

CAPTION SHEET

CASE MANAGEMENT SYSTEM

1. REPORT DATE: 00/00/00	:	
2. BUREAU: FUS	:	
3. SECTION(S):	:	
5. APPROVED BY:	:	4. PUBLIC MEETING DATE:
DIRECTOR:	:	00/00/00
SUPERVISOR:	:	
6. PERSON IN CHARGE:	:	7. DATE FILED: 05/03/06
8. DOCKET NO: A-110500 F0376	:	9. EFFECTIVE DATE: 00/00/00

PARTY/COMPLAINANT: SOUTH AKRON-BERKS 230 KV TRANSMISSION

RESPONDENT/APPLICANT: PPL ELECTRIC UTILITIES CORP

COMP/APP COUNTY: UTILITY CODE: 110500

ALLEGATION OR SUBJECT

LETTER OF NOTIFICATION OF PPL ELECTRIC UTILITIES CORPORATION FILED PURSUANT TO 52 PA CODE CHAPTER 57 SUBCAPTER G WITH RESPECT TO THE RECONSTRUCTION OF THE SOUTH AKRON-BERKS 230 KV TRANSMISSION LINE IN THE TOWNSHIP OF WEST EARL, EARL, EPHRATA, EAST COCALICO AND BRECKNOCK, ALL IN LANCASTER COUNTY.

DOCUMENT
FOLDER

DOCKETED
MAY 05 2006

ORIGINAL

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File #: 2507-127463

May 3, 2006

VIA HAND DELIVERY

James J. McNulty
Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
PO Box 3265
Harrisburg, PA 17105-3265

2006 MAY -3 AM 11:53
PA PUC
SECRETARY'S BUREAU

RE: Letter of Notification of PPL Electric Utilities Corporation filed Pursuant to 52 Pa. Code Chapter 57 Subchapter G with Respect to the Reconstruction of the South Akron-Berks 230 kV Transmission Line in the Townships of West Earl, Earl, Ephrata, East Cocalico and Brecknock, all in Lancaster County
Docket No. A- 110500 F0376

Dear Secretary McNulty:

Enclosed, for filing, are seven (7) copies of the Application and Letter of Notification of PPL Electric Utilities Corporation in the above-referenced proceeding.

As indicated on the certificates of service, copies have been served on the parties in the manner indicated.

Respectfully submitted,

John H. Isom
John H. Isom

JHI/jl

Enclosures

cc: Certificate of Service

DOCUMENT
FOLDER

DOCKETED
MAY 05, 2006

SUMMARY

This filing is submitted by PPL Electric Utilities Corporation (PPL) pursuant to the Pennsylvania Public Utility Commission's (PUC or the Commission) regulations at 52 Pa. Code §§57.71 through 57.77 for PUC approval to reinforce the 230 kV bulk power system in northern Lancaster and southwestern Berks Counties. Because of the breadth of the work involved and the functional requirements of the overall project, this reinforcement will be described and submitted under two separate filings.

The proposed project described in this, the first of two, filings will reconstruct an approximate 12.4 mile section of single circuit South Akron-Berks 230 kV Transmission Line for double circuit 230 kV operation. With one minor exception (see the bald eagle discussion in Exhibit "C"), this project will be contained on existing PPL right-of-way that traverses portions of West Earl, Earl, Ephrata, East Cocalico, and Brecknock Townships in Lancaster County. The proposed project will provide sufficient transmission capability to meet expected load requirements in a manner that complies with the requirements of the North American Electric Reliability Council (NERC), Reliability*First* and PPL Reliability Criteria.

The estimated cost to design and reconstruct the line is \$29 million. This project has an anticipated construction start date of August 2006 to support an in-service date of May 2008.

This document, which describes the need for the project and discusses the engineering and siting analysis for the proposed construction, consists of the following exhibits and appendices:

- Exhibit "A" - Necessity Statement
- Exhibit "B" - Engineering Description
- Exhibit "C" - Environmental Assessment

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PA PUC
SECRETARY'S BUREAU

- Appendix A - PPL Design Criteria and Safety Practices
- Appendix B - Magnetic Field Management at PPL
- Appendix C - List of Property Owners Within the Proposed Right-of-Way
- Appendix D - List of Involved Governmental Agencies, Municipalities, and Other Public Entities

ORIGINAL



Before the
Pennsylvania Public Utility Commission

DOCKETED
MAY 05 2006

South Akron – Berks 230 kV Line Reconstruction

DOCUMENT
FOLDER

Letter of Notification

Application Docket No. A-110500 FO376

Submitted by: PPL Electric Utilities Corp.

LOCATION MAP

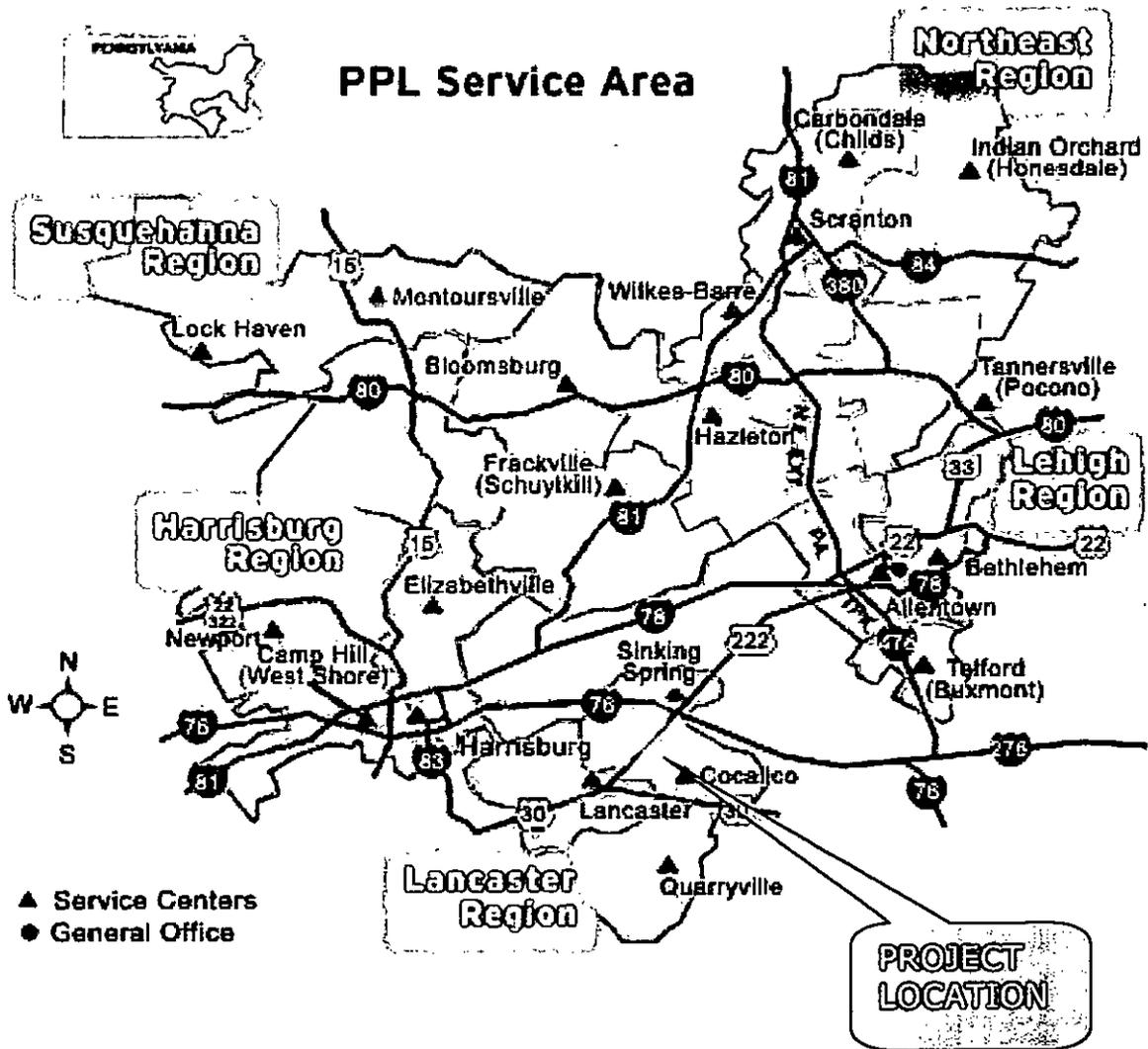


EXHIBIT "A"
SOUTH AKRON – BERKS 230 kV LINE RECONSTRUCTION
NECESSITY STATEMENT

2006 MAY -3 AM 11:54
SECRETARY'S BUREAU

A. INTRODUCTION

PPL, in order to meet reliability guidelines set forth by the ReliabilityFirst Corporation (RFC), a member of the North American Electric Reliability Council (NERC), is required to reinforce the existing 230 kV transmission system in northern Lancaster and southwestern Berks Counties. Because of the breadth of the work involved and the functional requirements of the overall project, the reinforcement of the 230 kV system will be described and submitted under two separate filings. Part 1, the subject of this filing, is the proposed reconstruction of a 12.4 mile section of the South Akron – Berks 230 kV Line for double circuit operation. Part 2 proposes to rebuild a 6.8 mile section of the Berks – South Akron #1 69 kV line for double circuit operation (one circuit to be energized at 230 kV and the other at 69 kV) and will be the subject of a second filing with the Commission.

This project was identified as a coordinated effort by PPL and PJM Interconnection, LLC (PJM) to develop an overall long term transmission upgrade that will alleviate reliability concerns in the region. Specifically, construction of these facilities is required by PJM as part of their Regional Transmission Expansion Plan (RTEP) to maintain reliable electrical service on the PJM transmission system in general and in northern Lancaster and southwestern Berks Counties in particular. PJM is a federally regulated Regional Transmission Organization (RTO) and is responsible for maintaining reliability of the electric power system via its regional transmission expansion planning process.

The estimated cost to design and construct Part 1 of this project is \$ 29 million. This project has a scheduled construction start date of August 2006 to meet an in-service date of May 2008. A PPL system map showing existing transmission

facilities with a design voltage of 35 kV or greater is included in the Exhibit "A" map pocket. This filing addresses only the existing and proposed 230 kV transmission system in northern Lancaster and southwestern Berks Counties.

B. EXISTING BULK POWER SUPPLY SYSTEM - NORTHERN LANCASTER AND SOUTHWEST BERKS COUNTIES

Presently, northern Lancaster and southwestern Berks Counties receive the bulk of their electric power supply from PPL's South Akron 230-138-69 kV Substation and the Berks 230-69 kV Substation and from Met-Ed Company's South Reading 230-69 kV Substation. The basic functional arrangement of the 230 kV transmission system in the region is shown in Figure 1.

PPL's Berks 230-69 kV Substation is supplied by two 230 kV lines, one from PPL's South Akron 230-138-69 kV Substation and the other from Met-Ed's South Reading 230-69 kV Substation. For the last 7.8 line miles into Berks Substation, both circuits occupy the same set of structures.

The South Akron 230-138-69kV Substation is supplied by three 230 kV lines. The first line is from PPL's South Manheim 230-69 kV Substation and the second is from the Manor and Millwood¹ 230-69 kV Substations. The third line is the above-mentioned 230 kV circuit connecting Berks 230-69 kV Substation with the South Akron Substation.

C. DEFINITION OF THE PROBLEM

The immediate area of concern is the capability of the 230 kV transmission system to provide reliable power supply to PPL's South Akron 230-138-69 kV and Berks 230-69 kV Substations within acceptable voltage levels and within the

¹ Millwood 230-69 kV Substation is currently scheduled to be in service in November 2007.

power line conductor's thermal capability during periods of high summer time demand and under the contingency violations described below. Specifically, thermal overloads and excessive voltage drop violations have been documented via the PJM RTEP process for several single contingency (NERC Category B) and double contingency (NERC Category C) outages². Additionally the same violations occur under the MAAC generation emergency import test.

The contingency violations are as follow:

- For the loss of PPL's Brunner Island - South Manheim 230 kV Line and South Manheim's #3 230-69 kV Transformer, PPL's Manor – Millwood 230kV line will load to 107% of its summer emergency rating (7% above the permissible limit).
- For the loss of PPL's Brunner Island - South Manheim 230 kV Line and South Manheim's #3 230-69 kV Transformer, PPL's Brunner Island – West Hempfield 230 kV line will load to 103% of its summer emergency rating (3% above the permissible limit).
- For the loss of PPL's Brunner Island - South Manheim 230 kV Line and South Manheim's #3 230-69 kV Transformer, PPL's South Manheim Substation 230 kV bus voltage drops 11.6% (6.6% above the permissible limit).
- For the loss of PPL's Brunner Island - South Manheim 230 kV Line and South Manheim's #3 230-69 kV Transformer, PPL's South Akron Substation 230 kV bus voltage drops 9.7%. (4.7% above the permissible limit)

² NERC Category B is briefly defined as the loss of single transmission line, generating unit, transformer, bus section etc. without exceeding the applicable emergency rating and voltage drop criteria. NERC Category C is the loss of a double circuit line one mile or greater in length, without exceeding the applicable emergency rating and voltage drop criteria.

- For the loss of PPL's Brunner Island - South Manheim 230 kV Line and South Manheim's #3 230-69 kV Transformer, PPL's Berks Substation 230kV voltage drops 7.4% (2.4% above the permissible limit).
- For the loss of the interconnected PPL - Met-Ed Berks - South Reading 230kV Line and the Berks #1 230-69 kV Transformer, PPL's South Manheim Substation 230 kV bus voltage drops 5.8% (0.8% above the permissible limit).
- For the loss of the interconnected PPL - Met-Ed Berks - South Reading 230kV Line and the Berks #1 230-69 kV Transformer, PPL's South Akron Substation 230 kV bus voltage drops 7.4% (2.4% above the permissible limit).
- For the loss of the interconnected PPL - Met-Ed Berks - South Reading 230 kV Line and the Berks #1 230-69 kV Transformer, PPL's Berks Substation 230 kV voltage drops 9.6% (4.6% above the permissible limit).
- Additionally, a structure failure on the 7.8 miles of double circuit 230 kV line (NERC Category C condition) serving PPL's Berks 230-69 kV Substation will interrupt all of the 225 MW of load connected to the substation. Initially, approximately 45,000 customers will lose their electric supply. After extensive field switching approximately half of the customers will be restored. The rest will remain out of service, for an extended period of time, until repairs are completed.

