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LETTER OF NotificATION APPLICATION

AMERICAN TRANSMISSION SYSTEMS, INCORPORATED SUBSIDIARY OF FIRSTENERGY CORP.

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

BRUCE MANSFIELD – GLENWILLOW 345 kV TRANSMISSION LINE PROJECT

OPSB CASE NO.: 12-1726-EL-BLN

November 2012

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American Transmission Systems, Incorporated 76 South Main Street Akron, Ohio 44308



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November 9, 2012

Mr. KLAUS Lambeck, Chief Facilities, Siting & Environmental Analysis Division Ohio Power Siting Board Public Utilities Commission of Ohio 180 East Broad Street Columbus, OH 43215-3793

Letter of Notification Bruce Mansfield - Glenwillow 345 kV Transmission Line Project Case No. 12-1726-EL-BLN

Dear Mr. Lambeck,

American Transmission Systems, Incorporated "ATSI", a subsidiary of FirstEnergy Corp., today under separate cover, has filed with the Public Utilities Commission of Ohio, Docketing Division, the subject Letter of Notification ("LON") Application. Copies of the LON are enclosed for your information.

In this project, ATSI is proposing the construction of a new, single circuit 345 kV transmission line between the Bruce Mansfield Substation in Beaver County, Pennsylvania and the proposed new Glenwillow Switching Station to be located in the Village of Glenwillow in Cuyahoga County, Ohio. As proposed and described in this Letter of Notification Application, the Preferred Route can be constructed entirely within ATSI's existing transmission right-of-way ("ROW") through a combination of using "open arm" positions on existing transmission line structures, re-energizing an existing but inactive 345 kV circuit, and rebuilding existing single circuit transmission structures to accommodate a second circuit. "Open arm" refers to a transmission structure that was designed and built to carry two circuits, but only one circuit was previously installed. Approximately 72 percent of the Preferred Route in Ohio will involve using open arm positions on existing transmission line structures or re-energizing an inactive 345 kV circuit. The remaining 28 percent would involve rebuilding existing transmission structures to accommodate a second circuit.

A few new structures will be installed along the route of the new construction, generally at locations where the route crosses existing transmission lines or at transitions from proposed open arm to rebuild sections of construction. Additionally, in one location, the conductors installed in the new construction will be used as part of an existing circuit and the existing conductors of that circuit will be used as part of the new Bruce Mansfield-Glenwillow 345 kV Transmission Line.

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Should the Ohio Power Siting Board desire further information or discussion of this submittal, please contact me at (304) 534-7472.

Sincerely,

Jay A. Ruberto

Sr. Advisor, Transmission & Substation Engineering

FirstEnergy Service Company

Attachments

LETTER OF NOTIFICATION BRUCE MANSFIELD – GLENWILLOW 345 kV TRANSMISSION LINE PROJECT OPSB Case No. 12-1726-EL-BLN

The following information is being provided in accordance with the procedures delineated in Ohio Administrative Code Section 4906-11-01: <u>Letter of Notification Requirements</u> of the Rules and Regulations of the Ohio Power Siting Board ("OPSB").

4906-11-01(B): General Information

4906-11-01(B)(1)a: Name and Reference Number

Name of Project: Bruce Mansfield - Glenwillow 345 kV Transmission Line

Project ("Project")

2012 LTFR Reference: This Project is not identified in FirstEnergy Corp.'s 2012

Electric Long-Term Forecast Report ("LTFR") submitted to the

Public Utility Commission of Ohio in Case Number 12-0504-

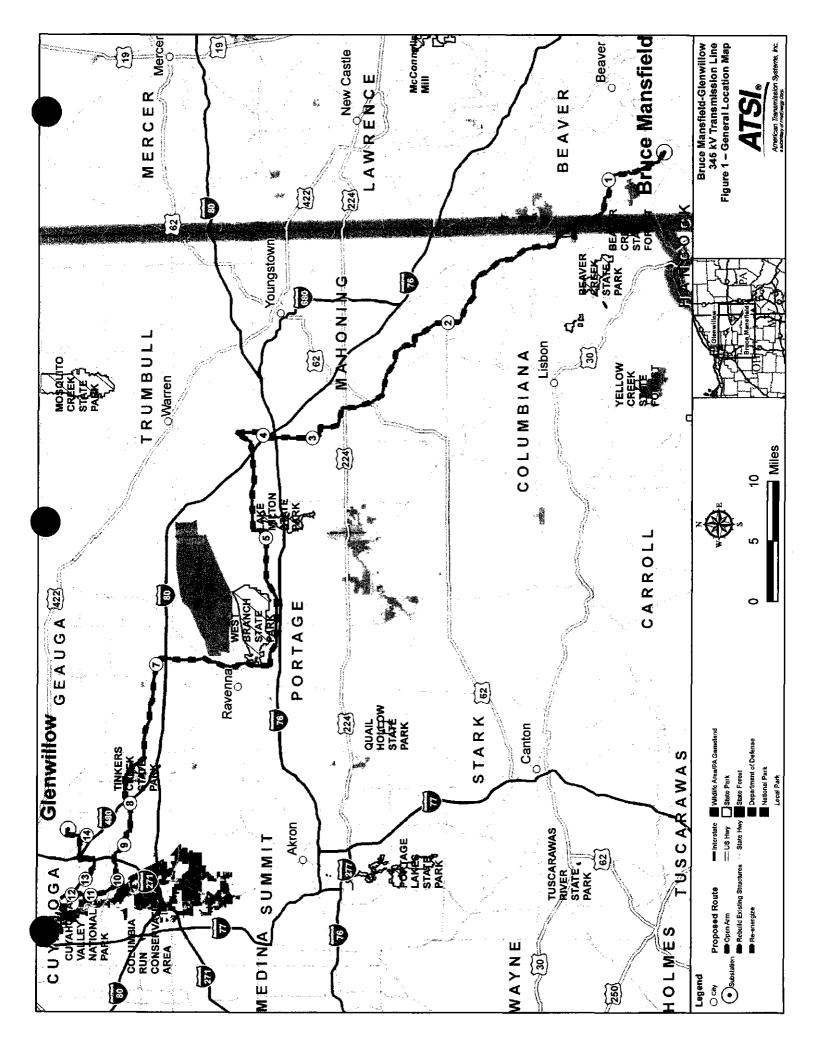
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4906-11-01(B)(1)b: Brief Description of Project

American Transmission Systems, Incorporated ("ATSI" or the "Applicant"), a wholly owned subsidiary of FirstEnergy Corp., is seeking a Certificate of Environmental Compatibility and Public Need to construct the Bruce Mansfield – Glenwillow 345 kV Transmission Line (the "Project"). Included in this Letter of Notification ("LON") application as part of the Project is the construction of the short looped extensions of the existing Eastlake – Juniper and Inland – Perry 345 kV Transmission Line to the Glenwillow Transmission Switching Substation. The overall project consists of constructing a new 345 kV transmission line approximately 114.5 miles in length between the existing Bruce Mansfield Substation in Beaver County, Pennsylvania and the proposed new Glenwillow Transmission Switching Substation to be located in the Village of Glenwillow in Cuyahoga County, Ohio. This LON application concerns both the portion of the proposed Project to be constructed within Ohio, which is approximately 103.6 miles in length, and the approximately 390-foot and 315-foot long looped extensions of two existing 345 kV transmission lines into the new Glenwillow

Substation. Concurrent with this LON application, ATSI has submitted an application to the Board seeking a Certificate of Environmental Compatibility and Public Need for the proposed Glenwillow Switching Station Project in Board Case Number 12-1727-EL-BSB. A Preferred and an Alternate Site for the Glenwillow Transmission Switching Substation ("Glenwillow Substation") are proposed in this Application. The Project's transmission line construction proposed in this LON connects to the proposed Preferred Site of the Glenwillow Substation.

As proposed and described in this LON application, the Bruce Mansfield – Glenwillow 345 kV Transmission Line portion of the Project begins at the Ohio-Pennsylvania border in Middleton Township, Columbiana County, Ohio, traverses in a northwesterly direction through Columbiana, Mahoning, Trumbull, Portage, Summit, and Cuyahoga counties, and terminates at the proposed Glenwillow Switching Station proposed to be located in the Village of Glenwillow in Cuyahoga County. The route utilizes a combination of available "open arm" positions on existing 345 kV lines, re-energizing an existing but inactive 345 kV circuit and rebuilding existing single circuit 345 kV lines for double circuit operation. "Open arm" refers to a transmission structure that was designed and built to carry two circuits, but for which only one circuit was installed. The sections of single circuit line to be reconstructed total approximately 29.2 miles and will require replacing approximately 205 existing structures. Approximately 25 new structures will be installed along the route of the new construction, generally at locations where the route crosses existing transmission lines or at transitions from the proposed open arm sections to the rebuild sections of construction. Descriptions of the general locations and arrangements of the new structures are included in the Project route description provided below. Additionally, in the 53-mile section between the Bruce Mansfield Substation and Highland Junction, the conductors of that circuit will be used as part of the new Bruce Mansfield - Glenwillow 345 kV Transmission Line, and the new construction will be used for the existing circuit. For clarity purposes, the various route segments are referred to by "Link" Numbers 1 through 5 and 7 through 14, as presented in Table 1.



	Location (County/Municipality)	Beaver County, Pennsylvania	(Shippingport, Industry,	Ohioville, South Beaver)	Columbiana (Middleton, Unity,	Fairfield)	Mahoning (Beaver, Green,	Canfield, Ellsworth)	Mahoning (Ellsworth, Jackson)		Mahoning (Jackson)	Trumbull (Lordstown)		Trumbull (Lordstown, Newton)	Mahoning (Milton)	Portage (Rootstown, Ravenna,	Shalersville, Streetsboro, Aurora)	Portage (Aurora)	Summit (Twinsburg, Macedonia)
sink Summary	Existing ROW Width (feet)	150			180				180		180			150		150		150	
Table I. New Construction Rouge Link Summary	Line/KOW	Mansfield –	Highland 345 kV		Mansfield –	Highland 345 kV			Mansfield -	Highland 345 kV	Mansfield –	Highland 345 kV		Hanna – Highland	345 kV	Chamberlin –	Mansfield 345 kV	Chamberlin –	Mansfield 345 kV
ble I. New	Length (Miles)	11.0			31.5				1.4		5.8			21.5		20.3		5.1	
	So. Type	2, 7, 8	(some not	shown)	1,2				4,5		2,7			4, 5, 12		2, 4, 7		2, 7, 9	
100	Constant for Type (Open som, reduild, recogner)	Open Arm	(plus three new	structures)	Open Arm				Rebuild		Open Arm	(plus two new	structures)	Rebuild	(plus one new structures)	Open Arm	(plus two new structures)	Open Arm	(plus one new structure)
	Tage of the control o	1			2				3		4			5		7		∞	

1 Structure Type refers to the existing or proposed transmission structure type located along each link. Figures of each structure type are presented in Exhibit 3.

Location (C. anty/Monte pality)	Summit (Twinsburg)	Summit (Macedonia, Northfield Center, Sagamore Hills)	Summit (Sagamore Hills)	Summit (Sagamore Hills) Cuyahoga (Walton Hills)	Cuyahoga (Walton Hills) Summit (Sagamore Hills, Northfield, Macedonia)	Summit (Macedonia) Cuyahoga (Oakwood, Glenwillow)
sing Sections (1)	150	150	200	200	185	170 – 200
Printing Friedrich	Chamberlin – Harding 345 kV	Chamberlin – Harding 345 kV	Juniper – Star 345 kV	Juniper – Star 345 kV	Eastlake – Juniper 345 kV	Eastlake – Juniper 345 kV
Table I. New Parth Vicini	2.3	4.5	1.4	0.8	3.9	4.9
	4, 6, 9	2, 8, 9	4	3,7	3,7	4, 5, 7, 10, 11, 13
Constitution of the consti	Open Arm (plus four new structures)	Open Arm (plus two new structures)	Rebuild	Open Arm (plus one new structure)	Re-energize (plus three new structures)	Rebuild (plus seven new structures)
fink Number	6	10	11	12	13	14

The general location of the Project is shown in Figure 1 and more detailed maps showing the transmission centerline and 2,000-foot corridor (i.e. 1,000 feet on each side of the centerline) are presented as Exhibit 1.

The Pennsylvania portion of the proposed transmission line begins at the Bruce Mansfield Substation in Shippingport Borough, Beaver County, Pennsylvania. Three new structures will be installed adjacent to the Bruce Mansfield Substation to support the transmission line. The route then traverses approximately 11 miles on the open arm of the existing Mansfield – Highland 345 kV Transmission Line structures through Shippingport, Industry, and Ohioville boroughs and South Beaver Township before reaching the Ohio border (Link 1).

The route of the Ohio portion of the transmission line proposed in this LON application continues from the Ohio border on the open arm of the existing Mansfield – Highland 345 kV Transmission Line structures in a northwesterly direction for approximately 31.5 miles through Middleton, Unity, and Fairfield townships in Columbiana County and Beaver, Green, Canfield, and Ellsworth townships in Mahoning County to a point west of Canfield, approximately 500 feet north of the intersection of Gault Road (Route 73) and North Palmyra Road (Link 2). The existing right-of-way ("ROW") through this section of the route is generally 180 feet wide so no new ROW is required.

From this point near Gault Road, the route continues generally northward through Ellsworth and Jackson townships in Mahoning County. In this area between Gault Road and just north of Kirk Road, there is a short (approximately 1.4-mile) segment of the existing Mansfield – Highland 345 kV Transmission Line where the existing line was installed as a single circuit transmission line and the open arm positions are not present. In this segment (Link 3), the proposed route rebuilds approximately 1.4 miles of the existing steel lattice Mansfield – Highland 345 kV Transmission Line structures with steel monopoles for double circuit operation to connect back to the available open arm position on the existing Mansfield – Highland structures north of Kirk Road. This

segment is located adjacent to the existing Sammis – Highland 345 kV Transmission Line and the existing ROW is generally 180 feet wide so no new ROW is required.

North of Kirk Road, the route continues northward for approximately 5.8 miles through Jackson Township within Mahoning County and the Village of Lordstown in Trumbull County on the open arm position on the existing Mansfield – Highland 345 kV Transmission Line structures (Link 4). Within this area, the existing conductors will be used as part of the new Bruce Mansfield – Glenwillow 345 kV Transmission Line; new conductors installed in the open-arm position will be utilized for the existing Bruce Mansfield – Highland 345 kV Transmission Line.

The existing ROW through this segment is generally 180 feet wide, as such no new ROW is required. Two new dead-end structures will be installed at this location to allow the new construction to pass over the existing Sammis – Highland 345 kV Transmission and the double circuit Niles – Bluebell/Bluebell – Highland 138 kV Transmission Lines, as demonstrated in the Highland Junction drawing (Exhibit 3, Figure 14). Immediately north of this location, the Bruce Mansfield – Highland 345 kV Transmission Line will reconnect to the existing conductors.

From Lordstown, the route turns southwest and then west, requiring the rebuilding of approximately 21.5 miles of the existing single circuit Hanna – Highland 345 kV Transmission Line as double circuit structures (Link 5) through Trumbull and Mahoning counties. This segment begins at the intersection of the existing Hanna – Highland and Mansfield – Highland 345 kV transmission lines and traverses in a westerly direction through Newton and Milton townships. The first structure in this link, a three wood pole structure, will be replaced with a self-supporting, double circuit dead-end structure and the remaining wood H-frame structures will be replaced with double circuit steel monopole structures (see Exhibit 3). After approximately 1.4 miles, the route heads west and continues for approximately 7 miles before heading south into Mahoning County for approximately 1 mile, paralleling the existing Milton (Newtown Falls) 69 kV Transmission Line. Next, the route heads generally west into and through Portage

County for nearly 11 miles, parallel to and north of Interstate 76, crossing Ohio State Route 14, before meeting with the existing Chamberlin – Mansfield 345 kV Transmission Line near Campbellsport Road in Rootstown Township. Throughout this 21.5-mile segment, the double circuit structures can be rebuilt entirely within the existing ROW, which is generally 150 feet wide throughout this segment. At the junction with the existing Chamberlin – Bruce Mansfield 345 kV Transmission Line (Hanna Junction), new structures will be installed to locate the circuit to Glenwillow on the open arm side of the towers for the Chamberlin to Bruce Mansfield line (see Exhibit 3, Figure 15).

At the Hanna Junction, the line will be constructed for approximately 20.3 miles on towers of the existing Chamberlin – Mansfield 345 kV Transmission Line in Portage County (Link 7). From its joining with this open arm near the intersection of Campbellsport Road and Hattrick Road, the route travels first north for approximately 10.3 miles through Ravenna and Shalersville townships. Near Shalersville, the route turns west for another 10 miles through the cities of Streetsboro and Aurora. Near the end of this segment, the route traverses approximately 0.5 miles of Tinkers Creek State Park. The ROW through this entire 20.3-mile segment is generally 150 feet wide, so no new ROW is required for this Link.

The route then traverses west into Summit County, continuing to use the existing Chamberlin – Bruce Mansfield 345 kV Transmission Line for another 5.1 miles through the City and Township of Twinsburg to the Chamberlin Junction located south of FirstEnergy Corp.'s existing Chamberlin Substation (Link 8). Three new monopole structures will be required to transition the lines at the Chamberlin Junction (see Exhibit 3, Figure 16).

The route continues west and northwest for 2.3 miles through Twinsburg, using the corridor of the existing Chamberlin – Harding 345 kV Transmission Line (Link 9). The existing ROW through these segments is generally 150 feet wide, so no new ROW is

required.² For approximately the first three miles west of Chamberlin Junction, the existing towers are monopole (single pole) structures. In this area, new arms will need to be installed on tangent³ and small angle structures, and new guyed towers will need to be installed for larger angle structures.

Next, the route breaks west through Twinsburg and Northfield Center and then northwest for approximately 4.5 miles through Sagamore Hills, continuing to use the available open arm position on the existing Chamberlin – Harding 345 kV Transmission Line structures (Link 10). The existing towers for the first approximately 0.9 miles of Link 10 are monopole structures. Approximately 0.25 miles after Link 10 crosses State Route 8, the existing towers are steel lattice structures for the remainder of Link 10.

Where the line intersects the existing Juniper – Star 345 kV Transmission Line (Juniper/Star Junction) in the vicinity of Carter Road and Nesbitt Road in Sagamore Hills, two new structures will be required (Link 11). These structures will be used to transition the circuits through the junction to maintain appropriate clearances and stay within the existing ROW limits (see Exhibit 3, Figure 17). North of the Juniper/Star Junction, the route requires rebuilding approximately 1.4 miles of the existing Juniper – Star 345 kV Transmission Line steel lattice towers with steel monopoles for double circuit operation, before connecting with a 0.8-mile section of available open arm of the Juniper – Star 345 kV Transmission Line in the Walton Hills area in Cuyahoga County (Link 12). The ROW in these sections is generally 200 feet wide, so no new ROW is required for either of these segments. The rebuild section can be constructed entirely within ATSI's existing transmission ROW for the Juniper – Star 345 kV Transmission Line.

² A portion of the open arm installation route proposed in Links 7 and 8 was to be used for the Chamberlin – Shalersville Transmission Line Supply Project that was proposed to and approved by the Board in Docket No. 08-0123-EL-BTX. Installation of the Chamberlin – Shalersville Transmission Line Supply Project has not commenced and the proposed installation of the Bruce Mansfield – Glenwillow 345 kV Transmission Line would supersede its installation.

³ Tangent structures refer to structures that support conductors traversing in a straight direction. Angled structures refer to structures that support conductors that must change direction.

The open arm segment heads to a point north of Alexander Road adjacent to the Juniper Substation. Near the substation, the route then connects to the existing Eastlake – Juniper 345 kV Transmission Line structures, which carry two 345 kV circuits—one of which is currently de-energized (see Exhibit 3, Figure 18). The unused circuit will be energized, allowing the route to traverse southeast for approximately 3.9 miles through Walton Hills and back again through Sagamore Hills, the Village of Northfield, and Macedonia, crossing Ohio State Route 8 and Interstate 271, and requires no new infrastructure or ROW. The existing ROW along this link is generally 185 feet wide, as such no new ROW is required; construction will only be required at the end points. On the Juniper property, ATSI anticipates that two self-supporting steel pole dead-end structures will be installed to allow the Bruce Mansfield – Glenwillow 345 kV Transmission Line to cross over the existing Hanna – Juniper 345 kV Transmission Line. At the east end of the deenergized segment, ATSI anticipates that two existing guyed wood pole structures will be replaced with self-supporting steel monopoles.

Once the route crosses back over Ohio State Route 8 (Northfield Road) and Interstate 271, the available, currently de-energized line ends, and the route turns north and then east for approximately 4.9 miles through the heavily developed areas of Macedonia, Oakwood, and Glenwillow to the proposed Glenwillow Switching Station, which is located in the Village of Glenwillow, Cuyahoga County (Link 14). This section of the route will involve rebuilding the existing Eastlake – Juniper 345 kV Transmission Line single circuit structures in order to construct the Project through this congested area to reach the Glenwillow Transmission Switching Substation site. The rebuild will involve replacing the existing steel lattice transmission towers with steel monopoles capable of accommodating two 345 kV circuits. This rebuild of existing infrastructure is expected to be constructed entirely within ATSI's existing transmission ROW for the Juniper – Star 345 kV Transmission Line, which ranges from 170 to 200 feet wide along this link.

Approximately 390 feet of the existing Eastlake – Juniper 345 kV Transmission Line and approximately 315 feet of the existing Inland – Perry 345 kV Transmission Line will be rerouted into the new Glenwillow Transmission Switching Substation. Each circuit will

terminate on separate deadend structures into the new substation (see Exhibit 1, Figure 22 and 26). Any potential impacts associated with the 345 kV realignments are accounted for in discussions of the overall Project and any impacts specific to Link 14 are described in this LON.

As proposed and described in this LON, the proposed Project can be constructed entirely within ATSI's existing transmission ROW through a combination of using "open arm" positions on existing transmission line structures, re-energizing an existing but inactive 345 kV circuit, and rebuilding existing single circuit transmission structures to accommodate a second circuit. Approximately 72 percent of the route in Ohio will either involve use of open arm positions on existing transmission line structures or re-energizing an inactive 345 kV circuit. The remaining 28 percent will involve rebuilding existing transmission structures to accommodate a second circuit.

Specifically, construction of the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line Project in Ohio involves the installation of an approximately 103.6-mile-long 345 kV overhead electric transmission line. Approximately 70.4 miles of the Project will be installed on existing steel lattice towers in ATSI's ROW by utilizing the available open arm position on the existing Mansfield – Highland, Chamberlin – Harding, and Chamberlin – Mansfield 345 kV transmission lines. Approximately 3.9 miles of the Project will utilize a de-energized 345 kV circuit on the Eastlake – Juniper 345 kV Transmission Line. The remaining 29.3-mile portion of the Project will be constructed within existing transmission ROWs by rebuilding portions of the existing Mansfield – Highland, Hanna – Highland, Juniper – Star, and Eastlake – Juniper 345 kV transmission lines to accommodate a second circuit. The proposed route for the Project individual open arm, rebuilt, and re-energized segments of the proposed Project are shown in Figure 1 and Exhibit 1.

The existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines presently traverse the northern portion of the preferred Glenwillow Transmission Switching Substation Site. East of the existing Longfield 138 kV Substation, which borders the

preferred Glenwillow Substation Site to the north, two new deadend structures will be installed to support the approximately 390-foot and 315-foot long looped extensions of the existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line to the Glenwillow Substation.

4906-11-01(B)(1)c: Why the Project Meets the Requirements for a Letter of Notification

The Project meets the requirements for a Letter of Notification because the Project is within the types of project defined by Items (1)(g), (2)(b), and (4)(a) of Attachment A of the Boards interim process defined in the Boards September 4, 2012 Finding and Order in Docket 12-1981-GE-BRO. These items state:

- (1) Rerouting or extension or new construction of single or multiple circuit electric power transmission line(s) as follows:
 - (b) Line(s) three hundred kV and above, and greater than 0.1 mile but not greater than two miles in length.
 - (g) Line(s) that are necessary to maintain reliable electric service as a result of the retirement or shutdown of an electric generating facility located within the state.
- (2) Adding additional circuits on existing structures designed for multiple circuit use:
 - (b) New permanent access roads or structure replacement or widened right-ofway required.
- (4) Replacing electric power transmission line structure(s) with a different type of structure(s) or adding structure(s) within an existing electric power transmission line and:

(a) Two miles or less of new right-of-way required.

The proposed project consists of the following:

1. Approximately 70.4 miles of the proposed Project will be constructed by installing conductors on the open arm position of existing transmission line

structures;

2. Approximately 3.9 miles of the proposed Project will involve re-energizing an

existing circuit designed and constructed for 345 kV operation;

3. Approximately 29.3 miles of the Project will involve replacement of existing

single circuit 345 kV structures with double circuit 345 kV structures in

existing right-of-way. The existing 345 kV circuit will not be changed, and

the voltage of the new circuit (345 kV) will not increase over the voltage of

the single circuit currently in use on this portion of the line;

4. Less than two miles of new or widened right-of-way will be required for the

Project; and

5. Less than two miles of new 345 kV lines will be constructed as part of the

Eastlake - Juniper and Inland - Perry looped extensions into the new

Glenwillow Substation.

4906-11-01(B)(2): Need for the Project

ATSI's 345 kV and 138 kV transmission system in the greater Cleveland metropolitan

area (the "Project Area" and the "Project Area Transmission System") currently face

significant operating limitations including capacity shortage, the exceedance of thermal

ratings constraints⁴ and low voltage. The ability to import power into the Cleveland area

has historically been limited by low voltage concerns. Deactivation of generation in and

around Cleveland will significantly increase these voltage limitations. This Project, in

⁴ Exceeding thermal ratings results in wires overheating to the point that the electric system is damaged.

conjunction with others identified and directed by PJM Interconnection ("PJM"), is designed to correct these operating limitations and to ensure reliable energy delivery in the Project Area.

The Project Area Transmission System has been evaluated using the PJM 2013 and 2015 Load Forecasts from the forecast report dated January 26, 2012. The evaluations demonstrate that the Project Area Transmission System will experience potential voltage collapse and thermal overload violations – and other operating problems under various planning scenarios for multiple contingency conditions (i.e. the loss of two or more facilities) – when the generation units that have announced planned retirement dates are deactivated. The area load will exceed the delivery capacity available under contingency conditions in the existing Project Area Transmission System as soon as 2012 (as the generation deactivations occur) and may be susceptible to a local voltage collapse during multiple contingency conditions. The outage combination of greatest concern is the loss of the single largest remaining generating unit in the Project Area (Perry Nuclear Power Plant) combined with an outage of one of several 345 kV lines into the Cleveland area.

Construction of the Project along with several other projects identified and directed by PJM will provide a new, reliable electric supply to the Project Area Transmission System and thereby correct the inadequate capacity in the area. PJM has considered this Project as part of its continuing review of the transmission system within the ATSI footprint. The Transmission Expansion Advisory Committee ("TEAC") Recommendations to the PJM Board, PJM Staff Whitepaper (see Exhibit 2)⁵ contains additional information regarding the need for this project and other projects within the ATSI footprint, as directed by PJM. Moreover, the additional capacity provided to the Project Area from this project – when considered in conjunction with the other PJM identified projects – will support forecasted load growth and interconnection of potential new large customers or loads.

⁵ Available at http://www.pjm.com/committees-and-groups/committees/teac.aspx, May 2012, and included as Exhibit 2.

The retirement of the majority of Cleveland Area coal-fired generating plants means that the Project Area Transmission System must import more power from outside the local load center, and rely on some retired units being converted from generating units to synchronous condensers, to maintain voltage stability. Much of the power being imported into the Project Area Transmission System moves through the ATSI tie-line facilities that are connected to the neighboring utilities. These tie-line facilities have import capacity limitations; imports that exceed these limitations could result in thermal overloads on these neighboring facilities as well as ATSI facilities between the tie lines and the Project Area being served. Additionally, with increased thermal loading on the transmission lines that move power into the Project Area, there are increased power losses. The power losses also contribute to a reduction in voltage stability in the Project Area as power is consumed by the transmission system.

Both the retirement of generation as well as the load growth experienced in the area contributes to the need for this Project. The core issue is that unless a new supply of electric energy is brought into the area, the existing Project Area Transmission System is unlikely to be able to support a reliable electric system capable of delivering needed electricity to Project Area businesses, homes and communities and no additional capacity will be available for new homes or businesses in the area.

Because the Project Area Transmission System is approaching its operating limits, in order to accommodate electric contingencies – as well as new load (i.e. homes, businesses, and industrial facilities) that come on-line prior to the completion of the Project – operating procedures will be put into place on affected circuits in the area. Operating procedures may include manual load reductions (forced outages) in the Project Area should they be required as voltage in the Project Area collapses. This may be necessary to ensure the reliable operation of the transmission system as it relates to acceptable voltage levels. To minimize the potential for these operating procedures and manual load reductions, ATSI is planning on completing this Project prior to all the generation retirement taking effect.

The Bruce Mansfield – Glenwillow 345 kV Transmission Line and the Eastlake – Juniper and Inland – Perry 345 kV Transmission Line Extensions to the Glenwillow Transmission Switching Substation Project are needed to support recent and future increases in electric load and maintain voltage levels in the greater Cleveland area. Specifically, these projects are intended to reinforce the interconnected transmission system following the announced retirement of coal-fired power plants in the ATSI territory located in both Ohio and Pennsylvania that will occur by 2015. Additionally, there are other projects identified by PJM and FirstEnergy that are also needed to ensure compliance with North American Electric Reliability Corporation ("NERC") planning criteria for the 345 and 138 kV transmission systems, PJM planning criteria⁶ and the FirstEnergy transmission planning criteria as evaluated through the PJM Planning process. Ultimately, the projects are needed to ensure continued provision of safe and reliable electric service in the Project Area.

The proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line will add an additional path for energy flows into the Project Area from an area with additional generation resources. This pathway for the increased importation of power into the Project Area will provide the following benefits to the Project Area Transmission System:

- 1. Increase the import capability into the Project Area
- 2. Make the area more reliable under contingency conditions
- 3. Decrease flows on existing infrastructure
- 4. Reduce power losses on transmission lines moving power into the Project Area
- 5. Increase voltage stability in the Project Area.

Completion of this Project in addition to the others identified in the PJM Whitepaper dated May 2012 (see Exhibit 2) and other projects identified and directed by PJM through the RTEP process will resolve planning criteria violations on the Project Area

American Transmission Systems, Incorporated A FirstEnergy Company

⁶ PJM's planning criteria utilizes the most stringent of the applicable NERC, PJM or local (transmission owner) criteria. PJM Manual 14-B, page 20.

Transmission System for the years studied thus far by PJM. ATSI has determined that bringing the Project on-line will not adversely impact any of ATSI's other existing transmission facilities, or the transmission facilities and equipment of neighboring utilities. Overall performance on the Project Area Transmission System will be improved significantly as a result of the construction of the Project and other proposed improvements. Thermal overages, capacity limitations and voltage violations will be corrected by this Project, allowing ATSI to continue to provide safe, efficient and reliable electricity to its customers.

4906-11-01(B)(3): Location Relative to Existing or Proposed Lines

The location of the Project relative to existing or proposed transmission lines is described in reference to the FirstEnergy System Facilities map, included as the last page of Chapter 3 of the confidential portion of the FirstEnergy Corp. 2012 Long-Term Forecast Report, submitted to the Public Utility Commission of Ohio ("PUCO") in Case No. 12-0504-EL-FOR under rules 4901:5-5:04(C) of the Ohio Administrative Code. This map shows ATSI's 345 kV and 138 kV existing transmission lines and transmission substations and does not depict the proposed location of the Project. In reference to the map, the proposed Project enters the map into Columbiana County approximately 21/8 inches (11 by 17 inch printed version) from the left edge of the map box and 5% inches (11 by 17 inch printed version) from the top of the map box. The Project continues generally to the northwest following existing transmission lines until it reaches the Glenwillow, Ohio area within Cuyahoga County. This location is approximately 51/4 inches (11 by 17 inch printed version) from the left edge of the map box and 31/4 inches (11 by 17 inch printed version) from the top of the map box. The general location of the Project is shown in this LON as Figure 1. Maps showing the general layout of the Project are included in Exhibit 1.

4906-11-01(B)(4): Alternatives Considered

Analysis of Transmission Alternatives

ATSI and PJM surveyed a range of options and performed extensive analysis on those options that were both short-term solutions and longer-term solutions for the applicable area. Initial analysis established that completion of multiple projects are needed in order to resolve all of the capacity and voltage planning criteria violations on the 345 kV and 138 kV Systems. Moreover, there was not one transmission alternative which resolved these issues completely; rather it required a combination of several projects in order to meet the necessary results. Options analyzed include:

- 1. Beaver Valley Leroy Center #1 and Mansfield Leroy Center #1 345 kV lines
- 2. Beaver Valley Leroy Center #2 and Mansfield Leroy Center #2 345 kV lines
- 3. Star Juniper #2 345 kV line
- 4. Cabot Ashtabula 500 kV line

None of these projects could be completed within the necessary time frame to ensure reliability. Furthermore, these options would result in additional cost and greater environmental and social impacts. As such, these alternatives were rejected.

Analysis of Non-Transmission Alternatives

Two different types of non-transmission alternatives were considered: (i) energy efficiency alternatives and (ii) demand-side management alternatives. As explained in the following paragraphs, although certain features of each non-transmission alternative were attractive, no single non-transmission alternative resolved all of the capacity, thermal and voltage violations on the Transmission Systems. Accordingly, the non-transmission alternatives were rejected.

Energy Efficiency

Conservation and energy efficiency programs involve actions taken on the customer side of the meter that reduce the customers' overall energy requirements energy efficiency.

Energy efficiency actions focus on using energy more efficiently without sacrificing customer comfort or convenience. These actions usually involve installing more efficient equipment or changing processes to conserve energy. Energy efficiency and conservation programs usually provide financial incentives for customers to purchase and install energy efficient equipment and/or educate consumers on the efficient use of energy. Energy efficiency also requires customer cooperation – a utility cannot force customers to participate in energy efficiency programs. The reduction in peak load would be less than what is necessary to relieve the capacity problems on the 345 kV and 138 kV system. Further, conservation and energy efficiency programs will not provide the transmission infrastructure that is needed throughout Cleveland area. A new transmission line and substation, similar to the proposed Project, along with other projects identified by PJM in their analysis would remain needed to solve the capacity constraint. Accordingly, this option was rejected.

Demand-Side Management

Demand-Side Management ("DSM") programs generally involve actions taken on the customer side of the meter that have the intention and effect of reducing the customers' requirements during peak times. DSM programs typically involve utility incentives that are provided to consumers in exchange for reduction or curtailment of customer load at specific times (usually system peak times, but also can be used to address locational peak times). Load management and demand response incentives are most often provided and renewed on an annual basis. Further, DSM also requires customer cooperation — a utility cannot force customers to participate in DSM programs. DSM will not provide the needed transmission infrastructure needed in the Cleveland area. This would leave the Cleveland area capacity constrained. A new transmission line and substation, similar to the proposed Project, along with other projects identified by PJM in their analysis would remain needed to solve the capacity constraint.

New Generation

Placing a new utility grade generation source such as a power plant in the Project Area would generally help capacity issues in the Project Area. However, new generation will

not provide relief unless it is located within the Cleveland area near where existing generation—which is being retired—is located. Locating it within the ATSI zone of PJM will not provide relief unless additional transmission infrastructure is constructed to provide relief to the constraints in the greater Cleveland area. A new transmission line and substation, similar to the proposed Project would remain needed to solve the capacity constraint. Accordingly, this option is not feasible.

Further, ATSI does not build or own generation and can only plan for transmission. In 2001, the State of Ohio made a policy decision to deregulate electric utilities. Through this deregulation, the State of Ohio mandated that transmission and generation must remain in legally separate and independent companies. As such, ATSI does not build or own generation and can only plan for transmission.

Transmission Analysis Results

The Project was selected because it is the most efficient path to resolve a portion of the capacity and voltage problems that exist on the 345 kV and 138 kV Systems in the Project Area. As noted herein, all of the other transmission and non-transmission alternatives either would not resolve all of the capacity and voltage problems or, if all such problems would be resolved, the alternatives would: (i) cost more money; (ii) have greater environmental and social impacts; or (iii) cost more money and have greater environmental and social impacts.

The Project—in conjunction with others identified by PJM in their analysis—also brings additional benefits to resolving the existing voltage and capacity problems on the 345 kV and 138 kV and 69 kV Systems. Specifically, construction of the Project will provide operating flexibility to survive conditions that are more severe than the N-1 conditions that underlie the Applicant's planning criteria. Moreover, construction of the Project adds another source of power to the Project Area affording greater flexibility for future load growth and system maintenance. Finally, the addition of the Project provides the additional operational benefits that accrue by adding another power source from the eastern side of the Project Area, ensuring that the businesses, homes, and communities in

the greater Cleveland metropolitan area will have ready access to safe and reliability energy for many years to come.

Alternative Transmission Routes Considered

ATSI and its routing and permitting consultant, the Louis Berger Group, Inc. ("LBG"), conducted a Route Selection Study to identify and evaluate potential routes for the Bruce Mansfield – Glenwillow 345 kV Transmission Line and ultimately establish a Preferred and Alternate Route. Using established routing guidelines, the Routing Team identified constraints and opportunity features within the Study Area that would minimize impacts to the natural and human environment and take advantage of existing corridors to the extent feasible. The objective of the study was to identify routes that minimize the overall impacts to the community and the environment, while taking into account the engineering and construction needs of the Project.

The Potential Route identification effort initially resulted in a network of approximately 60 potential links that could be considered to route the new line from the Bruce Mansfield Substation to the Glenwillow Switching Station. Several Potential Routes were developed that would use available open arm positions on existing transmission lines, parallel existing transmission, or rebuild existing transmission. In areas without feasible corridor sharing opportunities, Potential Routes were developed that would involve acquiring new ROW. After the initial Potential Routes were identified, key members of the Routing Team conducted field inspections of the routes in February and March 2012. These inspections involved the visual examination of the potential and alternative routes from road crossings and other points of public access to identify residences, outbuildings, commercial buildings, and other potentially sensitive receptors (e.g., cemeteries, churches, schools).

Two significant lengths of open arm transmission structures were identified within the Study Area. In the southern portion of the Study Area, the existing Mansfield – Highland 345 kV Transmission Line provides 37.3 miles of available open arm between the Ohio border and the intersection with the Bluebell – Highland 138 kV Transmission Line (as described throughout this LON as Link 2). In the northern portion of the Study Area, the

existing Chamberlain – Mansfield 345 kV Transmission Line provides 25.4 miles of available open arm between Ravenna and a point just east of the Summit County and Portage County border (as described throughout this LON as Link 7). Based on the field reconnaissance, the Routing Team eliminated or modified several links and ultimately developed Potential Routes that would connect these two segments of open arm. Potential Routes were also developed to connect the end of the Chamberlain – Mansfield open arm segment to the proposed Glenwillow Transmission Switching Substation.

The Potential Route Links were presented to the public for comment during four open house meetings in Ohio in June 2012. Following the public input process, the Routing Team conducted additional field reconnaissance to review comments collected at the public meetings and finalize routing decisions. This iterative process resulted in the identification of the route proposed in this LON and one potentially viable Alternate Route. The Alternate Route would use the two significant open arm segments (Links 2 and 7) in conjunction with rebuilding 12.8 miles of existing 345 kV transmission line for single circuit operation and acquiring 23.2 miles of new ROW through Mahoning and Portage counties.

The Route Selection Study demonstrated that the installation of the transmission line along the open arm position of existing structures is preferable to any other Potential Route that could be used instead of these segments (i.e. Links 2 and 7). In addition, the Routing Team identified an approximately 4.9-mile section of the existing Eastlake – Juniper 345 kV Transmission Line through the heavily congested Macedonia and Glenwillow areas that could be rebuilt as a double circuit line (Link 14), providing one of the few opportunities to construct a new line through these areas to connect to the Glenwillow Transmission Switching Substation that would require no new ROW. Rebuilding a portion of this existing transmission line is preferable to the construction of any potential new routes through the Twinsburg, Macedonia, and Glenwillow areas. The use of these open arm and rebuild construction option minimizes ecological and land use impacts since the existing ROW and structures can be used for a significant part of the Project.

Installation of the new transmission line on the available open arm position and rebuilding this short segment of transmission line will minimize impacts on the natural and human environment, be less disruptive to the public, and eliminate the labor, costs, and public concern associated with identifying and requesting consideration of an alternate route that would clearly not be expected to be selected for construction under route selection study practices or applicable Board rules and practices.

4906-11-01(B)(5): Construction Schedule

Construction on the Project is expected to begin on as early as approximately February 1, 2013, and is expected to be completed and placed in-service by June 1, 2015.

4906-11-01(B)(6): Area Map

Project Maps

Project Area maps are included in Figure 1 and Exhibit 1. Figure 1 is a single map depicting the general location of the Project. Exhibit 1 is a series of 26 maps showing the Proposed Route in more detail, starting at the Ohio-Pennsylvania border in Middleton Township, Columbiana County and ending at the site of the proposed Preferred Site of the Glenwillow Transmission Switching Substation in the Village of Glenwillow, Cuyahoga County.

Directions to the Project Area

To locate the Project site starting from the Columbus, Ohio area, travel north on I-71 for approximately 111 miles. Take exit 220 to merge onto I-271 N toward Erie, Pennsylvania. Continue on I-271 N for approximately 23 miles then take exit 23 to merge onto OH-14 W/Fairoaks Road toward Broadway Avenue/Forbes Road. After approximately 0.4 miles, turn right onto Broadway Avenue. After approximately 1.2 miles turn left onto Pettibone Road. Finally, turn left after approximately 1.8 miles onto Cochran Road. Continue on Cochran Road for approximately 0.6 miles. The proposed Preferred Site of the Glenwillow Transmission Switching Substation site is located on the right on the northeast side of Cochran Road and its intersection with Austin Powder

Drive. The proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line terminates at the proposed Glenwillow Transmission Switching Substation.

To reach the approximate Project midpoint from the Glenwillow Transmission Switching Substation, head southeast on Cochran Road toward Emerald Valley Parkway for approximately 0.4 miles. Turn left onto Pettibone Road and continue for approximately 1.4 miles before turning right onto Som Center Road. Continue on Som Center Road for approximately 0.6 miles and take a right onto Darrow Road. After 2.5 miles, turn right onto Aurora Road. Continue on Aurora Road for approximately 0.6 miles and then merge left onto I-480/OH-14 East. Travel on I-480 for approximately 6 miles then take Exit 42 to merge onto I-80 East toward Youngstown. Continue on I-80 for approximately 28 miles then take Exit 215 toward Lordstown. After approximately 0.7 miles, turn left onto Ellsworth Baily Road. Continue for approximately 1.1 miles and take the second right onto Salt Spring Road. Travel for approximately 2.6 miles and the Bruce Mansfield – Glenwillow 345 kV Transmission Line will be on your right. In this area heading west the route will involve rebuilding the existing Hanna - Highland 345 kV Transmission Line for single circuit operation. Heading south involves a combination of rebuilding and using the available open arm position on the Mansfield – Highland 345 kV Transmission Line.

To locate the Project endpoint in Ohio from the approximate midpoint, head west on Salt Spring Road for approximately 1.1 miles. Take the third left onto Tod Avenue Southwest. Continue on Tod Avenue for approximately 1.5 miles then turn right onto Hallock Young Road. After approximately 0.6 miles, turn left and take the ramp onto I-80 East. Travel on I-80 for approximately 2.1 miles then continue onto the Ohio Turnpike (I-76 East). Travel on I-76 for approximately 14 miles then take Exit 232 to merge onto OH-7 South/North Main Street South. Continue to follow OH-7 South for approximately 12.9 miles then turn left onto OH-154 East/Walnut Street. After approximately 4.6 miles, turn right onto OH-170 South/Jackson Street. Continue on OH-170 South for approximately 2.9 miles then turn left onto Pancake Clarkson Road. After approximately 2.4 miles, the road will intersect the Bruce Mansfield – Glenwillow 345

kV Transmission Line. From the Pennsylvania-Ohio border, the route utilizes the open

arm position on the Mansfield - Highland 345 kV Transmission Line and heads in a

northwesterly direction.

4906-11-01(B)(7): Property Owner List

The entire Project will be constructed on existing ROW easements, fee owned property

owned by ATSI, Ohio Edison, or The Cleveland Electric Illuminating Company—all

FirstEnergy Corp. subsidiaries—and property being acquired by ATSI for the Preferred

Site of the Glenwillow Substation. No new easements or ROW will need to be acquired.

A list of properties with existing easements is provided in Exhibit 4. Based upon a

review of 592 existing easements, two easements include specific language regarding

transmission structure types that do not conform to ATSI's uniform construction

standards. Although ATSI does not require any new ROW width in these areas, ATSI is

in the process of contacting the three involved property owners to modify both easements

to conform to modern engineering and construction standards. Should these easements

remain unaltered, ATSI can construct under the current easement conditions.

