

ATTACHMENT “3”
MARTINS CREEK – SIEGFRIED #2 230 kV TRANSMISSION LINE REPLACEMENT
SITING ANALYSIS AND ENVIRONMENTAL ASSESSMENT

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A. INTRODUCTION

PPL Electric Utilities Corporation (PPL Electric) plans to rebuild the vintage 1920s transmission structures and conductor system on a segment of the Martins Creek – Siegfried #2 230 kV Transmission Line in order to prevent degradation in reliability of service, as well as eliminate potential safety concerns for the public and PPL Electric’s field personnel due to deteriorated facilities. The project involves removing the vintage lattice tower structures along a 10.7-mile long corridor and replacing them with single-shaft steel poles.

PPL Electric did not conduct an alternative siting analysis as part of this project. PPL Electric determined that any alternative route outside of the existing right-of-way (ROW) would result in significantly greater impacts to both the social and natural environments, and would increase project costs. Further, only a segment of the existing Martins Creek – Siegfried #2 230 kV Transmission Line requires upgrading at this time. The line replacement can be constructed entirely within the existing ROW, and would not otherwise substantially alter the ROW. Therefore, the existing Martins Creek – Siegfried #2 230 kV ROW was selected as the best option for rebuilding the transmission line. PPL Electric held a public meeting on March 31, 2011 to inform residents of the proposed project.

B. GENERAL LOCATION

The project area runs in a northeast to southwest direction through the northern part of Northampton County (**Figure 1**). The southern terminus of the Martins Creek – Siegfried #2 230 kV Line Replacement project is the Siegfried Substation, located along West 27th Street in Northampton Borough. The northern terminus includes the last structure in Northampton County before the line turns east, located just south of State Game Land 168 and the Moore

Township boundary. Townships where project activities will occur include (from south to north) Allen, Lehigh and Moore Townships.

Specific linear features in the project area include roadways, railroad ROWs and transmission line ROWs. No major roadways are located within the project area. A few state or local roads, including Route 248 (Lehigh Drive) and Route 946 (Mountain View Drive), are traversed by the existing line. Several electric transmission lines exit the Siegfried Substation and traverse northeast or northwest through Northampton County. A rail line is located adjacent to the Siegfried Substation to the west along the Lehigh River. The proposed rebuilt line will not cross this rail line. Aside from possible traffic controls employed during construction, the proposed project is not anticipated to result in impacts to any of these linear features.

C. EXISTING LAND USE

The closest airport is the Slatington Airport, located more than 5 miles northwest of the project area. PPL Electric will contact the PennDOT Bureau of Aviation and the Federal Aviation Administration to ensure that the proposed Martins Creek – Siegfried rebuild will not be a hazard to flight operations. A review of the Lehigh Valley Planning Commission (LVPC) Land Use data and mapping indicates that the project area is dominated by agricultural and rural land (**Figure 2**). The northernmost portion of the project area in Moore Township is located just south of State Game Land 168 and the base of Kittatinny Ridge (also known as Blue Mountain) and is primarily forested. The Appalachian Trail is located approximately 0.7 mile north of the northern terminus of the existing Martins Creek – Siegfried Replacement project. Based on this distance, the change in elevation, and heavy tree cover, the existing transmission line is not visually noticeable from the Appalachian Trail. Similarly, the line cannot be seen from Smith Gap Road, the nearest road crossing the Appalachian Trail, located approximately 2.5 miles northwest of the line. For these same reasons, the rebuild is also not expected to be visually noticeable from the Appalachian Trail or from Smith Gap Road.

The project area was historically dominated by farmland with scattered rural development and small villages. Moore, Allen and Lehigh Townships have experienced significant residential

growth and corresponding loss of farmland. However, the existing land use remains predominantly characterized by a mix of agricultural and rural residential areas. The central and southern portions of the project area are primarily used for agriculture or low density rural residential development. Most residential development is concentrated along major roadways. **Table 1** summarizes the general land use types and the percent of each type identified within each township along the Martins Creek – Siegfried #2 230 kV ROW. All three townships crossed by the existing line are considered to be rural townships (LVPC 2005). Scattered development is located throughout the project area, which would make rerouting the Martins Creek – Siegfried Replacement project potentially challenging. The density of residential land use in the project area further supports the decision to rebuild the Martins Creek – Siegfried Transmission Line Replacement project within the existing ROW.