D. PROPOSED SYSTEM

To resolve the issues outlined above, PPL proposes constructing a fourth 230 kV circuit into the South Akron 230-138-69 kV Substation and a third 230 kV circuit

into the Berks 230-69 kV Substation. The proposed system reinforcements are shown in Figure 2. This filing addresses only the fourth circuit into South Akron Substation. Approval to build a third circuit into Berks Substation will be requested in a separate filing.

The proposed fourth 230 kV circuit into South Akron 230-138-69 kV Substation involves reconstructing approximately 12.4 miles of the South Akron – Berks 230 kV Transmission Line for double circuit operation. The project begins at PPL’s South Akron Substation and continues to a location in Brecknock Township, Lancaster County where it intersects the Berks – South Reading 230 kV Transmission Line. Similar to the present arrangement, one circuit will recreate the tie between South Akron Substation and Berks 230-69 kV Substation. The other circuit will create a new tie between South Akron Substation and Met-Ed’s South Reading 230-69 kV Substation.

The proposed route for the transmission line will utilize the existing 150 foot wide rights-of-way occupied currently by PPL’s existing South Akron - Berks 230kV Transmission Line. Both proposed circuits will be constructed with high capacity 1590 kcmil ACSR conductors. The new transmission line will be terminated in PPL’s South Akron 230-138-69kV Substation via two 230 kV circuit breakers and associated relay and control facilities to ensure the safe operation of the new transmission line. At South Reading 230-69 kV Substation, the existing circuit breaker will be utilized with required relay and control changes as necessary.

The proposed 230 kV upgrades will provide the required PJM/PPL bulk power supply reinforcement in the region and meet all NERC, PJM and PPL reliability criteria.

E. **ALTERNATIVES CONSIDERED**

Three alternatives were considered to provide the necessary reinforcement in the region. Each alternative was based on its ability to eliminate the single contingency thermal overload and excessive voltage drop violations outlined above, and ensure that the customer load in the region could be supplied in accordance with NERC, PJM, and PPL reliability criteria in a long range economic and environmentally acceptable manner. Each of the three alternatives are identified and described below:

Alternative 1 (Preferred Option) - Construct a new South Akron - South Reading 230 kV Transmission Line and sectionalize the existing South Lebanon-South Reading 230 kV Transmission Line into Berks 230-69 kV Substation.

Part 1 of this alternative involves reconstructing approximately 12.4 miles of the South Akron – Berks 230 kV Transmission Line for double circuit operation. Similar to the present arrangement, one circuit will recreate the tie between South Akron 230-138-69 kV Substation and Berks 230-69 kV Substation. The other circuit will create a new 230 kV tie between South Akron Substation and Met-Ed’s South Reading 230-69 kV Substation. Part 2 of this project sectionalizes Met-Ed’s South Lebanon – South Reading 230 kV Transmission Line into Berks kV Substation and will be the subject of a separate filing with the Commission.

The construction of this alternative eliminates the single contingency thermal overloads and excessive voltage drop reliability violations. The project would improve electrical system reliability by providing additional 230 kV transmission sources into PPL’s Berks 230-69 kV and South Akron 230-138-69 kV Substations and would provide enhanced reliability of electric service to customers in the region.

This alternative is the preferred option. The preferred option will utilize existing transmission line rights-of-way and thus, has the least land use impact on the area. It fits well into the long term reinforcement of the PJM and PPL transmission systems and provides necessary load carrying capacity to ensure reliable electric service.

The estimated cost of Part 1 of this alternative is \$29 million. The total cost of both Parts 1 and 2 is estimated at \$50 million.

Alternative 2- Construct a new South Lebanon-South Akron 230 kV Transmission Line and sectionalize the existing South Lebanon-South Reading 230 kV Transmission Line into the Berks 230-69 kV Substation as a double circuit line.

Alternative 2 constructs a new 230 kV transmission line, approximately 22 miles long, from Met-Ed's South Lebanon 230-69 kV Substation to PPL's South Akron 230-138-69 kV Substation. Additionally, the existing Met-Ed South Lebanon - South Reading 230 kV Transmission Line will also be sectionalized into PPL's Berks 230-69kV Substation as a double circuit line to provide reinforcements in the southwestern Berks County area.

Although Alternative 2 eliminates all of the contingency reliability violations outlined above, it does not provide the capability for expected future system expansion needs. Also, at an estimated cost of \$64 million, it is more expensive to build than the Alternative 1. Finally, construction of this alternative would require the acquisition of new right-of-way, a process that is becoming increasingly difficult and litigious and would likely jeopardize the project's required in-service date. Due to all of these constraints and higher cost of the project, this alternative was eliminated in favor of the preferred alternative.

Alternative 3- Construct a new Manor - South Akron 230 kV Transmission Line; sectionalize the existing Met-Ed South. Lebanon - South Reading 230 kV line into Berks 230-69 kV Substation as a double circuit line; install a 230 kV Static VAR Compensator (SVC) at South Akron 230-69 kV Substation; reconductor the Yorkana - Otter Creek 230 kV Transmission Line for increased capacity; construct a second 230 kV line between PPL's Brunner Island and West Hempfield 230-138-69 kV Substations.

Alternative 3 requires construction of two new 230 kV transmission lines. The first, approximately 25 miles long, connects PPL's Manor 230-69 kV and South Akron 230-138-69 kV Substations. The second, approximately 15 miles long, connects PPL's Brunner Island and West Hempfield 230-138-69 kV Substations.

Additionally, the existing 11-mile long, Yorkana – Otter Creek 230 kV Transmission Line would be reconducted with higher capacity conductor to accommodate additional power flows during the contingency outages outlined above. For the same reasons, a 230 kV SVC will also be installed at South Akron 230-138-69 kV Substation to maintain 230 kV voltages within acceptable limits at South Akron, South Manheim, and Berks Substations.

Finally, the existing Met-Ed South Lebanon - South Reading 230 kV Transmission Line will be sectionalized into the Berks 230-69 kV Substation as a double circuit line to provide reinforcements to southwestern Berks County. Alternative 3 is estimated to cost \$ 79 million.

Although Alternative 3 also eliminates all contingency reliability violations it does not provide capability for the expected future system expansion needs. As with Alternative 2, new right-of-way acquisition is required for this alternative and difficulty in obtaining the required easements is anticipated.

Due to these constraints and the higher cost to construct, this alternative was eliminated in favor of Alternative 1.

F. CONCLUSIONS

Failure to complete this project would violate NERC, PJM and PPL Power System Reliability Guidelines. Furthermore, under the contingency conditions outlined above, extensive load shedding would be required to prevent damage to the region's 230 kV transmission system caused by excessive voltage drops and thermal overloads. This would result in the loss of electric service to thousands of PPL customers.

