information and comments received from this meeting will be included in the company's application to OPSB.

The application to construct the Biers Run-Circleville line will address need, technical issues, project finances, land use, cultural, ecological, environmental and socioeconomic issues.

The OPSB guidelines require AEP to study multiple routes and submit two routes — a preferred and an alternate site — for OPSB's evaluation. Information and comments obtained during the public information open house and other factors help determine the preferred and alternate routes proposed in the company's application.

After AEP files its application, the siting board will conduct public hearings about the project before making its final decision. These public hearings will be preceded by the publication of two notices in area newspapers. These notices will provide the time, date and location of the hearings, as well as describe the proposed facility and the siting process.

More information about the OPSB process and AEP's filings can be found at [www.opsb.ohio.gov](http://www.opsb.ohio.gov). Search under pre-application cases for case number 13-0430-EL-BTX.

Timeline

This is an estimated schedule for the project.

April-October 2013	Prepare Application
October 2013	Public Information Open House
January 2014	File Application with Ohio Power Siting Board
January - February 2014	Ohio Power Siting Board Review and Action (approximately 60 days)
May 2014	Ohio Power Siting Board Hearing Process (approximately 90 days)
September 2014	Certificate Application Approved
Fall 2015	Construction Begins
Spring 2017	In service

Q & A

Why are the Biers Run-Circleville transmission line and the overall Biers Run Project needed?

AEP has a critical need to reinforce its transmission system in parts of AEP Ohio's southern Ohio area, specifically between Chillicothe in Ross County and Circleville in Pickaway County to accommodate development in this area and to upgrade the transmission system. In the past 10 years, area demand for electricity has risen, and due to air emission regulations, AEP Ohio is shutting down some older power plants, which increases the need to bolster its transmission infrastructure to avoid reliability problems.

Q & A

AEP already has filed an application with the OPSB to build the new 345/138/69-kV Biers Run transmission substation in the rural Ross County, northwest of Chillicothe. The proposed Biers Run-Circleville line is the second of the two new 138-kV lines AEP proposes to construct as part of this reliability improvement project.

How will the overall project improve the reliability of the transmission system in Ross County and southern Ohio?

The overall project will allow the company to address reliability concerns about potential low voltages and thermal overloads under certain conditions. Without these improvements, AEP studies indicate that the performance of the company's transmission system will be inadequate to provide the level of service that its customers expect and new business growth requires.

The transmission area encompassing Chillicothe and Circleville is served primarily by three 138-kV transmission lines. Outages on any two of these circuits could cause low-voltage issues for customers throughout the area. Residential customers experience low voltage in the form of intermittent power loss, and for some industrial customers, this can seriously interfere with their operations.

To resolve this voltage issue, AEP has proposed and PJM — the regional transmission organization to which AEP belongs — has approved a baseline project to construct a new 345/138/69-kV substation; to build two new 138-kV circuits, one from the new station to the Circleville Station and the other from the new station to the Delano Station; and two new 69-kV circuits to reinforce the 138-kV and 69-kV transmission systems in the area. These new facilities will provide the much needed voltage and thermal capacity support, as well ensure near- and long-term transmission reliability for the area.

When will you start construction of the Biers Run-Circleville line and when would it be completed?

If the application is approved, construction of the line could begin by fall 2015 and would be targeted for completion in spring 2017.

Where is AEP proposing to build the Biers Run-Circleville line and what is the process for route selection?

AEP is studying possible routes for the line. The public informational open houses solicit input from the public regarding these routes. Using the information gained during the public open houses, AEP expects to file an application for a Certificate of Environmental Compatibility and Public Need with the OPSB by January 2014. The siting board then will conduct a public hearing and an adjudicatory hearing to receive testimony and comments about the project. Notices announcing the public information meeting and public hearings are placed in local newspapers.

Why are you looking at more than one route?

The guidelines established by the OPSB require AEP to submit two routes for the board's evaluation — a preferred and an alternate route. Either route has advantages and drawbacks. The public information meeting will help AEP determine which route it will recommend as the preferred route and which it will recommend as the alternate route.

Where can I get more information about the project?

Area residents can attend meetings or hearings related to the projects. Meeting and hearing notifications will be made through advertising and news releases in local newspapers.