The following is the property information for the two easements which will be modified,

if possible, prior to constructing the Project:

3668 State Route 534

Newton Falls, OH 44444

4889 SR 14

Ravenna, OH 44266

4906-11-01(C): Technical Features of the Project

4906-11-01(C)(1): Operating Characteristics

The Project will be designed and constructed for 345 kV operation. The proposed Bruce

Mansfield - Glenwillow 345 kV Transmission Line and the looped extensions of the

existing Eastlake – Juniper and Inland – Perry 345 kV Transmission Line have the following characteristics:

Voltage:

345 kV

Conductor:

Bundled (two conductors per phase) 954 kcmil 48/7 ACSR

Static Wire:

7 Number 8 Alumoweld Shield Wire

Insulators:

Porcelain or Glass

Structure types:

Figure 1. Open Arm Installation on Existing Steel Lattice Two

Conductor Arm Tower

Figure 2. Open Arm Installation on Existing Steel Lattice Three

Conductor Arm Tower

Figure 3. Open Arm Installation on Existing Steel Lattice Three

Conductor Arm Tower (V-String)

Figure 4. New Double Circuit Steel Pole to Replace Existing

Single Circuit Structure

Figure 5. New Double Circuit Steel Pole Deadend to Replace

Existing Deadend Structure

Figure 6. New Steel Pole for Two Pole Guyed Structure

Figure 7. New Single Circuit Steel Pole Deadend Structure

Figure 8. New Single Circuit Steel Pole Tangent/Light Angle

Structure

Figure 9. New Double Circuit Steel 2-Pole Horizontal

Tangent/Vertical Deadend Structure

Figure 10 New Double Circuit Steel 3-Pole Deadend to Replace

Existing Dead-end Structure

Figure 11. New Double Circuit Steel 2-Pole Horizontal Deadend

Structure

Figure 12. New Double Circuit Steel Pole Vertical Deadend

Structure

Figure 13. New Single Circuit Steel 2-Pole Horizontal Deadend

Schematic drawings of each proposed structure type are included in Exhibit 3. The proposed Project will be located within the existing ROW of several ATSI-owned transmission lines, as identified in Table 1. No new ROW will be required for this Project. ATSI is in the process of re-negotiating two existing easements to accommodate the Project. No increase in ROW width is required in any of these locations.

Exhibit 3 also includes drawings of the following transmission junctions:

Figure 14. Highland Junction

Figure 15. Hanna Junction

Figure 16. Chamberlin Junction

Figure 17. Juniper/Star Junction

Figure 18 Juniper Substation

Figure 19. Eastlake Juniper Near Structure 10024

Figure 20. Eastlake Juniper Near Structure 12227

4906-11-01(C)(2)(a): Calculated Electric and Magnetic Fields

The following calculations provide an approximation of the magnetic and electric fields strengths of the new 345 kV transmission line. The calculations provide an approximation of the electric and magnetic field levels based on specific assumptions utilizing the Electric Power Research Institute ("EPRI") EMF Workstation 2009 program software.

Factors that affect the level of magnetic and electric fields include variance in the ROW widths, daily and projected long-term transmission—line loading, operating voltage, contingency operations, phase configuration, direction of current flows, conductor sag, ground elevation, unbalance conditions, and other nearby magnetic field sources or conductors of neutral current including water mains, metallic fences, and railroad tracks. Electric field computations assume that shrubs, trees, buildings, and other objects are not in close proximity to the facilities, as they produce significant shielding effects. Other transmission or distribution facilities in the vicinity of the line will also affect the calculated fields. For example, a double circuit loop configuration, with current flows in

opposite directions, results in a partial reduction (cancellation) of the magnetic field levels. The model and calculations include a number of assumptions. Current flows are assumed in the direction expected under normal system operating conditions. The location of transmission line poles, attached conductors and static wire, and line phasing are based on preliminary engineering layouts. Finally, the calculated field levels assume a reference point approximately 3 feet (1 meter) above ground.

Three loading conditions were modeled at nineteen (19) different sections of the proposed transmission line. The three loading conditions represent: (1) normal maximum loading; (2) emergency line loading; and (3) winter normal conductor rating. The normal maximum loading represents the routine maximum load at which the transmission line will be operated. Daily current load levels will fluctuate below this level. The emergency maximum loading represents the maximum current flow in the transmission line under unusual circumstances and only for a short period of time. The winter normal conductor rating represents the maximum current flow that the conductor used on the project can withstand during winter conditions. It is not anticipated that the transmission line will be operated at the winter normal conductor rating level of current flow.

The transmission line loadings used in the calculations are presented in Table 2. The model of the 345 kV transmission line was based on typical transmission line corridor ROW widths and with 19 different transmission line configurations for the proposed Project.

Line Name		Emergence	Winter
Bruce Mansfield – Glenwillow 345 kV	Amps 981	Amps 1157	Rating Amps 2955
Mansfield – Highland 345 kV	902	1158	2955
Cedar Street Columbiana 69 kV (Y-52)	148	254	795
Sammis – Lowellville 138 kV	563	596	795

Table 2: Transmission Line Loa	dings Used f	or EMF Calc	ulations
Line Name	30000000 00000000000000000000000000000	Emergency Loading Amps	Winter Rating Amps
Sammis – Boardman 138 kV	330	367	1320
Sammis – Highland 345 kV	938	1165	2955
Niles – Bluebell 138 kV	29	106	764
Bluebell – Highland 138 kV	105	145	764
Hanna – Highland 345 kV	630	880	1701
Milton (Newton Falls) 69 kV	103	149	427
Chamberlin – Bruce Mansfield 345 kV	1109	1572	2955
Hanna – Shalersville 138 kV	455	498	1295
Hanna – Juniper 345 kV (S-27)	1278	1562	2955
Chamberlin – Hudson Muni East 138 kV	189	371	950
Chamberlin – Harding 345 kV (S-21)	681	908	2955
Chamberlin – Macedonia 69 kV	284	382	950
Avon – Juniper 345 kV (S-7)	64	138	2955
Juniper – Star 345 kV (S-26)	973	1231	2955
Hanna – Juniper 345 kV (S-27)	1278	1562	2955
Eastlake – Juniper 345 kV (S-7)	200	513	2955
Perry – Harding 345 kV (S-6)	142	225	2955
Perry – Inland 345 kV (S-5)	223	538	2955
Eastlake – Mayfield 138 kV (Q2)	135	243	1320
Mayfield – Northfield 138 kV (Q1)	289	359	1295
Mayfield – Northfield 138 kV (Q3)	289	359	1295
Glenwillow – Inland 345 kV	771	910	2955
Bruce Mansfield - Glenwillow 345 kV	989	997	2955
Glenwillow – Juniper 345 kV	228	822	2955
Eastlake – Glenwillow 345 kV	216	287	2955
Glenwillow – Perry 345 kV	213	296	2955

The calculated electric and magnetic fields are shown in Table 3.

	Paule,3.	EMP Calculatio	200000000000000000000000000000000000000	
Transmission Unes		alculations		Magnetie Field mGauss
	Normal	Under Lowest Conductors	2.503	58.69
	Loading	At ROW Edges	0.853/0.85	36.06/37.25
Bruce Mansfield – Glenwillow 345 kV	Emergency	Under Lowest Conductors	2.503	69.08
Mansfield – Highland 345 kV	Loading	At ROW Edges	0.853/0.85	45.50/44.41
	Winter	Under Lowest Conductors	2.503	176.44
	Rating	At ROW Edges	0.853/0.85	116.00/113.41
Bruce Mansfield – Glenwillow 345 kV	Normal Loading	Under Lowest Conductors	4.13	95.68
Mansfield – Highland 345 kV	_	At ROW Edges	0.25/0.70	15.20/46.00
Cedar Street Columbiana 69 kV (Y-52)	Emergency Loading	Under Lowest Conductors	4.13	117.01
Sammis – Lowellville 138 kV		At ROW Edges	0.25/0.70	15.5/56.25
Sammis - Boardman 138 kV	Winter Rating	Under Lowest Conductors	4.13	300.39
		At ROW Edges	0.25/0.70	75.1/140
	Normal	Under Lowest Conductors	4.06	137.66
D 14 5.11	Loading	At ROW Edges	1.95/0.51	57.00/53.95
Bruce Mansfield – Glenwillow 345 kV	Emergency	Under Lowest Conductors	4.06	170.98
Mansfield – Highland 345 kV	Loading	At ROW Edges	0.51/1.95	71.00/65.67
Sammis – Highland 345 kV	Winter Rating	Under Lowest Conductors	4.06	434.07
		At Right-Of- Way Edges	0.51/1.95	185.00/167.56
Bruce Mansfield – Glenwillow 345 kV	Normal	Under Lowest Conductors	4.26	134.16
Mansfield – Highland 345 kV	Loading	At ROW Edges	1.52/0.75	46.45/51.00

	Table 3.	EMF Calculation	ns		
Transmission Lines	EMF C	alculations	Electric Field kV/mete	Magnetic Field	
Sammis – Highland 345 kV	Emergency	Under Lowest Conductors	4.26	166.81	
	Loading	At ROW Edges	0.75/1.52	57.63/62.50	
		Under Lowest Conductors	4.26	423.40	
	Winter Rating	At ROW Edges	0.75/1.52	146.26/150.25	
	Normal	Under Lowest Conductors	3.66	74.91	
Bruce Mansfield –	Loading	At ROW Edges	0.30/1.05	15.13/52.00	
Glenwillow 345 kV	Emergency	Under Lowest Conductors	3.66	93.03	
Niles – Bluebell 138 kV Bluebell – Highland 138 kV	Loading	At ROW Edges	0.30/1.05	20.82/65.00	
Hanna – Highland 345 kV	Winter	Under Lowest Conductors	3.66	217.14	
	Rating	At ROW Edges	0.30/1.05	64.69/156.00	
	Normal	Under Lowest Conductors	3.90	80.26	
	Loading	At ROW Edges	1.03/1.04	47.45/54.00	
Bruce Mansfield – Glenwillow 345 kV	Emergency	Under Lowest Conductors	3.90	99.58	
Hanna – Highland 345 kV	Loading	At ROW Edges	1.03/1.04	61.51/66.50	
	Winter	Under Lowest Conductors	3.90	234.84	
	Rating	At ROW Edges	1.03/1.04	135.01/157.50	
D	Normal	Under Lowest Conductors	3.85	78.24	
Bruce Mansfield – Glenwillow 345 kV	Loading	At ROW Edges	0.25/1.25	28.79/47.00	
Hanna – Highland 345 kV Milton (Newton Falls) 69	Emergency	Under Lowest Conductors	3.85	97.12	
kV	Loading	At ROW Edges	st 4.26 0.75/1.52 st 4.26 0.75/1.52 st 3.66 0.30/1.05 st 3.66 0.30/1.05 st 3.90 1.03/1.04 st 3.90 1.03/1.04 st 3.90 1.03/1.04 st 3.85 0.25/1.25 st 3.85	36.44/61.00	

	Fable 3.	EMF Cakalatio	lı.	
Transmission Lines	EMEC	alenations.	klectric Field kV/meter	Magnetic Field mGauss
	Winter	Under Lowest Conductors	3.85	228.34
	Rating	At ROW Edges	0.25/1.25	88.74/134.00
	Normal	Under Lowest Conductors	4.12	107.66
	Loading	At ROW Edges	0.75/0.81	51.00/48.78
Bruce Mansfield – Glenwillow 345 kV	Emergency	Under Lowest Conductors	4.12	144.23
Chamberlin – Bruce Mansfield 345 kV	Loading	At ROW Edges	0.75/0.81	69.50/60.28
	Winter	Under Lowest Conductors	4.12	300.93
	Rating	At ROW Edges	0.75/0.81	140.26/140.26
	Normal Loading Emergency Loading Winter	Under Lowest Conductors	3.87	170.11
Bruce Mansfield –		At ROW Edges	0.71/1.51	57.00/61.00
Glenwillow 345 kV Chamberlin – Bruce		Under Lowest Conductors	3.87	208.25
Mansfield 345 kV Hanna – Shalersville 138 kV Hanna – Juniper 345 kV		At ROW Edges Under Lowest	0.71/1.51	65.00/75.00
Haima – Jumper 343 k v		Conductors At ROW	3.87	398.50
	Rating	Edges Under Lowest	0.71/1.51	140.00/149.00
	Normal Loading	Conductors At ROW	4.06	155.45
Bruce Mansfield –	Lowning	Edges Under Lowest	0.43/1.38	44.98/54.62
Glenwillow 345 kV Chamberlin – Bruce	Emergency Loading	Conductors At ROW	4.06	189.62
Mansfield 345 kV Hanna – Juniper 345 kV		Edges Under Lowest	0.43/1.38	62.17/66.67
	Winter Rating	Conductors At ROW	4.06	356.00
Bruce Mansfield –	Normal	Edges Under Lowest	0.43/1.38	125.66/127.00
Glenwillow 345 kV	Loading	Conductors	4.12	107.99

Table 3-EMF Calculations							
Transmission Lines	EVI (alculations	Electric Field kV/meter	Magnetic Field mGauss			
Chamberlin – Bruce Mansfield 345 kV		At ROW Edges	0.75/0.75	48.20/50.91			
	Emergency	Under Lowest Conductors	4.12	144.64			
	Loading	At ROW Edges	0.75/0.75	60.31/70.00			
	Winter	Under Lowest Conductors	4.12	301.88			
	Rating	At ROW Edges	0.75/0.75	140.30/140.30			
	Normal	Under Lowest Conductors	4.12	105.18			
	Loading	At ROW Edges	0.50/0.88	10.00/48.57			
Bruce Mansfield – Glenwillow 345 kV	Emergency Loading	Under Lowest Conductors	4.12	140.21			
Chamberlin – Bruce Mansfield 345 kV		At ROW Edges	0.50/0.88	12.49/59.00			
Chamberlin – Hudson Muni East 138 kV	Winter Rating	Under Lowest Conductors	4.12	291.89			
		At Right-Of- Way Edges	0.50/0.88	33.34/138.64			
	Normal	Under Lowest Conductors	3.90	81.80			
	Loading	At ROW Edges	1.04/1.05	49.42/55.00			
Bruce Mansfield – Glenwillow 345 kV	Emergency	Under Lowest Conductors	3.90	100.36			
Chamberlin – Harding 345 kV	Loading	At ROW Edges	1.04/1.05	62.53/66.88			
	Winter	Under Lowest Conductors	3.90	282.77			
	Rating	At ROW Edges	1.04/1.05	185.60/187.25			
Bruce Mansfield – Glenwillow 345 kV	Normal	Under Lowest Conductors	3.86	81.57			
Chamberlin – Harding 345 kV	Loading	At ROW Edges	0.18/1.05	30.50/50.00			
Chamberlin – Macedonia 69 kV	Emergency Loading	Under Lowest Conductors	3.86	97.90			

A management	Table Sa	EMF Calculation		
Transmission Lines	A PMI	alculations		Magnetic Kield mGauss
		At ROW Edges	0.18/1.05	37.46/62.73
	Winter	Under Lowest Conductors	3.86	278.35
	Rating	At ROW Edges	0.18/1.05	101.13/185.50
Bruce Mansfield – Glenwillow 345 kV Chamberlin – Harding 345 kV Avon – Juniper 345 kV Juniper – Star 345 kV	Normal	Under Lowest Conductors	4.18	104.41
	Loading	At ROW Edges	1.13/1.86	27.20/66.92
	Emergency	Under Lowest Conductors	4.18	127.57
	Loading	At ROW Edges	1.13/1.86	36.82/83.75
	Winter	Under Lowest Conductors	4.18	424.39
_18884	Rating	At ROW Edges	1.13/1.86	198.01/228.89
	Normal Loading	Under Lowest Conductors	4.22	149.96
D 14 6.11		At ROW Edges	0.75/1.44	14.65/56.67
Bruce Mansfield – Glenwillow 345 kV	Emergency	Under Lowest Conductors	4.22	185.44
Hanna – Juniper 345 kV Eastlake – Juniper 345 kV	Loading	At ROW Edges	0.75/1.44	23.59/66.15
	Winter	Under Lowest Conductors	4.22	350.60
	Rating	At ROW Edges Under Lowest	0.75/1.44	108.33/130.00
	Normal Loading	Conductors At ROW	3.89	56.63
	Loading	Edges Under Lowest	1.01/1.02	16.36/36.88
Bruce Mansfield – Glenwillow 345 kV Eastlake – Juniper 345 kV	Emergency Loading	Conductors At ROW	3.89	65.07
	Loading	Edges Under Lowest	1.01/1.02	14.54/38.46
	Winter Rating	Conductors At ROW	3.89	186.37
	Nating	Edges	1.01/1.02	73.76/73.85

Table 3. EMP Calculations							
Transmission Lines	EMIFO	alculations	Electric Field kV/meter	Magnetic Field mGauss			
	Normal	Under Lowest Conductors	3.71	62.41			
Davies Mana Gold	Loading	At ROW Edges	1.00/1.84	15.13/17.31			
Bruce Mansfield – Glenwillow 345 kV Eastlake – Juniper 345 kV Perry – Harding 345 kV Perry – Inland 345 kV	Emergency	Under Lowest Conductors	3.71	76.71			
	Loading	At ROW Edges	1.00/1.84	14.97/29.09			
	Winter	Under Lowest Conductors	3.71	380.19			
	Rating	At ROW Edges	1.00/1.84	38.09/185.00			
Bruce Mansfield –	Normal	Under Lowest Conductors	3.75	78.51			
Glenwillow 345 kV Eastlake – Juniper 345 kV	Loading	At ROW Edges	0.35/1.80	8.22/33.00			
Perry – Harding 345 kV Perry – Inland 345 kV	Emergency Loading	Under Lowest Conductors	3.75	93.89			
Eastlake – Mayfield 138 kV Mayfield – Northfield (Q1)		At ROW Edges	0.35/1.80	12.50/41.25			
138 kV Mayfield – Northfield (Q3)	Winter	Under Lowest Conductors	3.75	376.00			
138 kV	Rating	At ROW Edges	0.35/1.80	60.00/180.00			
Glenwillow – Inland 345 kV ⁷	Normal Loading	Under Lowest Conductors ⁷	1.93	62.99			
Bruce Mansfield – Glenwillow 345 kV ⁷		At ROW Edges	0.44/0.48	4.90/3.41			
Glenwillow – Juniper 345 kV ⁷	Emergency Loading	Under Lowest Conductors ⁷	1.93	67.47			
Eastlake – Glenwillow 345 kV ⁷		At ROW Edges	0.44/0.48	8.10/3.07			
Glenwillow – Perry 345 kV ⁴	Winter Rating	Under Lowest Conductors ⁷	1.93	246.18			
	/	At ROW Edges	0.44/0.48	33.79/78.00			

⁷ Modeled as the transmission lines enter the substation, the highest value within the ROW is shown.

4906-11-01(C)(2)(b): EMF Discussion

Background Information

Electric and magnetic fields ("EMFs") are naturally occurring in the environment and can be found in the Earth's interior and in the human body. EMFs are generated essentially anywhere there is a flow of electricity, including electrical appliances and power equipment. Electric fields are associated with the voltage of the source; magnetic fields are associated with the flow of current in a wire. The strength of these fields decreases rapidly with distance from the source. EMFs associated with electricity use are not disruptive to cells like x-rays or ultraviolet rays from the sun. These fields are thought to be too weak to break molecules or chemical bonds in cells. Extensive research has been conducted over the past three decades to determine whether EMFs are associated with adverse health effects. A number of independent scientific panels have reviewed the research and have stated that there is no basis to conclude that EMFs cause adverse health effects nor has it been shown that levels in everyday life are harmful.

Developments

As a part of the National Energy Policy Act of 1992, the Electric and Magnetic Fields Research and Public Information Dissemination ("EMF RAPID") program was initiated within the five-year effort under the National EMF Research Program. The culmination of this five-year effort resulted in a final RAPID Working Group report, which was released for public review in August 1998. The Director of the National Institutes of Environmental Health Sciences ("NIEHS") then prepared a final report to Congress after receiving public comments.

The NIEHS' Director's final report, released to Congress on May 4, 1999, concluded that extremely low frequency electric and magnetic fields ("ELF-EMF") exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. The Director further stated that the conclusion of this report is insufficient to warrant aggressive regulatory concern.

Sources for Additional Information

The following websites sponsored by federal agencies or other organizations provide additional information on EMF:

- Centers for Disease Control/National Institute for Occupational Safety and Health: http://www.cdc.gov/niosh/topics/emf/
- National Institute of Environmental Health Sciences ("NIEHS") EMF RAPID Program: http://www.niehs.nih.gov/emfrapid/home.htm

4906-11-01(C)(3): Estimated Costs

The estimated capital costs by FERC Accounts for the proposed Project are:

Account	Cost		
350 Land Rights	\$	15,000	
353 Substation Equipment		N/A ⁸	
355 Transmission Poles and Fixtures	\$ 70	5,400,000 ⁹	
356 Overhead Conductors & Devices	\$ 50	5,500,000	
Total	\$ 13	2,915,000	

4906-11-01(D): Socioeconomic Data

4906-11-01(D)(1): Land Use

Land use varies along the proposed route. In general, land use along the route is characterized by a mix of rural forested and agricultural uses, with a few more densely populated residential and commercial/industrial areas. Table 4 identifies the land use type within both 2,000 feet of the proposed route (i.e. 1,000 feet on each side of the centerline) and along the 150-foot ROW based on the 2006 National Land Cover Data ("NLCD"). As identified in Table 4, land use within both the 2,000-foot corridor and along the ROW itself is dominated by forest, agriculture, and open space, with smaller amount of development, grassland, and other land uses.

⁸ Glenwillow Transmission Switching Substation equipment costs to be included in a separate application submitted to the Board.

⁹ These costs include costs associated with reconfigured 345 kV lines.

Table 4. Land Use Types along Route						
Land Use Type	Percent Within 2,000-foot Corridor	Percent Along 150-foot ROW				
Agriculture	29.4	33.4				
Barren	0.1	0.0				
Developed, High Intensity	1.1	0.6				
Developed, Low Intensity	6.9	4.6				
Developed, Medium Intensity	2.2	1.9				
Developed, Open Space	9.8	9.4				
Forest	42.0	38.1				
Grassland	4.4	7.5				
Scrub/Shrub	1.2	2.9				
Water	0.7	0.5				
Wetland	2.1	1.2				

The route traverses several municipalities in Ohio through six different counties. Municipalities crossed by the route, along with the approximate distance of the route through those municipalities, and the type of construction required, are identified in Table 5. Freedom, Charleston, and Atwater townships and the City of Solon are not crossed by the route, but are located within 1,000 feet.

Tables Mu Same County/Municipality			Casare House seen Line	
	Open Arm	Rebuild as Double-Circuit	Re- Energize	Total
Pennsylvania	11.0	0.0	0.0	11.0
Beaver County	11.0	0.0	0.0	11.0
Industry Borough	3.5	0.0	0.0	3.5
Ohioville Borough	6.3	0.0	0.0	6.3

Table 5. Municipalities Crossed by the Route						
State County/Municipality	France Mansfield – Glenwillow 345 k Transmission Janes (Links 12, 3, 4, 5, 7, 8, 9, 10, 12, 13, 14)					
	Open Arm	Rebuild as Double-Circuit	Re- Energize	Total		
Shippingport Borough	0.6	0.0	0.0	0.6		
South Beaver Township	0.7	0.0	0.0	0.7		
Ohio	70.4	29.3	3.9	103.6		
Columbiana County	15.0	0.0	0.0	15.0		
Fairfield Township	3.4	0.0	0.0	3.4		
Middleton Township	5.8	0.0	0.0	5.8		
Unity Township	5.9	0.0	0.0	5.9		
Mahoning County	20.8	2.6	0.0	23.4		
Beaver Township	7.3	0.0	0.0	7.3		
Canfield Township	3.3	0.0	0.0	3.3		
Ellsworth Township	3.1	0.6	0.0	3.8		
Green Township	2.8	0.0	0.0	2.8		
Jackson Township	4.4	0.8	0.0	5.2		
Milton Township	0.0	1.2	0.0	1.2		
Portage County	20.7	11.2	0.0	31.9		
Aurora City	2.3	0.4	0.0	2.3		
Edinburg Township	0.0	5.1	0.0	5.1		
Palmyra Township	0.0	5.2	0.0	5.2		
Ravenna Township	5.0	0.0	0.0	5.0		
Rootstown Township	1.0	0.9	0.0	1.8		
Shalersville Township	9.1	0.0	0.0	9.1		

Table 5. Municipalities Crossed by the Route 🕮 💮						
State/County/Municipality	Bruce Mansfield - Glenwillow 345 kV Transmission Line (Links 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14)					
	Open Arm	Rebuild as Double-Circuit	Re- Energize	Total		
Streetsboro City	3.3	0.0	0.0	3.3		
Trumbull County	1.5	9.1	0.0	10.7		
Lordstown Village	1.5	4.3	0.0	5.8		
Newton Township	0.0	4.8	0.0	4.8		
Summit County	11.5	3.1	2.7	17.4		
Macedonia City	3.6	1.7	0.8	6.1		
Northfield Center Township	0.8	0.0	0.0	0.8		
Northfield Village	0.0	0.0	0.2	0.2		
Sagamore Hills Township	2.8	1.4	1.7	6.0		
Twinsburg City	1.4	0.0	0.0	1.4		
Twinsburg Township	2.9	0.0	0.0	2.9		
Cuyahoga County	0.8	3.2	1.2	5.1		
Glenwillow Village	0.0	2.2	0.0	2.2		
Oakwood Village	0.0	1.0	0.0	1.0		
Walton Hills Village	0.8	0.0	1.2	1.9		
Total	81.4	29.5	3.4	114.5		

Table 6 identifies the Study Area Demographics for the counties and municipalities traversed or within 1,000 feet of the route. ATSI met with representatives from each of these counties and municipalities during the course of the Project.

Table 6. Study Area Demographics						
Municipality	2010 Population	2000 Populations	260000000000000000000000000000000000000	Average Household Size	Medjan Household Income	
Columbiana County	107,841	112,075	-3.8%	2.43	\$39,502	
Fairfield Township	9,890	9,583	3.2%	2.38	\$42,978	
Middleton Township	3,612	3,741	-3.5%	2.61	\$41,788	
Unity Township	9,957	10,294	-3.4%	2.51	\$42,769	
Mahoning County	238,823	257,555	-7.3%	2.34	\$40,123	
Beaver Township	6,711	6,466	3.7%	2.49	\$50,872	
Green Township	3,532	3,450	2.3%	2.68	\$50,897	
Canfield Township	16,164	14,624	10.5%	2.50	\$64,793	
Ellsworth Township	2,217	2,234	-0.7%	2.55	\$50,000	
Milton Township	3,759	4,107	-9.2%	2.38	\$49,304	
Jackson Township	2,114	2,167	-2.5%	2.50	\$60,392	
Trumbull County	210,312	225,116	-7.0%	2.40	\$42,296	
Village of Lordstown	3,417	3,633	-6.3%	2.46	\$39,808	
Newton Township	8,875	9,524	-7.3%	2.41	\$46,875	
Portage County	16,419	152,061	6.1%	2.47	\$50,447	
Edinburg Township	2,586	2,344	10.3%	2.77	\$73,551	
Palmyra Township	2,919	2,785	4.8%	2.78	\$59,722	
Charlestown Township*	1,799	2,003	-11.3%	2.48	\$41,979	
Rootstown Township	8,225	7,212	14.0%	2.63	\$58,110	
Freedom Township*	2,843	2,751	3.3%	2.64	\$52,361	
Ravenna Township	9,209	9,270	-0.66%	2.41	\$48,677	
Shalersville Township	5,670	5,976	-5.3%	2.68	\$59,145	

Table 6. Study Area Demographics						
Municipality	2010 Population	2000 Population	Percent Change	Average Household	TO THE REAL PROPERTY AND ADDRESS OF THE PERTY ADDRE	
				» Sizë	Income	
City of Streetsboro	16,028	12,311	231%	2.43	\$60,740	
City of Aurora	15,548	13,556	100%	2.54	\$79,552	
Summit County	541,781	542,899	-0.2%	2.39	\$47,926	
Village of Northfield	3,677	3,827	-4.1%	2.38	\$51,741	
Northfield Center Township	5,839	4,931	18.4%	2.49	\$73,889	
Sagamore Hills Township	10,947	9,340	17.2%	2.27	\$68,963	
Twinsburg Township	2,828	2,153	31.3%	2.84	\$60,817	
City of Macedonia	11,188	9,224	21.2%	2.58	\$77,866	
City of Twinsburg	18,795	17,006	10.5%	2.49	\$69,662	
Cuyahoga County	1,280,122	1,393,978	-8.8%	2.29	\$43,603	
Village of Oakwood	3,667	3,667	0.0%	2.28	\$50,668	
Village of Walton Hills	2,281	2,400	-5.2%	2.27	\$70,068	
Village of Glenwillow	923	449	105.5%	2.64	\$70,938	

^{*} Municipality is not crossed by the route, but is located within 1,000 feet.

Sources: U.S. Census Bureau, Census 2010 Summary File 1 and U.S. Census Bureau, Census 2000 Summary File 1.

There are 3,025 residences located within 1,000 feet of the proposed route and 29 residences within 100 feet. The entire route will be constructed using existing transmission infrastructure. Approximately 72 percent of the route will be located on the open arm position of an existing transmission line or re-energize an inactive 345 kV circuit. With the exception of new structures in areas at transmission junctions, and possibly a few other unique cases, no new structures are expected along the open arm portions of the route. Only a few new structures are proposed at the endpoints along the

de-energized portion of the route. Table 7 identifies the number of residences within 1,000 and 100 feet of the route by Link number.

Table 7. Residences Located within 1,000 and 100 Feet of the Route ²						
Link No.	Construction Type	Residences within 1,000 Feet ¹	Residences within 100 Feet ¹			
2	Open Arm	250	0			
3	Rebuild	15	0			
4	Open Arm	72	0			
5	Rebuild	306	4			
7	Open Arm	523	10			
8	Open Arm	16	0			
9	Open Arm	42	0			
10	Open Arm	811	6			
11	Open Arm	109	0			
12	Open Arm	20	0			
13	Re-energize	785	7			
14	Rebuild	201	0			

Some residences are located within 1,000 or 100 feet of multiple links.

Overall, the route has fewer land use impacts than any other alternative considered as it would be constructed entirely on existing ROW already encumbered by electric transmission lines, either being constructed on the open arms of existing structures or being rebuilt completely within the ROW.

4906-11-01(D)(2): Agricultural Land

Approximately one-third of the route is characterized as agricultural land. With the exception of new structures in areas at transmission junctions, and possibly a few other

Link 14 also encompasses residents located within 1,000 and 100 feet of the Eastlake – Juniper and Inland – Perry 345 kV transmission line realignments.

unique cases, no new structures are expected along the open arm and de-energized portions of the route, which constitutes approximately 72 percent of the entire route. The existing steel lattice or H-frame towers located along the rebuild portions of the route will be replaced with steel monopoles. Through the rebuild areas, the steel monopoles may benefit farmers as the diagonal footprint of the existing lattice towers ranges from approximately 40 to 55 feet and the existing H-frame structures are generally approximately 30 feet pole to pole, while the new monopoles will have foundations ranging from 7 to 9 feet. Therefore, the new monopoles will provide more usable land for farming than currently exists. The placement of the new structures is not anticipated further impact agricultural land use. ATSI will avoid placing structures with guy wires on agricultural land to the extent practical.

LBG contacted the Columbiana, Cuyahoga, Mahoning, Portage, Summit, and Trumbull County auditors to obtain information on agricultural district land. The data was received via email from the Trumbull County Auditor on June 27, 2012, and from the Summit County and Portage County Auditors on July 10, 2012. On July 11, 2012, the Cuyahoga County Auditor informed LBG that no agricultural district land was crossed by the Project. On July 11, 2012, data was received via email from the Mahoning County Auditor, and from the Columbiana County Auditor on July 23, 2012. LBG communicated again with each county auditor via telephone on October 11, 2012. No updates needed to be made to reflect changes for agricultural district land parcels sent from Trumbull, Summit, Portage, Cuyahoga, Mahoning, and Columbiana County Auditors. The October 2012 communication with the County Auditors fulfills the requirement of the OAC 4906-11-01 (D)(2), which states that this data must be collected not more than 60 days prior to submittal.

Ten agricultural district land parcels are crossed by the ROW of the open-arm segment in Columbiana County. Thirteen agricultural district land parcels are crossed by the ROW of the open arm and rebuild segments in Trumbull County. Within Mahoning County, 105 agricultural district land parcels are crossed by the ROW of the open arm and rebuild segments. Fifty-four agricultural district land parcels are crossed by the ROW of the

open arm and rebuild segments in Portage County. In Summit County, one agricultural district land parcel is crossed by the ROW of a rebuild segment. Cuyahoga County does not have any agricultural district land parcels crossed by the ROW. Each of these agricultural district land properties is already crossed by an existing transmission line. No impacts to these properties are anticipated. A list of Agricultural District Land crossed by the Project is included as Exhibit 7.

4906-11-01(D)(3): Archaeological or Cultural Resources

As part of ATSI's investigation of the Project site, a search of the Ohio Historic Preservation Office ("OHPO") National Register of Historic Places on-line database was conducted. The data gathered during this analysis included National Register of Historic Places ("NRHP") properties, historic districts, previously identified archaeology sites and architectural resources and cemeteries, and previously surveyed archaeological and architectural areas. No archaeological sites or historic architectural resources are traversed by the route. Several recorded archaeological sites or historic architectural resources were identified within 1,000 or 100 feet of the route.

Twenty-seven previously recorded archaeological sites were identified within 1,000 feet of the route. Of these, 17 are located along the common open arm segments. Eleven of the recorded archaeological sites identified are located within 100 feet of the route. Of the eleven recorded archaeological sites within 100 feet, eight are located within 100 feet of an open-arm segment (Link 2), and three are located within 100 feet of a rebuild segment (Link 14). With the exception of new structures in areas at transmission junctions, and possibly a few other unique cases, no new structures would be located along Link 2. The existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines presently traverse in the vicinity of features located along Link 14. Therefore, rebuilding the Eastlake – Juniper line through this area for double circuit operation is anticipated to have minimal impacts, if any.

One previously recorded architectural resource listed on the NRHP is located within 1,000 feet of the route. This resource is not located within 100 feet of the route. The

NRHP-listed resource located within 1,000 feet of the route is located in the vicinity of an open-arm segment of the route (Link 7). Twelve recorded architectural resources are located within 1,000 feet, and five previously recorded cemeteries were identified within 1,000 feet. Of these resources, none are located within 100 feet. Three of the architectural resources within 100 feet are located along the de-energized segment (Link 13) and no impacts are anticipated. The remaining architectural resource is a farm located within 100 feet of a rebuild segment (Link 5). The line would be rebuilt within ATSI's existing ROW and no impacts to the farm are anticipated. These non-NRHP architectural resources and cemeteries have not been evaluated for NRHP-eligibility at this time.

ATSI submitted a letter to the OHPO on June 1, 2012, describing the Project and requesting information on potential survey requests. To date, no response to the letter has been received. However, a meeting was held with the OHPO on September 11, 2012, to discuss the Bruce Mansfield – Glenwillow 345 kV Transmission Line and the Glenwillow Transmission Switching Substation Project. ATSI is in the process of developing a cultural resource plan for the Project and will continue to consult with the OHPO to determine if any historic architecture surveys are requested in the Project area or if any archaeological surveys are required on site.

4906-11-01(D)(4)(a): Documentation of Letter of Notification Transmittal

This Letter of Notification is being provided concurrently to officials of counties, municipalities, and land use planning agencies through which the proposed line would pass. This includes the following:

- Columbiana County: Fairfield, Middleton, and Unity townships
- Mahoning County: Beaver, Canfield, Ellsworth, Green, Jackson, and Milton townships
- Portage County: Cities of Aurora and Streetsboro; Edinburg, Palmyra, Ravenna,
 Rootstown, and Shalersville townships
- Trumbull County: Village of Lordstown; Newton Township

- Summit County: Cities of Macedonia and Twinsburg; Village of Northfield;
 Northfield Center, Sagamore Hills, and Twinsburg townships
- Cuyahoga County: Villages of Glenwillow, Oakwood, and Walton Hills.

The full list of recipients is included in Exhibit 5.

4906-11-01(D)(4)(b): Public Information Program

The Applicant's public information program included the following main elements:

In June 2012, ATSI issued public notices regarding the Project. The public notices were distributed to the Lisbon Morning Journal, Youngstown Vindicator, Warren Tribune Chronicle, Ravenna Record Courier, Aurora Advocate, Hudson Hub, Northfield News Leader, Streetsboro Gateway News, Twinsburg Bulletin, Cleveland Plain Dealer – East Zone, Chagrin Valley-Solon Times, Akron Beacon Journal, and Beaver County Times. Copies of the public notice can be found in Exhibit 6.

During the week of June 18-21, 2012, one public information meeting was held in Pennsylvania and four public information meetings were held in Ohio. At the Ohio meetings, attendees received a project factsheet, information on the OPSB Process, comment cards, and Project Area map. The public information meetings provided an opportunity for residents and other interested parties to review project information displays and discuss the Project with FirstEnergy and LBG representatives. The factsheet contained a brief statement on project need, a description of the siting process, and a preliminary project timeline. The public meetings were organized in an open house format and consisted of several stations that identified the Project processes. These stations included the following:

- 1. Welcome station located at the entrance for attendees to sign-in;
- 2. Project Need station providing an overall summary and explaining the planning process;

- 3. Route Selection station detailing the siting process and including aerial maps showing the potential route network and parcel boundaries;
- 4. Right-of-Way station explaining the easement process;
- 5. Environmental station explaining consultations with local, state, and federal agencies;
- 6. Engineering and Construction station highlighting engineering and substations; and
- 7. OPSB Process station explaining the application process and how to stay informed.

On June 18, 2012, a meeting was held at East Palestine Elementary School on Grant Street in East Palestine, Ohio. Seven members of the public attended this meeting. The next meeting was held on June 19, 2012, at Mahoning County Career and Technical Center on Palmyra Road in Canfield, Ohio. Six members of the public attended this meeting. The following meeting was held on June 20, 2012, at Maplewood Career Center on State Route 88 in Ravenna, Ohio. Nine members of the public attended this meeting. The final meeting was held on June 21, 2012, at Nordonia High School on Bedford Road in Macedonia, Ohio. Twenty-three members of the public attended this meeting.

A total of 10 comment cards were completed and received during the public information meetings. Comments generally discussed use of existing transmission ROW, EMF, vegetation maintenance, property values, or requests for copies of maps. ATSI reviewed these comments and followed up as appropriate to answer any outstanding questions. In addition, ATSI provided the following means to obtain information about the Project or provide comments: a Project website: https://www.firstenergycorp.com/content/fecorp/about/transmission_projects (current link); a phone number: 1-800-589-2837; and a mailing address: FirstEnergy Service Company, Attention: Bruce Mansfield—Glenwillow Transmission Line Project Team, A-GO-3, 76 South Main Street, Akron, Ohio 44308. ATSI tracked and responded to all inquiries. ATSI's Area Manager will

continue to advise local officials of the status of the proposed transmission line Project as necessary.

4906-11-01(D)(5): Current or Pending Litigation

There is no known current or pending litigation involving this Project.

4906-11-01(D)(6): Local, State, and Federal Requirements

The Applicant anticipates submitting Notice of Intent ("NOI") for coverage under Ohio EPA General National Pollutant Discharge Elimination System ("NPDES") Permit for Discharges Associated with Construction Activities. Coverage under U.S. Army Corps of Engineers Nationwide Permit 12 for wetland and stream impacts associated with Utility Line Activities is also anticipated, as well as an application to the Ohio Environmental Protection Agency for a Water Quality Certification. In addition, the Applicant will need to receive clearance from the U.S. Fish and Wildlife Service ("USFWS") and the Ohio Department of Natural Resources ("ODNR") for federal and state listed species. Consultation with the OHPO will also continue. As some of these notification, coordination, and/or approval requirements may apply to only a portion of the Project's construction activities, the Applicant proposes to start construction on portions of the Project shortly after all necessary requirements for any distinct portion of the Project have been accomplished while continuing to complete requirements for other portions of the Project.

4906-11-01(E): Environmental Data

As part of the preparation of this Application, ATSI and LBG conducted a detailed desktop review of published ecological information within 1,000 feet of the proposed transmission lines through the review of aerial photography, USGS maps, USFWS National Wetlands Inventory ("NWI") maps, and U.S. Department of Agriculture ("USDA") Natural Resources Conservation Service ("NRCS") soil survey maps. Additional information regarding endemic vegetation and wildlife was obtained from the Ohio Department of Natural Resources - Division of Wildlife ("ODNR-DOW") Ohio Biodiversity Database and Liberty Park. Published reports prepared for the Cleveland

MetroParks, Cuyahoga Valley National Park, and Summit County were also reviewed as part of the desktop study.

4906-11-01(E)(1): Endangered, Threatened, and Rare Species Investigation

A written request was submitted to the USFWS and the ODNR on May 25, 2012 to research the presence of any endangered, threatened, or rare species within the Project area. The USFWS's response dated June 20, 2012 and the ODNR's response dated June 21, 2012, and August 8, 2012, are attached as Exhibit 8 and summarized in this section.

The USFWS's June 2012 response letter to LBG indicates that the proposed project is within the range of four federally listed, candidate, or species of concern that may be affected by the Project: the endangered Indiana bat (*Myotis sodalis*) and Mitchell's satyr (*Neonympha mitchellii*), the candidate species eastern massasauga (*Sistrurus catenatus catenatus*), and the species of special concern eastern hellbender (*Cryptobranchus a. alleganiensis*). The massasauga and eastern hellbender are also Ohio state endangered species. LBG conducted additional consultation with USFWS regarding the Indiana bat and as a result of that consultation USFWS submitted a second letter dated July 25, 2012, detailing Indiana bat survey requirements and restrictions. This letter (see Exhibit 8) states the following:

In areas south and east of the intersection with Page Road in Streetsboro (outside the 5-mile buffer):

- Mist net surveys are not required in areas where only a narrow amount of clearing is required (in the 10-20' wide category, if the linear length of clearing is not excessive) if tree clearing only occurs between the dates of September 30 and April 1.
- If the winter tree clearing restrictions cannot be met, mist net surveys need to take place and be submitted to USFWS for review.
- No habitat assessments are required in this section of the project area.

In areas within the buffer around the suspected hibernaculum in Liberty Park and the female capture near Cuyahoga Valley National Park (north and west of Page Road):

- No mist net surveys to take place west and north of Page Road in Streetsboro.
- Habitat assessments need to take place for all areas within this buffer where trees need to be cut.
- All habitat assessments will be submitted to USFWS for review.
- For identified potential maternity roost trees that are proposed to be cut, the coordinates, description of the tree characteristics (size, amount of pealing bark, solar exposure etc.), photographs, and a description of available roosting habitat in the vicinity, must be provided in the habitat assessment.
- Based on the information in the habitat assessment, emergence surveys may
 be necessary to determine if bats are utilizing the potential roost trees.
 Emergence surveys may only be conducted between the dates of May 15 and
 August 15, when the presence of maternity colonies could be detected.
- Should an emergence survey detect bats using a potential roost tree, the USFWS will be consulted to determine if further surveys will be necessary or if an incidental take permit will be necessary.

As discussed previously, LBG and its consultant have conducted habitat assessments for all areas along the route where tree cutting would be required within the approximately 5-mile buffer around Liberty Park in Summit County and the Cuyahoga Valley National Park. Outside of this buffer, LBG and its consultant have conducted mist net surveys in all areas that could require tree clearing at the direction of the USFWS. The Applicant will continue to consult with USFWS regarding the results of these surveys and any required protection measures.

For the remaining species mentioned by USFWS in its June 20, 2012 letter as potentially being affected by the Project, it is likely that the route crosses potential habitat for the eastern massasauga. The route crosses through all three townships mentioned by USFWS. USFWS requested habitat assessments for this species if potential habitat is

crossed. The ODNR-DOW indicated in its August 8, 2012 email that the eastern massasauga occurs in proximity to the Project within Mahoning and Portage counties.

Because the eastern hellbender is only known to occur in perennial streams in the North Fork of Little Beaver Creek in Columbiana County and the route would use open arms within Columbiana County, it is not likely to be affected by the Project. ODNR-DOW also indicated the eastern hellbender could occur in Columbiana County. The Mitchell's satyr occurs in sedge-dominated fens with low shrubs and tamaracks in the City of Aurora in Portage County. The route traverses the City of Aurora using both open arm and rebuild segments. The Applicant will assess the habitat crossed by the route in the City of Aurora to determine if appropriate habitat exists. The Applicant will continue to consult with USFWS regarding the eastern massasauga and the Mitchell's satyr if appropriate habitat exists. ODNR-DOW stated that because of the habitat used by Mitchell's satyr and the type of work proposed, it is unlikely to be affected by the Project.

ODNR-DOW, in its August 8, 2012 email indicated that several additional species could be impacted by the Project. In addition to the Indiana bat, eastern massasauga, and eastern hellbender, which are discussed in more detail above, ODNR-DOW states that the following species could be affected if their habitat is impacted: five state endangered birds, including American bittern (Botaurus lentiginosus), northern harrier (Circus cyaneus), trumpeter swan (Cygnus buccinator), yellow-bellied sapsucker (Sphyrapicus varius), and king rail (Rallus elegans); seven state endangered dragonflies, including American emerald (Cordulia shurtleffi), frosted whiteface (Leucorrhinia frigida), brushtipped emerald (Somatochlora walshii), chalk-fronted corporal (Ladona julia), elfin skimmer (Nannothemis bella), racket-tailed emerald (Dorocordulia libera), and Canada darner (Aeshna Canadensis); and one state threatened bird, the bald eagle (Haliaeetus leucocephalus). ODNR-DOW mentioned several other species which are not likely to be impacted.

ODNR, in an email dated September 18, 2012, requested that construction crews be careful with heavy equipment near sensitive resources such as wetlands to avoid creating

ruts, altering hydrology etc. and to clear as little vegetation as possible near areas with known records. No plant surveys were requested. During field wetland delineation, two state listed plants were observed within the ROW. Woodland horsetail (*Equisetum sylvaticum*), listed as potentially threatened in the State of Ohio, was found within the easternmost tip of wetland LBDE within the ROW. A small cluster of woodland horsetail was also observed just outside of the ROW. Wetland LBDE is located in Twinsburg Township, Summit County along an open arm segment of the route (Link 8). Water arum (*Calla palustris*), listed as potentially threatened in the State of Ohio, was observed in the northern portion of wetland BBII within the ROW. Wetland BBII is located in Ravenna Township, Portage County along an open arm segment of the route (Link 7). A GPS point was taken at both locations.