EXISTING 230 kV SYSTEM

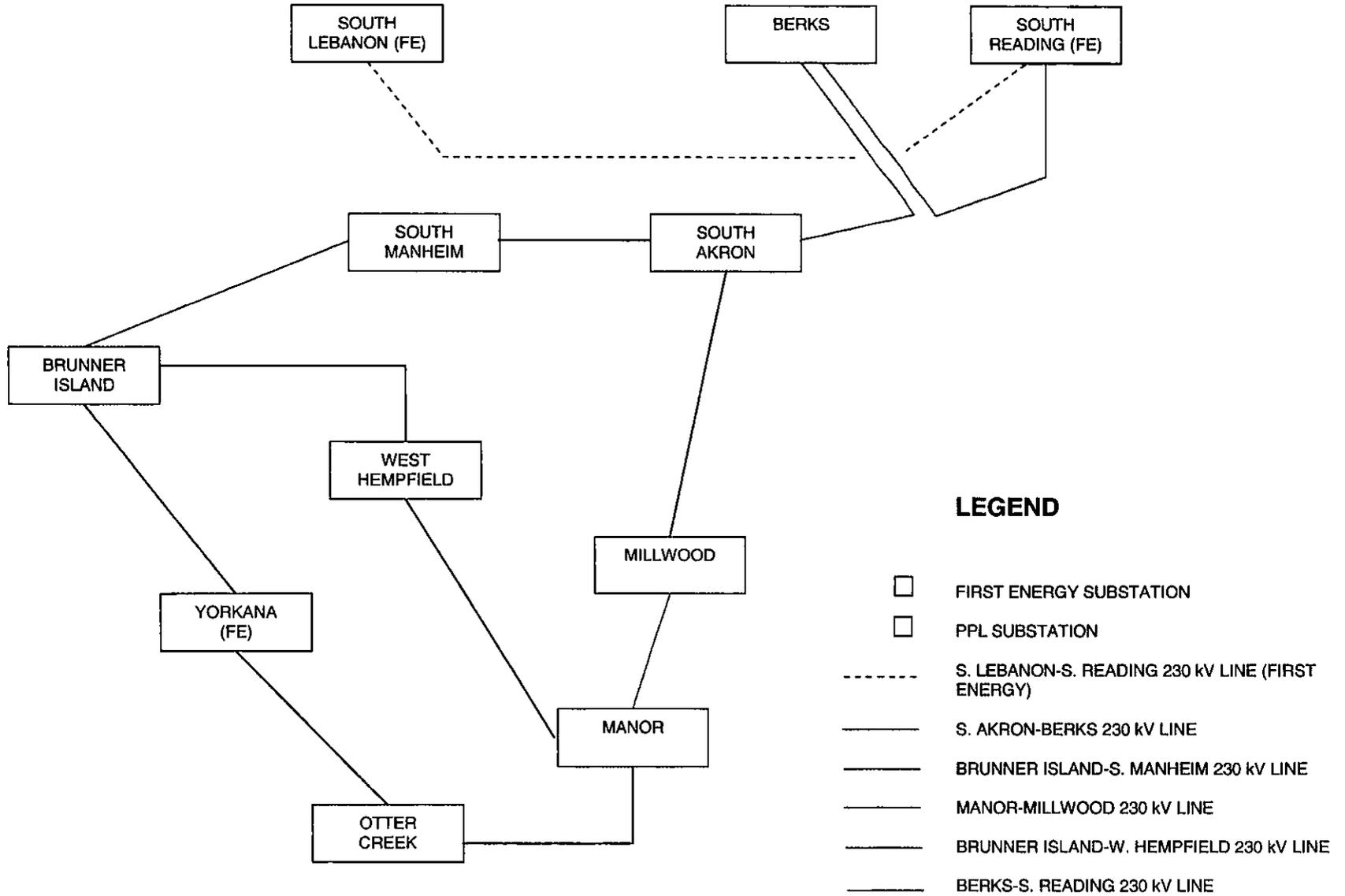


FIGURE 1

PROPOSED 230 kV SYSTEM

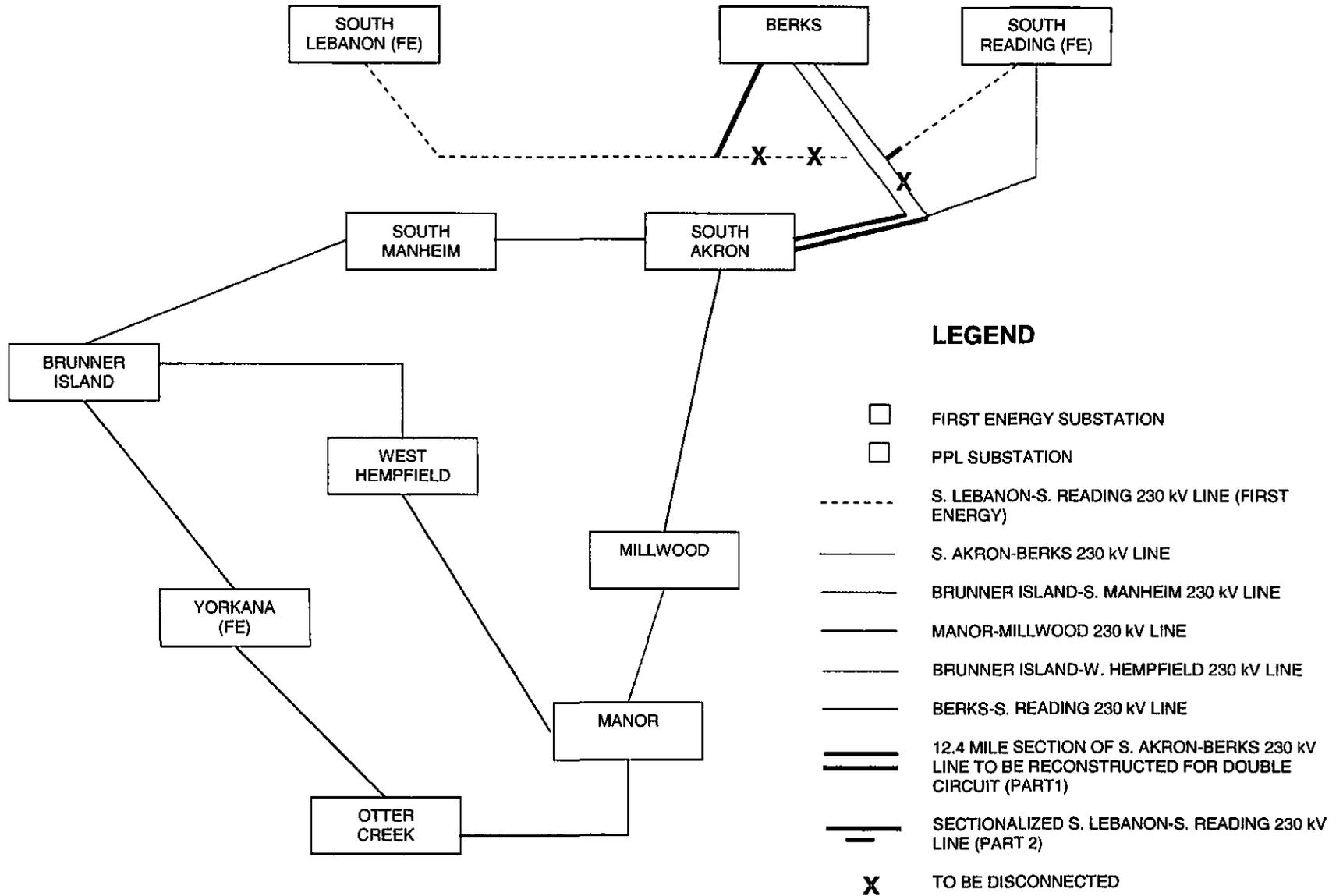
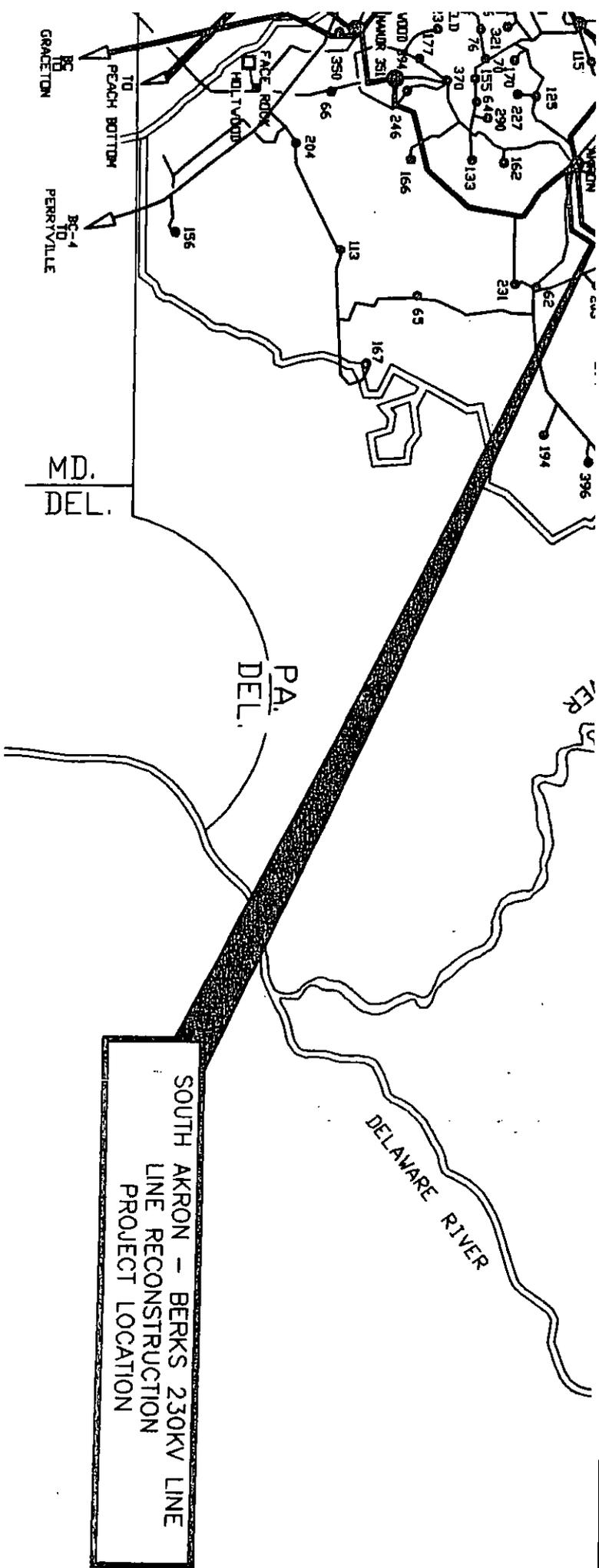


FIGURE 2



- 500KV OPERATION
- 230KV OPERATION
- 138KV OPERATION
- 69KV OPERATION

PRODUCERS _____

STATION _____

DATE _____

BY _____

REVIEWED _____

APPROVED _____

ACCT - 805201	ELECTRICAL SYSTEM MA SOUTH AKRON - BERKS 230KV
SCALE - NONE	
BY - CDW	
REVIEWED	APPROVED G. HAKUN III
PPL DRAWING NO. D191830	DATE 7/17/85
BY CDW	APPROVED KBK
REVIEWED	APPROVED

OVER SIZED DOCUMENTS

EXHIBIT "B"
SOUTH AKRON – BERKS 230 kV LINE RECONSTRUCTION
ENGINEERING DESCRIPTION

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MAP

AERIAL EXHIBIT

EXHIBIT "B" MAP POCKET

EXHIBIT "B"
SOUTH AKRON – BERKS 230 kV LINE RECONSTRUCTION
ENGINEERING DESCRIPTION

A. PROPOSED LINE DESIGN

PPL proposes to reconstruct a 12.4 mile section of the South Akron – Berks 230 kV Transmission Line. The project will convert the line from single to double circuit 230 kV operation. The line traverses portions of West Earl, Earl, Ephrata, East Cocalico, and Brecknock Townships in Lancaster County.

The project involves the removal of existing lattice steel towers that were built to accommodate only one circuit. The proposed new double circuit line will consist of single-shaft steel poles equipped with upswept steel conductor support arms. Angle structures will consist of two-pole steel structures. All poles will be installed on concrete foundations. Additionally, some angle structures may be guyed. Altogether, this project requires the installation of approximately 68 structures averaging 143 feet high. Average span lengths will be 965 feet.

The proposed new line construction described above will be designed according to, and will meet, all National Electrical Safety Code standards. Design specifications and safety rules practiced by PPL are included in Appendix A. Six power conductors and two will be installed. The power conductors will be 1,590 KCMIL 45/7 stranding ACSR. One overhead groundwire will be ½ -inch extra high-strength steel and the other will be 0.752-inch diameter OPGW with 36 single mode fibers.

Table 1 shows the designed minimum conductor clearances and the conductor thermal ratings of the proposed line.

TABLE 1
DESIGN MINIMUM CONDUCTOR CLEARANCES
FOR 1590 KCMIL 45/7 STRANDING ACSR*

<u>Condition</u>	<u>Transmission Double-Circuit Design Clearance-to-Ground</u>
Normal load; average weather (16°C ambient temperature)	41 feet
Predicted extreme thermal load (125°C conductor temperature)	32 feet
Predicted extreme weather conditions (1/2-inch ice, 8 lbs. wind, -18°C)	38 feet

*Clearances based on a maximum tension of 16,880 pounds and a ruling span of 1,000 feet.

CONDUCTOR THERMAL RATING
1590 KCMIL 45/7 STRANDING ACSR
(257°F) 125°C MAXIMUM CONDUCTOR TEMPERATURE

Condition	<u>Ambient Temperature °C</u>	<u>Wind Speed Knots</u>	<u>Ampacity Amps</u>
Summer Normal	35	0	1,640
Winter Normal	10	0	1,775
Summer Emergency	35	1 1/2	1,965
Winter Emergency	10	1 1/2	2,045

B. MAGNETIC FIELD MANAGEMENT

PPL's Magnetic Field Management Program, summarized in Appendix B, is applied to new and reconstructed transmission line projects. To reduce magnetic field exposures, the program generally prescribes the use of a line design that provides five feet higher ground clearance and reverse phasing of new double circuit lines where it is feasible to do so at low or no cost. The implementation of additional modifications will be considered, provided those modifications can be made at low or no cost.

The estimated cost to reverse phase the proposed rebuilt double circuit transmission line is estimated at \$160,000 and falls within PPL's low cost/no cost EMF mitigation program. Therefore, along with increasing the pole heights by five feet, PPL will reverse phase the new line.

C. RIGHT-OF-WAY STATUS

With the exception of approximately 1600 feet, the entire 12.4 mile line is being reconstructed within existing PPL right-of-way. The 1600 foot exception is to reroute the new line around one of the old towers that contains an active bald eagle nest. The right-of-way for this reroute has been acquired. For a complete discussion of bald eagle mitigation efforts, see page 4 in Exhibit "C". A list of all persons owning property within the proposed right-of-way is included as Appendix C.

OVER SIZED DOCUMENTS

EXHIBIT C

AERIAL EXHIBIT SHEET 1 OF 6

SOUTH AKRON - BERKS 230 kV LINE RECONSTRUCTION

WEST EARL, EARL, EPHRATA, EAST COCALICO, AND BRECKNOCK TOWNSHIPS
LANCASTER COUNTY

SCALE: 1" = 400'



PPL ELECTRIC UTILITIES

PREPARED BY:
PPL ELECTRIC UTILITIES CORP.



PPL ELECTRIC UTILITIES

ACCT-139133		SOUTH AKRON - BERKS 230KV LINE RECONSTRUCTION RIGHT OF WAY	
SCALE-AS SHOWN			
BY-CDW			
REVIEWED	DLH	WEST EARL TWP.	LANCASTER CO., PA.
		APPROVED	DATE
		PPL ELECTRIC UTILITIES	
PPL DRAWING NO. SM139133		SHEET NO. 1	REV. 0

SM139133_5001.DWG

F
MF

G

PC CAD

TS

EXHIBIT "C"
SOUTH AKRON – BERKS 230 kV LINE RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

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RECEIVED

MAY - 3 2006

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUHEAU

EXHIBIT "C"
SOUTH AKRON – BERKS 230 kV LINE RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT

A. INTRODUCTION

PPL proposes to rebuild a 12.4 mile section of the single-circuit South Akron – Berks 230 kV Transmission Line for double-circuit operation. The existing line and, with one exception (see discussion on Bald Eagle on page 4 of Exhibit "C"), all of the towers will be removed and replaced with single-shaft steel poles capable of accommodating two circuits. With the same exception noted above, the line will be rebuilt entirely within the existing right-of-way.

The proposed project was reviewed with West Earl, Earl, Ephrata, East Cocalico and Brecknock Townships as well as Lancaster County. Neither the Townships nor the County have any objections. A list of involved governmental agencies, municipalities and other public entities is presented in Appendix D.

B. LAND USE

The proposed line reconstruction will result in little, if any environmental or social impacts. In fact, land use impacts are expected to decrease because the footprint of the proposed single-shaft steel poles and their support foundations is much less than the existing four-legged lattice steel towers.

No pipelines, communication towers, or other utilities will be affected by the proposed project. The nearest part of the nearest runway at Lancaster Airport is 4.3 miles away and will not be impacted.

The proposed project crosses both SR 222 and the Pennsylvania Turnpike. Both are easily spanned and will not be impacted by the operation of the line.

However, during construction, the State Police will be requested to stop traffic for

approximately 5 minutes to hand carry the pulling ropes across the highway. The pulling ropes are used to install the power conductors. Traffic stoppages are scheduled on weekends during periods of light traffic volume.

C. CULTURAL RESOURCES

PPL has reviewed this project with the Pennsylvania Historical and Museum Commission (PHMC). PHMC notes the presence of several recorded archaeological sites along the transmission line corridor. PPL has retained the services of Dr. Frank Vento of Clarion State University to locate and investigate these sites as well as to identify new, unrecorded sites adjacent to the many watercourses traversed by the proposed project. Thus far, over 80% of the testing has been completed and no potentially significant sites have been located within the proposed construction corridor. Any PHMC concerns will be addressed prior to the start of construction.

The following lists were reviewed for the presence of historical districts and structures in the area:

- National Historic Landmarks in Pennsylvania
- National Register Historic Districts in Pennsylvania
- National Register Individual Properties and Historic Districts in Pennsylvania
- National Register/Listed and Eligible Properties in Pennsylvania

The Ephrata Cloister, a National Historic Landmark and site of one of America's earliest religious communities is located approximately 2.85 miles from the closest section of the proposed transmission line. The cloister will not be impacted due to its location within Ephrata Borough and its distance from the project.

There are numerous, locally important historic structures along the 12.4 mile line route. The closest is Bitzer's Mill Covered Bridge, thought to be the oldest state-owned bridge in Pennsylvania. The bridge is approximately ¼ mile from the transmission line. The visual intrusion to the area is not expected to be greater than that which currently exists with the present transmission line.

D. NATURAL FEATURES

The proposed project will not affect any unique geological, scenic, or natural areas. No National Natural Landmarks, parks, recreational facilities, or natural areas are located near the project area. Tree clearing is not required because the line is being reconstructed in existing right-of-way that is kept clear of tree growth.

The transmission line corridor crosses the Conestoga River four times; Muddy Creek twice as well as several named and unnamed tributaries and wetlands. All water bodies were delineated, surveyed and added to the construction plans. All are easily spanned and, therefore, no impacts are anticipated. PPL will employ its "Specification for Soil Erosion and Sedimentation Control for Electrical Systems Projects" to mitigate soil erosion problems during construction. Additionally, permits, if required, will be obtained from the Pennsylvania Department of Environmental Protection and the United States Army Corps of Engineers prior to the start of construction.

E. THREATENED AND ENDANGERED SPECIES

In March 2005, PPL received word from Ephrata Township officials of a bald eagle nest in one of the towers along the section of line to be rebuilt. PPL personnel visited the tower and noted the nest as well as a pair of eagles. PPL retained the service of Mr. Richard Mellon of Mellon Biological Service as an advisor on how to deal with the bald eagle situation and to also investigate the

presence of any other species of special concern along the transmission line corridor. In addition to the bald eagle nest Mr. Mellon notes the presence of potential bog turtle habitat. Below is a discussion on PPL's mitigation strategies for each of these species.