TABLE 1: Percent of Existing Land Use Along ROW by Township

Municipality	Length within Each Municipality	LVPC Land Use Classification	Percent Land Use Type Along ROW
Allen Township	2.3 miles	Farmland Preservation	30%
		Natural Features	5%
		Rural	65%
Lehigh Township	0.9 mile	Farmland Preservation	1%
		Natural Features	32%
		Rural	67%
Moore Township	7.5 miles	Farmland Preservation	50%
		Natural Features	6%
		Rural	44%

Comprehensive Land Use Plans and Zoning

In addition to the LVCP, planning within the project area is guided by the *Allen Township Comprehensive Plan* (1999), the *Nazareth Area...2003 Multimunicipal Comprehensive Plan* (2006), and the *Lehigh Township Comprehensive Plan* (1999). Each of these plans strives to prepare for projected growth while protecting important natural features, farmland and rural communities. The townships through which the proposed line rebuild traverses have developed zoning districts that define allowable uses within each district. In addition, the LVCP has

developed general, countywide zoning districts that correspond to the municipal zoning designations (**Figure 3**). Both the county and municipal zoning districts reflect the historic nature of the northwestern portion of Northampton County as a rural community. **Table 2** summarizes, by township, the percent of each general zoning classification that the Martins Creek – Siegfried Transmission Line Replacement project ROW crosses over.

TABLE 2: Percent LVPC and Municipal Zoning Along ROW by Township

Municipality	LVPC Zoning	Municipal Zoning	Percent Zoning District
Allen Township	Rural	Rural	96%
	Agricultural Preservation	Agricultural	4%
Lehigh Township	Rural	Agricultural/Rural Residential	100%
Moore Township	Mixed Use	Limited Conservation	21%
	Rural	Rural	63%
	Suburban Residential	Suburban Residential/Village Center	16%

In general, zoning requirements within the townships that comprise the project area seek to preserve agricultural land and open space and concentrate growth in previously developed areas. Such preservation efforts would be negatively affected by a new transmission ROW, thus the decision to rebuild the Martins Creek – Siegfried Line Replacement project within the existing ROW is consistent with local efforts to preserve agricultural land and open space.

Population

According to the LVPC Comprehensive Plan, *The Lehigh Valley...2030*, population within the Lehigh Valley is growing modestly. No township located within the project area is expected to be among the top five growth municipalities within Northampton County. However, forecasts completed by the LVPC indicate that Moore, Allen, and Lehigh Townships are expected to experience increasing development and growth pressure through 2030. Much of this population growth will likely come from continued suburban sprawl spreading from New Jersey and to a lesser extent, the Philadelphia area. The townships and the county government are trying to plan ahead to direct new development or redevelopment required to support this population growth around existing development centers located to the west and south of the study area. **Table 3**

provides a summary of previous US Census data and population forecasts for each township within the project area (US Census 2000 and LVPC).

TABLE 3: Population Data, Estimates, and Change by Township

Municipality	2000 Census	2010 Estimate	2020 Estimate	2030 Estimate	2000-2030 Change
Allen Township	2,630	4,473	6,387	8,586	5,956
Lehigh Township	9,728	11,707	14,238	16,369	6,641
Moore Township	8,673	10,132	11,888	13,698	5,025
TOTALS	21,031	26,312	32,513	38,653	17,622

