

**ATTACHMENT 4**  
**NORTHEAST-POCONO RELIABILITY PROJECT**  
**ALTERNATIVES AND SITING ANALYSIS**

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**LIST OF ACRONYMS**

Acronym	Definition
CWF	Cold Water Fishery
DEM	Digital Elevation Model
EPRI	Electric Power Research Institute
EV	Exceptional Value
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
GTC	Georgia Transmission Corporation
HQ	High Quality
I	Interstate
J	Jenkins Substation
kV	Kilovolt
MF	Migratory Fishery
MPC	Municipality Planning Codes
NAI	Natural Area Inventory
NHS	National Historic Site
NP	North Pocono Substation
NPC	North Pocono Connector
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
P	Paupack Substation
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PADEP	Pennsylvania Department of Environmental Protection
PennDOT	Pennsylvania Department of Transportation
PEM	Palustrine Emergent
PFBC	Pennsylvania Fish and Boat Commission
PFO	Palustrine Forested
PNHP	Pennsylvania Natural Heritage Program
PPL Electric	PPL Electric Utilities Corporation
PSS	Palustrine Scrub/Shrub
ROW	Right-of-Way
RTE	Rare, Threatened, and Endangered

<b>Acronym</b>	<b>Definition</b>
TNC	The Nature Conservancy
URS	URS Corporation
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WWF	Warm Water Fishery
WP	West Pocono Substation
WPC	West Pocono Connector

## 1.0 OVERVIEW OF SITING ANALYSIS

PPL Electric Utilities Corporation (PPL Electric) seeks approval from the Pennsylvania Public Utility Commission (Commission or PUC) to site and construct transmission line connections associated with two new 230-69 kV transmission substations, the West Pocono (WP) 230-69 kV Substation and North Pocono (NP) 230-69 kV Substation.<sup>1</sup> The new Substations will be connected to the existing 230 kV transmission systems by a new 58-mile 230 kV transmission line. The proposed transmission line will have three segments: (1) approximately 15 miles of the line will be constructed from the existing Jenkins 230-69 kV Substation to the new West Pocono 230-69 kV Substation; (2) approximately 21 miles of the line will be constructed from the new West Pocono 230-69 kV Substation to the new North Pocono 230-69 kV Substation; and (3) approximately 22 miles of the line will be constructed from the new North Pocono 230-69 kV Substation to the previously approved Paupack 230-69 kV Substation.<sup>2</sup>

PPL Electric also proposes to construct five new 138/69 kV transmission lines to connect the new North Pocono and West Pocono 230-69 kV Substations to the existing local 138/69 kV system. Approximately 5.3 miles of new 138/69 kV transmission lines will be constructed to connect the new North Pocono 230-69 kV Substation to the existing local 138/69 kV lines. Approximately 6.0 miles of new 138/69 kV transmission lines will be constructed to connect the new West Pocono 230-69 kV Substation to the existing 138/69 kV local lines.

Collectively, the proposed North Pocono and West Pocono 230-69 kV Substations and associated new transmission lines make up the proposed Northeast-Pocono Reliability Project. As explained in **Attachment 2**, the proposed Northeast-Pocono Reliability Project is necessary to resolve projected violations of PPL Electric’s “Reliability

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<sup>1</sup> PPL Electric will file zoning petitions for the West Pocono and North Pocono 230-69 kV Substations, seeking a finding for a finding that the buildings to shelter control equipment at each of the Substations are reasonably necessary for the convenience or welfare of the public and, therefore, exempt from any local zoning ordinance pursuant to 52 Pa. Code § 5.41 and 53 P.S. § 10619.

<sup>2</sup> The Paupack 230-69 kV Substation was approved by the Commission on September 27, 2012. *See Petition of PPL Electric Utilities Corporation for a finding that a building to shelter control equipment at the Paupack 230-69kV Substation to be constructed in Paupack Township, Wayne County, Pennsylvania is reasonably necessary for the convenience or welfare of the public*, Docket No. P-2012-2309302 (Sept. 27, 2012). Construction of the Paupack Substation is scheduled to commence as soon as practical in order to meet the required in-service date of November 2014.

Principles & Practices” (RP&P) guidelines. Further, the proposed West Pocono and North Pocono 230-69 kV Substations will provide operating flexibility and improved reliability for customers in the Northeast Pocono area.

This Attachment describes the methodology used by PPL Electric and URS Corporation (URS) to identify alternative transmission routes (Alternative Routes) and to select the proposed transmission line route (Selected Route) for this Project. The data used in this siting study fall into three broad categories: (1) built environment (land use/cultural); (2) natural environment (ecological); and (3) engineering consideration (engineering design and constructability). Data were obtained from a variety of sources including federal, state and local Geographic Information System (GIS) databases; field reconnaissance surveys; public agencies; published documents; and other publicly available sources.

The Siting Team was composed of technical experts engaged with transmission line siting, design, and construction, as well as experts in the fields of environmental assessment, permitting, and public outreach. The Siting Team undertook an extensive siting study to identify and evaluate potential alternative routes for the Northeast-Pocono Reliability Project. The detailed siting study involved several sequential steps.

The first step identified major opportunities and constraints within the region to establish a Project Study Area. This included extensive background research regarding the overall environmental setting of the Project Study Area, the results of which are described in **Attachment 3**. The second step of the process identified Alternative Corridors within the Project Study Area. The third step developed the Alternative Routes. These alternative routes provide the necessary substation connections, minimizing potential social, cultural, and natural environment impacts, while still being technically feasible to construct.

The fourth and final step involved both a quantitative and qualitative analysis to determine a Selected Route. The quantitative evaluation scored and ranked the Alternative Routes according to certain selected criteria (described in **Section 2.0**). The qualitative evaluation incorporated the professional judgment of the Siting Team to identify the Selected Route. The qualitative evaluation is an essential step in the selection process because not all criteria can be counted and scored. For example, permitting requirements will be different for alternative routes that cross Exceptional

Value (EV) streams or major highways compared to potential routes that avoid these specific features. Similarly, community concerns will vary between the different alternatives based on their proximity to residential neighborhoods, socially sensitive areas, or public open spaces. Qualitative evaluations such as these provide essential insight into the determination of the Selected Route.

The ultimate goal of the Northeast-Pocono Reliability Project siting study was to identify an overhead electric transmission line alignment that minimizes the impact to the built and natural environments to the maximum extent practicable, while still maintaining the technical and economic viability of the Project.

### 1.1 Overview of Quantitative and Qualitative Siting Methodology

The framework used for this siting study is based on the process developed by the Electric Power Research Institute (EPRI) and Georgia Transmission Corporation (GTC), which incorporates GIS technology, statistical evaluation, and professional judgment into the decision-making process. The approach formalizes many of the methods and principles used in the industry and by consultants, including URS, over the last several years. It was developed with collaboration and feedback from utility companies; federal, state and local government agencies; and other key stakeholders, such as private landowners. The process was tested and calibrated against previously approved transmission line siting projects that have been successfully completed. A review of the methodology used for this siting study is included in this section. A full discussion of the EPRI-GTC Siting Methodology can be found in the report entitled *EPRI-GTC Overhead Electric Transmission Line Siting Methodology* (EPRI-GTC 2006).

The siting methodology used for determining the Selected Route for the Northeast-Pocono Reliability Project was adapted from the EPRI-GTC protocol. The siting method consisted of four fundamental phases:

- 1) **Generate Macro Corridors:** Macro Corridors were developed to define the outer edges of the Project Study Area from within the larger regional context.
- 2) **Generate Alternative Corridors:** Alternative Corridors most suitable for transmission line development within the Project Study Area were generated from four perspectives: (i) protection of the built environment, (ii) protection of the

natural environment, (iii) engineering considerations, and (iv) a composite of these three.

- 3) **Generate Alternative Routes:** Alternative Routes most suitable for transmission line alignment were generated within the Alternative Corridors.
- 4) **Determine Selected Route:** A Selected Route was determined based on the quantitative and qualitative assessment of the Alternative Routes by the Siting Team.

The following sections provide a general discussion of these four phases.

## 1.2 Overview of Phase I – Macro Corridor Generation

Macro Corridor analysis began after the general start and end points of the new transmission line were established, i.e. the substation locations. The first step in the Macro Corridor development process included the creation of a land use/land cover GIS database to identify some of the key opportunity and constraint areas traditionally reviewed as part of a siting study. Opportunity areas include paralleling or rebuilding existing utility corridors, paralleling primary or secondary roads, or crossing open and undeveloped land.

The next step identifies Avoidance Areas, which, as a general rule, are excluded from the analysis as being viable areas to site a new transmission line. These Avoidance Areas represent features that have typically been identified as requiring maximum protection from a development perspective or represent a significant physical barrier that would be impractical to cross. Examples of these areas include: high/medium density residential areas, federal- or state-listed historic structures or districts, wildlife refuges, mines and quarries, national or state parks, church or cemetery parcels, airports, and military facilities. While it is typical to try to avoid these features, project specific circumstances may require that locations including these features be included in the analysis; for example if an existing transmission or utility corridor already crosses one of these avoidance features then it may be considered a potential option.

A GIS map of the regional area is then created using commercially available land use, land cover data and other feature data including road networks, terrain, and existing transmission line alignments. A Composite Suitability Surface Map, a map composed of these suitable land types, is then developed. The map is comprised of a grid of cells with

an assigned value indicating cell areas which are suitable for a transmission line (an opportunity) or less suitable (a constraint). In the next phases of the process, the same method is employed using a smaller cell size to increase data precision.

The quantitative analysis used a series of grid cells across the regional area. Values determined by EPRI-GTC through stakeholder input are assigned to each cell according to its primary use. A value was assigned representing, for example, an opportunity area such as open land or a constraint area such as a residential neighborhood. A “least impact” corridor was identified by the mathematical addition of the value numbers from the value assigned to each cell between the start and end points. Opportunity areas were assigned low numbers, and constraint areas were assigned a high number. Therefore, the corridor with the lowest value or “least impact” is the corridor or path with the least potentially adverse impacts.

The features of each cell (*e.g.*, commercial land use, transmission line rights-of-way (ROW), agriculture, wetlands, steep slopes) were ranked from one (1), being the most suitable for transmission line development, to nine (9), which is the least suitable. A feature was considered suitable if a transmission corridor through it is possible with minimal adverse impact. An open pasture is an example of a feature that would be considered suitable. A feature was considered less suitable if a transmission line going through it could have adverse consequences. A wetland area is an example of a feature that would be considered less suitable.

Based on the numeric values assigned to each feature, a composite suitability surface was created. This composite suitability surface was used to produce a series of potential broad corridor areas for the following three scenarios:

- Opportunities for rebuilding or paralleling existing transmission lines and other linear features.
- Opportunities to parallel existing road ROWs.
- Opportunities to cross undeveloped land.

The first two corridor scenarios represent corridor sharing opportunities, by paralleling existing linear features such as existing transmission lines, natural gas pipelines, or town and local roads. Corridor sharing is usually encouraged since it minimizes impacts by:

- Reducing the amount of new ROW required
- Concentrating linear land uses and reducing the number of new corridors
- Creating an incremental, rather than a new impact

The third scenario looks at opportunities to cross undeveloped areas. These undeveloped areas are often further away from residential and other human development areas and may include for example, forested areas or agricultural fields. Crossing these areas while implementing best practices such as careful pole placements typically allows for a reduced impact in areas where corridor sharing opportunities are absent or limited.

The Macro-Corridor process determined the corridor across the suitability surface that minimizes the sum of the values within that corridor. Corridors with the lowest sums have the highest overall suitability. Corridors with a larger suitability sum were considered less optimal.

The lowest sum areas, *i.e.*, the preferred transmission line development areas, were identified as scenario-specific Macro Corridors. After the most suitable scenario-specific Macro Corridor was identified for each of the three scenarios identified above, the three corridors were merged together into a final combined Macro Corridor area. The outer boundaries of the Macro Corridor areas defined the Project Study Area. This Project Study Area provides a refined and focused area in which to acquire more detailed data sets for analysis. The process achieves this by using a GIS based siting method to reduce the appearance of an arbitrary definition of the project boundary. This focused Project Study Area represents the most practicable area in which to site the new transmission line.

### 1.3 Overview of Phase II – Alternative Corridor Generation

In Phase II, Alternative Corridors were generated through GIS analysis from within the Project Study Area based on the following four distinct perspectives:

- 1) *Built Environment Perspective* – protecting human and cultural resource areas by reducing potential Project conflicts with existing residential neighborhoods and other community-valued features.

- 2) *Natural Environment Perspective* – protecting plants, animals, aquatic, and other natural resources by minimizing the Project impact to ecological resources and natural habitat.
- 3) *Engineering Considerations Perspective* – maximizing co-location and minimizing cost and schedule challenges for the Project by seeking the shortest path or using existing ROW, while avoiding areas that pose significant construction obstacles, such as steep slopes or those used for unique agricultural practices.
- 4) *Simple Composite Perspective* – this perspective uses the same data as the other three, but offers equal consideration and weighting to the three perspectives noted above.

An assessment based on each of these four perspectives was conducted using GIS-based data, which are collections of similar information developed for organization and analysis. Similar, but more refined data, included with the Macro Corridors were used to establish each of the perspective-specific Alternative Corridors. Higher consideration was given to data aligned within each unique perspective. For example, the built environment assessment applied a higher weight to features related to building proximity and building density, whereas the natural environment evaluation applied a higher weight to floodplain and wildlife habitat features. Similarly, the engineering considerations assessment was based on linear infrastructure and slope features. The simple composite Alternative Corridor allows for direct comparison when equal weight is applied to the three primary considerations. The use of four perspectives allowed a comparison of the social, environmental, and engineering costs and benefits of the different Alternative Corridors.

#### 1.4 Overview of Phase III – Alternative Route Generation

The next step in the process, determining the Alternative Routes within the Alternative Corridors, was accomplished by using GIS analyses to identify preferred paths or alignments within each of the Alternative Corridors. A summary of the process used to generate the Alternative Routes is presented below in **Section 2.3** of this Attachment, which provides project-specific detailed information on this process.

Generation of the Alternative Routes for the transmission line used similar data to that used in developing the Alternative Corridors; however, this effort was focused on identifying a single alignment rather than a broader corridor area. Additionally, focus is

given to potential pole placement locations that seek to minimize impacts to the surrounding environment.

### **1.5 Overview of Phase IV – Selected Route Determination**

To assess the advantages and disadvantages of the GIS-generated Alternative Routes, feature metrics -- or specific parameters measured for a particular feature (such as the number of residences within a given distance or number of stream crossings per route) -- were considered for each Alternative Route. These quantitative feature metrics were normalized, assigned relative weights, and organized within the three perspectives. The metrics were normalized to provide a means to compare the data. Using a normalized 0-100 scale allowed the different data values to be mathematically combined and compared without being distorted by differences in measurement scale. Establishing these quantitative values allowed for overall scoring of each Alternative Route. Lower scores are preferred as they indicate potentially less impact along that route. The numerical score provides an objective reference for comparing each of the Alternative Routes.

The final aspect of the evaluation process was to apply expert judgment to rank the Alternative Routes. During this process, Siting Team members qualitatively assessed the Alternative Routes. The routes were then ranked based on several important considerations, such as visual concerns, community concerns, schedule delay risk, special permit issues, and construction, maintenance, and accessibility issues. This process encouraged thorough discussion by Siting Team members as they evaluated and selected the final Selected Route in an objective, consistent and comprehensive manner.

## 2.0 ALTERNATIVE ROUTE SELECTION PROCESS AND RESULTS

The goal of this siting analysis was to determine a reasonable route for a new 230 kV transmission line to connect the existing Jenkins 230-69 kV Substation in Plains Township, Luzerne County with the Paupack 230-69 kV Substation to be constructed in Paupack Township, Wayne County. This new 230 kV transmission line will connect four 230 kV substations at strategic locations along the route: the existing Jenkins 230-69 kV Substation in Plains Township, Luzerne County; the proposed new West Pocono 230-69 kV Substation to be constructed in Buck Township, Luzerne County; the proposed new North Pocono 230-69 kV Substation to be constructed in Covington Township, Lackawanna County; and the previously-approved Paupack 230-69 kV Substation in Paupack Township, Wayne County (see **Figure 3-1**). The selection of the proposed sites for the new West Pocono and North Pocono Substations is further explained in **Section 2.1.1**. Providing 230 kV electrical services to these substations was identified as a critical step toward resolving regional reliability concerns that make this Project necessary, as described in **Attachment 2 (Necessity Statement)**. The siting analysis for this Project was divided into three segments based on the logical progress of the proposed route to connect the following:

- Jenkins Substation to West Pocono Substation,
- West Pocono Substation to North Pocono Substation, and
- North Pocono Substation to Paupack Substation.

In addition to siting the 230 kV transmission line alignments between these existing and proposed substations, this study also documents the siting process involved with determining the 138/69 kV transmission lines routes necessary to connect the new West Pocono and North Pocono Substations to the local existing 138/69 kV transmission line network. The siting analyses for these new 138/69 kV transmission lines were divided into two sections:

- West Pocono 230-69 kV Substation Connector Lines
- North Pocono 230-69 kV Substations Connector Lines

Providing connectivity between the new substations and the existing 138/69 kV electrical network also is necessary to resolve regional reliability concerns, as described in **Attachment 2 (Necessity Statement)**.

The following sections describe the methodology used to determine the Selected Route for the Northeast-Pocono Reliability Project. These sections include the methodology used to generate the Macro Corridors for each of the 230 kV Segments, which are collectively combined and used to define the Project Study Area for the entire length of the Northeast-Pocono Reliability Project (**Section 2.1**). These sections also describe the methodology used to generate Alternative Corridors for each segment (**Section 2.2**), the methodology used to generate Alternative Routes for each segment (**Section 2.3**), and a description of the Alternative Routes and Connector Line Options for each segment and their subsequent evaluation and selected route determination (**Section 2.4**). A summary of the Public Outreach activities provided after generation of the Project Study Area and development of the Alternative Routes is presented in **Section 2.1** and **Section 2.3**.

## **2.1 Generating Macro Corridors and Defining the Project Study Area**

The Project Study Area was defined using the progressive process described in **Section 1.1** of this Attachment. Project-specific avoidance areas are located on **Figure 4-1** and include the following:

- Airports – Spring Hill Airport and Pocono Mountains Municipal Airport.
- Military Facilities – Tobyhanna Army Depot.
- Mines and Quarries – examples include Laurel Run Mine, Kamanski Mine, Heberling Quarry, and Kreske Meadow Run Quarry.
- National Register of Historic Places (NRHP)–listed Historic Structures or Districts – Bear Creek Village Historic District, Stoddartsville Historic District, and the Lacawac Sanctuary.
- Non-spannable Water Bodies – examples include Bear Lake, Francis E. Walter Reservoir, Arrowhead Lake, Gouldsboro Lake, and Lake Wallenpaupack.
- Buildings – including residential subdivisions (e.g., Eagle Lake, Big Bass Lake) and village centers (e.g., Bear Creek Village, Thornhurst, Gouldsboro, Sterling)
- State Designated Wild and Scenic Rivers – Lehigh River below Francis E. Walter Dam.
- State Parks – Gouldsboro State Park, Tobyhanna State Park, Promised Land State Park, and Hickory Run State Park.

- Superfund Sites – Tobyhanna Army Depot.

Other typical avoidance area categories such as national parks, Federally-designated wildlife refuges, Federally-designated scenic rivers, and U.S. Forest Service Wilderness Areas are not present within the regional area.

The following data were used to create a composite suitability surface with each grid cell classified by its underlying land use:

- *Pennsylvania Land Use/Land Cover dataset* (PSU 2005) – This dataset identifies the land use (residential, commercial, agriculture) and land cover (forest, wetlands, and streams) based on the Anderson Land Use/Land Cover system (Anderson et al., 1976).<sup>3</sup>
- *U.S. Geological Survey (USGS) Digital Elevation Model (DEM) data* (USGS 2001) – identifies the topography in the regional area. This data was used to process and derive slope information. Slopes were classified into two types: slopes greater than or less than 30 degrees.
- *Pennsylvania Department of Transportation* (PennDOT 2011) – identifies the roadways in the regional area. This data was used to identify Interstate (I), primary, and secondary roads.
- *Existing Transmission Corridors dataset from PPL Electric Utilities* (PPL Electric) – identifies the existing transmission corridors within the regional area.
- *Gas Pipelines* (Platts POWERmap 2011) – identifies the location of existing gas pipelines.

The opportunity/constraint values assigned for the land use surface are provided in **Table 4-1**. Suitability surfaces were then developed and used to create **Macro Corridors** based on three potential scenarios:

- Rebuilding or paralleling existing transmission lines or ROWs.
- Paralleling existing transportation and other utility ROWs.
- Crossing undeveloped land.

**Figures 4-2a, 4-2b, and 4-2c** illustrate each of the three Macro Corridor areas (Existing Transmission Line Macro Corridor, Transportation and Other Utilities Macro Corridor, and Undeveloped Land Macro Corridor) generated for each segment of the Northeast-Pocono Reliability Project. The outer extents of the segment-based, individual least-impact Macro Corridors were then combined to define the outer extent of the Project

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<sup>3</sup> This data is based on aerial photographs collected between 2003 and 2007.

Study Area for the entire Project length. The resulting Project Study Area, shown in **Figure 4-3**, forms the basis for the collection and analysis of more detailed data that are used in the Alternative Corridor analysis conducted for each segment.

**TABLE 4-1: Opportunity/Constraint Values\* for Study Area Creation**

Land Cover Classification	Source	X-Country <sup>1</sup>	Roads <sup>2</sup>	Existing Transmission Lines <sup>3</sup>
Open Water	PA LULC 2005	7	7	7
Urban	PA LULC 2005	9	9	9
Open Land	PA LULC 2005	1	2	2
Surface Mining / Rock Outcrop	PA LULC 2005	9	9	9
Forest	PA LULC 2005	1	2	2
Agriculture	PA LULC 2005	1	2	2
Wetland	PA LULC 2005	9	9	9
Transmission Corridors	PPL Data 2011	5	5	1
Other Utility Corridors	Platts POWERmap 2011	5	5	5
Interstate	PennDOT 2011	9	9	9
Primary Roads	PennDOT 2011	5	1	5
Secondary Roads	PennDOT 2011	5	1	5
Slopes > 30 degrees	USGS 10-meter DEM	9	9	9
<p>*The Opportunity/Constraint Value system is based on a 1-9 scale, with a <b>rank of 1 being most desirable and a rank of 9 being least desirable.</b></p> <p style="margin-left: 40px;">1- Route scenario where corridor would cross over undeveloped land</p> <p style="margin-left: 40px;">2- Route scenario where corridor would follow existing roadways</p> <p style="margin-left: 40px;">3- Route scenario where corridor would follow existing transmission line right-of-ways</p>				

(EPRI-GTC 2006)

The process used in this study provides a quantifiable method for determining the Project Study Area. Traditional methods of defining study areas are sometimes criticized for the apparently arbitrary selection of features, such as nearby roads or rivers, to define the boundaries. The GIS siting tools used for this Project, however, work by effectively

reviewing each individual composite surface to determine the areas that can be crossed with the least impact to the identified resources.

### 2.1.1 Substation Location Determination

The locations of the new West Pocono and North Pocono 230-69 kV Substations were determined prior to the development of the Macro Corridors through a process of land use and constraint analysis. Through the electrical systems analysis that was used to define the Project need (**Attachment 2**), strategic locations were identified for the two Substations that would be central to the load they will serve and within close proximity to the existing 138/69 kV network, which will minimize the length of transmission lines needed to connect the Substations to the 138/69 kV electric grid, as well as minimize the costs and environmental impacts of the connecting the associated lines to the Substations. A functional area was established around these locations in which the existing land use and known social and environmental constraints were assessed. Key attributes of the selected substation location included accessibility from adjacent established roadways, a level topographic grade, sturdy soil conditions (no wetlands), and buffered from surrounding residential development by forest or distance to the extent practicable.

Review of the functional area for the West Pocono Substation (**Figure 4-4**) noted two additional local attributes that were part of the determination: the existence of an established gas pipeline ROW through the landscape and the existence of future-use ROW easements owned by PPL Electric that parallels the pipeline ROW. Use of these attributes was recognized early in the Project as being beneficial during the siting of the transmission line in the area because they would decrease environmental impacts (paralleling existing ROW) and Project costs (use of existing PPL Electric easements).

Evaluation of the West Pocono Substation functional area noted a predominance of environmental constraints including conserved lands, natural areas, state game lands, large wetland complexes, and the Lehigh River and associated tributary network. The functional area also includes a few residential clusters located primarily along Buck River Road. The process of determining the location of West Pocono Substation eventually narrowed the selection to the upland areas surrounding an isolated section of Buck River Road, over which the gas pipeline and future-use ROW extend. Buck River Road would

provide an appropriate roadway for the substation access. The cover or buffer provided by the surrounding forest land would satisfy the need for separation from neighboring residential development. Closer evaluation noted that the lands to the northwest of Buck River Road were too steep and contained potential wetland areas, whereas the lands to the southeast were noted to be level and devoid of potential wetlands. Based on these attributes, the property identified in **Figure 4-5** was determined to be the most practicable location of the West Pocono Substation. This property has been purchased by PPL Electric to be used as the location for the West Pocono 230-69 kV Substation.

Review of the functional area for the North Pocono Substation (**Figure 4-6**) also noted the predominance of environmental constraints including Lackawanna State Forest, natural areas, state game lands, large wetland complexes, and several stream networks. The functional area includes a few residential homes located along Freytown Road, but also includes a large concentration of residential homes located along the southwestern perimeter that are associated with the Eagle Lake and Big Bass Lake developments. Also located in this area is the Delaware, Lackawanna, & Western Railroad, which is considered an historic alignment due to its association with the Steamtown National Historic Site. Based upon these constraints, the process of determining the location of North Pocono Substation was narrowed to the forested upland areas surrounding an isolated section of Freytown Road. Freytown Road would provide an appropriate roadway for the substation access. The cover or buffer provided by the adjacent forest land would satisfy the need for separation from any existing and proposed residential development. Closer examination of the area noted that topography was favorable and that wetlands were generally not an issue. To determine the final substation location, PPL Electric coordinated discussions with the local landowners and eventually purchased the property identified in **Figure 4-7** as the location of the North Pocono 230-69 kV Substation.

### **2.1.2 Public Outreach - Project Study Area Review**

In March 2011, shortly after determining the Project Study Area, PPL Electric conducted a series of Public Open Houses at several locations within the Project Study Area to present the need for and objectives of the Northeast-Pocono Reliability Project to the

residents and local officials of the surrounding communities. Information at the meetings was presented by PPL Electric specialists in transmission line and substation design, who provided details on potential concerns with the current electrical system and described the benefits of the proposed electrical network. In addition, maps were presented that illustrated the Project Study Area and identified the proposed substation locations. Other maps were provided that showed the location of key features within the Project Study Area such as preserved lands, existing land uses, and natural resources (e.g., streams, wetlands, and natural areas). These maps were used to explain how these features affect the process of identifying possible transmission line routes that would connect the proposed substations through the surrounding landscape.

As part of the open house procedure, attendees were also provided survey forms that requested them to rank the level of avoidance they felt specific features should be provided during the route analysis. **Table 4-2** lists the ten features that were evaluated by the community members, who used a scale of 1 (highest avoidance) to 10 (least avoidance) as the basis for their ranking.

**TABLE 4-2: Results of Community Survey – Average Rank of Feature Avoidance\***

Built Environment				Natural Environment				Engineering	
Residential areas	Industrial/commercial areas and buildings	Historical places, archaeological sites	Undeveloped Areas	Wetlands, floodplains, lakes, and rivers	State forests/parks and other preserved or natural areas	Other forests and wooded areas, such as game lands	Open space and local parks	Roads, railroads, other power lines or rights-of-way	Agricultural areas or tree and fruit farming areas
<b>1.80</b>	<b>8.31</b>	<b>5.16</b>	<b>6.77</b>	<b>4.22</b>	<b>4.52</b>	<b>5.90</b>	<b>5.13</b>	<b>8.10</b>	<b>5.10</b>

\*Features were ranked by community members based on a scale of 1 (highest avoidance) to 10 (least avoidance). Average rank calculated by adding the rank value per feature and dividing by 93 (number of survey responses).

The results for built environment features, which are summarized as an average on **Table 4-2**, indicate that residential areas should be provided the highest level of avoidance (74% of surveys ranked this category as the highest avoidance feature [average rank 1.80]) and that industrial and commercial lands be provided the least level of avoidance (42% of surveys ranked this category as the lowest avoidance feature [average rank 8.31]). Based on average ranks for the natural features, the results indicate that sensitive resources such as wetlands and rivers should be provided a higher level of avoidance relative to forested areas such as state game lands. In terms of the engineering considerations, the average ranks indicate that areas with intensive agricultural activities should be provided more protection than roads, railroads, and other linear right-of-ways.

The results of this community survey were compared to the weights and ranks used in the generation of the alternative corridors (**Table 4-3**) and evaluation of alternative routes (**Table 4-6, Table 4-9, and Table 4-12**), which are based on the findings of EPRI-GTC during their survey of landowners and other stakeholders. The comparison indicates that the features identified by community members as the main avoidance areas are provided elevated levels of protection through the issuance of a higher ranks or weights during alternative corridor development and alternative route evaluation. Areas identified as lesser avoidance areas are correspondingly provided reduced levels of protection through the issuance of lower ranks and weights. This community feedback process provided confirmation and support that the ranks and weights used in the evaluation process were consistent with the siting objectives of balancing impacts to both the built and natural environments, while still siting a constructible transmission line.