ODNR-DOW states that the American bittern is known to occur in Columbiana County. The American bittern prefers large undisturbed wetlands that have scattered small pools amongst dense vegetation. They occasionally occupy bogs, large wet meadows, and dense shrubby swamps. ODNR-DOW states that if this type of habitat will be impacted, construction must be avoided in this habitat during the species' nesting period of May 1 to July 31; however, if this type of habitat will not be impacted, the project is not likely to impact this species. Because the Project would use open arms in Columbiana County, it is unlikely that this species would be affected.

ODNR-DOW states that the northern harrier is known to occur in Mahoning County. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands and nest in loose colonies. ODNR-DOW states that if this type of habitat will be impacted, construction must not occur in this habitat during the species' nesting period of May 15 to August 1. If this habitat will not be impacted, the Project is not likely to impact this species. Almost all of the route within Mahoning County would use open arms and would therefore be unlikely to affect this species.

ODNR-DOW states that the trumpeter swan is known to occur in Trumbull County. Trumpeter swans prefer large marshes and lakes ranging in size from 40 to 150 acres. They like shallow wetlands one to three feet deep with a diverse mix of emergent and submergent vegetation and open water. ODNR-DOW states that if this type of wetland habitat will be impacted, construction must be avoided in this habitat during the species' nesting period of May 1 to August 1. If this type of wetland habitat will not be impacted, the Project is not likely to impact this species. The route within Trumbull County would require rebuilding an existing transmission line; however, the only wetland with standing water present during wetland delineations was wetland DD, which is located near Cedar Lake in an area where the Project is being constructed on the open arm position. At the time of observation, only 4 inches of standing water was present and the portion of the wetland crossed by the Project is palustrine emergent marsh and palustrine scrub shrub. Although it is connected to Cedar Lake, which could provide trumpeter swan habitat, the wetland crossed by the Project does not provide appropriate habitat and is spanned by the open arm segment. Therefore, the Project would not affect the trumpeter swan.

ODNR-DOW states that the yellow-bellied sapsucker is known to occur in Trumbull and Cuyahoga counties. Yellow-bellied sapsuckers occupy wet, deciduous forests or the margins of bogs where yellow birch, beech, and aspen are prevalent. ODNR-DOW states that if tree removal is proposed in this type of habitat, tree removal must not occur during the species' nesting period of May 1 to July 1. If no tree removal is proposed, the Project is not likely to impact this species. The proposed route in Trumbull County would require rebuilding an existing transmission line. In Cuyahoga County, the route would utilize both open arm and rebuild construction. Although some tree clearing will be required in segments that will be rebuilt, the amount is expected to be minimal since the existing ROW is generally cleared to the width necessary for the proposed Project. In Cuyahoga County, the need for additional tree clearing is further minimized because the Project would use a ROW that is adjacent to other cleared ROWs for a portion of its length. Overall, the proposed route is not expected to adversely affect the yellow-bellied sapsucker; however, if tree clearing is required in the identified habitat, ATSI will adhere to the timing restriction and/or consult with ODNR-DOW further.

ODNR-DOW states that the king rail is known to occur in Cuyahoga County. Nests for this species are deep bowls constructed out of grass and usually hidden very well in marsh vegetation. In Ohio, most breeding pairs occupy marshes dominated by cattails and other tall emergent vegetation, preferably wetlands larger than 50 acres. However, they have also nested in buttonbush swamps, wet meadows, marshy pools in swamp forests, and brushy tangles in swampy meadows¹⁰. King Rails prefer permanently flooded wetlands where water depths are generally less than six inches, although they are not averse to swimming across deep water channels¹⁰. If this type of habitat will be impacted, construction must be avoided in this habitat during the species' nesting period of May 1 to August 1.

In Cuyahoga County, the route would use reenergized, open arm, and rebuild construction. The reenergized segment would not impact any marshy grass habitat. The open arm segments within Cuyahoga County do not cross any appropriate habitat. Although the rebuild segments of the route do cross some larger wetland complexes, based on wetland delineations, very few are flooded. Similarly, although the route does cross several wetlands with 2-4 inches of surface water, they are very small and do not appear to be good king rail habitat. There are two wetlands crossed by the route in Cuyahoga County that could provide potential king rail habitat because they are flooded wetlands with cattails: Wetlands LSB and RSCJ. Wetland RSCJ, however, had 22 inches of surface water at the time of observation and is a relatively small pond. Wetland LSB is larger and had only 2 inches of surface water at the time of observation, making it more likely king rail habitat. Both of these wetlands are small enough that the route should be able to span them without any impact to potential habitat. If the route is not able to avoid impacts to marshy grass habitat during rebuild construction, ATSI will adhere to the timing restriction and/or consult with ODNR-DOW further.

Ohio Ornithological Society, 2012. Ohio Breeding Bird Atlas, King Rail information, located at, http://www.ohiobirds.org/obba2/pdfs/species/KingRail.pdf.

ODNR-DOW states that the Project is within the range of the American emerald, frosted whiteface, brush-tipped emerald, and the chalk-fronted corporal within Portage County; elfin skimmer and racket-tailed emerald in Summit County; and the Canada darner in Cuyahoga County. ODNR-DOW states that wetland impacts must be avoided in order to avoid potential impacts to these dragonfly species. Although the Project will be designed to minimize impacts to wetlands, it is unlikely the Project can avoid all wetland impacts in these counties. The Applicant will consult with ODNR-DOW further regarding wetland impacts and any further measures necessary to protect these species.

ODNR-DOW states that there is a known record of the bald eagle near the Project in Portage County within Tinkers Creek State Park. The occurrence is approximately 930 feet from an open arm segment of the proposed route. ODNR-DOW recommends the Project follow the National Bald Eagle Management Guidelines when constructing the Project. The National Bald Eagle Management Guidelines indicate that construction of power lines should occur at least 660 feet away from bald eagle nests (during nesting season) and they should not be constructed between communal roosts or nests and foraging areas. Because the proposed route would use either open arm areas or would rebuild an existing transmission line, the route would not introduce any additional obstructions into bald eagle habitat.

4906-11-01(E)(2): Areas of Ecological Concern

Wetland Delineation

LBG conducted field wetland delineation within the Project ROW in June and July 2012. Wetlands were delineated in accordance with the Ohio Environmental Protection Agency ("OEPA") Ohio Rapid Assessment Method for Wetlands v. 5.0 ("ORAM"). ORAM was developed to determine the relative ecological quality and level of disturbance of a particular wetland in order to meet requirements under Section 401 of the Clean Water Act. Each wetland is given a score using a range from 0 (low quality and high

¹¹ USFWS, May 2007. National Bald Eagle Management Guidelines.

disturbance) to 100 (high quality and low disturbance). Wetlands scored from 0 to 29.9 are grouped into "Category 1," 30 to 59.9 are "Category 2," and 60 to 100 are "Category 3." Wetland delineation within the 150-foot transmission ROW resulted in the identification of 501 wetlands totaling approximately 386 acres, including 255 Category 1, 228 Category 2, and 9 Category 3 features. Table 8 provides a summary of the number, length, acreage and quality of each wetland type delineated.

	Table 8, Summary of Delineated Wetlands							
Cowardin Wetland Type	No. of Wetlands	Category 1	Category 2	Category 33	Acreage within Survey Corridor	Linear Feet Crossed by Centerline ¹		
PFO	2	0	2	0	0.22	46		
PFO/SS/EM	1	0	1	0	5.08	1,573		
PFO/PEM	1	1	0	0	0.14	NC		
PSS	12	6	6	0	6.49	1,929		
PSS/PEM	63	12	47	4	101.30	29,943		
PEM	411	235	171	5	265.37	78,503		
PEM/UB	2	1	1	0	3.36	928		
PUB	9	NA	NA	NA	3.80	1,026		
Total ²	501 ²	255	228	9	386.00	113,948		

¹ Linear Feet Crossed by Centerline (feet)^a: NC = Not Crossed by proposed centerline

Nine ponds, totaling 3.80 acres, were also identified within the ROW. All nine ponds were classified as Palustrine unconsolidated bottom and appear to have been made for industrial, wildlife, or agricultural use. Nine wetlands were delineated that either met the Category 3 score or fell within the dual Category 2/3 rating. All nine of the Category 3 (or Category 2/3) wetlands are located along open arm segments of the route. Of these, four are likely dual Category 2/3 wetlands due to the presence of invasive species. With the exception of new structures in areas at transmission junctions, and possibly a few

² Total included nine PUB wetlands not scored using ORAM

³ Four of the wetlands are likely dual Category 2/3 wetlands

other unique cases, no new structures are expected along these areas. ATSI will minimize disturbance to these areas to the maximum extent practical during construction.

There are 164 streams within the ROW, including 30 ephemeral streams, 80 intermittent streams, and 54 perennial streams. Of these, 113 streams were assessed using the headwater habitat evaluation index ("HHEI") methodology (drainage area less than 1 square mile), 50 were assessed using the qualitative habitat evaluation index ("QHEI") methodology (drainage area greater than 1 square mile), and one, the Cuyahoga River, did not have a form completed for it since it is a larger water body and has an OEPA aquatic use designation. Table 9 provides a summary of the number, type, and quality of QHEI streams crossed and Table 10 provides a summary of the number, type, and quality of HHEI streams crossed. The 50 streams within the ROW that were assessed using the QHEI methodology includes: two Very Poor Warmwater habitat streams, ten Poor Warmwater habitat streams, 15 Fair Warmwater habitat streams, 19 Good Warmwater habitat streams, and four Excellent Warmwater habitat streams. Field surveys along the proposed ROW identified 113 headwater streams: 29 Modified Class 1 streams, 30 Class 1 streams, 25 Modified Class 2 streams, 18 Class 2 streams, nine Class 3 streams, and two Rheocrene Potential stream.

The OEPA has established water use designation for streams throughout Ohio as outlined in the Ohio Administrative Code ("OAC"), OAC-3745-1-07. The streams that were identified during the field assessment that have a State of Ohio aquatic use designation are provided in Table 11. Twenty-two named streams and three unnamed tributaries to named streams that have an OEPA aquatic use designation are crossed by the route. A copy of the complete wetland delineation report will be provided to the OPSB under separate cover.

Table 9. Summary of QHEI Streams that cross the ROW							
Flow Regime	Number of Streams	Very Poor	Poor	Fair	Good	Excellent	Linear Feet Crossing ROW
Intermittent (R4)	5	0	3	1	1	0	927
Perennial (R3)	46 ¹	2	7	14	18	4	12,460
Total	51	2	10	15	19	4	13,387

Stream RSAR (Cuyahoga River) was not scored with QHEI as the river was too wide and too deep to assess the benthic environment on foot.

Table 10. Summary of HHEI Streams that cross the ROW									
Flow Regime	No. of Streams	Mod. Class I PHWH	Class I PHWH	Mod. Class II PHWH	Class II PHWH	Mod. Class III PHWH	Class III PHWH	Rheocrene Potential	Linear Feet Crossing ROW
Ephemeral (RE)	30	12	14	2	2	0	0	0	5,483
Intermittent (R4)	75	16	16	21	14	0	6	2	14,824
Perennial (R3)	8	1	0	2	2	0	3	0	1,420
Total	113	29	30	25	18	0	9	2	21,727

Table 11. State Of Ohio Aquatic Life Use Designation For Streams Within the ROW					
Waterbody	Ohio EPA Aquatic Use Designation				
Cuyahoga River	Drainage Basin (HUC 04110002)				
Cuyahoga River	Warmwater Habitat				
Indian Creek	Warmwater Habitat				
Pond Brook	Modified Warmwater Habitat				
Tinkers Creek	Warmwater Habitat				
UNT to Cuyahoga River	Warmwater Habitat				

Waterbody	Ohio EPA Aquatic Use Designation			
Upper Ohio River Drainage Basin (HUC 05030101)				
Brush Run	Exceptional Warmwater/Coldwater Habitat			
Bull Creek	Exceptional Warmwater/Coldwater Habita			
Leslie Run	Warmwater Habitat			
North Fork Little Beaver Creek	Exceptional Warmwater Habitat			
Mahoning River D	Prainage Basin (HUC 05030103)			
Barrel Run	Warmwater Habitat			
Bixon Creek	Warmwater Habitat			
Duck Creek	Warmwater Habitat			
Indian Run	Warmwater Habitat			
Kale Creek	Warmwater Habitat			
Mahoning River	Warmwater Habitat			
Meander Creek	Warmwater Habitat			
Morrison Run	Warmwater Habitat			
Mud Creek	Warmwater Habitat			
Silver Creek	Warmwater Habitat			
UNT to Kale Creek	Warmwater Habitat			
UNT to Mahoning River	Warmwater Habitat			
West Branch Mahoning River	Warmwater Habitat			

Scenic Rivers

The Route crosses two scenic rivers: Upper Cuyahoga Scenic River and Little Beaver Creek Scenic River. Upper Cuyahoga Scenic River is crossed once in Shalersville Township, Portage County by an open arm segment of the route (Link 7) and Little Beaver Creek is crossed once in Middleton Township, Columbiana County by an open arm segment of the route (Link 2). According to ODNR, the Little Beaver Creek Scenic

River is protected by a number of classifications, including Ohio Wild and Scenic River and national Scenic River, as well as being part of Ohio's state park system. Cuyahoga Scenic River is listed as a State Scenic River and Little Beaver Creek listed as both a State and National Scenic River. Little Beaver Creek was designated as a Wild Scenic River and state Scenic River in 1974, and a National Scenic River in 1975. The Upper Cuyahoga was designated a State Scenic River in 1974. Both scenic rivers are crossed by existing transmission line. The Project would utilize the available open arm position through these areas. With the exception of new structures in areas at transmission junctions, and possibly a few other unique cases, no new structures are expected along these areas. ATSI will minimize disturbance to these areas to the maximum extent practical during construction.

Wildlife

Numerous wildlife species were observed during wetland delineation activities. Table 12 identifies the species observed within the project vicinity.

Conservation Lands

The route crosses seven state conservation areas: Sheepskin Hollow Nature Preserve, Vickers Creek Nature Preserve, Jennings Woods, Liberty Park Nature Preserve, Tinkers Creek Nature Preserve, and land owned by the Western Reserve Land Conservancy and the NRCS. Table 13 identifies the length and acreage of conservation lands traversed by the route.

Bruce Mansfield – Glenwillow 345 kV Transmission Line November 2012

	Table 12. Wildlife Species Observed in the Field	ieldi
	Reptiles/Amphibians	
Spotted turtle (Clemmys guttata) ¹	Northern leopard frog (Rana pipiens)	Spring peeper (Pseudacris crucifer)
Snapping turtle (Chelydra serpentina)	American toad (Bufo americanus)	Eastern garter snake (Thamnophis sirtalis
Wood frog (Rana sylvatica)	Pickerel frog (Rana palustris)	sirtalis)
Green frog (Rana clamitans)	Red-eared-slider (Trachemys scripta elegans)	Northern water snake (Nerodia sipedon sipedon)
		Bullfrog (Rana castesbeiana)
	Birds	
American crow (Corvus brachyrhynchos)	Brown thrasher (Toxostoma rufum)	Black-crowned night-heron (Nycticorax
Canada goose (Branta canadensis)	Downey woodpecker (Picoides pubescens)	nycticorax)
Mourning dove (Zenaida macroura)	Red-bellied woodpecker (Melanerpes	Eastern phoebe (Sayornis phoebe)
Ring-necked pheasant (Phasianus	carolinus)	Eastern bluebird (Sialia sialis)
colchicus)	Purple finch (Haemorhous purpureus)	Ovenbird (Seiurus aurocapillus)
Mallard (Anas platyrhynchos)	Green heron (Butorides virescens)	Grasshopper sparrow (Ammodramus
Wild turkey (Meleagris gallopavo)	Broad-winged hawk (Buteo platypterus)	savannarum)
Black-capped chickadee (Poecile	Tree swallow (Tachycineta bicolor)	Savannah sparrow (Passerculus
atricapillus)	Northern mockingbird (Mimus polygottos)	sandwichensis)
Red-tailed hawk (Buteo jamaicensis)	Gray catbird (Pumetella carolinensis)	Song sparrow (Melospiza melodia)
Eastern kingbird (Tyrannus tyrannus)	Brown creeper (Certhia americana)	White-crowned sparrow (Zonotrichia
American robin (Turdus migratorius)	Wood duck (Aix sponsa)	ieuophrys)
American goldfinch (Carduelis tristis)	American woodcock (Scolopax minor)	White-throated sparrow (Zonotrichia albicollis)
Bluejay (Cyanocitta cristata)	Barred owl (Strix varia)	Bobolink (Dolichony oryziyoms)
Northern cardinal (Cardinalis		
American Transmission Systems, Incorporated A FirstEnergy Company	63	Bruce Mansfield – Glenwillow 345 kV Transmission Line November 2012



	Table 12. Wildlife Species Observed in the Field	Ple
cardinalis)	Whip-poor-will (Caprimulgus vociferus)	Common grackle (Quiscalus quiscola)
Indigo bunting (Passerina cyanea)	Belted kingfisher (Ceryle alcyon)	White-breasted nuthatch (Sitta
Black-billed cuckoo (Coccyzus	Pileated woodpecker (Pryocopus pileatus)	carolinensis)
erythropthalmus)	Red-headed woodpecker (Melanerpes	Red-breasted nuthatch (Sitta canadensis)
Yellow warbler (Setophaga petechial)	erythrocephalus)	House finch (Carpodacus mexicanus)
Killdeer (Charadrius vociferus)	Northern flicker (Colaptes auratus)	Brown-headed cowbird (Molothrus ater)
Red-winged blackbird (Agelaius	Great crested flycatcher (Myiarchus crinitus)	House sparrow (Passer domesticus)
phoeniceus)	Osprey (Pandion haliaetus)	Eastern meadowlark (Sturnella magna)
Barn swallow (Hirundo rustica)	Eastern towhee (Pipilo erythrophthalmus)	European starling (Sturnus vulgaris)
Tufted titmouse (Baeolophus bicolor)	Ring-billed gull (Larus delawarensis)	Great blue heron (Ardea Herodias)
Cedar waxwing (Bombycilla cedrorum)	Chipping sparrow (Spizella passerina)	Turkey vulture (Cathartes aura)
Baltimore oriole (Icterus galbula)	Common yellowthroat (Geothlypis trichas)	

The spotted turtle is a state-threatened turtle. One spotted turtle was found dead within wetland BBIH. Wetland BBIH is located in Ravenna Township, Portage County along an open arm segment of the route (Link 7).

Table 13. Conservation Lands T	raversed by the Rou	ite = 🔻 🧀
Conservation Area	Length Traversed (miles)	Acreage Traversed
Sheepskin Hollow Nature Preserve	0.5	9.9
Vickers Creek Nature Preserve	0.5	9.4
Jennings Woods	0.0	0.1
Liberty Park Nature Preserve	1.5	26.7
Tinkers Creek Nature Preserve	0.6	10.7
Western Reserve Land Conservancy	0.6	10.4
Wetlands Reserve Program (NRCS owned)	0.1	1.5

Each of these conservation areas is traversed by an open arm segment of the route. Liberty Park and Nature Preserve includes sensitive wetland habitats and is known habitat for several rare and endangered species, including the Indiana bat, marsh wrens, ospreys, and bald eagles. This area was also designated as an Important Bird Area ("IBA") by Audubon Ohio. An existing transmission line presently traverses these conservation lands. Therefore, vegetation maintenance activities periodically occur within the ROW. With the exception of new structures in areas at transmission junctions, and possibly a few other unique cases, no new structures are expected along the open arm sections. Any impacts to these areas from the Project would be minimal and include minor vegetation clearing or trimming within the existing ROW.

Recreation Lands

Recreational opportunities are located throughout the Study Area. Recreational lands traversed by the route include one State Park (Tinkers Creek), one State Forest (Beaver Creek), two local parks (Cleveland MetroParks and Liberty Park), and a local hike and bike trail (Summit County Hike and Bike Trail). Table 14 identifies the recreational areas crossed by the route.

Table 14. Recreation Areas Crossed by the Routes					
Conservation Area	Length Traversed (miles)	Acreage Traversed			
Tinkers Creek State Park	0.6	10.7			
Beaver Creek State Forest	0.5	0.9			
Liberty Park	1.5	26.7			
Cleveland MetroParks	0.4	7.8			
Bedford Reservation (operated by Cleveland Metro Park)	0.4	7.8			
Summit County Hike and Bike Trail	3.2	Unknown width			
Cuyahoga Valley National Park	0	< 0.1			

Tinkers Creek State Park, Beaver Creek State Forest, and Liberty Park are located along open arm segments of the route. An existing transmission line presently traverses these recreation lands. Therefore, vegetation maintenance activities periodically occur within the ROW. No new structures will be located along the open arm sections. Any impacts to these areas from the Project will be minimal and include minor vegetation clearing or trimming within the existing ROW. Visitor access may be limited in the vicinity of the routes during the conductor installation. Following construction, no additional impacts to recreational uses of these sites are anticipated.

Cleveland MetroParks ("MetroPark") property is located along an open arm segment (Link 12) and Bedford Reservation, which is part of the MetroParks system, is located along the de-energized segment (Link 13). The Akron Hike and Bike trail is located within the transmission ROW through an open arm segment (Link 10) and adjacent to a segment where existing infrastructure will be rebuilt (Link 11). The trail continues for approximately 0.1 miles through the MetroPark along Link 12 and is crossed once by Link 13. Additional tree trimming will be required within the ROW beneath the open arm position and possibly within the rebuild ROW in these areas. The portion of the trail located within the ROW will need to be closed during construction. Because no new structures are expected along the open arm and de-energized segments (with

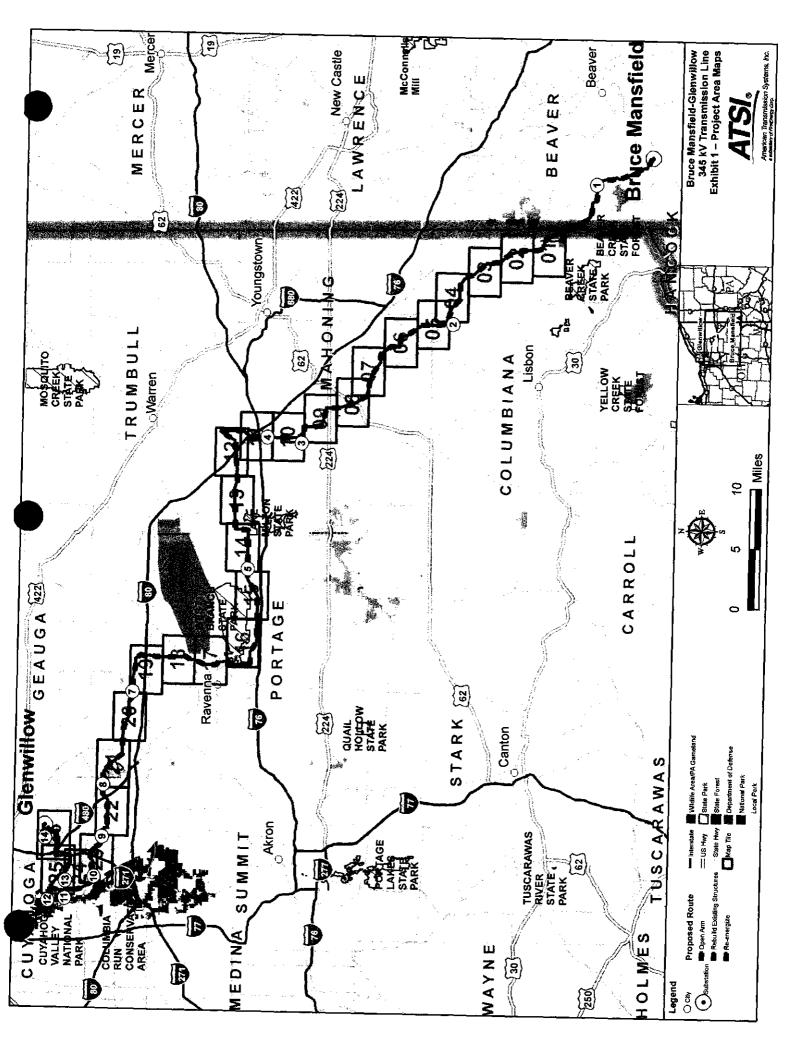
the exception of new structures in areas at transmission junctions, new structures at the Link 13 endpoints, and possibly a few other unique cases as previously described), and the rebuild portion is only 1.4 miles, construction activities would be minimal in this area. A very small portion of the ROW, less than 0.1 acres in size, for the deenergized segment (Link 13) overhangs the Cuyahoga Valley National Park jurisdictional boundary. No structures are located within the Cuyahoga Valley National Park, and no impact to the National Park is anticipated.

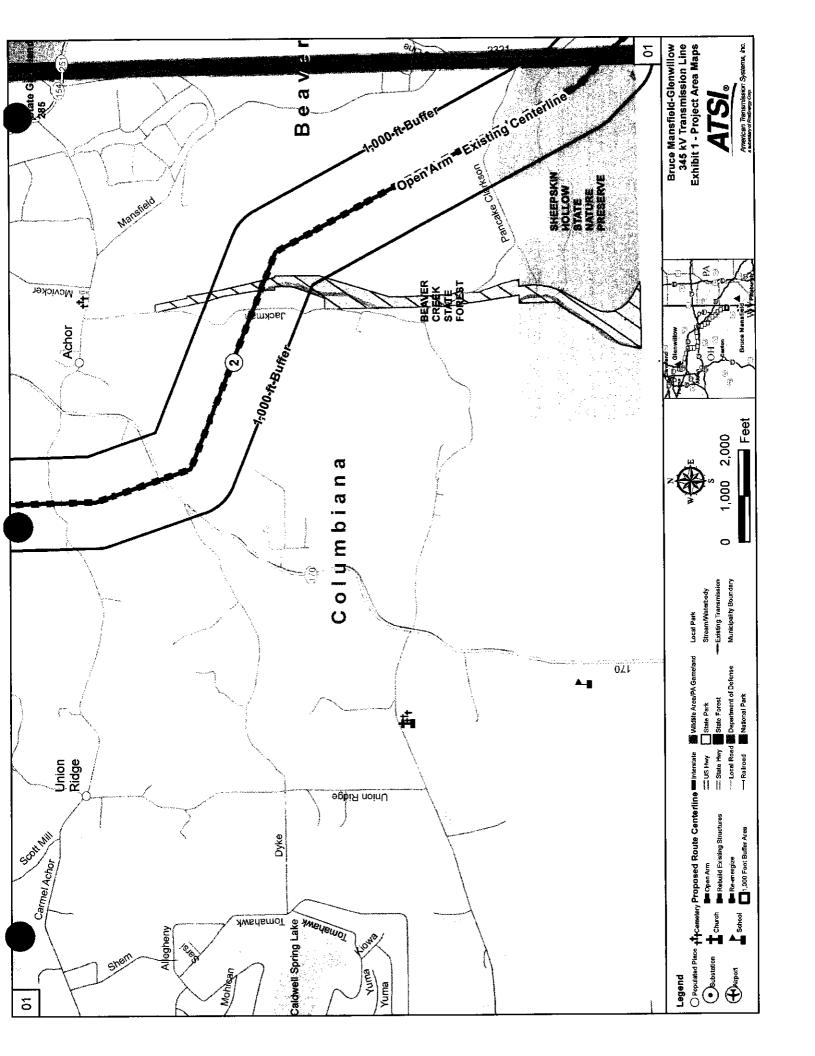
4906-11-01(E)(3): Additional Information

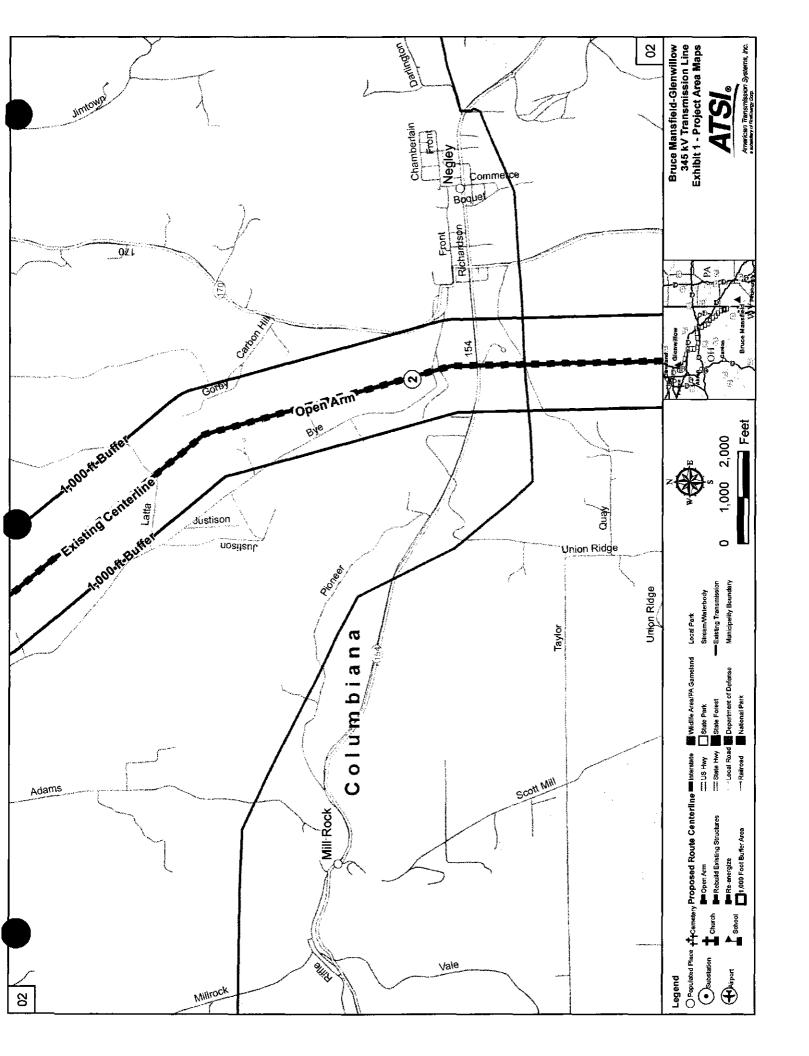
Construction and operation of the proposed Project will be in accordance with the requirements specified in the latest revision of the National Electric Safety Code ("NESC") as adopted by the PUCO and will meet all applicable safety standards established by Occupational Safety and Health Administration ("OSHA").

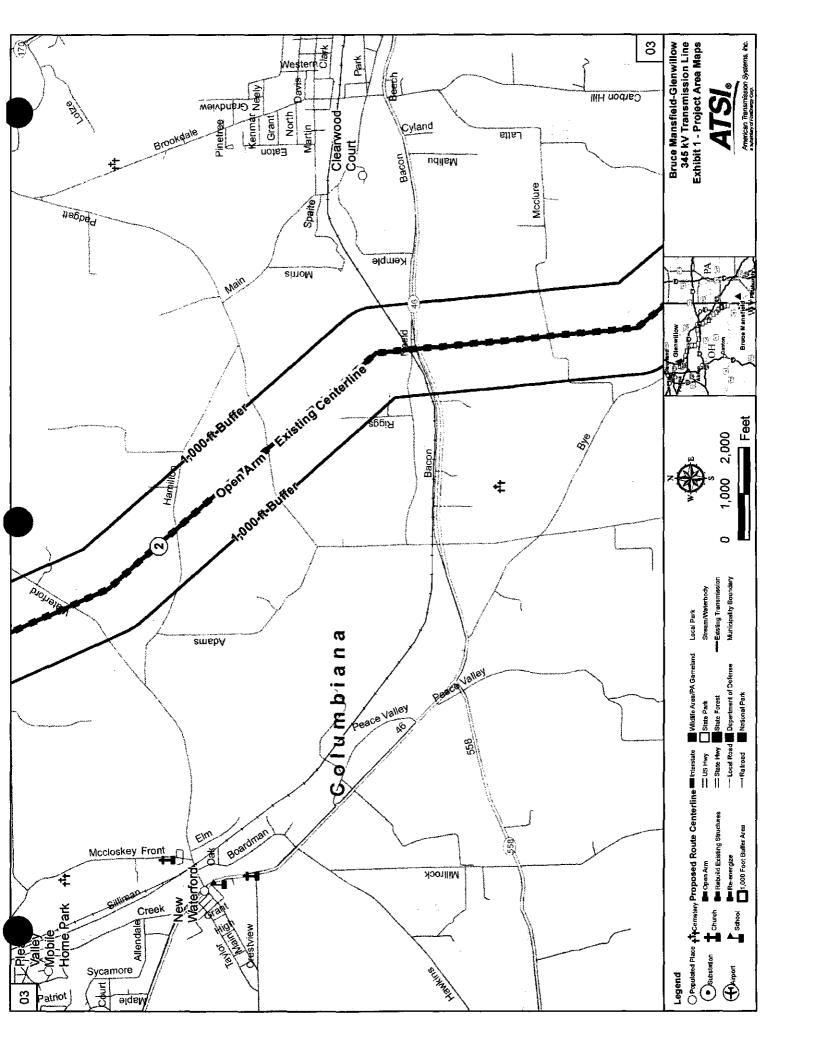
As set forth above, the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line Project is needed to reinforce the interconnected transmission system following the announced retirement of several coal-fired power plants in ATSI territory. Because the Project is needed to ensure the ATSI BES meets at a minimum all applicable NERC Transmission Planning ("TPL") criteria, the Project will serve the public interest, convenience, and necessity. The Project is consistent with the regional plans for expansion of the electric power grid serving northeast Ohio.

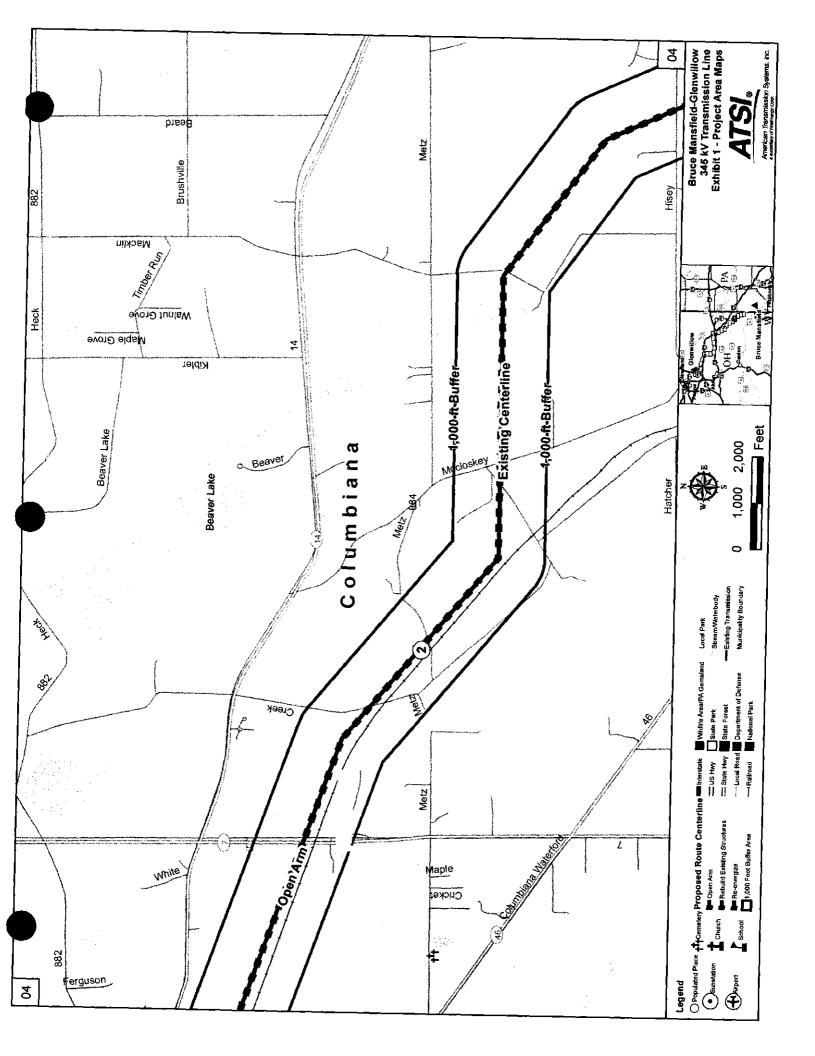
This LON describes the nature of the probable environmental impact of the proposed Project. Of all Potential Routes identified by ATSI, the route presented in this LON represents the route with the minimum adverse environmental impact feasible, given all pertinent considerations. The Project is not expected to significantly impact water resources and ATSI will comply with all applicable provisions of relevant environmental statutes. Additionally, the Project will have no significant impact on the viability of agricultural land along the route of the proposed transmission line, given that only one-third of the route is characterized as agricultural land and ATSI has limited the need for new structures along the route to the greatest extent possible.