Agricultural Areas

In general, the Lehigh Valley is home to many historic agricultural areas that support eastern Pennsylvania. These agricultural areas are located throughout the project area. As evident in Table 1 and Figure 2, the majority of the project area traversed by the Martins Creek – Siegfried Replacement project, especially much of the northern portion, is designated by the LVPC as Farmland Preservation land. Two other agricultural designations are also found within the project study area – Agricultural Easements and Agricultural Security Areas. Eleven agricultural security areas, one in Allen Township and the remainder in Moore Township, are traversed by the Martins Creek – Siegfried #2 230 kV Replacement project. In addition, four of the eleven agricultural security areas (one located in Allen Township and three located in Moore Township) are also designated as agricultural easements. Numerous additional agricultural easements, security areas, and land designated as Farmland Preservation by the Lehigh Valley Planning Commission are located in the vicinity of the project area (**Figure 4**).

Use of the existing ROW will not involve construction of utility facilities in new locations, will not require significant tree clearing and will not occupy new agricultural areas. Therefore, no significant impacts on agricultural lands are expected.

D. CULTURAL RESOURCES

Historic Architectural Assessment

A desktop survey of historic architectural resources within the Martins Creek – Siegfried Project area was completed. The survey consisted of accessing the Pennsylvania Historical and Museum Commission’s (PHMC’s) Bureau for Historic Preservation (BHP) Cultural Resources Geographic Information System (CRGIS) to review available information on previously recorded historic architectural sites along and in the vicinity of the transmission line alignment.

There are National Register of Historic Places (NRHP)-listed and eligible historic architectural resources located within 1 mile of the proposed Martins Creek – Siegfried Transmission Line Replacement project (**Figure 5**). However, none of the NRHP-listed or eligible resources are found within the existing Martins Creek – Siegfried ROW. The NRHP-listed Lehigh Canal (Walnutport to Allentown Section) (key number 050956), located in multiple municipalities, and Cold Spring Bridge (key number 000125), located in Whitehall Township, are located in the vicinity of the Siegfried Substation along the Lehigh River. One NRHP-eligible resource referred to as “Water Company Dam” (key number 135639) in Whitehall Township and another eligible resource referred to as “Hokendauqua Creek Crossing” (key number 136977) in Allen Township are also located within 1 mile of the proposed transmission line route. In addition, the NRHP-eligible Appalachian Trail, which traverses several municipalities, is located less than 1 mile north of the northern terminus of the proposed transmission line route. As discussed previously, the transmission line is not expected to be visible from the Appalachian Trail.

If consultation with the PHMC indicates that a historic architectural survey is required, it will be conducted within an area of potential effects (APE) that encompasses the transmission line and surrounding area for visual effects. During such a survey, historic architectural resources that have not been previously documented at the state level are recorded. The height and design of the new transmission line towers will be used to determine the potential visual effect on these historic resources. If the transmission line results in an adverse effect on eligible or listed

resources, measures will be developed and taken to mitigate the adverse effects of transmission line construction.

Archaeological Assessment

Review of the PHMC CRGIS reveals that only two recorded archaeological sites are within 1 mile of the proposed Martins Creek – Siegfried Transmission Line Replacement project. One of these sites, 36NM0068, is located in Allen Township within the transmission corridor. The site is recorded as open prehistoric habitation. If feasible, it will be avoided when selecting tower/pole locations. The second site is also located within Allen Township approximately 0.15 mile from the ROW and recorded as open prehistoric habitation. Based on its distance from the ROW, no impact to the site is expected. The eligibility of both sites is undetermined due to insufficient data. Locations of the previously recorded archaeological sites are not mapped in this Letter of Notification in order to protect those resources.

Proximity to water has been found to be the best predictor of prehistoric archaeological site locations. Pre-nineteenth century historic sites are generally located near streams. Therefore, areas within 150 meters (500 feet) of a stream, spring, or wetland are considered to have a high probability for prehistoric sites. Historic-period maps will be consulted to identify areas of high probability for later historic archaeological sites. Locations of extant above-ground historic resources also have a high probability for historic archaeological deposits. If consultation with the PHMC indicates that a Phase I archaeological survey is required, it will be conducted within an APE encompassing all areas of anticipated ground disturbance from transmission line construction. Should potentially significant archaeological sites be identified, a Phase II survey will be conducted to determine their eligibility for the National Register. If National Register-eligible sites are present within the APE and cannot be avoided, measures will be taken to mitigate the adverse effects of transmission line construction.