## 2.2 Generating and Reviewing Alternative Corridors in the Project Study Area

**Alternative Corridors** were generated using the same GIS tools as the Macro Corridors, but relied on more detailed data from within the defined Project Study Area. Data added to the evaluation process included:

- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) wetlands are used to identify the location and type of potential wetlands (USFW).
- Federal Emergency Management Agency (FEMA) 100-year floodplain boundaries are used to define the width of floodplain areas adjacent to major streams (FEMA 2011).
- Pennsylvania Department of Environmental Protection (PADEP) Chapter 93 stream classifications are used to illustrate classification status and determine associated levels of protection (PADEP 2011).
- Tax parcel boundaries are used to define property edges to minimize bisecting a property (Carbon County Planning Commission 2010, Lackawanna County Planning Commission 2011, Luzerne County Planning Commission 2010, Monroe County Planning Commission 2010, Pike County Planning Commission 2010, and Wayne County Planning Commission 2010).
- Public land classifications (e.g., conservation easements, open space lands, agricultural easements) are used to identify the location and type of land preservation features.

Detailed data within the Project Study Area were used to generate four types of Alternative Corridors within each segment. These corridors were identified as being the

most suitable for transmission line development from three distinct perspectives and a fourth that is a composite of the other three:

- Built environment.
- Natural environment.
- Engineering considerations.
- Simple composite – a combination of three perspectives using equal weighting.

As shown in **Table 4-3**, opportunity/constraint values were assigned in the form of feature rankings (yellow cells) and data layer weights (green cells) to the different siting criteria within each perspective. Although many of the values provided for these rankings and weights are from the original EPRI-GTC methodology, some values were refined with respect to specific features and layers. Refinements to the feature ranking values, described below in **Section 2.2.1**, were made by PPL Electric and URS technical experts in environmental, engineering, and public outreach disciplines to better represent conditions within Project study area. Initial steps in this process involved the inclusion of state-specific features, such as priority natural areas and regulated stream classifications, into the appropriate data layer. Ranking values, which were based on the original EPRI-GTC values, were then assigned to these key resources to offer enhanced protection during the siting process. Weights, which are shown as percentages in **Table 4-3**, represent the associated level of influence assigned to each data layer. For example, under the natural environment perspective, the wildlife habitat data layer is given a high level of influence through the assignment of 36% weight, whereas the floodplain data layer, which is not considered as critical due to the ability to span most floodplains, was given a 6% weight. These weights are used to make sure critical features are considered in the siting process, but that those features needing higher protection are afforded it. Using the previous example – it is important to consider floodplain areas in the analysis, but reducing impact on these features is typically possible with intelligent pole placement. If a transmission line has to cross an important habitat area however, it is usually more challenging to reduce impacts. Once the ranking and weighting values were defined, the data were then used as the basis to generate the Alternative Corridors for each segment of the Northeast-Pocono Reliability Project (**Section 2.2.2**).

**TABLE 4-3: Opportunity/Constraint Values for  
Alternative Corridor Generation by Criteria Type**

Built Environment		Engineering		Natural Environment	
<b>Proximity to Buildings</b>	<b>13%*</b>	<b>Linear Infrastructure</b>	<b>70%</b>	<b>Floodplain</b>	<b>6%</b>
Background	1	Rebuild Existing Transmission Lines	1	Background	1
900-1200	2	Parallel Existing Transmission Lines	2	100-Year Floodplain	9
600-900	3	Parallel Road ROW	4	<b>Streams/Wetlands</b>	<b>21%</b>
300-600	4	Parallel Gas Pipelines	4	Background	1
0-300	9	Parallel Railway ROW	5	Streams classified as CWF/WWF/MF/TSF + 100' buffer	6
<b>Eligible NRHP Historic Structures</b>	<b>15%</b>	Background	5	PEM/PSS wetlands + 100' buffer	7
Background	1	Future PENNDOT Plans	8	HQ Streams + 150' buffer	8
900-1200	3	Parallel Interstate ROW	8	Class A and EV Streams + 150' Buffer	8
600-900	4	Road ROW	8	Forested Wetlands + 100' buffer	9
300-600	5	Scenic Highways ROW	9		
0-300	9				
<b>Building Density</b>	<b>38%</b>	<b>Slope</b>	<b>30%</b>	<b>Public Lands</b>	<b>16%</b>
0-0.25 Buildings/Acre	1	Slope 0-15%	1	Background	1
0.25-0.50 Buildings/Acre	3	Slope 15-30%	6	Conservation Lands - Open Space, Conservation Easements	5
0.50-1 Buildings/Acre	5	Slope >30%	9	State-Game Lands	5
1-4 Buildings/Acre	7			State Forest	9
4-25 Buildings/Acre	9			<b>Land Cover</b>	<b>21%</b>
<b>Spannable Lakes and Ponds</b>	<b>5%</b>			Open Land, Pastures, Scrub/Shrub	1
Background	1			Row Crops and Horticulture	2
Spannable Lakes and Ponds	9			Managed Timber Lands	2
<b>Land Divisions</b>	<b>9%</b>			Developed Land	6
Edge of Field	1			Hardwood/Natural Coniferous Forests	9
Land Lots	8			<b>Wildlife Habitat</b>	<b>36%</b>
Background	9			Background	1
<b>Land Use</b>	<b>20%</b>			Important Birding Areas	2
Undeveloped	1			Potential Bog Turtle Habitat	3
Nonresidential	2			Priority Natural Areas	9
Residential	9				
<b>Legend:</b>					
<b>Perspective Categories</b>					
<b>Layers</b>					
<b>Layer Influence Percentages</b>					
<b>Value</b>					
<b>Features</b>					
NOTE: The Opportunity/Constraint Value system is based on a 1-9 scale, with a rank of 1 being most desirable and a rank of 9 being least desirable.					

\*An explanation of the ranks and weights are provided in Section 2.2

### 2.2.1 Project Specific Data

Environmental data specific to the Project Study Area were added to the analysis. Ranking values assigned to these features were based on the original EPRI-GTC methodology but refined based on input from PPL Electric and URS technical experts. These data included stream and wetland classifications, protective buffer definitions, potential bog turtle habitat, important bird areas, and The Nature Conservancy (TNC) identified Priority Natural Areas, as described below.

#### **Streams**

All streams in the Project Study Area were classified in accordance with Pennsylvania Code Title 25, Chapter 93: *Water Quality Standards*, which is coordinated and enforced by the PADEP (PADEP 2010a). Streams with the following classifications are found in the Project Study Area:

#### Aquatic Life Designations

- *Cold Water Fishery (CWF)* – Maintenance and propagation, or both, of fish species including the family Salmonidae and additional flora and fauna that are indigenous to a cold-water habitat.
- *Migratory Fishery (MF)* – Passage, maintenance, and propagation of anadromous and catadromous fishes and other fishes that move to and from flowing waters to complete their life cycles in other waters.

#### Special Protection Designations

- *High Quality Waters (HQ)* – Surface waters having quality that exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in or on the water by satisfying 25 PA Code § 93.4b(a).
- *Exceptional Value Waters (EV)* – Surface waters having quality that exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in or on the water by satisfying 25 PA Code § 93.4b(b).

Additionally, the Pennsylvania Fish and Boat Commission (PFBC) have devised several trout water classifications designed to provide additional recognition to the ecological value of specific streams. Trout water classification types identified within the Project Study Area includes:

- *Class A Wild Trout Streams* – streams that support a population of naturally produced trout of sufficient size and abundance to support a long-term and rewarding sport fishery (PFBC 2010a).

- *Wilderness Trout Streams* – streams identified based upon the provision of a wild trout fishing experience in a remote, natural and unspoiled environment where man's disruptive activities are minimized. This option was designed to protect and promote native (brook trout) fisheries, the ecological requirements necessary for natural reproduction of trout and wilderness aesthetics. The superior quality of these watersheds is considered an important part of the overall angling experience on wilderness trout streams (PFBC 2010b).

Further, Pennsylvania Code Title 25, Chapter 102: *Erosion and Sediment Control* states:

*Riparian buffers consist of permanent vegetation that is predominantly native trees, shrubs and forbs along surface waters that is maintained in a natural state or sustainably managed to protect and enhance water quality, stabilize stream channels and banks, and separate land use activities from surface waters.*

Based on the Chapter 102 regulations, the minimum effective riparian buffer width is 100-feet from the edge of most streams (*i.e.*, those with CWF or WWF designations). A 150-foot-wide riparian buffer is recommended for special protection waters (*i.e.*, those with HQ or EV designations) (PADEP 2010b).

For this study, each of the stream classifications and associated buffer widths was assigned a specific ranking factor, with the most important waters assigned a more protective ranking value.

### **Wetlands**

Wetlands within the Project Study Area are classified based on the Cowardin system (Cowardin et al., 1979). These classifications include:

- *Palustrine Emergent (PEM)* – these wetlands are characterized by erect, rooted, herbaceous hydrophytes not including mosses and lichens. These wetlands are typically dominated by perennial plants that are present for the majority of the growing season.
- *Palustrine Forested (PFO)* – these wetlands are characterized by woody vegetation that is over 20-feet tall and normally include an overstory of trees, an understory of young trees or shrubs, and an herbaceous layer.
- *Palustrine Shrub-Scrub (PSS)* – these wetlands are generally dominated by woody vegetation under 20-feet tall. These wetlands may represent a successional stage leading to a forested wetland and include shrubs, young trees, and trees or shrubs stunted due to environmental conditions.

Similar to the protection provided to streams, riparian buffers bordering wetlands reduce the potential degradation of water quality caused by the influx of pollutants and

sedimentation. Unlike streams, wetlands are typically characterized by their physical composition (*i.e.*, such as PEM or PFO), not by their water quality.

For this study, all wetlands were assigned 100-foot buffers, the minimum effective buffer width according to the PADEP Chapter 102: Erosion and Sediment Control regulations.

Construction of transmission lines across wetlands designated as PEM or PSS is not anticipated to significantly impact them since the lines can often span these wetland types. However, development through wetlands designated as PFO would result in more impacts due to tree removal required in order to develop the ROW area. To minimize the impacts to this wetland type, a greater level of protection was provided to PFO wetlands.

### ***Potential Bog Turtle Habitat***

The bog turtle (*Clemmys muhlenbergii*) is a federally threatened species of concern that is monitored by the USFWS. Preferred habitat for these reptiles is spring-fed wetlands that are composed of soft mud and emergent hydrophytic plants, such as rushes, tussock sedge (*Carex stricta*), and jewelweed (*Impatiens capensis*). It is important for their habitat to have an open canopy, because bog turtles spend a considerable amount of time basking in the sunlight. Although the exact locations of bog turtle populations are not known, the USFWS notes that they may be present only in the Monroe County portion of the Project Study Area. Bog turtle preference for PEM wetland habitats was acknowledged, and these wetlands, specifically in Monroe County, were provided a higher protective ranking value.

### ***Important Bird Areas***

As described in **Attachment 3, Section 2.1.6.6**, the Audubon Society has identified several Important Bird Areas (IBAs) that are located within the region. Of these, only IBA #63, which incorporates several TNC-identified natural areas and State Game Land #127, is located within the Project Study Area. This ecologically sensitive area is situated along the southeastern boundary of the Project Study Area in Monroe County. IBA #63 was assigned a more protective ranking value.

### ***Priority Natural Areas***

A Natural Area Inventory (NAI) has been conducted for each of the six counties located within the Project Study Area. These reports were developed by TNC to document the location and importance of specific natural environments and the associated plants and animals that may be located at these sites. Many of these habitats are recognized by the Pennsylvania Natural Heritage Program (PNHP) as rare, and some of the plants and animals within these areas have been identified as species of special concern (rare, threatened, or endangered). Specific Priority Natural Areas within the Project Study Area are reviewed in **Attachment 3, Section 2.1.6.5**. These environmentally sensitive areas were assigned a more protective ranking value.

### **2.2.2 Review of Alternative Corridors**

The data for each of the four perspectives, including the identified weighting factors, were evaluated using GIS analysis to identify the Alternative Corridors for each segment of the Northeast-Pocono Reliability Project (**Figures 4-8a, 4-8b, and 4-8c**). These Alternative Corridors then formed the optimal areas within which to identify Alternative Route alignments for consideration for each segment.

## **2.3 Generation and Evaluation of Alternative Routes in the Project Study Area**

The third phase of the siting analysis was to generate several **Alternative Routes** for each segment within the Project Study Area (**Figures 4-9a, 4-9b, and 4-9c**). Two Alternative Routes were generated within the optimal area of the Alternative Corridors for each segment by using standard GIS analysis tools. To complete this task, more refined data were developed and existing data were supplemented to reflect a greater amount of detail. For example, to avoid routing close to residences, a 100-meter (approximately 328-foot) protective buffer was created adjacent to all residential areas. Refinements made to ensure engineering feasibility are described in **Section 2.3.2**.

### **2.3.1 Selection of Alternative Route Alignments**

Data used to develop the Alternative Routes were weighted in accordance with their importance or sensitivity, as described in **Section 2.2.1**. The Alternative Routes were

developed from individual siting models that assessed the region associated with each segment. These segments specifically focused on the following areas:

- Between the existing Jenkins Substation and the proposed West Pocono Substation.
- Between the proposed West Pocono Substation and the proposed North Pocono Substation.
- Between the proposed North Pocono Substation and the previously-approved Paupack Substation.

### **2.3.2 Engineering Adjustments to Alternative Route Alignments**

Based on field observations and assessment of aerial maps, the initial Alternative Routes were modified to reflect more practical alignments within their segment of the Project area. Changes included:

- Straightening the proposed alignments in areas where the generated alignment was irregular (*e.g.*, zigzagged through open areas).
- Setting possible pole sites to minimize potential impact to environmental and sensitive land use features. A 1,000-foot distance was typically used as the longest possible distance for a span between transmission line poles.
- Setting possible pole sites in positions to effectively span some features (roadway intersections) or to make turns that avoid other features (dense development). These modifications were primarily implemented to avoid commercial and residential structures.
- Placing proposed alignments along the edge of open fields or undeveloped lots. These modifications were implemented to decrease the potential impact to either farming activities or potential development of commercial and residential activities.

### **2.3.3 Public Outreach – Alternative Route Review**

Analysis of the three specific segments of the Northeast-Pocono Reliability Project resulted in the identification of two Alternative Routes per segment. Each of the Alternative Routes was contained within the area defined by the Alternative Corridors and provided a viable connection between the substations. In July 2011, PPL Electric coordinated a second round of Public Open Houses to present the Alternative Routes and to provide the attendees with information on how the routes were defined and the process to be followed to determine the Selected Route. Extensive feedback was solicited and

provided by landowners within the proposed alignments and from adjacent property owners. Additionally coordination with State agencies and other public interest groups, such as The Nature Conservancy, were held to review these results in more detail and make adjustments that were practicable and technically feasible. These review meetings resulted in the creation of a third alternative route for the West Pocono-North Pocono and North Pocono-Paupack Segments. These two new Alternative Routes essentially combined the best aspects of the original Alternative Routes for those segments and are illustrated on **Figures 4-10b and 4-10c**. The review meetings did not result in adjustments to the alternatives for the Jenkins to West Pocono segment.

## **2.4 Description and Evaluation of Alternative Routes per Project Segment**

Descriptions of the resulting Alternative Routes, the subsequent quantitative and qualitative evaluation, and the determination of the Selected Route for each segment are described below.

- Alternative Routes for the Jenkins-West Pocono Segment are reviewed in **Section 2.4.1** and illustrated in **Figure 4-10a**. The options for the 138/69 kV transmission lines to connect the West Pocono Substation to the existing local 138/69 kV network are reviewed in **Section 2.4.1.8** and illustrated in **Figure 4-11a**.
- Alternative Routes for the West Pocono-North Pocono Segment are reviewed in **Section 2.4.2** and illustrated in **Figure 4-10b**. The options for the 138/69 kV transmission lines to connect the North Pocono Substation to the existing local 138/69 kV network are reviewed in **Section 2.4.2.8** and illustrated in **Figure 4-11c**.
- Alternative Routes for the North Pocono-Paupack Segment are reviewed in **Section 2.4.3** and illustrated in **Figure 4-10c**.

### **2.4.1 Jenkins-West Pocono Segment (J-WP)**

Analysis of the Jenkins-West Pocono Segment resulted in two Alternative Routes, Alternative Route A and Alternative Route B.

#### **2.4.1.1 Alternative Route A**

**Alternative Route A** is 17.10 miles (90,360 feet) in length.

- Starting at the existing Jenkins Substation, located within Plains Township, Luzerne County, Alternative Route A travels southeast along the existing Susquehanna-Jenkins 230 kV ROW for 1.05 miles (5,550 feet) through predominantly commercial and industrial lands prior to crossing over State Route (SR) 315 and Interstate (I)-81.

No new ROW will be required in this section since the proposed 230 kV line will be incorporated onto the existing Susquehanna-Jenkins 230 kV transmission poles.

- After crossing I-81, Alternative Route A leaves the existing Susquehanna-Jenkins 230 kV poles and ROW and begins paralleling the existing East Mountain-Bear Creek 69 kV transmission line for the next 3.45 miles. From this point on, the proposed alternative will require new ROW. From I-81, Alternative Route A extends southeast through a forested area for 1.20 miles (6,360 feet) spanning over Mill Creek, a Cold Water Fishery (CWF) designated stream, and an active freight railroad alignment. Alternative Route A then turns south for 1.25 miles (6,600 feet) through forested areas and spans over a tributary to Laurel Run (CWF) before intersecting with and crossing the existing Susquehanna-Jenkins 230 kV transmission line ROW and into Bear Creek Township. After crossing the ROW, the proposed alternative turns southeast for 1.00 mile (5,280 feet) passing through a residential area along Pittston Boulevard, spanning over the Pennsylvania Turnpike, and climbing up toward the summit of Wyoming Mountain. Along Pittston Boulevard, the ROW of the proposed alternative will be within the curtilage of a home through which an easement would need to be negotiated with the landowner. If these negotiations are not successful then this property is considered a non-condemnable property that may impact the ability to construct the transmission line through this section. Alternative Route A enters the western half of State Game Land (SGL) #91 after crossing the Pennsylvania Turnpike.
- Near the crest of Wyoming Mountain (elevation approximately 1,900 feet above mean sea level), Alternative Route A stops paralleling the existing East Mountain-Bear Creek 69 kV ROW and turns east for 1.50 miles (7,940 feet) across a forested area within a section of PPL Electric's future-use ROW before intersecting with an existing Williams Transco natural gas pipeline ROW. The alternative route crosses from the Susquehanna River Basin onto the Delaware River Basin along this section. The alignment also leaves the western half of SGL #91 and enters onto the Bear Creek Camp Conservation Area, which is managed by the North Branch Land Trust. This area is also part of the Wyoming Mountain Barrens Natural Area. An active wind farm is located just north of the proposed route.
- Alternative Route A turns southeast and parallels the western side of the pipeline ROW for 1.20 miles (6,360 feet). This section crosses areas of the Bear Creek Camp Conservation Area, navigates along the western half of SGL #91, and spans Bear Creek, a High Quality-Cold Water Fishery (HQ-CWF) stream.
- The proposed route then turns south for 3.20 miles (16,890 feet) through forested areas until it intersects with SR 115, which is bordered by clusters of residential homes. The northern half of this section is located on lands associated with the Bear Creek Camp Conservation Area or the western half of SGL #91.
- After crossing SR 115, Alternative Route A continues south for 1.10 miles (5,800 feet) through forested areas associated with Bear Creek Preserve, which is managed by Natural Lands Trust. Bear Creek Preserve incorporates the Bear Creek Railroad Site Natural Area and the Bear Creek at Shades Creek Natural Area, which are also traversed Alternative Route B.

- At this point, Alternative Route A intersects an existing Williams Transco natural gas pipeline ROW and turns east for 1.50 miles (7,940 feet) paralleling the pipeline ROW through forested areas. Alternative Route A leaves the natural areas and spans Shades Creek (HQ-CWF) along this segment. The proposed route then intersects with another Williams Transco natural gas pipeline ROW and turns south for 1.10 miles (5,800 feet) through forested areas. These sections are entirely within the Bear Creek Preserve.
- Alternative Route A then departs the pipeline ROW and turns east for 2.50 miles (13,200 feet) where it intersects with another Williams Transco natural gas pipeline ROW. Along this section, the proposed route leaves the Bear Creek Preserve, crosses into Buck Township, and traverses along the edge of the Dry Land Hill Pools Natural Area. Prior to reaching the pipeline ROW, Alternative Route A crosses over SR 115, which is bordered by several residential homes.
- After intersecting with the pipeline ROW, Alternative Route A turns southeast for 0.50 miles (2,640 feet) and crosses over River Road before connecting with the proposed West Pocono Substation.

#### **2.4.1.2 Alternative Route B**

**Alternative Route B** is 15.00 miles (79,250 feet) in length.

- Starting at the existing Jenkins Substation, Alternative Route B travels southeast along the existing Susquehanna-Jenkins 230 kV ROW for 1.05 miles (5,550 feet) through predominantly commercial and industrial lands prior to crossing over State Route (SR) 315 and Interstate (I)-81. The proposed route then turns east for 1.30 miles (6,870 feet) traversing through forested areas, crossing the Pittston 69 kV Tap line, spanning over tributaries to Mill Creek (CWF) and a Williams' Transco natural gas line ROW, and crossing the residential lined Westminster Road prior to intersecting with the Pennsylvania Turnpike. No new ROW will be required in these sections since the proposed 230 kV line will be incorporated onto the existing Susquehanna-Jenkins 230 kV transmission poles.
- At this point, Alternative Route B departs from the existing Susquehanna-Jenkins 230 kV ROW and, from this point on, will require new ROW. The proposed route turns southeast for 1.50 miles (7,920 feet) toward Bald Mountain Road. Along this section, the proposed route crosses over the Pennsylvania Turnpike, through a forested area, and spans Mill Creek (CWF) below the Mill Creek Reservoir.
- Alternative Route B then turns south for 1.10 miles (5,810 feet), crossing into Bear Creek Township, over Bald Mountain Road, which is bordered by single-family residential homes, and then climbing up the northern slope of Wyoming Mountain.
- Prior to reaching the summit of Wyoming Mountain (elevation approximately 2,000 feet above mean sea level), Alternative Route B turns east for 0.90 miles (4,750 feet) along the northern side of the ridge, and north onto an active wind farm. The proposed route enters the Wyoming Mountain Barrens Natural Area along this section. Alternative Route B then turns south for 1.20 miles (6,360 feet) toward an

existing Williams Transco natural gas pipeline ROW. After turning south, the proposed route crosses over the wind farm access road while passing through additional areas of the Wyoming Mountain Barrens Natural Area. As Alternative Route B exits this natural area, it enters the adjacent Canada Bog Natural Area, and then follows the boundary between the Bear Creek Camp Conservation Area (North Branch Land Trust) to the west and SGL #91 to the east.

- Upon reaching the Williams Transco pipeline ROW, Alternative Route B turns southeast and parallels the ROW for 4.55 miles (24,025 feet) towards the Williams Transco natural gas compressor station. This portion of the proposed route is within PPL Electric’s future-use ROW. Along this section, which is located primarily within SGL #91, Alternative Route B spans Bear Creek (HQ-CWF), crosses Meadow Run Road, which is bordered by single-family residential homes, and then spans Little Shades Creek (HQ-CWF). After exiting SGL #91, the proposed route passes into Buck Township, crosses the access road for the Indian Lake development (Indian Lake Trail), and spans Shades Creek (HQ-CWF) before reaching the Williams Transco compressor station.
- At this point, Alternative Route B turns sharply to the east and then to the south over a 0.80 mile (4,225 feet) length as it continues to follow the future-use ROW around the compressor station. This portion of Alternative Route B passes through the Shades Glen Headwaters Natural Area. The proposed route then makes another sharp turn to the east and then to the south over a 1.00 mile (5,280 feet) length as it departs from the future-use ROW to bypass the active Stone Meadows Golf Course. Alternative Route B is located within SGL #91 through most of this section.
- After intersecting back with the pipeline ROW and the future-use ROW, Alternative Route B turns to the southeast and traverses through forested areas for 1.60 miles (8,448 feet) to the West Pocono Substation. Stony Creek (HQ-CWF) and its tributaries are spanned and River Road is crossed prior to connecting with the proposed West Pocono Substation.

#### **2.4.1.3 Evaluation of Alternative Routes – Jenkins-West Pocono Segment**

The Alternative Routes were evaluated and compared against each other to determine the **Selected Route** for this segment. Evaluation of the Alternative Routes included a combination of *quantitative analysis* based on weighted metrics, as well as a *qualitative review* by the Siting Team. This section describes the evaluation metrics, weighting procedures, and Siting Team analyses used to evaluate these two Alternative Routes and to determine the Selected Route for the Jenkins-West Pocono Segment. The quantitative analysis included using weighted metrics to assess the potential impacts in accordance with the three perspectives (built environment, natural environment, and engineering considerations). The qualitative analysis performed by the Siting Team included an assessment of visual concerns; community concerns; risk of schedule delay; special

permit requirements; and construction, maintenance, and accessibility issues specific to each Alternative Route.

### Evaluation Metrics

As described in the **Section 1.0** overview, the process for identifying the Selected Route involved quantitatively evaluating the advantages and disadvantages of the Alternative Routes per segment. Initial steps in this process required defining the metrics, or constraint data, to be used and then determining the values for each Alternative Route per segment for each metric. These data were summarized in tabular form organized by evaluation metrics for each of the Alternative Routes per segment, and by the three perspectives.

Evaluation metrics were used to factor detailed information on relative lengths, acres of easement, and Project-specific conditions into the selection process. For example, specific evaluation metrics included the number of homes within 300 feet of the route, acres of wetland crossings, and miles paralleling existing utility ROW. The metrics used for this evaluation process are shown in **Table 4-4**. The constraint data use a variety of scales/units, including acres, miles, and number of units. For instance, one Alternative Route may cross 100 linear feet of wetland, while another might cross 10 feet of wetland and be in close proximity to 100 houses.

The resulting constraint data were then normalized. Data normalization is required to allow meaningful comparison of the Alternative Routes using the quantitative values. Normalizing the data allows the underlying characteristic of the data to be compared by removing the units (miles, acres) associated with the various measurements. For each segment of the proposed Northeast-Pocono Reliability Project, data normalization was achieved by first comparing a single constraint value for a given Alternative Route within a segment against the same constraint values for the other Alternative Routes within that same segment. For example, the Alternative Routes with the lowest and highest potential wetland impacts were determined by comparing the range of wetland constraint values between the Alternative Routes. As an example, the number of wetland acres for the Jenkins-West Pocono Segment ranges from 5.71 acres for **Alternative Route A** to 11.66 acres for **Alternative Route B**.

A normalization calculation was used to assign each Alternative Route a value based on a scale of 0 – 100. The Alternative Route with no impact or the lowest potential impact was assigned a value of 0 and the Alternative Route with the highest potential impact was assigned a value of 100; other Alternative Routes were assigned a value in between 0 – 100 based on their relative potential impact when compared to the lowest and highest scoring routes. This same process was used to assign a value on the 0 – 100 scale for all the metrics evaluated. **Table 4-5** provides a tabular summary of the raw metrics and corresponding normalized values for the two Alternative Routes identified for the Jenkins-West Pocono (J-WP) Segment of the Northeast-Pocono Reliability Project siting study.

**TABLE 4-4: Metric Definitions of Quantitative Criteria**

Built Environment
<b>School, Day Care, Church, Cemetery, or Park Parcels (within 1,000 feet):</b> Identifies the number of areas where the Alternative Route would be within 1,000 feet of any of these sensitive land uses.
<b>Residences (within 300 feet):</b> Residences located in close proximity to the Alternative Route.
<b>Proposed Housing Developments (within 300 feet):</b> Areas that have physical indications of new residential development located in proximity to the Alternative Route.
<b>Commercial Buildings (within 300 feet):</b> Structures in close proximity to the Alternative Route, including retail stores, restaurants, and service garages.
<b>Industrial Buildings (within 300 feet):</b> Structures in close proximity to the Alternative Route, including steel mills, power plants, or quarries.
<b>Miles of State-Owned and Conserved Lands Crossed:</b> Identifies the length of state-owned lands (game lands, state forest) and conserved lands (private land trusts, public open space) crossed by the proposed Alternative Route.
<b>Within Homes Curtilage:</b> Identifies properties that contain residences that lie within 100-meters (328 feet) of or have their curtilage crossed by the proposed Alternative Route.
Natural Environment
<b>Natural Forests:</b> Acres of forest crossed by the proposed Alternative Route.
<b>Stream/River Crossing:</b> Number of streams that would be crossed by the proposed Alternative Route. Values based on GIS stream data. Smaller tributaries are often not identified in the GIS database, thus the actual number of crossings may be higher than indicated.
<b>NWI Wetlands:</b> Acres of potential wetlands that would be crossed by the proposed Alternative Route. USFWS NWI Wetlands were used as the basis of the analysis.
<b>Floodplain Areas:</b> Acres of floodplains that would be crossed by the proposed Alternative Route. Values based on GIS-mapped FEMA floodplains, as available in state databases.
Engineering Considerations
<b>Miles of Future-Use ROW (Inverted):</b> Miles of future-use ROW used by the proposed Alternative Route. Metric is inverted to reflect value of using these currently owned ROW areas relative to purchasing new ROW.
<b>Miles of Co-location with Existing Linear Utilities (Inverted):</b> Length of the proposed Alternative Route to be built parallel to the ROW of an existing transmission line or other linear utility (i.e., water, gas, petroleum). These areas have fewer impacts compared to developing completely new ROW, but require additional coordination and may involve more engineering analysis to ensure safe co-location with the other utility.
<b>Number of Road and Railroad Crossings:</b> Number of times the proposed Alternative Route crosses a public road or railroad alignment. These areas have engineering constraints due to height requirements.
<b>Number of Turns Greater than 60 Degrees:</b> Number of turns (angles) along the proposed Alternative Route greater than 60 degrees. Value provides insight into the engineering and cost aspect of the project because angles of this degree are complex to design and costly to build.
<b>Number of Roads within 500 feet of Transmission Center Line (Inverted):</b> Identifies the number of roads within 500 feet of the proposed Alternative Route centerline. Existing roads close to the alignment provide opportunities for easier and reduced access road development.
<b>Estimated Total Project Costs:</b> Values were estimated based on typical project-specific cost per mile and associated cost of new ROW property acquisition, if relevant. Estimates do not include licensing and permitting and other miscellaneous costs.