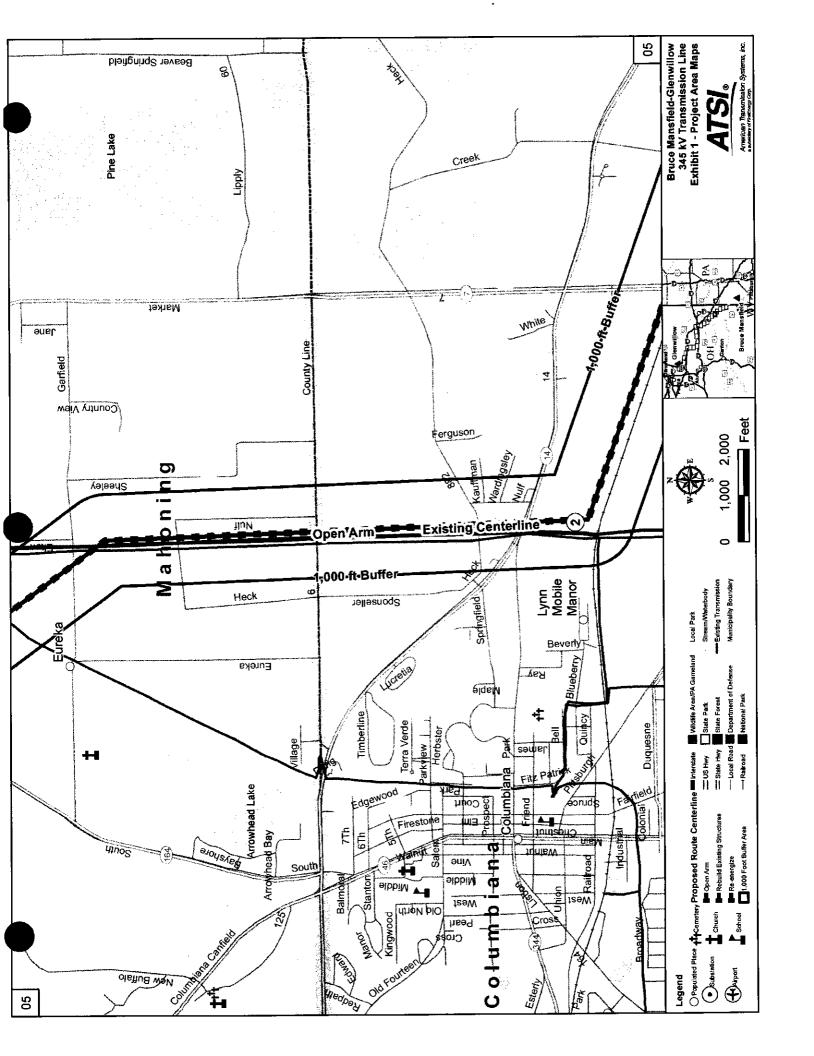


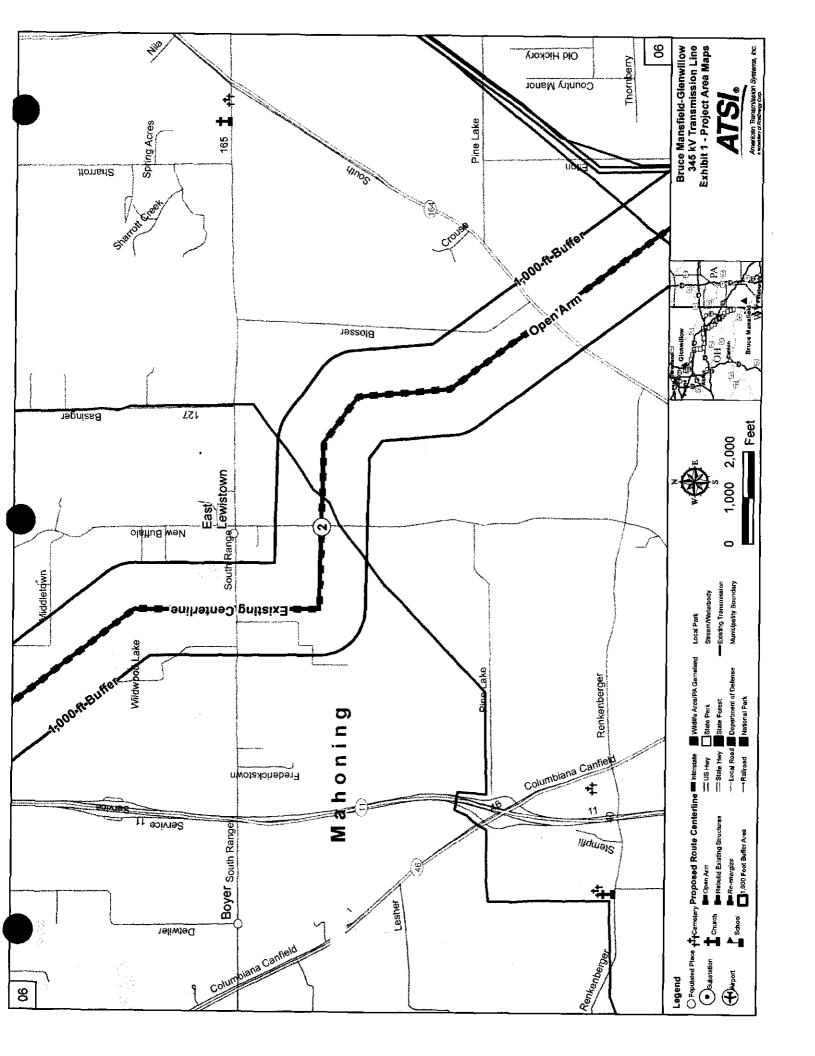


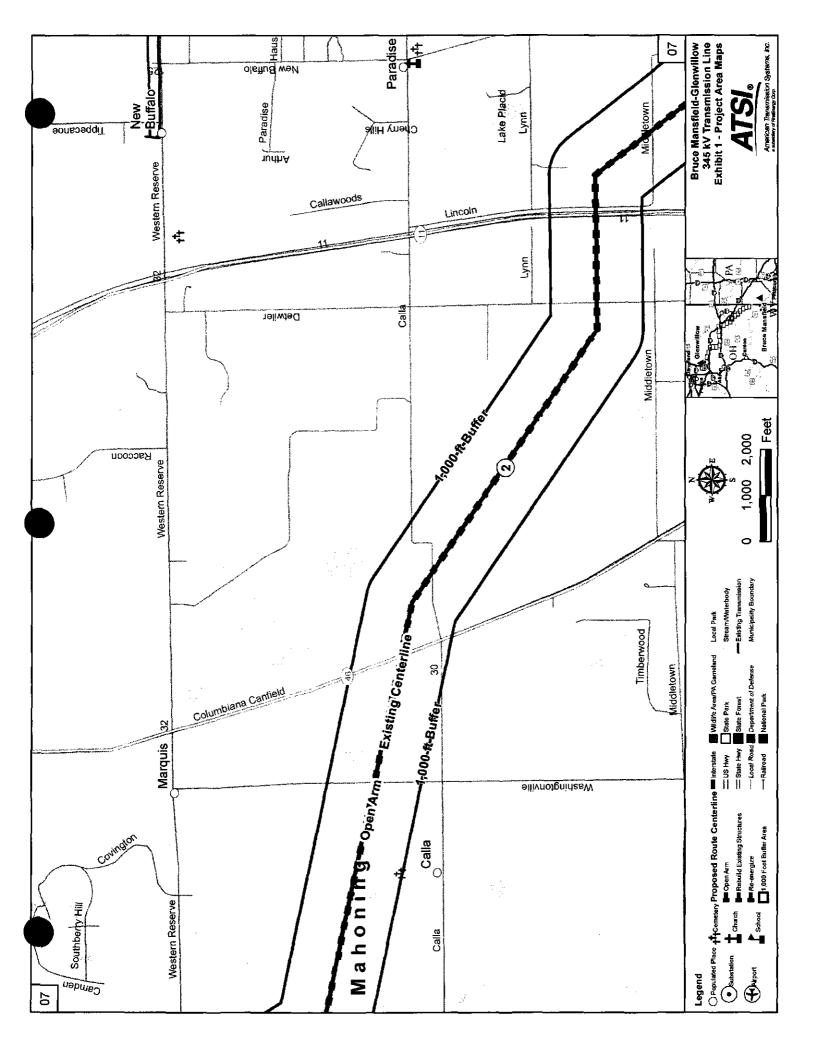


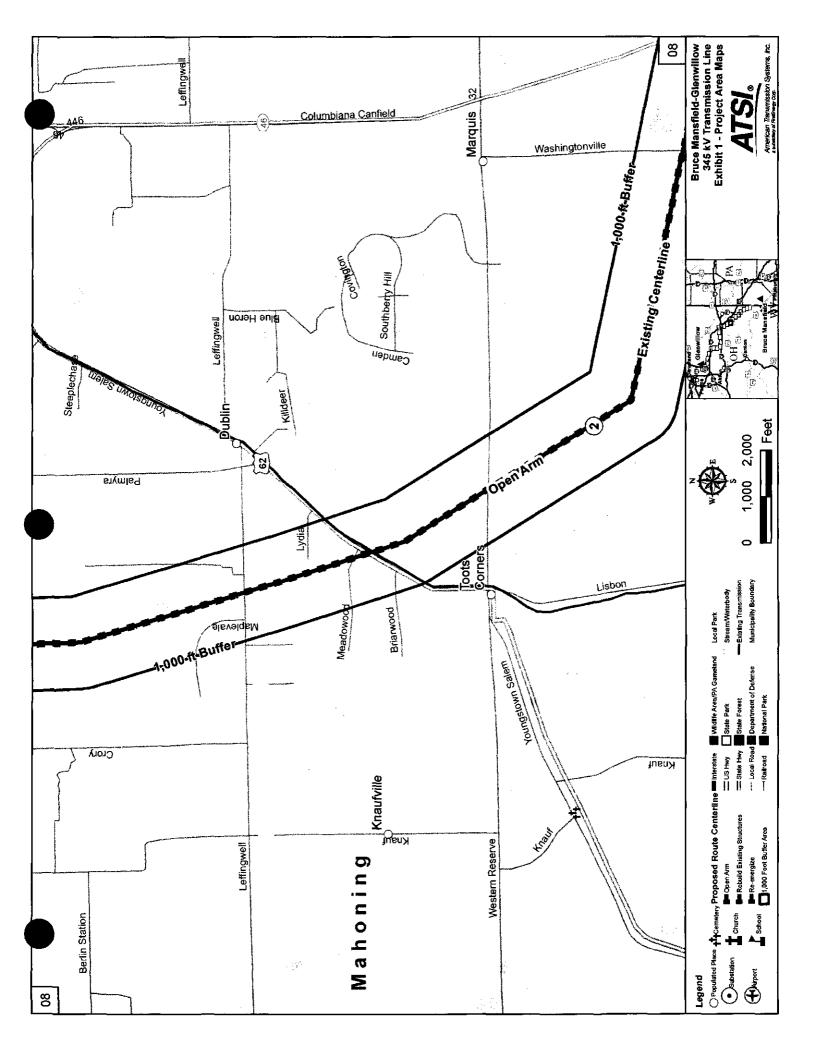


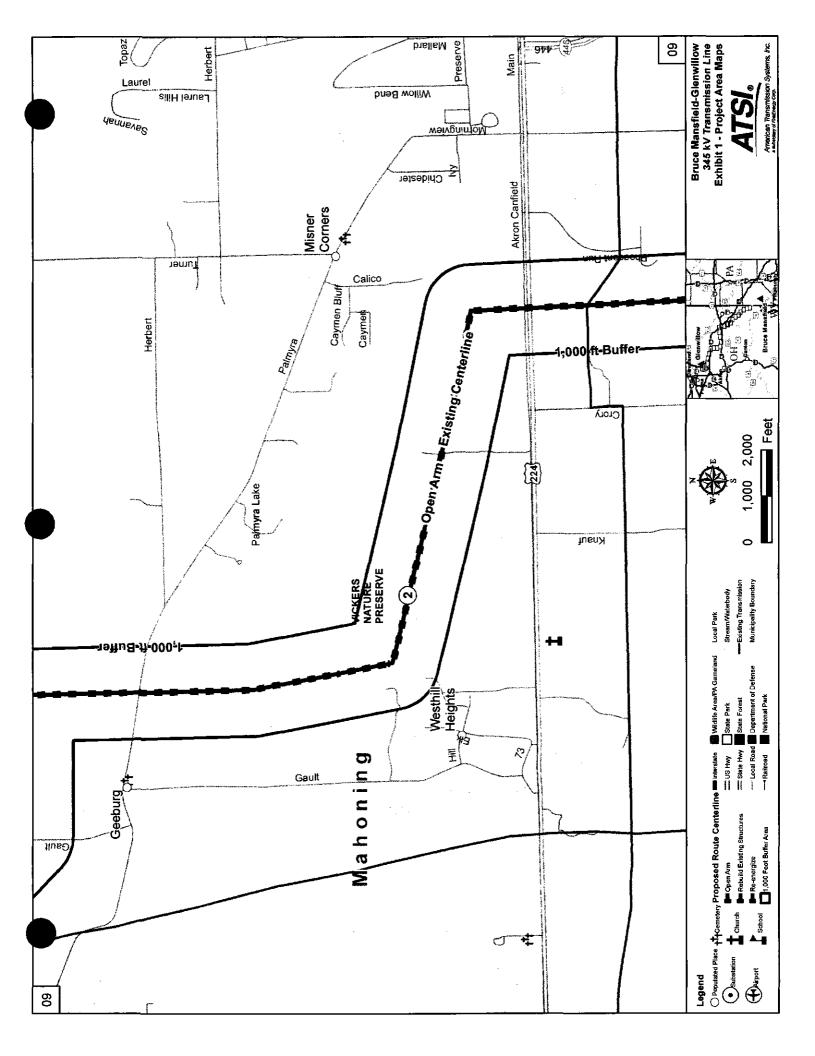


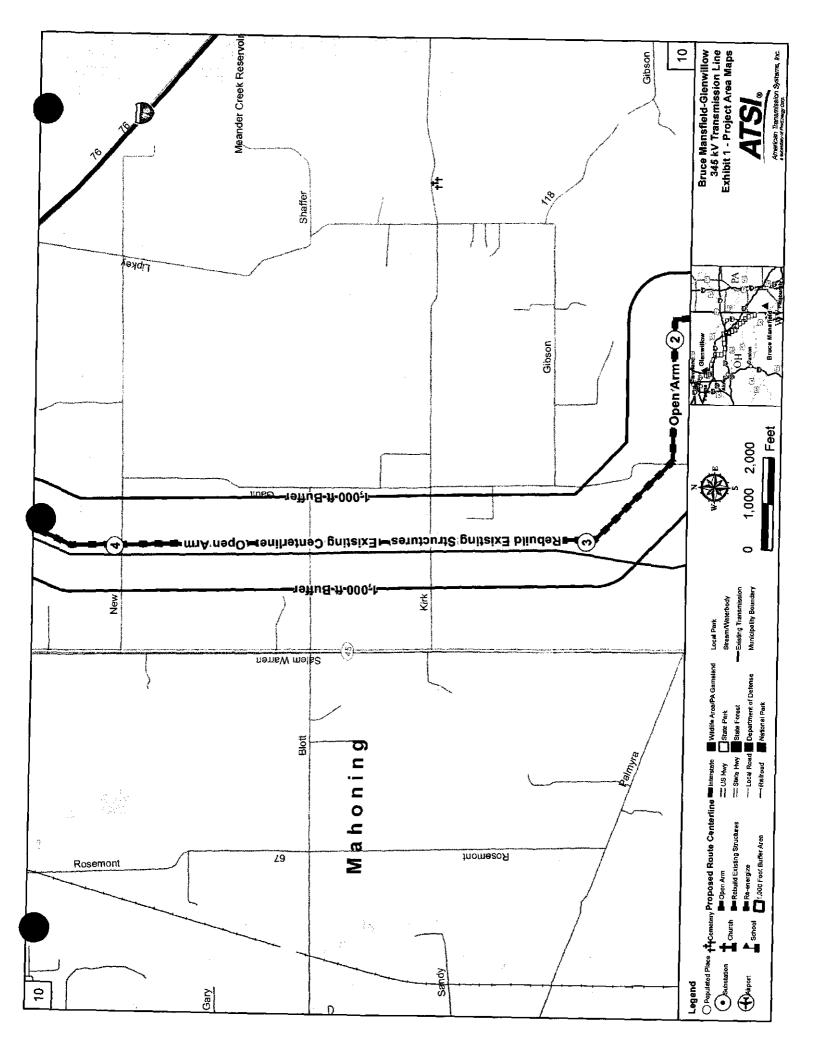


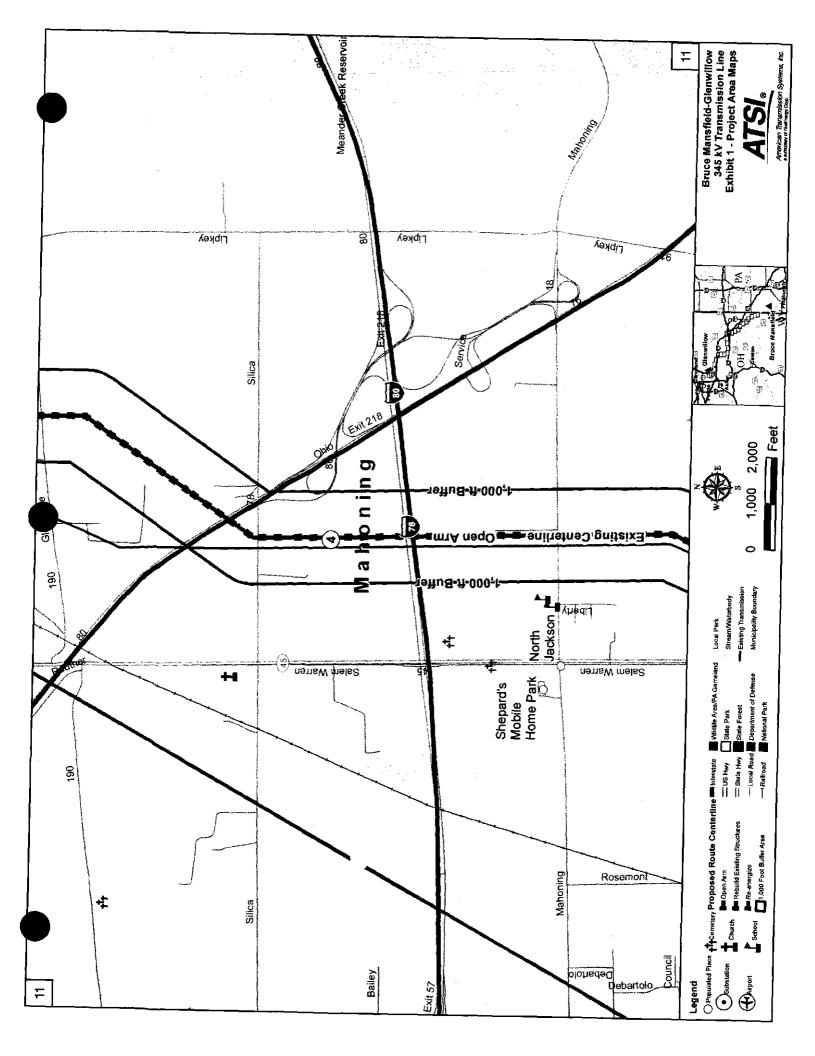


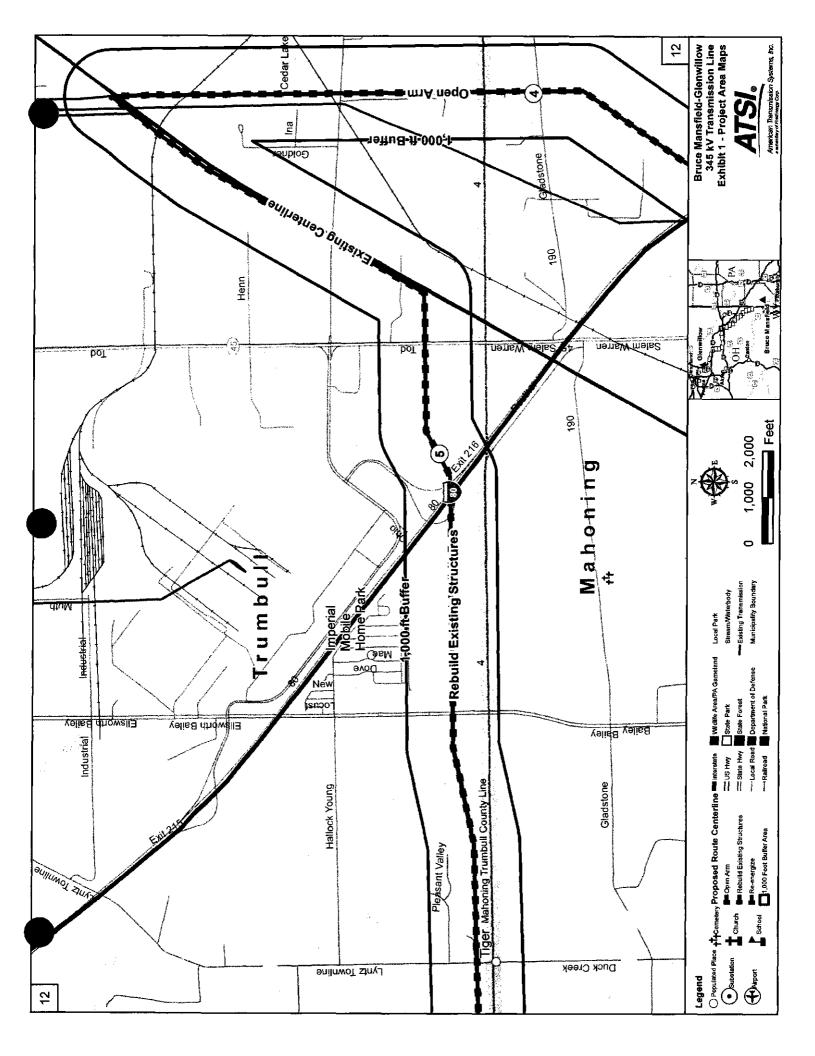


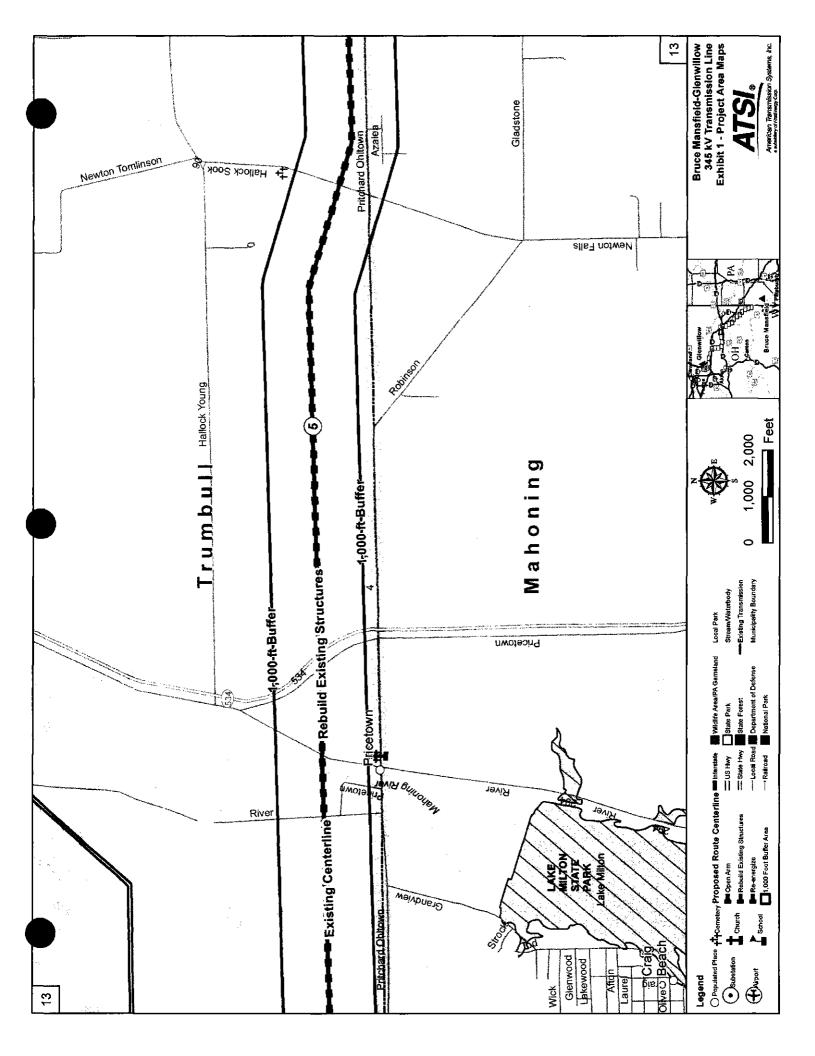


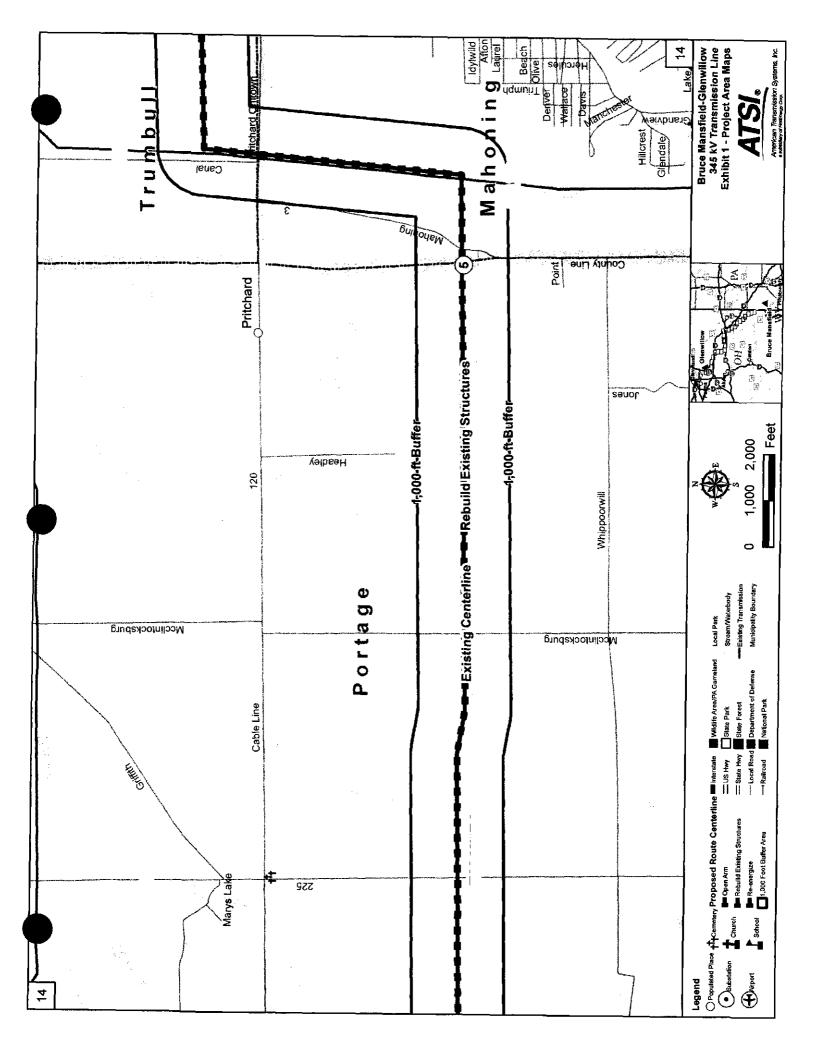


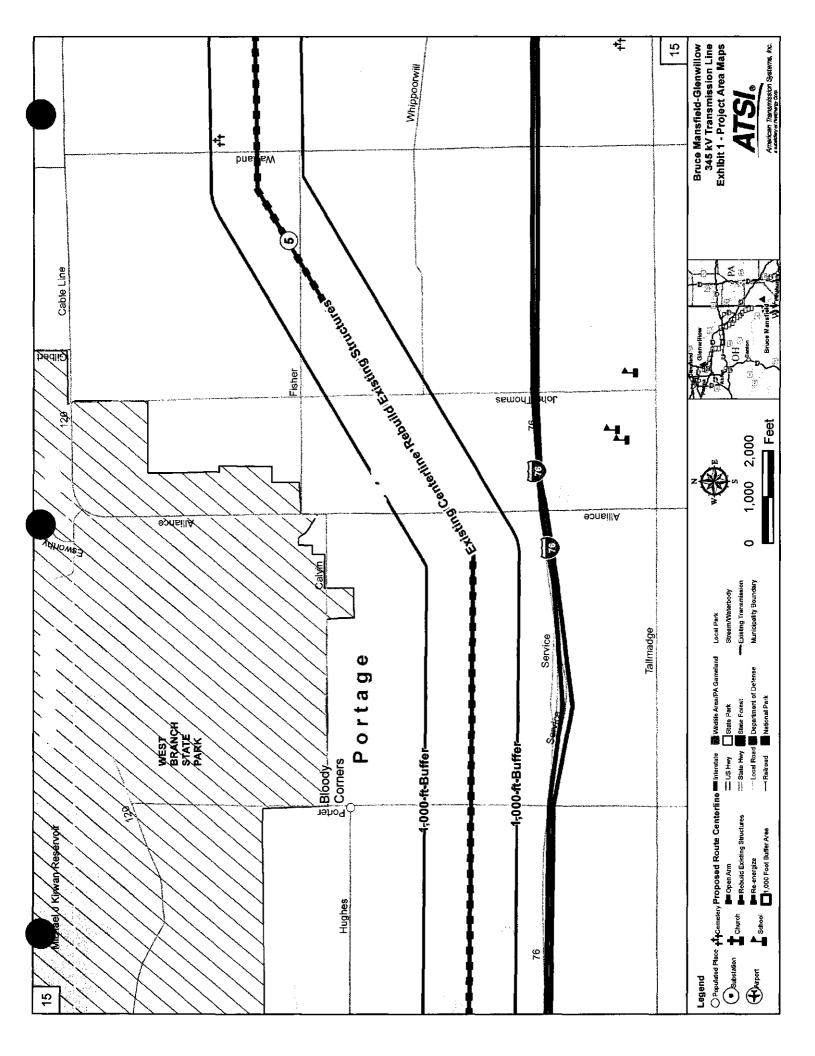


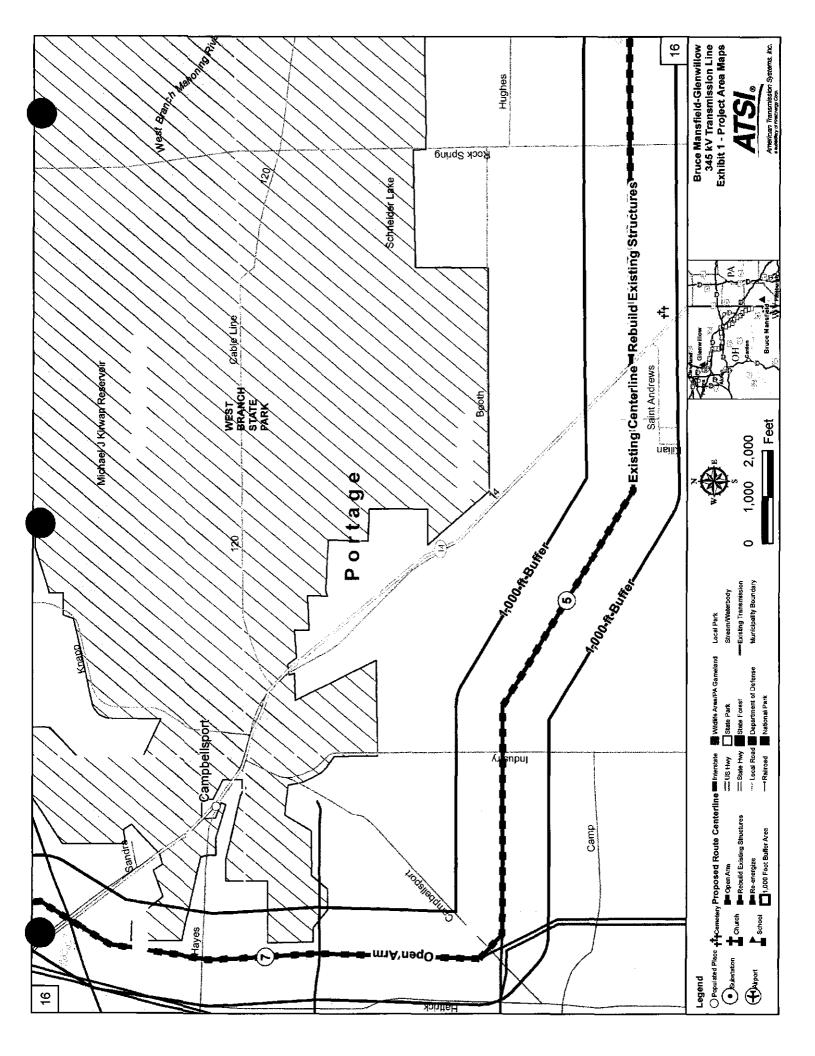


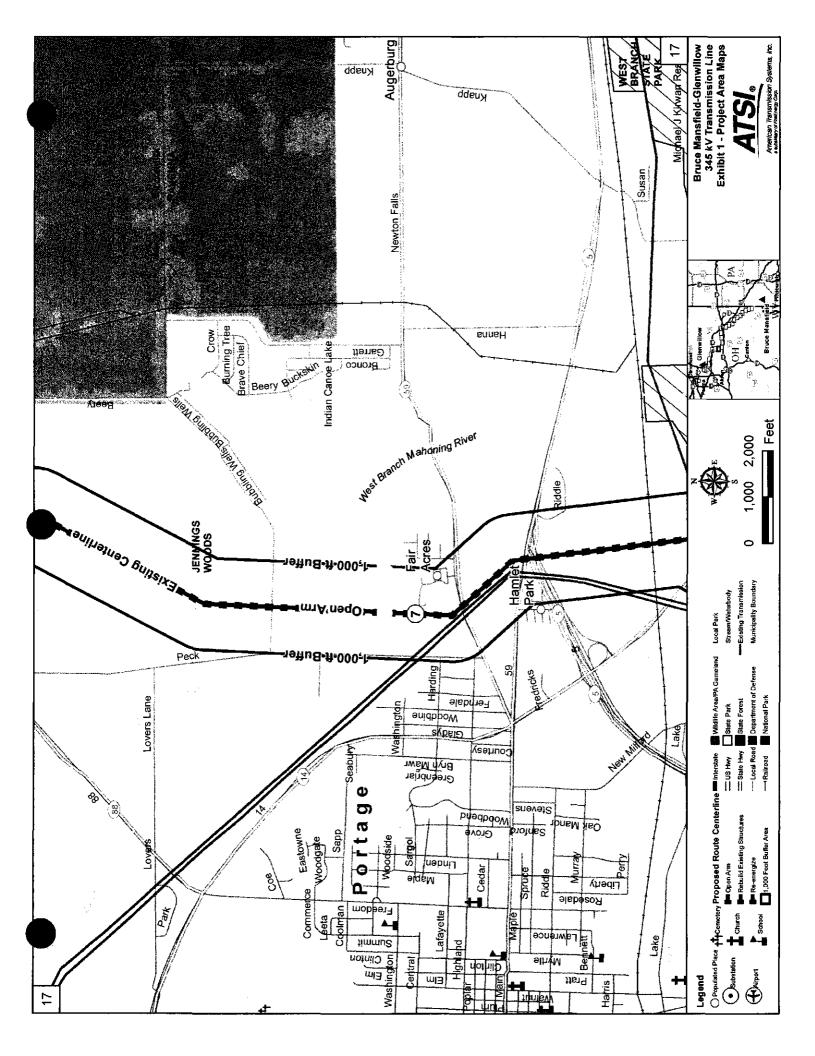


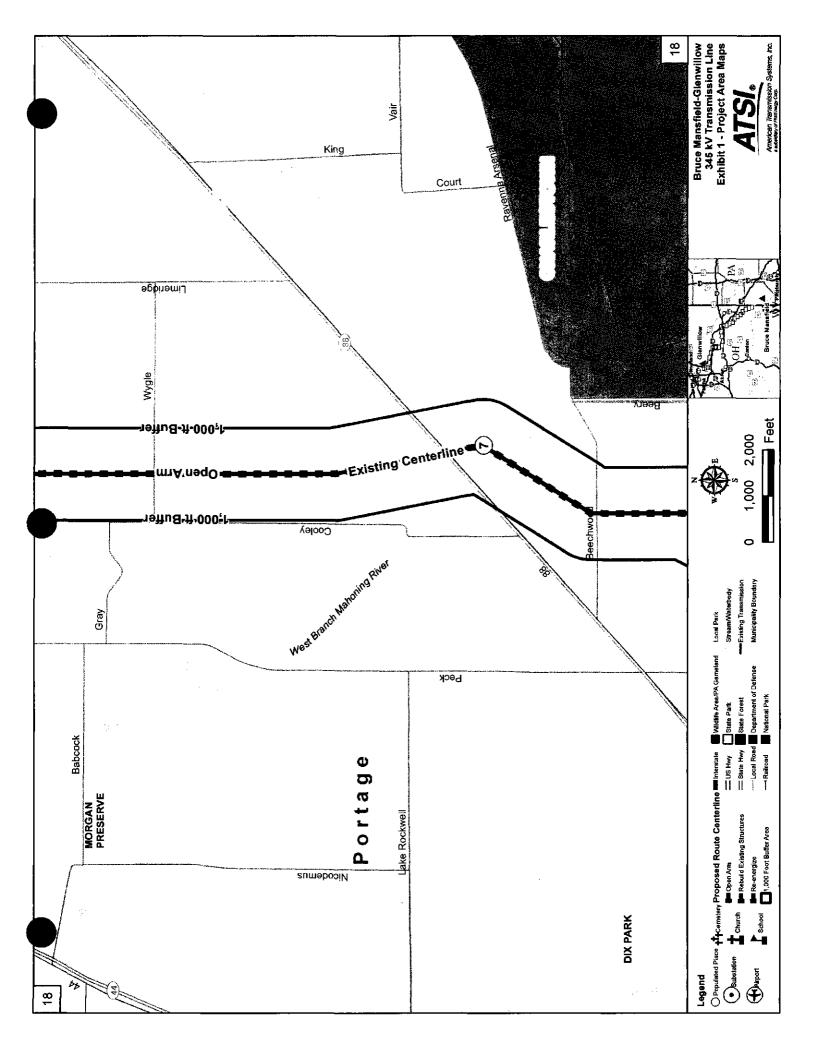


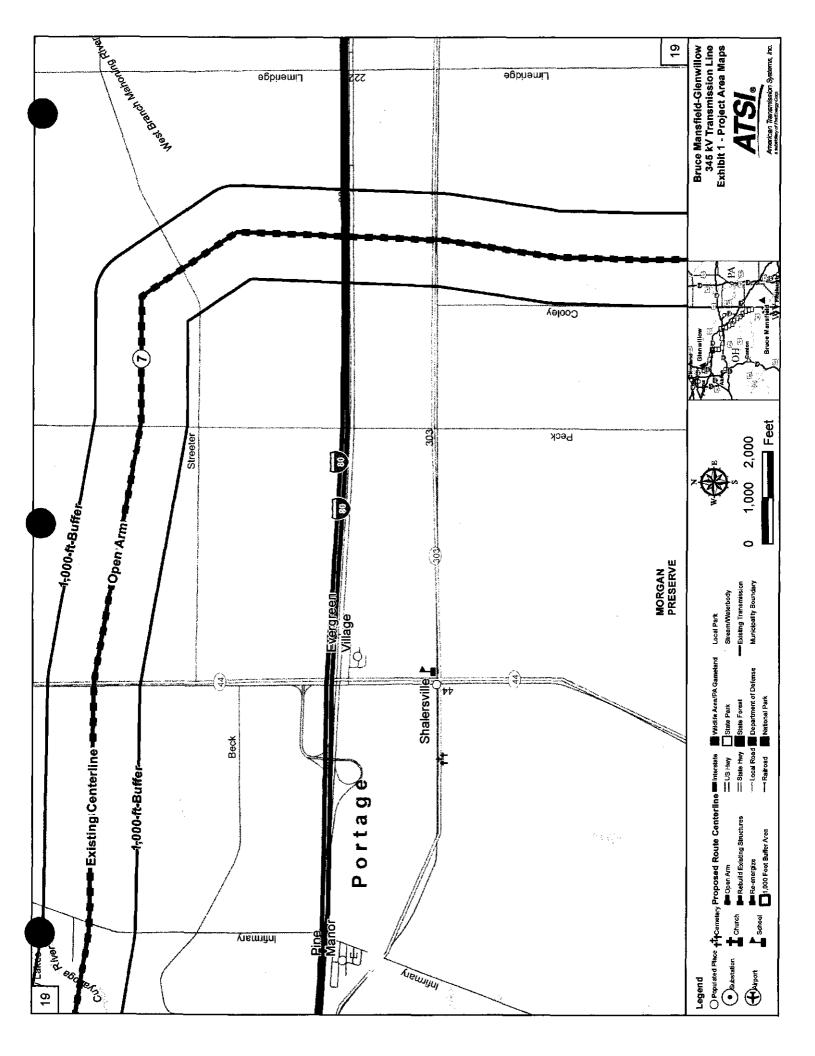


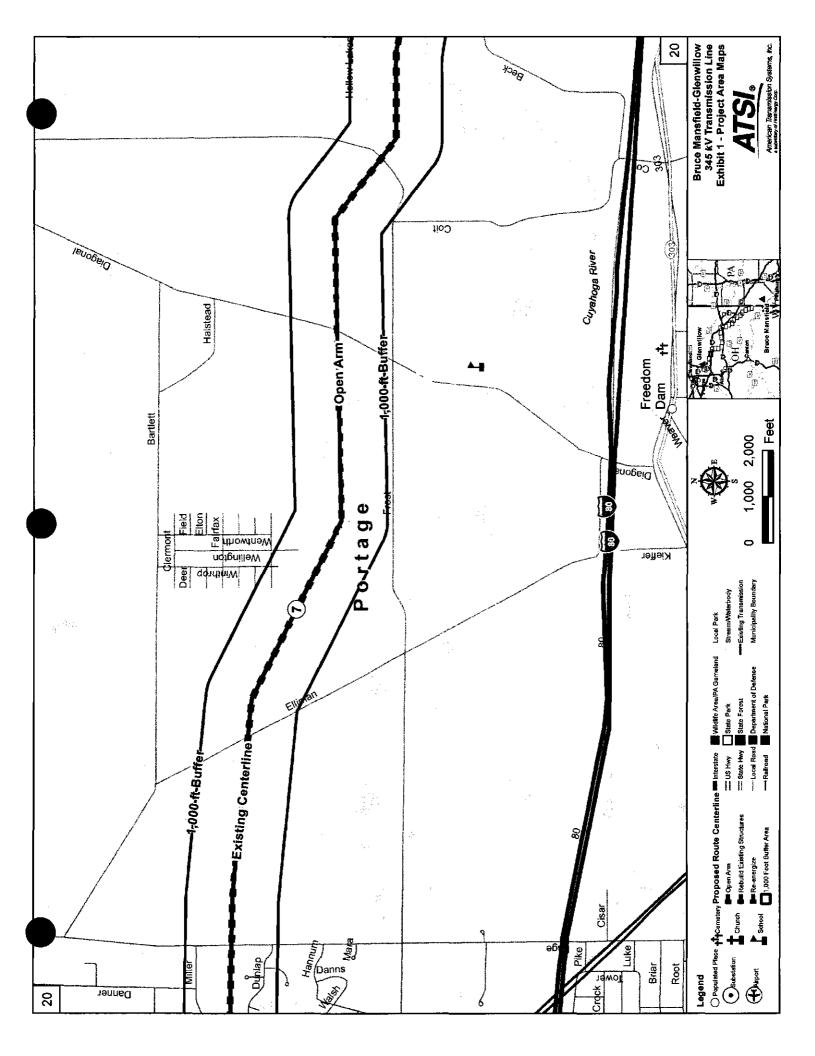


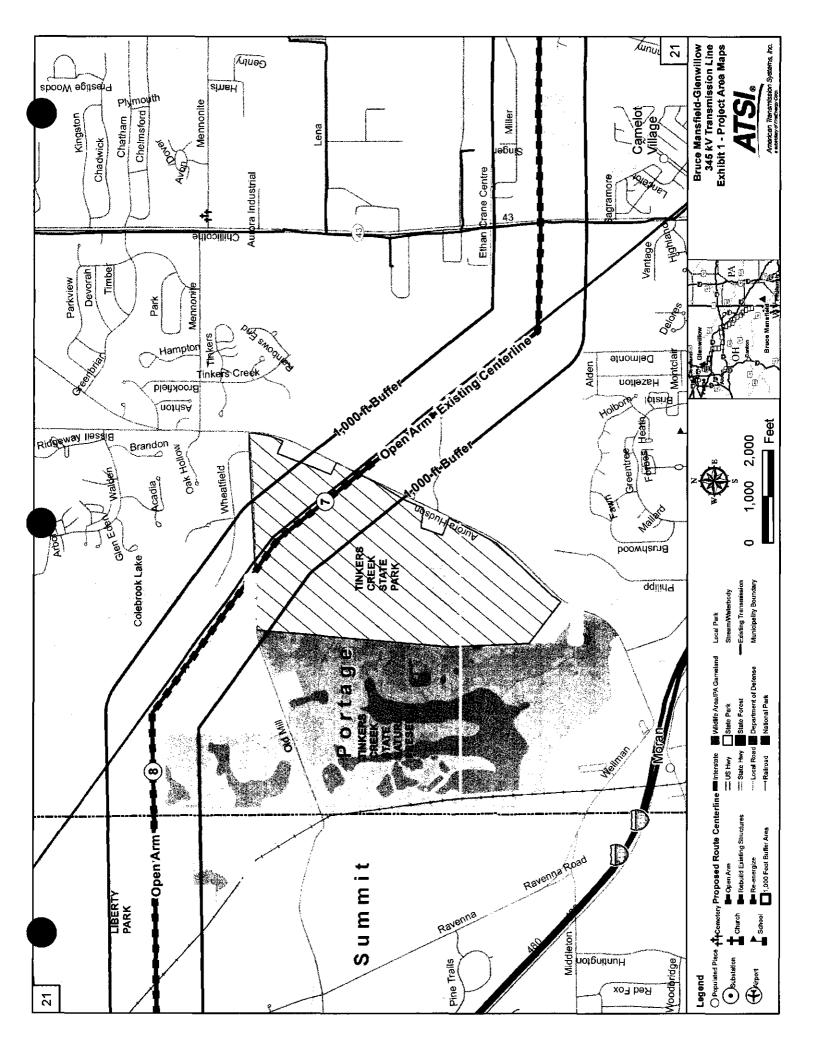


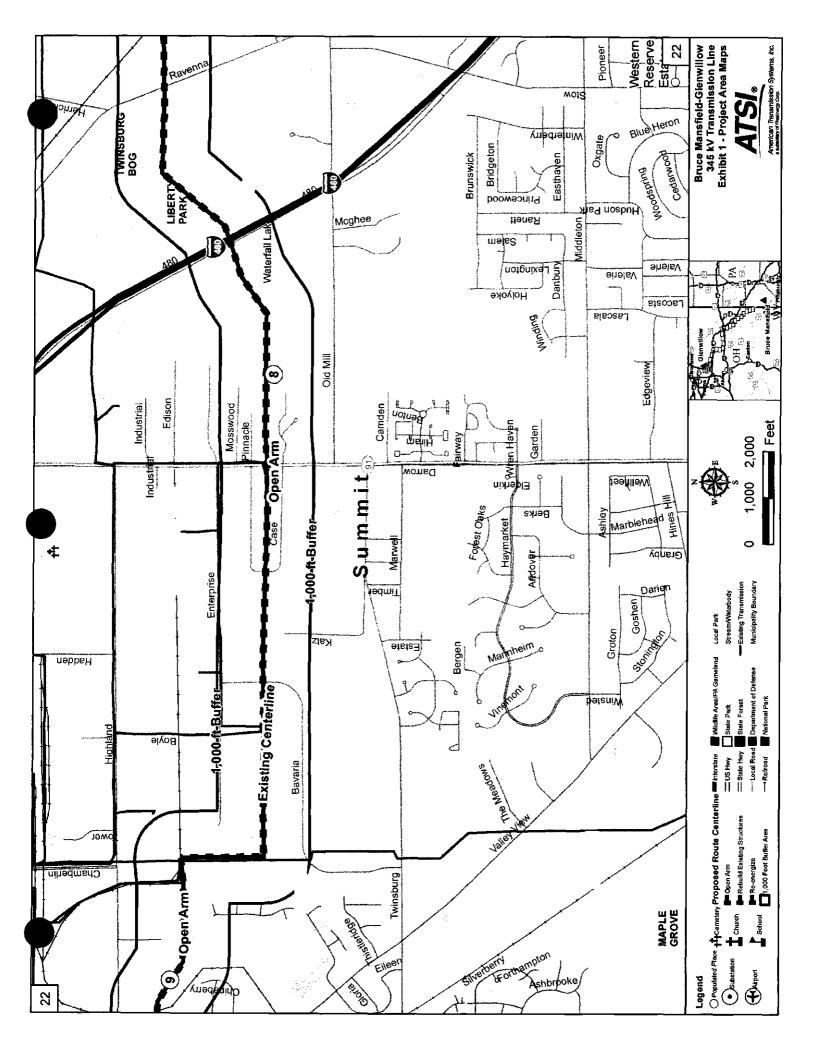


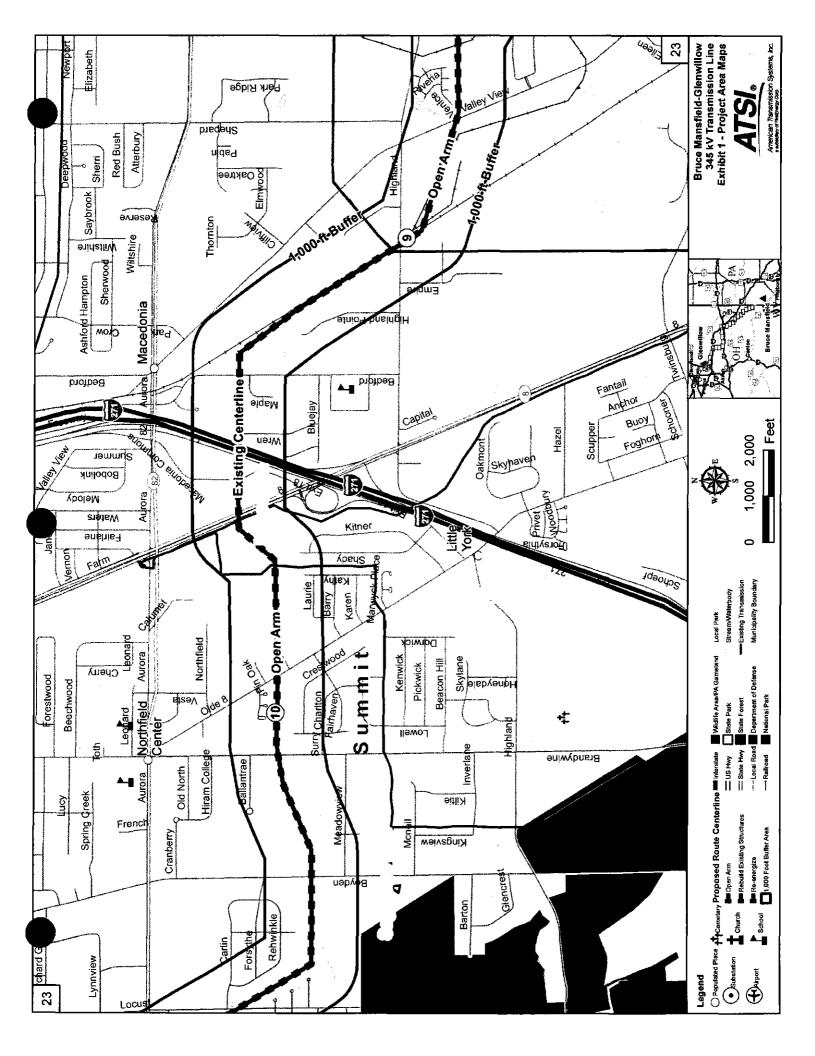


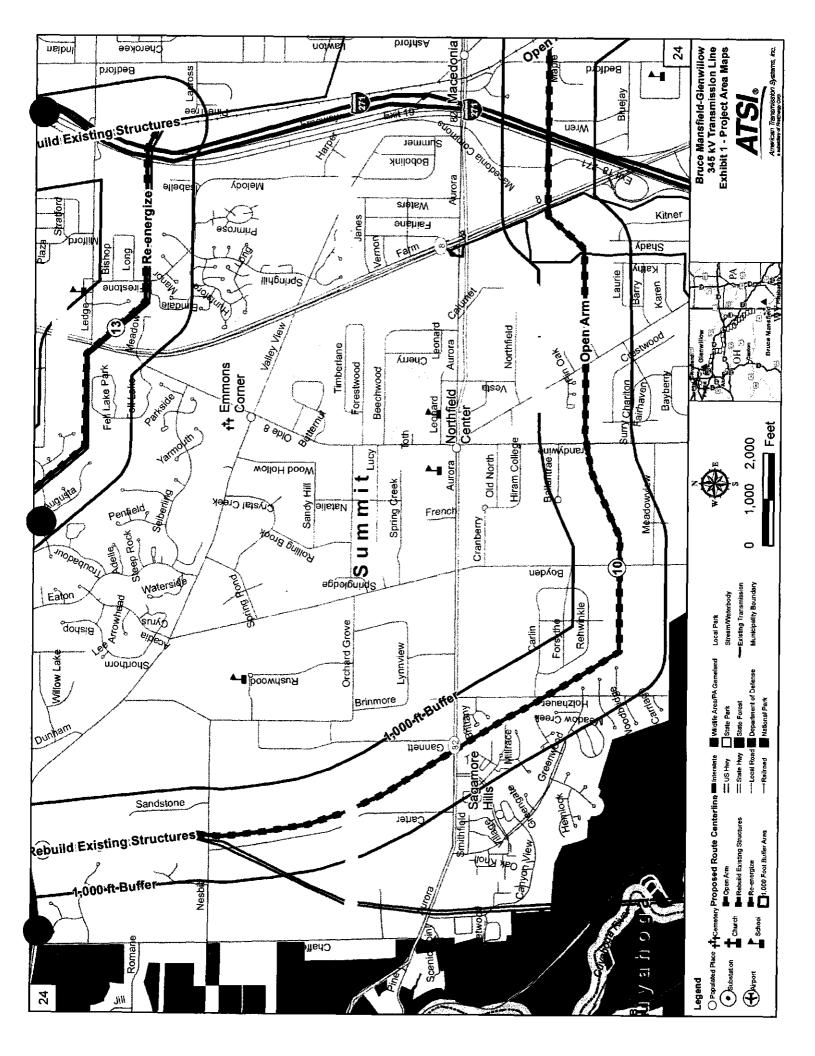


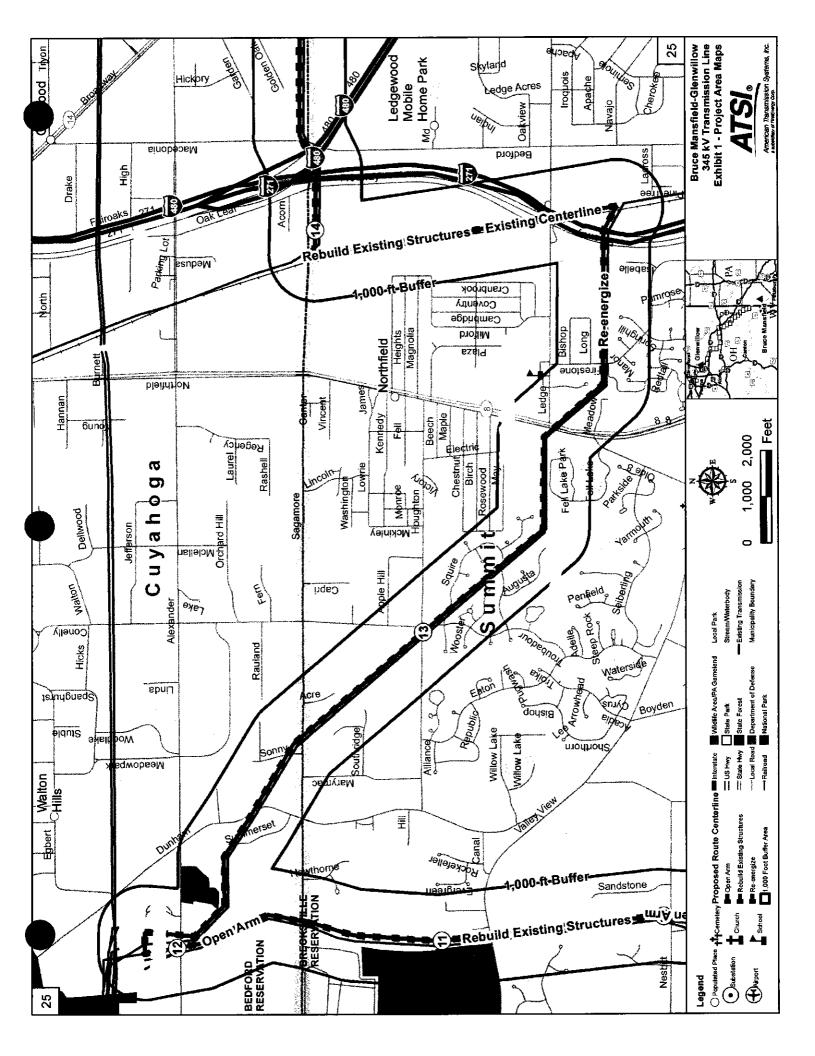


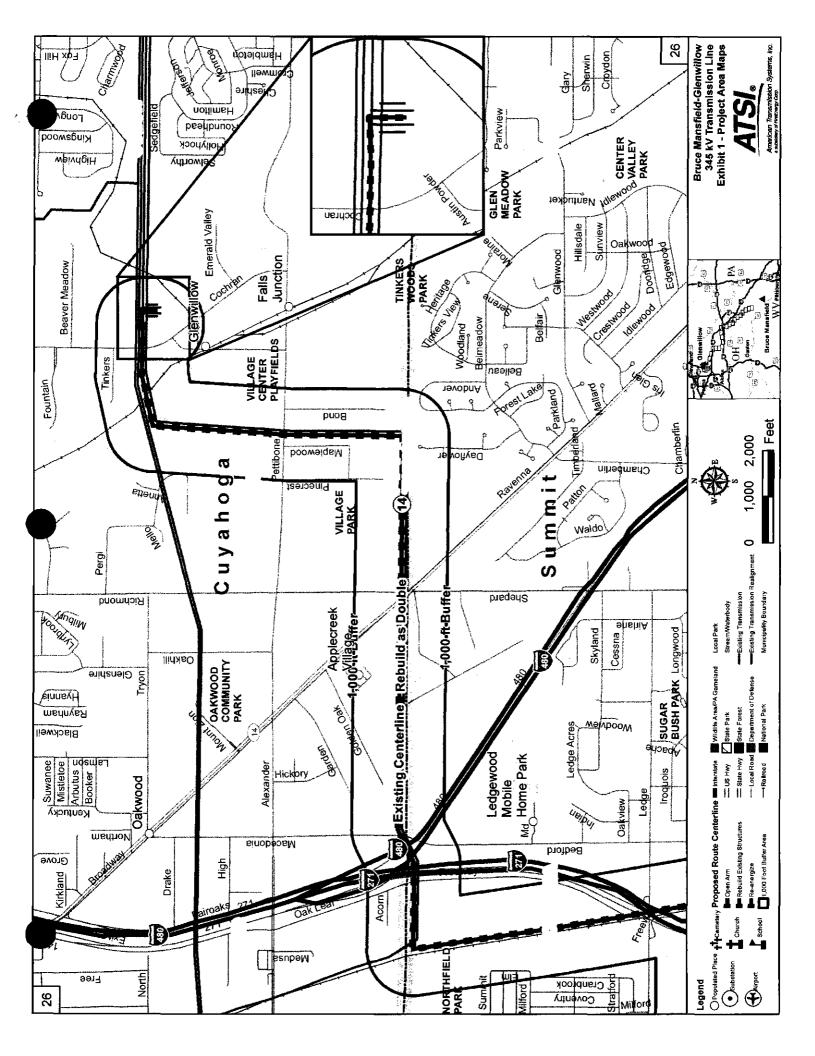












Transmission Expansion Advisory Committee (TEAC) Recommendations to the PJM Board

PJM Staff Whitepaper May 2012





EXECUTIVE SUMMARY

Since November, PJM has received notification from several generation owners of their intent to deactivate a number of generators totaling over 13,000 MW of generation. Generation owners are required to notify PJM of their intent to deactivate generation per Article V of the PJM tariff. Baseline reliability criteria violations have been identified as a result of the generation deactivations. Transmission reinforcements to address the reliability criteria violations are being developed.