The potential to impact surrounding cultural resources would be higher if a new transmission line ROW were developed, thus the decision to rebuild the Martins Creek – Siegfried Transmission Line Replacement project within the existing ROW minimizes the potential effect on these resources.

E. NATURAL FEATURES

The project area crosses one physiographic region, two geologic formations and several soil associations, streams, and wetlands as it runs from north to south. These features are described in detail within the following sections. The *Lehigh Valley, Pennsylvania Natural Areas Inventory* (Nature Conservancy 2004) further describes two areas of ecological importance – Bushkill Creek Watershed and Clearview Road Riverbank Site – as well as one important bird area located in part within the project area.

Physiographic Regions and Bedrock Geology

The project area traverses from north to south across two geologic formations, the Martinsburg Formation and the graywacke and shale of the Martinsburg Formation, which are located within the broad lowlands of the Great Valley Section of the Ridge and Valley Geologic Province. According to the Pennsylvania Department of Conservation and Natural Resources (DCNR 2010), the Great Valley Section is described as follows:

...consists of a very broad lowland that lies south of Blue Mountain in southeastern Pennsylvania. The lowland has gently undulating hills eroded into shales and siltstones on the north side of the valley and a lower elevation flatter landscape developed on limestones and dolomites on the south side. Local relief is generally less than 100 feet, particularly in the carbonate area, but may be up to 300 feet in the shale area. Elevation ranges from 140 feet to 1,100 feet. Several large streams such as the Susquehanna and Schuylkill Rivers cut across the Great Valley. However, most of the well-defined drainage originates on the slopes of Blue Mountain and flows across the shales.

Geologically, the Martinsburg Formation and the graywacke and shale of the Martinsburg Formation consist of shale as the primary rock type and the latter formation includes graywacke as a secondary rock type (DCNR 2010).

Soils

According to the Soil Survey of Northampton County (USDA 1974), the project area contains two primary soil associations:

- Berks-Weikert Association: shallower soils on rugged areas underlain by acid gray shale
- Laidig-Hazelton-Dekalb-Buchanan Association: deep, stony soils generally on uplands underlain by sandstone, siltstone or shale.

The majority of the project area consists of the Berks-Weikert Association. The Laidig-Hazelton-Dekalb-Buchanan Association comprises the approximately 1.4 miles of forested land located in the northern portion of the project area (**Figure 6**). Several other soils types are located along or in the vicinity of the line in smaller amounts, as shown in Figure 5.

Surface Water Resources

Wetland delineation activities were conducted within the Martins Creek – Siegfried ROW in April 2011. Based on review of the National Hydrology Dataset (NHD) and the results of the wetland delineation, in addition to the wetlands, the Martins Creek – Siegfried Line Replacement project intersects nineteen streams as it travels from the Siegfried Substation in the south to northern Northampton County in the north (**Figure 7**). Two of these streams (Indian Creek and Hokendauqua Creek) are named streams and the rest are unnamed tributaries of named streams. Based on review of Pennsylvania Department of Environmental Protection (PADEP) Title 25 Chapter 93 classifications, all nineteen of these streams are classified as Cold Water Fishes (CWF) (PADEP 2010a). Six of the nineteen streams are also classified as High Quality (HQ) Waters by PADEP. None of the streams are classified as Trout Stocked Fishes (TSF). **Table 4** provides a summary of all streams found within the project area and their classifications. Definitions for each of these classifications are located below the table. These stream crossings are also regulated by the U.S. Army Corps of Engineers (USACE).