**TABLE 4-5: Tabular Summary of Alternative Routes (J-WP)**

Perspective	METRIC/ROUTE	ROUTE A	ROUTE B
<b>BUILT ENVIRONMENT</b>	<b>Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line</b>	1	2
	<i>Normalized</i>	0	100
	<b>Number of Residences within 300 feet of Transmission Center Line</b>	15	13
	<i>Normalized</i>	100	0
	<b>Number of Proposed Housing Developments within 300 feet of Transmission Center Line</b>	0	0
	<i>Normalized</i>		
	<b>Number of Commercial Buildings within 300 feet of Transmission Center Line</b>	2	1
	<i>Normalized</i>	100	0
	<b>Number of Industrial Buildings within 300 feet of Transmission Center Line</b>	0	0
	<i>Normalized</i>		
	<b>Miles of State-owned and Conserved Lands Crossed</b>	8.57	3.91
	<i>Normalized</i>	100	0
<b>NATURAL ENVIRONMENT</b>	<b>Acres of Natural Forests Crossed</b>	240.18	222.96
	<i>Normalized</i>	100	0
	<b>Number of Stream/River Crossings</b>	18	16
	<i>Normalized</i>	100	0
	<b>Acres of NWI Wetlands Areas Crossed</b>	5.71	11.66
	<i>Normalized</i>	0	100
<b>ENGINEERING VARIABLES</b>	<b>Miles of Future Use ROW (Inverted)</b>	3.2	7.0
	<i>Normalized</i>	100	0
	<b>Miles of Co-location with a Linear Utility (Inverted)</b>	7.68	7.96
	<i>Normalized</i>	100	0
	<b>Number of Road and Railroad Crossings</b>	15	14
	<i>Normalized</i>	100	0
	<b>Number of &gt;60 Degree Turns along Route</b>	6	4
	<i>Normalized</i>	100	0
	<b>Number of Roads within 500 feet of Transmission Center Line (Inverted)</b>	13	13
	<i>Normalized</i>		
<b>ENGINEERING VARIABLES</b>	<b>Estimated Cost to Site, Design and Construct Transmission Facilities (\$)</b>	\$36,123,200	\$30,367,200
	<i>Normalized</i>	100	0

#### 2.4.1.4 Weighting Procedures

The normalized metric values derived from **Table 4-5** were further adjusted through a weighting process shown in **Table 4-6**. **Table 4-6** shows the total of the weighted metrics within each of the three perspectives and an overall total for each Alternative Route within this segment. Each of the perspectives was assigned a weighted percentage and the results were normalized to that percentage. The rationale and process for determining the assigned percentages for each perspective are described below.

The Siting Team reviewed the weight criteria and assigned weights based on their analyses. Weights developed from the EPRI-GTC Siting Methodology were used as starting point values for the following reasons:

- The EPRI-GTC weights were developed through significant outreach and collaboration between multiple stakeholders from utilities, government agencies, and the general public.
- They use established collaborative and statistical techniques in their determination.
- They were calibrated against successfully developed transmission line routes.

The ranking, weights, and features considered for analysis were assigned by the Siting Team to address specific Pennsylvania regulations and Project-specific features. For example, items within the natural environment matrix were modified to address protective measures recommended by state regulatory agencies for maintaining the ecological value associated with streams and wetlands.

As shown in **Table 4-6**, for the first step in the weighting process, a relative weight (percentage) was assigned to each specific metric. For example, proximity to *Residences* was assigned a weight of 30.0%, while proximity to *Industrial Buildings* was assigned a weight of 1.5%. This weighting ensures that the features requiring the most protection are assigned a higher relative influence for the ranking process. Relative weights for all the metrics within each perspective category must add up to 100%. The total of the weighted metrics within each perspective are summarized and illustrated on the line entitled “Total” at the bottom of the perspective (*e.g.*, **Alternative Route A** has a total of 83.50 for the built environment perspective).

In the second weighting process shown in **Table 4-6**, each total value was then applied against the assigned weight for the perspective. These weights were set higher for the built environment (37.5%) and natural environment (37.5%) perspectives relative to the engineering considerations (25.0%) perspective based on the premise that the complex intermix of man-made and natural features would be more of a factor in siting the necessary alignment relative to the engineering concerns, i.e. the protectiveness of the built and natural environment was assigned a higher level of influence. The weighted metric total is provided on the line entitled “Weighted Total.” The Weighted Total values for the entire process are summed at the bottom of **Table 4-6** on the line entitled “Sum of Weighted Total.” The Sum of Weighted Total result effectively compares the cumulative impact of the Alternative Routes on the built and natural environment and shows which has the lowest cumulative impact while being technically feasible to construct from an engineering perspective.

**TABLE 4-6: Weighted Metrics and Totals for Alternative Routes (J-WP)**

QUANTITATIVE CRITERIA	Weights	ROUTE A	ROUTE B
<b>BUILT</b>	<b>37.5%</b>		
Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line	<b>10.0%</b>	0	100
<i>Weighted</i>		0.00	10.00
Number of Residences within 300 feet of Transmission Center Line	<b>30.0%</b>	100	0
<i>Weighted</i>		30.00	0.00
Number of Proposed Housing Developments within 300 feet of Transmission Center Line	<b>5.0%</b>	0.00	0.00
<i>Weighted</i>		0.00	0.00
Number of Commercial Buildings within 300 feet of Transmission Center Line	<b>3.5%</b>	100	0
<i>Weighted</i>		3.50	0.00
Number of Industrial Buildings within 300 feet of Transmission Center Line	<b>1.5%</b>	0.00	0.00
<i>Weighted</i>		0.00	0.00
Miles of State-owned and Conserved Lands Crossed	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0.00
Number of Homes with Transmission Line ROW in Curtilage	<b>35.0%</b>	100	0
<i>Weighted</i>		35.00	0.00
<b>TOTAL</b>	<b>100.0%</b>	<b>83.50</b>	<b>10.00</b>
<b>WEIGHTED TOTAL</b>		<b>31.31</b>	<b>3.75</b>
<b>NATURAL</b>	<b>37.5%</b>		
Acres of Natural Forests Crossed	<b>20.0%</b>	100	0
<i>Weighted</i>		20.00	0.00
Number of Stream/River Crossings	<b>30.0%</b>	100	0
<i>Weighted</i>		30.00	0.00
Acres of NWI Wetlands Areas Crossed	<b>40.0%</b>	0	100
<i>Weighted</i>		0.00	40.00
Acres of FEMA 100-year Floodplain Crossed	<b>10.0%</b>	0	100
<i>Weighted</i>		0.00	10.00
<b>TOTAL</b>	<b>100.0%</b>	<b>50.00</b>	<b>50.00</b>
<b>WEIGHTED TOTAL</b>		<b>18.75</b>	<b>18.75</b>
<b>ENGINEERING</b>	<b>25.0%</b>		
Acres of Future Use ROW (Inverted)	<b>30.0%</b>	100	0
<i>Weighted</i>		30.00	0.00
Miles of Co-location with a Linear Utility (Inverted)	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0.00
Number of Road or Railroad Crossings	<b>10.0%</b>	100	0
<i>Weighted</i>		10.00	0.00
Number of >60 Degree Turns along Route	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0.00
Number of Roads within 500 feet of Transmission Center Line (Inverted)	<b>15.0%</b>	0	0
<i>Weighted</i>		0.00	0.00
Estimated Cost to Site, Design and Construct Transmission Facilities (\$)	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0.00
<b>TOTAL</b>	<b>100.0%</b>	<b>85.00</b>	<b>0.00</b>
<b>WEIGHTED TOTAL</b>		<b>21.25</b>	<b>0.00</b>
<b>SUM OF WEIGHTED TOTAL</b>		<b>71.31</b>	<b>22.50</b>

#### 2.4.1.5 Discussion of Quantitative Results

Review of the cumulative values indicate that **Alternative Route B (22.50)** would produce significantly fewer impacts relative to **Alternative Route A (71.31)** and be less challenging to construct.

##### 2.4.1.5.1 Built Environment

Values for the built environment metrics are higher for **Alternative Route A (31.31)** relative to **Alternative Route B (3.75)**. The key factors that affected the built environment value for **Alternative Route A** is the greater number of homes (15) that would be in close proximity of the ROW and the proposed ROW would be within the curtilage (100 meters; 328 feet) of one (1) house that would require landowner negotiation to possibly acquire the necessary easement. If these negotiations are not successful then this property is considered a non-condemnable property that may impact the ability to construct the transmission line through this section. Another factor affecting **Alternative Route B** is the length of proposed alignment (8.57 miles) that would traverse state-owned and other conserved lands. Built environment values for **Alternative Route B** are affected by its proximity to a higher number (2) of sensitive receptors (cemetery/church) relative to **Alternative Route A**.

##### 2.4.1.5.2 Natural Environment

Values for the natural environment metrics are equal for **Alternative Route A (18.75)** and **Alternative Route B (18.75)**. Environmental values for **Alternative Route A** were higher than **Alternative Route B** because it will pass through more acres of forested land (240.18) and across more streams (18) than **Alternative Route B**. As noted above, forest areas bisected by **Alternative Route B** consist of more state-owned and conserved lands than **Alternative Route A**. In addition, **Alternative Route A** crosses more High Quality (HQ) streams than **Alternative Route B**. **Alternative Route B**, on the other hand, would cross more acres of NWI wetlands (11.66) and FEMA floodplains (1.78) relative to **Alternative Route A**. Many of the wetlands along this proposed route are classified as palustrine forested (PFO), which would be more heavily affected by the Project relative to palustrine scrub/shrub (PSS) or palustrine emergent (PEM) wetlands. Due to the

stream grades and slope of the landscape, FEMA floodplain areas along the route are relatively narrow and may be spanned by either proposed route.

#### **2.4.1.5.3 Engineering Considerations**

Values for engineering metrics are higher for **Alternative Route A (21.25)** relative to **Alternative Route B (0.00)**. Although both proposed alternatives use portions of PPL Electric’s existing future-use ROW, which parallels the existing Williams Transco natural gas pipeline ROW for approximately 10.5-miles through the Project area, **Alternative Route B** uses considerably more (81.81 acres), making this alignment relatively more cost-effective to develop. Both routes would have relatively similar needs for crossing major highways (I-81, Pennsylvania Turnpike), but **Alternative Route A** has more overall road crossings (15) and would be required to cross SR 115, an arterial highway through eastern Luzerne County, twice in a 5-mile span. Engineering consideration values were also higher for **Alternative Route A** because of its overall longer length and the increased number (6) of hard-angle (>60 degrees) structures required for the alignment. These items resulted in **Alternative Route A** having the highest estimated cost to construct (\$36 million).

#### **2.4.1.6 Qualitative Assessment**

The last phase in identifying the Selected Route for the Jenkins-West Pocono Segment of the Project involved the Siting Team’s qualitative assessment of the two Alternative Routes for this segment. In conjunction with the review of the quantitative results, the Siting Team assessed the following five qualitative criteria for each alternative:

- 1) Visual concerns
- 2) Community concerns
- 3) Special permit issues
- 4) Construction, maintenance, and accessibility
- 5) Schedule delay risk

Each of these qualitative criteria was assigned a weight based on its significance within the scope of the Project as illustrated on **Table 4-7**. Siting Team members then assessed each Alternative Route based on these criteria, ranking each on a 1-5 scale, with one (1)

indicating a low impact and five (5) indicating a high impact. A detailed discussion of the Siting Team considerations related to each of the five criteria is provided below.

**TABLE 4-7: Siting Team Analysis of Qualitative Concerns (J-WP)**

Qualitative Criteria	Weights	ROUTE A	ROUTE B
Visual Concerns	15%	5	2
<i>Weighted</i>		0.75	0.3
Community Concerns	15%	5	2
<i>Weighted</i>		0.75	0.3
Special Permit Issues	20%	3	3
<i>Weighted</i>		0.6	0.6
Construction, Maintenance, and Accessibility	30%	3	2
<i>Weighted</i>		0.9	0.6
Schedule Delay Risk	20%	4	2
<i>Weighted</i>		0.8	0.4
<b>TOTALS</b>	<b>100%</b>	<b>3.80</b>	<b>2.20</b>

NOTE: The qualitative criteria are ranked on a scale of 1-5, with 1 indicating a low impact and 5 a high impact

#### 2.4.1.6.1 Visual Concerns

The Siting Team noted that **Alternative Route B** would be added as a second circuit to 2.3 miles of existing Susquehanna-Jenkins 230 kV transmission poles between the existing Jenkins Substation and the Pennsylvania Turnpike, resulting in minimal visual change to the residential/industrial character of the area. **Alternative Route A** would be added as a second circuit to the existing Susquehanna-Jenkins line for 1.0-mile, and then be placed on new monopoles along a new ROW that would parallel the existing East Mountain-Bear Creek 69 kV for 2.8 miles to the Pennsylvania Turnpike, crossing over several residential-lined roads in the process. One home along this section would be within the curtilage of the proposed ROW.

Once across the Pennsylvania Turnpike, both routes traverse through lengths of isolated forest and over the heights of Wyoming Mountain, from which either route would be equally visible. **Alternative Route B** would cross Bald Mountain Road prior to cresting Wyoming Mountain. It will then parallel an existing gas pipeline ROW for approximately 8-miles through forested areas on a relatively direct path to the southeast toward the

proposed West Pocono Substation, crossing three roads along the way: residential-lined Meadow Run Road and undeveloped sections of Indian Lake Trail and River Road. **Alternative Route A** would parallel the pipeline ROW to the southeast for a shorter (1.2 miles) distance, and then circle to the south and east through several isolated forest areas and over three roads: two separate parts of the residential-lined SR 115 highway, and the undeveloped section of River Road. SR 115 is a primary arterial highway through this section of the Northeast Pocono area that receives heavy local and seasonal traffic, thus increasing the potential visibility of **Alternative Route A**.

The Siting Team concluded that both route alternatives would create unfavorable visual impacts on the landscape because they are new overhead alignments through areas without existing transmission line ROWs. The Siting Team concluded that the visual concerns generated by **Alternative Route A** as it passes near a residential home, over more residential-lined roads, and across the well-travelled SR 115 corridor, would be higher than concerns raised by the **Alternative Route B** alignment. **Alternative Route A** was, therefore, assigned a high visual concern value of 5, and **Alternative Route B** was assigned the moderately low value of 2.

#### **2.4.1.6.2 Community Concerns**

Some of the potential concerns that could be raised by the general community were proactively addressed during the initial siting process. During the quantitative analyses process (described in **Section 2.2.1**), specific avoidance areas and buffers were identified to guide the potential Alternative Routes away from high-density areas, as well as maintain required distances from residences, where practicable. The Siting Team reviewed the quantitative assessment and determined that it adequately accounted for these avoidance expectations. These alternatives cross primarily through rural or isolated areas where construction and maintenance activities would be unlikely to significantly impact the local residents.

Both routes, however, cross several roads with significant residential development along them, as reviewed above. Concerns may arise regarding the change in the local landscape, community character, and the prospect of increased roadway activity and noise during construction. The Siting Team acknowledged that the potential level of

community concerns raised for **Alternative Route A** would be elevated by the easement negotiations for the non-condemnable property on Pittston Boulevard and the double crossing of SR 115 near the communities of Bear Creek Village and Shades Glen. It was noted that sections of **Alternative Route A** would run between the Laurel Brook development and the well-inhabited Meadow Run Road prior to crossing SR 115 near Bear Creek Village, which is a retreat destination with a state-recognized historic district. Although less restricted by residential development, the second crossing of SR 115 could provide further argument for concerns raised regarding the change in local community character.

As noted, both alternatives would travel through many forested regions, most of which are protected or preserved through state-regulated programs (State Game Lands) or private land conservation groups (North Branch Land Trust, Natural Lands Trust). Many of these forested regions are also the locations of TNC-identified natural areas, which typically contain state-recognized threatened and endangered animal or plant species of concern. It is anticipated that **Alternative Route A**, which traverses through double the amount of conserved land as **Alternative Route B**, would generate negative reactions from community leaders and regional conservation groups due to the potential environmental impacts to these preserved resources. Siting Team members noted that the community concerns for **Alternative Route A** would have long-term social ramifications on the local community and recognized that acquisition of the necessary state-owned, preserved, or private properties would be strongly contested.

The Siting Team concluded that the level of community concern raised regarding the social and environmental aspects of the proposed routes would be greater for **Alternative Route A**, which was assigned a high community impact value of 5. The Siting Team also acknowledged that the relatively isolated and rural character of the road crossings proposed along **Alternative Route B** would generate comparably less community concerns, and was therefore assigned a moderately low community concern value of 2.

#### **2.4.1.6.3 Special Permit Requirements**

Various types of permits may be required for developing a new transmission alignment or even when re-building transmission lines within existing ROW. For example, in the

Commonwealth of Pennsylvania, freshwater wetlands, open waters, and floodplains are regulated by the PADEP. Impacts on these features would require environmental permits from PADEP, whether related to the complex positioning of a new structure in a large wetland or simply spanning a small tributary.

Additionally, coordination would be required with local county conservation districts, in conjunction with PADEP, to acquire erosion and sediment control permits required under the federal National Pollutant Discharge Elimination System (NPDES) permit program. The NPDES program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The extent of NPDES permitting is determined by the water quality level of the receiving streams. HQ and EV designated streams require the highest level of protection.

In addition, issuance of compulsory federal and state permits usually requires compliance with agency-mandated evaluation of potential environmental or social features. This evaluation includes conducting detailed assessments of rare, threatened, and endangered (RTE) species habitats, cumulative impact analyses, and/or studies on local cultural resources. Impacts to these features can require mitigation efforts that would need to be addressed prior to obtaining the necessary permits. Furthermore, permits may be required for social safety considerations involving route proximity to highways, airports, or railroad ROWs.

The Siting Team noted that both alternatives would cross environmentally sensitive areas located within State Game Land #091, properties preserved through conservation organizations, or private property. These sensitive areas include mature forest areas, forested wetland complexes, and several TNC-identified natural areas. Based on the quantitative assessment, development of either alternative would involve similar degrees of forest removal, HQ-designated stream crossings, wetland impacts, FEMA floodplain crossings, and potential encroachment on RTE species habitat areas. The Siting Team additionally acknowledged that the new transmission line ROW associated with either route would span several HQ-designated streams, resulting in expectations regarding erosion and sedimentation control measures required for a NPDES permit. Furthermore, the Siting Team acknowledged that each alternative would cross two major highways, I-

81 and the Pennsylvania Turnpike, and a similar number of smaller state roads, thus coordination with PennDOT for roadway occupancy permits would be nearly identical for both routes. Since these impacts and expectations are comparable, special permit requirements are anticipated to be similar for both routes. Therefore, the Siting Team assigned moderate special permit requirement values of 3 to both **Alternative Route A** and **Alternative Route B**.

#### **2.4.1.6.4 Construction, Maintenance, and Accessibility**

The Siting Team considered the variables involved in constructing transmission lines, conducting mandatory routine maintenance of the facilities, and providing appropriate access to all of the required areas. Initial phases of transmission line construction require the use of various types of heavy machinery (bulldozers, cranes, and cement mixers) that need to traverse the landscape to the proposed monopole positions. These vehicles aid in clearing the forest, leveling access roads and footer/pad areas, digging footers or creating the concrete foundations, and erecting monopole structures. Typically, wire installation is conducted by hand, with construction personnel carrying lighter leader lines between monopoles and using small power equipment to pull the line taut and haul the heavier wire into place. This process often allows the lines to be strung over wetlands or stream valleys, thereby decreasing potential impacts to protected features and avoiding areas of steep slopes. Due to the ability to bypass certain complex areas between the monopoles, the access road system does not necessarily need to extend the entire length of the proposed alignment. This decrease in access road length also facilitates the permit process as it minimizes impacts to regulated areas by reducing stream and wetland crossings. The access road system would only need to ensure access to the monopole locations for routine inspections and maintenance requirements.

The Siting Team acknowledged that construction related issues for both routes would involve the need to clear vegetation and other obstructions within the proposed new 150-foot wide ROW, develop new access roads, build new monopole foundations, erect the monopoles, and install the new 230 kV conductoring network along the alignment. Rocky terrain, steep slopes, and dense forest growth would encumber access and

development of either alternative. Once completed, however, access for routine maintenance would not be problematic for either route.

Quantitatively, both alignments parallel similar lengths of existing transmission line and pipeline ROW, which have established access road systems. Using these existing access road networks would be equally beneficial to both alternatives. The Siting Team noted, however, that **Alternative Route B** would be located on a length of future-use ROW that would be twice as long as the future-use ROW used by **Alternative Route A**, making the acquisition of property less complicated and costly for **Alternative Route B**. Furthermore, **Alternative Route B** would be approximately two miles shorter than **Alternative Route A**, thereby decreasing the construction and maintenance process for **Alternative Route B**.

The Siting Team concluded that using more future-use ROW and having a shorter overall length would result in less construction, maintenance, and access issues. Accordingly, the Siting Team assigned **Alternative Route B** a moderately low construction, maintenance, and accessibility value of 2. Due to the limited use of future-use ROW and longer length, **Alternative Route A** was assigned a moderate construction, maintenance, and accessibility value of 3.

#### **2.4.1.6.5 Risk of Schedule Delay**

Risk of schedule delay is directly related to the other qualitative criteria evaluated by the Siting Team. For example, negative community reaction, complicated ROW acquisition, required additional field studies for environmental permit clearance, and construction complexity can all result in delayed schedules. Many of the potential reasons for schedule delays along each of the Alternative Routes can be identified in advance. Some reasons for delay, however, may not be known until additional engineering studies have been completed and therefore may not be realized until later in the process.

As already noted, **Alternative Route A** would raise considerably more community concern relative to **Alternative Route B**. Schedule delays for **Alternative Route A** would be expected as a result of community opposition to the easement negotiations necessary for the non-condemnable property along Pittston Boulevard, the acquisition of new ROW adjacent to the residential clusters near Bear Creek Village, or due to the

visual concerns regarding the SR 115 route crossings. Other factors that could further delay the schedule for **Alternative Route A** include: opposition from regional environmental groups over the potential impact to existing conserved lands and their associated natural areas; the need to acquire additional easement areas due to limited use of the future-use properties, and the additional land acquisition, permitting, and construction process involved with the extra 2 miles of route length. Cumulatively, these factors could significantly delay the construction schedule of **Alternative Route A**.

**Alternative Route B** would not require the same level of community relations, property acquisition, or construction complexity. This proposed alternative would generate fewer community issues in regards to visibility and land acquisition because it is located in an isolated portion of the study area. Furthermore, utilization of the future-use ROW and an overall shorter route length would reduce the need to acquire property from private and public landholders. A shorter route length also reduces the construction complexity and degree of permit coordination required to develop the Project.

The Siting Team concluded that **Alternative Route A** would potentially encounter more schedule delays due to community opposition, property acquisition, and construction complexity. Accordingly, the Siting Team assigned **Alternative Route A** a moderately high schedule delay risk value of 4. The Siting Team concluded that the schedule delays for **Alternative Route B** would be relatively lower and assigned the route a moderately low value of 2.

#### **2.4.1.7 Determination of Selected Route – Jenkins-West Pocono Segment**

The results of the *quantitative assessment* of the Alternative Routes for this segment show **Alternative Route B** with the lowest overall weighted total value. A detailed discussion is included in **Section 2.4.1.5** and illustrated in **Table 4-6**. **Alternative Route B** had the lower weighted score for two of the three perspectives of the siting process (built environment and engineering consideration), and matched **Alternative Route A** for the third perspective (natural environment). Based on the results of the quantitative assessment, the Siting Team concluded that **Alternative Route B** would result in fewer social and physical impacts than **Alternative Route A**.

The results of the *qualitative assessment* conducted by the Siting Team of the Alternative Routes, discussed in detail in **Section 2.4.1.6** and illustrated in **Table 4-7**, show **Alternative Route B** with the lower weighted scores for visual concerns, community concerns, construction issues, and schedule delay risk. This route also scored similar to **Alternative Route A** with regards to special permit issues.

Based on the quantitative assessment of the Alternative Routes, in conjunction with a qualitative siting process, the Siting Team selected **Alternative Route B** for the Jenkins-West Pocono Segment of the Northeast-Pocono Reliability Project, as illustrated on **Figure 4-11**.

#### **2.4.1.8 Review and Determination of the West Pocono 138/69 kV Connector Lines (WPC)**

A pair of new parallel 138/69 kV transmission lines are required to connect the proposed West Pocono Substation to the nearest existing 138/69 kV transmission line alignment. The 138/69 kV transmission alignments nearest to the site proposed for the West Pocono Substation are the existing East Palmerton-Wagners #1 & #2 and Jackson-Wagners #1 & #2 139/69 kV Transmission Lines in Tobyhanna Township, Monroe County, which are located approximately three miles east of the proposed West Pocono Substation site. Construction of these new West Pocono 138/69 kV Connector lines will require clearing of a new 150 foot wide ROW between the proposed West Pocono Substation and the existing E East Palmerton-Wagners #1 & #2 and Jackson-Wagners #1 & #2 139/69 kV Transmission Lines.

Two alternatives for this new 138/69 kV alignment, Connector Line 1 and Connector Line 2, are illustrated on **Figure 4-11a** and are described as follows:

**Connector Line 1** is 2.94 miles (15,523 feet) in length.

- Starting at the proposed West Pocono Substation, Connector Line 1 extends to the southwest for 0.60 mile (3,168 feet) through a wooded lot and crosses to the south side of SR 115.
- Turning to the southeast, the route travels 1.37 miles (7,234 feet) through portions of State Game Land #091, across a tributary to the Lehigh River (EV), over Bear Creek Conservation area preserved through Wildlands Conservancy, past areas associated with the NRHP-listed Stoddartsville Historic District, through portions of the Lehigh River – Route 115 Bridge Natural Area, and across the Lehigh

River (EV) to residential lined Acahela Road just north of the Acahela Boy Scout Camp.

- Connector Line 1 then turns south and then southeast for 0.97 mile (5,121 feet) through forested land and intercepts the existing East Palmerton-Wagners #1 & #2 and Jackson-Wagners #1 & #2 139/69 kV Transmission Lines tap locations, which is situated between the Tobyhanna River and the Fawn Ridge Estates residential subdivision.

**Connector Line 2** is 3.12 miles (16,473 feet) in length.

- Starting at the proposed West Pocono Substation, Connector Line 2 extends to the northeast for 0.54 mile (2,851 feet) through forested land and sections of the Kendall Creek Natural Area, and then turns to the east for 0.55 mile (2,904 feet) crossing Kendall Creek, over a wetland area, through portions of the Lehigh River – S.R. 115 Bridge Natural Area, and across the Lehigh River (EV).
- From this point, the route travels 0.97 mile (5,121 feet) southeast over a portion of the Two Mile Swamp Preserve conserved through Natural Lands Trust, across an isolated section of Caughbaugh Road, over a tributary to the Lehigh River, and adjacent to the Pennsylvania Glacial Till L.L.C. Quarry.
- Connector Line 2 then turns to the east for 0.27 mile (1,426 feet) across forested lands and intercepts with the Arrowhead Lake 69 kV Tap. Both new lines turn to the south through forested lands associated with the Two Mile Swamp Preserve conserved through Natural Lands Trust and parallel the Arrowhead Lake 69 kV Tap for 0.79 mile (4,171 feet) to its intersection with the existing East Palmerton-Wagners #1 & #2 and Jackson-Wagners #1 & #2 139/69 kV Transmission Lines.

Similar to the prior analysis, these new Connector Line options were quantitatively compared and evaluated against each other. **Table 4-8** provides a tabular summary of the raw metrics and corresponding normalized values and **Table 4-9** shows the weighted values and overall totals for the two new Connector Lines identified for the proposed West Pocono Substation.