The baseline upgrades related to the generation deactivation studies completed as of this time are summarized below. The requested generation deactivations range from May 2012 through the end of 2015. If the transmission upgrades that are required to maintain reliability cannot be implemented by the requested deactivation date, generation may need to be retained through Reliability Must Run (RMR) agreements. Based on the expected in-service date of some of the transmission upgrades included in this report, RMR agreements are being pursued.

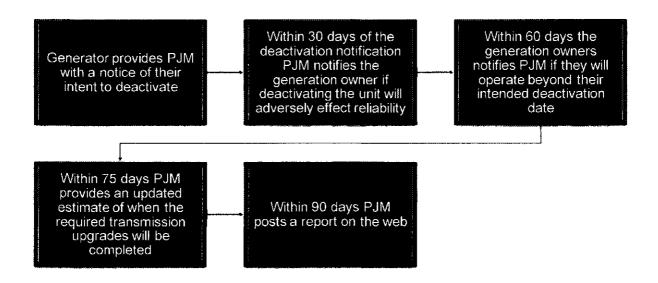
The total increase to the RTEP to include these baseline project changes is \$1,881 million. With these changes, the RTEP will include over \$23.410 billion of transmission additions and upgrades since the first plan was approved by the Board in 2000.

SUMMARY OF RESULTS

Generation Deactivation Process

As noted above, generation deactivation is covered under Article V of the PJM tariff. The flowchart below details the generation deactivation process. After a generation owner notifies PJM of their intent to deactivate a unit, PJM conducts a series of studies to determine if deactivating the generator will have an adverse impact on the reliability of the bulk electric system. This baseline analysis determines the compliance of the system with reliability criteria and standards. If reliability criteria violations are identified, transmission upgrades are developed to resolve the identified issues. If the transmission upgrades can be put in place prior to the intended deactivation date, the unit can retire as requested. If the transmission upgrades cannot be put in place prior to the requested deactivation date then an RMR agreement may be pursued. The generation owner is not under any obligation to pursue the RMR agreement and may retire the unit at any time. PJM cannot compel a generator to remain in-service. Transmission upgrades required to maintain a reliable system are identified and reviewed with the Sub-regional RTEP Committees and the

Transmission Expansion Advisory Committee (TEAC). The cost of transmission upgrades to mitigate criteria violations caused by generation deactivation is allocated to load.



The upgrades included in this report are needed due to the deactivation of multiple units from several different generation owners. The table below summarizes the generation deactivations driving the need for the upgrades included in this report.

Unit Name	Capacity (MW)	Owner	Official Owner Request Date
Chesapeake 1	111	Dominion	11/15/2011
Chesapeake 2	111	Dominion	11/15/2011
Yorktown 1	159	Dominion	11/15/2011
Chesapeake 3	147	Dominion	11/15/2011
Chesapeake 4	207	Dominion	11/15/2011
Bergen 3	21	PS Power	12/1/2011
Burlington 8	21	PS Power	12/1/2011
National Park 1	21	PS Power	12/1/2011
Mercer 3	115	PS Power	12/1/2011
Sewaren 6	111	PS Power	12/1/2011
Armstrong 1	172	FE Solutions	1/26/2012
Armstrong 2	171	FE Solutions	1/26/2012

	Capacity	_	Official Owner
Unit Name	(MW)	Owner	Request Date
Ashtabula 5	244	FE Solutions	1/26/2012
Bay Shore 2	138	FE Solutions	1/26/2012
Bay Shore 3	142	FE Solutions	1/26/2012
Bay Shore 4	215	FE Solutions	1/26/2012
Eastlake 1	132	FE Solutions	1/26/2012
Eastlake 2	132	FE Solutions	1/26/2012
Eastlake 3	132	FE Solutions	1/26/2012
Eastlake 4	240	FE Solutions	1/26/2012
Eastlake 5	597	FE Solutions	1/26/2012
Lake Shore 18	245	FE Solutions	1/26/2012
R Paul Smith 3	28	FE Solutions	1/26/2012
R Paul Smith 4	87	FE Solutions	1/26/2012
Walter C Beckjord 1	94	Duke Energy	2/1/2012
Walter C Beckjord 2	94	Duke Energy	2/1/2012
Walter C Beckjord 3	128	Duke Energy	2/1/2012
Walter C Beckjord 4	150	Duke Energy	2/1/2012
Walter C Beckjord 5	238	Duke Energy	2/1/2012
Walter C Beckjord 6	414	Duke Energy	2/1/2012
Albright 1	73	Monongahela Power	2/8/2012
Albright 2	73	Monongahela Power	2/8/2012
Albright 3	137	Monongahela Power	2/8/2012
Rivesville 5	35	Monongahela Power	2/8/2012
Rivesville 6	86	Monongahela Power	2/8/2012
Willow Island 1	51	Monongahela Power	2/8/2012
Willow Island 2	138	Monongahela Power	2/8/2012
New Castle 3	93	GenOn	2/29/2012
New Castle 4	92	GenOn	2/29/2012
New Castle 5	140	GenOn	2/29/2012
New Castle Diesels	5.5	GenOn	2/29/2012
Portland 1	158	GenOn	2/29/2012
Portland 2	243	GenOn	2/29/2012
Glen Gardner CTs	160	GenOn	2/29/2012
Shawville 1 - 4	597	GenOn	2/29/2012
Titus 1 - 3	243	GenOn	2/29/2012
Niles 1 & 2	217	GenOn	2/29/2012
Elrama 1 - 4	396	GenOn	2/29/2012
Fisk 19	326	Midwest Generation	3/8/2012
Crawford 7	213	Midwest Generation	3/8/2012
Crawford 8	319	Midwest Generation	3/8/2012

The baseline deactivation analysis, discussed herein, resulted in the need for transmission upgrades in several transmission zones. In total these analyses identified over 130 upgrades ranging from simple line terminal equipment upgrades, new substations and substation additions to reinforce underlying systems, rebuilding existing lines to higher capacity, and new transmission lines. A summary of the major baseline project additions that are \$5 million or greater are detailed below. A complete listing of all of the projects is included as an attachment to this document.

Mid-Atlantic Region System Upgrades

- PEPCO Transmission Zone
 - Reconductor 230 kV line 23032 and 23034 with high temperature conductor \$16M
- PENELEC Transmission Zone
 - Construct a 115 kV ring bus at Claysburg Substation \$5.25M
 - Construct Farmers Valley 345/230 kV and 230/115 kV substation by looping the Homer City to Stolle Road 345 kV line into Farmers Valley – \$29.5M
 - Relocate the Erie South 345 kV line bay \$13M
 - Convert the Lewis Run Farmers Valley 115 kV line to 230 kV \$46.8M
- PPL Transmission Zone
 - Install a new North Lancaster 500/230 kV substation \$42M
- JCPL Transmission Zone
 - Construct a new Whippany to Montville 230 kV line \$37.5M

Western Region System Upgrades

- American Electric Power
 - Reconductor Kammer West Bellaire 345 kV \$20M
 - Install a new 765/345 substation at Mountaineer and build a ¾ mile 345 kV line to Sporn \$65M
 - Terminate Transformer #2 at SW Lima in a new bay position \$5M
 - Add four 765 kV breakers at Kammer \$30M
- APS Transmission Zone
 - Loop the Homer City-Handsome Lake 345 kV line into the Armstrong substation and install a 345/138 kV transformer at Armstrong - \$27.8M
 - Install a new Buckhannon Weston 138 kV line \$17.5M
 - Convert Moshannon substation to a four breaker 230 kV ring \$6.5M
- ATSI Transmission Zone
 - Install a 345/138 kV transformer at the Inland Q-11 station \$7.2M

- Convert Eastlake units 1, 2, 3, 4 and 5 to synchronous condensers \$100M
- Convert Lakeshore 18 to synchronous condensers \$20M
- Re-conductor the Galion GM Mansfield Ontario Cairns 138 kV line \$9.8M
- Install a 2nd 345/138 kV transformer at the Allen Junction station \$7.2M
- Install a 2nd 345/138 kV transformer at the Bay Shore station \$7.2M
- Create a new Northfield Area 345 kV switching station by looping in the Eastlake Juniper 345 kV line and the Perry Inland 345 kV line \$37.5M
- Build a new Mansfield Northfield Area 345 kV line \$184.5M
- Create a new Harmon 345/138/69 kV substation by looping in the Star South Canton 345 kV line
 \$46M
- Build a new Harmon Brookside + Harmon Longview 138 kV line \$9.2M
- Create a new Five Points Area 345/138 kV substation by looping in the Lemoyne Midway 345 kV line \$30M
- Build a new 345-138kV Substation at Niles \$32M
- Build a new substation near the ATSI-AEP border and a new 138kV line from new substation to Longview - \$17.7M
- Build new Allen Jct Midway Lemonye 345kV line \$86.3M
- Build a new Leroy Center 345/138 kV substation by looping in the Perry Harding 345 kV line \$46M
- Build a new Toronto to Harmon 345 kV line \$218.3M
- Build a new Toronto 345/138 kV substation \$41.8M
- Build a new West Fremont Groton Hayes 138 kV line \$45M
- Reconductor the ATSI portion of South Canton Harmon 345 kV line \$6M
- Add a new 150 MVAR SVC and 100 MVAR capacitor at New Castle \$31.7M
- Duquesne Transmission Zone
 - Install a third 345/138 kV transformer at Collier \$8M

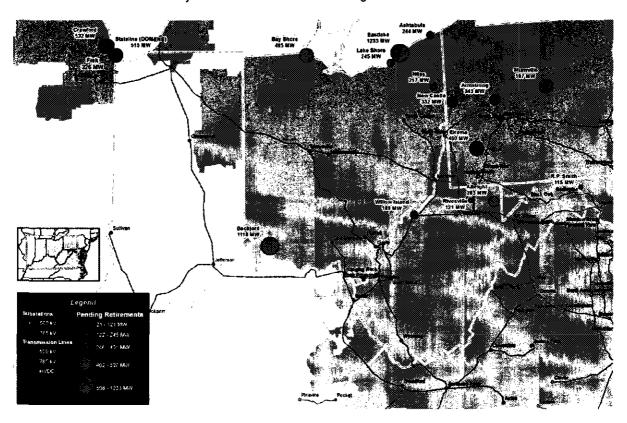
Southern Region System Upgrades

- Dominion Virginia Power Transmission Zone
 - Build new Surry to Skiffes Creek 500 kV line \$58.3M
 - Build new Skiffes Creek 500/230 substation \$42.4M
 - Build new Skiffes Creek Whealton 230 kV line \$46.4M
 - Expand Yadkin 500/230 kV and 230/115 kV substation and Chesapeake 230/115 kV substation \$45M
 - Add a third 500/230 kV transformer at Yadkin \$16M
 - Add six 500 kV breakers at Yadkin \$8M
 - Install a third 500/230 kV transformer at Clover \$16M
 - Rebuild Lexington to Dooms 500 kV line \$120M

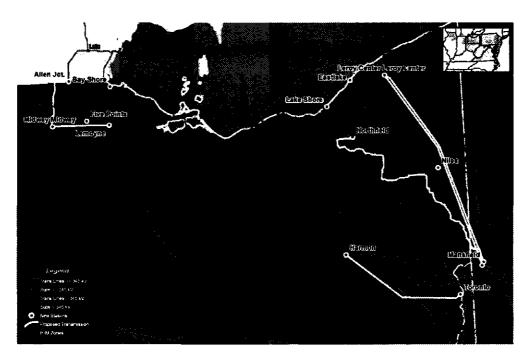
- Upgrade Bremo Midlothian 230 kV line \$10M
- Build a new Suffolk to Yadkin 230 kV line \$40M
- Install a second Valley 500/230 kV transformer \$16M
- Build a 500 MVAR SVC at Landstown 230 kV \$60M

Western Region System Upgrades

The majority of the generator deactivations that PJM has received since November are for units in the western region of PJM. Generation owners including First Energy Solutions, Duke Energy, GenOn and Midwest Generation have notified PJM of their intent to deactivate units in the western region of PJM. As shown in the map below a number of these deactivations are clustered around Lake Erie in the American Transmission System Inc. (ATSI) transmission zone. Deactivation of the generation along Lake Erie will require significant transmission upgrades to resolve thermal and voltage violations in and around the City of Cleveland which has historically been constrained due to voltage limitations.



Several new 345 kV transmission lines, new 345/138 kV substations, and new reactive upgrades have been identified in addition to a large number of incremental upgrades to existing facilities. The map on the following page shows the new 345 kV lines and the new 345/138 kV stations.

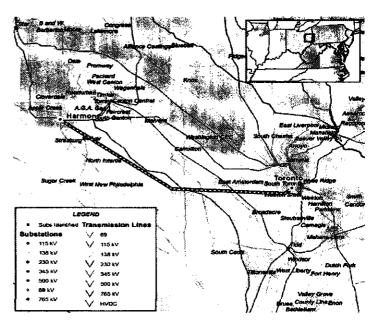


As noted above, the ability to import power into the Cleveland area has historically been limited by voltage problems. Deactivation of the generation in and around Cleveland will exacerbate these voltage limitations. As a result, a significant number of upgrades have been identified to address voltage and voltage stability criteria. The Eastlake units 1 – 5 and the Lakeshore 18 unit were recommended to be converted to synchronous condensers. The estimated cost for this work is \$20M for each machine. The expected reactive capability for the Eastlake units 1 – 3 is 124 MVAR/machine, Eastlake unit 4 is 268 MVAR, Eastlake unit 5 is 485 MVAR and 260 MVAR for the Lakeshore 18 machine. In addition a new 345/138 kV substation at Leroy Center was recommended. The new station will be established by looping the existing Perry to Harding 345 kV line through the station. The estimated cost for the new Leroy Center substation is \$46M. A new Northfield area 345/138 kV substation was recommended to address voltage violations under load deliverability conditions. The new substation will be established by tapping the existing Eastlake to Juniper 345 kV line and the Perry to Inland 345 kV line. The estimated cost for that work is \$37.5M. A new 345 kV line from Mansfield to Northfield was also recommended to reinforce the 345 kV feed into the Northfield area. The estimated cost for this new line is \$184.5M. In addition, a new 345 kV line from Beaver Valley to Leroy Center and another new 345 kV line from Mansfield to Leroy Center are being considered to address ATSI voltage stability criteria violations. The estimated cost of the two new 345 kV lines is \$393M. The Beaver Valley to Leroy Center and Mansfield to Leroy Center 345 kV lines were not recommended to the PJM Board at this time. Additional analysis using the ATSI voltage stability is in progress.

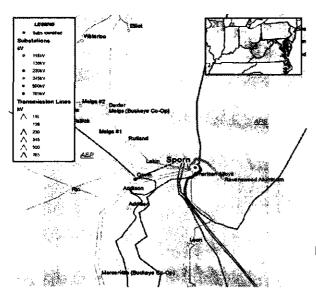
A new Five Points 345/138 kV substation was recommended to address NERC category C3 (N-1-1) voltage violations. The new station will be created by looping the existing Lemoyne to Midway 345 kV line through the station. The estimated cost for this work is \$30M. A second Bayshore 345/138 kV transformer was also recommended to address NERC category C3 (N-1-1) voltage violations. The estimated cost for adding the second transformer at Bayshore is \$7.2M. In addition to these upgrades to address voltage problems in and around the City of Cleveland, a 150 MVAR SVC and 100 MVAR capacitor were

recommended at New Castle station in western Pennsylvania to address voltage problems primarily related to the deactivation of the New Castle generation.

There are also a number of projects that are required to address thermal violations. A new Harmon 345/138/69 kV station was recommended to address several NERC category C (breaker failure) contingency overloads. The new Harmon station will be established by looping the South Canton to Star 345 kV line through the station. The estimated cost for this project is \$46M. In addition, a new Toronto 345/138 kV substation was recommended to address a number of NERC category C3 (N-1-1) violations. The new substation will be established by looping the existing Sammis to Wylie Ridge 345 kV line through the station. The estimated cost for the new Toronto station is \$41.8M. In addition, a new Toronto to Harmon 345 kV line was recommended to reinforce the 345 kV system in the area. The estimated cost for the new Toronto to Harmon 345 kV line is \$218.3M.



A new 345 kV line from Allen Junction to Midway to Lemoyne was recommended to address a NERC category C3 (N-1-1) thermal violation on Lemoyne to BG Tap 138 kV line. The violation is being driven by the loss of the Allen Junction to Lulu 345 kV tie line to Michigan and the Lemoyne to Five Points 345 kV line. Approximately 48 miles (roughly 3/4 of the line) will utilize an open tower position on an existing double circuit tower structures. The estimate cost for Allen Junction to Midway to Lemoyne line is \$86.3M. A new 138 kV line between West Fremont and Hayes was recommended to address thermal violations on other 138 kV facilities for NERC category C5 (double circuit tower) contingency. Specifically the Ottowa to Lakeview 138 kV line and the Lakeview to Greenfield 138 kV line are both overloaded for a double circuit towerline contingency. The estimated cost of the new 138 kV line is \$45M.

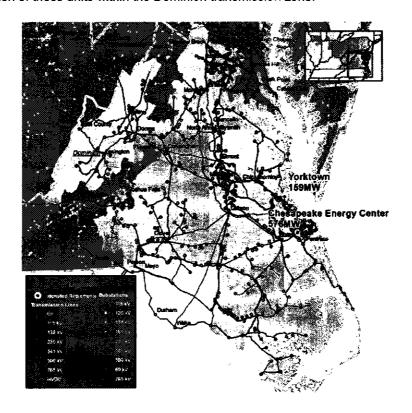


A new 345 kV source into the Sporn station was recommended to address an overload on the Mountain to Belmont 765 kV line for a NERC category C breaker failure contingency at Marysville that trips the Marysville – Sorenson 765 kV line and the Marysville – Flatlick 765 kV line. The recommended project is to add a new 765/345 kV transformer at Mountaineer and build a new 345 kV line from Mountaineer to Sporn. The Sporn station is approximately 3/4 of a mile from Mountaineer. The estimated cost for this project is approximately \$65M.

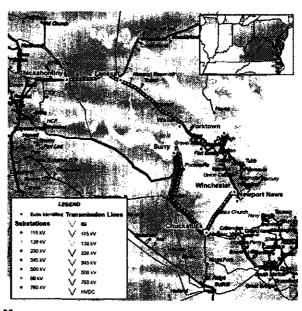
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Southern Region System Upgrades

Several new upgrades have been identified in the Dominion transmission zone. A number of the more significant upgrades are summarized below. These upgrades are being driven primarily by the deactivation of the Yorktown 1 unit (159 MW) and the Chesapeake 1 – 4 units (576 MW total). The map below shows the relative location of these units within the Dominion transmission zone.



Thermal and voltage violations were identified on the 230 kV facilities noted on the diagram at the right which serve the northern Hampton Roads area of Virginia. Several alternatives were evaluated to address these issues including a new 500 kV line from Chickahominy to a new station called Skiffes Creek, a new 500 kV line from Surry crossing the James River to the new Skiffes Creek station, and a new 230 kV line from Surry to Skiffes Creek. Each of these alternatives also included a new 230 kV line from Skiffes Creek to Whealton with an estimated cost of \$46.4 million. PJM staff is recommending the new 500 kV line from Surry to Skiffes Creek which has an estimated cost of \$100.7 million including the new Skiffes Creek 500/230 kV substation. Each alternative resolved the reliability

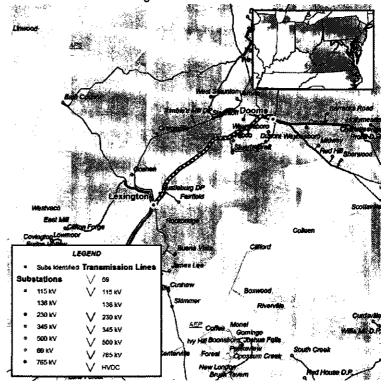


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criteria violations in 2015, however the 230 kV alternative was found to be less robust and would not be adequate under certain at-risk generation scenarios that were evaluated by PJM staff. In addition, the 230 kV alternative required a Phase Angle Regulator (PAR) to control the flow of power on the proposed Surry to Skiffes Creek 230 kV line which would add additional operational complexity. The 500 kV line from Chickohominy to Skiffes Creek was not chosen primarily due to it being the highest cost alternative.

A violation of Dominion planning criteria was identified on the Lexington to Dooms 500 kV line. One of the

Dominion planning criteria establishes the critical system conditions by removing a single generator followed by the single contingency outage of any other line or generator. Under these conditions with either the Yorktown 3 unit or the Surry 2 unit off-line, the Lexington to Dooms 500 kV line overloads for the loss of the Bath to Valley 500 kV line. The recommended upgrade to address this violation is to rebuild the 40 mile Lexington to Dooms 500 kV line. The estimated cost for this work is \$120 million. The line is being recommended to be rebuilt to address the thermal overload and to address the aging infrastructure issues that are similar to problems that are driving the need for the rebuild of the Mt Storm -Doubs 500 kV line.



Other significant upgrades in the

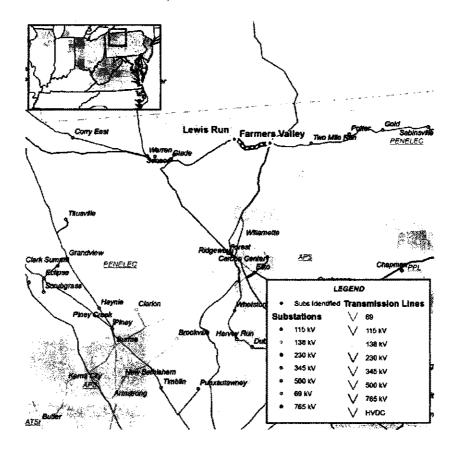
Dominion transmission zone include a third 500/230 kV transformer at Yadkin (estimated cost \$16 million) to address thermal overloads on the existing Yadkin 500/230 kV transformers for the loss of the other transformer, a third 500/230 kV transformer at Clover (estimated cost \$16 million) to address overloads on the existing Clover 500/230 kV transformers, a new Suffolk to Yadkin 230 kV line (estimated cost \$40 million) to address a NERC category C3 (N-1-1) overload, a second Valley 500/230 kV transformer to address overloads on the existing transformer to address NERC category C3(N-1-1) violations, and a new 500 MVAR Static VAR Compensator (SVC) on the 230 kV at Landstown to address NERC category C3 (N-1-1) voltage violations in the Southern Hampton Roads area.

Mid-Atlantic Region System Upgrades

There are a number of upgrades in the Mid-Atlantic region. Many of these upgrades are being driven by the deactivation of the GenOn units at Portland, Shawville, Titus and Glen Gardner.

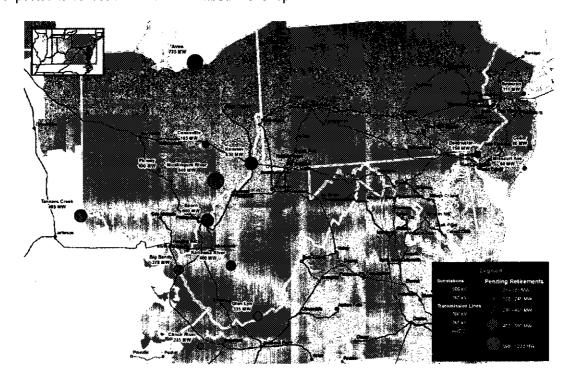
In the PPL transmission zone a new 500/230 kV substation is being recommended to address several overloads on 230 kV facilities in the South Akron and South Manheim areas. The estimated cost for the project is \$42M. In the JCPL transmission zone a new 6.4 mile 230 kV line between Whippany and Montville is being recommended to address NERC Category C3 (N-1-1) violations due to the loss of the Montville to Roseland 230 kV line followed by the loss of the Kittatiny to Newton 230 kV line. The estimated cost for the project is \$37.5M.

There are several upgrades in the Pennelec transmission zone to address both thermal and voltage violations. A new 345/230/115 kV substation was recommended at the existing Farmers Valley 115 kV substation. The 345 kV source will be from the Homer City to Stolle Road 345 kV line that passes near the station. This project is needed to address NERC category B (single contingency) voltage drop violations, generator deliverability violations and NERC category C3 (N-1-1) thermal violations. The estimated cost for this work is \$29.5M. In addition to this upgrade, the existing 115 kV line from Farmers Valley to Lewis Run be converted to 230 kV. This upgrade is required to address generator deliverability violations. The estimated cost for this conversion work is \$46.8M.



Next Steps

PJM staff continues to work on a number of generator deactivation studies for units shown on the map below including twenty two units in the AEP transmission zone, two Avon Lake units in the ATSI transmission zone, several units at Sewaren in the PSEG zone and several units in the Atlantic Electric transmission zone. Although upgrades will be required to address reliability violations for these deactivations, based on initial analysis the number and scope of upgrades required for these deactivations is expected to be less than those described in this report.



Review by the Transmission Expansion Advisory Committee (TEAC)

The results of all of the deactivation analyses were reviewed with the TEAC at the February 16th, March 15th, April 12th meetings. Final upgrades included in this report were reviewed with the TEAC at the April 27, 2012 meeting.

Board Approval

The PJM Board met on May 17th and approved the elements of the 2012 RTEP documented herein.

Appendix: Retirement Baseline Upgrades

	Upgrade ID	Project Description	Transmission Owner	Cost	Estimate
	b1879	Perform a sag study on the Hansonville - Meadowview 138 kV line	AEP	\$	0.10
	b1946	(Improve the emergency rating to 245 MVA) Perform a sag study on the Brues – West Bellaire 138 kV line	AEP	\$	0.03
		A sag study of the Dequine - Meadowlake 345 kV fine #1 line may		-	
DI	b1947	improve the emergency rating to 1400 MVA	AEP	\$	0.01
	b1948	Establish a new 765/345 interconnection at Sporn. Install a 765/345 kV transformer at Mountaineer and build ¾ mile of 345 kV to Sporn	AEP	\$	65.00
	b1949	Perform a sag study on the Grant Tap - Deer Creek 138 kV fine and replace bus and risers at Deer Creek station	AEP	\$	0.30
	b 1950	Perform a sag study on the Kammer Ormet 138 kV line of the conductor section	AEP	\$	0.10
	b1951	Perform a sag study of the Maddox- Convoy 345 kV line to improve the emergency rating to 1400 MVA	AEP	\$	0.03
	b1952	Perform a sag study of the Maddox – T130 345 kV line to improve the emergency rating to 1400 MVA	AEP	\$	0.03
	b1953	Perform a sag study of the Meadowiake - Olive 345 kV line to improve the emergency rating to 1400 MVA	AEP	\$	0.06
	b1954	Perform a sag study on the Milan - Harper 138 kV line and replace bus and switches at Milan Switch station	AEP	\$	0.35
	b1955	Perform a sag study of the R-049 - Tillman 138 kV line may improve the emergency rating to 245 MVA	AEP	\$	0.03
	b1956	Perform a sag study of the Tillman - Dawkins 138 kV line may improve the emergency rating to 245 MVA	AEP	\$	0.03
	b1957	Terminate Transformer #2 at SW Lima in a new bay position	AEP	\$	5.00
	b1958	Perform a sag study on the Brookside - Howard 138 kV line and replace bus and risers at AEP Howard station	AEP	\$	0.50
	b1960	Sag Study on 7.2 miles SE Canton-Canton Central 138kV ckt	AEP	\$	0.30
	b1961	Sag study on the Southeast Canton - Sunnyside 138kV line	AEP	\$	0.25
	b1962	Add four 765 kV breakers at Kammer	AEP	\$	30.00
	b19 6 3	Build approximately 1 mile of circuit comprising of 2-954 ACSR to get the rating of Waterford-Muskinum 345 kV higher	AEP	\$	3.50
	b1 9 70	Reconductor 13 miles of the Kammer – West Bellaire 345kV circuit	AEP	\$	20.00
	b1971	Perform a sag study to improve the emergency rating on the Bridgville – Chandlersville 138 kV line	AEP	\$	0.05
	b1972	Replace disconnect switch on the South Canton 765/345 kV transformer	AEP	\$	0.30
	b1973	Perform a sag study to improve the emergency rating on the Carrollton – Sunnyside 138 kV line	AEP	\$	0.05
	b1974	Perform a sag study to improve the emergency rating on the Bethel Church – West Dover 138 kV line	AEP	\$	0.03
	b 1975	Replace a switch at South Millersburg switch station	AEP	\$	0.20
	b1837	Replace breaker risers and wave traps at Marlowe 138 kV and wave traps at Bedington 138 kV	APS	\$	0.60
	b1840	install a new Buckhannon - Weston 138 kV line	APS	\$	17.50

Upgrade ID b1902	Project Description Replace line trap at Stonewall on the Stephenson 138 kV line terminal	Transmission Owner APS	Cost E	stimate 0.08
b1941	Loop the Homer City-Handsome Lake 345 kV line into the Armstrong	APS	s	27.80
b1942	substation and install a 345/138 kV transformer at Armstrong Change the CT ratio at Millville to improve the Millville – Old Chapel 138 kV	APS	5	0.05
	line ratings		•	
b1964	Convert Moshannon substation to a 4 breaker 230 kV ring bus	APS	5	6.50
b1965	Install a 44 MVAR 138 kV capacitor at Luxor substation	APS	5	1.50
b1986	Upgrade the AP portion of the Elrama – Mitchell 138 kV line by replace breaker risers on the Mitchell 138 kV bus on the Elrama terminal	APS	\$	0.05
b1987	Reconductor the Osage-Collins Ferry 138 kV line with 795 ACSS. Upgrade terminal equipment at Osage and Collins Ferry	APS	\$	1.80
b1988	Raise structures between Lake Lynn and West Run to eliminate the clearance de-rates on the West Run – Lake Lynn 138 kV line	APS	\$	0.32
b1989	Raise structures between Collins Ferry and West Run to eliminate the clearance de-rates on the Collins Ferry - West Run 138 kV line	APS	\$	0.32
b1913	Convert Eastlake units 1, 2, 3, 4 and 5 to synchronous condensers	ATSI	\$	100.00
b1914	Convert Lakeshore 18 to a synchronous condenser	ATSI	5	20.00
b1915	Install a 50 MVAR capacitor bank at the Maclean 138 kV station	ATSI	\$	3.00
b1916	Install a 345/138 kV transformer at the Inland Q-11 station	ATSI	5	7.20
b1917	Install a 138 KV circuit breaker at the inland Q-11 station	ATSI	\$	0.90
b1918	Upgrade terminal equipment on the Avon – Crestwood 138 kV line	ATSI	5	0.30
b1919	Re-conductor the Galion - Leaside 138 kV line with 336 ACSS	ATSI	\$	4.90
b1920	Re-conductor the Galion – GM Mansfield – Ontario - Cairns 138 kV line with 477 ACSS	ATSI	\$	9.80
b1921	Install a 2nd 345/138 kV transformer at the Allen Junction station	ATSI	5	7.20
b1922	Install a 2nd 345/138 kV transformer at the Bayshore station	ATSI	\$	7.20
b1923	Create a new Northfield Area 345 kV switching station by looping in the Eastlake – Juniper 345 kV line and the Perry - Inland 345 kV line	ATSI	\$	37.50
b1924	Build a new Mansfield - Northfield Area 345 kV line	ATSI	5	184.50
b1925	Create a new Harmon 345/138/69 kV substation by looping in the Star – South Canton 345 kV line	ATSI	5	46.00
b1926	Build a new Harmon - Brookside + Harmon - Longview 138 kV line	ATSI	5	9.20
b1927	Create a new Five Points Area 345/138 kV substation by looping in the Lemovne – Midway 345 kV line	ATSI	\$	30.00
61928	Install a 50 MVAR capacitor at Hayes 138 kV	ATSI	\$	1.50
b1929	Install a 138/69 kV transformer at the Avery station	ATSI	\$	3.20
ь1930	Increase design temperature limitation on the Avery – Hayes 138 kV line by raising the existing structures	ATSI	\$	0.13
b 1931	Reconductor Cloverdale - Harmon #2 and #3 138 kV lines with 795 ACSS or greater conductor 6 miles total + Terminal upgrades	ATSI	\$	3.60
b1932	Change the transformer tap settings on the Maclean 138/69 kV transformers	ATSI	\$	0.05
b1933	Replace 336.4 ACSR SCCIR at Richland to upgrade the Richland - Naomi 138 kV line	ATSI	\$	0.04

Upgrade ID b1934	Project Description Build a new 345/138 kV Substation at Niles	Transmission Owner	Cost E	stimate 32.00
	Loop 1.2 miles of 345 kV into substation of the Highland – Shenango 345		•	32.00
b1 934 .1	kV line	ATSI		
b1934.2	New 345/138 kV transformer at Niles	ATSI		
b1935	ATSI-AEP 138 kV Substation on near territory border + 138 kV from new	ATSI	S	17.70
D1203	substation to Longview approx. 8 miles	Alai	•	11.10
b1936	Build new Allen Jct - Midway - Lemonye 345 kV line (48 miles of open tower position)	ATSI	\$	86.30
b1937	Build a new Leroy Center 345/138 kV substation by looping in the Perry – Harding 345 kV line	ATSI	\$	46.00
	Place a portion of the 138 kV Leroy Center 345/138 kV project into		_	
b1938	service by summer 2015	ATSI	\$	3.30
b1939	Reconductor the Barberton - West Akron 138 kV line with 477 ACSS or	ATSI	\$	4.23
	greater (7.3 miles) + Terminal upgrades at Barberton		•	
b1959	Build a new West Fremont-Groton-Hayes 138kV line	ATSI	5	45.00
b1976	Reconductor ATSI portion of South Canton - Harmon 345 kV line	ATSI	\$	6.00
b1977	Build new Toronto 345/138 kV substation by looping in the Sammis –	ATSI	S	41.80
	Wylie Ridge 345 kV line and tie in four 138 kV lines		-	040.65
b1977.1 b1978	Build a new Toronto-Harmon 345kV line	ATSI	S	218.30
	Reconductor Inland - Clinic Health Q-11 138 kV line	ATSI	5	1.10
b1981	Replace relay on the Highland - G689 138 kV line	ATSI	\$	0.05
b1982	Reconductor the Hoytdale – Newcastle 138 kV lines #1 and #2 with 795 ACSS	ATSI	\$	4.80
b1983	Add 150 MVAR SVC and a 100 MVAR capacitor at New Castle	ATSI	\$	31.70
b1984	Install a 50 MVAR capacitor at the Boardman 138 kV bus	ATSI	\$	1.70
	Establish operating procedure such that breaker 89, connecting			
b1968	Cheswick-Logans Ferry Z-53 to the No. 3 138 kV bus at Cheswick Substation is normally open	DL	\$	-
b1969	Install a third 345-138 kV autotransformer at Collier Substation. Currently	DL	S	8.00
	s0321 and will be converted to baseline.		•	0.00
b1985	Upgrade the Duquesne portion of the Eirama — Mitchell 138 kV line	DL		
b1905.1	Surry to Skiffes Creek 500 kV Line (7 miles overhead)	Dominion	S	58.30
b1905.2	Surry 500 kV Station Work	Cominion	\$	1.50
b1905.3	Skiffes Creek 500-230 kV Tx and Switching Station	Dom i nion	\$	42.40
b1905.4	New Skiffes Creek - Whealton 230 kV line	Dominion	\$	46.40
b1905.5	Whealton 230 kV breakers	Dominion	\$	2.10
b1905.6	Yorktown 230 kV work	Dominion.	\$	0.20
b1905.7	Lanexa 115 kV work	Dominion	5	0.13
b1905.8	Surry 230 kV work	Dominion	\$	0.13
b1905.9	Kings Mill, Peninmen, Toano, Waller, Warwick	Dominion	\$	0.03
b1906.1	At Yadkin 500 kV, install six 500 kV breakers	Dominion	\$	9.00
b1906.2	install a 2nd 230/115 kV TX at Yadkin	Dominion	\$	5.00
b1906.3	install a 2nd 230/115 kV TX at Chesapeake	Dominion	\$	5.00
b1906.4	Uprate Yadkin – Chesapeake 115 kV	Dominion	5	10.00
b1906.5	Install a third 500/230 kV TX at Yadkin	Dominion	\$	16.00
ь1907	Install a 3rd 500/230 kV TX at Clover	Dominion	\$	16.00

Upgrade ID	Project Description	Transmission Owner	Cost E	
b1908	Rebuild Lexington - Dooms 500 kV	Dominion	\$	120.00
b1909	Uprate Bremo - Midlothian 230 kV to its maximum operating temperature	Dominion	\$	10.00
b1910	Build a Suffolk - Yadkin 230 kV line (14 miles) and install 4 breakers	Dominion	\$	40.00
b1911	Add a second Valley 500/230 kV TX	Dominion	5	16.00
b1912	install a 500 MVAR SVC at Landstown 230 kV	Dominion	\$	60.00
b2003	Construct a Whippany to Montville 230 kV line (6.4 miles)	JCPL	5	37.50
b1999	Replace limiting wave trap, circuit breaker, substation conductor, relay	ME	5	0.90
b2000	and current transformer components at Northwood Replace limiting wave trap on the Glendon - Hosensack line	ME	5	0.05
	Replace limiting circuit breaker and substation conductor transformer		-	
b2001	components at Portland 230kV	ME	\$	0.40
b2002	Northwood 230/115 kV Transformer upgrade	ME	5	4.00
b1943	Construct a 115 kV ring bus at Claysburg Substation. Bedford North and	PENELEC	s	5.25
L4044	Saxton lines will no longer share a common breaker	DENEL EG		0.45
b1944	Reconductor Eclipse substation 115 kV bus with 1033 kcmil conductor.	PENELEC	5	0.15
b1945	Install second 230/115 kV autotransformer at Johnstown	PENELEC	\$	4.50
b1966	Replace the 1200 Amp Line trap at Lewistown on the Raystown- Lewistown 230 kV line and replace substation conductor at Lewistown	PENELEC	5	0.15
b1967	Replace the Blairsville 138/115 kV transformer	PENELEC	5	4.20
b1990	Install a 25 MVAR 115 kV Capacitor at Grandview	PENELEC	5	0.90
	Construct Farmers Valley 345/230 kV and 230/115 kV substation. Loop		-	
b1991	the Homer City-Stole Road 345 kV line into Farmers Valley	PENELEC	\$	29.50
b1992	Reconductor Cambria Slope-Summit 115kV with 795 ACSS Conductor	PENELEC	\$	4.80
b1993	Relocate the Erie South 345 kV line terminal	PENELEC	\$	13.00
	Convert Lewis Run-Farmers Valley to 230 kV using 1033.5 ACSR			
b1994	conductor. Project to be completed in conjunction with new Farmers	PENELEC	5	46.80
	Valley 345/230 kV transformation			
b1995	Change CT Ratio at Claysburg	PENELEC	5	0.00
b1996.1	Replace 600 Amp Disconnect Switches on Ridgeway-Whetstone 115 kV	PENELEC	s	0.50
	line with 1200 Amp Disconnects		_	
b1996.2	Reconductor Ridgway and Whetstone 115 kV Bus.	PENELEC	\$	0.20
b1996.3	Replace Wave Trap at Ridgway.	PENELEC		
b1996.4	Change CT Ratio at Ridgway	PENELEC		
b1997	Replace 600 Amp Disconnect Switches on Dubois-Harvey Run- Whetstone 115 kV line with 1200 Amp Disconnects	PENELEC	5	0.20
b1998		PENELEC	\$	1.50
b2008	Instal a 75 MVAR 115 kV Capacitor at Shawville Reconductor feeder 23032 and 23034 to high temp. conductor (10 miles)		Š	16.00
b2004	Replace the CTs and switch in South Akron Bay 4 to increase the rating	PPL	S	0.53
02.0 07	Replace the CTs and switch in SAKR Bay 3 to increase the rating of the		•	
b2005	Millwood-South Akron 230 kV Line and of the rating in Bay 3	PPL	5	0.53
b2006	Install North Lancaster 500/230 kV substation	PPL.	S	42.00
b2007	Install a 90 MVAR capacitor bank at the Frackville 230 kV Substation	PPL	Š	3.00
	Commence of the Company of the Compa		_	