TABLE 4: Surface Water Classification

STREAMS	
Name	Designated Use
Indian Creek	CWF
Hokendauqua Creek	CWF, MF
Unnamed Tributary to Indian Creek	CWF
Unnamed Tributary to Indian Creek	CWF
Unnamed Tributary to Hokendauqua Creek	CWF
Unnamed Tributary to Hokendauqua Creek	CWF
Unnamed Tributary to Hokendauqua Creek	CWF
Unnamed Tributary to Hokendauqua Creek	CWF
Unnamed Tributary to Hokendauqua Creek	CWF
Unnamed Tributary to Hokendauqua Creek	CWF
Unnamed Tributary to Hokendauqua Creek	CWF
Unnamed Tributary to Hokendauqua Creek	CWF
Unnamed Tributary to Hokendauqua Creek	CWF
Unnamed Tributary to Bushkill Creek	HQ-CWF, MF
Unnamed Tributary to Bushkill Creek	HQ-CWF, MF
Unnamed Tributary to Bushkill Creek	HQ-CWF, MF
Unnamed Tributary to Bushkill Creek	HQ-CWF, MF
Unnamed Tributary to Bushkill Creek	HQ-CWF, MF
Unnamed Tributary to Bushkill Creek	HQ-CWF, MF

- CWF - *Cold Water Fishes*—Maintenance or propagation, or both, of fish species including the family Salmonidae and additional flora and fauna which are indigenous to a cold water habitat.
- HQ - *High Quality Waters*—Designation indicates that surface waters have quality which exceeds the level necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water as determined by §93.4b(a).
- MF - *Migratory Fishes*—Passage, maintenance and propagation of anadromous and catadromous fishes and other fishes which move to or from flowing waters to complete their life cycle in other waters.

Wetlands

Based on review of the U.S. Fish and Wildlife Service’s (USFWS) National Wetland Inventory (“NWI”), the Martins Creek – Siegfried Line does not intersect any NWI wetland systems (USFWS 2010). As mentioned in the previous section, wetland delineation activities were conducted within the Martins Creek – Siegfried ROW in April 2011. Based on the wetland delineation, the Martins Creek – Siegfried Line Replacement project intersects 19 wetlands. This does not include stream crossings discussed in the previous section. The Martins Creek – Siegfried Line Replacement project traverses approximately 4.8 acres of wetlands. These wetland systems are located throughout the project area, but are more concentrated in the northern, forested portion of the route. Most of these wetlands are palustrine emergent wetland systems (PEM). Two of the wetlands are palustrine open water (POW) wetlands (i.e., ponds) and one wetland is classified as palustrine forested (PFO). **Table 5** provides a summary of the type and acreage of all wetlands found within the project area.

TABLE 5: Wetlands Crossed by the Proposed Project

WETLANDS	
Wetland Type	Acres Crossed*
PEM	4.3
POW	0.5
PFO	<0.1
Total	4.8

*Rounded to the nearest 0.1

PPL Electric will avoid placing structures in wetlands to the maximum extent practical. Where impacts cannot be avoided, PPL Electric will obtain and adhere to the terms and conditions of all required permits.

Floodplains

A review of Federal Emergency Management Agency (FEMA 2010) floodplain data for the project area indicates that the Martins Creek – Siegfried Line Replacement project intersects three 100-year floodplains (**Figure 7**). These areas are associated with the Indian Creek, Hokendauqua Creek and Bushkill Creek stream corridors discussed previously. The rebuilt line will not result in any new floodplain crossings. PPL Electric will avoid placing structures in floodplains to the extent practical.

Vegetation

Vegetation in the northernmost 2 miles of the line is dominated by forestland. Vegetation cover in the remaining portions of the project area has been more heavily influenced by agricultural and residential development. Most of the natural vegetative cover has been removed or is dominated by agricultural land or maintained lawns, with some scattered forestland. Upland forested areas are composed primarily of hardwoods that include oak, tulip poplar (*Liriodendron tulipifera*), black birch (*Betula lenta*) and red maple (*Acer rubrum*) with lesser amounts of American beech (*Fagus grandifolia*) and hickory. The forested riparian corridors in the project area include silver maple (*Acer saccharinum*), sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), black willow (*Salix nigra*), and American elm (*Ulmus americana*). Shrubs and vines common to these forests include spicebush, silky dogwood (*Cornus amomum*), Virginia creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*) (Nature Conservancy 2004). The majority of the project area consists of agricultural land/pasture or maintained lawns. The Martins Creek – Siegfried Transmission Line Reconstruction project will be rebuilt within an existing ROW that is currently maintained in accordance with PPL Electric’s Vegetation Management Plan. Therefore, the rebuild will result in little change to the existing vegetation within the ROW.