## **Biers Run Project**

### Biers Run-Circleville Line

### Frequently Asked Questions

#### **Why are the Biers Run-Circleville transmission line and the overall Biers Run Project needed?**

AEP has a critical need to reinforce its transmission system in parts of AEP Ohio's southern service area, specifically between Chillicothe in Ross County and Circleville in Pickaway County to accommodate development in this area and to upgrade and reinforce the transmission system. In fact, the regional transmission authority has mandated that AEP improve grid reliability in this area. This mandate, along with AEP Ohio's retirement of older generation plants due to emissions regulations, has bolstered the need to improve our transmission infrastructure, and therefore, improve reliability.

The proposed Biers Run-Circleville 138-kilovolt (kV) transmission line is part of the overall Biers Run Project, which includes the proposed 345/138/69-kV Biers Run Station and the Biers Run-Hopetown-Delano 138-kV transmission line. AEP's application for the proposed Biers Run Station is pending before the Ohio Power Siting Board (OPSB). AEP expects to file its application for the proposed Biers Run-Hopetown-Delano line by the end of 2013.

#### **What does the complete project include?**

The complete Biers Run Project is a major transmission reinforcement effort designed to help AEP maintain an adequate level of transmission reliability in southern Ohio. The project includes improvements at several existing substations, the new Biers Run Station, upgrades to existing transmission lines and the two new proposed 138-kV transmission lines.

#### **How will the overall project improve the reliability of the transmission system in Ross County and southern Ohio?**

The overall project will allow AEP to address reliability concerns about potential low voltages and thermal overloads under certain conditions. Without these improvements, in a worst-case scenario, uncontrolled widespread power outages affecting major portions of southern Ohio may materialize. 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.

The transmission area encompassing Chillicothe and Circleville is served primarily by three 138-kV transmission lines. These lines deliver power from one substation to another and are known individually as the Harrison-Circleville, Poston-Ross and Waverly-Ross. Simultaneous outages on any two of these circuits could result in severely depressed voltages throughout the area. Residential customers experience low voltage in the form of intermittent power loss, and for some industrial customers, this can seriously interfere with their operations.

The regional transmission authority has ordered AEP to resolve this issue. AEP has proposed and PJM — the regional transmission authority to which AEP belongs — has approved a baseline project to construct the new 345/138/69-kV Biers Run Station; to build two new 138-kV circuits, one from Biers Run to Delano Station and one from Biers Run Station to Circleville Station; and two new 69-kV circuits to reinforce the 138-kV and 69-kV transmission systems in the area. These new facilities will ensure near- and long-term transmission reliability for the area by providing the much needed voltage and thermal capacity support.



**Where is AEP proposing to build the Biers Run Station?**

AEP has proposed to build Biers Run Station, which will have an approximate 10-acre footprint, on 103 acres in Union Township in Ross County about nine miles northwest of Chillicothe, Ohio. The property is located between Biers Run Road and State Route 35, roughly one-third mile southeast of Albright Road and 1.4 miles northwest of Cattail Road. AEP purchased this property in 2011.

**Where is AEP proposing to build the Biers Run-Circleville line and what is the process for route selection?**

AEP is studying possible routes for the line. The public informational open houses solicited input from the public regarding these routes. Using the information gained during the public open house, AEP expects to file an application for a Certificate of Environmental Compatibility and Public Need with the OPSB by January 2014. The siting board then will conduct a public hearing and an adjudicatory hearing to receive testimony and comments about the project. Notices announcing the public information meeting and public hearings are placed in local newspapers.

**Why are you looking at more than one route?**

The guidelines established by the OPSB require AEP to submit two routes for the board's evaluation – a preferred and an alternate route. Either route will allow AEP to satisfy its objectives for improving the transmission system. Each route has advantages and drawbacks. The public information meeting will help AEP determine which route it will recommend as the preferred route and which it will recommend as the alternate route.

**Who will approve the final route?**

The OPSB is responsible for reviewing all the information related to the project – including input from the public – and determining whether the proposed facility meets the suitability and necessity requirements of the siting process. Ohio's siting process requires that the proposed facilities:

- satisfy the public need criteria for the facility;
- satisfy all engineering requirements of the project;
- address the compatibility of the facility with existing land use in the area; and
- address the socioeconomic, land use, ecological, cultural and environmental effects of the facility on the area.