Appendix: Baseline Cost Allocation

Upgrade ID	Description	Cost Estimate	Transmission Required Owner Date	IS
b1840	Violanew Buestons Wester	\$ 17.50	APS MILES	
b1906.2	Install a 2nd 230/115 kV TX at Yadkin	\$ 5.00	Dominion 6/1/201	
b1906.3		5 00	Dominion 6/1/201	5
b1906.4	Uprate Yadkin - Chesapeake 115 kV	\$ 10.00	Dominion 6/1/201	5
b1906.5		16.00	Dominion 6/1/201	1
b1910	Build a Suffolk - Yadkin 230 kV line (14 miles) and install 4 breakers	\$ 40.00	Dominion 6/1/2010	6
b1913	Convert Eastfake units 1, 2, 3, 4 and 5 to synchronisms contentions	3 100 00 €	ATSI 674/201	5
b1914	Convert Lakeshore 18 to a synchronous condenser	\$ 20.00	ATSI 6/1/201	5
b1915	Instal a SELEVAR capacitor bank at the Maclean 136 kV station	\$ 3.00	AJS: 6/1/201:	3
b1916	Install a 345/138 kV transformer at the Inland Q-11 station	\$ 7.20	ATSI 6/1/201:	3
b1917	Install a 138 KV circuit breaker at the inland Q-11 station	\$ 0.90	ATS# 6/1/201:	3
b1918	Upgrade terminal equipment on the Avon - Crestwood 138 kV line	\$ 0.30	ATSI 6/1/201:	3
b1919	Re-conductor the Gallon - Leaside 138 kV line with 336 ACSS	\$ 4.90	6/1/2014	4
b1921	Install a 2nd 345/138 kV transformer at the Allen Junction station	\$ 7.20	ATSI 6/1/2014	4
b1922	Install a 2nd 345/138 kV transformer at the Bayshore station	\$ 7.20	ATSI 6/1/2014	4
b1923	Create a new Northfield Area 345 kV switching station by looping in	\$ 37.50	ATSI 6/1/201	5
b1924	Build a new Mansfield - Northfield Area 345 kV line	\$ 184.50	ATSE 6/1/201	5
b1925	Create a new Harmon 345/138/69 kV substation by looping in the Star	\$ 46.00	ATSI 6/1/201!	5
b1926	Suild a new Harmon - Brookside + Harmon - Longview 138 kV line	\$ 920	* ATSI 6/1/2019	5 .
b1927	Create a new Five Points Area 345/138 kV substation by looping in	\$ 30.00	ATSI 6/1/2015	5
b1928	Install a 50 MVAR capacitor at Haves 136 kV	\$ 1.50	ATSI 6/1/2019	5 🗢
b1929	Install a 138/69 kV transformer at the Avery station	\$ 3.20	ATSI 6/1/2019	5
b1930	Excrease design temperature limitation on the Avery - Hayes 138 kV	X 0.13	ATSI 6/1/201	\$
b1931	Reconductor Cloverdale - Harmon #2 and #3 138 kV lines with 795	\$ 3.60	ATS! 6/1/2015	5
b1932	Change the transformer top settings on the Maclean 138/69 kV	5 0.05	6/1/201	5
b1933	Replace 336.4 ACSR SCCIR at Richland to upgrade the Richland -	\$ 0.04	ATSi 6/1/2011	5
b1934	Build a new 345/138 kV Substation at Miles	\$ 32.00	" ATSI 6/1/201	5
b1934.1	Loop 1.2 miles of 345 kV into substation of the Highland - Shenango		ATSi 6/1/2015	5
b1934.2	New 345/138 kV transformer at Niles		ATSI 6/1/201	5
b193 6	Build new Allen Jct - Midway - Lemonye 345 kV line (48 miles of open	\$ 86.30	ATSI 6/1/2016	6
b1937	Build a new Leroy Center 345/138 kV substation by looping in the	\$ 45.00	ATSI 6/1/2010	6
ь1938	Place a portion of the 138 kV Leroy Center 345/138 kV project into	\$ 3.30	ATSI 6/1/2019	5
b1939	Reconductor the Barberton - West Akron 138 kV line will \$27 ACSS	\$ 4.23	ATSI 6/1/201	6
b1 94 2	Change the CT ratio at Millville to improve the Millville - Old Chapel 138	\$ 0.05	APS 6/1/2019	5
b1943	Construct a 115 kV ring bus at Claysburg Substation. Bedford North	\$ 5.25	. PENELEC 6/1/20 1:	5
b1 944	Reconductor Eclipse substation 115 kV bus with 1033 kcmil	\$ 0.15	PENELEC 6/1/2011	3
b1945	install second 230/115 kV autotransformer at Johnstown	\$ 4.50	PENELEC 6/1/201	5
b1946	Perform a sag study on the Brues - West Bellaire 138 kV line	\$ 0.03	AEP 12/1/201	14
b1947	A sag study of the Dequine - Meadowhite 345 \$7 the #1 the may improve the emergency rating to 1400 \$67A	\$ 0.01	AEP 12/1/201	3
b1949	Perform a sag study on the Grant Tap - Deer Creek 138 kV line and replace bus and risers at Deer Creek station	\$ 0.30	AEP 12/1/201	14

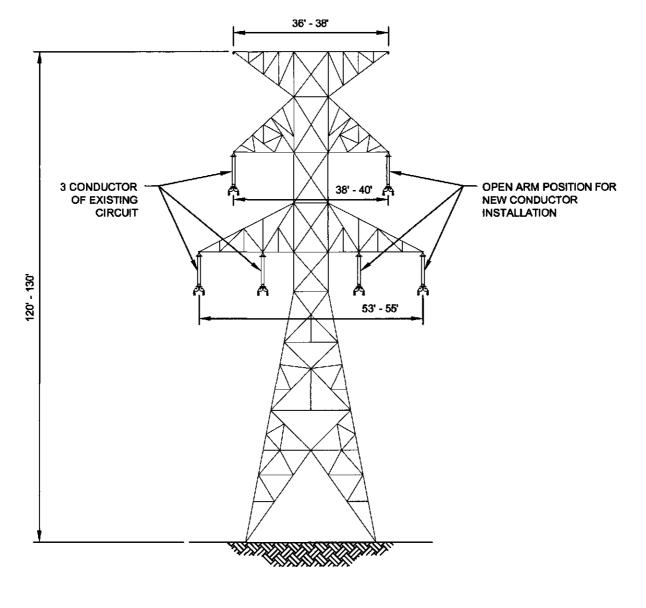
Upgrade ID	Description	Cost Estima	te	Transmission Owner	Required IS Date
b1950	Per loss \$25 \$50 on the Kammer - Ormet 138 kV the of the conductor section	\$ 0	10	0	12/1/2012
b1951	Perform a sag study of the Maddox- Convoy 345 kV line to improve the emergency rating to 1400 MVA	-	03	AEP	12/1/2013
b1952	Perform a sag study of the Maddox = T130 345 White to improve the emergency rating to 1460 MVA	\$ 0	03	AEP	12/1/2013
b1953	Perform a sag study of the Meadowiake - Olive 345 kV line to improve the emergency rating to 1400 MVA	\$ 0.	06	AEP	12/1/2013
b1954	Perform a sag study on the Miles - Harper 135 V line and replace bus and switches at Milan Switch station	\$ 0	.35	AEP .	12/1/2014
b1955	Perform a sag study of the R-049 - Tillman 138 kV line may improve the emergency rating to 245 MVA	\$ 0.	25	AEP	12/1/2014
b1956	Perform a sag study of the Tillian - Covitins 138 kV line may improve the emergency rating to 245 MVA	\$ 20	25	AEP	12/1/2013
b1958	Perform a sag study on the Brookside - Howard 138 kV line and replace bus and risers at AEP Howard station	•	50	AEP	12/1/2014
b1960	Say Study on 7.2 miles SE Canton-Canton Central 138kV ckt	23982	.30	AEP X	12/1/2012
b1961	Sag study on the Southeast Canton - Surmyside 138kV line		.25	AEP	12/1/2012
b1963	Build approximately 1 mile of circuit comprising of 2-954 ACSR to get the rating of Waterford-Muskinum 345 kV higher	\$ 3.	50	AEP	,
b1965	Install a 44 MVAR 138 kV capacitor at Luxor substation	-	50	APS	6/1/2014
b1966	Replace the 1200 Amp Line trap at Lewistown on the Raystown-	\$ 0.	15	A CONTRACTOR OF THE CONTRACTOR	12/1/2013
b1967	Replace the Blairsville 138/115 kV transformer		20	PENELEC	6/1/2014
b1968	Establish operating procedure such that breaker 89, connecting	5 -	105	De to the the	6/1/2012
b1971	Perform a sag study to improve the emergency rating on the Bridgville — Chandlersville 138 kV line	\$ 0.	05	AEP	12/1/2014
b1972	Replace disconnect switch on the South Canton 765/345 kV transformer	. s 0.	.30	AEP	12342014
b1973	Perform a sag study to improve the emergency rating on the Carrollton – Sunnyside 138 kV line	\$ 0.	05	AEP	12/1/2014
b1974	Perform a sag study to improve the emergeacy rating on the Bethel Church – West Dover 138 kV line	•	.03	AEP	12/1/2014
b1975	Replace a switch at South Millersburg switch station	•	20	AEP	12/1/2014
b1978	Reconductor Inland - Clinic Health Q-11 138 (V line	*	.10	ATSI	6/1/2015
b1981	Replace relay on the Highland - G689 138 kV line	•	.05	ATSI	12/31/2012
b1982	Reconductor the Hoytdale - Newcastle #38 MV lines #1 and #2 with	•	.80	ATSI	6/1/2015
b1983	Add 150 MVAR SVC and a 100 MVAR capacitor at New Castle		.70	ATSI	6/1/2015
b1984	Install a 50 MVAR capacitor at the Boardman 138 kV bus	•	.70	ATSI	6/1/2015
b1985	Upgrade the Duquesne portion of the Elrama – Mitchell 138 kV line	TBD	se	DL On Arte	4/16/2015
b1986	Upgrade the AP portion of the Eframa - Michel 138 kV line by replace	-	.05	APS	6/1/2015
b1987	Reconductor the Osage-Collins Ferry 138 kV line with 795 ACSS.	•	.80	APS	6/1/2015
b1988	Raise structures between Lake Lynn and West Run to eliminate the	-	.32	APS	6/1/2015
b1989	Raise structures between Colins Ferry and West Run to eliminate the	\$ 0.	.32	APS	6/1/2015

Upgrade l	Description	Cost Estimate	Transmission Owner	Required IS Date
b1990	Fishall a 25 MVAR 115 KV Capacitor at Grandway	\$ 0.90	PENELEC	6/1/2015
b1991	Construct Farmers Valley 345/230 kV and 230/115 kV substation.	\$ 29.50	PENELEC	6/1/2015
b1992	Reconductor Cambria Slope-Summit 115kV with 795 ACSS Conductor	\$ 4.80	PENELEC	6/1/2015
b1995	Change CT Ratio at Clavsburg	\$ 0.00	PENELEC	6/1/2015
b1996.1	Replace 600 Ams Esconero Switches on Ridgeway Whetstone 115	\$ 0.50	* PERELECTION	6/1/2015
b1996.2	Reconductor Ridgway and Whetstone 115 kV Bus.	\$ 0.20	PENELEC	6/1/2015
b1996.3	Replace Wieve Trap at Ridgway	- month make the	FENELEO	6/1/2015
b1996.4	Change CT Ratio at Ridgway	,	PENELEC	6/1/2015
b1997	Replace 600 Amp Disconnect Switches on Dubois-Harvey Run-	\$ 0.20	PENELEC	6/1/2015
b1998	Install a 75 MVAR 115 kV Capacitor at Shawville	\$ 1.50	PENELEC	6/1/2015
b1999	Replace limiting wave trap, circuit breaker, substation conductor,	\$ 2.90	ME	6/1/2015
b2000	Replace limiting wave trap on the Glendon - Hosensack line	\$ 0.05	ME	6/1/2015
b2001	Replace limiting circuit breaker and substation conductor transformer	\$ 0.40	ME	6/1/2015
b2002	Northwood 230/115 kV Transformer upgrade	\$ 4.00	ME	6/1/2015
b2003	Construct a Whippany to Montville 230 kV line (6.4 miles)	\$ 37.50	JCPL	6/1/2015
b2004	Replace the CTs and switch in South Akron Bay 4 to increase the	\$ 0.53	PPL	6/1/2014
b2005	Replace the CTs and switch in SAKH Bay 3 to increase the rating of	\$ 0.53	PPL STATE	6/1/2014
b2007	Install a 90 MVAR capacitor bank at the Frackville 230 kV Substation	S 3.00	PPL	6/1/2015

Upgrade ID	Description	Multi-Zone Cost Allocation Required IS Date
b1905.1	Surry to Skiffes Creek 500 kV Line (7 miles overhead)	AEC - 1.83%, AEP - 15.12%, APS - 5.53%, ATSI - 8.65%, BGE - 4.46%, ComEd - 14.64%, ConEd - 0.55%, Dayton - 2.21%, DL - 1.85%, DPL - 2.61%, Dominion - 12.38%, ECP - 0.19%, JCPL - 4.07%, ME - 1.92%, Neptune - 0.41%, PECO - 5.54%, PENELEC - 1.93%, PEPCO - 4.33%, PPL - 4.77%, PSEG - 6.74%, RE - 0.27%,
- 1		AEC \$ 1.83%, AEP - 15.12%, APS - 5.53%
		ATSI - 8.65%, BGE - 4.46%, ComEd -
· *		14.64%, ConEd - 0.55%, Dayton - 2.21%, DE-
b1905.2	Surry 500 kV Station Work	1.85%, DPL - 2.61%, Dominion - 12.38%, ECP 0.19%, JCPL - 4.07%, ME - 1.92%, Neptune -
		0.41% PECO - 5.54% PENELEC - 1.93%
		REPCO - 4.33%, PPL - 4.77%, PSEG - 6.74%.
h		RE - 0.27%,
ь1905.3	Skiffes Creek 500-230 kV Tx and Switching Station	Dominion - 99.84%, PEPCO - 0.16%, 6/1/2015
b1905.4	New Skiffes Creek - Whealton 230 kV line	Deminion - 99.84%, PEPCO - 0.16%, 6/1/2016
b1905.5	Whealton 230 kV breakers	Dominion - 99.84%, PEPCO - 0.16%, 6/1/2016
b1905.6	Yorktown 230 kV work	Dominion - 99.84%, PEPCO - 0.16%, 6/1/2016
b1905.7	Lanexa 115 kV work	Dominion - 99.84%, PEPCO - 0.16%, 6/1/2016
b1905.8		Dominion - 99.84%, PEPCO + 0.16%, 6/1/2016
b1905.9	Kings Mill, Peninmen, Toano, Waller, Warwick	Dominion - 99.84%, PEPCO - 0.16%, 6/1/2016
		AEC - 1.83%, AEP + 16.12%, APS - 5.53%, ATSI - 8.65%, BGE = 4.46%, ComEd -
		14.64%, ConEd - 0.55%, Dayton - 2.21%, DL -
b1906.1	At Yadkin 500 kV, install six 500 kV breakers	1.85%, DPL - 2.61%, Dominion - 12.38%, ECP 6/1/2016
	The region out he and the new two new terms of	- 0.19%, JCPL - 4.07%, ME - 1.92%, Neptune -
		0.41%, PECO - 5.54%, PENELEC - 1.93%, PEPCO - 4.33%, PPL - 4.77%, PSEG - 6.74%, RE - 0.27%,
b1907	install a 3rd 500/230 kV TX at Clover	APS - 5.83%, BGE - 4.74%, Dominion - 6/1/2016 81.79%, PEPCO - 7.64%,

Upgrade ID	Description	Multi-Zone Cost Allocation	Required IS Date
经通过 。2011年		AEC - 1.83%, AEP - 15.12%, APS : 5.63%, ATSI - 8.65%, BCE - 4.46%, Conted 14.64%, Conted - 0.55%, Dayson - 2.21%, Dc	
b1908	Rebuild Lexington - Dooms 500 NV	1.85%, DPL - 2.61%, Dominion - 12.35%, ECR - 0.19%, JCPL - 4.07%, ME - 1.92%, Nephune 0.41%, PECO - 5.54%, PENELEC - 1.93%,	116.15
+ 1 1 -		PEPCO - 4.33%, PPL - 4.77%, PSEG 16.74%, RE - 0.27%,	Ale Car
b1909	Uprate Bremo – Midlothian 230 kV to its maximum operating temperature	APS - 6.31%, BGE - 3.81%, Dominion - 81.9%, PEPCO - 7.98%,	6/1/2016
b1911	Add a second Valley 500/230 kV TX	APS - 14.85%, BGE - 3.1%, Dominion - 74.12%, PEPCO - 7.93%,	6/1/2016
b1912	Install a 500 MVAR SVC at Landstown 230 kV	DEOK - 0.46%, Dominion - 99.54%,	6/1/2016
b1920	Re-conductor the Gallon - GM Mansfield - Ontario - Carris 138 KV line with 477 ACSS	ATSI - 94.47%, DL - 2.9%, PENELEC - 2.63%,	6/1/2014
b1935	ATSI-AEP 138 kV Substation on near territory border + 138 kV from new substation to Longview approx, 8 miles	ATSI - 94.9%, DL - 2.97%, PENELEC - 2.13%,	
	Loop the Homer City-Handsome Lake 345 kV line into the	A STATE OF THE STA	
b1941	Amstrong substation and install a 345/138 kV transformer at Amstrong	APS - 67.86%, PENELEC - 32.14%	6/1/2014
b1948	Establish a new 765/345 interconnection at Sporn. Install a 765/345 kV transformer at Mountaineer and build ¾ mile of 345 kV to Sporn	ATSI - 61.08%, DL - 21.87%, Deminion - 13.97%, PENELEC - 3.08%,	6/1/2015
ь1957	Terminate Transformer #2 at SW Lima in a new bay position	AEP-69.41%, ATSI-23.11%, ECP-0.17%, HTP-0.19%, PENELEC-2.42%, PSEG- 4.52%, RE-0.18%	12/1/2014
b1959	Build a new West Fremont-Groton-Hayes 138kV line	APS - 4.24%, ATSI - 87.76%, DL - 4.27%, PENELEC - 3.73%,	6/1/2018

Upgrade ID	Description	Multi-Zone Cost Allocation	Required IS Date
b1962	Add four 765 kV breakers at Kasanier	AEC - 1.83%, AEP - 15, 12%, APS - 5.53%, ATSI - 8.65%, BCE 2.4.6%, Corred - 8.64%, Coned - 0.55%, Dayton - 2.21%, Di- 8.5%, DPL - 2.61%, Dominion - 12.38%, ECP - 0.19%, ACPL - 4.07%, ME - 1.92%, Neptune - 0.41%, PECO - 5.54%, PENELEC - 1.93%, PEPCO - 4.33%, PPL - 4.77%, PSEG - 6.74%, RE - 0.27%,	, Å
b1964	Convert Moshannon substation to a 4 breaker 230 kV ring bus	APS - 41.06%, DPL - 6.68%, JCPL - 5.48%, ME - 10.7%, Neptune - 0.53%, PECO - 15.53%, PPL - 20.02%,	6/1/2014
b1969	Install a third 345-138 kV autotransformer at Collier. Substation. Currently s0321 and will be converted to baseline.	APS - 18.69%, DL 81.31%,	6/1/2013
b1970	Reconductor 13 miles of the Kammer – West Bellaire 345kV circuit	APS - 33.51%, ATSI - 32.21%, DL - 18.64%, Dominion - 6.01%, ECP - 0.1%, HTP - 0.11%, JCPL - 1.68%, Neptune - 0.18%, PENELEC - 4.58%, PSEG - 2.87%, RE - 0.11%,	6/1/2014
b1976	Reconductor ATSI portion of South Canton - Harmon 345 kV line	ATSI - 88.77%, ECP - 0.12%, HTP - 0.14%, JCPL - 1.24%, Neptune - 0.13%, PENELEC - 6.54%, PSEG - 2.94%, RE - 0.12%,	6/1/2015
b1977	Build new Toronto 345/138 kV substation by looping in the Sammis – Wylie Ridge 345 kV lines and tie in four 138 kV lines	APS - 7%, ATSI - 88.14%, DL - 0.81%, PENELEC - 4.05%,	6/1/2017
b1977.1	Build a new Toronto-Harmon 345kV line	APS - 7%, ATSI-28 14%, DL - 0.81%, PENELEC - 4.05%,	6/1/2017
b1993	Relocate the Erie South 345 kV fine terminal	APS - 10.09%, ECP - 0.45%, HTP - 0.49%, JCPL - 5.14%, Neptune - 0.54%, PENELEC - 70.71%, PSEG - 12.1%, RE - 0.48%,	6/1/2015
b1994	Convert Lewis Run-Farmers Valley to 230 kV using 1033.5 ACSR conductor. Project to be completed in conjunction with new Farmers Valley 345/230 kV transformation	APS - 33.2%, ECP - 0.44%, HTP - 0.44%, JCPL - 8.64%, ME - 5.52%, Neptune - 0.86%, PENELEC - 36.81%, PSEG - 13.55%, RE - 0.54%,	6/1/2015
b2006	Install North Lancaster 500/230 kV substation	AEC - 1.1%, ECP - 0.37%, HTP - 0.37%, JCPL - 9.61%, ME - 19.42%, Neptune - 0.75%, PECO - 6.01%, PPL - 50.57%, PSEG - 11.35%, RE - 0.45%,	6/1/2017
b2008	Reconductor feeder 23032 and 23034 to high terms conductor (10 miles)	BGE - 33.05%, DPL - 1.36%, PECO - 1.35%, PEPCO - 64.22%,	6/1/2015

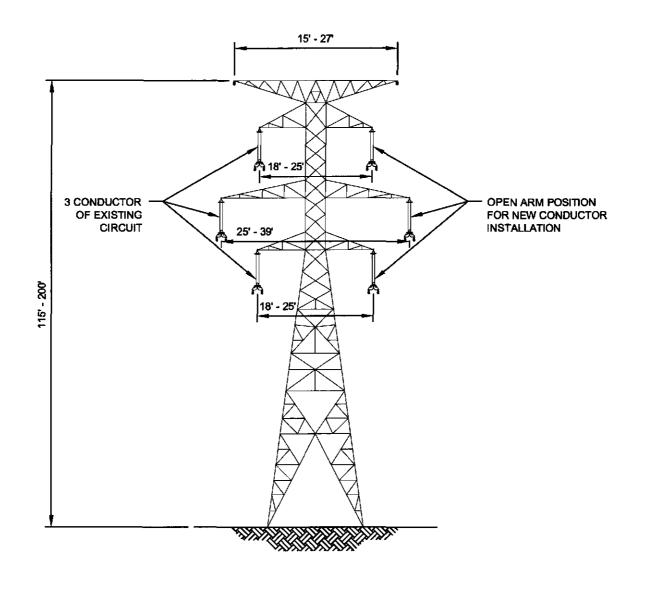


1. THIS STRUCTURE TYPE IS LOCATED IN LINK 2.



BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

FIGURE 1
OPEN ARM INSTALLATION ON EXISTING
STEEL LATTICE TWO CONDUCTOR ARM TOWER

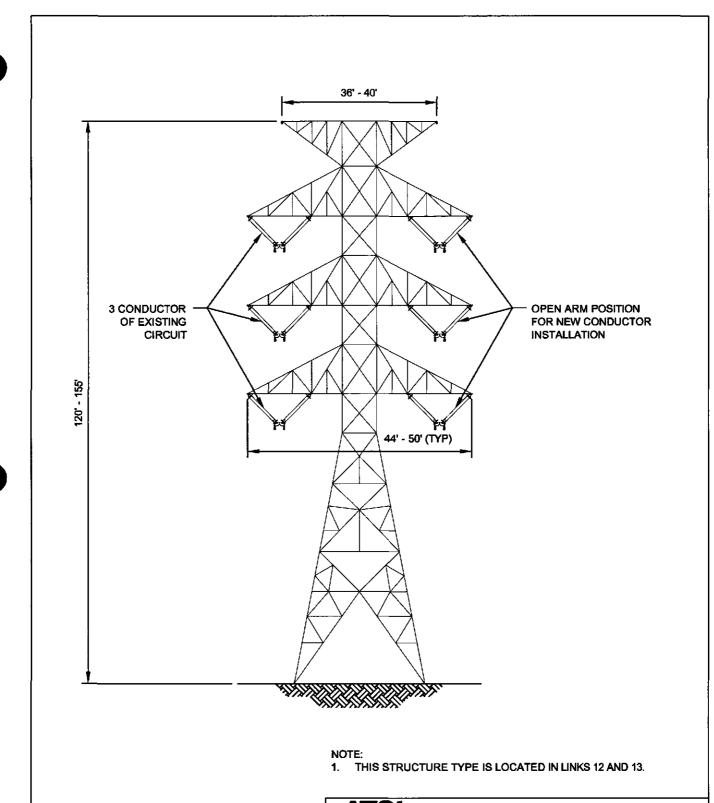


1. THIS STRUCTURE TYPE IS LOCATED IN LINKS 1,2,4,7,8 AND 10.



BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

FIGURE 2
OPEN ARM INSTALLATION ON EXISTING
STEEL LATTICE THREE CONDUCTOR ARM TOWER

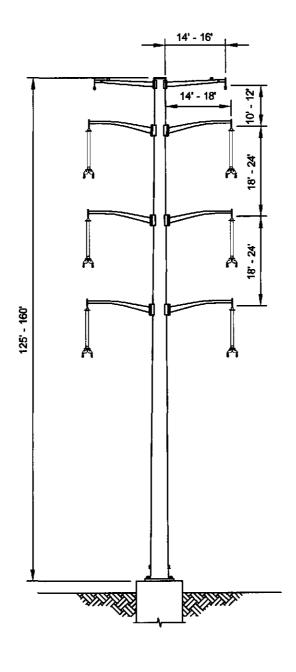


ATSI.

American Transmission Systems, inc.

BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

FIGURE 3
OPEN ARM INSTALLATION ON EXISTING STEEL
LATTICE THREE CONDUCTOR ARM TOWER (V-STRING)



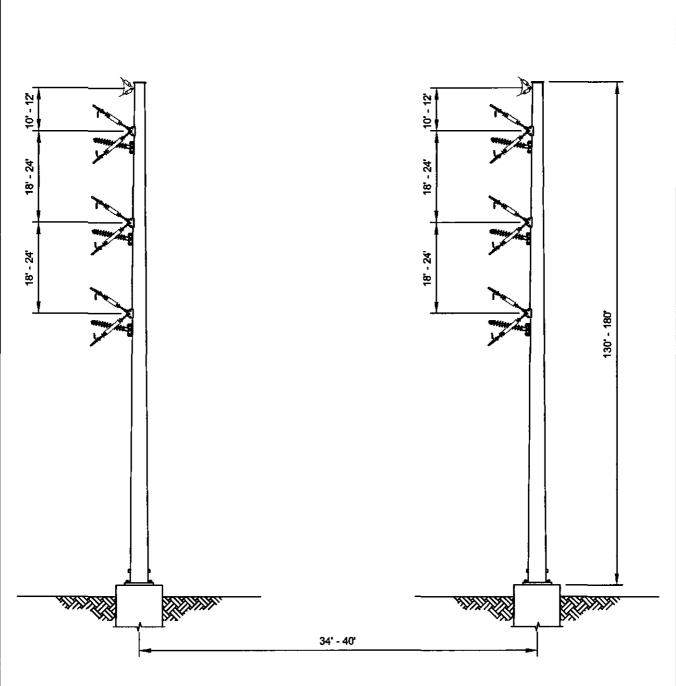
- CIRCUIT POSITION WILL BE DETERMINED DURING FINAL ENGINEERING.
- 2. THIS PROPOSED STRUCTURE TYPE IS LOCATED IN LINKS 3, 5, 7, 9, 11 AND 14.

ATSI.

American Transmission Systems, Inc. a subsidiary of Proteining Corp. BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

FIGURE 4

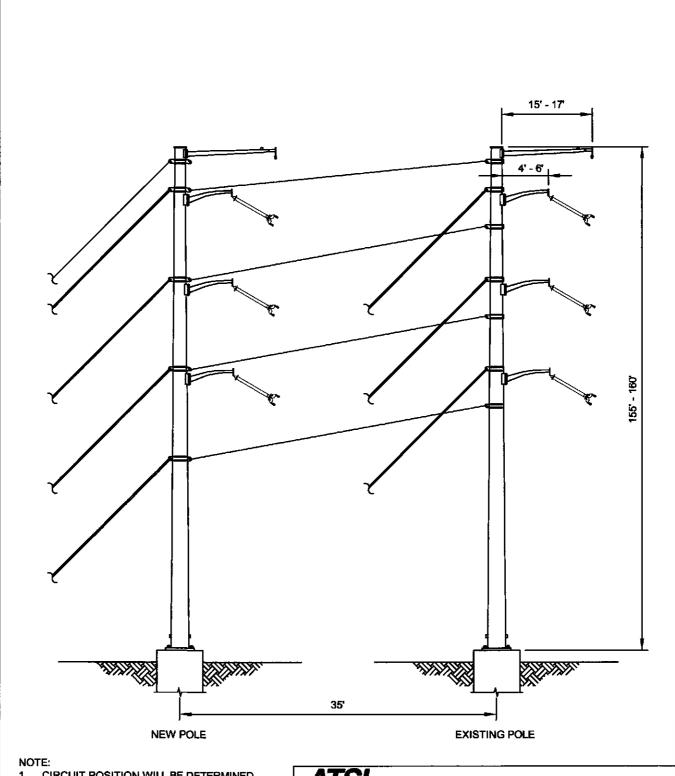
NEW DOUBLE CIRCUIT STEEL POLE TO REPLACE EXISTING SINGLE CIRCUIT STRUCTURE



- CIRCUIT POSITION WILL BE DETERMINED **DURING FINAL ENGINEERING.**
- THIS PROPOSED STRUCTURE TYPE IS LOCATED IN LINKS 3, 5, AND 14.

BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

FIGURE 5
NEW DOUBLE CIRCUIT STEEL POLE DEADEND TO REPLACE EXISTING DEADEND STRUCTURE



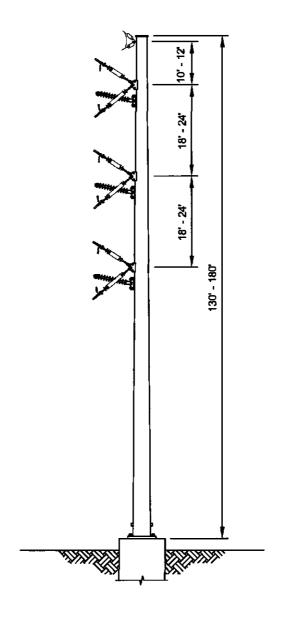
- CIRCUIT POSITION WILL BE DETERMINED DURING FINAL ENGINEERING.
- 2. THIS PROPOSED STRUCTURE TYPE IS LOCATED IN LINK 9.

ATSI.

BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

American Transmission Systems, Inc.

FIGURE 6
NEW STEEL POLE FOR
TWO POLE GUYED STRUCTURE

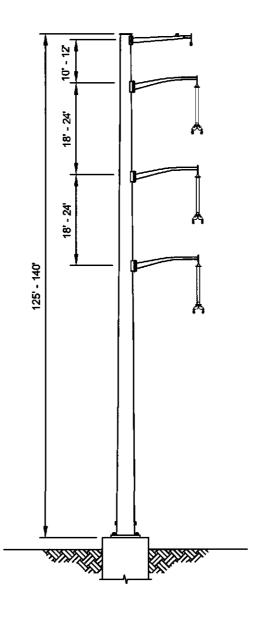


 THIS PROPOSED STRUCTURE TYPE IS LOCATED IN LINKS 1, 4, 8, 12, 13 AND 14. ATSI.

American Transmission Systems, Inc.

BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

FIGURE 7
NEW SINGLE CIRCUIT
STEEL POLE DEADEND STRUCTURE



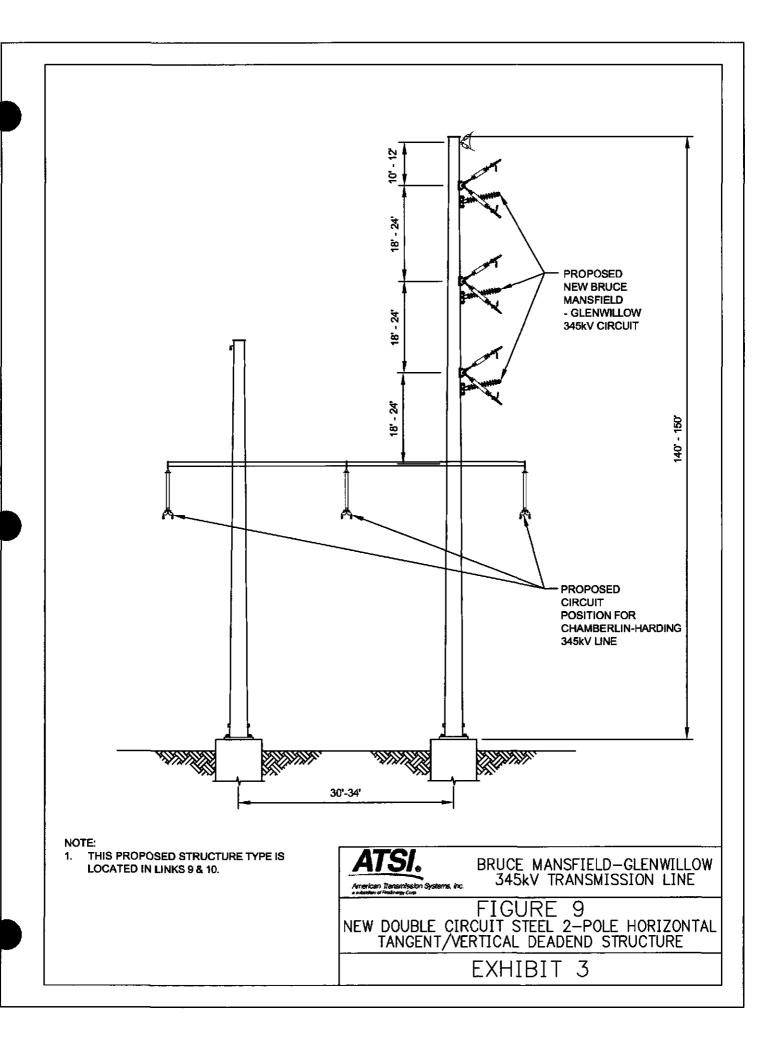
1. THIS PROPOSED STRUCTURE TYPE IS LOCATED IN LINKS 1 AND 10.

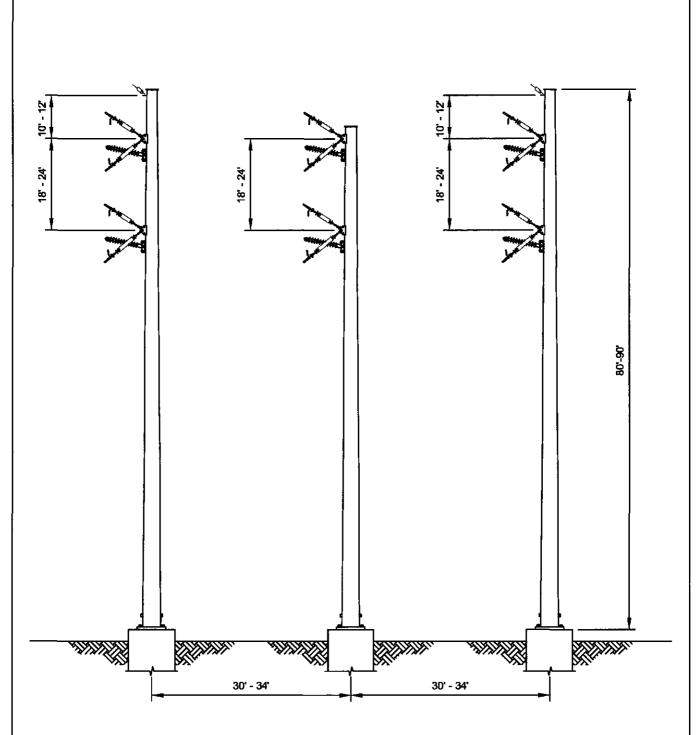
ATSI.

American Transmission Systems, inc.

BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

FIGURE 8
NEW SINGLE CIRCUIT STEEL POLE
TANGENT/LIGHT ANGLE STRUCTURE





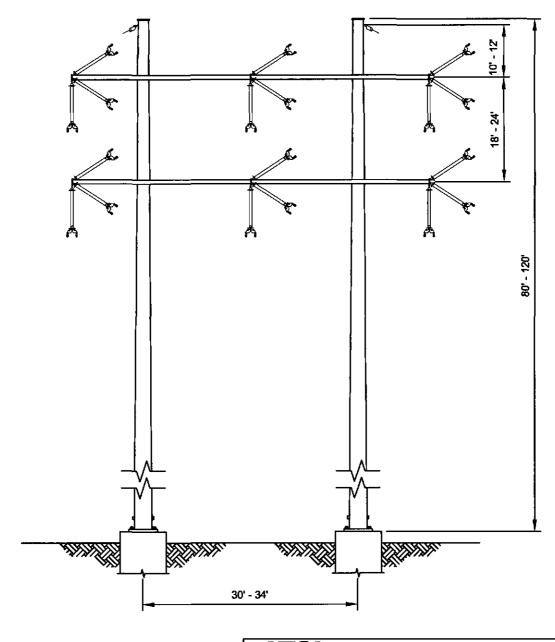
- 1. CIRCUIT POSITION WILL BE DETERMINED DURING FINAL ENGINEERING.
- 2. THIS PROPOSED STRUCTURE TYPE IS LOCATED IN LINK 14.



BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

Action Carl Hattastessack Systems, E.C. a substitute of Postinage Cosp.

FIGURE 10
NEW DOUBLE CIRCUIT STEEL 3-POLE DEADEND TO REPLACE EXISTING DEADEND STRUCTURE



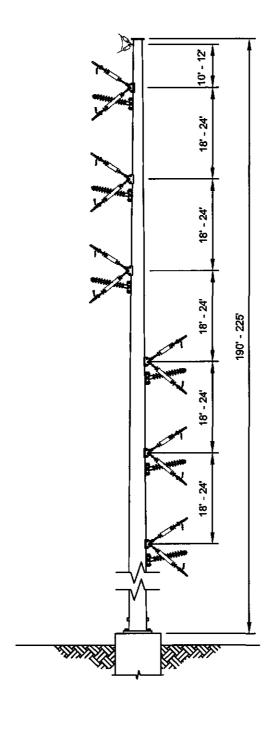
- CIRCUIT POSITION WILL BE DETERMINED DURING FINAL ENGINEERING.
- 2. THIS PROPOSED STRUCTURE TYPE IS LOCATED IN LINK 14.

AISIe

American Itansmission Systems, inc

BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

FIGURE 11
NEW DOUBLE CIRCUIT STEEL 2-POLE HORIZONTAL
DEADEND STRUCTURE



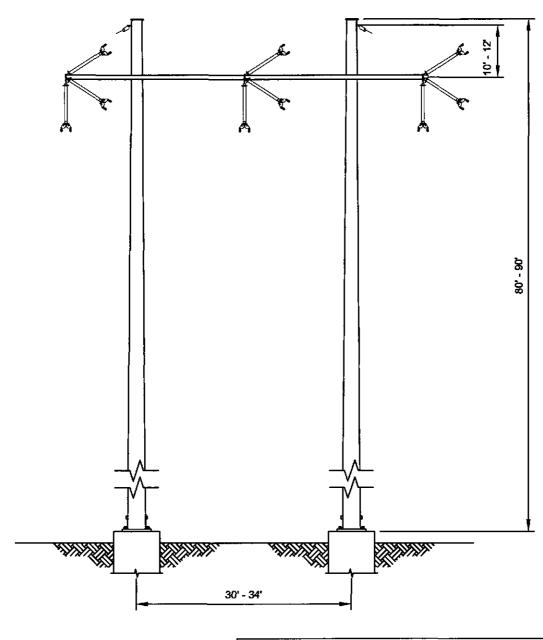
- CIRCUIT POSITION WILL BE DETERMINED DURING FINAL ENGINEERING.
- 2. THIS PROPOSED STRUCTURE TYPE IS LOCATED IN LINK 5.

AISIe

American Transmission Systems, Inc. a volusion of Profesory Corp

BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

FIGURE 12
NEW DOUBLE CIRCUIT STEEL POLE VERTICAL
DEADEND STRUCTURE

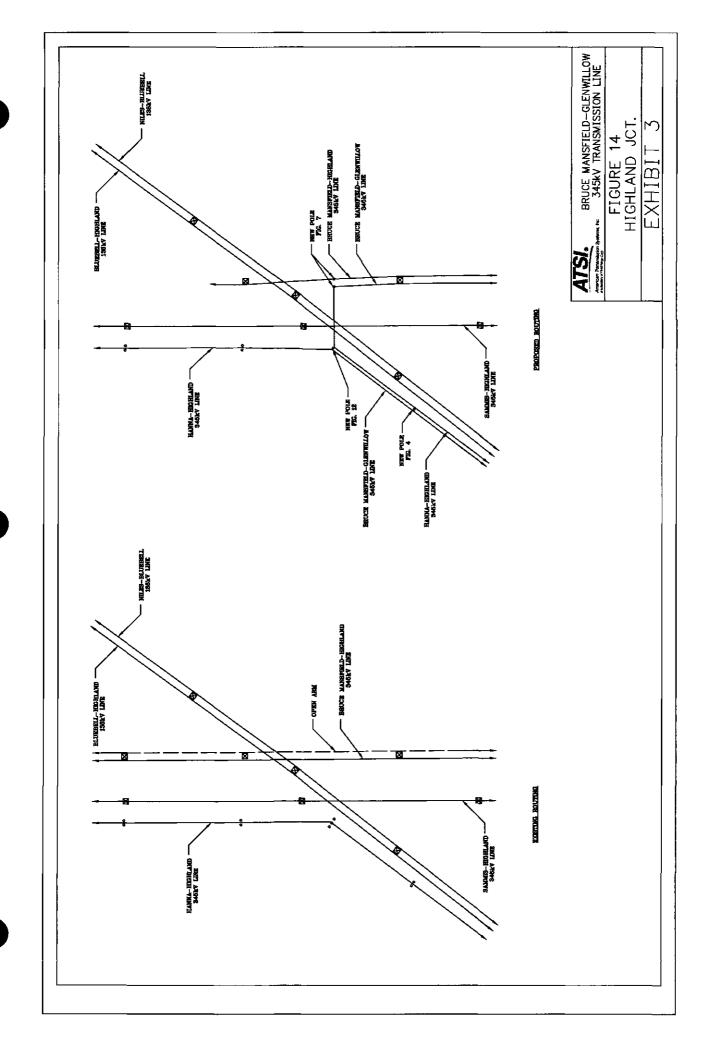


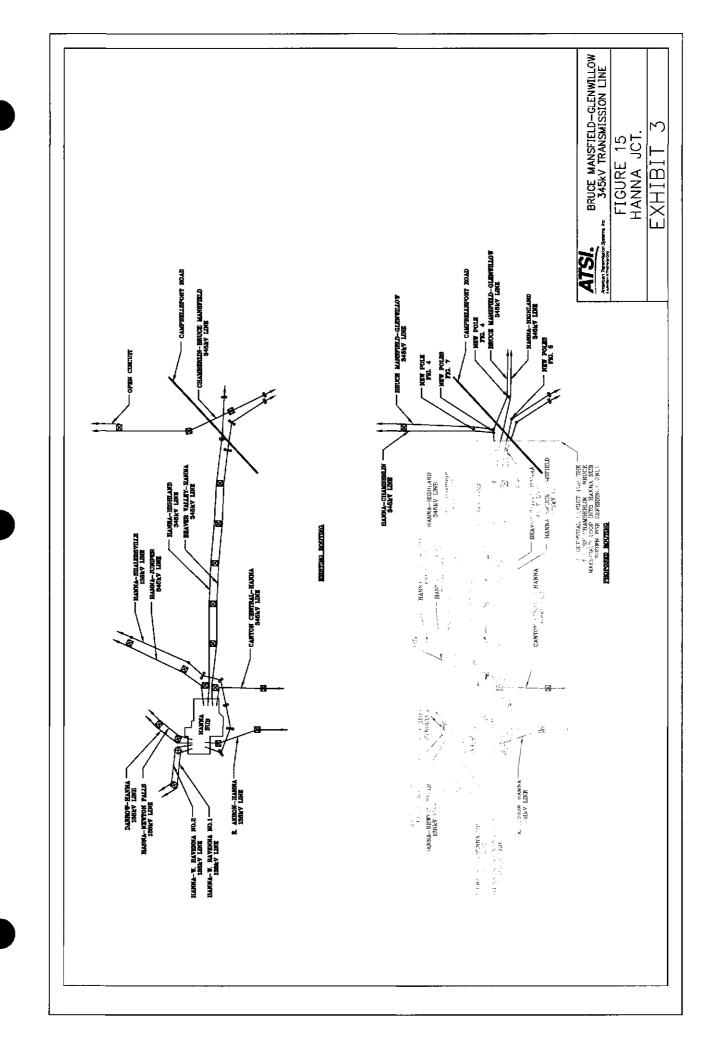
 THIS PROPOSED STRUCTURE TYPE IS LOCATED IN LINK 14. ATSI.