F. THREATENED AND ENDANGERED SPECIES

Natural Areas Inventory

The Nature Conservancy's Lehigh-Northampton Natural Areas Inventory (NAI) 2005 Update identified two special concern sites in the vicinity of the project area and one Pennsylvania Audubon Important Bird Area (IBA) (Nature Conservancy 2004) (**Figure 7**). The Bushkill Creek Watershed area is located approximately 280 feet north of the northern terminus of the Martins Creek – Siegfried #2 230 kV Replacement project. The site consists of gently sloping forest land and includes an "Ephemeral Fluctuating Pools Natural Community." The site includes marsh and shrub swamp, fed by ground water seepage that supports a species of concern. According to the NAI, the site is impacted by silt runoff from adjacent farm fields.

The Clearview Road Riverbank Site is located approximately 0.5 mile south of the southern terminus of the Martins Creek – Siegfried #2 230 kV Line Replacement project along the Lehigh River. The site supports a shrub and a graminoid species of concern. According to the NAI, extensive suitable habitat for both species occurs along this stretch of river.

The northernmost 0.9 mile of the line is located within a portion of the Pennsylvania Audubon designated Hawk Mountain and Kittatinny Ridge IBA No. 51. The Kittatinny Ridge is a long mountain ridge that winds 185 miles through eastern and central Pennsylvania, to the Maryland line. According to Audubon Pennsylvania, the Ridge is a fall migration flyway used annually by tens of thousands of raptors and vultures and millions of songbirds, and has been designated by Audubon Pennsylvania as the largest of the state's IBAs.

The proposed project is not expected to impact any of the identified NAI areas. The transmission line will be rebuilt in the existing ROW, which is currently maintained in accordance with PPL Electric's Vegetation Management Plan. Although Kittatinny Ridge is an important bird migration corridor, the proposed project is not expected to adversely impact migration because the project is within an existing ROW and limited tree clearing would occur. The proposed project would increase the height of the structures from 90 feet to 120 feet;

however, the location of the proposed project at lower elevations below the ridgeline would limit any potential for interference with avian flight. In addition, based on the significant elevation difference and tree cover present on Kittatinny Ridge, the Martins Creek – Siegfried Transmission Line Replacement project is generally screened from view.

Pennsylvania Natural Diversity Inventory Review

A review of the Pennsylvania Natural Diversity Inventory (PNDI) database was conducted for the project area (PNDI Number 21074). The Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Game Commission (PGC), and the Pennsylvania Department of Conservation and Natural Resources (DCNR) indicated that no impacts to fish, mammal, or plant species are anticipated. The U.S. Fish and Wildlife Service (USFWS) noted the potential presence of the federally threatened bog turtle (*Glyptemys mühlenbergii*). This species prefers to live in shallow, spring-fed bogs, swamps, marshy meadows, and pastures with soft, muddy bottoms, and slow-flowing waters. A Phase I habitat survey will be conducted to assess potential habitat and additional Phase II presence/absence surveys will be conducted if needed by a USFWS qualified bog turtle surveyor.

The proposed project is unlikely to adversely affect the bog turtle, because it is anticipated that any potential bog turtle wetlands can be spanned. In addition, because the proposed project is using an existing ROW, there would be limited, if any, tree clearing required, thereby avoiding secondary impacts to any bog turtle habitat. Overall, using the existing ROW limits the potential for impacts to rare species versus constructing a transmission line in a new ROW, because there is less tree clearing and no new wetland and stream crossings.

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