Bald Eagle

Mr. Mellon and PPL contacted officials from the Pennsylvania Game Commission and the U. S. Fish and Wildlife Service (USF&W). Officials of the USF&W Service encouraged PPL to not disturb the nest. With this information, PPL right-of-way agents were able to negotiate additional easements with two property owners to bypass the tower containing the eagle nest. The tower with the eagle nest will be retained and the proposed new transmission line will detour around this tower. As directed by the USF&W Service construction activities in the vicinity of the eagle nest tower will be completed during the months from September to December, outside the nesting period.

In addition and as directed by the USF&W, Mr. Mellon completed an aerial helicopter survey of the entire 12.4 mile line and found no additional bald eagles or bald eagle nests. A complete report will be issued shortly.

Bog Turtle

Mr. Mellon is assessing wetlands along the right-of-way for potential bog turtle habitat. If any PPL construction activities fall within 300 feet of any potential bog turtle habitat or if any direct or indirect impacts at distances greater than 300 feet are anticipated, the Company will secure all required permissions prior to the start of construction.

LIST OF APPENDICES

- APPENDIX A - PPL Design Criteria and Safety Practices
- APPENDIX B - Magnetic Field Management at PPL
- APPENDIX C - List of Property Owners Within the Proposed Right-of-Way
- APPENDIX D - List of Involved Governmental Agencies, Municipalities, and Other Public Entities

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APPENDIX A

PPL DESIGN CRITERIA AND SAFETY PRACTICES

The National Electrical Safety Code (NESC) is a set of rules to safeguard people during the installation, operation, and maintenance of electric power lines. The NESC contains the basic provisions considered necessary for the safety of employees and the public. Although it is not intended as a design specification, its provisions establish minimum design requirements. PPL Electric Utilities Corp. (PPL) has developed design specifications and safety rules which meet or surpass all provisions specified by the NESC.

Engineering Design Criteria and Parameters

The NESC includes loading requirements and clearances for the design, construction, and operation of power lines. The "loads" on conductors and supporting structures are the mechanical forces that develop from the weight of the conductors, the weight of ice on the conductors, plus wind pressure on the conductors and supporting structures. Loading requirements are the loads on the conductors and structures that are anticipated assuming certain ice and wind conditions. Loading requirements always contain "safety factors" to allow for unknown or unanticipated contingencies. The clearances and loading requirements contained in the NESC were developed to ensure public safety and welfare.

PPL transmission line design standards meet or surpass the NESC standards. For example, the relative order of grades of construction for conductors and supporting structures is B, C, and N; Grade B being the highest. According to the NESC standards, construction Grades B, C, or N may be used for transmission lines (except at crossings of railroad tracks and limited access highways where Grade B construction is specified). However, PPL designs all of its transmission lines for Grade B construction. The use of Grade B design and construction specifies such things as larger-minimum crossarm dimensions, larger-minimum conductor size, and increased safety factors.

Another example is the design parameters utilized to account for ice and wind loadings on the overhead ground wire (OHGW) and power conductors. The NESC standard ice and wind design magnitudes for the PPL territory are 0.5 inch thickness of radial ice combined with four pounds per square foot horizontal wind pressure (equivalent to 40-mile per hour wind velocity). The conductor sags and tensions used in line designs are the result of various ice and wind combinations, depending on the elevation at the line location and line design voltage. The conductor sags and tensions used in the design of all PPL transmission lines are at least 0.5-inch ice combined with eight pounds wind pressure (equivalent to 57 miles per hour wind velocity). This means that PPL lines are designed to operate safely and reliably during inclement weather even more severe than assumed by the NESC. In addition, PPL transmission lines are designed with more clearance to the ground than required by the NESC. The tables below compare PPL and NESC ground clearances for lines of various voltages.

138 kV

<u>Surface Underneath Conductors</u>	<u>Vertical Clearance to Ground</u>	
	NESC Standard	PPL Design
Roads, streets, alleys	21 Ft.	30 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	21 Ft.	30 Ft.
Spaces accessible to pedestrians only	17 Ft.	30 Ft.
Railroad tracks	31 Ft.	35 Ft.

230 kV

<u>Surface Underneath Conductors</u>	<u>Vertical Clearance to Ground</u>	
	NESC Standard	PPL Design
Roads, streets, alleys	23 Ft.	32 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	23 Ft.	32 Ft.
Spaces accessible to pedestrians only	19 Ft.	32 Ft.
Railroad tracks	31 Ft.	36 Ft.

500 kV

<u>Surface Underneath Conductors</u>	<u>Vertical Clearance to Ground</u>	
	NESC Standard	PPL Design
Roads, streets, alleys	28 Ft.	53 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	28 Ft.	53 Ft.
Spaces accessible to pedestrians only	24 Ft.	53 Ft.
Railroad tracks	38 Ft.	53 Ft.

A relay protection system is used to protect the public safety and welfare as well as equipment and the transmission system. Relay protection is installed for all transmission lines to automatically de-energize the line in the unlikely event that the line or supporting structure fails and the line contacts the ground.

Periodic Maintenance Program on All Transmission Lines

To ensure continued public safety and integrity of service, a periodic maintenance and inspection program is implemented for every transmission line. The program is

administered through the use of helicopter patrols, with supplemental foot and structure climbing patrols. A number of helicopter patrols are performed on all lines annually. The two-man helicopter crew flies parallel, to the left, and above the line so that the observer can look for signs of line damage or deterioration and observe clearances between vegetation and conductors. The observations are included in a report that is forwarded to the appropriate department for corrective action.

Foot and structure climbing patrol programs for a transmission line begin approximately three to five years after the line is energized, unless a helicopter patrol reports a need for earlier action. The frequency of foot patrols varies from once every year to once every several years depending on line type and age.

An assigned foot patroller checks right-of-way conditions, including access roads, bridges, pole washouts, tower footers, vegetation height and clearance to conductors, pole and tower deterioration and, with the use of binoculars, insulators, and condition of hardware.

Identified problems are included in a report that is forwarded to the appropriate department for corrective action.

A scheduled line outage is required to perform an overhead patrol because of "hands-on" inspection of hardware. Overhead patrols are conducted on a schedule determined by line age, operating record, and observed general condition. The necessary repairs are also done during the inspection outage.

Personnel Safety Rules

The following are a few of the PPL safety rules that demonstrate the Company's concern for employee safety:

- Work procedures have been developed to allow work to be performed on energized facilities in a safe manner. When lines or apparatus are removed from service to be worked on, the Energy Control Process system is applied. This system provides that a red tag must be physically placed on the control handle of the de-energized equipment. The red tag may be removed only after proper authorization to energize the equipment.

Various other tags are used for limited operations and informational purposes. Employees will not apply or remove a tag or change the status of tagged equipment unless authorized.

- Temporary safety grounds are used on de-energized facilities for employee safety during maintenance, construction, or reconstruction work. Safety grounds are wires connecting the de-energized facility to an electrical ground. If the facility should be energized, the safety grounds will divert the current directly to ground and reduce the likelihood of personal injury. The conductor size and attachment clamps of temporary safety grounds must be capable of conducting anticipated fault currents. Rubber gloves, rubber sleeves, and additional rubber protective equipment are used as required when applying or removing temporary safety grounds to or from the lines or apparatus to be grounded. An approved nonconductive working stick of sufficient length to allow workers to maintain the following required minimum clearances is used to test that the line has been de-energized and to apply temporary safety grounds:

<u>Voltage-kV</u>	<u>Minimum Clearance</u>
138	3'-7"
230	5'-3"
500	11'-3"

Before applying grounds, a test is done to confirm that the line is de-energized. The voltage test device is checked before and after use to assure reliability. When ground pins are used to establish proper ground points, they are driven to a depth of not less than four feet as near vertical as possible.

- Poles or structures are inspected and examined for structural integrity before climbing. If there is any reason to believe that a pole is unsafe, it is stabilized before work is performed. Appropriate safety gear in the form of body belts, safety straps, hard hats, gloves, etc., is worn by linemen during line work activity.



**MAGNETIC
FIELD
MANAGEMENT**
PPL Electric Utilities
Corporation

APPENDIX B

DECEMBER 2004

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INTRODUCTION

At PPL Electric Utilities Corp. (PPL EU), magnetic field management means investigating and implementing methods at low or no cost to reduce magnetic fields in new or rebuilt transmission and distribution lines. This document explains PPL EU's Magnetic Field Management Program, which is part of PPL EU's larger Electric and Magnetic Fields (EMF) policy.

PPL EU's View

Some people are worried that electric and magnetic fields are harming their health. Others think the scientific research does not show a problem at all, and still others believe there's just too much scientific uncertainty to draw any conclusions.

Here's what we do know now. Various panels of scientists that have reviewed the EMF research generally have drawn two main conclusions. First, the large body of evidence does not demonstrate that EMF are harmful. Second, additional research is recommended to explore questions raised in some studies.

Given these conclusions, PPL EU is taking a reasoned approach in responding to the EMF issue. PPL EU's approach to the EMF issue consists of five elements:

- Providing EMF information to customers and employees
- Providing magnetic field measurements
- Establishing and implementing a magnetic field management program to reduce magnetic fields in new or rebuilt facilities when it can be done at no, or low, cost
- Integrating EMF in the public involvement process that PPL EU undertakes in the siting of transmission lines
- Have supported additional research

EMF Are All Around Us

Electric and magnetic fields occur in nature and in all living things. The earth, for instance, has a magnetic field, which makes the needle on a compass point north.

Electric fields and magnetic fields of a different type also surround every wire that carries electricity. In everyday life, these EMF arise from several basic sources, including power lines, electrical appliances, home and building wiring, other utility lines and cables, and currents flowing on water pipes. Though they often occur together, EMF are made up of two separate components:

Electric Fields

Electric fields are produced by the voltage—or electrical pressure—on a wire. The higher the voltage, the higher the electric field. As long as a wire is energized—has voltage present—an electric field is present (see Figure 1). In other words, an appliance, or an electric power line, doesn't actually have to be turned on to create an electric field. It just has to be plugged in. Electric fields diminish with distance and can be blocked or partially shielded by objects such as trees and houses.

Magnetic Fields

Magnetic fields are created by the current or flow of electricity through a wire. Generally speaking, the higher the current, the higher the magnetic field. Because they only occur when current is flowing, magnetic fields are present only when the power is turned on (see Figure 1). Magnetic fields also diminish with distance, but—unlike electric fields—are not blocked by common objects. In recent years, public and scientific interest has turned toward the magnetic field component of EMF because of some scientific studies regarding these fields.

Figure 1

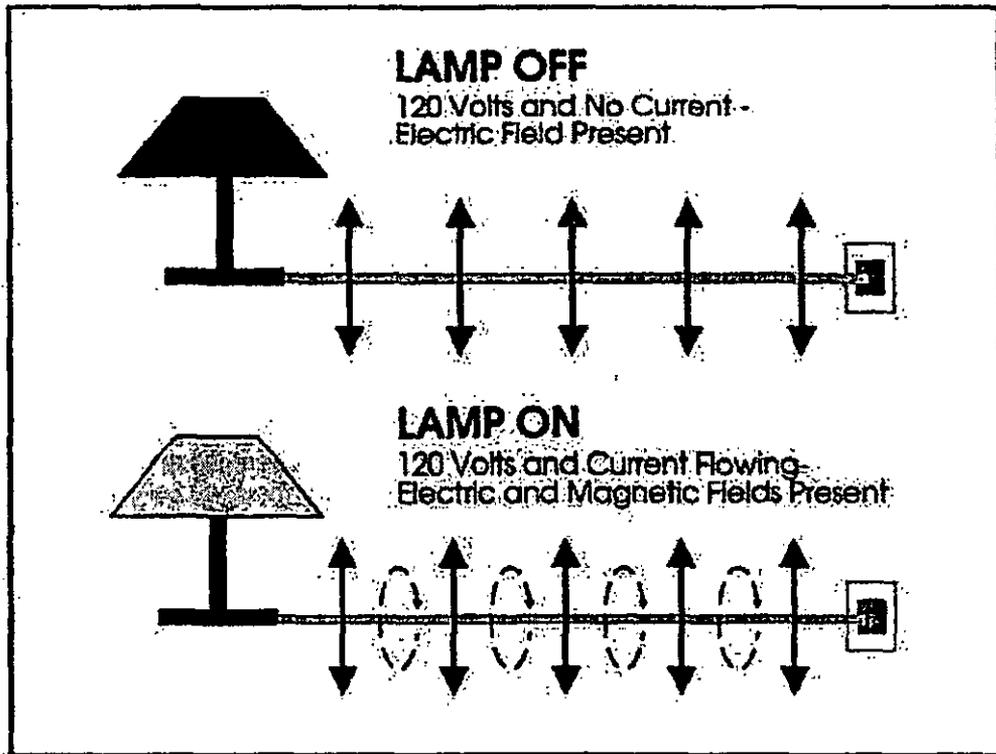


Figure 2

Magnetic field strengths decrease with distance Magnetic fields are measured in milligauss		Source: "EMF in Your Environment", U.S. Environmental Protection Agency 1992		
		At 6 inches	At 1 foot	At 2 feet
Clothes dryer		2 to 10	* to 3	*
Microwave oven		100 to 300	1 to 200	1 to 30
Toaster		5 to 20	* to 7	*
Power drill		100 to 200	20 to 40	3 to 6
Can opener		500 to 1500	40 to 300	3 to 30
Mixer		30 to 600	5 to 100	* to 10
Hair dryer		1 to 700	* to 70	* to 10
Color television		Data not available	* to 20	* to 8

FIGURE 2 * The magnetic field measurement at this distance from the operating appliance could not be distinguished from background measurements taken before the appliance had been turned on.