**How much will this project cost?**

AEP will invest an estimated \$97 million in the overall project. The Biers Run-Circleville line will be an approximate \$20 million investment and is projected to provide approximately \$1 million in additional tax revenue for local school and communities. The Biers Run-Hopetown-Delano line investment will be approximately \$11.25 million. This line will provide between \$450,000 and \$550,000 in additional tax revenue for local schools and communities. The Biers Run Station investment is approximately \$22 million and is estimated to contribute between \$1 million and \$1.13 million in tax revenue for Ross County, Union Township and the local community.

**How long will the Biers Run-Circleville line be?**

Depending on the route selected, it will be approximately 19 miles long.

**Where will the Biers Run-Circleville line be located?**

The new Biers Run-Circleville line will extend from Biers Run Station in Ross County, traversing Deerfield and Union townships, through Circleville and Wayne townships in Pickaway County to the existing Circleville Station in Circleville.

**When will you start construction of the Biers Run-Circleville line and when would it be completed?**

We expect to file our application with the power siting board by January 2014. If the application is approved, construction of the line could begin by fall 2015 and would be targeted for completion in spring 2017.

This is an estimated schedule for the Biers Run-Hopetown-Delano line project.

April-October 2013	Prepare Application
October 2013	Public Information Open Houses
January 2014	File Application with Ohio Power Siting Board
January - February 2014	Ohio Power Siting Board Review and Action (approximately 60 days)
May 2014	Ohio Power Siting Board Hearing Process (approximately 90 days)
September 2014	Certificate Application Approved
Fall 2015	Construction Begins
Spring 2017	In service

**What alternatives or other options did you consider before deciding to pursue approval of these projects?**

Adding capacity at other substations and building new transmission lines were considered. In the final analysis, the improvements we propose represent the best option (most efficient and least-cost) for reinforcing our existing transmission system – both short and long term – for meeting future growth and development in this area.

**What about safety during the construction process?**

AEP's safety philosophy states that "No aspect of operations is more important than the health and safety of people. Our customers' needs are met in harmony with environmental protection." AEP takes every precaution to ensure the safety of its employees and the public. During construction of this substation, AEP will communicate with property owners to keep them informed about the construction process and when employees will be in the area.

**Where can I get more information about the project?**

Area residents can attend meetings or hearings related to the projects. Meeting and hearing notifications will be made through advertising and news releases in local newspapers. The public also can ask questions, make comments or express concerns about the project by calling the toll-free AEP Ohio Transmission Project Information Line at 877-215-9261 or by sending an email inquiry through "contact us" on AEPOhio.com. The public is asked to leave a detailed message and their contact information. An AEP project representative will respond.

Information about this project also is available online at <http://aepohio.com/BiersRunCircleville>.

Information about the Biers Run Station is available at <http://aepohio.com/go/BiersRun> and Biers Run-Hopetown-Delano at <http://aepohio.com/BiersRunDelano>.

**Why is AEP proposing a new station with 345-kV, 138-kV and 69-kV overhead transmission line extensions instead of underground extensions?**

The technology for 345-kV underground transmission lines is still being developed, has reliability risks and is cost prohibitive. Additionally, the new station will be tied to AEP's existing Don Marquis - Bixby 345-kV overhead transmission line.

**Will customers in the area experience power outages as a result of the construction?**

No planned customer outages are associated with the construction of this project.

**What economic benefits will the Biers Run Project provide for the local area?**

The project will produce millions of dollars in additional tax revenue for local schools and communities. AEP projects the Biers Run-Circleville line is estimated to provide \$1 million in tax revenue to local schools and communities. The Biers Run-Hopetown-Delano line will provide between \$450,000 and \$550,000 in additional tax revenue for local schools and communities. Biers Run Station is projected to contribute between \$1 million and \$1.13 million in property taxes to local communities. Initial estimates for tax revenue for the station were between \$500,000 and \$600,000. The anticipated tax revenue may change, depending on depreciation or improvements.

The direct increase in tax revenue is just one way AEP supports the continued growth and development of the local community. The project also will help meet the power requirements necessary to ensure continued business development and growth in the area. Unlike other development projects, AEP's Biers Run Project will not place demands on other utilities such as sewer or water; other township services, including law enforcement; or local educational services.