**TABLE 4-8: Tabular Summary of Connector Line Options (WPC)**

Perspective	METRIC/ROUTE	CONNECTOR 1	CONNECTOR 2
<b>BUILT ENVIRONMENT</b>	Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line	1	1
	<i>Normalized</i>		
	Number of Residences within 300 feet of Transmission Center Line	1	0
	<i>Normalized</i>	100	0
	Number of Proposed Housing Developments within 300 feet of Transmission Center Line	0	0
	<i>Normalized</i>		
	Number of Commercial Buildings within 300 feet of Transmission Center Line	0	0
	<i>Normalized</i>		
	Number of Industrial Buildings within 300 feet of Transmission Center Line	0	0
	<i>Normalized</i>		
	Miles of State-owned and Conserved Lands Crossed	2.44	0.99
	<i>Normalized</i>	100	0
Number of Homes with Transmission ROW in Curtilage	0	0	
<i>Normalized</i>			
<b>NATURAL ENVIRONMENT</b>	Acres of Natural Forests Crossed	51.53	46.52
	<i>Normalized</i>	100	0
	Number of Stream/River Crossings	2	4
	<i>Normalized</i>	0	100
	Acres of NWI Wetlands Areas Crossed	0.00	2.97
	<i>Normalized</i>	0	100
<b>ENGINEERING VARIABLES</b>	Miles of Future Use ROW (Inverted)	0.00	0.00
	<i>Normalized</i>		
	Miles of Co-location with a Linear Utility (Inverted)	0.00	0.80
	<i>Normalized</i>	100	0
	Number of Road and Railroad Crossings	3	1
	<i>Normalized</i>	100	0
	Number of >60 Degree Turns along Route	4	3
	<i>Normalized</i>	100	0
	Number of Roads within 500 feet of Transmission Center Line (Inverted)	5	1
	<i>Normalized</i>	0	100
Estimated Cost to Site, Design and Construct Transmission Facilities (\$)	\$5,888,000	\$5,457,000	
<i>Normalized</i>	100	0	

**TABLE 4-9: Weighted Metrics and Totals for Connector Line Options (WPC)**

QUANTITATIVE CRITERIA	Weights	CONNECTOR 1	CONNECTOR 2
<b>BUILT</b>	<b>37.5%</b>		
Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line	<b>10.0%</b>	0	0
<i>Weighted</i>		0	0
Number of Residences within 300 feet of Transmission Center Line	<b>30.0%</b>	100	0
<i>Weighted</i>		30.00	0.00
Number of Proposed Housing Developments within 300 feet of Transmission Center Line	<b>5.0%</b>	0	0
<i>Weighted</i>		0	0
Number of Commercial Buildings within 300 feet of Transmission Center Line	<b>3.5%</b>	0	0
<i>Weighted</i>		0	0
Number of Industrial Buildings within 300 feet of Transmission Center Line	<b>1.5%</b>	0	0
<i>Weighted</i>		0.00	0.00
Miles of State-owned and Conserved Lands Crossed	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0.00
Number of Homes with Transmission Line ROW in Curtilage	<b>35.0%</b>	0	0
<i>Weighted</i>		0	0
<b>TOTAL</b>	<b>100.0%</b>	<b>45.00</b>	<b>0.00</b>
<b>WEIGHTED TOTAL</b>		<b>16.88</b>	<b>0.00</b>
<b>NATURAL</b>	<b>37.5%</b>		
Acres of Natural Forests Crossed	<b>20.0%</b>	100	0
<i>Weighted</i>		20.00	0.00
Number of Stream/River Crossings	<b>30.0%</b>	0	100
<i>Weighted</i>		0.00	30.00
Acres of NWI Wetlands Areas Crossed	<b>40.0%</b>	0	100
<i>Weighted</i>		0.00	40.00
Acres of FEMA 100-year Floodplain Crossed	<b>10.0%</b>	0	100
<i>Weighted</i>		0.00	10.00
<b>TOTAL</b>	<b>100.0%</b>	<b>20.00</b>	<b>80.00</b>
<b>WEIGHTED TOTAL</b>		<b>7.50</b>	<b>30.00</b>
<b>ENGINEERING</b>	<b>25.0%</b>		
Acres of Future Use ROW (Inverted)	<b>30.0%</b>	0.00	0.00
<i>Weighted</i>		0.00	0.00
Miles of Co-location with a Linear Utility (Inverted)	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0.00
Number of Road or Railroad Crossings	<b>10.0%</b>	100	0
<i>Weighted</i>		10.00	0.00
Number of >60 Degree Turns along Route	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0.00
Number of Roads within 500 feet of Transmission Center Line (Inverted)	<b>15.0%</b>	0	100
<i>Weighted</i>		0.00	15.00
Estimated Cost to Site, Design and Construct Transmission Facilities (\$)	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0.00
<b>TOTAL</b>	<b>100.0%</b>	<b>55.00</b>	<b>15.00</b>
<b>WEIGHTED TOTAL</b>		<b>13.75</b>	<b>3.75</b>
<b>SUM OF WEIGHTED TOTAL</b>		<b>38.13</b>	<b>33.75</b>

Review of the cumulative values indicates that **Connector Line 2 (33.75)** would produce fewer impacts relative to **Connector Line 1 (38.13)**. The built environment metrics show that **Connector Line 1 (16.88)** would be within 300 feet of one home in the Stoddartsville area and cross over more state-owned and conserved lands relative to **Connector Line 2 (0.00)**. Natural environment metrics indicate that **Connector Line 2 (30.00)** would involve more stream crossings, floodplain areas, and wetlands, whereas **Connector Line 1 (7.50)** would involve more forest impacts. The engineering metrics note that **Connector Line 1 (13.75)** has a more complex design, crosses more roads, does not co-locate with any existing linear utility, and would be more costly to construct. **Connector Line 2 (3.75)** scored relatively better due to paralleling portions of the existing 69 kV transmission line, but was noted as being further away from the existing roadway network, which would make access for construction more difficult.

A qualitative assessment of the proposed West Pocono Connector Line options was also conducted that involved the same five qualitative criteria used during the analysis of the Jenkins-West Pocono Segment. **Table 4-10** provides a summary of the Siting Teams’ assessment of each connector option based on these criteria.

**TABLE 4-10: Siting Team Analysis of Qualitative Concerns (WPC)**

Qualitative Criteria	Weights	CONNECTOR 1	CONNECTOR 2
Visual Concerns	15%	4	1
<i>Weighted</i>		0.6	0.15
Community Concerns	15%	3	1
<i>Weighted</i>		0.45	0.15
Special Permit Issues	20%	2	4
<i>Weighted</i>		0.4	0.8
Construction, Maintenance, and Accessibility	30%	3	2
<i>Weighted</i>		0.9	0.6
Schedule Delay Risk	20%	4	3
<i>Weighted</i>		0.8	0.6
<b>TOTALS</b>	<b>100%</b>	<b>3.15</b>	<b>2.30</b>

Qualitative assessment of the two Connector Line options determined that **Connector Line 1** would have more visual impacts due to crossing over SR 115, a primary arterial

highway through this section of the Pocono Region, and Acahela Avenue, a main route through the village of Stoddartsville and the only access to the Acahela Boy Scout Camp. Additionally, **Connector Line 1** would pass within the boundary of the Stoddartsville Historic District, which would likely initiate the Pennsylvania Historical and Museum Commission (PHMC) to require a visual impact analyses. **Connector Line 1** would also traverse closely behind the Fawn Ridge Estates residential development and may raise some visual impact concerns from these landowners. Conversely, **Connector Line 2** would only cross one rural road, Caughbaugh Road, in an isolated area and would be far removed from the Stoddartsville Historic District and most residential development. For these reasons, **Connector Line 1** was assigned a moderately high visual impact value (4) and **Connector Line 2** was assigned a low visual impact value (1).

Related to these observations, assessment of the community concerns determined that **Connector Line 1** would generate more reaction relative to **Connector Line 2**. Community concerns for **Connector Line 1** may be raised due to the perceived impact of the alignment on the village of Stoddartsville, on the natural character of the Acahela Boy Scout Camp, and on the historic value of the Stoddartsville Historic District. Another aspect of **Connector Line 1** that may raise community concerns is the impact on conserved lands as the route would traverse through portions of State Game Lands #091 and lands conserved through The Nature Conservancy. **Connector Line 2** would produce limited community concerns as its alignment would be relatively removed from the surrounding built environment. The alignment of **Connector Line 2** would produce some impacts to lands conserved by The Nature Conservancy, but these impacts would primarily occur in an area where the new lines would parallel an existing transmission line ROW. Based on this assessment, **Connector Line 1** was assigned a moderate community concern value (3) and **Connector Line 2** was assigned a low community concern value (1).

Review of the two options in terms of special permit requirements noted that both would involve spanning the Lehigh River, which is classified by PADEP as an EV stream in this area. Due to the high water quality of the river, PADEP will require additional water quality protection measures to be incorporated into the plans for either option prior to issuing the NPDES permit. Aside from the Lehigh River, it was noted that **Connector**

**Line 2** would involve more stream, wetland, and floodplain crossings relative to **Connector Line 1**. Assessment of the local natural areas also noted that **Connector Line 2** would affect two separate natural areas, Kendall Creek Wetlands and Lehigh River-Route 115 Bridge, whereas **Connector Line 1** would only affect the latter one. Although **Connector Line 1** may require additional permits for crossing SR 115 and additional evaluations for the potential visual effect to the Stoddartsville Historic District, the overall environmental impact of **Connector Line 2** was determined to involve the most special permit requirements. For this analysis, **Connector Line 2** was assigned a moderately high permit value (4) and **Connector Line 1** was assigned a moderately low permit value (2).

Access and construction concerns reviewed for the two options focused on the availability of existing roads and the complexity of the transmission line design. **Connector Line 1** was noted to be closer to the existing road network, but would involve the more complex design in terms of number of road crossings and sharp turns. Conversely, **Connector Line 2** would be further away from existing roads, but would involve a less complex design with fewer road crossings and sharp turns. **Connector Line 2** would involve the additional advantage of having a sizable portion located along an existing transmission line ROW, which will improve access and construction in that location. Based on this assessment, **Connector Line 1** was assigned a moderately high access and construction value (4) and **Connector Line 2** was assigned a moderate access and construction value (3).

Assessment of the schedule delay risk associated with the two options is related to the concerns and requirements noted in the prior discussions. These discussions indicate that **Connector Line 1** will involve more visual concerns, more community concerns, and more access and construction issues relative to **Connector Line 2**. **Connector Line 2** however would involve more special permit requirements and some access and construction issues. Based on this summary, it was determined that **Connector Line 1** will be more prone to schedule delay issues and was assigned a moderately high schedule delay value (4), whereas **Connector Line 2** was assigned a moderate schedule delay value (3).

The results of the *quantitative assessment* of the West Pocono Connector Lines resulted in **Connector Line 2** having the lowest overall weighted total value of the metrics evaluated. The results of the *qualitative assessment* also indicate that **Connector Line 2** has the lowest overall weighted total value for the five aspects assessed. Based on the results of these assessments, it was concluded that **Connector Line 2** would result in less social and physical impacts than **Connector Line 1**. Therefore, **Connector Line 2** was selected as the West Pocono 138/69 kV Connector Line for the Northeast-Pocono Reliability Project, as illustrated on **Figure 4-11b**.

#### **2.4.2 West Pocono-North Pocono Segment (WP-NP)**

Analysis of the West Pocono-North Pocono Segment resulted in three Alternative Routes: Alternative Route C, Alternative Route D, and Alternative Route D-1. Alternative Route D-1 was established following additional public open house and agency coordination meetings, and combines significant components of Alternative Route D with specific aspects of Alternative Route C.

##### **2.4.2.1 Alternative Route C**

**Alternative Route C** is 19.10 miles (101,000 feet) in length.

- Starting at the proposed West Pocono Substation, located within Buck Township, Luzerne County, Alternative Route C travels northwest 0.60 miles (3,200 feet) back over River Road and along the proposed Jenkins-West Pocono alignment, which is paralleling the Williams Transco pipeline ROW in this area.
- Alternative Route C will then turn to the northeast and travel 4.15 miles (21,900 feet) across forested lands to Bear Lake Road. Along this section, the proposed alternative will span several tributaries (Kendall Run, Choke Creek, Butler Run, and Sand Spring Creek) to the Lehigh River, which is designated as Exceptional Value (EV) upstream of the Francis E. Walters Reservoir. Crossing over Choke Creek, Alternative Route C will enter Thornhurst Township, Lackawanna County and onto lands that are part of Lackawanna State Forest. The proposed alternative will generally parallel existing access roads through the state forest. Nine Ponds Natural Area, which is located along a tributary to Sand Spring Creek, will be bisected along this section.
- After crossing residential-lined Bear Lake Road, Alternative Route C continues northeast for 0.85 miles (4,500 feet) across forested lands to the edge of SGL #135. Pond Creek (EV) is spanned along this section.
- Alternative Route C continues in a northeasterly direction for 3.60 miles (19,000 feet) through SGL #135. The proposed alternative will span a game land access

- road and Buckley Run (EV) prior to crossing into Clifton Township approximately midway through this section. In Clifton Township, Alternative Route C will cross several more game land access roads, as well as Fenner Mill Run and Ash Creek (EV streams), prior to exiting SGL #135.
- Upon exiting SGL #135, Alternative Route C will turn to the north for 1.00 mile (5,280 feet), crossing and paralleling undeveloped portions of Ash Gap Road. Ash Creek (EV) will be spanned again along this section. At this point, the proposed alternative will turn sharply to the east for 1.75 miles (9,260 feet) through forested lands toward I-380. This section spans an undeveloped portion of Sandy Beach Road and generally borders the northern edge of a large property conserved through Pocono Heritage Land Trust. Prior to crossing I-380, Alternative Route C will enter Covington Township.
  - After spanning I-380, Alternative Route C travels northeast for 0.40 miles (2,110 feet) and then southeast for 0.55 miles (2,900 feet) over SR 435. Meadow Brook (EV) and a companion PFO wetland complex are spanned in this area. In the location where the proposed alternative will cross, SR 435 is a minor arterial highway that is bordered by a mix of commercial and residential uses.
  - Alternative Route C will then enter the Covington Industrial Park and travel to the northeast for 1.25 miles (6,600 feet) in a zigzag pattern around the edge of the industrial area. The proposed alternative will then continue across forested lands in a northeasterly direction for 1.10 miles (5,800 feet) to A.M. Hughes Boulevard, a residential-lined road that is also the primary entranceway to the Eagle Lake development.
  - After crossing A.M. Hughes Boulevard, Alternative Route C continues through forested lands to the north and east for 1.50 miles (7,920 feet) toward the Delaware, Lackawanna, & Western Railroad. Through this section, the proposed route crosses Emerson Run, Lake Run, and Roaring Brook, which are HQ-CWF designated tributaries to the Lackawanna River. Prior to crossing the railroad, Alternative Route C spans an undeveloped section of Lehigh Road and an area of Lackawanna State Forest that borders Roaring Brook. The Delaware, Lackawanna, & Western Railroad is an active freight line that also provides seasonal train excursions from the Scranton-based Steamtown National Historic Site.
  - On the east side of the rail line, Alternative Route C will turn to the southeast through forested lands for 2.35 miles (12,500 feet) toward the proposed North Pocono Substation. Most of the open forest is part of Lackawanna State Forest. A section of the Freytown Marsh Natural Area will be crossed by the proposed alignment. Alternative Route C will span a sparsely populated section of Freytown Road prior to entering the proposed North Pocono Substation.

#### **2.4.2.2 Alternative Route D**

**Alternative Route D** is 19.90 miles (105,072 feet) in length.

- Starting at the proposed West Pocono Substation, Alternative Route D travels northwest 0.45 miles (2,450 feet) back over River Road and along the proposed Jenkins-West Pocono alignment, which is paralleling the Williams Transco pipeline ROW in this area.
- Alternative Route D will then turn to the northeast and travel 4.25 miles (22,360 feet) across forested lands to Bear Lake Road. After spanning Kendall Creek (EV), the route jogs to the east, through the Choke Creek Shrub Swamp Natural Area, and then turns northeasterly again to span Choke Creek (EV) into Thornhurst Township, Lackawanna County, and onto Lackawanna State Forest lands. After a short length, Alternative Route D departs state lands and parallels a forest road along the southeastern edge of the state forest. Following the forest road, the proposed alternative turns north back into Lackawanna State Forest property and then turns northeast to span Sand Spring Creek (EV), which is located within the Sand Spring Woods Natural Area. The proposed alternative continues to the northeast, exits Lackawanna State Forest, and heads to Bear Lake Road.
- After crossing residential-lined Bear Creek Road, Alternative Route D continues northeast for 0.65 miles (3,500 feet) through open forest and across residential-lined Pine Grove Road. Along Pine Grove Road, the ROW of the proposed alternative will be within the curtilage of a home through which an easement would need to be negotiated with the landowner. If these negotiations are not successful then this property is considered a non-condemnable property that may impact the ability to construct the transmission line through this section
- Alternative Route D continues northeast for 1.95 miles (10,350 feet) through forested lands toward SGL #135. The proposed alternative spans Pond Creek and Buckley Run (EV streams) prior to entering Clifton Township, and then spans Spruce Run (EV) prior to entering SGL #135.
- Alternative Route D travels 0.95 miles (5,100 feet) northeast through SGL #135, crossing over several game land access roads and spanning Fenner Mill Run and Ash Creek (EV streams). At this point, the proposed alternative turns to the east for 0.75 miles (4,000 feet) through forested lands and crosses Sandy Beach Road. Alternative Route D then spans Silver Creek (EV) and turns south for 0.45 miles (2,450 feet) and crosses to the south side of Clifton Beach Road. Residential clusters are located along both roads.
- After crossing Clifton Beach Road, Alternative Route D turns east for 1.70 miles (9,100 feet) through forested lands toward I-380. The proposed alternative spans Rucks Run (EV) and a palustrine forested (PFO) wetland complex along this section. Alternative Route D turns north after crossing I-380 and parallels the highway for 1.40 miles (7,400 feet), crossing a palustrine shrub/scrub (PSS) wetland complex, spanning an undeveloped section of Clifton Beach Road, and entering into Covington Township.
- Turning to the east and north, Alternative Route D travels 2.25 miles (11,910 feet) across Meadow Brook (EV), commercial-lined SR 435, and through the

Covington Industrial Park. After exiting the industrial park, the proposed alternative heads north and then east through forested lands for 1.15 miles (6,100 feet) toward residential-lined A.M. Hughes Boulevard, the primary access road for the Eagle Lake development.

- After crossing A.M. Hughes Boulevard, Alternative Route D continues through forested lands in a northeastern direction for 1.45 miles (7,650 feet) toward the Delaware, Lackawanna, & Western Railroad. Through this section, the proposed route spans Emerson Run, Lake Run, and Roaring Brook (HQ-CWF streams), as well as an undeveloped section of Lehigh Road and the freight/recreational railroad. Alternative Route D also crosses a portion of Lackawanna State Forest that borders Roaring Brook.
- On the east side of the Delaware, Lackawanna, & Western Railroad, Alternative Route D turns quickly to the south and parallels the east side of the rail line through open forest for 1.90 miles (10,050 feet), at which point the route turns to the east for 0.5 mile (2,650 feet) and into the proposed North Pocono Substation. Most of the open forest along this route is part of the Lackawanna State Forest. Alternative Route D will span a sparsely populated section of Freytown Road prior to entering the proposed North Pocono Substation.

#### **2.4.2.3 Alternative Route D-1**

**Alternative Route D-1** is 20.75 miles (109,600 feet) in length and is a combination of Alternative Route D and several portions of Alternative Route C that was developed based upon additional siting review and coordination with public officials and private landowners.

- Similar to Alternative Route D, Alternative Route D-1 starts at the proposed West Pocono Substation and travels northwest 0.45 miles (2,450 feet) back over River Road and then turns northeast across forested lands to Bear Lake Road. This alternative route travels 5.10 miles (26,600 feet) across the same EV-streams and natural areas, but extends further north along state forest lands near Bear Lake Road to intercept the proposed alignment of Alternative Route C.
- Following a similar path as Alternative Route C, Alternative Route D-1 crosses Bear Lake Road and continues northeast for 0.85 miles (4,500 feet) through forested lands and over Pond Creek (EV) to the edge of SGL #135. This alternative route mirrors Alternative Route C across western portions of SGL #135, but turns eastward and exits SGL #135 prior to crossing into Clifton Township. Traveling through private forested lands, Alternative Route D-1 spans Buckley Run and Spruce Run (EV streams) before reentering SGL #135 and intercepting the proposed alignment of Alternative Route D. From this point, Alternative Route D-1 copies Alternative Route D through SGL #135, over Fenner Mill Run and Ash Creek (EV streams), Sandy Beach Road, Silver Creek (EV), and Clifton Beach Road. Alternative Route D-1 travels 4.05 miles (21,400 feet) across this section.

- Similar to Alternative Route D, Alternative Route D-1 turns east after crossing Clifton Beach Road for 1.70 miles (9,100 feet), spanning Rucks Run (EV), crossing I-380, paralleling the highway north for 1.40 miles (7,400 feet), and crossing Clifton Beach Road again. This alternative route then turns to the northeast and travels 2.25 miles (11,900 feet) across Meadow Brook (EV), commercial-lined SR 435, and through the Covington Industrial Park. After exiting the industrial park, Alternative Route D-1 continues to the northeast through forested lands for 1.15 miles (6,100 feet) and crosses A.M. Hughes Boulevard.
- After crossing A.M. Hughes Boulevard, Alternative Route D-1 continues through forested lands in a northeastern direction for 1.45 miles (7,650 feet) toward the Delaware, Lackawanna, & Western Railroad, spanning Emerson Run, Lake Run, and Roaring Brook (HQ-CWF streams), Lehigh Road, a portion of Lackawanna State Forest, and the Delaware, Lackawanna, & Western Railroad. On the east side of the Delaware, Lackawanna, & Western Railroad, Alternative Route D-1 intercepts the proposed alignment of Alternative Route C and turns to the southeast through forested lands for 2.35 miles (12,500 feet), passing through Lackawanna State Forest property, a section of the Freytown Marsh Natural Area, and over Freytown Road prior to entering the proposed North Pocono Substation.

#### 2.4.2.4 Evaluation of Alternative Routes – West Pocono-North Pocono Segment

Similar to the prior segment, the Alternative Routes were compared and evaluated against each other to determine the Selected Route for this segment. Evaluation of the Alternative Routes included a combination of *quantitative analysis* based on weighted metrics, as well as a *qualitative review* by the Siting Team. Evaluation metrics, weighting procedures, and Siting Team analyses used to evaluate these three Alternative Routes and to determine the Selected Route for this segment were the same as reviewed in **Section 2.4.1.3**, **Section 2.4.1.4**, and **Table 4-4**.

**Table 4-11** provides a tabular summary of the raw metrics and corresponding normalized values for the three Alternative Routes identified for the West Pocono-North Pocono (WP-NP) Segment of the Northeast-Pocono Reliability Project siting study. The normalized metric values derived from **Table 4-11** were further adjusted through a weighting process shown in **Table 4-12**. **Table 4-12** shows the total of the weighted metrics within each of the three perspectives and an overall total for each Alternative Route within this segment.

**TABLE 4-11: Tabular Summary of Alternative Routes (WP-NP)**

Perspective	METRIC/ROUTE	ROUTE C	ROUTE D	ROUTE D-1
<b>BUILT ENVIRONMENT</b>	<b>Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line</b>	1	2	2
	<i>Normalized</i>	0	100	100
	<b>Number of Residences within 300 feet of Transmission Center Line</b>	8	8	6
	<i>Normalized</i>	100	100	0
	<b>Number of Proposed Housing Developments within 300 feet of Transmission Center Line</b>	1	0	0
	<i>Normalized</i>	100	0	0
	<b>Number of Commercial Buildings within 300 feet of Transmission Center Line</b>	1	0	0
	<i>Normalized</i>	100	0	0
	<b>Number of Industrial Buildings within 300 feet of Transmission Center Line</b>	0	0	0
	<i>Normalized</i>			
	<b>Miles of State-owned and Conserved Lands Crossed</b>	7.10	2.93	4.76
	<i>Normalized</i>	100	0	44
<b>Number of Homes with Transmission ROW in Curtilage</b>	0	1	0	
<i>Normalized</i>	0	100	0	
<b>NATURAL ENVIRONMENT</b>	<b>Acres of Natural Forests Crossed</b>	326.85	336.90	354.71
	<i>Normalized</i>	0	36	100
	<b>Number of Stream/River Crossings</b>	24	25	25
	<i>Normalized</i>	0	100	100
	<b>Acres of NWI Wetlands Areas Crossed</b>	9.71	6.71	5.69
	<i>Normalized</i>	100	25	0
<b>ENGINEERING VARIABLES</b>	<b>Miles of Future Use ROW (Inverted)</b>	0.00	0.00	0.00
	<i>Normalized</i>			
	<b>Miles of Co-location with a Linear Utility (Inverted)</b>	0.57	0.43	0.43
	<i>Normalized</i>	0	99	100
	<b>Number of Road and Railroad Crossings</b>	18	20	18
	<i>Normalized</i>	0	100	0
	<b>Number of &gt;60 Degree Turns along Route</b>	11	14	18
	<i>Normalized</i>	0	43	100
	<b>Number of Roads within 500 feet of Transmission Center Line (Inverted)</b>	21	20	21
	<i>Normalized</i>	0	100	0
<b>Estimated Cost to Site, Design and Construct Transmission Facilities (\$)</b>	\$43,885,500	\$43,822,800	\$45,499,200	
<i>Normalized</i>	4	0	100	

**TABLE 4-12: Weighted Metrics and Totals for Alternative Routes (WP-NP)**

QUANTITATIVE CRITERIA	Weights	ROUTE C	ROUTE D	ROUTE D-1
<b>BUILT</b>	<b>37.5%</b>			
Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line	<b>10.0%</b>	0	100	100
<i>Weighted</i>		0.00	10.00	10.00
Number of Residences within 300 feet of Transmission Center Line	<b>30.0%</b>	100	100	0
<i>Weighted</i>		30.00	30.00	0.00
Number of Proposed Housing Developments within 300 feet of Transmission Center Line	<b>5.0%</b>	100	0	0
<i>Weighted</i>		5.00	0.00	0.00
Number of Commercial Buildings within 300 feet of Transmission Center Line	<b>3.5%</b>	100	0	0
<i>Weighted</i>		3.50	0.00	0.00
Number of Industrial Buildings within 300 feet of Transmission Center Line	<b>1.5%</b>	0	0	0
<i>Weighted</i>		0.00	0.00	0.00
Miles of State-owned and Conserved Lands Crossed	<b>15.0%</b>	100	0	44
<i>Weighted</i>		15.00	0.00	6.60
Number of Homes with Transmission Line ROW in Curtilage	<b>35.0%</b>	0	100	0
<i>Weighted</i>		0.00	35.00	0.00
<b>TOTAL</b>	<b>100.0%</b>	<b>53.50</b>	<b>75.00</b>	<b>16.60</b>
<b>WEIGHTED TOTAL</b>		<b>20.06</b>	<b>28.13</b>	<b>6.23</b>
<b>NATURAL</b>	<b>37.5%</b>			
Acres of Natural Forests Crossed	<b>20.0%</b>	0	36	100
<i>Weighted</i>		0.00	7.20	20.00
Number of Stream/River Crossings	<b>30.0%</b>	0	100	100
<i>Weighted</i>		0.00	30.00	30.00
Acres of NWI Wetlands Areas Crossed	<b>40.0%</b>	100	25	0
<i>Weighted</i>		40.00	10.00	0.00
Acres of FEMA 100-year Floodplain Crossed	<b>10.0%</b>	100	0	42
<i>Weighted</i>		10.00	0.00	4.20
<b>TOTAL</b>	<b>100.0%</b>	<b>50.00</b>	<b>47.20</b>	<b>54.20</b>
<b>WEIGHTED TOTAL</b>		<b>18.75</b>	<b>17.70</b>	<b>20.33</b>
<b>ENGINEERING</b>	<b>25.0%</b>			
Miles of Future Use ROW (Inverted)	<b>30.0%</b>	0.00	0.00	0.00
<i>Weighted</i>		0.00	0.00	0.00
Miles of Co-location with a Linear Utility (Inverted)	<b>15.0%</b>	0	99	100
<i>Weighted</i>		0.00	14.85	15.00
Number of Road or Railroad Crossings	<b>10.0%</b>	0	100	0
<i>Weighted</i>		0.00	10.00	0.00
Number of >60 Degree Turns along Route	<b>15.0%</b>	0	43	100
<i>Weighted</i>		0.00	6.45	15.00
Number of Roads within 500 feet of Transmission Center Line (Inverted)	<b>15.0%</b>	0	100	0
<i>Weighted</i>		0.00	15.00	0.00
Estimated Cost to Site, Design and Construct Transmission Facilities (\$)	<b>15.0%</b>	4	0	100
<i>Weighted</i>		0.60	0.00	15.00
<b>TOTAL</b>	<b>100.0%</b>	<b>0.60</b>	<b>46.30</b>	<b>45.00</b>
<b>WEIGHTED TOTAL</b>		<b>0.15</b>	<b>11.58</b>	<b>11.25</b>
<b>SUM OF WEIGHTED TOTAL</b>		<b>38.96</b>	<b>57.40</b>	<b>37.80</b>

#### 2.4.2.5 Discussion of Quantitative Results

Review of the cumulative values indicates that **Alternative Route D-1 (37.80)** would produce slightly fewer impacts relative to **Alternative Route C (38.96)**, and significantly less impacts than **Alternative Route D (57.40)**.

##### 2.4.2.5.1 Built Environment

Values for the built environment metrics are highest for **Alternative Route D (28.13)** and **Alternative Route C (20.06)** and lowest for **Alternative Route D-1 (6.23)**. The key factors that affected the built environment value for **Alternative Route D** was the greater number of homes (8) within close proximity to the ROW and the proposed ROW would be within the curtilage (100 meters; 328 feet) of one (1) house that would require landowner negotiation to possibly acquire the necessary easement. . If these negotiations are not successful then this property is considered a non-condemnable property that may impact the ability to construct the transmission line through this section. The value for **Alternative Route C** was primarily affected by the longer length (7.10 miles) of alignment proposed within state-owned and conserved lands. Built environment values for both **Alternative Route C** and **Alternative Route D** were affected by having the most houses (8) located within 300 feet of the proposed alignments. The **Alternative Route D-1** value was influenced by the presence of two (2) sensitive receptors (cemetery/church) and the moderate length (4.76 miles) of proposed alignment through state-owned and conserved lands.

##### 2.4.2.5.2 Natural Environment

Values for the natural environment metrics are relatively equal for each alternative, with **Alternative Route D-1 (20.33)** and **Alternative Route C (18.75)** being slightly higher than **Alternative Route D (17.70)**. The environmental value for **Alternative Route D-1** is the highest due to the proposed alignment passing through more acres of forested land (354.71), spanning the most streams (25), and crossing a moderately high area of FEMA floodplains. Forest impacts associated with **Alternative Route D-1** are related to its longer length relative to the other alternatives. Although **Alternative Route C** has the fewest acres of forest impact and stream crossings, the proposed alignment does intercept the most acres of wetlands (9.71) and FEMA floodplains (25.05). The value assigned to

**Alternative Route D** was influenced by the combination of having the greatest number of stream crossings and a moderate number of forests, wetlands and FEMA floodplain crossings. Of note, all three alternatives cross a similar number of EV streams and PFO/PSS wetland areas, and the FEMA floodplain areas along the route are relatively narrow and may be spanned by any proposed route.