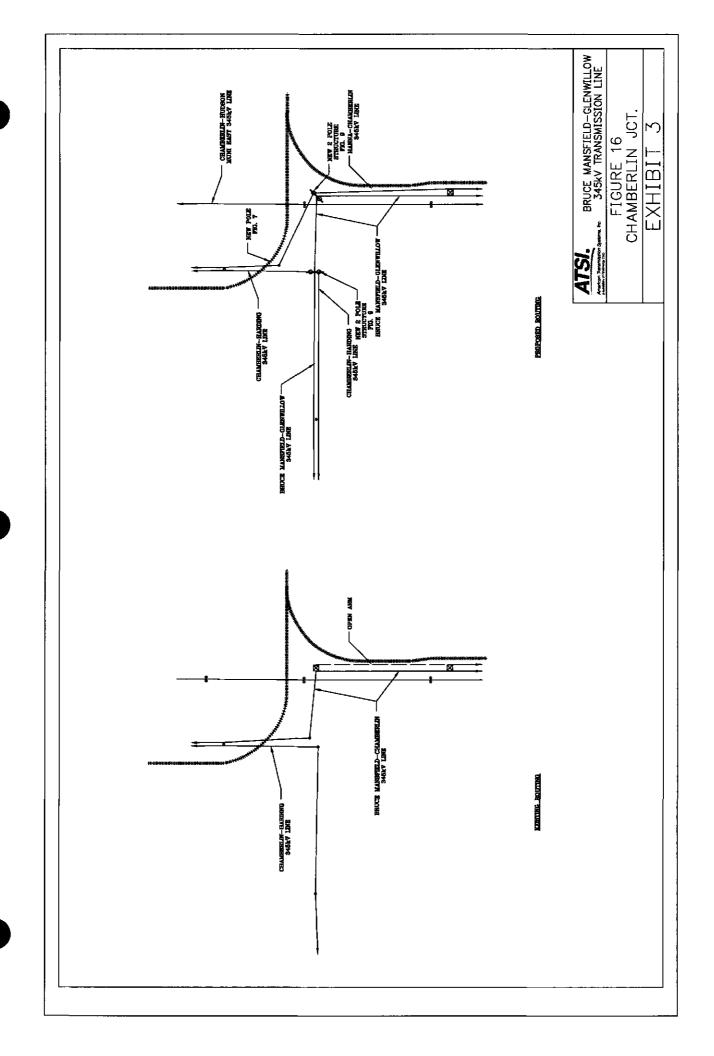
BRUCE MANSFIELD-GLENWILLOW 345kV TRANSMISSION LINE

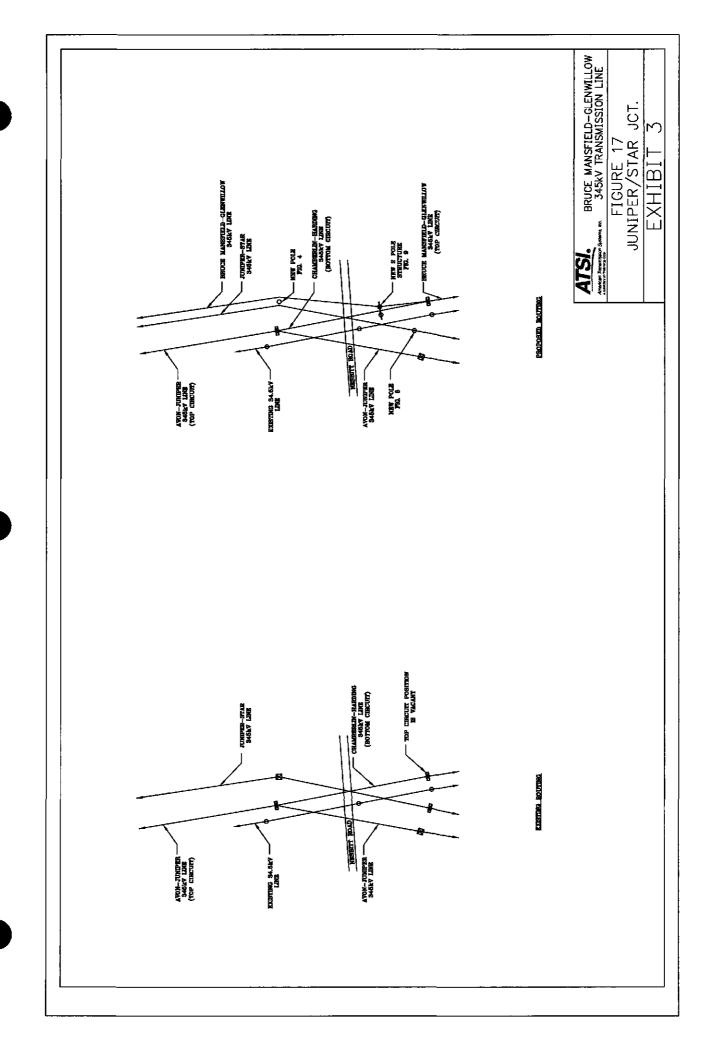
American Transmission Systems, Inc.

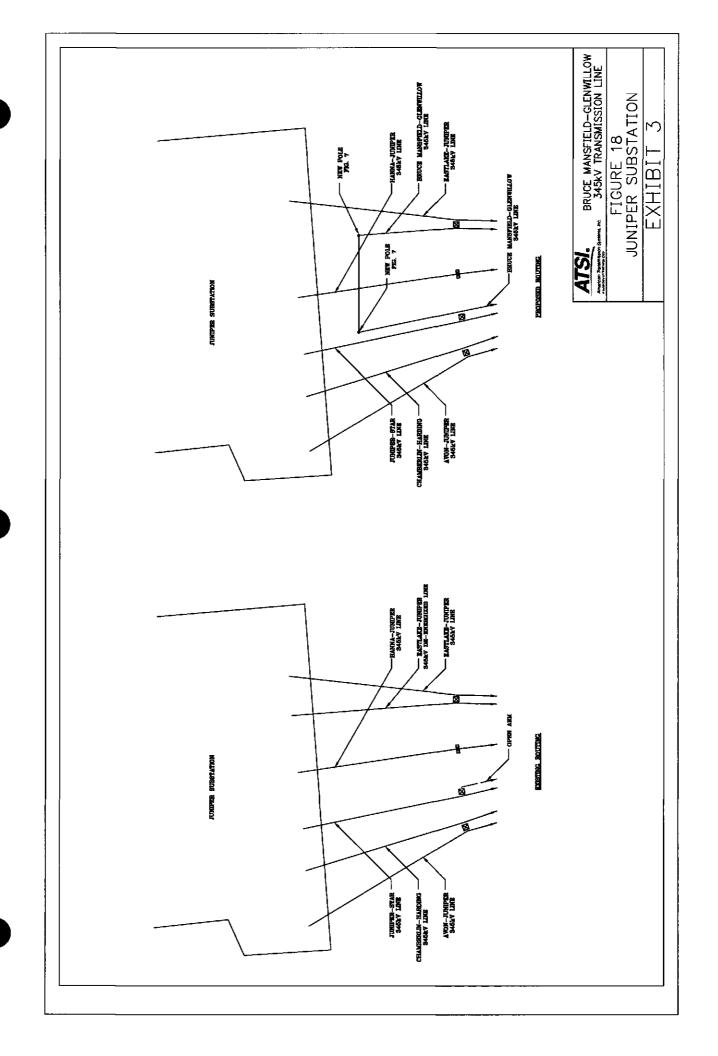
FIGURE 13
NEW SINGLE CIRCUIT STEEL 2-POLE
HORIZONTAL DEADEND STRUCTURE

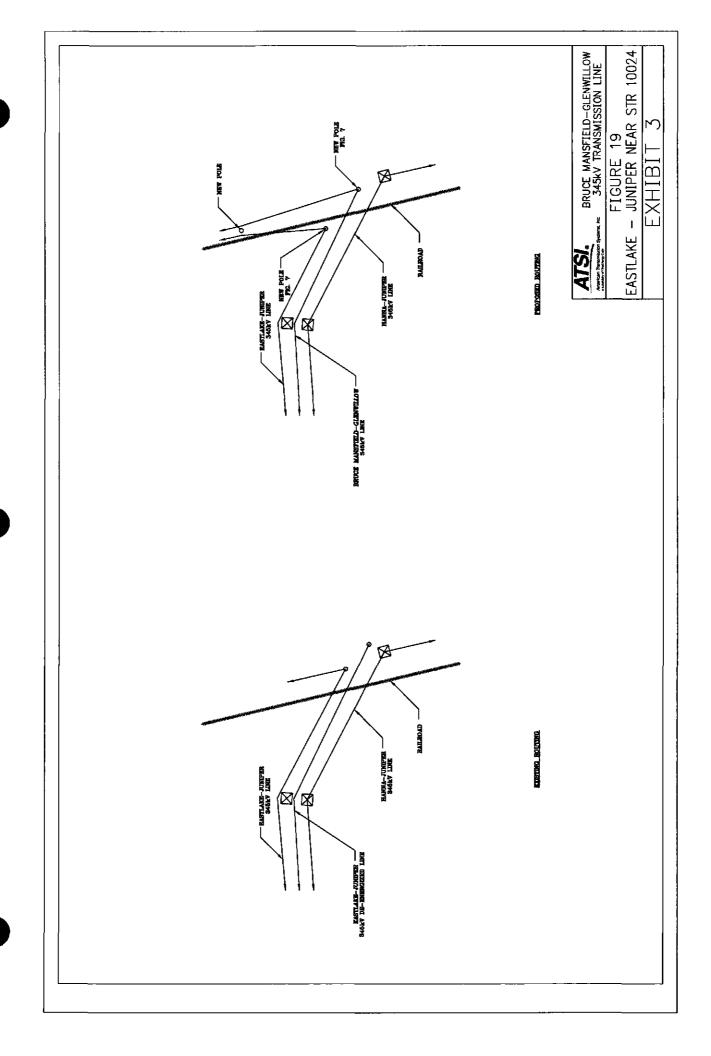












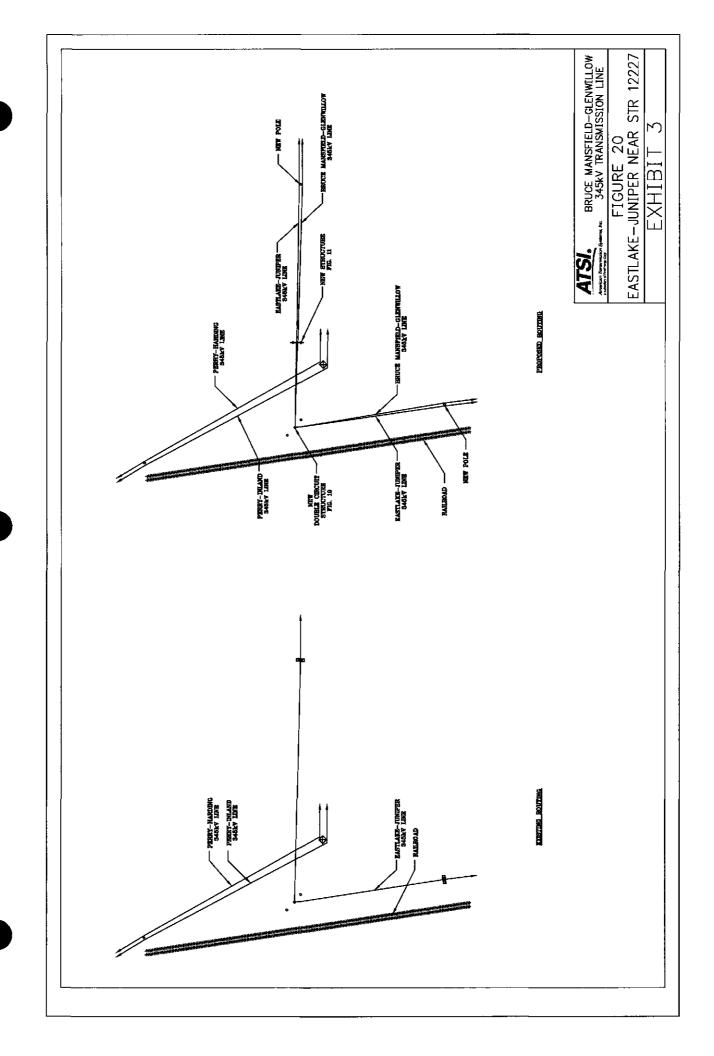


EXHIBIT 4: EXISTING TRANSMISSION ROW EASEMENTS OR PROPERTY OWNED BY FIRSTENERGY COMPANIES

Bruce Mansfield – Glenwillow 345 kV Transmission Line Case NO. 12-1726-EL-BLN

Columbiana County		
No.	Property Address	Parcel Number
1.	RLR Investments LLC 44054 Heck Rd Columbiana, OH 44408	17-00077.000
2.	Melvin G & Eleanor Horst County Line Rd Columbiana, OH 44408	17-00080.001
3.	Gwenn-Gary Nursery Inc 1257 SR 7 New Waterford, OH 44445	17-00122.000
4.	Melvin G & Eleanor Horst County Line Rd Columbiana, OH 44408	17-00132.000
5.	Nickolas A George Metz Rd New Waterford, OH 44445	17-00232.000
6.	Nickolas A George Metz Rd New Waterford, OH 44445	17-00233.000
7.	Village Of Columbiana Heck Rd Columbiana, OH 44408	18-03455.001
8.	Village Of Columbiana SR 14 Columbiana, OH 44408	18-03455.002
9.	William G Kaylor Trustee 44015 SR 14 Columbiana, OH 44408	18-03478.000
10.	Route 14 Truck Stop SR 14 Columbiana, OH 44408	18-03481.000
11.	Meadowbrooke Development LLC Creek Rd New Waterford, OH 44445	18-03494.000

Columbiana County		
No.	Property Address	Parcel Number
12.	Meadowbrooke Development LLC SR 7 New Waterford, OH 44445	18-03495.000
13.	Meadowbrooke Development LLC Creek Rd New Waterford, OH 44445	18-03498.000
14.	Benjamin Firestone Post No 290 American Legion 44403 SR 14 Columbiana, OH 44408	18-03505.000
15.	Christopher Britt Trustee 44681 SR 14 Columbiana, OH 44408	18-03506.000
16.	Route 14 Truck Stop LLC 44245 SR 14 Columbiana, OH 44408	18-03508.000
17.	Beverly J Richardson SR 14 Columbiana, OH 44408	18-03533.000
18.	Edward Abram Scholl 9406 SR 170 Negley, OH 44441	45-00169.000
19.	Lansberry Properties LLC SR 170 Negley, OH 44441	45-00182.000
20.	Marc L Neeley 2273 Jackman Rd Negley, OH 44441	45-00236.000
21.	Lansberry Properties LLC Jackman Rd Negley, OH 44441	45-00236.001
22.	Robert J Householder Pancake Clarkson Rd Negley, OH 44441	45-00264.000
23.	David Thomas Delong Carmel Achor Rd Negley, OH 44441	45-00411.001
24.	Amy M Persohn 50400 Carmel Achor Rd Negley, OH 44441	45-00411.002

Columbiana County		
No.	Property Address	Parcel Number
25.	Lansberry Properties LLC SR 170 Negley, OH 44441	45-00483.000
26.	Dennis L Twaddle Sr. Quay Rd Negley, OH 44441	45-00484.000
27.	Pilgrim Energy Corporation Mansfield Rd Negley, OH 44441	45-00545.001
28.	Pilgrim Energy Corporation Pancake Clarkson Rd (Off) Negley, OH 44441	45-00547.000
29.	State Of Ohio ODNR (Nature Preserve) Pancake Clarkson Rd Negley, OH 44441	45-02791.001
30.	State Of Ohio Department Of Natural Resources Jackman Rd Negley, OH 44441	45-03205.000
31.	Pilgrim Coal Company Jackman Rd Negley, OH 44441	45-03223.000
32.	Pilgrim Coal Company Mansfield Rd Negley, OH 44441	45-03224.000
33.	Steven & Karyn Sirota 7700 Bye Rd East Palestine, OH 44413	46-00007.000
34.	Raymond L & Lois A Earley Trustees Bye Rd East Palestine, OH 44413	46-00036.000
35.	Raymond L & Lois A Earley Trustees Bye Rd East Palestine, OH 44413	46-00037.000
36.	Gregory C & Sharon K Matthews 6271 Latta Rd East Palestine, OH 44413	46-00150.000

Columbiana County		
No.	Property Address	Parcel Number
37.	Gale Douglas Blue Jr & Vicky D Barr Latta Rd East Palestine, OH 44413	46-00157.000
38.	Nancy L Plecas 7052 Bye Rd East Palestine, OH 44413	46-00167.000
39.	Dennis L Twaddle Sr SR 170 Negley, OH 44441	46-00169.000
40.	Dennis L Twaddle Sr Quay Rd Negley, OH 44441	46-00172.000
41.	Larry G Adkins SR 154 Negley, OH 44441	46-00176.000
42.	Roman P Swerdan 6651 Gorby Rd East Palestine, OH 44413	46-00178.000
43.	Clark A & Darlene B Wolf 50215 SR 154 Negley, OH 44441	46-00222.000
44.	Steven T & Karyn T Sirota Taylor Rd East Palestine, OH 44413	46-00226.000
45.	Patricia L & Joni L Mcelroy Cyphert 7240 Bye Rd East Palestine, OH 44413	46-00227.001
46.	Steven T & Karyn T Sirota Bye Rd East Palestine, OH 44413	46-00227.005
47.	Dennis Scott Wallace Bye Rd East Palestine, OH 44413	46-00502.000
48.	Gale Douglas Jr & Vicky D Barr Blue 6384 Latta Rd East Palestine, OH 44413	46-00509.000
49.	Arthur L Grossen 6748 Bye Rd East Palestine, OH 44413	46-00925.000

Columbiana County		
No.	Property Address	Parcel Number
50.	Gregory C & Sharon K Matthews Latta Rd East Palestine, OH 44413	46-00974.000
51.	Patricia A. Hedger 6495 Latta Rd East Palestine, OH 44413	46-00975.000
52.	Rudy E Sacchet SR 154 Negley, OH 44441	46-01034.000
53.	Paul A & Melanie S Conkle Conkle 7459 Bye Rd East Palestine, OH 44413	46-90007.000
54.	Valerie J & Mark A Rockenberger 5766 Bye Rd East Palestine, OH 44413-9714	65-00038.000
55.	Kevin L & Debra J Baker 5800 Bye Rd East Palestine, OH 44413	65-00039.000
56.	Keith J & Linda C Conkle 47800 Hisey Rd New Waterford, OH 44445	65-00075.000
57.	Robert E Ramsayer Jr & Robin Zellers 2771 Creek Rd New Waterford, OH 44445	65-00081.000
58.	David John & Jennifer Donkin 3220 Waterford Rd New Waterford, OH 44445	65-00127.000
59.	Garret J & Jane M Bankowski 3215 Waterford Rd New Waterford, OH 44445	65-00127.001
60.	Glen Allen Lacey Jr Hamilton Rd East Palestine, OH 44413	65-00149.000
61.	Henry P Hoffstot III & Darylin B Hoffstot Custodian 3058 Waterford Rd New Waterford, OH 44445	65-00175.000
62.	Larry L & Douglas A Justison 5990 Bye Rd East Palestine, OH 44413	65-00196.000

Columbiana County		
No.	Property Address	Parcel Number
63.	Carol Ann & Kenneth W Robb McCloskey Rd New Waterford, OH 44445	65-00243.000
64.	Ralph Thomas & Cindy Lee Richey 4086 Padgett Rd East Palestine, OH 44413	65-00280.001
65.	Harold & Donna Padgett Padgett Rd East Palestine, OH 44413	65-00280.004
66.	Ralph T & Cindy L Richey Padgett Rd East Palestine, OH 44413	65-00280.005
67.	Earl & Betty McCoy 4273 Padgett Rd East Palestine, OH 44413	65-00280.006
68.	Joanne L Wasko 46901 Metz Rd New Waterford, OH 44445	65-00297.000
69.	Dale Everett Wilhelm 49248 Mcclure Rd East Palestine, OH 44413	65-00352.000
70.	David W & Diana L Depillo 48591 Hamilton Rd East Palestine, OH 44413	65-00358.000
71.	Harold Ross & Donna Jean Padgett 4329 Padgett Rd East Palestine, OH 44413	65-00409.000
72.	Donald M & Lori A Knight 2904 Creek Rd New Waterford, OH 44445	65-00426.000
73.	Fritz E Rukenbrod 49404 Mcclure Rd East Palestine, OH 44413	65-01082.000
74.	Kevin L & Debra J Baker 5800 Bye Rd East Palestine, OH 44413	65-01084.000
75.	Ronald D & Patricia Shreve 48591 Hamilton Rd East Palestine, OH 44413	65-01092.000

Columbiana County		
No.	Property Address	Parcel Number
76.	Diane M Leeson 4150 Padgett Rd East Palestine, OH 44413	65-01193.000
77.	Benjamin Riggs 300 Riggs Dr East Palestine, OH 44413	65-01276.000
78.	Richard R McElroy 48126 Hamilton Rd East Palestine, OH 44413	65-01280.000
79.	John S Kestner & Alison E Melmick 2409 Macklin Rd New Waterford, OH 44445	65-01310.000
80.	Kevin L Dilling Macklin Rd New Waterford, OH 44445	65-01311.000
81.	Robert M Dennison 49203 Mcclure Rd East Palestine, OH 44413	65-01318.001
82.	George J & Sandra S Nunamaker 2147 Macklin Rd New Waterford, OH 44445	67-00302.001
83.	Lorie G & Robert K Ritchey 2298 Macklin Rd New Waterford, OH 44445	67-00302.002
84.	Henry P Hoffstot III & Darylin B Hoffstot Custodian 2883 Waterford Rd New Waterford, OH 44445	67-00355.000
85.	Larry L & Douglas A Justison 6123 Bye Rd East Palestine, OH 44413	67-00390.000
86.	Carol Ratkovich 5965 Latta Rd East Palestine, OH 44413	67-00561.000
87.	Gene E Douglass 47827 Metz Rd New Waterford, OH 44445	67-00655.000
88.	Michael R Tucker 1691 Bacon Ave East Palestine, OH 44413	67-01121.000

Columbiana County		
No.	Property Address	Parcel Number
89.	Ruth A Dodge Neeld Rd East Palestine, OH 44413	67-02389.000
90.	Tom R Ross 47135 Metz Rd New Waterford, OH 44445	67-02412.000
91.	Ruth A Dodge Neeld Rd East Palestine, OH 44413	67-02427.000
92.	Benjamin Riggs Padgett Rd East Palestine, OH 44413	67-02639.000
93.	Bonnie L Evans 250 Riggs Dr East Palestine, OH 44413	67-02640.000
94.	Ohio Edison Co Pleasant Dr New Waterford, OH 44445	67-90012.002
95.	Pennsylvania Lines LLC C/O Norfolk Southern Rwy East Palestine, OH 44413	RR ROW

	Mahoning County		
No.	Property Address	Parcel Number	
1.	Edith R Dunlap Elton Rd North Lima, OH 44452	05-080-0-004.00-0	
2.	Thomas A Rochford Trustee 13505 South Ave North Lima, OH 44452	05-089-0-008.00-0	
3.	Stephen T Harrold 13345 South Ave North Lima, OH 44452	05-089-0-008.01-0	
4.	Jerry Burlingame 13172 South Ave North Lima, OH 44452	05-090-0-002.00-0	
5.	Jerry Burlingame Blosser Rd North Lima, OH 44452	05-090-0-006.00-0	
6.	Jerry Burlingame Blosser Rd North Lima, OH 44452	05-091-0-001.00-0	
7.	Jerry Burlingame Blosser Rd North Lima, OH 44452	05-091-0-002.00-0	
8.	Ohio Edison Co Blosser Rd North Lima, OH 44452	05-091-0-004.01-P	
9.	Richard D & Marilyn Carr Blosser Rd North Lima, OH 44452	05-092-0-001.00-0	
10.	Richard D & Marilyn Carr 12715 Blosser Rd North Lima, OH 44452	05-092-0-004.00-0	
11.	Jason & Iva Irene Witmer 12425 New Buffalo Rd North Lima, OH 44452	05-113-0-001.00-0	
12.	Outland Wehr & Slater Ltd New Buffalo Rd North Lima, OH 44452	05-129-0-001.00-0	
13.	Myron C Wehr Properties LLC South Range Rd Columbiana, OH 44408	05-129-0-020.00-0	

	Mahoning County		
No.	Property Address	Parcel Number	
14.	Beaver Township Board Of Trustees 2800 South Range Rd Columbiana, OH 44408	05-130-0-001.00-P	
15.	Sara Jane Crumbacher New Buffalo Rd North Lima, OH 44452	05-131-0-007.00-0	
16.	Jean Stear Middletown Rd Canfield, OH 44406	05-144-0-001.00-0	
17.	Nicholas E Toy 3300 W. Middletown Rd Canfield, OH 44406	05-144-0-002.07-0	
18.	Joseph Petrilli 1016 Lincoln Rd Canfield, OH 44406	05-144-0-004.00-0	
19.	Henry Jr & Janie Hassey 3265 Lynn Rd Canfield, OH 44406	05-144-0-007.00-0	
20.	Duane D Beatty Lynn Rd Canfield, OH 44406	05-144-0-008.00-0	
21.	Sara Jane Crumbacher Middletown Rd Canfield, OH 44406	05-145-0-001.00-0	
22.	Charles T Adams 3333 Middletown Rd Canfield, OH 44406	05-145-0-002.00-0	
23.	Lori Ann Coler 3331 Middletown Rd Columbiana, OH 44408	05-145-0-004.00-0	
24.	Richard C Morrow 3003 Middletown Rd Canfield, OH 44406	05-146-0-001.00-0	
25.	Raymond & Linda Kucalaba 10825 Detwiler Rd Canfield, OH 44406	05-169-0-001.00-0	
26.	Kenneth J Kuzior Lincoln Rd Canfield, OH 44406	05-169-0-003.00-0	

	Mahoning County		
No.	Property Address	Parcel Number	
27.	Alfred A Davison 1014 Lincoln Rd Canfield, OH 44406	05-169-0-004.00-0	
28.	Ronald R Carrocce 10246 Detwiler Rd Canfield, OH 44406	05-178-0-001.00-0	
29.	Ronald R Carrocce Detwiler Rd Canfield, OH 44406	05-179-0-004.00-0	
30.	Ronald R Carrocce Middletown Rd Canfield, OH 44406	05-179-0-006.00-0	
31.	David J Shuntich 4150 Middletown Rd Canfield, OH 44406	05-180-0-004.02-0	
32.	Nancy E Dubiel Detwiler Rd Canfield, OH 44406	05-180-0-008.00-0	
33.	David R & Kathy S Moff Calla Rd Canfield, OH 44406	05-207-0-001.00-0	
34.	Janine Tareshawty 4727 Calla Rd Canfield, OH 44406	05-207-0-002.00-0	
35.	Diana J Greier Trustee Calla Rd Canfield, OH 44406	05-207-0-003.00-0	
36.	James R Trustee Moore Trustee 7393 Western Reserve Rd Canfield, OH 44406	09-029-0-002.00-0	
37.	James R Trustee Moore 7373 Western Reserve Rd Canfield, OH 44406	09-029-0-002.01-0	
38.	Charles W Stearns 9547 Lisbon Rd Canfield, OH 44406	09-030-0-027.00-0	
39.	Russell L Garber 6876 Calla Rd Canfield, OH 44406	09-051-0-001.00-0	

Mahoning County		
No.	Property Address	Parcel Number
40.	Diana J Greier Trustee Calla Rd Canfield, OH 44406	09-051-0-011.00-0
41.	Diana J Greier Trustee Calla Rd Canfield, OH 44406	09-051-0-012.00-0
42.	Robert A Seman Jr Calla Rd Canfield, OH 44406	09-051-0-014.03-0
43.	Jason L Wine 6446 Calla Rd Canfield, OH 44406	09-051-0-015.00-0
44.	Matthew & Diana O'Brien 6410 Calla Rd Canfield, OH 44406	09-051-0-017.01-0
45.	Janet L Schlegel 10000 Washingtonville Rd Canfield, OH 44406	09-051-0-025.00-0
46.	Sherman G Martz Jr Washingtonville Rd Canfield, OH 44406	09-051-0-030.00-0
47.	Eagle Boiler Limited 6762 Calla Rd Canfield, OH 44406	09-052-0-024.01-0
48.	Kenneth & Sheron Paulin Washingtonville Rd Canfield, OH 44406	09-054-0-004.00-0
49.	Kenneth & Sheron Paulin Calla Rd Canfield, OH 44406	09-054-0-005.00-0
50.	Diana J Greier Trustee Calla Rd Canfield, OH 44406	09-054-0-007.00-0
51.	Diana J Greier Trustee 9585 State Route 46 Canfield, OH 44406	09-054-0-009.00-0
52.	Diana J Greier Trustee Calla Rd Canfield, OH 44406	09-055-0-001.00-0

	Mahoning County		
No.	Property Address	Parcel Number	
53.	James R Grope Jr Western Reserve Rd Canfield, OH 44406	12-029-0-001.00-0	
54.	Mark S Gozur Gault Rd North Jackson, OH 44451	23-029-0-006.00-0	
55.	Johanne Edel 4180 Gault Rd North Jackson, OH 44451	23-029-0-007.00-0	
56.	Johanne Edel Gault Rd North Jackson, OH 44451	23-029-0-008.00-0	
57.	Evelyn M Nolan Trustee 4268 Gault Rd North Jackson, OH 44451	23-029-0-009.00-0	
58.	Paul F & Deanne M Hunt 4385 Gault Rd North Jackson, OH 44451	23-029-0-010.00-0	
59.	Paul F & Deanne M Hunt Gault Rd North Jackson, OH 44451	23-029-0-011.00-0	
60.	Robert A Miller Jr Gault Rd North Jackson, OH 44451	23-029-0-013.00-0	
61.	Michele N Prusak 4400 Gault Rd North Jackson, OH 44451	23-029-0-014.00-0	
62.	Randel G Boyles 9816 Palmyra Rd North Jackson, OH 44451	23-030-0-010.00-0	
63.	Ohio Edison Co Palmyra Rd North Jackson, OH 44451	23-030-0-012.01-P	
64.	Kenneth E Calhoun Gault Rd North Jackson, OH 44451	23-030-0-014.00-0	
65.	James H & Beverly Porter 5115 Gault Rd North Jackson, OH 44451	23-031-0-001.01-0	

Mahoning County		
No.	Property Address	Parcel Number
66.	Raymond G Minniti Gault Rd North Jackson, OH 44451	23-031-0-001.02-0
67.	Jeremy B Hornberger Gault Rd North Jackson, OH 44451	23-031-0-005.00-0
68.	Raymond G Minniti 5231 Gault Rd North Jackson, OH 44451	23-031-0-006.00-0
69.	Raymond G Minniti Gault Rd North Jackson, OH 44451	23-031-0-008.00-0
70.	Raymond Minniti Gault Rd North Jackson, OH 44451	23-031-0-009.00-0
71.	Heidi Creighton 5581 Gault Rd North Jackson, OH 44451	23-032-0-001.00-0
72.	Ronald J Bilas Trustee Gault Rd North Jackson, OH 44451	23-032-0-004.00-0
73.	Ronald J Bilas Trustee 5843 Gault Rd North Jackson, OH 44451	23-032-0-005.00-0
74.	James E & Anna Munholand 5921 Gault Rd North Jackson, OH 44451	23-032-0-006.00-0
75.	James E Munholand Gault Rd North Jackson, OH 44451	23-032-0-007.01-0
76.	James Majernik 9314 Akron Canfield Rd Canfield, OH 44406	23-033-0-053.01-0
77.	Board Of Parkk Commissioners Akron Canfield Rd Canfield, OH 44406	23-044-0-005.00-0
78.	Board Of Parkk Commissioners Akron Canfield Rd Canfield, OH 44406	23-045-0-001.00-0

Mahoning County		
No.	Property Address	Parcel Number
79.	Janet G Donaldson Trustee 4323 State Route 45 Canfield, OH 44406	24-028-0-018.00-0
80.	Robert A Miller Jr 10940 Palmyra Rd North Jackson, OH 44451	24-028-0-021.00-0
81.	Myers Equipment Corp 8860 Akron Canfield Rd Canfield, OH 44406	25-044-0-010.00-0
82.	George Kyprianou Akron Canfield Rd Canfield, OH 44406	25-044-0-011.00-0
83.	Arthur A Horvath Trustee Akron Canfield Rd Canfield, OH 44406	25-044-0-014.02-0
84.	Arthur A Horvath Trustee Akron Canfield Rd Canfield, OH 44406	26-010-0-001.03-0
85.	Frank N Lonardo Akron Canfield Rd Canfield, OH 44406	26-010-0-011.00-0
86.	Frank N Lonardo Akron Canfield Rd Canfield, OH 44406	26-010-0-013.00-0
87.	Gatorland LLC Akron Canfield Rd Canfield, OH 44406	26-017-0-003.01-0
88.	Gatorland LLC Canfield Ellsworth Rd Canfield, OH 44406	26-017-0-004.01-0
8 9.	Henry W Davis Trustee Crory Rd Canfield, OH 44406	26-020-0-009.00-0
90.	Henry W Davis Trustee Crory Rd Canfield, OH 44406	26-020-0-010.00-0
91.	Henry W Davis Trustee Crory Rd Canfield, OH 44406	26-023-0-018.00-0

	Mahoning County		
No.	Property Address	Parcel Number	
92.	James R Scott 8028 Maplevale Dr Canfield, OH 44406	26-023-0-019.01-0	
93.	City Of Canfield Youngstown Salem Rd Canfield, OH 44406	26-024-0-003.01-0	
94.	City Of Canfield 7576 Leffingwell Rd Canfield, OH 44406	26-024-0-006.00-0	
95.	Emerald Estates Inc 7760 Lydia Ln Canfield, OH 44406	26-024-0-023.00-0	
96.	Emerald Estates Inc 7780 Lydia Ln Canfield, OH 44406	26-024-0-024.00-0	
97.	Emerald Estates Inc 7795 Lydia Ln Canfield, OH 44406	26-024-0-025.00-0	
98.	Emerald Estates Inc 7765 Lydia Ln Canfield, OH 44406	26-024-0-026.00-0	
99.	John Decerbo 8556 Youngstown Salem Rd Canfield, OH 44406	26-027-0-006.00-0	
100.	Anthony R Giordano 8700 Youngstown Salem Rd Canfield, OH 44406	26-027-0-009.01-0	
101.	Richard A Hanrahan 7550 Meadowood Dr Canfield, OH 44406	26-027-0-009.02-0	
102.	John E & Debra L Fleming 7600 Meadowood Dr Canfield, OH 44406	26-027-0-009.03-0	
103.	Martin F & Rischar 7575 Meadowood Dr Canfield, OH 44406	26-027-0-009.25-0	
104.	Usha Sethi Youngstown Salem Rd Canfield, OH 44406	26-027-0-011.01-0	

Mahoning County		
No.	Property Address	Parcel Number
105.	Florence V Libb Trustee W. Western Reserve Rd Canfield, OH 44406	26-027-0-012.01-0
106.	Camille A Cestone 8575 Youngstown Salem Rd Canfield, OH 44406	26-027-0-012.11-0
107.	Nick Loze W. Western Reserve Rd Canfield, OH 44406	26-027-0-012.13-0
108.	Robert A Ferguson 7400 W. Western Reserve Rd Canfield, OH 44406	26-027-0-012.14-0
109.	John C & Anna L Pera Youngstown Salem Rd Canfield, OH 44406	26-027-0-012.15-0
110.	Kenneth S Neuberger 900 County Line Rd Columbiana, OH 44408	43-052-0-001.00-0
111.	Marc B Baird 14700 Sheeley Rd Columbiana, OH 44408	43-052-0-007.00-0
112.	Helen L Stacy 14670 Sheeley Rd Columbiana, OH 44408	43-053-0-001.00-0
113.	Geo E & Edwynna J Stacy 899 Garfield Rd Columbiana, OH 44408	43-054-0-001.00-0
114.	Nancy L Casanta 1500 Garfield Rd Columbiana, OH 44408	43-081-0-001.00-0
115.	Raymond A Miller Elton Rd North Lima, OH 44452	43-081-0-003.00-0
116.	Timothy M Reeser Elton Rd North Lima, OH 44452	43-081-0-004.02-0
117.	Timothy M Reeser Garfield Rd Columbiana, OH 44408	43-081-0-004.03-0

Mahoning County		
No.	Property Address	Parcel Number
118.	Timothy M Reeser 1298 Garfield Rd Columbiana, OH 44408	43-081-0-004.04-0
119.	Robert M Saleman 13650 Elton Rd North Lima, OH 44452	43-081-0-004.07-0
120.	Timothy M Reeser Elton Rd North Lima, OH 44452	43-081-0-004.09-0
121.	John F & Suzanne J Taylor 1190 Garfield Rd Columbiana, OH 44408	43-081-0-005.00-0
122.	Port Authority For Garfield Rd Columbiana, OH 44408	43-081-0-009.00-0
123.	Geo E & Edwynna J Stacy Garfield Rd Columbiana, OH 44408	43-082-0-001.00-0
124.	Timothy Shahan Et al. 1115 Garfield Rd Columbiana, OH 44408	43-082-0-002.00-0
125.	Ronald Siembieda 14151 Eureka Rd Columbiana, OH 44408	43-082-0-006.00-0
126.	Daniel M & Arlene Carr 1085 Garfield Rd Columbiana, OH 44408	43-082-0-007.00-0
127.	Helen L Stacy Sheeley Rd Columbiana, OH 44408	43-083-0-003.00-0
128.	Gary A & Paula A Ruggles Blott Rd North Jackson, OH 44451	50-023-0-007.00-0
129.	Ohio Edison Co New Rd North Jackson, OH 44451	50-024-0-002.00-P
130.	Ohio Edison Co New Rd North Jackson, OH 44451	50-024-0-003.00-P

Mahoning County		
No.	Property Address	Parcel Number
131.	William H Lehotsky Salem Warren Rd North Jackson, OH 44451	50-024-0-007.00-0
132.	Myrna F Ruggles Trustee Salem Warren Rd North Jackson, OH 44451	50-024-0-010.00-0
133.	Marvin J Moore Salem Warren Rd North Jackson, OH 44451	50-025-0-011.00-0
134.	Marvin J Moore Salem Warren Rd North Jackson, OH 44451	50-025-0-015.00-0
135.	Ohio Edison Co New Rd North Jackson, OH 44451	50-025-0-037.00-P
136.	Ohio Edison Co New Rd North Jackson, OH 44451	50-025-0-038.00-P
137.	Star White 10347 Mahoning Ave North Jackson, OH 44451	50-026-0-001.00-0
138.	Ohio Edison Co Mahoning Ave North Jackson, OH 44451	50-027-0-094.00-P
139.	Jason W Whipkey Gladstone Rd North Jackson, OH 44451	50-032-0-006.01-P
140.	Stephen E Ware 10060 Gladstone Rd North Jackson, OH 44451	50-032-0-016.00-0
141.	Stephen E Ware 10010 Gladstone Rd North Jackson, OH 44451	50-032-0-016.01-0
142.	M Virginia Buzzelli 10193 Gladstone Rd North Jackson, OH 44451	50-033-0-002.00-0
143.	Todd Learn Gladstone Rd North Jackson, OH 44451	50-033-0-003.01-0

Mahoning County			
No. Property Address Parcel Number			
144.	Richard R Rich 9771 Gladstone Rd North Jackson, OH 44451	50-033-0-005.00-0	
145.	Ohio Edison Co 10410 Silica Rd North Jackson, OH 44451	50-034-0-001.00-P	
146.	Joseph L Breznai Jr Silica Rd North Jackson, OH 44451	50-034-0-004.00-0	
147.	David E Hallett 10250 Silica Rd North Jackson, OH 44451	50-034-0-005.00-0	
148.	David E Hallett Silica Rd North Jackson, OH 44451	50-034-0-006.01-0	
149.	John D Markel 10381 Silica Rd North Jackson, OH 44451	50-034-0-037.00-0	
150.	Jose Gonzalez 10239 Mahoning Ave North Jackson, OH 44451	50-037-0-012.00-0	
151.	Kathleen J Solic Kirk Rd North Jackson, OH 44451	50-041-0-001.00-0	
152.	Ruggles Land Company LLC Blott Rd North Jackson, OH 44451	50-041-0-019.00-0	
153.	Marie P Hamilton Trustee Salem Warren Rd North Jackson, OH 44451	50-041-0-021.00-0	
154.	Marie P Hamilton Trustee Salem Warren Rd North Jackson, OH 44451	50-041-0-022.00-0	
155.	Theodore L Graham 10449 Kirk Rd North Jackson, OH 44451	50-042-0-015.00-0	
156.	Carl F Donegan Jr 2150 Milton Newton Rd Netwon Falls, OH 44444	51-021-0-001.00-0	

Mahoning County		
No.	Property Address	Parcel Number
157.	Wilbur E Valot Milton Newton Rd Netwon Falls, OH 44444	51-022-0-002.00-0
158.	Robert L Force Milton Newton Rd Netwon Falls, OH 44444	51-022-0-003.00-0
159.	Robert L Force Milton Newton Rd Netwon Falls, OH 44444	51-026-0-001.00-0
160.	Todd Brian Carpenter Milton Newton Rd Netwon Falls, OH 44444	51-026-0-002.00-0
161.	Dominic Precurato 2180 Milton Newton Rd Netwon Falls, OH 44444	51-026-0-003.00-0

	Portage County		
No.	Property Address	Parcel Number	
1.	Janice Flynn 6151 Aberdeen Ct Ravenna, OH 44266	11-317-10-00-019-019	
2.	Malawi LTD Aberdeen Ct Ravenna, OH 44266	11-317-10-00-019-020	
3.	Joseph M Crano Aberdeen Ct Ravenna, OH 44266	11-317-10-00-019-021	
4.	Malawi LTD Aberdeen Ct Ravenna, OH 44266	11-317-10-00-019-022	
5.	Vincent Lisa Trustee 4420 Alliance Rd Ravenna, OH 44266	26-432-00-00-004-001	
6.	Debra L Watson 4453 Alliance Rd Ravenna, OH 44266	11-293-00-00-013-001	
7.	Donal & Barbara Bryant Alliance Rd Ravenna, OH 44266	11-242-00-00-003-000	
8.	Jeffrey J Janeda Alliance Rd Ravenna, OH 44266	11-291-00-00-003-000	
9.	Vincent Family Limited Alliance Rd Ravenna, OH 44266	26-432-00-00-004-000	
10.	Jeffrey J Janeda 4473 Alliance Rd Ravenna, OH 44266	11-242-00-00-002-000	
11.	State Of Ohio 1350 Aurora Hudson Rd Aurora, OH 44202	03-014-00-00-009-000	
12.	Jerold S Slagle 1365 Aurora Hudson Rd Aurora, OH 44202	03-014-00-00-002-001	
13.	Cora S Stackelberg Aurora Hudson Rd Aurora, OH 44202	03-014-00-00-003-000	

	Portage County		
No.	Property Address	Parcel Number	
14.	State Of Ohio Aurora Hudson Rd Aurora, OH 44202	03-014-00-00-008-000	
15.	Stanley T Elnikar Aurora Hudson Rd Aurora, OH 44202	35-004-00-00-003-000	
16.	Walden Company Ltd Aurora Hudson Rd Aurora, OH 44202	03-014-00-00-002-003	
17.	Shalersville Real Estate Beck Rd Mantua, OH 44255	33-053-00-00-014-000	
18.	Shelly Materials Inc Beck Rd Mantua, OH 44255	33-068-00-00-001-003	
19.	Rand W & Teresa Lowers 5331 Beechwood Rd Ravenna, OH 44266	29-111-00-00-001-009	
20.	Edward W Mathews 5325 Beechwood Rd Ravenna, OH 44266	29-111-00-00-001-007	
21.	Richard D & Carol Malesky 5327 Beechwood Rd Ravenna, OH 44266	29-111-00-00-001-008	
22.	Gordon R & Barbara Powell 5333 Beechwood Rd Ravenna, OH 44266	29-111-00-00-001-010	
23.	Gary D & Teresa G Jones 5402 Beechwood Rd Ravenna, OH 44266	29-215-00-00-004-000	
24.	Charles Allen & Brode 5485 Beechwood Rd Ravenna, OH 44266	29-111-00-00-003-000	
25.	Virginia Shaw Beery Rd Ravenna, OH 44266	29-214-00-00-009-000	
26.	Virginia Shaw Berry Rd Ravenna, OH 44266	29-214-00-00-009-007	