Measuring Magnetic Fields

Magnetic fields usually are measured in a unit called a milligauss. Magnetic field levels found in the living areas of homes typically range from less than 1 milligauss to about 4 milligauss according to the U.S. Environmental Protection Agency. They can be higher in some cases. The levels next to appliances can exceed 1,000 milligauss (1 gauss). Figures 2 and 3 show how the strength of the field falls off as you move away from the source, just as the heat of a campfire grows weaker as you walk away from it. For overhead power lines, the strength of the magnetic fields is dependent upon a number of factors that will be explained later. Those factors produce a magnetic field that drops off rapidly as you move away from the power line.

Figure 3

Sample Magnetic Field Levels in Milligauss				
Type of Overhead Power Line	Distance from the line			
	Under the line	50 ft.	100 ft.	200 ft.
220 kV and 500 kV	5-400	5-250	1-75	0.5-20
69 kV and 138 kV	3-80	0.5-2.5	0.1-10	0.1-3
12 kV and below	0.4-20	0.1-1	-	-

The magnetic field values provided in this table represent a general range of values associated with the types of overhead power lines listed and are provided for illustration. There will be circumstances in which there will be magnetic field levels above or below the range of values provided due to variations in such factors as height of the wires, current flow and so on.

DEVELOPMENT OF PPL EU's MAGNETIC FIELD MANAGEMENT PROGRAM

One element of our response to EMF concerns expressed by some of our customers is PPL EU's Magnetic Field Management Program. The program was initiated in March 1991 because PPL EU believes it makes good sense, as a matter of policy, to respond to the concerns expressed by some of our customers and to reduce magnetic fields in new and rebuilt facilities where it can be done with either no-cost or low-cost design changes.

This document updates the original program which has been revised several times since 1991. These guidelines were developed by PPL EU's EMF Working Group.

VARIABLES THAT AFFECT MAGNETIC FIELDS

Magnetic fields from transmission and distribution lines are a function of a number of design variables. The following parameters affect the magnetic field levels produced by transmission and distribution lines:

- Current
- Height of conductors above ground
- Configuration of conductors
- Distance from the line

EFFECT OF PHASE CURRENT ON MAGNETIC FIELDS

At power frequencies (i.e., 60 hertz), the magnetic field level is a function of the current or flow of electricity through a wire. Keeping all other parameters the same, the magnetic field is proportional to the current. Hence, if the current increases by 25 percent, the resulting magnetic field level will increase by 25 percent.

The overall load current on any line varies with the demand for power. It's usually highest during daytime hours and lowest at night. There also are weekly, monthly, seasonal and yearly variations.

The difference in the currents between each phase in a multiphase line also can affect the magnetic field. This difference is called phase unbalance. For a constant load, a statistical analysis of this phase unbalance can be made to determine its effect on the magnetic field. Close to the line, there is very little effect. However, the phase unbalance slows the rate at which the magnetic field decreases with distance from the line.

EFFECT OF CONDUCTOR CONFIGURATION ON MAGNETIC FIELDS

In the transmission and distribution of power, utilities like PPL EU presently use both three-phase and single-phase lines. Each phase on a three-phase power line has either a single conductor or a bundle of two or more conductors. In a three-phase system, the ground-level magnetic field is a result of the fields produced by the currents in each of the phases. Placing the three phases as close together as possible (compaction) creates some field cancellation, and the ground-level magnetic field is reduced. However, appropriate phase separation is required for the reliable operation of the line. In addition, the arrangement of the phases can create some; field cancellation and reduction of the ground-level magnetic field.

EFFECT OF DISTANCE FROM THE MAGNETIC FIELD SOURCE

Magnetic field strength diminishes with the vertical and lateral distances from the magnetic field source. Increasing the height of the conductors above ground is useful for magnetic field reduction at ground level, but may result in increased structure costs and increased aesthetic impact of the structures. Another possible method of increasing the distance to the magnetic field source is to increase the right-of-way requirements. By keeping buildings off increased rights of way, thereby requiring the public to live and work further away from lines, exposure to magnetic fields produced by the lines can be reduced. Increases in right of way are not always practical and may increase costs significantly, however.

SUMMARY OF PPL EU's MAGNETIC FIELD MANAGEMENT PROGRAM

Under its Magnetic Field Management Program, PPL EU has changed the way it builds and rebuilds some of its transmission and distribution lines. These design changes reduce magnetic field levels (assuming balanced circuit loadings and phase currents) by up to 69 percent in most of the company's new transmission lines. These guidelines now are being applied to new and reconstructed transmission facilities, based on this program.

The distribution component of the program focuses on 12 kV lines, the company's standard distribution voltage. It concentrates on the three-phase, primary 12 kV lines, since these are the most heavily loaded facilities and often are located in densely populated areas. The guidelines in this program are being applied to these three-phase, primary 12 kV lines.

A maximum 3-5 percent change in estimated cost was used as the limit for the guidelines since this value is consistent with low cost, is within estimating accuracy and is likely to have little impact on overall line costs.

The magnetic field calculations used in this document for the design of PPL EU's overall magnetic field management plan assume balanced load conditions among the phases and a fixed level of current, not necessarily representative of specific transmission or distribution lines. These levels were calculated using the Electric Power Research Institute's ENVIRO computer program. Under actual operating conditions, the magnetic field levels that result may vary due to such things as actual load per circuit, overall current on each phase conductor and the electrical configuration and operation of each line.

MAGNETIC FIELD MANAGEMENT PROGRAM GUIDELINES

The guidelines for magnetic field management are noted below, with discussion points for each.

OVERHEAD LINES

NEW OR REBUILT TRANSMISSION LINES

1. **Balance transmission circuit loads and phase currents as much as possible.**
 - PPL EU should continue to make every effort to balance loadings between the two circuits of a double circuit line when planning new or rebuilt facilities to maximize the effects of reverse phasing.
 - PPL EU should continue the practice of balancing single-phase loads across the three phases of the distribution system. (Unbalanced phase currents on the distribution system are reflected through to the transmission system.)
 - Unbalanced phase currents result in higher magnetic fields that do not drop off as quickly with distance as do the fields resulting from balanced phase currents.
 - For a 5 percent phase current unbalance, the magnetic field 50 feet from the centerline of a single circuit 138 kV line could be more than twice the value than if the same line had balanced phase circuits.
 - Balanced phase currents on each three-phase distribution circuit also reduce magnetic fields from the distribution circuits themselves. In addition, they reduce magnetic fields on the transmission system from which the distribution system circuits are supplied and connected through substations.
 - Apart from magnetic field considerations, balanced phase currents on each three-phase distribution circuit also reduce line losses and improve the system voltage.

2. Continue with the present practice of using long-span construction as the PPL EU 138/69 kV standard

- Structure designs for short-span and long-span construction are illustrated on Charts I and II, respectively.
 - Short-span design does not significantly reduce magnetic fields when compared to long-span design even though it is more compact than long-span design. Comparison of the magnetic field values from Chart III indicates essentially the same values. Therefore, short-span design should not be used solely to reduce magnetic fields.
 - PPL EU will continue to use long-span construction for 138/69 kV double-circuit lines and for single-circuit/future-double-circuit lines.
 - For single-circuit/future-double-circuit lines, PPL EU will continue to install two conductors on the top positions and one in the middle position as shown in Chart IV.
 - This arrangement minimizes magnetic fields as shown in Chart V by placing the three initial conductors higher on the structure, which increases the ground clearances, and by placing the conductors in a triangular configuration.

3. Compact design structures are not a low-cost alternative and should be used for magnetic field reduction only in special applications.

Chart VI illustrates the compact design structure.

- The compact design increases the initial installation costs by 79 percent when compared to the long-span design but reduces the magnetic field from 9 mG to 3 mG (about 67 percent) at the edge of the 100-foot-wide right of way as shown on Chart III.

4. Reverse phase new or rebuilt double-circuit transmission lines for all voltage levels.

- Reverse phasing was adopted by PPL EU in March 1991 for double-circuit 138/69 kV transmission lines and in April 1992 for all other double circuit transmission lines. Reverse phasing is shown in Chart VII. Reverse phasing will reduce the magnetic fields when the current flow on both circuits is in the same

direction. Calculated values contained here are based on balanced and equal phase currents on both circuits.

- Reverse phasing reduces the magnetic field of a double circuit 138 kV single pole transmission line from 29 mG to 9 mG (about 69 percent) at the edge of the 100-foot-wide right of way as shown on Chart III.
- Reverse phasing reduces the magnetic field of a double circuit 230 kV single pole transmission line from 49 mG to 16 mG (about 67 percent) at the edge of the 150-foot-wide right of way as shown on Chart VIII.
- Reverse phasing reduces the magnetic field of a double-circuit 500 kV single pole transmission line from 37 mG to 21 mG (about 43 percent) at the edge of the 200-foot-wide right of way as shown on Chart IX.
- When new or rebuilt double-circuit lines require tapping existing double-circuit lines, PPL EU will review the existing lines to determine if reverse phasing can be provided at low cost.
- Computer modeling is required to develop the optimum phasing and overall conductor arrangements for lines added to, or rebuilt in, multiple-line corridors.
 - Merely adding a reverse-phase double-circuit line to an existing transmission line corridor or reverse phasing a rebuilt line in the multiple-line corridor will not necessarily produce lower magnetic field levels at the edge of the corridor right of way.
 - The corridor must be computer modeled with all the lines, existing phase conductor locations and currents. Then, magnetic field calculations must be made varying the phase arrangements of the new or reconstructed line to determine the appropriate phasing arrangement.
 - Current flow direction on a line also must be considered. For example, a reverse-phased line should have the current flowing in the same direction on both circuits. If the current flow is in the opposite direction for one circuit, reverse phasing will not produce the lowest magnetic field and another phase arrangement that produces lower fields may need to be utilized.

5. Increase the minimum ground clearance for all new transmission lines.

138/69 kV Transmission Lines

- Increasing the minimum line design ground clearance from 25 feet to 30 feet may add up to about 5 percent to the installed cost of a new double-circuit single pole 138/69 kV line. For a given project, such cost may be substantially less, however. In fact, PPL EU frequently uses higher-than-minimum ground clearances due to such features as road crossings, line crossings and site-specific terrain. With long-span reverse-phase design, the magnetic field is reduced from 9 mG to 7 mG (about 22 percent) at the edge of a 100-foot-wide right of way as shown in Chart X.
 - In the actual design of transmission lines to include higher minimum ground clearances, there may be limited segments (such as highway crossings, severe slopes and transmission line crossing locations) where National Electrical Safety Code (NESC) minimum ground clearances may need to be used. The NESC minimum ground clearances are less than the increased ground clearance discussed previously.

230 kV Transmission Lines

- Increasing the minimum line design ground clearances from 27 feet to 32 feet may add up to about 5 percent to the cost of a single-circuit single-pole line (current standard). For a given project, such cost may be substantially less, however. In fact, PPL EU frequently uses higher-than-minimum ground clearances due to such features as road crossings, line crossings and site-specific terrain. By increasing the clearances, the magnetic field is reduced from 30 mG to 28 mG (about 7 percent) at the edge of a 150-foot-wide right of way.
- Increasing clearances from 27 feet to 32 feet could theoretically add up to about 2.8 percent to the cost of a double-circuit single-pole line (current standard) and reduce the magnetic field of a reverse-phase line from 16 mG to 15 mG (about 6 percent) at the edge of a 150-foot-wide right of way. Chart XI is a summary of this data.
- Studies are required for each new 230 kV line to determine optimum structure types, ground clearances, configurations and designs to reduce field levels. Such

studies could include analysis of reduction measures such as additional minimum ground clearances, increasing conductor tensions, using reduced phase spacing (a "Delta" configuration on a single-circuit line), installing the second circuit initially, and/or adding a second set of conductors that are reverse phased and operated in parallel with the first set (bundled/split phase).

500 kV Transmission Lines

- Increasing ground clearances from 33 feet to 53 feet may add up to about 4.5 percent to the cost of a single-circuit "H-frame" line (current standard). For a given project, such cost may be substantially less, however. In fact, PPL EU frequently uses higher-than-minimum ground clearances due to such features as road crossings, line crossings and site-specific terrain. By increasing the clearances, the magnetic field is reduced from 42 mG to 35 mG (about 17 percent) at the edge of a 200-foot-wide right of way.
- Increasing ground clearances from 33 feet to 53 feet could theoretically add up to 2.8 percent to the cost of a double-circuit "H-frame" line (current standard) and reduces the magnetic field of a reverse-phase line from 21 mG to 16 mG (about 24 percent) at the edge of a 200-foot-wide right of way. Chart XII is a summary of this data.
- Studies are required for each new 500 kV line to determine optimum structure types, ground clearances, configurations and designs to reduce field levels. Such studies could include analysis of reduction measures such as additional minimum ground clearances, increasing conductor tensions, using reduced-phase spacing (a "Delta" configuration on a single circuit line), installing the second circuit initially, and/or adding a second set of conductors that are reverse phased and operated in parallel with the first set (bundled/split phase).

RECONDUCTORING OR ADDING ADDITIONAL CIRCUITS TO EXISTING TRANSMISSION LINES

When reconductoring or adding additional circuits to existing transmission lines, PPL EU will evaluate low-cost or no-cost options for magnetic field management on a case-by-case basis.

When reconductoring existing transmission lines or adding additional circuits, low-cost alternatives may not exist; however, the following steps will be taken:

- For a single-circuit line, the use of a Delta arrangement or other modifications on the existing structure, with reduced-phase spacing, will be evaluated.
- For double-circuit lines, application of reverse phasing may reduce the magnetic field under the line and within the right of way and will be evaluated.
- For single- and double-circuit lines, evaluate using higher conductor tensions that can increase the minimum line design ground clearance.