**What about magnetic fields? Haven't there been studies done indicating that power lines and equipment can cause health problems?**

All electrical equipment carrying a current generates electric and magnetic fields (EMF). This pertains as much to the electrical appliances in our homes as it does to power lines, power substations and their related equipment. Questions have been raised over the past 20 years about a possible link between exposure to EMF and certain kinds of health effects. While numerous studies have been conducted, as a body of work they have failed to link EMF to specific health effects. More recent studies have cast further doubt on the hypothesized link. Research by the federal government and the electric utility industry continues. Please visit AEPOhio.com at <https://www.aepohio.com/info/projects/emf/> for more information regarding EMF and for links to third-party websites for the latest information about EMF.





## **Biers Run Project**

### **Biers Run-Circleville Transmission Line**

#### **Chronology \***

April-October 2013	Prepare Application
October 2013	Public Information Open Houses
January 2014	File Application with Ohio Power Siting Board
January - February 2014	Ohio Power Siting Board Review and Action (approximately 60 days)
May 2014	Ohio Power Siting Board Hearing Process (approximately 90 days)
September 2014	Certificate Application Approved
Fall 2015	Construction Begins
Spring 2017	In service

\* Timeline is approximate.

## **Biers Run-Circleville Project Details**

The proposed Biers Run-Circleville 138-kilovolt (kV) transmission line is part of the overall Biers Run Project – a major transmission reinforcement effort to help AEP maintain adequate transmission reliability in southern Ohio. The total project will allow the company to address concerns about potential low voltages and thermal overloads in the area.

The proposed Biers Run-Circleville line will originate from the proposed Biers Run Station and will extend to the existing Circleville Station to the northeast in Pickaway County.

The Biers Run-Circleville line will be approximately 19 miles long depending on the route selected and will traverse Deerfield and Union townships in Ross County, and Circleville and Wayne townships in Pickaway County.

Three 138-kV transmission lines currently serve the Chillicothe and Circleville transmission area. These lines deliver power from one substation to another. These are the Harrison-Circleville, Poston-Ross and Waverly-Ross lines. Simultaneous outages on any two of these lines could drop voltages well below acceptable levels throughout the area. AEP's proposed system improvements will address these issues.

Before construction can begin on the Biers Run-Circleville line, AEP must obtain a Certificate of Environmental Compatibility and Public Need from the Ohio Power Siting Board (OSPB), a multi-agency board led by the chairman of the Public Utilities Commission of Ohio (PUCO).

To obtain this certificate, AEP must complete the siting process, which includes a public informational meeting for residents in the project area. Information and comments received from this meeting will be included in the company's application to OSPB.

The application to construct the Biers Run-Circleville line will address need, technical issues, project finances, land use, cultural, ecological, environmental and socioeconomic issues.

OSPB guidelines require AEP to study multiple routes and submit two routes — a preferred and an alternate site — for OSPB's evaluation. Information and comments obtained during the public information open house and other factors help determine the preferred and alternate routes proposed in the company's application.