#### 2.4.2.5.3 Engineering Considerations

Values for engineering metrics are higher for **Alternative Route D (11.58)** and **Alternative Route D-1 (11.25)** relative to the value for **Alternative Route C (0.15)**. The engineering values for **Alternative Route D** were influenced by the higher number of road crossings (20) and fewer roads within 500 feet along the route; consequently decreasing route accessibility. Of note, all three alignments would be required to span I-380 in generally the same location. The value for **Alternative Route D-1** was affected by having the longest length and higher number of complex turns (18), which result in the highest cost to complete (\$45.5 million). **Alternative Route D** and **Alternative Route D-1** are equally affected by the limited distance of co-location with existing linear utilities. **Alternative Route C** has the longest co-location length of 0.57 miles. Other factors influencing the lower value for **Alternative Route C** include the fewest number of complex turns, fewest road crossings, and a relatively low cost to complete. Future-use ROW is not located within this segment of the Project area.

#### 2.4.2.6 Qualitative Assessment

The qualitative assessment for the West Pocono-North Pocono Segment of the Project involved the same five qualitative criteria used during the analysis of the Jenkins-West Pocono Segment. **Table 4-13** provides a summary of the Siting Teams' assessment of each Alternative Route based on these criteria. A detailed discussion of the considerations related to each of these criteria is provided below.

**TABLE 4-13: Siting Team Analysis of Qualitative Concerns (WP-NP)**

Qualitative Criteria	Weights	ROUTE C	ROUTE D	ROUTE D-1
Visual Concerns	15%	4	4	3
<i>Weighted</i>		0.6	0.6	0.45
Community Concerns	15%	4	5	3
<i>Weighted</i>		0.6	0.75	0.45
Special Permit Issues	20%	5	3	4
<i>Weighted</i>		1	0.6	0.8
Construction, Maintenance, and Accessibility	30%	4	4	3
<i>Weighted</i>		1.2	1.2	0.9
Schedule Delay Risk	20%	4	4	3
<i>Weighted</i>		0.8	0.8	0.6
<b>TOTALS</b>	<b>100%</b>	<b>4.20</b>	<b>3.95</b>	<b>3.20</b>

**2.4.2.6.1 Visual Concerns**

The Siting Team noted that each of the proposed alignments would be a new transmission line route through the surrounding landscape. These routes would primarily be located within large areas of forest and generally not visible to the local population. Each alternative, however, would be required to span similar residential-lined roadways, including Bear Lake Road and A.M. Hughes Boulevard, and larger highway routes, such as SR 435 and I-380. All of the alternatives would navigate in close proximity to specific communities, such as Thornhurst, Clifton, and Gouldsboro. At these locations, each of the proposed alignments would generate similar levels of visual concerns.

**Alternative Route C** would travel along the Delaware, Lackawanna, & Western Railroad corridor in Covington Township, which would increase the visibility of the route to residents along Lehigh Road and the adjacent Eagle Lake community, as well as to seasonal travelers on the scenic railroad excursions from Steamtown NHS. Visual concerns for **Alternative Route D** would center on the section crossing the residential-lined Pine Grove Road in Thornhurst Township, where one (1) home along this section would be in close proximity to the proposed ROW.

The Siting Team concluded that as new overhead alignments through areas without existing transmission line ROW, each alternative would produce an unfavorable visual impact on the landscape. Based on the specific items noted above, the Siting Team concluded that the visual concerns generated by **Alternative Route C** and **Alternative Route D** would be relatively higher than concerns raised by the **Alternative Route D-1** alignment. **Alternative Route C** and **Alternative Route D** were, therefore, assigned a moderately high visual concern value of 4, and **Alternative Route D-1** was assigned the moderate value of 3.

#### **2.4.2.6.2 Community Concerns**

The Siting Team acknowledged that community concerns regarding the change in the local landscape, community character, and the prospect of increased highway activity and noise during construction may be encountered along each of the proposed alignments. The Siting Team noted that the potential level of concerns raised for **Alternative Route D** would be elevated by the easement negotiations for the non-condemnable property on Pine Grove Road and the general impact the route would have on the Thornhurst area. Although **Alternative Route C** and **Alternative Route D-1** would also travel through the Thornhurst area, the alignments would be further away from the town center, cross Bear Lake Road in a less populated area, and eliminate the need to cross Pine Grove Road. The level of community concerns for **Alternative Route D** would be elevated by the location of the proposed alignment along the Delaware, Lackawanna, & Western Railroad, which would generate visual concerns to portions of Eagle Lake and diminish the scenic character of the railroad corridor. The scenic impact of this proposed alignment may stimulate reaction from local citizen groups, as well as from representatives of the National Park Service.

As noted, each of the alternatives would travel through many forested regions, most of which are protected through state-related programs (State Game Lands, State Forest). Some of these forested regions, predominantly in the Thornhurst area, are also the locations of TNC-identified natural areas that typically contain state-recognized RTE animal or plant species of concern. It is anticipated that **Alternative Route C**, which traverses through proportionally more conserved lands compared to **Alternative Route D**

or **Alternative D-1**, would generate more reactions from local and regional conservation groups due to the potential environmental impacts to these preserved resources. Siting Team members noted that the community concerns for **Alternative Route C** would be elevated due to these potential impacts and that acquisition of the necessary state-owned and private properties would be strongly contested. Conversely, **Alternative Route D-1**, which was developed using feedback and guidance from local landowners and state agencies, would bypass many of these socially and environmentally sensitive areas and be less contested.

The Siting Team concluded that the level of community concerns raised regarding the social aspects of the proposed routes would be higher for **Alternative Route D**, which was assigned a high community concern value of 5. **Alternative Route C**, which would generate community concerns based on visual and environmental impact aspects, was assigned a moderately high value of 4. The Siting Team acknowledged that **Alternative Route D-1** would generate comparably less community concerns due to the landowner and regulatory agency input used to develop the alignment, and was therefore assigned a moderate community concern value of 3.

#### **2.4.2.6.3 Special Permit Requirements**

The Siting Team recognized that each of the alternatives would cross environmentally sensitive areas located within Lackawanna State Forest, SGL #135, or occasionally on private property. These sensitive areas include mature forests, various EV-designated streams, forested wetland complexes, and several TNC-identified natural areas. Quantitatively, **Alternative Route D** had the least environmental impact of the three proposed routes, but the degree of variance between the different routes was not substantial. For example, the number of stream crossings varies between 24 and 25 for the three routes. Since these are all EV-designated streams, the NPDES permit level would be increased to an Individual Permit, which requires more complex stormwater analysis and control measures, but would be similarly required for either route.

Potential special permit differences between the three routes, however, were identified by the Siting Team and generally involve the length of alignment within conserved lands. **Alternative Route C**, which has the longest route length on State Forest and State Game

Lands, would be anticipated to involve proportionally more environmental assessments to evaluate the potential impact of the route on the resources within these conserved areas. **Alternative Route D-1** has an overall longer route length and shares greater coverage over conserved lands. Therefore, it is anticipated to involve a relatively moderate level of environmental assessments.

Furthermore, the Siting Team acknowledged that each alternative would cross two major highways, I-380 and SR 435, and a similar number of smaller state roads. Thus, coordination with PennDOT for highway occupancy permits would be basically identical for all routes. Similarly, each route would span the Delaware, Lackawanna, & Western Railroad, which would require a special permit from the railroad company to assure clearance requirements and safety regulations. These highway and railroad expectations are comparable for either route, thus the special permit requirements are not anticipated to be too different.

The Siting Team concluded that each alternative would result in similar types of special permit requirement expectations, but the level of expectations within these permit types would vary based on the location of the alignment. **Alternative Route C**, which crosses through longer portions of state-conserved lands, was assigned a high special permit requirement value of 5. **Alternative Route D-1**, which is relatively longer than the other proposed routes, was assigned a moderately high special permit requirement value of 4. The Siting Team assigned the moderate special permit requirement value of 3 to **Alternative Route D**.

#### **2.4.2.6.4 Construction, Maintenance, and Accessibility**

The Siting Team acknowledged that all three proposed routes would require the construction of a new 150-foot wide ROW, which would involve clearing vegetation and creating a new access road network. Variable terrain, isolated sections, and dense forest growth would similarly encumber access and development of each alternative. As with the prior segment, access for routine maintenance would not be problematic for any of the routes once the ROW and access roads are completed.

Acquisition of the required ROW easements was deemed to be the most critical accessibility issue. The Siting Team noted that no future-use ROW is located along this

segment and that each route would involve negotiations with a number of landowners. Based on public feedback during Open House sessions, some of the landowners would be receptive to the arrangement and others resistant. This diversity of landowner response was thematic across each proposed route.

Acquiring land from Lackawanna State Forest and SGL #135 was deemed most problematic for **Alternative Route C**, which has a longer overall length on these properties and may be potentially more controversial due to traversing through central portions of these conserved lands. Conversely, **Alternative Route D** would have fewer issues acquiring state-lands due to its relatively shorter length through these conserved lands and tendency to border along their edges. **Alternative Route D-1** would circumvent the Thornhurst area and travel for a moderate length along the edges of the state-conserved lands, thereby minimizing the land acquisition concerns in these two areas. By avoiding these areas, **Alternative Route D-1** would be approximately 1-mile longer than the other alternatives and cost the most to construct.

The Siting Team concluded that acquisition of the required easements would be the key construction, maintenance, and access issue. Accordingly, the Siting Team assigned **Alternative Route C** a moderately high construction, maintenance, and accessibility values of 4 due to the potential need for more elaborate state coordination. **Alternative Route D** was assigned a similar value of 4 as a result of community opposition to the easement negotiations necessary for the non-condemnable property along Pine Grove Road. Although more costly to construct, **Alternative Route D-1** was assigned a moderate construction, maintenance, and accessibility value of 3, due to the less controversial easement acquisition prospects.

#### **2.4.2.6.5 Risk of Schedule Delay**

The Siting Team noted that the risk of schedule delays would be expected for each of the routes due to the social and environmental issues inherent in the Project. As discussed above, **Alternative Route D** would raise more concerns from local governments and landowners regarding the perceived community and individual impact the proposed alignment would generate, **Alternative Route C**, on the other hand, would create greater concern from regional conservation groups regarding the environmental impacts to state-

conserved lands. Additionally, both **Alternative Route C** and **Alternative Route D** share the risk of further delays due to property acquisition concerns and potential visual impacts to adjacent residences. Local opposition, difficult land negotiations, and special permitting requirements could create delays that affect the economic viability of these proposed routes. Development of **Alternative Route D-1** was directed by input from the landowners, local officials, and state representatives. Cooperative coordination of the Project needs with these groups reduces the risk of potential schedule delays as the Project progresses.

The Siting Team concluded that **Alternative Route C** and **Alternative Route D** would potentially encounter more schedule delay risks due to the factors explained above and assigned both routes a moderately high schedule delay risk value of 4. The Siting Team concluded that the risk of schedule delays for **Alternative Route D-1** would be relatively lower due to the willingness of the vested parties in negotiating the proposed alignment and assigned the route a moderate value of 3.

#### **2.4.2.7 Determination of Selected Route – West Pocono-North Pocono Segment**

The results of the *quantitative assessment* of the Alternative Routes for this segment, discussed in detail in **Section 2.4.2.5** and illustrated in **Table 4-12**, resulted in **Alternative Route D-1** having the lowest overall weighted total value. This alternative had the lowest weighted score for two of the three perspectives of the siting process (built environment and engineering consideration), but was the highest for the third perspective (natural environment). Environmental impacts for this route were elevated by the need to avoid social conflicts and reduce the potential effects of the alignment on conserved lands. Based on the results of the quantitative assessment, the Siting Team concluded that **Alternative Route D-1** would result in less social and physical impacts than the other two alternative routes.

The results of the *qualitative assessment* conducted by the Siting Team of the Alternative Routes, discussed in detail in **Section 2.4.2.6** and illustrated in **Table 4-13**, indicate that **Alternative Route D-1** has the lowest weighted scores for visual concerns, community concerns, construction issues, and schedule delay risk. This route scored relatively high with regards to special permit issues, primarily due to its longer length.

Therefore, based on the quantitative assessment of the Alternative Routes, in conjunction with a qualitative siting process, the Siting Team selected **Alternative Route D-1** for the West Pocono-North Pocono Segment of the Northeast-Pocono Reliability Project, as illustrated on **Figure 4-11**.

#### **2.4.2.8 Review and Determination of the North Pocono 138/69 kV Connector Lines (NPC)**

A set of three new parallel 138/69 kV transmission lines are required to connect the proposed North Pocono Substation to the existing 138/69 kV transmission line network. The 138/69 kV transmission alignments closest to the site proposed for the proposed North Pocono Substation are the existing Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Lines.<sup>4</sup> Two new single-circuit 138/69 kV lines would be required to connect the proposed North Pocono Substation to the existing single circuit Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Lines which are located in Sterling Township, Wayne County, approximately one mile southeast of the proposed North Pocono Substation. Development of the new single-circuit 138/69 kV connecting lines would require a new, shared 200 foot ROW, using a 50 foot centerline separation, that would extend from the North Pocono 230-69 kV Substation to the tap point of the existing Peckville-Jackson Gouldsboro-Madisonville 69 kV line. A third new double-circuit 69 kV transmission line would be required to connect the proposed North Pocono Substation to the existing double circuit Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Line, which is located approximately two miles south of the proposed North Pocono Substation near the existing Gouldsboro 69 kV Substation in Lehigh Township, Wayne County. The new double-circuit 138/69 kV transmission line would utilize the same 200 foot ROW shared by the two new single-circuit 138/69 kV connecting lines between the proposed North Pocono Substation and the tap point of the existing Peckville-Jackson Gouldsboro-Madisonville 69 kV line, and would require an additional new 100 foot wide ROW where it would

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<sup>4</sup> From the Jackson 138-69 kV Substation to the Goldsboro 69 kV Substation, the Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Lines are built on double-circuit 138/69 kV structures -- that is, both Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Lines are installed on common structures and operate as a double circuit. From the Goldsboro 69 kV Substation, the Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Lines proceed on separate single-circuit 138/69 kV structures.

intersect the existing double-circuit Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Line.<sup>5</sup>

Two alternatives for this new North Pocono 138/69 kV Connector Line alignment, Connector Line 3 and Connector Line 4, are illustrated on **Figure 4-11c** and are described as follows:

**Connector Line 3** is 2.84 miles (14,995 feet) in length.

- Starting at the proposed North Pocono Substation, Connector Line 3 extends to the southeast for 1.06 miles (5,597 feet) through forested land associated with the Lackawanna State Forest and State Game Lands #312 to an existing 69 kV ROW. At this location, the two new single-circuit 138/69 kV lines tap into the existing single circuit Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Lines.
- The new double-circuit 138/69 kV line continues south and parallels the existing ROW for 1.78 miles (9,398 feet) through portions of State Game Lands #312 and private lands, across the West Fork Lehigh River (EV), the Lehigh River (EV), and several wetlands, and then over residential-lined SR 507 to a tap location at the existing Gouldsboro Substation, where it taps into the existing double-circuit Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Line.

**Connector Line 4** is 2.97 miles (15,682 feet) in length.

- Following a similar beginning as Connector Line 4, Connector Line 3 starts at the North Pocono Substation and extends to the southeast for 1.06 miles (5,597 feet) through forested land associated with the Lackawanna State Forest and State Game Lands #312 to an existing 69 kV ROW. At this location, the two new single-circuit 138/69 kV lines tap into the existing single circuit Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Lines.
- The new double-circuit 138/69 kV line continues southeast and then south for 1.53 miles (8,079 feet) through forested land associated with State Game Lands #312, across the West Fork Lehigh River (EV) and the Lehigh River (EV), through a section of the Lehigh Pond Natural Area, over several wetlands, and across an isolated section of SR 507.
- Once across the roadway, Connector Line 4 extends another 0.38 mile (2,006 feet) through more forested land associated with State Game Lands #312, spanning over a wetland and tributary to the Lehigh River (EV), to its tap location with the existing double circuit Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Lines located east of the existing Gouldsboro Substation.

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<sup>5</sup> One circuit of the double circuit line will break the Blooming Grove – Jackson 138/69 kV Transmission Line and the other circuit of the double circuit line will break the Peckville-Jackson #1 138/69 Transmission Line.

Similar to prior analysis, these Connector Line options were quantitatively compared and evaluated against each other. **Table 4-14** provides a tabular summary of the raw metrics and corresponding normalized values and **Table 4-15** shows the weighted values and overall totals for the two Connector Lines identified for the proposed North Pocono Substation.

**TABLE 4-14: Tabular Summary of Connector Line Options (NPC)**

Perspective	METRIC/ROUTE	CONNECTOR 3	CONNECTOR 4
<b>BUILT ENVIRONMENT</b>	Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line	0	0
	<i>Normalized</i>		
	Number of Residences within 300 feet of Transmission Center Line	1	0
	<i>Normalized</i>	100	0
	Number of Proposed Housing Developments within 300 feet of Transmission Center Line	0	0
	<i>Normalized</i>		
	Number of Commercial Buildings within 300 feet of Transmission Center Line	0	0
	<i>Normalized</i>		
	Number of Industrial Buildings within 300 feet of Transmission Center Line	0	0
	<i>Normalized</i>		
	Miles of State-owned and Conserved Lands Crossed	4.03	4.32
	<i>Normalized</i>	0	100
<b>NATURAL ENVIRONMENT</b>	Acres of Natural Forests Crossed	40.33	47.63
	<i>Normalized</i>	0	100
	Number of Stream/River Crossings	3	3
	<i>Normalized</i>		
	Acres of NWI Wetlands Areas Crossed	2.40	2.14
	<i>Normalized</i>	100	0
<b>ENGINEERING VARIABLES</b>	Miles of Future Use ROW (Inverted)	0.00	0.00
	<i>Normalized</i>		
	Miles of Co-location with a Linear Utility (Inverted)	1.78	0.00
	<i>Normalized</i>	0	100
	Number of Road and Railroad Crossings	1	1
	<i>Normalized</i>		
	Number of >60 Degree Turns along Route	2	0
	<i>Normalized</i>	100	0
	Number of Roads within 500 feet of Transmission Center Line (Inverted)	2	2
<i>Normalized</i>			
Estimated Cost to Site, Design and Construct Transmission Facilities (\$)	\$5,763,000	\$5,106,000	
<i>Normalized</i>	100	0	

**TABLE 4-15: Weighted Metrics and Totals for Connector Line Options (NPC)**

QUANTITATIVE CRITERIA	Weights	CONNECTOR 3	CONNECTOR 4
<b>BUILT</b>	<b>37.5%</b>		
Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line	<b>10.0%</b>	0	0
<i>Weighted</i>		0	0
Number of Residences within 300 feet of Transmission Center Line	<b>30.0%</b>	100	0
<i>Weighted</i>		30.00	0
Number of Proposed Housing Developments within 300 feet of Transmission Center Line	<b>5.0%</b>	0	0
<i>Weighted</i>		0	0
Number of Commercial Buildings within 300 feet of Transmission Center Line	<b>3.5%</b>	0	0
<i>Weighted</i>		0	0
Number of Industrial Buildings within 300 feet of Transmission Center Line	<b>1.5%</b>	0	0
<i>Weighted</i>		0	0
Miles of State-owned and Conserved Lands Crossed	<b>15.0%</b>	0	100
<i>Weighted</i>		0	15.00
Number of Homes with Transmission Line ROW in Curtilage	<b>35.0%</b>	0	0
<i>Weighted</i>		0	0
<b>TOTAL</b>	<b>100.0%</b>	<b>30.00</b>	<b>15.00</b>
<b>WEIGHTED TOTAL</b>		<b>11.25</b>	<b>5.63</b>
<b>NATURAL</b>	<b>37.5%</b>		
Acres of Natural Forests Crossed	<b>20.0%</b>	0	100
<i>Weighted</i>		0	20.00
Number of Stream/River Crossings	<b>30.0%</b>	0	0
<i>Weighted</i>		0	0
Acres of NWI Wetlands Areas Crossed	<b>40.0%</b>	100	0
<i>Weighted</i>		40.00	0
Acres of FEMA 100-year Floodplain Crossed	<b>10.0%</b>	0	100
<i>Weighted</i>		0	10.00
<b>TOTAL</b>	<b>100.0%</b>	<b>40.00</b>	<b>30.00</b>
<b>WEIGHTED TOTAL</b>		<b>15.00</b>	<b>11.25</b>
<b>ENGINEERING</b>	<b>25.0%</b>		
Acres of Future Use ROW (Inverted)	<b>30.0%</b>	0	0
<i>Weighted</i>		0	0
Miles of Co-location with a Linear Utility (Inverted)	<b>15.0%</b>	0	100
<i>Weighted</i>		0	15.00
Number of Road or Railroad Crossings	<b>10.0%</b>	0	0
<i>Weighted</i>		0	0
Number of >60 Degree Turns along Route	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0
Number of Roads within 500 feet of Transmission Center Line (Inverted)	<b>15.0%</b>	0	0
<i>Weighted</i>		0	0
Estimated Cost to Site, Design and Construct Transmission Facilities (\$)	<b>15.0%</b>	100	0
<i>Weighted</i>		15.00	0
<b>TOTAL</b>	<b>100.0%</b>	<b>30.00</b>	<b>15.00</b>
<b>WEIGHTED TOTAL</b>		<b>7.50</b>	<b>3.75</b>
<b>SUM OF WEIGHTED TOTAL</b>		<b>33.75</b>	<b>20.63</b>

Review of the cumulative values indicates that **Connector Line 4 (20.63)** would produce fewer impacts relative to **Connector Line 3 (33.75)**. The built environment metrics show that **Connector Line 3 (11.25)** would be within 300 feet of one home at the S.R. 507 roadway crossing, whereas **Connector Line 4 (5.63)** would traverse across relatively more state-owned lands. The natural environment metrics indicate that both options would span the same number of streams, but that **Connector Line 3 (15.00)** would encounter more wetlands, and that **Connector Line 4 (11.25)** would involve more floodplain areas and forest impacts. Although **Connector Line 3 (7.50)** parallels the most existing ROW, the engineering metrics note that this option has a more complex design and would be the most costly to construct in terms of total line length. **Connector Line 4 (3.75)** scored relatively better due to having a less complex design and having a shorter total line length, making this option less costly to construct.

A qualitative assessment of the North Pocono Connector Line options was also conducted that involved the same five qualitative criteria used during the analysis of the West Pocono-North Pocono Segment. **Table 4-16** provides a summary of the Siting Teams’ assessment of each connector option based on these criteria.

**TABLE 4-16: Siting Team Analysis of Qualitative Concerns (NPC)**

Qualitative Criteria	Weights	CONNECTOR 3	CONNECTOR 4
Visual Concerns	15%	2	1
<i>Weighted</i>		0.3	0.15
Community Concerns	15%	3	1
<i>Weighted</i>		0.45	0.15
Special Permit Issues	20%	3	3
<i>Weighted</i>		0.6	0.6
Construction, Maintenance, and Accessibility	30%	2	3
<i>Weighted</i>		0.6	0.9
Schedule Delay Risk	20%	3	2
<i>Weighted</i>		0.6	0.4
<b>TOTALS</b>	<b>100%</b>	<b>2.55</b>	<b>2.20</b>

Qualitative assessment of the visual effects of the two Connector Line options noted that both alignments would only need to cross one roadway, SR 507, a main highway through this section of the Pocono Region. Evaluation of the alignments recognized that **Connector Line 3** would cross the highway in a more residentially developed location. In addition, although an existing 69 kV line already spans the roadway in this location, **Connector Line 3** would involve widening the existing 100 foot wide ROW to 200 feet and add two more 69 kV lines to the roadway crossing configuration as two lines would be required to extend into the Gouldsboro Substation for this option to meet the electrical connectivity needs of the Project. From the perspective of the neighboring village of Gouldsboro, this alignment may also be considered to have an effect on the rural character of the area. **Connector Line 4** would cross SR 507 at a more isolated location that is further away from the village of Gouldsboro and only involve a 100 foot wide ROW and one 69 kV line to meet the electrical connectivity needs of the Project. For these reasons, **Connector Line 3** was assigned a moderately low visual impact value (2) and **Connector Line 4** was assigned a low visual impact value (1).

Due in part to the visual issues, assessment of the community concerns determined that **Connector Line 3** would generate more reaction relative to **Connector Line 4**. Community concerns for **Connector Line 3** may be raised due to its location relative to the homes in the immediate crossing location, as well as the closeness of the alignment relative to the village of Gouldsboro. Another possible reason for raised community concerns would be the potential effect of **Connector Line 3** on the habitat of the state-endangered northern flying squirrel (*Glaucomys sabrinus*), which prefer old-growth boreal forests that contain a heavy coniferous component. Considerable sections of this habitat type are located along the existing ROW area as it travels through State Game Lands #312. Opposition to **Connector Line 3** may be raised by the authorities at State Game Lands #312 and the Pennsylvania Game Commission, which has jurisdictional protection over the northern flying squirrel, as well as by other local environmental groups. In contrast, **Connector Line 4** was identified with the assistance of the authorities at State Game Lands #312 to avoid potential impacts to this habitat type. Based on this assessment, **Connector Line 3** was assigned a moderate community

concern value (3) and **Connector Line 4** was assigned a low community concern value (1).

Review of the two options in terms of special permit requirements noted that both would involve crossing one highway (SR 507) and spanning the Lehigh River and two tributaries, which are classified by PADEP as EV in this area. Due to the high water quality of these streams, PADEP will require additional water quality protection measures to be incorporated into the plans for either option prior to issuing the NPDES permit. Aside from the roadway and stream crossings, it was noted that **Connector Line 3** would involve more wetland crossings and potential impacts to the preferred habitat of the state-endangered northern flying squirrel relative to **Connector Line 4**, which would involve more forest clearing, be located on more state lands, and have a potential effect on the Lehigh Pond Natural Area relative to **Connector Line 3**. Due to the complexity of the natural features involved in either option, both were assigned a moderate permit value (3).

Access and construction concerns reviewed for the two options focused on the use of existing utility line ROW corridors and the complexity of the transmission line design. **Connector Line 3** was noted to use the existing 69 kV ROW for most of the alignment, but this option would involve the more complex design in terms of number of sharp turns. Conversely, **Connector Line 4** would not use any of the existing 69 kV line ROW, but would involve a less complex design with fewer sharp turns. Having use of the existing transmission line ROW would be more beneficial to **Connector Line 3** due to the ease of access and construction. Based on this assessment, **Connector Line 3** was assigned a moderately low access and construction value (2) and **Connector Line 4** was assigned a moderate access and construction value (3).

Assessment of the schedule delay risk associated with the two options is related to the concerns and requirements noted in the prior discussions. These discussions indicate that both would involve similarly complex special permitting requirements, but that **Connector Line 3** would involve more visual concerns and more community concerns, whereas **Connector Line 4** would only involve more access and construction issues. Based on this summary, it was determined that **Connector Line 3** will be more prone to

schedule delay issues and was assigned a moderate schedule delay value (3). **Connector Line 4** was assigned a moderately low schedule delay value (2) due to a reduced probability of schedule delays.

The results of the *quantitative assessment* of the North Pocono Connector Lines resulted in **Connector Line 4** having the lowest overall weighted total value of the metrics evaluated. The results of the *qualitative assessment* also indicate that **Connector Line 4** has the lowest overall weighted total value for the five aspects assessed. Based on the results of these assessments, it was concluded that **Connector Line 4** would result in less social and physical impacts than **Connector Line 3**. Therefore, **Connector Line 4** was selected as the North Pocono 138/69 kV Connector Line for the Northeast-Pocono Reliability Project, as illustrated on **Figure 4-11d**.

### **2.4.3 North Pocono-Paupack Segment (NP-P)**

Analysis of the North Pocono-Paupack Segment resulted in three Alternative Routes: Alternative Route E, Alternative Route F, and Alternative Route F-1. Alternative Route F-1 was established based on public feedback obtained during the Open House sessions and combines major components of Alternative Route F with specific aspects of Alternative Route E.

#### **2.4.3.1 Alternative Route E**

**Alternative Route E** is 20.88 miles (110,250 feet) in length.

- Starting at the proposed North Pocono Substation, located within Covington Township, Lackawanna County, Alternative Route E travels generally northeast for 2.70 miles (14,250 feet) to its intersection with the existing Gouldsboro-Madisonville 69 kV transmission line ROW. The proposed route crosses undeveloped portions of Freytown Road, traverses along the boundary and through a small portion of Lackawanna State Forest, spanning over the East Branch Roaring Brook (HQ-CWF), and crossing Freytown Road a second time. After this road crossing, the proposed alignment will travel through forested land across a short section of Madison Township, enter into Sterling Township, Wayne County, and then intersect with the existing 69 kV transmission line ROW.
- At this point, Alternative Route E will cross over the existing Gouldsboro-Madisonville 69 kV ROW and proceed northeast for 3.70 miles (19,550 feet) toward I-84. Along this section, the proposed alternative will traverse through portions of the Thousand Acre Swamp Natural Area and the Gas Hollow Natural Area before dropping several hundred feet from a high ridgeline down into the

Buttermilk Creek valley. Traveling through primarily forested lands, Alternative Route E continues northeast toward the village of Sterling, where agricultural land uses become more prominent. Using the edge of agricultural lands when possible, the proposed alternative avoids much of the residential development by circling around to the west of the village. Prior to crossing residential-lined Spring Hill Road, the ROW of the proposed alternative passes within the curtilage of a home through which an easement would need to be negotiated with the landowner. If these negotiations are not successful then this property is considered a non-condemnable property that may impact the ability to construct the transmission line through this section. Near this location, Alternative Route E will be within 1-mile of the Spring Hill Airport. After crossing Spring Hill Road, Alternative Route E will continue northeast to I-84.