DISTRIBUTION LINES

At the 12 kV distribution level, new main three-phase lines will continue to be constructed with five feet of additional ground clearance.

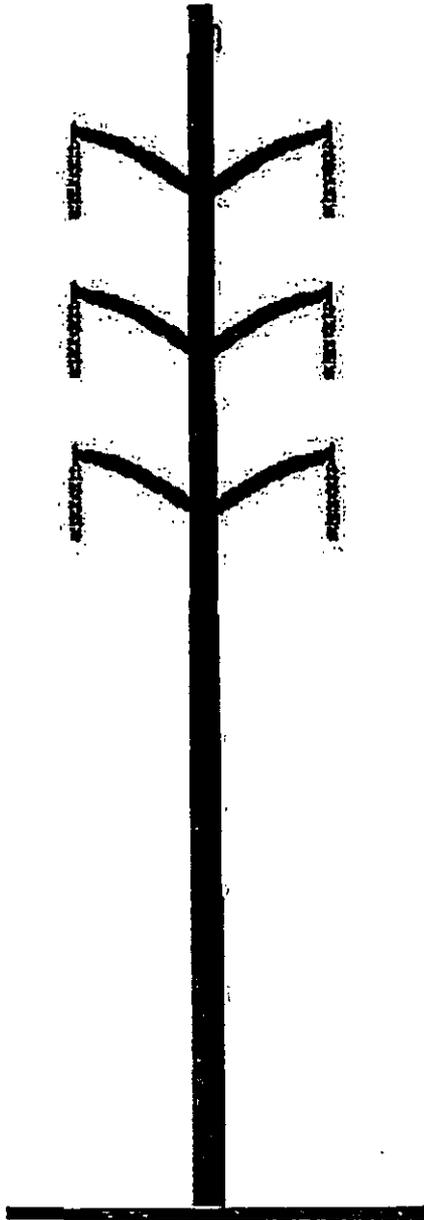
- Main lines are the most heavily loaded sections of a distribution line and therefore have the highest magnetic fields associated with them.
- Increasing the ground clearance by five feet reduces the magnetic field under the line from 14 mG to 11 mG using the standard eight-foot crossarm design. These values are based on increasing pole heights from 45 feet to 50 feet and a typical operating current of 300 amps per phase.
- Chart XIII is a summary of this data. Increasing ground clearance by five feet could theoretically add about 5 percent to the cost of a typical distribution line.

UNDERGROUND TRANSMISSION LINES

Underground transmission lines are required due to environmental or land use factors or restrictions on available clearances, PPL EU will evaluate options for magnetic field management techniques on a case-by-case basis.

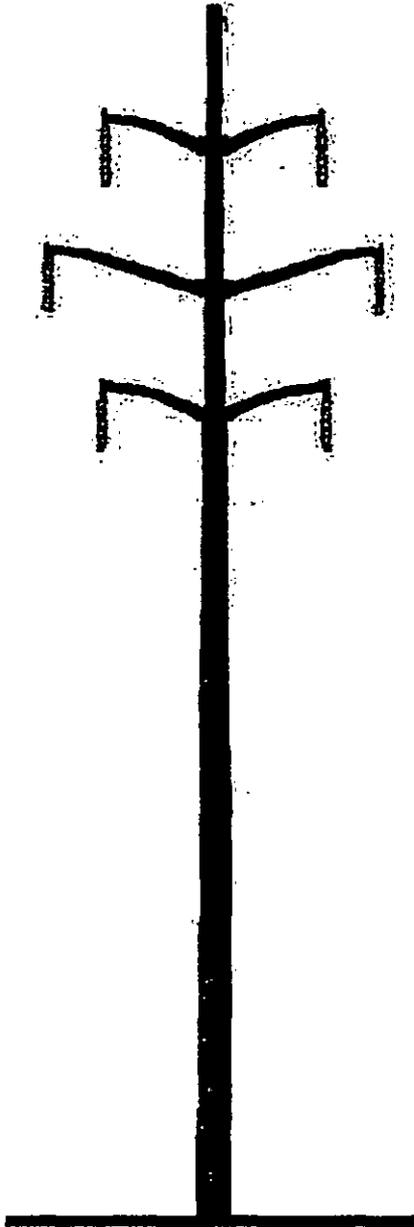
- The phase arrangement that produces the lowest field will be determined.
- The depth of burial of the line will be determined considering the cost of excavation and the location of other buried utilities in the area.
- The use of steel pipe ferromagnetic shielding that reduces magnetic fields will be evaluated.

Short-Span Construction



- **More compact design**
- **Should not be used solely to reduce magnetic fields**
- **Typical conductor data:**
 - 1 3/8" HS steel overhead ground wire - 7.3 feet sag
 - 6-556.5 KCMIL 24/7 ACSR power conductors - (PARAKEET) 10.0 feet sag
 - Average span - 400 feet

Long-Span Construction Remains PPL EU 138 kV Standard



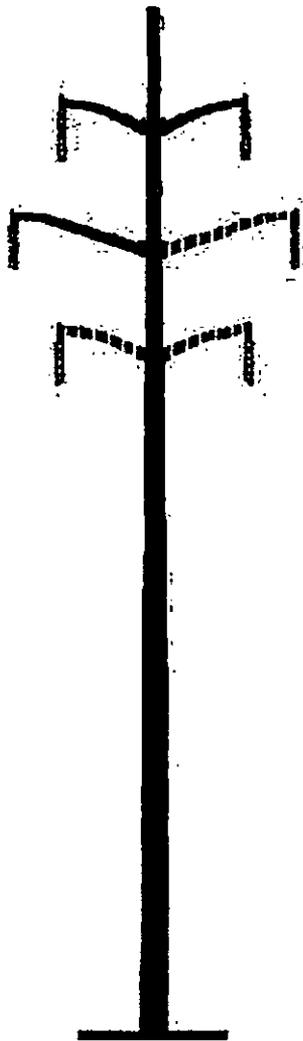
- Lower cost alternative
- Reduces magnetic fields due to higher structures
- Typical conductor data:
 - 1 3/8" HS steel overhead ground wire - 17.3 feet sag
 - 6-556.5 KCMIL 24/7 ACSR power conductors - (PARAKEET) 23.0 feet sag
 - Average span - 600 feet

**138/69 kV REVERSE-PHASE TRANSMISSION LINES
CALCULATED MAGNETIC FIELDS AT 400 AMPERES**

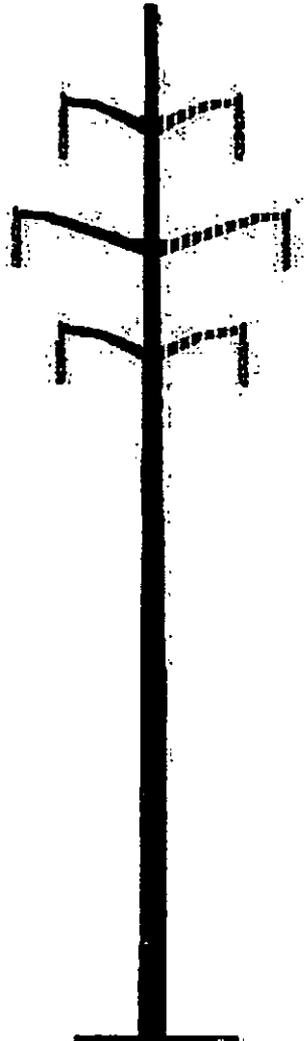
TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SHORT SPAN (CHART I)	30
SHORT SPAN (REVERSE PHASE)	8
LONG SPAN (CHART II)	29
LONG SPAN (REVERSE PHASE)	9
COMPACT (CHART VI)	14
COMPACT (REVERSE PHASE)	3

The edge of right of way is 50 feet from the line centerline.
 The 400 ampere phase current is balanced between phases.
 Calculations are based on a minimum ground clearance of 25 feet.
 LONG SPAN, SHORT SPAN and COMPACT are double-circuit lines.

Typical Single-Circuit Structure Designs



Top/Middle



Vertical



Top/Middle/Bottom

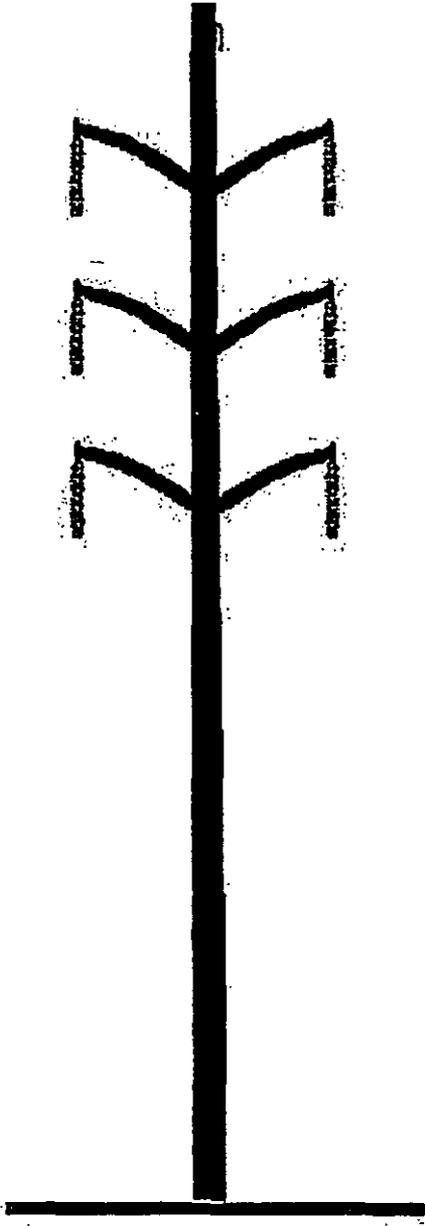
——— initial single circuit
- - - - future second circuit

**138/69 kV SINGLE CIRCUIT TRANSMISSION LINES
CALCULATED MAGNETIC FIELDS AT 400 AMPERES**

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
TOP/MIDDLE/BOTTOM	20
VERTICAL	17
TOP/MIDDLE	12

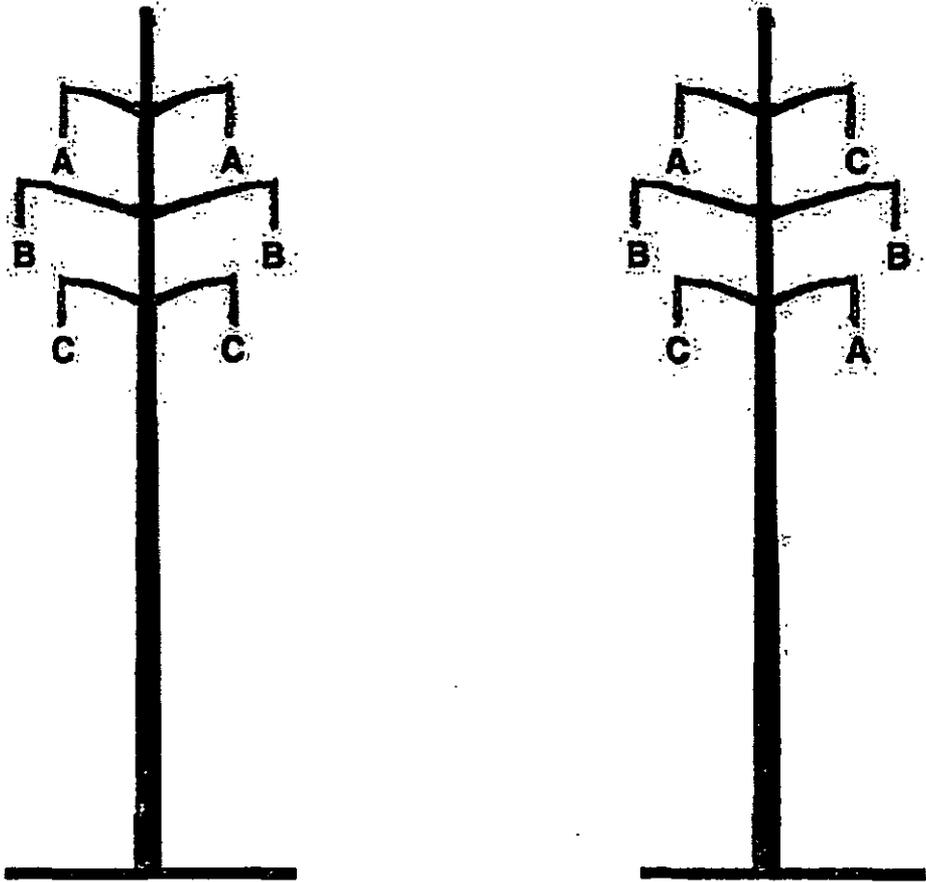
The edge of right of way is 50 feet from the line centerline.
The 400 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 25 feet.

Compact Design Structure



- **Minimize magnetic fields due to compact design**
- **Not a low-cost alternative**
- **Typical conductor data:**
 - 1 3/8" HS steel overhead ground wire - 9.0 feet sag
 - 6-556.5 KCMIL 24/7 ACSR power conductors - (PARAKEET) 9.0 feet sag
 - Average span - 300 feet

Reverse Phasing of Double-Circuit Transmission Lines



From: → → → → To:

Reverse phasing also can be one of the following phase arrangements:

A	B		B	A		B	C		C	A		C	B
C	C	or	C	C	or	A	A	or	B	B	or	A	A
B	A		A	B		C	B		A	C		B	C

**230 kV REVERSE-PHASE TRANSMISSION LINES
CALCULATED MAGNETIC FIELDS AT 800 AMPERES**

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
DOUBLE CIRCUIT POLE	49
DOUBLE CIRCUIT POLE (REVERSE-PHASE)	16

The edge of right of way is 75 feet from the line centerline.
The 800 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 27 feet.