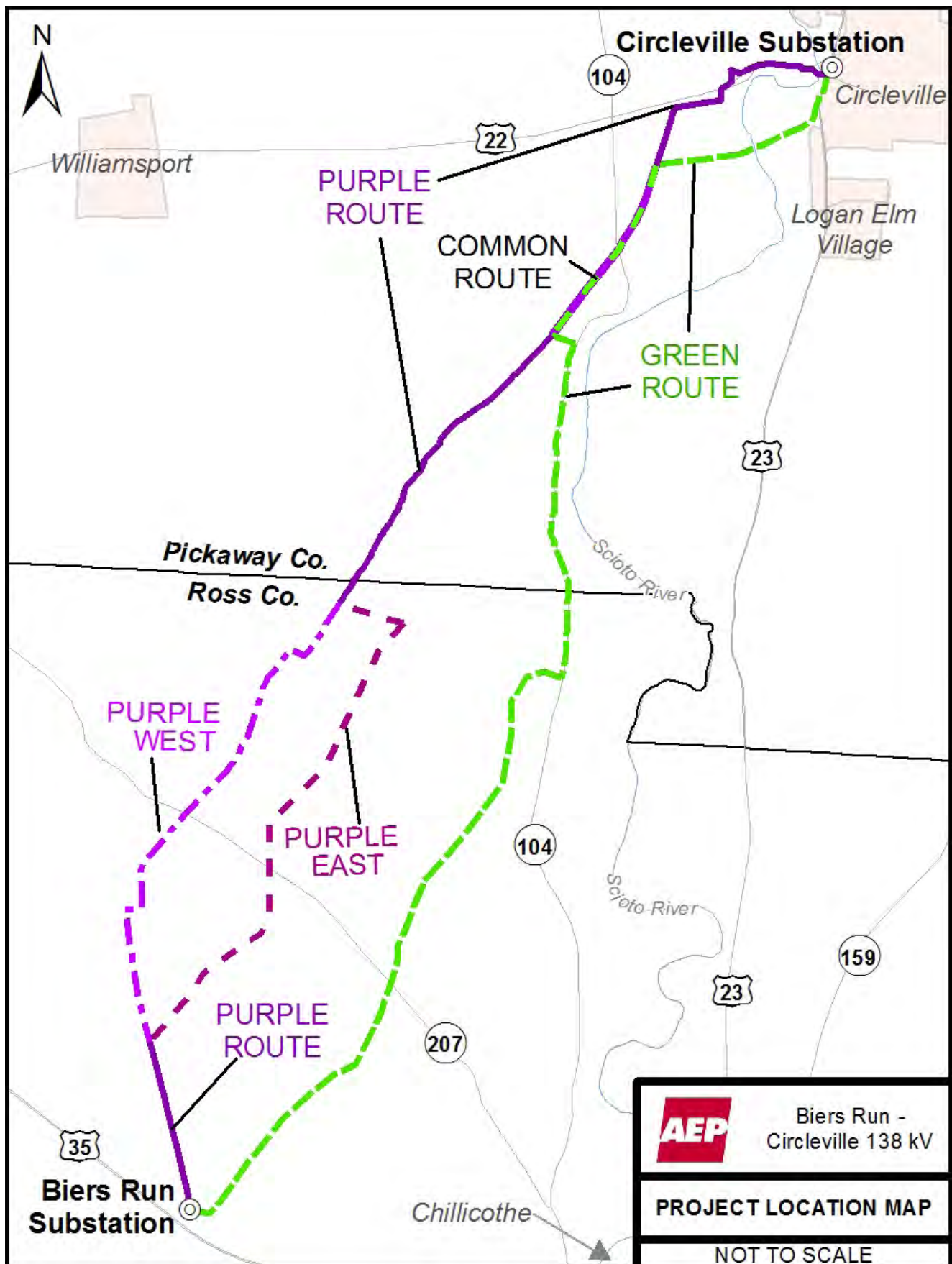
After AEP files its application, the siting board will conduct public hearings on the project before making its final decision. These public hearings will be preceded by the publication of two notices in area newspapers. These notices will provide the time, date and location of the hearings, as well as describe the proposed facility and the siting process.

More information about the OPSB process and AEP's filings can be found at [www.opsb.ohio.gov](http://www.opsb.ohio.gov). Search under pre-application cases for case number 13-0430-EL-BTX.

The overall Biers Run project also includes the proposed Biers Run Station and the proposed Biers Run-Hopetown-Delano 138-kV transmission line. The Biers Run-Hopetown-Delano Line will be approximately 12 miles long depending on the route selected and will be located in Ross County. The line will run primarily through Union Township with a short section in Green Township. The proposed 345/138/69-kV Biers Runs Station will be located about nine miles northwest of Chillicothe in Union Township between Biers Run Road and State Route 35.

AEP's application for the proposed Biers Run Station is pending before the Ohio Power Siting Board. AEP expects to file its application for the Biers Run-Hopetown-Delano line with the siting board in the fourth quarter of 2013.

Concept map only to show approximate locations of proposed purple and green transmission line routes.



**This foregoing document was electronically filed with the Public Utilities**

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**Case No(s). 13-0430-EL-BTX**

Summary: Application Biers Run – Circleville 138 kV Transmission Line Project Part 5 of 7  
electronically filed by Mr. Yazen Alami on behalf of AEP Ohio Transmission Company