- After crossing to the north side of I-84, Alternative Route E continues heading northeast for 6.30 miles (33,300 feet) toward SR 590. The proposed alternative crosses an undeveloped portion of SR 196, spans Uban Creek (HQ-CWF), travels through a commercial business area along SR 196, spans the West Branch Wallenpaupack Creek (HQ-CWF), and enters Salem Township. Continuing northeast, Alternative Route E crosses a series of residential-lined roads, including Bidwell Hill Road, Ledgeale Road, Catterson Road, and Goose Pond Road. These roads are separated by areas consisting of agriculture fields, forested uplands, and PFO wetlands, one of which is bisected by the proposed alignment. After crossing Bidwell Hill Road, the ROW of the proposed alternative passes within the curtilage of another home through which an easement would need to be negotiated with the landowner. If these negotiations are not successful then this property is considered a non-condemnable property that may impact the ability to construct the transmission line through this section. North of Goose Pond Road, Alternative Route E will bypass to the east of the Claws-N-Paws Park, cross Ledgeale Road again, span Ariel Creek (HQ-CWF), and intersect with SR 590, a primary arterial highway that is bordered with a mix of commercial businesses, vacation resorts, and residential communities.
- Alternative Route E continues northeast for 4.15 miles (22,000 feet) toward a third crossing location along SR 590. Along this section, the proposed alternative crosses a rural portion of Rose Road, through two PFO wetland areas, across two farmlands preserved through Agricultural Conservation Easements, and over a rural portion of Eisenhower Road. The route will cross from Salem Township, briefly into Lake Township, and then on into Paupack Township near Eisenhower Road. Prior to crossing Eisenhower Road, Alternative Route E will turn to the east and travel through forested lands and a PFO wetland area before spanning SR 590 for a second time. The proposed route will turn north, spanning Purdy Creek (HQ-CWF), and intersecting with PPL Electric's future-use ROW near the existing Lakeville 69 kV Substation, which is located adjacent to SR 590.
- Crossing SR 590 for the third time, Alternative Route E continues in a northerly direction for 2.05 miles (10,850 feet) to the previously approved Paupack Substation. Initially, the proposed alternative parallels the existing Lakeville 69 kV Tap ROW for a short distance, but then angles off to parallel the eastern

slopes along Locklin Pond, a man-made impoundment of Purdy Creek. Continuing north, Alternative Route E crosses residential-lined Daniels Road, through a mixed forest/agricultural area, onto private hunting lands owned by the Lakeville Hunt Club, and into the previously approved Paupack Substation, which will be developed on the west side of Hoadleys Road.

### 2.4.3.2 Alternative Route F

**Alternative Route F** is 23.88 miles (126,000 feet) in length.

- Starting at the proposed North Pocono Substation, Alternative Route F will proceed south for 1.00 mile (5,280 feet) toward an intersection with the existing Gouldsboro-Madisonville 69 kV transmission line ROW. Along this section, the proposed alternative crosses through an area of Lackawanna State Forest and into SGL #312, which contains the existing 69 kV ROW. Alternative Route F will also pass into Sterling Township, Wayne County along this section.
- Turning to the northeast, Alternative Route F travels 2.70 miles (14,200 feet) to a second intersection with the existing Gouldsboro-Madisonville 69 kV ROW. The proposed alternative generally parallels the northern side of the existing 69 kV ROW, but has been adjusted to the north by several hundred feet to increase the distance from the Pocono Springs Estates residential development to the south. Through this section, Alternative Route F will exit SGL #312 and cross a portion of the Freytown Swamp Natural Area.
- At this point, Alternative Route F will cross the existing Gouldsboro-Madisonville 69 kV ROW and head northeast for 6.10 miles (32,250 feet) toward I-84. The proposed alternative will span an upper section of Butternut Creek (HQ-CWF), proceed across a ridge top, and then drop down several hundred feet into the Butternut Creek valley. Alternative Route F will then cross an isolated section of SR 196, span another portion of Butternut Creek, and travel over another ridgeline before crossing a section of Butternut Road bordered by active farms and single-family homes. Continuing northeast, the proposed alternative traverses forested land located along the border of Sterling and Dreher Townships, and turns north back into Sterling Township as it spans residential-lined SR 191. East of SR 191, Alternative Route F intercepts and follows the future-use ROW in a northerly direction toward I-84. The proposed alignment will parallel the west side of Wallenpaupack Creek (HQ-CWF) along this section.
- After crossing I-84, Alternative Route F continues following the future-use ROW in a circuitous alignment to the northwest and then around to the northeast for 5.55 miles (29,270 feet) toward Goose Pond Road. North of I-84, Alternative Route F turns west, crossing an undeveloped section of Forks Bridge Road, the West Branch Wallenpaupack Creek (HQ-CWF), and enters Salem Township. Turning to the northwest, the proposed alternative crosses residential-lined Bidwell Hill Road and then turns north through forested and agricultural lands, crossing Ledgesdale Road and then Catterson Road, which are bordered by a mix of farms and single-family homes. After Catterson Road, Alternative Route F

turns northeast through forested lands and then sharply to the southeast to residential-lined Sledzinski Road. Turning sharply back to the northeast, the proposed alternative crosses an undeveloped section of Ledge Dale Road a second time, spans Ariel Creek (HQ-CWF), and then extends to and crosses an undeveloped section of Goose Pond Road.

- Alternative Route F continues northeast for 4.50 miles (23,750 feet) following the future-use ROW toward SR 590. Along this section, the proposed alternative crosses an undeveloped section of Hanlon Road, passes through Topps Bog Natural Area, turns sharply to the southeast and crosses Everly Road and then Finn Swamp Road, which are lightly developed at these locations. Turning sharply to the northeast, Alternative Route F parallels Finn Swamp Road within lands associated with the Goose Pond Boy Scout Reservation and preserved through conservation easements with Natural Lands Trust. Crossing back to the north side of Finn Swamp Road in a sparsely developed area, the alignment will turn north, cross Purdy Creek (HQ-CWF) and intersect SR 590 adjacent to the existing Lakeville 69 kV Substation.
- From this point, Alternative Route F mirrors Alternative Route E. The alignment will continue north for 2.05 miles (10,850 feet) to the previously approved Paupack Substation, paralleling a short section of the existing Lakeville 69 kV Tap ROW, paralleling the eastern slopes along Locklin Pond, crossing residential-lined Daniels Road, navigating onto private hunting lands owned by the Lakeville Hunt Club, and connecting with the previously approved Paupack Substation, which is proposed on the west side of Hoadleys Road.

#### **2.4.3.3 Alternative Route F-1**

**Alternative Route F-1** is 23.93 miles (126,200 feet) in length and is a modified version of Alternative Route F combined with several portions of Alternative Route E that were developed based upon additional siting review and coordination with public officials and private landowners.

- Similar to Alternative Route E, Alternative Route F-1 starts at the proposed North Pocono Substation and travels generally northeast for 2.70 miles (14,250 feet) toward the existing Gouldsboro-Madisonville 69 kV transmission line ROW, spanning undeveloped sections of Freytown Road two times, traversing portions of Lackawanna State Forest, and spanning over the East Branch Roaring Brook (HQ-CWF). The proposed alignment will also cross a short section of Madison Township and then enter into Sterling Township, Wayne County prior to intercepting the existing 69 kV transmission line ROW.
- Alternative Route F-1 then turns to the southeast for 1.15 miles (6,100 feet) through forested lands paralleling the western side of the existing Gouldsboro-Madisonville 69 kV ROW. At this point, the alternative route intercepts the proposed alignment of Alternative Route F, turns to the northeast, and crosses the existing 69 kV ROW.

- Continuing in a northeasterly direction, Alternative Route F-1 travels for 5.90 miles (31,150 feet) toward I-84. The proposed alternative mirrors Alternative Route F by spanning an upper section of Butternut Creek (HQ-CWF) and proceeding across a ridge top, but then turns to the east and heads down into the Butternut Creek valley along a gentler slope. Alternative Route F-1 continues on across undeveloped sections of SR 196, spanning another portion of Butternut Creek, traveling over a lower ridgeline, and intercepting Alternative Route F again before crossing rurally developed Butternut Road. The proposed alternative generally mirrors Alternative Route F from this point forward and similarly spans residential-lined SR 191, intercepts and follows the future-use ROW, and heads toward I-84.
- After crossing I-84, Alternative Route F-1 continues following the future-use ROW for 5.55 miles (29,300 feet) toward Goose Pond Road. The alignment turns west, crossing Forks Bridge Road, the West Branch Wallenpaupack Creek (HQ-CWF), and then turns northwest, crossing Bidwell Hill Road. Turning to the north Alternative Route F-1 crosses Ledgesdale Road and then Catterson Road, before turning sharply to the southeast to Sledzinski Road. Turning sharply back to the northeast, the proposed alternative crosses Ledgesdale Road a second time, spans Ariel Creek (HQ-CWF), and then extends to Goose Pond Road. The alignment across this last section will be located further to the west than noted for Alternative Route F due to landowner requests.
- After crossing Goose Pond Road, Alternative Route F-1 continues northeast for 4.60 miles (24,250 feet) following the future-use ROW toward SR 590. Along this section, the proposed alternative crosses Hanlon Road, passes through Topps Bog Natural Area, turns sharply to the southeast and crosses Everly Road and then Finn Swamp Road. Turning sharply to the northeast, Alternative Route F-1 parallels Finn Swamp Road within lands associated with the Goose Pond Boy Scout Reservation and preserved through conservation easements with Natural Lands Trust. Crossing back to the north side of Finn Swamp Road, the alignment will turn north, cross Purdy Creek (HQ-CWF), and intersect SR 590 adjacent to the existing Lakeville 69 kV Substation.
- From this point, Alternative Route F-1 mirrors both of the other alternatives. The alignment will continue north for 2.05 miles (10,850 feet) to the previously approved Paupack Substation, paralleling a short section of the existing Lakeville 69 kV Tap ROW, paralleling the eastern slopes along Locklin Pond, crossing residential-lined Daniels Road, navigating onto private hunting lands owned by the Lakeville Hunt Club, and connecting with the previously approved Paupack Substation, which will be developed on the west side of Hoadleys Road.

#### 2.4.3.4 Evaluation of Alternative Routes – North Pocono-Paupack Segment

Similar to the prior segments, the Alternative Routes were compared and evaluated against each other to determine the **Selected Route** for this segment. Evaluation of the Alternative Routes included a combination of *quantitative analysis* based on weighted

metrics, as well as a *qualitative review* by the Siting Team. Evaluation metrics, weighting procedures, and Siting Team analyses used to evaluate these three Alternative Routes and to determine the Selected Route for this segment were the same as reviewed in **Section 2.4.1.3**, **Section 2.4.1.4**, and **Table 4-4**.

**Table 4-17** provides a tabular summary of the raw metrics and corresponding normalized values for the three Alternative Routes identified for the North Pocono-Paupack (NP-P) Segment of the Northeast-Pocono Reliability Project siting study. The normalized metric values derived from **Table 4-17** were further adjusted through a weighting process shown in **Table 4-18**. **Table 4-18** shows the total of the weighted metrics within each of the three perspectives and an overall total for each Alternative Route within this segment.

**TABLE 4-17: Tabular Summary of Alternative Routes (NP-P)**

Perspective	METRIC/ROUTE	ROUTE E	ROUTE F	ROUTE F-1	
<b>BUILT ENVIRONMENT</b>	<b>Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line</b>	6	5	6	
	<i>Normalized</i>	100	0	100	
	<b>Number of Residences within 300 feet of Transmission Center Line</b>	9	15	15	
	<i>Normalized</i>	0	100	100	
	<b>Number of Proposed Housing Developments within 300 feet of Transmission Center Line</b>	0	0	0	
	<i>Normalized</i>				
	<b>Number of Commercial Buildings within 300 feet of Transmission Center Line</b>	1	0	0	
	<i>Normalized</i>	100	0	0	
	<b>Number of Industrial Buildings within 300 feet of Transmission Center Line</b>	1	1	1	
	<i>Normalized</i>				
	<b>Miles of State-owned and Conserved Lands Crossed</b>	1.21	1.93	1.19	
	<i>Normalized</i>	2	100	0	
<b>NATURAL ENVIRONMENT</b>	<b>Acres of Natural Forests Crossed</b>	323.71	399.07	392.60	
	<i>Normalized</i>	0	100	91	
	<b>Number of Stream/River Crossings</b>	17	19	19	
	<i>Normalized</i>	0	100	100	
	<b>Acres of NWI Wetlands Areas Crossed</b>	16.15	9.29	5.38	
	<i>Normalized</i>	100	36	0	
	<b>Acres of FEMA 100-year Floodplain Crossed</b>	19.13	17.41	21.82	
	<i>Normalized</i>	39	0	100	
	<b>ENGINEERING VARIABLES</b>	<b>Miles of Future Use ROW (Inverted)</b>	0.00	7.81	7.81
		<i>Normalized</i>	100	0	0
		<b>Miles of Co-location with a Linear Utility (Inverted)</b>	0.18	1.42	1.30
		<i>Normalized</i>	100	0	10
<b>Number of Road and Railroad Crossings</b>		20	20	23	
<i>Normalized</i>		0	0	100	
<b>Number of &gt;60 Degree Turns along Route</b>		8	10	9	
<i>Normalized</i>		0	100	50	
<b>Number of Roads within 500 feet of Transmission Center Line (Inverted)</b>		23	31	31	
<i>Normalized</i>		100	0	0	
<b>ENGINEERING VARIABLES</b>	<b>Estimated Cost to Site, Design and Construct Transmission Facilities (\$)</b>	\$43,831,200	\$47,983,000	\$48,083,200	
	<i>Normalized</i>	0	98	100	

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**ATTACHMENT 4 – ALTERNATIVES AND SITING ANALYSIS**

**TABLE 4-18: Weighted Metrics and Totals for Alternative Routes (NP-P)**

QUANTITATIVE CRITERIA	Weights	ROUTE E	ROUTE F	ROUTE F-1
<b>BUILT</b>	<b>37.5%</b>			
Number of Schools, Day Cares, Churches, or Cemeteries within 1,500 feet of Transmission Center Line	<b>10.0%</b>	100	0	100
<i>Weighted</i>		10.00	0.00	10.00
Number of Residences within 300 feet of Transmission Center Line	<b>30.0%</b>	0	100	100
<i>Weighted</i>		0.00	30.00	30.00
Number of Proposed Housing Developments within 300 feet of Transmission Center Line	<b>5.0%</b>	0	0	0
<i>Weighted</i>		0.00	0.00	0.00
Number of Commercial Buildings within 300 feet of Transmission Center Line	<b>3.5%</b>	100	0	0
<i>Weighted</i>		3.50	0.00	0.00
Number of Industrial Buildings within 300 feet of Transmission Center Line	<b>1.5%</b>	0	0	0
<i>Weighted</i>		0.00	0.00	0.00
Miles of State-owned and Conserved Lands Crossed	<b>15.0%</b>	2	100	0
<i>Weighted</i>		0.30	15.00	0.00
Number of Homes with Transmission Line ROW in Curtilage	<b>35.0%</b>	100	0	0
<i>Weighted</i>		35.00	0.00	0.00
<b>TOTAL</b>	<b>100.0%</b>	<b>48.80</b>	<b>45.00</b>	<b>40.00</b>
<b>WEIGHTED TOTAL</b>		<b>18.30</b>	<b>16.88</b>	<b>15.00</b>
<b>NATURAL</b>	<b>37.5%</b>			
Acres of Natural Forests Crossed	<b>20.0%</b>	0	100	91
<i>Weighted</i>		0.00	20.00	18.20
Number of Stream/River Crossings	<b>30.0%</b>	0	100	100
<i>Weighted</i>		0.00	30.00	30.00
Acres of NWI Wetlands Areas Crossed	<b>40.0%</b>	100	36	0
<i>Weighted</i>		40.00	14.40	0.00
Acres of FEMA 100-year Floodplain Crossed	<b>10.0%</b>	39	0	100
<i>Weighted</i>		3.90	0.00	10.00
<b>TOTAL</b>	<b>100.0%</b>	<b>43.90</b>	<b>64.40</b>	<b>58.20</b>
<b>WEIGHTED TOTAL</b>		<b>16.46</b>	<b>24.15</b>	<b>21.83</b>
<b>ENGINEERING</b>	<b>25.0%</b>			
Miles of Future Use ROW (Inverted)	<b>30.0%</b>	100	0	0
<i>Weighted</i>		30.00	0.00	0.00
Miles of Co-location with a Linear Utility (Inverted)	<b>15.0%</b>	100	0	10
<i>Weighted</i>		15.00	0.00	1.50
Number of Road or Railroad Crossings	<b>10.0%</b>	0	0	100
<i>Weighted</i>		0.00	0.00	10.00
Number of >60 Degree Turns along Route	<b>15.0%</b>	0	100	50
<i>Weighted</i>		0.00	15.00	7.50
Number of Roads within 500 feet of Transmission Center Line (Inverted)	<b>15.0%</b>	100	0	0
<i>Weighted</i>		15.00	0.00	0.00
Estimated Cost to Site, Design and Construct Transmission Facilities (\$)	<b>15.0%</b>	0	98	100
<i>Weighted</i>		0.00	14.70	15.00
<b>TOTAL</b>	<b>100.0%</b>	<b>60.00</b>	<b>29.70</b>	<b>34.00</b>
<b>WEIGHTED TOTAL</b>		<b>15.00</b>	<b>7.43</b>	<b>8.50</b>
<b>SUM OF WEIGHTED TOTAL</b>		<b>49.76</b>	<b>48.45</b>	<b>45.33</b>

#### 2.4.3.5 Discussion of Quantitative Results

Review of the cumulative values indicates that **Alternative Route F-1 (45.33)** would produce slightly fewer impacts relative to **Alternative Route F (48.45)** and **Alternative Route E (49.76)**.

##### 2.4.3.5.1 Built Environment

Values for the built environment metrics are highest for **Alternative Route E (18.30)** and **Alternative Route F (16.88)** and relatively lower for **Alternative Route F-1 (15.00)**. The key factor that affected the built environment value for **Alternative Route E** is that the proposed ROW would be within the curtilage (100 meters; 328 feet) of two (2) homes that would require landowner negotiation to possibly acquire the necessary easement. If these negotiations are not successful then these properties are considered non-condemnable properties that may impact the ability to construct the transmission line through these sections. Built environment values for both **Alternative Route F** and **Alternative Route F-1** were primarily affected by having the most houses (15) located within 300 feet of the proposed alignments. The value for **Alternative Route F** was further affected by the length of alignment (1.93 miles) proposed within state-owned and conserved lands. **Alternative Route E** and **Alternative Route F-1** were also influenced by their proximity to a higher number (6) of sensitive receptors (cemeteries/ churches/ school).

##### 2.4.3.5.2 Natural Environment

Values for the natural environment metrics are highest for **Alternative Route F (24.15)** and **Alternative Route F-1 (21.83)** and moderately lower for **Alternative Route E (16.46)**. The environmental values for **Alternative Route F** and **Alternative Route F-1** were higher due to these proposed alignments passing through more acres of forested land (399 acres; 393 acres) and spanning the most streams (19). **Alternative Route F** was further affected by the greater acres of NWI wetland crossings (9.29). Although **Alternative Route E** has the highest acres of wetland impact, the proposed alignment does have the lowest forest impacts and fewest stream crossings. Of note, all three alternatives cross a similar number of FEMA floodplain areas along the route that are relatively narrow and may be spanned by any proposed route.

**2.4.3.5.3 Engineering Considerations**

Values for engineering metrics are highest for **Alternative Route E (15.00)** and lowest for **Alternative Route F-1 (8.50)** and **Alternative Route F (7.43)**. Engineering values for **Alternative Route E** were influenced by the absence of future-use ROW along the alignment, whereas **Alternative Route F** and **Alternative Route F-1** used future-use ROW for more than half their alignments. **Alternative Route E** would also co-locate with fewer existing linear utilities and be located near fewer roads, which would increase its accessibility difficulty. Values for **Alternative Route F** and **Alternative Route F-1** were affected by having the longest length and most complex turns (10; 9), which resulted in the highest costs to complete (\$47.9 million; \$48.0 million). **Alternative Route F-1** was further affected by having relatively less linear utility co-location and a greater number of road crossings (23).

**2.4.3.6 Qualitative Assessment**

The qualitative assessment for the North Pocono-Paupack Segment of the Northeast-Pocono Reliability Project involved the same five qualitative criteria used during analysis of the previous segments. **Table 4-19** provides a summary of the Siting Teams’ assessment of each Alternative Route based on these criteria. A detailed discussion of the considerations related to each of these criteria is provided below.

**TABLE 4-19: Siting Team Analysis of Qualitative Concerns (NP-P)**

Qualitative Criteria	Weights	ROUTE E	ROUTE F	ROUTE F-1
Visual Concerns	15%	4	4	3
<i>Weighted</i>		0.6	0.6	0.45
Community Concerns	15%	4	3	2
<i>Weighted</i>		0.6	0.45	0.3
Special Permit Issues	20%	4	3	3
<i>Weighted</i>		0.8	0.6	0.6
Construction, Maintenance, and Accessibility	30%	4	4	3
<i>Weighted</i>		1.2	1.2	0.9
Schedule Delay Risk	20%	4	4	3
<i>Weighted</i>		0.8	0.8	0.6
<b>TOTALS</b>	<b>100%</b>	<b>4.00</b>	<b>3.65</b>	<b>2.85</b>

#### 2.4.3.6.1 Visual Concerns

Similar to the prior segment, the Siting Team noted that these proposed alignments would be new transmission line routes through the surrounding landscape. Some portions of the routes would not be visible to the local population due to it being located within large forest tracts. Most of the route lengths, however, would pass through populated areas that range from low-density rural communities near Jericho, East Sterling, Bidwell Hill, and Arlington, to moderate-density residential areas such as Pocono Springs Estates, Sterling, Ledgedale, and Lakeville. Each alternative would also be required to span similar residential-lined roadways, such as Bidwell Hill Road and Goose Pond Road, and larger highway routes, including SR 191, SR 196, SR 590, and I-84. Visual concerns would be generated by the proposed alignments at these locations.

**Alternative Route E** would cross SR 590, a major roadway lined with popular vacation resorts and private residential neighborhoods, three times between Arlington and Lakeville. Visual concerns for **Alternative Route F** would emphasize the route's proposed alignment along a ridge-top area in southern Sterling Township, where the route descending from the Pocono Plateau down into the Butternut Creek Valley would be highly visible to the surrounding communities. This proposed alternative would also raise concerns as it navigates near Pocono Springs Estates, across residential lined SR 191 near East Sterling, and around the residential and vacation communities bordering Lake Wallenpaupack. **Alternative Route F-1** would be subject to essentially the same visual concerns as **Alternative Route F**; however, **Alternative Route F-1** proposes a different alignment in the ridgetop area and would be less visible descending the plateau area. This change was incorporated following landowner suggestions provided during the Open House sessions. **Alternative Route F-1** also follows initial sections of **Alternative Route E** that would be located away from Pocono Springs Estates, further reducing the potential visual concerns of **Alternative Route F-1**.

The Siting Team concluded that both route alternatives would create unfavorable visual impacts on the landscape because they are new overhead alignments through areas without existing transmission line ROWs. Based on the specific items noted above, the Siting Team concluded that the visual concerns generated by **Alternative Route E** and

**Alternative Route F** would be relatively higher than concerns raised by the **Alternative Route F-1** alignment. **Alternative Route E** and **Alternative Route F** were, therefore, assigned a moderately high visual concern value of 4, and **Alternative Route F-1** was assigned the moderate value of 3.

#### **2.4.3.6.2 Community Concerns**

The Siting Team acknowledged that either of the new alignments would generate a general level of community concern based on the potential changes in local character, effects to the surrounding landscape, and noise and traffic issues associated with the construction activities. The Siting Team noted that **Alternative Route E** would create concerns to all of the neighboring communities regarding its passage through the primarily rurally populated countryside, where the route would cross or border numerous private properties from which land would need to be acquired, as well as cross many local roads where the transmission structures would be highly visible to the local population. The potential level of concerns for this alignment would be further elevated by the easement negotiations for the non-condemnable properties along Spring Hill Road and Bidwell Hill Road, and the particular impact the route would have on the moderately populated village of Sterling. Other certain community concerns would include the use of preserved lands within Lackawanna State Forest, impacts to two TNC-identified natural areas near the North Pocono Substation, and effects to agriculturally conserved farmlands located along northern portions of **Alternative Route E**.

**Alternative Route F** and **Alternative Route F-1** would also produce a similar level of community concern due to its passage through private properties, along residential developments, and over community roads. Along more than half of these alignments, however, these routes would be located on easements obtained by PPL Electric as a future-use ROW. Purchased in the 1970's, future-use ROW is aligned predominantly through rural landscape, but these routes currently cut through a landscape that has developed into a regional vacation destination with a growing local community base. On various properties along the future-use ROW, the present-day landowners have worked with PPL Electric to re-align the easements to provide for increased use of the land. Specific re-alignments have been made that follow property borders, or are angled

differently to provide access to areas that may have been made un-developable by the position of the proposed routes relative to surrounding property lines. Other re-alignments have been made to avoid homes that have inadvertently been developed within, or close to, the future-use ROW. In one of these situations, the re-alignment required extending the route length through a TNC-identified natural area.

The Siting Team noted that alignment differences between **Alternative Route F** and **Alternative Route F-1** are primarily located along the southern section of the routes near the North Pocono Substation. In this area, **Alternative Route F-1** traverses through portions of Lackawanna State Forest, whereas **Alternative Route F** traverses through relatively longer portions of SGL #312. Siting Team members acknowledged that the community concerns for **Alternative Route F-1** would be relatively less in this area because the alignment would be located further away from Pocono Springs Estates and slope less severely down from the ridge top of the plateau.

The Siting Team concluded that the level of community concerns raised regarding the social and conservation aspects of the proposed routes would be highest for **Alternative Route E**, which was assigned a moderately high community concern value of 4. **Alternative Route F** would generate comparably less community concerns due to the landowner input implemented to re-align the future-use ROW, and was therefore assigned a moderate community concern value of 3. **Alternative Route F-1** would benefit from the same landowner coordination, but produce fewer environmental and visual impacts and be located further away from specific residential developments relative to **Alternative Route F**; it was therefore assigned a moderately low community concern value of 2.

#### **2.4.3.6.3 Special Permit Requirements**

The Siting Team recognized that each of the alternatives would cross environmentally sensitive areas located within Lackawanna State Forest, SGL #312, or on private property. These sensitive areas include mature forests, various HQ-designated streams, forested wetland complexes, and several TNC-identified natural areas. Quantitatively, **Alternative Route E** had the least environmental impact of the three alternative routes. This proposed alignment would be moderately shorter than the other two alternatives and

would impact less forest and cross fewer streams. **Alternative Route E**, however, would pass within one mile of Spring Hill Airport, a public facility used by single-engine aircraft that is located northwest of the village of Sterling. Regardless of the route selected, PPL Electric would register the location of all new transmission structures with the Federal Aviation Administration (FAA). Due to its proximity to an active airport, **Alternative Route E** would, however, require additional coordination with the FAA to evaluate the new structures relative to the flight patterns associated with the Spring Hill Airport.

Based on the quantitative analysis, **Alternative Route F** and **Alternative Route F-1** would generate comparable environmental impacts that would require similar levels of environmental permitting. For example, these two alignments would impact comparable lengths of streams and areas of forest and wetlands, which would generate the need for an equal number of RTE surveys and cumulative impact evaluations. Furthermore, these routes are located within the same number of HQ-designated watersheds. Construction activities and long-term stormwater management of either alignment would similarly require an Individual NPDES permit for any discharges to these watersheds. As noted, Individual NPDES permits involve more complex stormwater analysis and control measures to assure protection of the local resources. Differences between these two alternatives would be based on the potential impacts on conserved lands. **Alternative Route F** has a longer route length through conserved lands (SGL #312) and would be anticipated to involve proportionally more environmental assessments to evaluate the potential impact of the alignment on this resource area.

The Siting Team further acknowledged that each alternative would cross one major highway (I-84), various state routes (SR 196, SR 191, and SR 590), and a number of smaller local roads. **Alternative Route E** was deemed to involve more complex permitting due to the need to span SR 590, an active arterial highway, three times in a relatively short distance. **Alternative Route F-1** was also noted to cross more roads than the other two alternatives, which would increase its coordination effort with PennDOT for highway occupancy permits relative to **Alternative Route F**.

The Siting Team concluded that **Alternative Route E** would generate special permit needs due to the additional FAA and PennDOT coordination that would be required for development of this alignment, and was therefore assigned the moderately high special permit requirement value of 4. Although **Alternative Route F** and **Alternative Route F-1** would generate a longer list of environmental impacts, the environmental permit expectations would be similar in scope to those anticipated for **Alternative Route E**. Comparatively, **Alternative Route F** and **Alternative Route F-1** would differ slightly in the level of environmental assessment or highway permit requirements, but these differences were deemed to balance each other and both alignments were assigned the moderate special permit requirement value of 3.

#### **2.4.3.6.4 Construction, Maintenance, and Accessibility**

As with the prior segments, access for routine maintenance would not be problematic for either of the routes once the ROW and access roads are completed. Construction of a the new ROW would involve clearing vegetation, creating new access road systems, and erecting transmission structures along the alignment. Variable terrain, isolated sections, and dense forest growth would similarly encumber access and development to portions of each alternative. Some portions of these routes, however, are situated in agriculturally and residentially altered landscapes where access to the ROW would be less complex and forest growth less dense.

Acquisition of the required ROW easements was deemed again to be the most critical accessibility issue. The Siting Team recognized that **Alternative Route F** and **Alternative Route F-1** involve a substantial length of future-use ROW that navigates through the moderately populated areas of Sterling, Salem, and Paupack Townships that border Lake Wallenpaupack. Many of the farms that contained these ROW easements have been subdivided since the 1970's and now contain some degree of residential development. The overall growth pattern in this area has resulted in an increasingly intricate and dense parcel arrangement, which is further convoluted by the presence of the ROW easement. As noted, PPL Electric has worked with present-day landowners to re-align the easement path across specific properties, typically to the benefit of the landowner. The future-use ROW, however, is narrower than the required 150-foot and

PPL Electric has initiated negotiations for the additional easement width with each landowner along the sections of future-use proposed for either **Alternative Route F** or **Alternative Route F-1**.