**500 kV REVERSE-PHASE TRANSMISSION LINES
CALCULATED MAGNETIC FIELDS AT 1100 AMPERES**

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
DOUBLE CIRCUIT POLE	37
DOUBLE CIRCUIT POLE (REVERSE PHASE)	21

The edge of right of way is 100 feet from the line centerline.
The 1,100 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 33 feet.

**INCREASED 138/69 kV MINIMUM GROUND CLEARANCE
CALCULATED MAGNETIC FIELDS AT 400 AMPERES**

TYPE CONSTRUCTION	MINIMUM GROUND CLEARANCE FEET	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SINGLE CIRCUIT TOP/MIDDLE	25	12
SINGLE CIRCUIT TOP/MIDDLE	30	10
LONG SPAN	25	29
LONG SPAN	30	26
LONG SPAN (REVERSE PHASE)	25	9
LONG SPAN (REVERSE PHASE)	30	7

The edge of right of way is 50 feet from the line centerline.
The 400 ampere phase current is balanced between phases.

**INCREASED 230 KV MINIMUM GROUND CLEARANCE
CALCULATED MAGNETIC FIELDS AT 800 AMPERES**

TYPE CONSTRUCTION	MINIMUM GROUND CLEARANCE FEET	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SINGLE CIRCUIT TOP/MIDDLE	27	30
SINGLE CIRCUIT TOP/MIDDLE	32	28
DOUBLE CIRCUIT POLE	27	49
DOUBLE CIRCUIT POLE	32	46
DOUBLE CIRCUIT POLE (REVERSE PHASE)	27	16
DOUBLE CIRCUIT POLE (REVERSE PHASE)	32	15

The edge of right of way is 75 feet from the line centerline.
The 800 ampere phase current is balanced between phases.

**INCREASED 500 KV MINIMUM GROUND CLEARANCE
CALCULATED MAGNETIC FIELDS AT 1,100 AMPERES**

TYPE CONSTRUCTION	MINIMUM GROUND CLEARANCE FEET	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SINGLE CIRCUIT "H" STRUCTURE	33	42
SINGLE CIRCUIT "H" STRUCTURE	53	35
DOUBLE CIRCUIT POLE	33	37
DOUBLE CIRCUIT POLE	53	31
DOUBLE CIRCUIT POLE (REVERSE PHASE)	33	21
DOUBLE CIRCUIT POLE (REVERSE PHASE)	53	16

The edge of right of way is 100 feet from the line centerline.
The 1,100 ampere phase current is balanced between phases.

**12 kV DISTRIBUTION LINES
CALCULATED MAGNETIC FIELDS AT 300 AMPERES**

TYPE CONSTRUCTION	POLE HEIGHT FEET	MAGNETIC FIELD IN MILLIGAUSS*	
		AT CENTERLINE	AT 30 FEET FROM CENTERLINE
STANDARD CROSSARM	45	14	7
STANDARD CROSSARM	50	11	6

* Field level under the line at mid-span based on 300 amps, balanced loading, one meter above ground level.

APPENDIX C

LIST OF PROPERTY OWNERS WITHIN THE PROPOSED RIGHT-OF-WAY

<u>Property Owner/Address</u>	<u>Parcel Number</u>
Jonathan N. Zimmerman 651 Old Akron Road Ephrata, PA 17522	1
Benjamin S. & Barbara E King 223 W. Metzler Road Ephrata, PA 17522	2
Elam Z. & Alma S. Shirk 114 Pool Road Ephrata, PA 17522	3
Curvin & Ella S. Weaver 174 Pool Road Ephrata, PA 17522	4
Ammon J. & Irene S. Zimmerman 312 Sloan Fort Road Liberty, KY 42539	5
Ervin S. Zimmerman Elva N. Zimmerman 400 W. Metzler Road Ephrata, PA 17522	6
Roy E. & Marlene L. Buch 20 Buch Road Ephrata, PA 17522	7
Jay P. & Tamara L. Horning 405 W. Metzler Road Ephrata, PA 17522	8
Reuben M. & Mary Jane Oberholtzer 465 W. Metzler Road Ephrata, PA 17522	9
Jerre W. & Emma H. Martin 391 N. Farmersville Road Ephrata, PA 17522	10
Melvin H. & Lizzie Z. Burkholder c/o Frank H. Hoover 469 N. Farmersville Rd. Ephrata, PA 17522	11

Mary H. Burkholder & Annie H. Burkholder 630 E. Metzler Road Ephrata, PA 17522	12
Lloyd K. Wise (Record Owner) Attn: Adam N. Zimmerman (Equitable Owner) 287 Voganville Road New Holland, PA 17557	13
Lamar M. Hoover 750 Crooked Lane Ephrata, PA 17522	14
Philip R. Horst Ruth Ann Horst 800 E. Metzler Road Ephrata, PA 17522	15
Paul L. & Alice G. Horst 690 Crooked Lane Ephrata, PA 17522	16
Ammon Z. Shirk Anna Mae Shirk 821 Crooked Lane Ephrata, PA 17522	17
David S. & Leah S. Lapp 182 Cider Mill Road Ephrata, PA 17522	18
Raymond M. & Gladys L. Hoover 224 Cider Hill Road Ephrata, PA 17522	19
Elam S. & Fern W. Burkholder 229 Conestoga Creek Rd. Ephrata, PA 17522	20
Stevie S. Zook, Jr. & Naomi B. Zook 440 Peach Road Ephrata, PA 17522	21
Norman S. & Marie S. Martin 384 Cabin Drive Ephrata, PA 17522	22
Mahlon Z. & Arlene B. Martin 255 Goods Dr. Ephrata, PA 17522	23

Walter M. & Barbara L. Zimmerman 245 Cabin Drive Ephrata, PA 17522	24, 25, 26, 27, 28
Phares B. & Mary Ella Weaver 128 Cabin Road Ephrata, PA 17522	29
Wayne G. & Hannah W. Martin 1361 Division Hwy. Ephrata, PA 17522	30
Leon G. & Verna E. Burkholder 1440 Division Highway Ephrata, PA 17522	31
Verna E. Burkholder RVCBL Trust & Verna E. Burkholder 1440 Division Highway Ephrata, PA 17522	32
John R. & Ellen M. Martin 105 Hahnstown Road Ephrata, PA 17522	33
Amos W. Zimmerman, Jr. Lois B. Zimmerman 937 Glenwood Drive Ephrata, PA 17522	34
Alvin M. & Ella H. Hoover 111 Hahnstown Rd. Ephrata, PA 17522	35
Eugene N. & Bernice W. Zimmerman 831 Glenwood Drive Ephrata, PA 17522	36
Martin J. & Cindy S. Buckwalter 368 Hillcrest Drive Ephrata, PA 17522	37
Eugene M. & Marie W. Martin 150 Frysville Road Ephrata, PA 17522	38
Lamar M. & Lizzie M. Martin 218 Hahnstown Road Ephrata, PA 17522	39, 40

Glenn B. & Carolyn K. Martin Erla S. Martin 265 Hahnstown Rd. Ephrata, PA 17522	41
Nelson B. & Lucy N. Martin 258 Frysville Road Ephrata, PA 17522	42
Irvin M. & Martha W. Zimmerman 277 Hahnstown Rd. Ephrata, PA 17522	43
Leon B. Martin 320 Napierville Road Ephrata, PA 17522	44
Morton S. & Rebecca G. Fry 302 Frysville Rd. Ephrata, PA 17522	45, 46
Clarence W. & Bernice E. Martin PO Box 306 Martindale, PA 17549	47
Edna S. Napier 320 Napierville Road Ephrata, PA 17522	48
Rufus M. Hoover, Sr. 117 Kurtz Road New Holland, PA 17557	49
Jeffrey B. & Delores M. Weaver 988 Red Run Road Stevens, PA 17578	50
John Z. & Barbara W. Weaver 889 S. Muddy Creek Rd. Stevens, PA 17578	51
Roy E. & Arlene L. Slabach 1041 Slabach Road Stevens, PA 17578	52, 53
Kenneth L. & Laura S. High 825 Fivepointville Rd. Stevens, PA 17578	54
Ronald M. & Judith A. Stauffer 817 Fivepointville Rd. Stevens, PA 17578	55

Edwin Z. Hoover 838 Fivepointville Rd. Stevens, PA 17578	56
William F. Brossman 762 Fivepointville Rd. Denver, PA 17517	57
Marcus H. Martin & Rufus H. Martin 1105 Kramer Mill Rd. Denver, PA 17517	58
Norman H. Martin & Jesse H. Martin 1090 Kramer Mill Rd. Denver, PA 17517	59
Eli M. & Marian H. Hoover 1180 Woodlyn Drive Denver, PA 17517	60
Jesse H. Martin & Esther M. Martin 1123 Woodlyn Drive Denver, PA 17517	61, 62
Harvey M. Weaver, Jr. & Anna R. Weaver 1179 Dry Tavern Road Denver, PA 17517	63
Daniel S. & Leah M. Martin 1187 Dry Tavern Road Denver, PA 17517	64
Ezra H. Good Trust & Amos H. Good 503 School Road Denver, PA 17517	65, 67
Daniel M. & Annetta Z. Hoover 431 School Road Denver, PA 17517	66

The Greens at Hawk Valley, Inc. 825 Berkshire Blvd. Wyomissing, PA 19610	68
Hawk Valley Inc. 1319 Crestview Dr. Denver, PA 17517	69, 70, 74
James E. Fricke II & Karen A. Fricke 1331 Crestview Drive Denver, PA 17517	71
Dorothy K. Good 1327 Crestview Drive Denver, PA 17517	72
James E. & Dorothy J. Fricke 1319 Crestview Drive Denver, PA 17517	73
Lewis Z. & Mary M. Horst 337 Lauschtown Road Denver, PA 17517	75
Randy Z. Martin & Edna R. Martin 1339 Crestview Drive Denver, PA 17517	76
Robert & Joyce Snader 303 Skyline Drive Denver, PA 17517	77
James P. & Lena M. Erb 1346 Crestview Drive Denver, PA 17517	78
Matthew E. Ross & Jennifer L. Ross 1352 Crestview Drive Denver, PA 17517	79
Dennis R. & Loretta Kakas 296 Skyline Drive Denver, PA 17517	80

Donald A. & Deborah A. Slider 292 Skyline Drive Denver, PA 17517	81
Harold L. & Jody K. Wenger 275 Lauschtown Road Denver, PA 17517	82
Edward H. Ladiski 273 Lauschtown Road Denver, PA 17517	83
Marvin E. Horst, Jr. Wendolyn J. Horst 1386 Clearview Drive Denver, PA 17517	84
Jay R. & Rosene M. Hurst 284 Lauschtown Road Denver, PA 17517	85
Raymond M. & Rondi Hoover 280 Lauschtown Road Denver, PA 17517	86
June L. Summers 124 E. Eighth Street Akron, PA 17501	87
Mark J. & Sharon W. Hostetter 1473 Bowmansville Road Mohnton, PA 19540	88, 89
Earl H. & Helen H. Gehman 1406 Bowmansville Road Mohnton, PA 19540	90
Andrew G. Weber 1483 Reading Road Mohnton, PA 19540	91
Leroy S. & Ruth M. Horst 1495 Reading Road Mohnton, PA 19540	92

Donald E. Mellinger PO Box 60 Terre Hill, PA 17581	93
David A. & Janet L. King Paul D. & Michelle L. Bias 1504 Reading Road Mohnton, PA 17540	94
Martin Auctioneers, Inc. PO Box 99 New Holland, PA 17557	95
Dorothy R. Zerbe & Helen L. Zerbe & Anna R. Good TA Zerbe Sisters & Curly 2499 Zerbe Road Narvon, PA 17555	96
Shane M. & Kimberly A. Rutherford 1494 Reading Road Mohnton, PA 19540	97
Boulder Hill Properties, LLC Attn: Keith Brubaker 1450 Reading Road Mohnton, PA 17540	98

APPENDIX D

LIST OF INVOLVED GOVERNMENTAL AGENCIES, MUNICIPALITIES AND OTHER PUBLIC ENTITIES

1. Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, Second Floor
400 North Street
Harrisburg, Pennsylvania 17120-0053
Attn: Mr. Douglas C. McLearn, Chief
2. Pennsylvania Department of Transportation
Commonwealth Keystone Building
400 North Street, 8th Floor
Harrisburg, Pennsylvania 17120
Attn: The Honorable Allen D. Biehler, P.E., Secretary
3. Department of Environmental Protection
P.O. Box 2063
Market Street State Office Building
Harrisburg, Pennsylvania 17105-2063
Attn: Office of Field Operations
4. Lancaster County Commissioners
50 North Duke Street
PO Box 83480
Lancaster, Pennsylvania 17608-3480
Attn: Mr. Richard Shellenberger, Chairman
5. Lancaster County Planning Commission
50 N. Duke Street
PO Box 83480
Lancaster, Pennsylvania 17608-3480
Attn: Mr. James R. Cowhey, Executive Director
6. Brecknock Township Board of Supervisors
1026 Dry Tavern Road
Denver, Pennsylvania 17517
Attn: Mr. Levi Hoover, Chairman
7. Brecknock Township Planning Commission
1026 Dry Tavern Road
Denver, Pennsylvania 17517
Attn: Mr. J. Roy Wise, Chairman

8. Earl Township Board of Supervisors
517 North Railroad Street
New Holland, Pennsylvania 17557
Attn: Mr. Rick Kochel, Chairman
9. Earl Township Planning Commission
517 North Railroad Street
New Holland, Pennsylvania 17557
Attn: Mr. Clair Hoover, Chairman
10. East Cocalico Township
100 Hill Road
Denver, PA 17517
Attn: Ms. Karen L. Koncle, Township Manager
11. East Cocalico Township Planning Commission
100 Hill Road
Denver, PA 17517
Attn: Mr. G. Sidni Schlegel, Chairman
12. Ephrata Township
265 Akron Road
Ephrata, PA 17522-2611
Attn: Mr. Steven A. Sawyer, Township Manager
13. Ephrata Township Planning Commission
265 Akron Road
Ephrata, PA 17522-2611
Attn: Mr. Louis Hurst, Chairman
14. West Earl Township
157 West Metzler Road
PO Box 787
Brownstown, PA 17508
Attn: Mr. Patrick Barrett, Township Manager
15. West Earl Township Planning Commission
157 West Metzler Road
PO Box 787
Brownstown, PA 17508
Attn: Mr. Dean Weinhold, Chair

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Application and applicable aerial photograph have been served upon the following persons, in the manner indicated, in accordance with the requirements of § 1.54 (relating to service by a participant).