Portage County		
No.	Property Address	Parcel Number
27.	Fortuna Inc 10586 Cable Line Newton Falls, OH 44444	26-417-00-00-003-000
28.	Timothy G Mellin 5151 Camp Rd Ravenna, OH 44266	32-005-00-00-012-000
29.	Victor N Petrisak 5341 Camp Rd Ravenna, OH 44266	32-005-00-00-016-000
30.	Timothy G Mellin Camp Rd Ravenna, OH 44266	32-005-00-00-012-004
31.	Clara Sue Gay 4800 Camp Rd Ravenna, OH 44266	32-008-00-00-099-000
32.	Rebecca J Cline 4778 Campbellsport Rd Ravenna, OH 44266	32-005-00-00-012-003
33.	Wallace Jr & Ava Wagner 4805 Campbellsport Rd Ravenna, OH 44266	32-008-00-00-095-000
34.	Carolyn T Masseria 4815 Campbellsport Rd Ravenna, OH 44266	32-008-00-00-095-001
35.	Benjamin L Adamson 4833 Campbellsport Rd Ravenna, OH 44266	32-008-00-00-095-004
36.	Malawi LTD Carlisle Way Ravenna, OH 44266	11-317-10-00-019-024
37.	Malawi LTD Carlisle Way Ravenna, OH 44266	11-317-10-00-019-025
38.	Malawi LTD Carlisle Way Ravenna, OH 44266	11-317-10-00-019-026
39.	Malawi LTD Carlisle Way Ravenna, OH 44266	11-317-10-00-019-027

	Portage County		
No.	Property Address	Parcel Number	
40.	Malawi LTD Carlisle Way Ravenna, OH 44266	11-317-10-00-019-029	
41.	Malawi LTD Carlisle Way Ravenna, OH 44266	11-317-10-00-019-030	
42.	Malawi LTD Carlisle Way Ravenna, OH 44266	11-317-10-00-019-038	
43.	Malawi LTD Carlisle Way Ravenna, OH 44266	11-317-10-00-019-039	
44.	Portage County Board Of Trustees 9640 Coit Rd Streetsboro, OH 44241	33-073-00-00-004-000	
45.	Steve M Bica 8042 Cooley Rd Ravenna, OH 44266	33-002-00-00-008-000	
46.	Eric D & Jennifer M Ruehr 8426 Cooley Rd Ravenna, OH 44266	33-004-00-00-007-001	
47.	Louise Bowers Cooley Rd Ravenna, OH 44266	33-004-00-00-004-001	
48.	Terry L & Deborah Stephens 7992 Cooley Rd Ravenna, OH 44266	33-002-00-00-008-001	
49.	Charles R Steele 8092 Cooley Rd Ravenna, OH 44266	33-002-00-00-006-000	
50.	Lawrence A Sr Lane 8114 Cooley Rd Ravenna, OH 44266	33-002-00-005-000	
51.	Steven M & Rachel Dillon 8132 Cooley Rd Ravenna, OH 44266	33-002-00-003-010	
52.	Raymond P & Lucas 8818 Cooley Rd Ravenna, OH 44266	33-004-00-001-000	

Portage County		
No.	Property Address	Parcel Number
53.	Bonner Farms LTD Cooley Rd Ravenna, OH 44266	33-002-00-00-001-001
54.	Bonner Farms LTD Cooley Rd Ravenna, OH 44266	33-002-00-00-001-003
55.	William H & Sandra Dillon Cooley Rd Ravenna, OH 44266	33-002-00-00-004-000
56.	Phyllis & Larry E Peters Cooley Rd Ravenna, OH 44266	33-004-00-00-004-000
57.	Louise Bowers Cooley Rd Ravenna, OH 44266	33-004-00-00-007-000
58.	Lawrence J Solak 9971 Diagonal Rd Mantua, OH 44255	33-091-00-00-004-000
59.	Lawrence J Solak Diagonal Rd Mantua, OH 44255	33-090-00-00-002-000
60.	Lawrence J Solak Diagonal Rd Mantua, OH 44255	33-091-00-00-006-000
61.	Ralph A & Rebecca Klouda 4435 Durham Ct Ravenna, OH 44266	11-317-10-00-014-000
62.	Chris J & Charity E Shodd 4436 Durham Ct Ravenna, OH 44266	11-317-10-00-015-000
63.	Jacob J & Amy S Zachrich 10156 Elliman Rd Mantua, OH 44255	35-009-00-00-010-001
64.	Joseph E & Susan Yackmack 10158 Elliman Rd Mantua, OH 44255	35-009-00-00-010-000
65.	Robert & Kathleen Kravetz 10227 Elliman Rd Streetsboro, OH 44241	35-009-00-00-015-000

	Portage County		
No.	Property Address	Parcel Number	
66.	Christopher & Karyn Hall 10248 Elliman Rd Mantua, OH 44255	35-009-00-00-015-003	
67.	Robert & Kathleen Kravetz 10255 Elliman Rd Mantua, OH 44255	35-009-00-00-015-002	
68.	Robert & Kathleen Kravetz Elliman Rd Streetsboro, OH 44241	35-009-00-00-015-001	
69.	Roger L & Verda Troyer Elliman Rd Mantua, OH 44255	35-009-00-00-016-005	
70.	Sylvia A Harwood Elliman Rd Mantua, OH 44255	35-019-00-00-010-006	
71.	Sylvia A Harwood Elliman Rd Mantua, OH 44255	35-019-00-00-010-007	
72.	Wade W & Christine A Pol 8835 Fisher Rd Diamond, OH 44412	26-427-00-00-004-000	
73.	Richard W Emch 8494 Fisher Rd Diamond, OH 44412	26-430-00-00-008-000	
74.	Joseph J Cantale 8512 Fisher Rd Diamond, OH 44412	26-430-00-00-007-000	
75.	Jonathon H Rankin 8528 Fisher Rd Diamond, OH 44412	26-430-00-00-006-000	
76.	Chad Louis Desimio 8544 Fisher Rd Diamond, OH 44412	26-430-00-00-005-000	
77.	Douglas B & Helen R Wirt 8556 Fisher Rd Diamond, OH 44412	26-430-00-00-004-000	
78.	Kenneth & Terry Brake 8584 Fisher Rd Diamond, OH 44412	26-430-00-00-003-000	

Portage County		
No.	Property Address	Parcel Number
79.	James A Jr Beans 8610 Fisher Rd Diamond, OH 44412	26-430-00-00-002-000
80.	Charles W Maneage 8654 Fisher Rd Diamond, OH 44412	26-428-00-00-020-005
81.	Kevin M Stoneking 8660 Fisher Rd Diamond, OH 44412	26-428-00-00-020-006
82.	Michael W Smith Fisher Rd Diamond, OH 44412	26-427-00-00-001-000
83.	William M Vance Fisher Rd Diamond, OH 44412	26-427-00-00-001-001
84.	Michael Grueschow Fisher Rd Diamond, OH 44412	26-427-00-00-001-002
85.	Wade W & Christine A Pol Fisher Rd Diamond, OH 44412	26-427-00-00-002-000
86.	Ohio Edison Co Fisher Rd Diamond, OH 44412	26-430-00-001-000
87.	Douglas B & Helen R Wirt Fisher Rd Diamond, OH 44412	26-430-00-00-003-001
88.	David A Oster 2575 Frost Rd Mantua, OH 44255	35-019-00-00-015-011
89.	Lori Stenger 2595 Frost Rd Mantua, OH 44255	35-019-00-00-015-012
90.	Cee Homestead LLC 2671 Frost Rd Mantua, OH 44255	33-110-00-00-004-000
91.	Raymond N Huffman Frost Rd Mantua, OH 44255	35-019-00-00-015-008

	Portage County		
No.	Property Address	Parcel Number	
92.	James Joseph Stadtlander 2881 Frost Rd Mantua, OH 44255	33-110-00-00-003-000	
93.	Daniel M & Concetta Kabat 3301 Frost Rd Mantua, OH 44255	33-090-00-00-025-001	
94.	Kabat Holdings LLC 3329 Frost Rd Mantua, OH 44255	33-090-00-00-025-000	
95.	Hazel M Hawkins 3353 Frost Rd Mantua, OH 44255	33-090-00-00-026-000	
96.	Kevin W & Teresa Hawkins 3373 Frost Rd Mantua, OH 44255	33-090-00-00-026-002	
97.	Jeffrey A Januska 3395 Frost Rd Mantua, OH 44255	33-090-00-00-026-001	
98.	Kathleen M Kulla 3415 Frost Rd Mantua, OH 44255	33-090-00-00-028-001	
99.	Shalersville Asphalt Co 3486 Frost Rd Streetsboro, OH 44241	33-073-00-00-003-000	
100.	Dolores M Kotkowski 3501 Frost Rd Mantua, OH 44255	33-071-00-00-005-000	
101.	Oscar Jr Brugmann Frost Rd Mantua, OH 44255	33-090-00-00-024-000	
102.	James Joseph Stadtlander Frost Rd Mantua, OH 44255	33-091-00-00-001-000	
103.	Gary H & Tina J Lemley 4908 Hattrick Rd Ravenna, OH 44266	32-007-00-00-012-009	
104.	Sean J Lambert 4932 Hattrick Rd Ravenna, OH 44266	32-007-00-00-012-008	

Portage County		
No.	Property Address	Parcel Number
105.	Robert E & Lambert 4942 Hattrick Rd Ravenna, OH 44266	32-007-00-00-012-007
106.	Tami J Lemley Hattrick Rd Ravenna, OH 44266	32-007-00-00-012-005
107.	John A & Diane Cubon 4966 Hattrick Rd Ravenna, OH 44266	32-007-00-00-020-000
108.	Pamela Workman Trustee Hattrick Rd Ravenna, OH 44266	32-007-00-00-021-000
109.	Ohio Edison Co Hattrick Rd Ravenna, OH 44266	32-008-00-00-097-000
110.	Andrew W Casciato 5107 Hayes Rd Ravenna, OH 44266	29-334-00-00-004-009
111.	Richard E Seckman 5137 Hayes Rd Ravenna, OH 44266	29-334-00-00-004-015
112.	Kevin R & Bragg 5180 Hayes Rd Ravenna, OH 44266	29-334-00-00-004-000
113.	Daniel Eugene Boles 4949 Headley Rd Newton Falls, OH 44444	26-419-00-00-004-000
114.	Martin A & Valent Meluch 4998 Headley Rd Newton Falls, OH 44444	26-419-00-00-003-000
115.	Katherine Bauman 7306 Hughes Rd Ravenna, OH 44266	11-253-00-00-010-000
116.	Sandra J Westover I 76 Ravenna, OH 44266	11-307-00-00-006-000
117.	Sandra J Westover I 76 Ravenna, OH 44266	11-307-00-00-008-000

	Portage County		
No.	Property Address	Parcel Number	
118.	Rex A & Diane K Ebie 4758 Industry Rd Ravenna, OH 44266	11-303-00-00-001-003	
119.	Thomas D & Norma J Smith 4574 Industry Rd Ravenna, OH 44266	11-303-00-00-004-000	
120.	Ronald W & Martha Harris 4688 Industry Rd Ravenna, OH 44266	11-303-00-001-001	
121.	Leonard B Gruver 4724 Industry Rd Ravenna, OH 44266	11-303-00-001-002	
122.	Michael E Sells 4759 Industry Rd Ravenna, OH 44266	32-005-00-00-026-000	
123.	Hugh M Dreher 4765 Industry Rd Ravenna, OH 44266	32-005-00-00-027-000	
124.	Michael E Sells Industry Rd Ravenna, OH 44266	32-005-00-00-025-000	
125.	Nancy Kay Caldwell 9820 Infirmary Rd Mantua, OH 44255	33-053-00-00-005-001	
126.	Dorothy J Caldwell 9820 Infirmary Rd Mantua, OH 44255	33-053-00-00-005-000	
127.	Sharon K Ballengee Infirmary Rd Mantua, OH 44255	33-053-00-00-002-000	
128.	Ohio Edison Co Infirmary Rd Mantua, OH 44255	33-053-00-00-017-000	
129.	Ohio Edison Co Infirmary Rd Mantua, OH 44255	33-068-00-00-001-001	
130.	Ryan Hyland 4585 John Thomas Rd Ravenna, OH 44266	26-432-00-00-005-001	

Portage County		
No.	Property Address	Parcel Number
131.	John W & Barbara A Rohn 4644 John Thomas Rd Ravenna, OH 44266	26-430-00-00-017-000
132.	Linda A Berlin Trustee 4626 John Thomas Rd Ravenna, OH 44266	26-430-00-00-018-000
133.	Violet R Freeman 4658 John Thomas Rd Ravenna, OH 44266	26-430-00-00-017-001
134.	Scott A & Carol L Weger 4680 John Thomas Rd Ravenna, OH 44266	26-430-00-00-016-001
135.	Theodore D & Rice 4700 John Thomas Rd Ravenna, OH 44266	26-430-00-00-015-000
136.	Vincent Holdings LLC John Thomas Rd Ravenna, OH 44266	26-432-00-00-005-000
137.	Mark J & Gay L Yonkers 400 Kimberly Dr Aurora, OH 44202	03-021-00-00-008-001
138.	Michael J & Vicki L Wolf 405 Kimberly Dr Aurora, OH 44202	03-021-00-00-008-006
139.	Kevin & Terri Miller 440 Kimberly Dr Aurora, OH 44202	03-021-00-00-008-000
140.	Douglas S & Denise Snyder Kimberly Dr Aurora, OH 44202	03-021-00-00-008-005
141.	Fortuna Inc 2182 Mahoning Rd Newton Falls, OH 44444	26-417-00-00-001-000
142.	LMR Development Ltd LLC Marcie Dr Ravenna, OH 44266	33-002-10-00-001-000
143.	Robert J & Mary E Metzger 4872 Mcclintocksburg Rd Diamond, OH 44412	26-421-00-00-004-008

	Portage County		
No.	Property Address	Parcel Number	
144.	Bruce R & Cheryl Rider 4918 Mcclintocksburg Rd Newton Falls, OH 44444	26-421-00-00-004-004	
145.	Richard R Hill Mcclintocksburg Rd Diamond, OH 44412	26-423-00-001-000	
146.	Joseph W Mound 4841 Mcclintocksburg Rd Newton Falls, OH 44444	26-423-00-00-002-001	
147.	Edward D & Marcie Wise 4901 Mcclintocksburg Rd Newton Falls, OH 44444	26-423-00-00-004-000	
148.	Marvin L & Eva Cottrell Mcclintocksburg Rd Newton Falls, OH 44444	26-423-00-00-002-000	
149.	Raymond C & Susan Mischka 5100 Mccormick Rd Ravenna, OH 44266	29-330-00-00-002-001	
150.	Glenn D & Naomi J Young 5091 Mccormick Rd Ravenna, OH 44266	29-329-00-00-001-000	
151.	Richard Otto Cermak 1400 Miller Pw Streetsboro, OH 44241	35-006-00-00-005-004	
152.	Onex Construction Inc 1430 Miller Pw Streetsboro, OH 44241	35-006-00-00-001-001	
153.	Safeguard Technology Inc 1460 Miller Pw Streetsboro, OH 44241	35-006-00-00-005-012	
154.	Nasitra Properties Ltd 1760 Miller Pw Streetsboro, OH 44241	35-007-00-00-003-008	
155.	MBO Limited 1780 Miller Pw Streetsboro, OH 44241	35-007-00-00-003-011	
156.	NL Ventures VI 1790 Miller Pw Streetsboro, OH 44241	35-007-00-00-003-016	

Portage County		
No.	Property Address	Parcel Number
157.	Gary L Pellegrino 1830 Miller Pw Streetsboro, OH 44241	35-007-00-00-003-018
158.	University Of Akron Miller Pw Streetsboro, OH 44241	35-006-00-00-005-013
159.	Nasitra Properties Ltd Miller Pw Streetsboro, OH 44241	35-007-00-00-006-000
160.	Oak Hills Subdivision 5067 Newton Falls Rd Ravenna, OH 44266	29-325-40-00-014-000
161.	Fair Acres JV LLC 5081 Newton Falls Rd Ravenna, OH 44266	29-325-40-00-013-000
162.	Fair Acres JV LLC 5141 Newton Falls Rd Ravenna, OH 44266	29-331-00-00-008-000
163.	Susan Large 5162 Newton Falls Rd Ravenna, OH 44266	29-331-00-00-003-000
164.	John E Reynolds Newton Falls Rd Ravenna, OH 44266	29-331-00-00-004-000
165.	Russell & Jo Konkowski 770 Old Mill Rd Aurora, OH 44202	03-013-00-00-003-000
166.	Lillian Bultrowicz 780 Old Mill Rd Aurora, OH 44202	03-013-00-00-003-004
167.	Zora Pavlak 800 Old Mill Rd Aurora, OH 44202	03-013-00-00-003-001
168.	Russell & Jo Konkowski Old Mill Rd Aurora, OH 44202	03-013-00-00-003-005
169.	Andrew Petroski 810 Old Mill Rd Aurora, OH 44202	03-013-00-00-003-003

Portage County		
No.	Property Address	Parcel Number
170.	Key Bank National Association 850 Old Mill Rd Aurora, OH 44202	03-013-00-00-003-010
171.	James E & Charles F Marks 908 Old Mill Rd Aurora, OH 44202	03-006-00-00-007-000
172.	City Of Aurora Old Mill Rd Aurora, OH 44202	03-006-00-00-002-000
173.	Key Bank National Association Old Mill Rd Aurora, OH 44202	03-006-00-00-005-000
174.	Key Bank National Association Old Mill Rd Aurora, OH 44202	03-006-00-00-006-000
175.	Key Bank National Association Old Mill Rd Aurora, OH 44202	03-006-00-00-008-000
176.	Key Bank National Association Old Mill Rd Aurora, OH 44202	03-006-00-00-010-000
177.	State Of Ohio Old Mill Rd Aurora, OH 44202	03-013-00-00-001-000
178.	Ellen V Poole Trustee 10391 Page Rd Streetsboro, OH 44241	35-007-00-00-003-000
179.	Calvin R Marks Page Rd Streetsboro, OH 44241	35-008-00-00-002-000
180.	Michael & Judith Conway 6384 Peck Rd Ravenna, OH 44266	29-330-00-00-011-002
181.	Timothy W Apel Trustee Peck Rd Ravenna, OH 44266	29-330-00-00-011-001
182.	Barrie B Forner 7052 Peck Rd Ravenna, OH 44266	29-214-00-00-007-000

Portage County		
No.	Property Address	Parcel Number
183.	Kimberly Chinn 9710 Peck Rd Mantua, OH 44255	33-013-00-00-006-001
184.	Robert J Wakefield 9717 Peck Rd Mantua, OH 44255	33-028-00-00-006-009
185.	Joyce E Cherry Peck Rd Ravenna, OH 44266	29-330-00-00-010-000
186.	Joann A & Arthur L Gilly Peck Rd Ravenna, OH 44266	29-330-00-00-013-000
187.	David J Guyette Peck Rd Mantua, OH 44255	33-011-00-00-007-000
188.	David W Habeger Peck Rd Mantua, OH 44255	33-028-00-00-006-016
189.	Edward J & Deborah Durkee 4455 Porter Rd Ravenna, OH 44266	11-281-00-00-001-000
190.	James E & Renee K Croft Porter Rd Ravenna, OH 44266	11-283-00-001-003
191.	Jeffrey Scott & Franklin 4433 Porter Rd Ravenna, OH 44266	11-281-00-00-008-000
192.	Rosilee Riddle 5276 Riddle Rd Ravenna, OH 44266	29-332-00-00-017-000
193.	John H & Jamie J Whitmore Riddle Rd Ravenna, OH 44266	29-332-00-00-016-001
194.	Edinburg Township 4324 Rock Spring Rd Ravenna, OH 44266	11-271-00-00-004-000
195.	Mauro M Montes 4451 Rock Spring Rd Ravenna, OH 44266	11-324-00-00-011-000

	Portage County		
No.	Property Address	Parcel Number	
196.	Deborah E Walvoord 4479 Rock Spring Rd Ravenna, OH 44266	11-324-00-00-012-000	
197.	Gregory L & Jeffrey Phile Rock Spring Rd Ravenna, OH 44266	11-271-00-00-001-000	
198.	Joann Phile Rock Spring Rd Ravenna, OH 44266	11-324-00-00-014-000	
199.	Malawi LTD St Andrews Wy Ravenna, OH 44266	11-317-10-00-022-000	
200.	Letha J Wiencek Trustee 4410 St Rt 14 Ravenna, OH 44266	11-317-00-00-003-000	
201.	Jeffrey L Bowling 4442 St Rt 14 Ravenna, OH 44266	11-317-00-00-003-002	
202.	Schumacher Properties 4443 St Rt 14 Ravenna, OH 44266	11-317-10-00-020-002	
203.	John B Shanley Jr 4481 St Rt 14 Ravenna, OH 44266	11-317-00-00-013-000	
204.	Frank F Romocean 4565 St Rt 14 Ravenna, OH 44266	11-308-00-00-001-003	
205.	Holly L Holman 4667 St Rt 14 Ravenna, OH 44266	11-308-00-00-001-004	
206.	Christopher D Romocean 4683 St Rt 14 Ravenna, OH 44266	11-308-00-00-001-005	
207.	William M Giuffre 4695 St Rt 14 Ravenna, OH 44266	11-308-00-00-001-002	
208.	Kathleen O Russell 4889 St Rt 14 Ravenna, OH 44266	11-308-00-00-003-000	

Portage County		
No.	Property Address	Parcel Number
209.	Debra L Diroll 5659 St Rt 14 Ravenna, OH 44266	29-333-00-00-024-000
210.	John B & Karin L Shipley 5662 St Rt 14 Ravenna, OH 44266	29-333-00-00-015-000
211.	Ronald G & Terri Matthews 5682 St Rt 14 Ravenna, OH 44266	29-333-00-00-014-000
212.	Loyal Order Of Moose Of 5727 St Rt 14 Ravenna, OH 44266	29-333-00-00-025-000
213.	Frederick B Sanders 5830 St Rt 14 Ravenna, OH 44266	29-332-00-00-015-000
214.	Frederick B Sanders 5858 St Rt 14 Ravenna, OH 44266	29-332-00-00-014-000
215.	Loyal Order Of Moose St Rt 14 Ravenna, OH 44266	29-327-00-00-013-001
216.	Donald & Barrie Forner St Rt 14 Ravenna, OH 44266	29-332-00-00-019-000
217.	John B & Karin L Shipley St Rt 14 Ravenna, OH 44266	29-333-00-00-015-001
218.	Ronald G & Terri Matthews St Rt 14 Ravenna, OH 44266	29-333-00-00-015-003
219.	John Paul Jones 4917 St Rt 225 Diamond, OH 44412	26-311-00-00-004-000
220.	O J Schneider St Rt 225 Diamond, OH 44412	26-311-00-00-001-000
221.	Richard R Hill St Rt 225 Diamond, OH 44412	26-312-00-00-004-000

	Portage County		
No.	Property Address	Parcel Number	
222.	Carmen J Cervella 5374 St Rt 303 Ravenna, OH 44266	33-006-00-00-007-000	
223.	Chloe Ann Sweet 5423 St Rt 303 Ravenna, OH 44266	33-006-00-00-004-000	
224.	City of Streetsboro 10312 St Rt 43 Aurora, OH 44202	35-006-00-001-005	
225.	Ohio Edison Co St Rt 43 Aurora, OH 44202	35-005-00-00-008-001	
226.	Steele Hill Properties II St Rt 43 Aurora, OH 44202	35-005-00-00-010-000	
227.	Richard A Bonner 9380 St Rt 44 Mantua, OH 44255	33-048-00-00-013-000	
228.	James & Deborah Mazanec St Rt 44 Mantua, OH 44255	33-033-00-00-001-000	
229.	Henry & Jane Ann Mesko St Rt 44 Mantua, OH 44255	33-033-00-00-001-002	
230.	Lawrence A Heeter Jr St Rt 5 Ravenna, OH 44266	29-331-00-00-019-000	
231.	US Bank National Association 7574 St Rt 88 Ravenna, OH 44266	29-110-00-00-030-000	
232.	Phillip M Godfrey 7658 St Rt 88 Ravenna, OH 44266	29-110-00-00-025-000	
233.	Alvin H Philpot 7688 St Rt 88 Ravenna, OH 44266	29-110-00-00-022-000	
234.	Donald E & Judy Thompson 7735 St Rt 88 Ravenna, OH 44266	29-110-00-00-016-000	

Portage County		
No.	Property Address	Parcel Number
235.	Allan C McDaniel St Rt 88 Ravenna, OH 44266	29-110-00-00-030-002
236.	David J Ballentine St Rt 88 Ravenna, OH 44266	29-111-00-00-001-011
237.	Donald E & Judy Thompson St Rt 88 Ravenna, OH 44266	33-002-00-00-014-000
238.	Joel & Veronica Latva 5165 Streeter Rd Mantua, OH 44255	33-013-00-00-006-022
239.	Joseph A Fabry III 5271 Streeter Rd Mantua, OH 44255	33-013-00-00-006-023
240.	Henry & Jane Ann Mesko 4527 Streeter Rd Mantua, OH 44255	33-033-00-00-003-001
241.	James L & Sue E Elsey 4637 Streeter Rd Mantua, OH 44255	33-033-00-00-007-000
242.	Barbara Komon 4745 Streeter Rd Mantua, OH 44255	33-033-00-00-013-000
243.	John W & Stephanie Zenisek 4801 Streeter Rd Mantua, OH 44255	33-028-00-00-003-000
244.	Sonney LLC 4831 Streeter Rd Mantua, OH 44255	33-028-00-00-004-000
245.	David W Habeger 4963 Streeter Rd Mantua, OH 44255	33-028-00-00-006-006
246.	Verne Maxwell Herr 5275 Streeter Rd Mantua, OH 44255	33-013-00-00-006-025
247.	Joseph Jr & Linda Fabry 5279 Streeter Rd Mantua, OH 44255	33-013-00-00-006-026

	Portage County		
No.	Property Address	Parcel Number	
248.	Leo R & Margaret M Nagle 5324 Streeter Rd Mantua, OH 44255	33-008-00-00-017-000	
249.	Rita L Kline 5382 Streeter Rd Mantua, OH 44255	33-008-00-00-015-000	
250.	Gregory S & Devos 5412 Streeter Rd Mantua, OH 44255	33-008-00-00-014-000	
251.	Jerry J Thomas 5429 Streeter Rd Mantua, OH 44255	33-008-00-00-003-000	
252.	Sonney LLC Streeter Rd Mantua, OH 44255	33-028-00-00-005-000	
253.	Joel E & Veronica L Latva Streeter Rd Mantua, OH 44255	33-028-00-00-006-000	
254.	Gary L Ramsey Streeter Rd Mantua, OH 44255	33-028-00-00-006-005	
255.	Marjorie Cayton 7951 Tallmadge Rd Ravenna, OH 44266	11-291-00-00-011-000	
256.	Chapel On Fir Hill Inc Tallmadge Rd Ravenna, OH 44266	11-283-00-00-005-000	
257.	Chapel On Fir Hill Inc Tallmadge Rd Ravenna, OH 44266	11-291-00-00-001-000	
258.	Brian D Richards Wayland Rd Diamond, OH 44412	26-425-00-00-008-001	
259.	Daniel G & Linda Amodio Wayland Rd Diamond, OH 44412	26-427-00-00-004-005	
260.	John G Hillegas 4838 Wayland Rd Diamond, OH 44412	26-425-00-00-008-000	

	Portage County		
No.	Property Address	Parcel Number	
261.	Michael P Misseldine 720 Wheatfield Rd Aurora, OH 44202	03-013-00-00-045-000	
262.	Bonner Farms LTD Wygle Rd Ravenna, OH 44266	33-004-00-00-008-000	
263.	Richard A Bonner Wygle Rd Ravenna, OH 44266	33-002-00-001-002	
264.	Fortuna Inc Newton Falls, OH 44444	26-417-00-001-001	
265.	Chloe Ann Sweet Mantua, OH 44255	33-006-00-00-004-001	
266.	Mantua, OH 44255 ¹	33-073-00-00-0WT-000	

¹ Specific address was not available from county parcel data or auditor

	Trumbull County		
No.	Property Address	Parcel Number	
1.	Ohio Edison 76 S Main St Akron, OH 44308	45-902849	
2.	Ohio Edison 76 S Main St Akron, OH 44308	45-902850	
3.	Ohio Turnpike Commission 682 Prospect St Berea, OH 44017	45-036400	
4.	Ohio Turnpike Commission 682 Prospect St Berea, OH 44017	45-903570	
5.	580 West Main Street Llc 3711 Starrs Center Dr Canfield, OH 44406	45-016701	
6.	CYV LLC 610 S Newton Falls Rd Diamond, OH 44412	51-037900	
7.	CYV LLC 610 S Newton Falls Rd Diamond, OH 44412	51-642501	
8.	Sandra J Rankin 5186 Corduroy Rd Mentor, OH 44060	51-900935	
9.	Stalnaker Enterprises Inc 5186 Corduroy Rd Mentor, OH 44060	51-900934	
10.	Claude D & Debra J Clay 619 Salt Springs Rd Mineral Ridge, OH 44440	45-903608	
11.	Ruth S Sharec 3523 S Canal St Newton Falls, OH 44444	51-611100	
12.	Robert F & Linda L Dugic 5164 Pritchard Ohltown Rd Newton Falls, OH 44444	51-159711	
13.	Ruth S Sharec 3523 S Canal St Newton Falls, OH 44444	51-610850	

Trumbull County		
No.	Property Address	Parcel Number
14.	Ruth A Cadle 3776 West River Rd Newton Falls, OH 44444	52-005621
15.	Albert A Adam Jr 3868 State Route 534 Newton Falls, OH 44444	52-005634
16.	Stewart Lee & Mary Lou Bryant 3873 E River Rd Sw Newton Falls, OH 44444	52-000970
17.	Christine E Wise 3943 State Route 534 Newton Falls, OH 44444	52-005641
18.	Paul A Pope II 3910 Pritchard-Ohltown Rd Newton Falls, OH 44444	51-442800
19.	Donald A Bever 3893 E River Rd Newton Falls, OH 44444	52-005604
20.	Ryan Clonch 5524 Pritchard Ohltown Rd Newton Falls, OH 44444	51-114823
21.	Mark G Daugherty 4014 Hallock Young Rd Newton Falls, OH 44444	51-900511
22.	Richard A & Denise R Aandewiel 3910 East River Rd Newton Falls, OH 44444	52-004851
23.	Clyde B & Pamela Lynn Williams 3903 E River Rd Newton Falls, OH 44444	52-004300
24.	Patricia Hanzes Po Box 382 Newton Falls, OH 44444	52-004350
25.	Helen J Adam 4452 Pritchard Ohltown Rd Newton Falls, OH 44444	52-000100
26.	Thomas D Ben 4486 Pritchard Ohltown Rd Newton Falls, OH 44444	52-000770

	Trumbull County		
No.	Property Address	Parcel Number	
27.	Florence F Siglin 728 St Rt 534 NW Newton Falls, OH 44444	45-025651	
28.	Florence F Siglin 728 St Rt 534 NW Newton Falls, OH 44444	45-025650	
29.	Florence F Siglin 728 St Rt 534 NW Newton Falls, OH 44444	45-025800	
30.	Cindy & Darrell R Clonch 5524 Pritchard Ohltown Newton Falls, OH 44444	51-677300	
31.	Scott D & Lisa L Crissman 3877 Hallock Sook Rd Newton Falls, OH 44444	51-029400	
32.	Patrick W & Lisa Higgins 17469 Pritchard Ohltown Newton Falls, OH 44444	51-901033	
33.	Ralph M & Pauline B Eddie 4110 Pritchard Ohltown Rd Newton Falls, OH 44444	52-002005	
34.	Waneta M Holt 3856 Hallock Sook Rd Newton Falls, OH 44444	51-566801	
35.	Edward & Marion Holesko 3711 West River Rd Newton Falls, OH 44444	52-005622	
36.	Eugene Vallozzi Po Box 352 North Jackson, OH 44451	45-141050	
37.	Eugene Vallozzi Po Box 352 North Jackson, OH 44451	45-141055	
38.	Pennsylvania Lines LLC 110 Franklin Rd Se Roanoke, VA 24042	45-902980	
39.	Pennsylvania Lines LLC 110 Franklin Rd Se Roanoke, VA 24042	45-902982	

	Trumbull County		
No.	Property Address	Parcel Number	
40.	Vasile Boncutiu 686 Senn Dr Tallmadge, OH 44278	51-901032	
41.	Craig S & Melinda R Barr 3066 Pritchard Ohltown Rd Warren, OH 44481	51-900761	
42.	Harvey D & Dolly A Lutz 5212 Kibler Toot Rd Warren, OH 44481	51-353750	
43.	Marjorie J Raidel 4482 Lyntz Townline Rd Warren, OH 44481	51-900718	
44.	Pamela S Isler Negro 2820 Silver Fox Warren, OH 44481	45-046100	
45.	Barbara Hammond Henn et al. 8292 S Tod Ave Warren, OH 44481	45-041400	
46.	Henn Development LLC 1001 Country Way Warren, OH 44481	45-141120	
47.	Martin S Hawk 3671 Goldner Lane Warren, OH 44481	45-903586	
48.	Barbara O Mccombs 2668 Pritchard Ohltwn Warren, OH 44481	45-115206	
49.	Kevin & Dana Campbell 3653 Ellsworth Bailey Rd Warren, OH 44481	45-011801	
50.	Beth Ellen Harrah 2678 Pritchard Ohltown Rd Warren, OH 44481	45-022815	
51.	Beth Ellen Harrah 2678 Pritchard Ohltown Rd Warren, OH 44481	45-022816	
52.	George J & Janice K Sawyer Ohltown Pritchard Rd Warren, OH 44481	45-115225	

	Trumbull County		
No.	Property Address	Parcel Number	
53.	Keith O Westenfelder 2640 Pritchard Ohltown SW Warren, OH 44481	45-903136	
54.	Daniel & Pamela Clark 1154 Hallock Young Rd Warren, OH 44481	45-068791	
55.	Imperial Trailer Park Inc 3293 Ellsworth Bailey Rd Warren, OH 44481	45-114980	
56.	Karen A Caldwell 2650 Pritchard Ohltown Rd Warren, OH 44481	45-031722	
57.	Henn Development LLC 1001 Country Way Warren, OH 44481	45-190801	
58.	Michael & Judith L Hodak 1277 Hallock Young Rd SW Warren, OH 44481	45-202800	
59.	Teddy E & Freida G Radtka 3483 Ellsworth Bailey Rd Warren, OH 44481	45-003359	
60.	Albert V & Ida Lucarelli 3485 Goldner Ln SW Warren, OH 44481	45-033360	
61.	Bhgh Properties Llc 8292 S Tod Ave Warren, OH 44481	45-189203	
62.	Harry Brian Wilson Jr & Mary Jane Wilson 7723 Highland Ave Warren, OH 44481	45-022341	
63.	Gary & Margaret Oneill 7250 Highland Ave Warren, OH 44481	45-903770	
64.	John S James & Mark T James 7030 Highland Ave SW Warren, OH 44481	45-046925	
65.	Tim Koniowsky 600 Wyndclift Circle Youngstown, OH 44515	51-900717	

	Trumbull County		
No.	Property Address	Parcel Number	
66.	Michael S & Michelle L Wells Po Box 4044 Youngstown, OH 44515	45-903731	
67.	State Of Ohio Turnpike Commission	45-903624	

Summit County		
***	Property Address	Parcel Number
1.	JWD Properties LLC 776 E Highland Rd Macedonia, OH 44056	3300279
2.	Hill Diversified Properties LLC N Bedford Rd Northfield, OH 44067	3300443
3.	ABC Distribution LLC 1 Acorn Dr Northfield, OH 44067	3300636
4.	City Of Macedonia & Township of Northfield Center Aurora Rd Northfield, OH 44067	3300705
5.	Hill Diversified Properties LLC 9426 N Freeway Dr Macedonia, OH 44056	3300885
6.	Macedonia Holdings LLC Freeway Dr Macedonia, OH 44056	3301003
7.	Paula M Leyman Trustee 1438 Highland Rd Twinsburg, OH 44087	3301204
8.	Charles D Maczko 9042 Valley View Rd Macedonia, OH 44056	3301230
9.	Jeffrey J Snell N Bedford Rd Northfield, OH 44067	3301732
10.	Robert J Schneider Trustee 750 E Highland Rd Macedonia, OH 44056	3302004
11.	David M & Elaine D Govern 8239 S Bedford Rd Northfield, OH 44067	3302517
12.	The Ohio Edison Company New Bedford Rd Northfield, OH 44067	3302623
13.	Monnalynn Nichols 655 Maple Ct Macedonia, OH 44056	3302636

Summit County		
	Property Address	Parcel Number
14.	Chris A Rutkai 645 Maple Ct Macedonia, OH 44056	3302637
15.	Samuel P & Lori A Gemelli 637 Maple Ct Macedonia, OH 44056	3302638
16.	Cleveland Electric Illuminating Co Freeway Dr Macedonia, OH 44056	3302917
17.	Norfolk Southern Corporation 401 Ledge Rd Northfield, OH 44067	3302928
18.	Norfolk Southern Corporation Valley View Rd Macedonia, OH 44056	3302929
19.	Jeffrey M & Christine D Batton 8930 Valley View Rd Macedonia, OH 44056	3303010
20.	Kurt O Laubinger & Sons Inc Freeway Dr Macedonia, OH 44056	3303015
21.	Cleveland Electric Illuminating Co Firestone Ln Macedonia, OH 44056	3303245
22.	Lutrell L Jr & Tanya M Naylor 667 Maple Ct Macedonia, OH 44056	3303332
23.	R & D Leasing Of Ohio LLC 661 E Highland Rd Macedonia, OH 44056	3303333
24.	Superior Concrete Pipe Corp 7925 Empire Pkwy Macedonia, OH 44056	3303586
25.	Donna M Pulaski Trustee 1222 E Highland Rd Macedonia, OH 44056	3303660
26.	SFH Holdings LLC 1244 E Highland Rd Macedonia, OH 44056	3303662

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	Property Address	Parcel Number
27.	Ohio Edison Co Twinsburg Rd Twinsburg, OH 44087	3303710
28.	James Cooper & Jennifer Dambrosio 10000 Firestone Ln Macedonia, OH 44056	3303780
29.	Regina D & Gerald Jakubczak 210 Long Dr Macedonia, OH 44056	3303781
30.	Jennifer Shafran 220 Long Dr Macedonia, OH 44056	3303782
31.	John G & Darlene M Hudeck 230 Long Dr Macedonia, OH 44056	3303783
32.	Lorne R Foulkes 240 Long Dr Macedonia, OH 44056	3303784
33.	Jerry J & Darlene S Johnson 250 Long Dr Macedonia, OH 44056	3303785
34.	Aaron M Robinson 260 Long Dr Macedonia, OH 44056	3303786
35.	Bugenske Family Limited Partnership 8300 Corporate Park Dr Macedonia, OH 44056	3303861
36.	Kuchar LLC 8280 Corporate Park Dr Macedonia, OH 44056	3303862
37.	Eric S Zorin Trustee 590 E Aurora Rd Northfield, OH 44067	3304081
38.	James Miller Etal 7159 Macedonia Commons Blvd Northfield, OH 44067	3310568
39.	Villge Of Macedonia Ledge Rd Macedonia, OH 44056	3310622

Summit County		
	Property Address	Parcel Number
40.	Cleveland Steel Warehouse Ltd 8055 Highland Pointe Pkwy Macedonia, OH 44056	3310735
41.	City Of Macedonia Ohio Trustee Highland Pointe Pkwy Macedonia, OH 44056	3310736
42.	Richard D Jr & Jean F Ford 8155 Highland Pointe Pkwy Macedonia, OH 44056	3311662
43.	Developers Diversified Realty Corp. 8161 Macedonia Commons Blvd Northfield, OH 44067	3311666
44.	Messner Enterprises LLC 9115 Freeway Dr Macedonia, OH 44056	3311716
45.	CG Macedonia 1 LLC Isabelle Ln Macedonia, OH 44056	3311727
46.	John M & Loreli V Day 8830 Langston Ct Macedonia, OH 44056	3311738
47.	Joseph P & Denise R Edmiston 8822 Langston Ct Macedonia, OH 44056	3311739
48.	Huntsford Farms Homeowners Association Robinwood Terr Macedonia, OH 44056	3312296
49.	DDR HD & LLC 8161 Macedonia Commons Blvd Northfield, OH 44067	3312306
50.	George B & Kelly D Washington 9021 Chinaberry Cir N Macedonia, OH 44056	3312331
51.	Clarence Parker et al. 9013 Chinaberry Cir N Macedonia, OH 44056	3312332
52.	Marvin & Renee Cross 9005 Chinaberry Cir N Macedonia, OH 44056	3312333

Summit County		
	Property Address	Parcel Number
53.	Donnie L Eatmon 8997 Chinaberry Cir N Macedonia, OH 44056	3312334
54.	Kenneth & Andrea Kitchen 8987 Chinaberry Cir N Macedonia, OH 44056	3312335
55.	Fannie Mae 8977 Chinaberry Cir N Macedonia, OH 44056	3312336
56.	Walter & Wendy Owens 8967 Chinaberry Cir N Macedonia, OH 44056	3312337
57.	Dante M Benjamin 8957 Chinaberry Cir N Macedonia, OH 44056	3312338
58.	Bettie & Willie Simpson 8947 Chinaberry Cir N Macedonia, OH 44056	3312339
59.	Michael Sr & Joseph & Paul J Pietro Freeway Dr Macedonia, OH 44056	3312368
60.	Spruce Hill Crossings Homeowners Association White Spruce Dr Macedonia, OH 44056	3312429
61.	CG Macedonia 1 LLC White Spruce Dr Macedonia, OH 44056	3312432
62.	W & W Development Co Chinaberry Cir N Macedonia, OH 44056	3312646
63.	W & W Development Co Chinaberry Cir N Macedonia, OH 44056	3312647
64.	W & W Development Co Chinaberry Cir N Macedonia, OH 44056	3312648
65.	Cleveland Electric Illuminating Co Ledge Rd Macedonia, OH 44056	3313164

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	Property Address	Parcel Number
66.	Cleveland Electric Illuminating Co Freeway Dr Macedonia, OH 44056	3313165
67.	Ohio Edison Co S Bedford Rd Northfield, OH 44067	3313167
68.	Cleveland Electric Illuminating Co N Bedford Rd Northfield, OH 44067	3313170
69.	SFH Holdings LLC 1244 E Highland Rd Macedonia, OH 44056	3313173
70.	Spruce Hill Crossings Homeowners Association Spruce Hill Dr Macedonia, OH 44056	3313207
71.	Ohio Edison Co E Highland Ave Macedonia, OH 44056	3400049
72.	W W Grainger Inc 8211 Bavaria Rd Twinsburg, OH 44087	3400050
73.	S & S Limited Partnership 8107 Bavaria Rd Twinsburg, OH 44087	3400051
74.	City Of Macedonia & Township of Northfield Center E Aurora(Rear) Rd Northfield, OH 44067	4000617
75.	City Of Macedonia & Township of Northfield Center Aurora Rd Northfield, OH 44067	4000619
76.	City Of Macedonia & Township of Northfield Center Rothwood Ave Northfield, OH 44067	4000620
77.	City Of Macedonia & Township of Northfield Center Rothwood Ave Northfield, OH 44067	4000622

	Summit County	
	Property Address	Parcel Number
78.	City Of Macedonia & Township of Northfield Center Rothwood Ave Northfield, OH 44067	4000624
79.	City Of Macedonia & Township of Northfield Center W Aurora Rd Northfield, OH 44067	4000630
80.	Joseph T Bosze 9011 Akron Cleveland Rd Northfield, OH 44067	4002010
81.	Charpal Builders & Developers LLC Olde Eight Rd Northfield, OH 44067	4002666
82.	Angelo & Romilda Bertolone 9021 Olde Eight Rd Northfield, OH 44067	4003190
83.	City Of Macedonia & Township Of Northfield Center Akron Cleveland Rd Northfield, OH 44067	4003987
84.	David Dalton & Sherri Reddington 8997 Olde Eight Rd Northfield, OH 44067	4004260
85.	Kenneth J & Danese L Pagano 8981 Olde Eight Rd Northfield, OH 44067	4004261
86.	Meadow Lane Development LLC Northfield Rd Northfield, OH 44067	4101674
87.	Meadow Lane Development LLC 51 Meadow Ln Macedonia, OH 44056	4102126
88.	Salemi/Redi Wash Family Limited Partnership 10121 Northfield Rd Northfield, OH 44067	4102127
89.	County Of Summit Houghton Rd Northfield, OH 44067	4500163
90.	Charles H & Marilyn D Daub 8958 Acre Dr Northfield, OH 44067	4500395

Summit County		
	Property Address	Parcel Number
91.	Derek A & Jennifer Nickschinski 8930 Acre Dr Northfield, OH 44067	4500797
92.	Frank Charles Jr Kopas S Boyden Rd Northfield, OH 44067	4501066
93.	Jeffrey C & Katherine E Domzalski 1164 Nesbitt Rd Northfield, OH 44067	4501218
94.	John F Matula 9002 Walton Rd Northfield, OH 44067	4501249
95.	Richard S & Marilee Hulburt 549 Houghton Rd Northfield, OH 44067	4501362
96.	Mary A Mottl 655 Houghton Rd Northfield, OH 44067	4501382
97.	John A & Cheryl A Farrell 8992 Walton Rd Northfield, OH 44067	4501398
98.	Robert & Jill Maggio Caravona 8940 Acre Dr Northfield, OH 44067	4501401
99.	David J & Karen J Bricker 9012 Walton Rd Northfield, OH 44067	4501428
100.	Raymond A & Donna M Krebs 8920 Acre Dr Northfield, OH 44067	4501831
101.	Wayne Spuckler Etal 8982 Walton Rd Northfield, OH 44067	4501834
102.	Tony & Tammy Guy 539 Houghton Rd Northfield, OH 44067	4501931
103.	Norman F Wintle 1154 Nesbitt Rd Northfield, OH 44067	4502120