Proposed alignments for **Alternative Route F** and **Alternative Route F-1** south of East Sterling and north of Lakeville would require land negotiations that specifically address each landowner's position and the physical arrangement of the parcel area individually, similar to the process necessary for the entire **Alternative Route E**. The Siting Team further noted that **Alternative Route E** would need to negotiate possible easements from two non-condemnable properties. This proposed alternative would also be located in areas further removed from existing road networks, which would make it more challenging to construct due to accessibility complexities and the need for a longer access road system. On the other hand, **Alternative Route E** is the shortest of the three alternatives and would cost the least to construct.

In regards to construction, each alternative must negotiate areas of high ridge lines and steep slopes. The Siting Team noted, however, that **Alternative Route F** would be more challenging to construct due to the convoluted topography along the alignment, primarily as it descends from the upper plateau down into Butternut Creek valley. **Alternative Route F** would also require the most hard-angle turns (>60 degrees) of either route, which further increases its construction difficulty.

The Siting Team concluded that acquisition of the required easements would be the key construction, maintenance, and access issue. Despite being the shortest alignment and least costly, **Alternative Route E** was assigned a moderately high construction, maintenance, and accessibility value of 4 due to the easement negotiations necessary for the non-condemnable properties along Spring Hill Road and Bidwell Hill Road, other intricate landowner negotiations, accessibility issues, and access road development costs. The Siting Team assigned **Alternative Route F** a similar value of 4 due to construction issues regarding the terrain the alignment would navigate and the complex configuration of transmission structures required. Compared to **Alternative Route E**, **Alternative Route F-1** would benefit from the existence of the future-use ROW and experience relatively easier land negotiations, as well as benefit from more prevalent sources of

ROW accessibility. Compared to **Alternative Route F**, **Alternative Route F-1** would be less challenging and complex to develop, and was therefore assigned a moderate construction, maintenance, and accessibility value of 3.

#### **2.4.3.6.5 Risk of Schedule Delay**

The Siting Team noted that schedule delay concerns for **Alternative Route E** would be elevated by the considerably high community concerns from landowners regarding the easement negotiations necessary for the non-condemnable properties along Spring Hill Road and Bidwell Hill Road, and the passage of the alignment around the village of Sterling. This alternative would raise additional concerns near Lakeville due to the perceived visual impact of the transmission lines as they spanned SR 590 several times. Schedule delay risks for **Alternative Route E** would also involve landowner resistance during easement negotiations, accessibility constraints during construction, as well as additional special permit requirements due to its location near an airport and its multiple crossings of SR 590.

**Alternative Route F** and **Alternative Route F-1** would have a decreased risk of schedule delay due to the existence of the future-use ROW easements and the on-going landowner negotiations to cooperatively align the easements through developed areas. Environmentally, these two alternatives would also generate relatively similar special permit requirements. **Alternative Route F** however would create more visual and community concerns due to its ridge top alignment, and involve more elaborate construction methods due to accommodate the complicated landscape and the number of complex turning structures required to support the transmission lines.

The Siting Team concluded that **Alternative Route E** and **Alternative Route F** would potentially encounter more schedule delay risks due to these factors and assigned both routes a moderately high schedule delay risk value of 4. The Siting Team concluded that the risk of schedule delays for **Alternative Route F-1** would be relatively lower due to reduced community concerns over its visibility and fewer construction issues regarding terrain and number of complex support structures, and therefore assigned the route a moderate value of 3.

#### 2.4.3.7 Determination of Selected Route – North Pocono-Paupack Segment

The results of the *quantitative assessment* of the Alternative Routes for this segment, discussed in detail in **Section 2.4.3.5** and illustrated in **Table 4-18**, resulted in **Alternative Route F-1** having the lowest overall weighted total value. All three of the alternatives' scores are relatively similar, but this alternative had the lowest weighted score for one of the three perspectives of the siting process (built environment), and was second lowest in the other two perspectives (natural environment and engineering considerations). Based on the results of the quantitative assessment, the Siting Team concluded that **Alternative Route F-1** would result in less social and physical impacts relative to the other two options.

The results of the *qualitative assessment* conducted by the Siting Team of the Alternative Routes for this segment, discussed in detail in **Section 2.4.3.6** and illustrated in **Table 4-19**, indicate that **Alternative Route F-1** has the lowest weighted scores for visual concerns, community concerns, construction issues, and schedule delay risk. This route scored similar to **Alternative Route F** with regards to special permit issues, primarily due to the extensive co-location of these two alternatives.

Therefore, based on the quantitative assessment of the Alternative Routes, in conjunction with a qualitative siting process, the Siting Team selected **Alternative Route F-1** for the North Pocono-Paupack Segment of the Northeast-Pocono Reliability Project, as illustrated on **Figure 4-11**.

### 3.0 REVIEW OF COMBINED SELECTED ROUTE

Per Pennsylvania Public Utility Commission (PUC) guidelines found at 52 Pa. Code, § 69.1101 (2)(3) and § 69.3104 (1), a review of the potential effect of the Selected Route on local comprehensive plans and zoning ordinances was conducted (**Section 3.1**). Based on the requirements of § 69.3106 (1), an assessment of the potential environmental and cultural mitigation measures and permit requirements anticipated for the Selected Route is also provided (**Section 3.2**). PUC regulation § 69.3105 (2) also requires that the status of the property acquisition process be provided as part of the siting study (**Section 3.3**). PUC regulation § 57.72 (c)(8) requires that a report of the efforts to locate and identify archaeological, geologic, historic, scenic, and wilderness areas within 2 miles of the

Selected Route also be submitted as part of the siting study (**Section 3.4**). PPL Electric has reviewed the Project with Luzerne County, Lackawanna County, Monroe County, and Wayne County officials and none have provided any objection to the Project. PPL Electric reviewed the Project with the thirty-one municipalities along the length of the Selected Route; only Covington Township in Luzerne County has objected.

### 3.1 Review of Township Zoning and Comprehensive Plans

Public utility features, such as transmission lines and substations are generally exempt from local municipal authority<sup>6</sup>. To further the Commonwealth’s goal of making agency actions consistent with sound land use planning by considering the impact of its decision upon local comprehensive plans and zoning ordinances, the PUC adopted a new policy on January 11, 2001 that requires the public utility to review local zoning ordinances and comprehensive land use plans to evaluate the impact of proposed projects on these items (*See* 52 Pa. Code § 69.1101, 31 Pa. Bull. 951 (Feb. 17, 2001)). Local zoning ordinances and comprehensive land use plans were reviewed by PPL Electric to evaluate the impact of the proposed Northeast-Pocono Reliability Project on these local ordinances and plans.

Based on the Project Need (**Attachment 2**), PPL Electric proposes to develop a new 58-mile long double-circuit 230 kV transmission line linking the Jenkins 230/69 kV Substation, located in Plains Township, Luzerne County, to three 230/69 kV substations to be developed in strategic locations in eastern Luzerne County (West Pocono Substation), eastern Lackawanna County (North Pocono Substation), and southern

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<sup>6</sup> The lack of authority for a local municipality to regulate the design, location, or construction of public utility facilities is consistent with the long line of cases holding that public utilities are exempt from local ordinances. *See Duquesne Light Company v. Monroeville Borough*, 449 Pa. 573, 580, 298 A.2d 2352 (1972) (“This Court has consistently held, however, that the Public Utility Commission has exclusive regulatory jurisdiction over the implementation of public utility facilities”) (citations omitted). *See, e.g., County of Chester v. Philadelphia Elec. Co.*, 420 Pa. 422, 218 A.2d 331 (1966) (holding that regulation by a multitude of jurisdictions would result in “twisted and knotted” public utilities with consequent harm to the general welfare); *Newtown Twp. v. Philadelphia Elec. Co.*, 594 A.2d 834, 837 (Pa. Cmwlth. 1991) (noting that “it is clear that no ‘implied’ power exists in the MPC which would allow the Township to regulate [the Philadelphia Electric Company] through its subdivision and land development ordinance”); *Heintzel v. Zoning Hearing Bd. of Millcreek Twp.*, 533 A.2d 832 (Pa. 1987) (holding that township had no power to regulate, under its zoning ordinance, city’s erection of water tower because that power was under the exclusive jurisdiction of the PUC); *South Coventry Twp. v. Philadelphia Elec. Co.*, 504 A.2d 368 (Pa. Cmwlth. 1986) (noting that to possibly subject [the Philadelphia Electric Company] to a miscellaneous collection of regulations upon its system would clearly burden and indeed disable it from successfully functioning as a utility); *Commonwealth v. Delaware and Hudson Railway Co.*, 339 A.2d 155 (Pa. Cmwlth. 1975) (holding that the MPC did not authorize local governments to regulate public utilities in any manner which infringes upon the power of the Commission to so regulate).

Wayne County (Paupack Substation). This Project is needed to resolve projected reliability criteria violations along the existing 138/69 kV transmission line network throughout the Northeast Pocono area.

**TABLE 4-20: Summary of Zoning and Comprehensive Plans along Selected Route**

COUNTY/TOWNSHIP	ZONING	COMPREHENSIVE PLANS
<b>J-WP SEGMENT</b>		
LUZERNE COUNTY		Lackawanna-Luzerne County Regional Plan – Final Draft (2011)
Plains Township	Zoning Map (2007) and Ordinances	No Comprehensive Plan
Bear Creek Township	Zoning Map (2007) and Ordinances	Bear Creek Township Comprehensive Plan (1996)
Buck Township	Zoning Map (2008) and Ordinances	No Comprehensive Plan
<b>WP-NP SEGMENT</b>		
LUZERNE COUNTY		Lackawanna-Luzerne County Regional Plan Final Draft (2011)
Buck Township	Zoning Map (2008) and Ordinances	No Comprehensive Plan
LACKAWANNA COUNTY		Lackawanna-Luzerne County Regional Plan Final Draft (2011)
Thornhurst Township	Zoning Map (1995) and Ordinances	No Comprehensive Plan
Clifton Township	Zoning Map (2011) and Ordinances	Clifton-Lehigh Comprehensive Plan (2010)
Covington Township	Zoning Map (2007) and Ordinances	Covington Township Comprehensive Plan (2006)
MONROE COUNTY		Monroe County Comprehensive Plan: Monroe 2020 (1999)
Tobyhanna Township	Zoning Map (2001) and Ordinances	Regional Comprehensive Plan (2005)
<b>NP-P SEGMENT</b>		
LACKAWANNA COUNTY		Lackawanna-Luzerne County Regional Plan Final Draft (2011)
Covington Township	Zoning Map (2007) and Ordinances	Covington Township Comprehensive Plan (2006)
Madison Township	Zoning Map (2010) and Ordinances	Jefferson-Madison-Salem Regional Comprehensive Plan (2007)
WAYNE COUNTY		Wayne County Comprehensive Plan (2010)
Lehigh Township	Zoning Map (2011) and Ordinances	Clifton-Lehigh Comprehensive Plan (2010)
Sterling Township	Zoning Map (2005) and Ordinances	Dreher-Lehigh-Sterling Comprehensive Plan (1996)
Salem Township	NO ZONING	Jefferson-Madison-Salem Regional Comprehensive Plan (2007)
Paupack Township	Zoning Map (2006) and Ordinances	Lake Region Comprehensive Plan (2007)

The siting study for the Northeast-Pocono Reliability Project has concluded that the new 230 kV transmission line should generally extend southeast from the existing Jenkins Substation in Plains Township (Luzerne County) through portions of Bear Creek Township and Buck Township to the proposed West Pocono Substation, turn northeast through Thornhurst Township (Lackawanna County), Clifton Township, and Covington Township to the proposed North Pocono Substation, and then turn north through Madison Township, Sterling Township (Wayne County), Salem Township, and Paupack Township to the previously approved Paupack Substation. Construction of the new double-circuit 230 kV transmission line will supply bulk energy to the new substations, which will then provide a more reliable electrical supply to the surrounding 138/69 kV transmission line network and thereby address the Project's goals.

In adherence to PUC regulations, PPL Electric evaluated the Project's consistency with the zoning ordinances and comprehensive plans of the government entities through which the Selected Route would pass. **Table 4-20** summarizes the presence of township zoning ordinances, as well as township and county comprehensive plans of the government entities along the proposed alignment.

### **3.1.1 Township Zoning**

PPL Electric collected and reviewed the zoning maps and ordinances of the relevant townships. The proposed line and ROW were assessed relative to the local zoning maps to identify the specific zoning districts through which the line would pass. Ordinances associated with these zoning districts were subsequently evaluated by PPL Electric to determine the proposed transmission line's consistency with their requirements.

The various zoning ordinances or land development ordinances reviewed for all of the relevant townships are comparable. Each of the municipalities has zoning ordinances and zoning districts that were established to guide future land use in the municipality by encouraging development of desirable residential, commercial, agricultural, and manufacturing areas with appropriate groupings of compatible and related uses. The general envisioned goal of these ordinances is to protect and promote the health, morals, safety, and general welfare of the inhabitants of the municipality.

Electric transmission lines used by public utilities are generally referred to in municipal zoning codes as an “essential service,” “public utility uses,” or similar categorization. Bear Creek Township, for example, defines high voltage transmission lines, towers, and substations under its Public Utilities Facilities (Essential) category, whereas Thornhurst Township defines electric transmission lines under the Essential Services category, which also includes the provision of gas, telephone, sewer, water, and other similar services.

### **3.1.1.1 Plains Township, Luzerne County**

The Jenkins to West Pocono Segment of the Northeast-Pocono Reliability Project would traverse approximately 3.84 miles of Plains Township. The proposed transmission line would be located on an existing transmission pole system for the initial 2.30 miles from the existing Jenkins Substation to a specific transmission pole located along the western edge of the Pennsylvania Turnpike; after crossing this roadway, the transmission line would be located on a new monopole system to be developed within a new ROW. The route would pass through four zoning districts within the township: the Industrial District, the Single Family Residential District, the Conservation District, and the Highway Commercial District. The co-located portion of the proposed alignment would cross through all of the zoning districts noted above, with the new ROW portion crossing through an area of the Conservation District. Section 315 of the Plains Township Zoning Ordinances indicates that the provisions and regulations of the zoning ordinance shall not apply to existing or proposed structures used by public utilities (Plains Township 2007).

#### **3.1.1.1.1 Industrial District**

The initial 0.21 miles from the existing Jenkins Substation would be located within the Industrial District, which is composed of the electrical utility property, as well as several adjacent active quarries. The purpose of the Industrial District is to facilitate uses engaged in the manufacturing, packaging, and other light industrial activities, as well as basic processing of extracted or raw materials, manufacturing of potentially hazardous materials, and other heavy industrial activities. According to Section 508 of the Plains Township Zoning Ordinances, essential public utility facilities are permitted by right in the Industrial District. The new transmission line would not interfere with any the

existing industrial uses and would be considered consistent with the intent of the ordinance.

#### **3.1.1.1.2 Single Family Residential District**

The intent of the Single Family Residential District is to provide for moderate density residential development. Two sections of Single Family Residential District, 0.11 miles and 0.07 miles, that would be crossed by the route are located within close proximity of the Jenkins Substation. These two areas are centered along Union Street and Ridgewood Road, which are bordered by undeveloped forest and a quarry to the one side, and several residential homes and commercial businesses on the other. According to Section 501 of the Plains Township Zoning Ordinances, essential public utility facilities are permitted by right in the Single Family Residential District. PPL Electric sited the proposed transmission line to avoid the curtilage (100 meters, or 328 feet) around residential units along the route. The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

#### **3.1.1.1.3 Conservation District**

Approximately 3.25 miles of the route would traverse through three sections of the Conservation District. The intent of this district is to perpetuate the wooded, natural, undeveloped, and unimproved areas of the township. Two of the sections are located near the Jenkins Substation and are relatively small, 0.15 miles and 0.21 miles; a third section extends 2.89 miles from the I-81 crossing to the eastern boundary of the township. The two smaller areas are composed of a quarry and a narrow forested area; the larger area is composed primarily of forest cover, with half of the distance containing an existing transmission line ROW. This portion also spans Westminster Road, which is bordered by several single family homes. According to Section 507 of the Plains Township Zoning Ordinances, essential public utility facilities are permitted by right in the Conservation District. PPL Electric sited the proposed transmission line to take advantage of the exiting transmission line ROW and structures and thereby reducing the need to impact other undeveloped lands. The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

#### **3.1.1.1.4 Highway Business District**

The proposed route would traverse across a 0.20 mile section of the Highway Business District centered along SR 315. The intent of this district is to provide focused areas in the township for various commercial activities. Specific commercial businesses at this location include restaurants and automotive repair shops. According to Section 506 of the Plains Township Zoning Ordinances, essential public utility facilities are permitted by right in the Highway Business District. The new transmission line would not interfere with any the existing commercial uses and would be consistent with the ordinance.

#### **3.1.1.2 Bear Creek Township, Luzerne County**

The Jenkins to West Pocono Segment of the proposed Northeast-Pocono Reliability Project would traverse approximately 6.63 miles of Bear Creek Township. The proposed transmission line would be on a new monopole system to be developed within a new ROW. Approximately half of the route would parallel an existing natural gas pipeline ROW through the southeastern portion of the township. The route would pass through two zoning districts within the township: the Agricultural District and the Conservation District. Section 317 of the Bear Creek Township Zoning Ordinances indicates that the provisions and regulations of the zoning ordinance shall not apply to existing or proposed structures used by public utilities (Bear Creek Township 1996).

##### **3.1.1.2.1 Agricultural District**

Two areas of Agricultural District would be traversed by the proposed route, a 1.67 mile section along Bald Mountain Road in the northwestern portion of the township, and a 0.55 mile section near Indian Lake Trail in the southeastern section of the township. The purpose of this zoning district is to provide for areas of farming, dairying, pasturage, and animal and poultry husbandry and the necessary accessory uses associated with these activities. Areas around Bald Mountain Road are used actively as horse or cattle pasture; whereas areas around Indian Lake Trail are predominantly forested. According to Section 502 of the Bear Creek Township Zoning Ordinances, essential public utility facilities are permitted by right in the Agricultural District. PPL Electric sited the proposed transmission line to take advantage of field edges and property lines to

minimize interference with existing agricultural activities. The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

#### **3.1.1.2.2 Conservation District**

A 4.41 mile section of the proposed route would cross through the Conservation District. This zoning district encompasses a large portion of the township and is composed locally of the privately preserved Bear Creek Camp Conservation Area and State Game Lands #091. The area of the Conservation District that would be traversed extends from the heights of Wyoming Mountain, the site of an existing wind farm network, toward the southeastern edge of the township at the crossing of residential lined Meadow Run Road. South of the wind farm, the proposed route would parallel the northern edge of an existing natural gas pipeline ROW, which extends southeast through to the township boundary and beyond. According to Section 501 of the Bear Creek Township Zoning Ordinances, essential public utility facilities are permitted by right in the Conservation District. PPL Electric sited the proposed transmission line to take advantage of existing linear utility ROWs to minimize affects to conserved lands. The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

#### **3.1.1.3 Buck Township, Luzerne County**

The Jenkins to West Pocono Segment of the proposed Northeast-Pocono Reliability Project would traverse approximately 4.42 miles of Buck Township. Through the township, the entire length of the Jenkins to West Pocono Segment would parallel an existing natural gas pipeline ROW except for a 1.75 mile section that would bypass to the north around an active golf course. This route would terminate at the proposed West Pocono Substation, which would be developed on the south side of Buck River Road. In addition, the West Pocono to North Pocono Segment of the proposed Northeast-Pocono Reliability Project would traverse an additional 2.51 miles through Buck Township. This segment would begin at the proposed West Pocono Substation and would cross to the north side of Buck River Road and parallel the Jenkins to West Pocono Segment for 0.60 miles to the northwest before turning to the northeast toward the proposed North Pocono Substation, which is to be located in Covington Township, Lackawanna County. These proposed transmission lines would be on new monopole structures to be developed within

a new ROW. The alignment would pass through two zoning districts within the township: the Conservation District and the Industrial District. Article 3, Table 1 and pages 3-2, 5-3, and 11-7 of the Buck Township Zoning Ordinances (Buck Township 2007) indicate that the erection, construction, and maintenance of electric transmission and distribution systems are “essential services-open” that are a permitted use in every zoning district in Buck Township.<sup>7</sup>

#### **3.1.1.3.1 Conservation District**

Two areas of the Conservation District would be traversed by the proposed Jenkins to West Pocono Segment. The first is a 1.11 mile section in the northwest portion of the township, which crosses an undeveloped section of Indian Lake Trail. The second is a 2.81 mile section extending from the industrially zoned Williams pipeline compressor station to the proposed location of the West Pocono Substation, crossing an undeveloped section of Buck River Road along the way. The proposed route would parallel the northern edge of an existing natural gas pipeline ROW through most of these sections. A third section of the Conservation District would be crossed by the West Pocono to North Pocono Segment. This 2.51 mile section would re-cross Buck River Road and generally travel to the northeast toward Choke Creek, which forms the boundary line between Luzerne County and Lackawanna County. This zoning district encompasses most of the township and is locally composed primarily of privately owned forested lands and a portion of State Game Lands #091. According to Article 3, Table 1 of the Buck Township Zoning Ordinances, “essential services-open” are permitted by right in the Conservation District. PPL Electric sited the proposed transmission line to parallel an existing linear utility ROW to minimize effects to the conserved lands. The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

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<sup>7</sup> The proposed West Pocono 230-69 kV Substation site is located in Buck Township, Luzerne County. Buck Township provides that any electric substation or associated facilities are a “essential services-closed” that are only permitted by special exception in every zoning district in Buck Township. BUCK TOWNSHIP ZONING ORDINANCE, pp. 3-2, 5-2, 11-7. Under the Buck Township Zoning Ordinance, PPL Electric would be required to obtain special exception use approval and a zoning permit for the West Pocono 230-69 kV Substation and associated control equipment building. PPL Electric is separately filing a Zoning Petition, pursuant to 52 Pa. Code § 5.41 and 53 P.S. § 10619, for a finding that a building to shelter control equipment at the proposed West Pocono 230-69 kV Substation in Buck Township, Luzerne County, Pennsylvania is reasonably necessary for the convenience or welfare of the public and, therefore, exempt from the Buck Township local zoning ordinance.

### **3.1.1.3.2 Industrial District**

A 0.50 mile section of the Jenkins to West Pocono Segment would travel through the Industrial District, which contains the Williams natural gas compressor station, but is composed primarily of forested lands. The alignment of the proposed route was purposefully positioned to pass around the northern side of the compressor station and through the forested area. According to Article 3, Table 1 of the Buck Township Zoning Ordinances, “essential services-open” are permitted by right in the Industrial District. The new transmission line would not interfere with any the existing industrial uses and would be consistent with the ordinance.

### **3.1.1.4 Thornhurst Township, Lackawanna County**

The West Pocono to North Pocono Segment of the proposed Northeast-Pocono Reliability Project would traverse approximately 5.45 miles of Thornhurst Township. The proposed transmission line would be on a new monopole system to be developed within a new ROW. The alignment would pass through two zoning districts within the township: the Open Space Conservation District and the Agricultural-Residential District. Section 403 of the Thornhurst Township Zoning Ordinances indicates that essential services are a special exception use and “*shall require individual consideration in each case because of their unique characteristics. Such special exception uses shall be referred to the Planning Commission by the Board for review and recommendation and such uses may be permitted only upon authorization by the Board subject to certain conditions and safeguards, as provided in this Section and after a hearing.*” (Thornhurst Township 1995).

#### **3.1.1.4.1 Open Space Conservation District**

The Open Space Conservation District provides for the wooded, natural, undeveloped, and unimproved areas of the township. Three areas of the Open Space Conservation District would be traversed by the proposed route, a 0.31 mile section of Lackawanna State Forest adjacent to Choke Creek, a 1.73 mile section of Lackawanna State Forest along Phelps Road and southeast of Bear Lake Road, and a 0.76 mile section of State Game Land #135 located north of Pine Grove Road. These areas are predominantly forested and intersected by a series of forest roads. Schedule 27-1 of the Thornhurst

Township Zoning Ordinances indicates that essential services are permitted in the Open Space Conservation District as a special exception use.

#### **3.1.1.4.2 Agriculture-Residential District**

The Agriculture-Residential District provides for a mix of agricultural land uses and large rural residential properties. Three areas of the Agriculture-Residential District would be traversed by the proposed route, a 0.92 mile section south of the Lackawanna State Forest property near Choke Creek, a 0.82 mile section north of Bear Lake Road, and a 0.91 mile section east of State Game Land #135 near the northeastern boundary of the township. The section bordering Lackawanna State Forest would use the existing ROW developed for Phelps Road, whereas the other two sections would cross through areas that are predominately forested and contain a few isolated residential buildings and sparse agricultural land uses. Schedule 27-1 of the Thornhurst Township Zoning Ordinances indicates that essential services are permitted in the Agriculture-Residential District as a special exception use.

#### **3.1.1.5 Clifton Township, Lackawanna County**

The West Pocono to North Pocono Segment of the proposed Northeast-Pocono Reliability Project would traverse approximately 5.24 miles of Clifton Township. The proposed transmission line would be on a new monopole system to be developed within a new ROW. The alignment would pass through four zoning districts within the township: the Open Space District, the Low Density Residential District, the Commercial District, and the Industrial District. Schedule 27-1 of the Clifton Township Zoning Ordinances indicates that essential services and facilities are considered a conditional use in all of the zoning districts within the township. Land uses deemed conditional use *“shall require individual consideration in each case because of their unique characteristics. Such conditional uses shall be referred to the Planning Commission by the Township Supervisors for review and recommendation and may be permitted only after a hearing and determination by the Board of Supervisors that such uses meet the standards in this Chapter.”* (Clifton Township 2011).

#### **3.1.1.5.1 Open Space District**

Section 401 of the Clifton Township Zoning Ordinances states the intent of the Open Space District is to “*protect the extensive wetlands and open water bodies and the unique plant and animal communities within the Township. To provide for the development of limited uses which are compatible with the unique and sensitive natural environment within this district at low densities and with suitable buffers and conditions which will minimize negative impacts of the development upon the environment.*” (Clifton Township 2011). A 1.14 mile section of the Open Space District would be traversed by the proposed route. This section would cross State Game Land #135, which is located along the western boundary of the township and is predominantly forested. Section 504 of the Clifton Township Zoning Ordinances indicates that essential services and facilities are permitted in the Open Space District as a conditional use.

#### **3.1.1.5.2 Low Density Residential District**

Section 401 of the Clifton Township Zoning Ordinances states the intent of the Low Density Residential District is to “*provide for the continued development of low density single family residential communities in areas of the Township having suitable environmental conditions and access to the public highway system.*” (Clifton Township 2011). A 2.75 mile section of the Low Density Residential District would be traversed by the proposed route. This district is located in the central area of the township and is bordered by State Game Land #135 to the west and I-380 to the east. The district is also primarily forested with residential areas clustered along Sandy Beach Road and Clifton Beach Road. Several homes are located in the vicinity of where the proposed route would span these roads. PPL Electric sited the proposed transmission line to avoid the curtilage (100 meters, or 328 feet) around residential units along the route. Section 505 of the Clifton Township Zoning Ordinances indicates that essential services and facilities are permitted in the Low Density Residential District as a conditional use.

#### **3.1.1.5.3 Commercial District**

Section 401 of the Clifton Township Zoning Ordinances states the intent of the Commercial District is to “*provide space and opportunities for the development of commercial trade and service facilities and multi-family residential development along the major highway*

*and in the area of the Township where municipal services and facilities can most feasibly be provided in the future.”* (Clifton Township 2011). A 0.55 mile section of the Commercial District would be traversed by the proposed route. This section would span to the east side of I-380 and parallel the highway to the north through an area that is predominantly forested. Section 506 of the Clifton Township Zoning Ordinances indicates that essential services and facilities are permitted in the Commercial District as a conditional use.

#### **3.1.1.5.4 Industrial District**

Section 401 of the Clifton Township Zoning Ordinances states the intent of the Industrial District is to *“provide space for those manufacturing and other types of industrial activities which can be developed and operated with minimal conflicts with the natural environment and rural residential character of the Township.”* (Clifton Township 2011). A 0.80 mile section of the Industrial District would be traversed by the proposed route. This section also parallels the east side of I-380 and would pass a propane distribution business prior to crossing to the north side of Clifton Beach Road; a majority of the area that would be crossed is forested. Section 507 of the Clifton Township Zoning Ordinances indicates that essential services and facilities are permitted in the Industrial District as a conditional use.

#### **3.1.1.6 Covington Township, Lackawanna County**

The West Pocono to North Pocono Segment of the proposed Northeast-Pocono Reliability Project would traverse approximately 6.93 miles of Covington Township. This route would terminate at the proposed North Pocono Substation, which would be developed on the east side of Freytown Road. Furthermore, the North Pocono to Paupack Segment of the proposed Northeast-Pocono Reliability Project would traverse an additional 1.65 miles through Covington Township. This segment would begin at the North Pocono Substation and would cross to the west side of Freytown Road and parallel the West Pocono to North Pocono Segment for 0.25 miles to the northwest before turning to the northeast toward the previously approved Paupack Substation, which will be located in Paupack Township, Wayne County. The proposed transmission line would be on a new monopole system to be developed within a new ROW. The alignment would pass through four zoning districts within the township: the Manufacturing District, the

Mobile Home Park-Recreational Vehicle Park District, the Rural Residential District, and the Special Conservation District. As set forth on pages III-9, IV-13, and IV-14 of the Covington Township Zoning Ordinances (Covington Township 2007), electric transmission and distribution poles, wire, and facilities that do not require a building are “essential services” or an “accessory use” that are a permitted use in every zoning district in Covington Township.<sup>8</sup>

#### **3.1.1.6.1 Manufacturing District**

According to Section 404 of the Covington Township Zoning Ordinances, the intent of the Manufacturing District is to “*provide adequate space to meet the projected needs for industrial activities and to restrict industrial land from being used for residential development and also provide areas for industrial growth to occur unhindered by pressures from other types of development.*” (Covington Township 2007). The proposed route would traverse 2.43 miles of the Manufacturing District. This section would travel through a forested area before crossing to the east side of SR 435, which is bordered by a mix of commercial and residential uses. The route would then head in a northerly direction through the Covington Industrial Park and maneuver around several large warehouses that are bordered by areas of maintained lawn and forest. The Table of Uses Permitted by District, located within the Covington Township Zoning Ordinances, indicates that essential services are considered a principal permitted use in the Manufacturing District. The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

#### **3.1.1.6.2 Mobile Home Park-Recreation Vehicle Park District**

According to Section 404 of the Covington Township Zoning Ordinances, the intent of the Mobile Home Park-Recreation Vehicle Park District is to “*provide for the*

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<sup>8</sup> The proposed North Pocono 230-69 kV Substation site in Covington Township, Lackawanna County is zoned as SC, Special Conservation. “Semi-public buildings or uses” are not permitted with any SC, Special Conservation zoning district. COVINGTON TOWNSHIP ZONING ORDINANCE, p. IV-17. “Semi-public buildings or uses” are any essential services or public utility facilities that require enclosure within any structure or building are COVINGTON TOWNSHIP ZONING ORDINANCE, p. III-19. PPL Electric is separately filing a Zoning Petition, pursuant to 52 Pa. Code § 5.41 and 53 P.S. § 10619, for a finding that a building to shelter control equipment at the proposed North Pocono 230-69 kV Substation in Covington Township, Lackawanna County, Pennsylvania is reasonably necessary for the convenience or welfare of the public and, therefore, exempt from the Covington Township Zoning Ordinance.