VIA CERTIFIED MAIL RETURN RECEIPT REQUESTED

Jonathan N. Zimmerman
651 Old Akron Road
Ephrata, PA 17522

Benjamin S. & Barbara E. King
223 W. Metzler Road
Ephrata, PA 17522

Elam Z. & Alma S. Shirk
114 Pool Road
Ephrata, PA 17522

Curvin & Ella S. Weaver
174 Pool Road
Ephrata, PA 17522

Ammon J. & Irene S. Zimmerman
312 Sloan Fort Road
Liberty, KY 42539

Ervin S. Zimmerman
Elva N. Zimmerman
400 W. Metzler Road
Ephrata, PA 17522

Roy E. & Marlene L. Buch
20 Buch Road
Ephrata, PA 17522

Jay P. & Tamara L. Horning
405 W. Metzler Road
Ephrata, PA 17522

Reuben M. & Mary Jane Oberholtzer
465 W. Metzler Road
Ephrata, PA 17522

Jerre W. & Emma H. Martin
391 N. Farmersville Road
Ephrata, PA 17522

Melvin H. & Lizzie Z. Burkholder
c/o Frank H. Hoover
469 N. Farmersville Road
Ephrata, PA 17522

Mary H. Burkholder &
Annie H. Burkholder
630 E. Metzler Road
Ephrata, PA 17522

Lloyd K. Wise (Record Owner)
Attn: Adam N. Zimmerman (Equitable
Owner)
287 Voganville Road
New Holland, PA 17557

Lamar M. Hoover
750 Crooked Lane
Ephrata, PA 17522

Philip R. Horst
Ruth Ann Horst
800 E. Metzler Road
Ephrata, PA 17522

Paul L. & Alice G. Horst
690 Crooked Lane
Ephrata, PA 17522

RECORDED
2006 MAY -3 AM 11:53
PA PUC
SECRETARY'S BUREAU

Ammon Z. Shirk
Anna Mae Shirk
821 Crooked Lane
Ephrata, PA 17522

Raymond M. & Gladys L. Hoover
224 Cider Hill Road
Ephrata, PA 17522

Stevie S. Zook, Jr. & Naomi B. Zook
440 Peach Road
Ephrata, PA 17522

Mahlon Z. & Arlene B. Martin
255 Goods Drive
Ephrata, PA 17522

Phares B. & Mary Ella Weaver
128 Cabin Road
Ephrata, PA 17522

Leon G. & Verna E. Burkholder
1440 Division Highway
Ephrata, PA 17522

John R. & Ellen M. Martin
105 Hahnstown Road
Ephrata, PA 17522

Alvin M. & Ella H. Hoover
111 Hahnstown Road
Ephrata, PA 17522

Martin J. & Cindy S. Buckwalter
368 Hillcrest Drive
Ephrata, PA 17522

Lamar M. & Lizzie M. Martin
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Ephrata, PA 17522

David S. & Leah S. Lapp
182 Cider Mill Road
Ephrata, PA 17522

Elam S. & Fern W. Burkholder
229 Conestoga Creek Road
Ephrata, PA 17522

Norman S. & Marie S. Martin
384 Cabin Drive
Ephrata, PA 17522

Walter M. & Barbara L. Zimmerman
245 Cabin Drive
Ephrata, PA 17522

Wayne G. & Hannah W. Martin
1361 Division Highway
Ephrata, PA 17522

Amos W. Zimmerman, Jr.
Lois B. Zimmerman
937 Glenwood Drive
Ephrata, PA 17522

Eugene N. & Bernice W. Zimmerman
831 Glenwood Drive
Ephrata, PA 17522

Eugene M. & Marie W. Martin
150 Frysville Road
Ephrata, PA 17522

Glenn B. & Carolyn K. Martin
Erla S. Martin
265 Hahnstown Road
Ephrata, PA 17522

Nelson B. & Lucy N. Martin
258 Frysville Road
Ephrata, PA 17522

Leon B. Martin
320 Napierville Road
Ephrata, PA 17522

Clarence W. & Bernice E. Martin
P.O. Box 306
Martindale, PA 17549

Rufus M. Hoover, Sr.
117 Kurtz Road
New Holland, PA 17557

John Z. & Barbara W. Weaver
889 S. Muddy Creek Road
Stevens, PA 17578

Kenneth L. & Laura S. High
825 Fivepointville Road
Stevens, PA 17578

Edwin Z. Hoover
838 Fivepointville Road
Stevens, PA 17578

Marcus H. Martin &
Rufus H. Martin
1105 Kramer Mill Road
Denver, PA 17517

Eli M. & Marian H. Hoover
1180 Woodlyn Drive
Denver, PA 17517

Harvey M. Weaver, Jr. &
Anna R. Weaver
1179 Dry Tavern Road
Denver, PA 17517

Irvin M. & Martha W. Zimmerman
277 Hahnstown Road
Ephrata, PA 17522

Morton S. & Rebecca G. Fry
302 Frysville Road
Ephrata, PA 17522

Edna S. Napier
320 Napierville Road
Ephrata, PA 17522

Jeffrey B. & Delores M. Weaver
988 Red Run Road
Stevens, PA 17578

Roy E. & Arlene L. Slabach
1041 Slabach Road
Stevens, PA 17578

Ronald M. & Judith A. Stauffer
817 Fivepointville Road
Stevens, PA 17578

William F. Brossman
762 Fivepointville Road
Denver, PA 17517

Norman H. Martin &
Jesse H. Martin
1090 Kramer Mill Road
Denver, PA 17517

Jesse H. Martin &
Esther M. Martin
1123 Woodlyn Drive
Denver, PA 17517

Daniel S. & Leah M. Martin
1187 Dry Tavern Road
Denver, PA 17517

Ezra H. Good Trust &
Amos H. Good
503 School Road
Denver, PA 17517

The Greens at Hawk Valley, Inc.
825 Berkshire Blvd.
Wyomissing, PA 19610

James E. Fricke II &
Karen A. Fricke
1331 Crestview Drive
Denver, PA 17517

James E. & Dorothy J. Fricke
1319 Crestview Drive
Denver, PA 17517

Randy Z. Martin &
Edna R. Martin
1339 Crestview Drive
Denver, PA 17517

James P. & Lena M. Erb
1346 Crestview Drive
Denver, PA 17517

Dennis R. & Loretta Kakas
296 Skyline Drive
Denver, PA 17517

Harold L. & Jody K. Wenger
275 Lauschtown Road
Denver, PA 17517

Marvin E. Horst, Jr.
Wendolyn J. Horst
1386 Clearview Drive
Denver, PA 17517

Raymond M. & Rondi Hoover
280 Lauschtown Road
Denver, PA 17517

Daniel M. & Annetta Z. Hoover
431 School Road
Denver, PA 17517

Hawk Valley Inc.
1319 Crestview Drive
Denver, PA 17517

Dorothy K. Good
1327 Crestview Drive
Denver, PA 17517

Lewis Z. & Mary M. Horst
337 Lauschtown Road
Denver, PA 17517

Robert & Joyce Snader
303 Skyline Drive
Denver, PA 17517

Matthew E. Ross &
Jennifer L. Ross
1352 Crestview Drive
Denver, PA 17517

Donald A. & Deborah A. Slider
292 Skyline Drive
Denver, PA 17517

Edward H. Ladoski
273 Lauschtown Road
Denver, PA 17517

Jay R. & Rosene M. Hurst
284 Lauschtown Road
Denver, PA 17517

June L. Summers
124 E. Eighth Street
Akron, PA 17501

Mark J. & Sharon W. Hostetter
1473 Bowmansville Road
Mohnton, PA 19540

Andrew G. Weber
1483 Reading Road
Mohnton, PA 19540

Donald E. Mellinger
P.O. Box 60
Terre Hill, PA 17581

Martin Auctioneers, Inc.
P.O. Box 99
New Holland, PA 17557

Shane M. & Kimberly A. Rutherford
1494 Reading Road
Mohnton, PA 19540

Earl H. & Helen H. Gehman
1406 Bowmansville Road
Mohnton, PA 19540

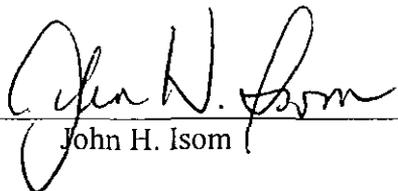
Leroy S. & Ruth M. Horst
1495 Reading Road
Mohnton, PA 19540

David A. & Janet L. King
Paul D. & Michelle L. Bias
1504 Reading Road
Mohnton, PA 17540

Dorothy R. Zerbe &
Helen L. Zerbe &
Anna R. Good
TA Zerbe Sisters & Curly
2499 Zerbe Road
Narvon, PA 17555

Boulder Hill Properties, LLC
Attn: Keith Brubaker
1450 Reading Road
Mohnton, PA 17540

Date: May 3, 2006



John H. Isom

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Application and Letter of Notification have been served upon the following persons, in the manner indicated, in accordance with the requirements of § 1.54 (relating to service by a participant).

VIA CERTIFIED MAIL RETURN RECEIPT REQUESTED

Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120-0053
ATTN: Mr. Douglas C. McLearn, Chief

Pennsylvania Department of Transportation
Commonwealth Keystone Building
400 North Street, 8th Floor
Harrisburg, PA 17120
ATTN: The Honorable Allen D. Biehler, P.E., Secretary

Department of Environmental Protection
P.O. Box 2063
Market Street State Office Building
Harrisburg, PA 17105-2063
ATTN: Office of Field Operations

Lancaster County Commissioners
50 North Duke Street
P.O. Box 83480
Lancaster, PA 17608-3480
ATTN: Mr. Richard Shellenberger, Chairman

Lancaster County Planning Commission
50 North Duke Street
P.O. Box 83480
Lancaster, PA 17608-3480
ATTN: Mr. James R. Cowhey, Executive Director

Brecknock Township Board of Supervisors
1026 Dry Tavern Road
Denver, PA 17517
ATTN: Mr. Levi Hoover, Chairman

Brecknock Township Planning Commission
1026 Dry Tavern Road
Denver, PA 17517
ATTN: Mr. J. Roy Wise, Chairman

Earl Township Board of Supervisors
517 North Railroad Street
New Holland, PA 17557
ATTN: Mr. Rick Kochel, Chairman

Earl Township Planning Commission
517 North Railroad Street
New Holland, PA 17557
ATTN: Mr. Clair Hoover, Chairman

East Cocalico Township
100 Hill Road
Denver, PA 17517
ATTN: Ms. Karen L. Koncle, Township Manager

East Cocalico Township Planning Commission
100 Hill Road
Denver, PA 17517
ATTN: Mr. G. Sidni Schlegel, Chairman

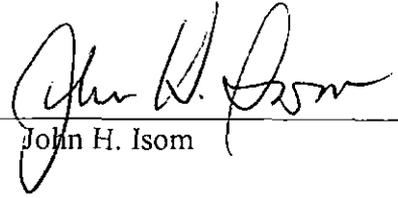
Ephrata Township
265 Akron Road
Ephrata, PA 17522-2611
ATTN: Mr. Steven A. Sawyer, Township Manager

Ephrata Township Planning Commission
265 Akron Road
Ephrata, PA 17522-2611
ATTN: Mr. Louis Hurst, Chairman

West Earl Township
157 West Metzler Road
P.O. Box 787
Brownstown, PA 17508
ATTN: Mr. Patrick Barrett, Township Manager

West Earl Township Planning Commission
157 West Metzler Road
P.O. Box 787
Brownstown, PA 17508
ATTN: Mr. Dean Weinhold, Chair

Date: May 3, 2006



John H. Isom

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
P. O. BOX 3265, HARRISBURG PA 17105-3265

IN REPLY PLEASE
REFER TO OUR FILE
Secretary
717-772-7777

May 5, 2006

A-110500 F0376

POST & SCHELL
ATTN: JOHN H. ISOM
17 NORTH SECOND STREET
12TH FLOOR
HARRISBURG PA 17101-1601

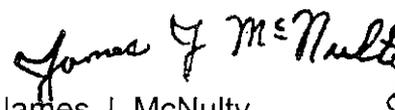
DOCUMENT
FOLDER

Dear Mr. Isom:

Receipt is acknowledged of the Letter of Notification of PPL Electric Utilities Corporation, which has been captioned and docketed to the above number.

This matter will receive the attention of the Commission and you will be advised of any further necessary procedure.

Sincerely,



James J. McNulty
Secretary

JJM:jih

DOCKETED
MAY 05 2006

DATE: May 5, 2006

SUBJECT: A-110500 F0376

TO: Bureau of Fixed Utility Services

FROM:  James J. McNulty, Secretary

DOCUMENT
FOLDER

Letter of Notification of PPL Electric Utilities Corporation

We attach hereto a copy of the Letter of Notification of PPL Electric Utilities Corporation, which has been captioned and docketed to the above number.

May we have a report prepared by your Bureau for Public Meeting.

Attachment

cc: Law Bureau

jih

DOCKETED
MAY 05 2006