*development of mobile home parks, recreational vehicle parks and campgrounds and allow for the reasonable expansion of such existing uses.”* (Covington Township 2007). Two sections of the proposed route would cross the mobile Home Park-Recreation Vehicle Park District: a 1.09 mile section located southwest of A.M. Hughes Boulevard, which is the primary entrance way to the Eagle Lake mobile home community, and a 0.11 mile section located along the northern edge of the Eagle Lake community near Lehigh Road. Both of these areas are predominantly forested and are potential growth areas for the mobile home community. The Table of Uses Permitted by District, located within the Covington Township Zoning Ordinances, indicates that essential services are considered a principal permitted use in the Mobile Home Park-Recreation Vehicle Park District. The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

#### **3.1.1.6.3 Rural Residential District**

According to Section 404 of the Covington Township Zoning Ordinances, the intent of the Rural Residential District is to *“provide adequate space for the continuation of agricultural activities and very low density residential development while preserving the rural character of the area.”* (Covington Township 2007). A 0.97 mile section of the proposed route would travel through the Rural Residential District. This section would cross to the east side of A.M. Hughes Boulevard in an area that consists of several dispersed residential homes, but then proceeds to the northeast through a predominantly forested area that contains a few isolated homes. The Table of Uses Permitted by District, located within the Covington Township Zoning Ordinances, indicates that essential services are considered a principal permitted use in the Rural Residential District. The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

#### **3.1.1.6.4 Special Conservation District**

According to Section 404 of the Covington Township Zoning Ordinances, the intent of the Special Conservation District is to *“protect special natural areas, open space and environmentally sensitive areas from over development.”* (Covington Township 2007). Two areas of the Special Conservation District would be traversed by the proposed

Northeast-Pocono Reliability Project. The first is a 2.33 mile section of the West Pocono to North Pocono Segment that starts west of Lehigh Road and proceeds northeast across an undeveloped portion of the road and over the Delaware, Lackawanna, & Western Railroad. The proposed route would then turn to the southeast and travel through a forested area primarily associated with the Lackawanna State Forest before crossing an undeveloped section of Freytown Road and entering the proposed North Pocono Substation. The second area of the Special Conservation District would be crossed by a 1.65 mile section of the North Pocono to Paupack Segment of the Northeast-Pocono Reliability Project. This section would initially head northwest and re-cross Freytown Road before turning to the northeast toward the boundary line between Lackawanna County and Wayne County; the alignment would span a second undeveloped portion of Freytown Road along this route. This zoning district encompasses most of the western half of the township and is locally composed primarily of privately owned forested lands, as well as portions of the Lackawanna State Forest and State Game Lands #312. The Table of Uses Permitted by District, located within the Covington Township Zoning Ordinances, indicates that essential services are considered a principal permitted use in the Special Conservation District. The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

#### **3.1.1.7 Madison Township, Lackawanna County**

The North Pocono to Paupack Segment of the proposed Northeast-Pocono Reliability Project would traverse approximately 0.27 miles of Madison Township. The proposed transmission line would be on a new monopole system to be developed within a new ROW. This section would be located along the southern edge of the township and travel in a northeasterly direction toward the Lackawanna and Wayne County boundary through an area that is predominantly forested. The alignment would pass through the only zoning area within the township: the Multiple Use Zone. Schedule 1 (Uses by Right) of the Madison Township Zoning Ordinances indicates that essential services are considered a non-residential principal use in the Multiple Use Zone (Madison Township 2009). The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

### **3.1.1.8 Sterling Township, Wayne County**

The North Pocono to Paupack Segment of the proposed Northeast-Pocono Reliability Project would traverse approximately 8.05 miles of Sterling Township. The proposed transmission line would be on a new monopole system to be developed within a new ROW except for a 1.1 mile section would parallel the existing Gouldsboro-Madisonville 69 kV transmission line ROW located in the southwestern corner of the township. The alignment would pass through two zoning districts within the township: the Rural Development District and the Residential District. Section 407 of the Sterling Township Zoning Ordinances provides a Schedule of Uses that indicates that essential services are an accessory use that is permitted in all of the zoning districts within the township (Sterling Township 2001).

#### **3.1.1.8.1 Rural Development District**

The Rural Development District provides for a mix of agricultural and rural residential land uses and constitutes a substantial portion of the township. Two areas of the Rural Residential District would be crossed by the proposed route. The first area is a 7.40 mile section that begins at the Wayne County boundary and extends northeast along the eastern side of the township to I-84, a major highway crossing the northern part of the township from east to west. The second area is a 0.62 mile section located north of I-84 that turns to the northwest and extends from I-84 to the West Branch Wallenpaupack Creek, which forms the boundary between Sterling Township and Salem Township. The areas crossed consist primarily of forested lands with agricultural and residential land uses clustered along SR 191, Butternut Road, and Forks Bridge Road. Several homes are located in the vicinity of where the proposed route would span these roads. PPL Electric sited the proposed transmission line to avoid the curtilage (100 meters, or 328 feet) around residential units along the route. According to Section 407 of the Sterling Township Zoning Ordinances, essential services are permitted in the Rural Residential District (Sterling Township 2005). The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

### **3.1.1.8.2 Residential District**

The Residential District provides for low to moderate density residential development and constitutes a relatively minor portion of the township. A 0.03 mile section of the Residential District would be crossed by the proposed route. This area is located south of I-84 on the east side of Forks Bridge Road and is associated with an existing residential development located on Valley View Drive, which is on the west side of Forks Bridge Road; no homes are located on the property spanned by the proposed alignment. According to Section 407 of the Sterling Township Zoning Ordinances, essential services are permitted in the Residential District (Sterling Township 2005). The proposed Northeast-Pocono Reliability Project would be consistent with the ordinance.

### **3.1.1.9 Salem Township, Wayne County**

The North Pocono to Paupack Segment of the proposed Northeast-Pocono Reliability Project would traverse the eastern portion of Salem Township for approximately 6.16 miles. The proposed transmission line would be on a new monopole system to be developed within a new ROW. Land use in the township is primarily a mix of forest and agriculture interspersed with low to moderate density residential development. Generally heading in a northeasterly direction, the proposed route would cross several local roads within the township, specifically Bidwell Hill Road, Ledgesdale Road (in two separate locations), Catterson Road, Sledzinski Road, Goose Pond Road, and Hanlon Road. Many of these roads would be crossed along portions that are currently undeveloped, but along the roads where residential development does exist, PPL Electric sited the proposed transmission line to avoid the curtilage (100 meters, or 328 feet) around the existing residential units.

Salem Township does not have zoning regulations. In these situations, the municipality typically uses the subdivision and land development ordinances developed by the county as the basis for some of the decisions regarding land use. In this scenario, Salem Township would use the Subdivision and Land Development Ordinance of Wayne County, Pennsylvania (Wayne County Commissioners 2002). These ordinances do not address zoning districts or utility transmission lines. Thus in this instance where the township does not address zoning issues, essential services are permitted.

### 3.1.1.10 Paupack Township, Wayne County

The North Pocono to Paupack Segment of the proposed Northeast-Pocono Reliability Project would traverse approximately 5.58 miles of Paupack Township. The proposed transmission line would be on a new monopole system to be developed within a new ROW except for a 0.2 mile section, which would parallel the existing Lakeville 69 kV Tap transmission line ROW located in the north-central portion of the township. This route would terminate at the proposed Paupack Substation, which would be developed on the west side of Hoadleys Road. The alignment would pass through three zoning districts within the township: the Rural Residential District, the Conservation District, and the Community Commercial District. The Paupack Township Zoning Ordinances indicate that essential services would be permitted in all zoning districts as a special exception. As defined in Section 206 of the Paupack Township Zoning Ordinances, special exceptions “*are uses which shall require individual considerations in each case because of their unique character. Such “Special Exceptions” may be permitted only on approval by the Zoning Hearing Board, under and subject to any conditions and/or safeguards as may be imposed. In the case of a request for a special exception a public hearing is required.*” (Paupack Township 2003).

#### 3.1.1.10.1 Rural Residential District

According to Section 501 of the Paupack Township Zoning Ordinances, the purpose of the Rural Residential District is to “*delineate those areas within the Township of Paupack where the existing uses are residential, agricultural, wooded or open space and primarily where no definite pattern of development has been established; to protect those areas until sound proposals for compatible uses are presented that will allow for development to take place that will not create unwanted pollution, flooding or loss of sensitive natural resources and promote the development of housing in a manner consistent with the present nature of the community.*” (Paupack Township 2003). Three areas of the Rural Residential District would be traversed by the proposed route. The first is a 0.82 mile section located in the southwestern corner of the township that travels primarily through forested and agricultural lands. This section would span Everly Road, which is bordered by several residential homes, and an undeveloped portion of Finn Swamp Road. The

second is a 1.60 mile section located south of SR 590 near Lakeville that traverses through predominantly forested lands. This section would span the undeveloped intersection of Peifer Road and Finn Swamp Road. The third area is a 2.30 mile section located north of SR 590 that also travels primarily through forested and agricultural lands. This section would span a portion of Daniels Road, which is bordered by several homes, and then extend north to the proposed Paupack Substation, which would be established along an undeveloped portion of Hoadleys Road. PPL Electric sited the proposed transmission line to avoid the curtilage (100 meters, or 328 feet) around residential units along the route. Section 504 of the Paupack Township Zoning Ordinances indicates that public utilities and facilities would be considered special exceptions in the Rural Residential District.

#### **3.1.1.10.2 Conservation District**

According to Section 801 of the Paupack Township Zoning Ordinances, the purpose of the Conservation District is to “*provide for undeveloped, nature conservancy and wildlife nurturing areas within the Township, allowing for the enjoyment of such open space, nature conservancy, pristine and undeveloped property which can be viewed in harmony with other land uses.*” (Paupack Township 2003). A 0.69 mile section of the proposed route would cross through the Conservation District. This section would be located on property that is part of the Goose Pond Boy Scout Reservation, which is also preserved as a conservation area by the Natural Lands Trust. The proposed route was sited to parallel the undeveloped southern side of Finn Swamp Road and would not interfere with the activities of the camp. Section 804 of the Paupack Township Zoning Ordinances indicates that any use not specifically permitted (including public utilities and facilities) or denied within this Ordinance would be permitted as a special exception pursuant a review by the Zoning Hearing Board.

#### **3.1.1.10.3 Community Commercial District**

According to Section 601 of the Paupack Township Zoning Ordinances, the purpose of the Community Commercial District is to “*identify areas within the established communities or proposed communities within the Township that are presently used or would be used for the purpose of commercial activities. These activities are designed to*

*provide goods and materials required on a daily basis by the residents and visitors of the Township of Paupack, at the same time preserving the said areas for the same.”* (Paupack Township 2003). The Community Commercial District would be crossed by a 0.17 mile section of the proposed route. This area consists of open agricultural located along the southern edge of SR 590 and west of the existing Lakeville 69 kV Substation. Section 604 of the Paupack Township Zoning Ordinances indicates that any use not specifically permitted (including public utilities and facilities) or denied within this Ordinance would be permitted as a special exception pursuant a review by the Zoning Hearing Board.

### **3.2 County and Municipal Plans**

PPL Electric acquired and reviewed available county and municipal comprehensive or land use plans covering the areas through which the proposed Northeast-Pocono Reliability Project would cross. County comprehensive plans included the Lackawanna-Luzerne County Regional Plan (Final Draft), the Monroe County Comprehensive Plan, and the Wayne County Comprehensive Plan. Municipal-level comprehensive plans were reviewed for Bear Creek, Tobyhanna, Clifton, Covington, Lehigh, Madison, Sterling, Salem, and Paupack Townships. All of these plans were developed to guide growth at the county and municipal levels and are summarized below.

#### **3.2.1 Lackawanna and Luzerne Counties**

The *Lackawanna-Luzerne Regional Plan* was developed as a joint project between the Lackawanna County Planning Commission and the Luzerne County Planning Commission. The cooperative relationship between Lackawanna and Luzerne Counties is strong and represents “*a shared vision for the collaborative planning and decision-making on a wide range of challenges and opportunities affecting the future of both counties.*” (Lackawanna and Luzerne County Planning Commissions 2011). The Lackawanna-Luzerne Regional Plan is comprised of two separate but inter-related planning elements: a comprehensive plan and a long-range transportation plan. The comprehensive plan is a broad-scoped planning guide for the two counties and associated 116 municipalities. The comprehensive plan “*establishes a framework for future growth, conservation, and preservation that strengthens the existing communities and responsibly*

*stewards natural, agricultural, and cultural resources.*” (Lackawanna and Luzerne County Planning Commissions 2011). The transportation plan addresses the need to coordinate, develop, maintain, and manage a safe and sound transportation network throughout the two counties.

The goal of the plan is to provide a pattern of development that is responsive to the existing and future needs of the two counties, while conserving and preserving natural and agricultural resources. Concepts discussed in the plan to achieve this goal are based on a framework of priority areas, infill areas, and conservation areas. Priority areas are identified as mixed-use areas that would provide a concentrated combination of housing, shopping, employment, community facilities, and public open space opportunities. Priority areas would occur at several scales including city centers, selected borough and township centers, and transit villages. Infill areas would involve opportunities for new development and redevelopment on properties that are vacant or underutilized. Infill areas would generally border priority areas and provide opportunities for mixed density residential and commercial development, as well as low density residential areas that are based on the “conservation development” strategy of concentrated clusters of homes and limited land disturbance. Conservation areas include sensitive environmental features, scenic landscapes, agricultural lands, recreational sites, and other cultural resources. Different classifications identified by the plan include public parks, conserved lands, game lands, and additional conservation areas recommended through the bi-county Open Space Plan. The *Lackawanna-Luzerne Regional Plan* provides additional goals that integrate this conceptual development pattern into other core aspects of the comprehensive plan including transportation, housing, community facilities, open space and greenways, cultural resources, agricultural resources, environmental protection, utilities and energy conservation, and resource extraction.

Based on review of the *Lackawanna-Luzerne Regional Plan*, the Selected Route would be located in areas designated as mixed density infill (from the Jenkins Substation east to the Pennsylvania Turnpike), low density infill (near Gouldsboro), and primarily in existing or proposed conservation areas. The route would not involve any priority areas identified in the *Lackawanna-Luzerne Regional Plan*. The section of the route that would traverse the mixed density infill areas only involves adding the required circuits onto

existing transmission line poles within an existing ROW and is not anticipated to have any effect on potential development options. Sections of the route that would traverse the low density infill areas would be located on new transmission monopoles within a new ROW. The effect of the route on potential development in the low density infill areas has been reduced by avoiding proposed development areas, minimizing the length of ROW through these areas, and using the borders of existing developed properties, such as Covington Industrial Park, where practicable.

The siting process conducted by PPL Electric has minimized the potential effects of the Selected Route on the open space, cultural resource, and environmental protection aspects of the plan. Open space and conserved lands will be crossed by the new alignment within the two counties, particularly State Game Land #091, State Game Land #135, and Lackawanna State Forest. The effects to these lands have been minimized by PPL Electric working with the various state agencies and private conservation groups on determining the route alignments across the their properties and by paralleling existing utility ROW where present on these lands. National Register-listed cultural resources in proximity to the Selected Route consist of the Stoddartsville Historic District, which is located along the Lehigh River near the West Pocono Substation. Siting processes presented opportunities to avoid possible direct effects to this resource, and the studies to evaluate potential visual effects being coordinated with the PHMC are anticipated to conclude that the resource would not be affected. Environmental protection matters will include impacts to mature forests, wildlife habitats, and water resources. PPL Electric has minimized the effect to these natural resources by developing as direct a route as possible to reduce forest clearing, while also maneuvering around sensitive habitat areas, such as specific Natural Areas and wetland complexes. PPL Electric has also limited stream and riparian buffer impacts by crossing these features at right angles where practicable. In regards to water quality protection, PPL Electric is cognizant of the erosion and sedimentation protection measures required in these high quality and exceptional value streams and wetlands. Coordination with county conservation districts and state agencies has already been initiated to review the Project activities required to develop the Selected Route to assure that all of the requirements and protective intentions are integrated into the construction plans. PPL Electric is aware of the effects that a

project of this scale has on the landscape and has identified several options for mitigation in the form of land conservation that may preserve lands that have the same characteristic as those affected.

Given that a substantial component of the Selected Route would traverse Lackawanna and Luzerne Counties, the route has been sited to avoid specified priority growth areas and minimize the effects to the natural environment, and, as such, is considered consistent with the principles of the *Lackawanna-Luzerne Regional Plan*. Even though the *Lackawanna-Luzerne Regional Plan* does not specifically provide any insight into the need for additional electrical utility services, such services will be crucial in supporting the projected social and economic growth of the region.

### **3.2.2 Monroe County**

The *Monroe County Comprehensive Plan: Monroe 2020* was coordinated by the Monroe County Planning Commission (MCPC) and formulated to address pressures on the county and local municipalities generated by high population growth rates, loss of open space, and strains on the local tax base (MCPC 1999). Goals of the plan are to guide further economic development and environmental conservation in the county and associated municipalities. The Overview Section provides a summary of the challenges, identified patterns, and recommendations for obtaining these goals. Key to this process is the coordination of county and municipal entities to cooperatively make decisions on future development through delineation of growth areas and the identification of important agricultural and natural resource areas that should be preserved. This cooperative method is envisioned to occur through actions such as county funding of specific municipal open space acquisitions and municipal level planning and zoning processes that guide development at the township level. Concerns regarding utility infrastructure focused primarily on the need to provide adequate supplies of drinking water and proper methods of wastewater processing. Electric utilities were noted to have strong expansion capabilities in the county.

Primary growth issues identified in the *Monroe County Comprehensive Plan* include guiding development and preservation of natural resources. To address the development issues, the plan identified the need to focus growth in specific population centers such as

Stroudsburg, Blakeslee, Mount Pocono, and Brodheadsville, and to focus future economic development along specific transportation corridors including SR 209, SR 611, SR 115, and SR 940. Strategies to guide this process include establishing efficient, compact patterns of land use and locating new development on sites served by existing infrastructure. To address the environmental conservation issues, the plan recommends preserving local environmentally valuable resources as identified by the County’s Natural Areas Inventory, and providing incentives to protect local agricultural lands. Strategies to guide this process include using various land acquisition methods including capital expenditures, private land donations, and conservation easements that are based on matching state funds.

A portion of the West Pocono 69 kV Connector Lines would cross through the westernmost section of Tobyhanna Township, which is located in the northwestern portion of Monroe County. The route would traverse through areas designated as forest, vacant, and residential land. The Project will not impact areas identified as growth centers or economic corridors. The alignment will, however, cross a forested area that is preserved through The Nature Conservancy and is also considered part of the Lehigh River-Route 115 Bridge Natural Area, which is based on the presence of a Pennsylvania Rare plant species. Effects to this area were addressed and minimized during the alternative review process through the selection of a route that would parallel an existing natural gas pipeline ROW that already crosses these sensitive resources. By avoiding growth areas and minimizing the effect to natural resources in the area, this portion of the West Pocono 69 kV Connector Lines is consistent with the principles of the *Monroe County Comprehensive Plan*.

### **3.2.3 Wayne County**

Wayne County has developed a comprehensive plan that was updated in September 2010 by the Wayne County Planning Commission (WCPC). The *Wayne County Comprehensive Plan Update* provides an assessment of the cultural, community facilities, transportation network, natural resources, and existing land uses within the county, as well as analysis of the population, economic, and housing trends. Goals identified by the Plan include preserving and enhancing the small town nature of the county, protecting the

county's natural resources, promoting the availability of recreational facilities and attractions, and promoting local economic development (WCPC 2010). Implementation strategies include updating the county subdivision and land use ordinances, which are used by several municipalities that lack local zoning regulations, supporting municipalities in enacting their own land use regulations, advocating for affordable housing, assisting county economic development organizations with business recruitment, and developing plans related to special issues such as stormwater management.

Review of the Generalized Future Land Use Plan provided in the *Wayne County Comprehensive Plan Update* indicates that the Selected Route would be located within the Lake Region/Recreational Generalized Sub-Region of Wayne County. Primary Population Centers located in this sub-region include areas around Pocono Spring Estates, Sterling, Newfoundland, Hamlin, and Lakeville. These population centers primarily follow existing transportation corridors, such as SR 590 and SR 191, and specify the location of projected residential development and associated commercial growth. Secondary Population Centers generally buffer the Primary Population Centers and identify areas of potential residential development. Potential effects to these identified growth areas have been minimized by PPL Electric through avoiding existing development areas and using undeveloped lands and existing transmission line ROWs, where practicable. Presently, the Selected Route would cross a section of SR 590 in Lakeville that is designated as a Primary Population Center. The Selected Route would parallel the existing Lakeville 69 kV Tap Line across this section and is therefore not anticipated to affect development potential in the area.

In terms of the goals identified in the *Wayne County Comprehensive Plan Update*, the Selected Route will not affect the small town nature of the county, will not reduce the availability of recreational facilities, and will not detract from local economic development opportunities. PPL Electric has sited the route to avoid any dense residential areas, including the small villages and hamlets located throughout this predominantly rural county. Similarly, recreational areas, which include summer camps, such as the Goose Pond Boy Scout Reservation and Journeys End Farm, and campgrounds, including Lake Moc-A-Toc and the Ledgesdale Recreational Area, were

avoided to the extent practicable. ROW acquisition is proposed along the edge of the Goose Pond Boy Scout Reservation adjacent to Finn Swamp Road, but this section is removed from the primary scout activity areas and PPL Electric is actively negotiating with the scouting organization and the land trust (Natural Lands Trust) that oversee the property. Avoidance of the summer camps and campgrounds, which are generally owned and operated by local residents, has also minimized any potential effects on the local economy. To some degree, acquisition of land for the Selected Route ROW that may have presented an opportunity for economic development could have an effect on the local economy. The lands proposed to be acquired for the ROW, however, are relatively small in comparison to the open lands presently available for these activities; therefore the effect of the Selected Route on economic development opportunities is minimal.

Potential effects of the Selected Route on the county's natural resources have been minimized through the siting process. The *Wayne County Comprehensive Plan Update* identifies hydrology, wetlands, and forested lands as key components of its natural resources. Development of the Selected Route will require crossing streams and wetlands, as well as the clearing of forest for the ROW. PPL Electric has avoided impacts to specific waterbodies, such as the abundant lakes and ponds that are located across the landscape, by considering them as non-spannable features during the siting process. This includes the larger waterbodies, such as Waynewood Lake, Locklin Pond, and Lake Lacawac, which is located near Lake Wallenpaupack and is considered a National Natural Landmark. Streams that will be crossed are predominantly designated high quality by PADEP and will require additional stormwater runoff protection to maintain their elevated level of water quality. PPL Electric has minimized the impacts to these waterways by siting the route to cross at right angles, thereby decreasing loss of riparian buffer areas, which naturally help maintain the stream's water quality. During construction, however, PPL Electric is aware that it will also be required to develop and implement stormwater erosion and control plans that will protect these waterways from runoff that could negatively affect the quality level. Wetlands are another natural resource that PPL Electric has minimized effects to through avoidance during the siting process. Impacts to wetlands along the Selected Route will be further minimized by adjusting monopole positions to allow the resource to be spanned. In regards to forest

cover, PPL Electric has minimized the effect of the route by siting the alignment to parallel existing utility ROWs or to use the edge of agricultural fields where available. According to the *Wayne County Comprehensive Plan Update*, forest cover is the predominant land cover in the county, accounting for approximately 65% of the area. The Plan also acknowledges that, due to the reduction in agricultural practices across the county, many acres of previously farmed land are converting to brush and forest cover. As such, although forested areas will be cleared due to development of the Selected Route, the impact to the county's overall forest resource will be relatively minimal.

The Selected Route will travel through a portion of southern Wayne County that has experienced the most residential development in the county due to its proximity to Lake Wallenpaupack. In light of these development patterns, PPL Electric has sited the Selected Route to minimize its effects on the social, economic, and natural environment and is consistent with the principles of the *Wayne County Comprehensive Plan Update*. In regards to electrical utility needs, the *Wayne County Comprehensive Plan Update* does not address the potential expectation that the population growth and economic development will have on this commodity, but this Project is anticipated to be an asset to these changes.

### **3.2.4 Municipal Comprehensive Plans**

Municipal-level comprehensive plans relevant to the Northeast-Pocono Reliability Project were also reviewed and are discussed below. These include plans from Bear Creek Township in Luzerne County, Tobyhanna Township in Monroe County, Covington Township, Clifton Township, and Madison Township in Lackawanna County, and Lehigh Township, Sterling Township, Salem Township, and Paupack Township in Wayne County. Most of these comprehensive plans, some of which are multi-municipal based plans, were updated or adopted in response to the coordination efforts recommended by the respective county planning commissions through the county-level comprehensive plans.

#### **3.2.4.1 Bear Creek Township Comprehensive Plan (1996)**

Bear Creek Township is located in the southeastern portion of Luzerne County and in a central portion of the Jenkins Substation to West Pocono Substation Segment of the

Selected Route. Bear Creek Township developed and adopted a comprehensive plan in the mid-1990's to address local land use concerns. Similar to the county plans reviewed thus far, the focus of the *Bear Creek Township Comprehensive Plan* is to guide growth while preserving the surrounding natural resources. The *Bear Creek Township Comprehensive Plan* also identifies similar goals including maintenance of the rural character of the area, preservation of the tourism-recreational based economy, and conservation of open lands. Identified means of achieving these goals are primarily based on the township developing, updating, and enforcing regulations and ordinances that define preferable land use practices, such as cluster development and planned residential developments, as well as provide protection to the natural resources, such as through effective stormwater control and erosion/sedimentation control requirements. Other tactics identified in meeting these goals involve regional planning and inter-municipal cooperation, which will provide all the governing bodies an opportunity to address the multitude of issues facing the area (Bear Creek Township, 1996).

Review of the *Bear Creek Township Comprehensive Plan* in relation to the Selected Route indicates that potential effects on the municipal's rural character and open land resources have been minimized through the siting process. Visually, the new monopole structures will be evident at particular road crossings in the township, specifically Bald Mountain Road and Meadow Run Road. The rural residential community along Bald Mountain Road would be bisected by the route as it proceeds up Wyoming Mountain towards the site of an active wind farm. During the qualitative review process, the visual impacts of the Selected Route scored lower than the alternative because it will blend into the utility-based character and towering presence of the ridge-top wind farm. At Meadow Run Road, the Selected Route will parallel an existing Williams's gas pipeline ROW that currently bisects the rural residential community that borders this road. Although the Selected Route will be evident as it spans the roadway, the rolling topography and dense forest growth surrounding the area will minimize the overall effect of the route as it progresses through this section. Aside from these two areas, the Selected Route will be generally concealed from the viewscape of the township residents. In regards to open lands, Bear Creek Township is reportedly composed of 90% open lands, most of which is forested. The route through the township will therefore be primarily located on either

private or public open lands, including State Game Land #091. PPL Electric has minimized the impacts of the route on open lands by paralleling an existing pipeline ROW through a significant portion of the township, thereby creating a single ROW corridor through the area. PPL Electric has also worked with the land owners, including the Pennsylvania Game Commission, to site the route in the most efficient and direct manner so as to decrease impacts to the open lands. PPL Electric is also cognizant of the mitigation responsibilities in regards to forest impacts and is pursuing options to reduce this potential impact through activities such as local land preservation.

#### **3.2.4.2 Tobyhanna Township Regional Comprehensive Plan (2005)**

Tobyhanna Township is located in the northwestern corner of Monroe County and at the eastern end of the Jenkins Substation to West Pocono Substation Segment of the Selected Route. A regional comprehensive plan was developed between Tobyhanna Township and its neighboring municipalities including Coolbaugh Township, Tunkhannock Township, and Mount Pocono Borough. The *Regional Comprehensive Plan* is based on a regional vision of the area that preserves the quality of life and diverse natural areas and open spaces while also managing and controlling growth. This vision serves as the basis for the other fundamental plan elements including the goals and objectives and the various sub-plans (*i.e.*, transportation, community facilities, natural resource protection, and economic development) proposed in the *Regional Comprehensive Plan* (Tobyhanna Township 2005).

Review of the *Regional Comprehensive Plan* in relation to the Selected Route indicates that potential effects on the municipal's natural and scenic resource preservation goal have been minimized through the siting process. This goal identifies the need to protect and preserve the ecosystems, natural and scenic resources, and beauty of the region. Project activities in Tobyhanna Township involve developing a new 69 kV Connector Line that would extend over 2 miles from the Lehigh River east to an existing 69 kV transmission line system located north of SR 115. Development of the new route will avoid direct impacts to the Lehigh River, which is designated as an EV stream by PADEP, and its surrounding floodplains. The new route will, however, involve spanning Caughbaugh Road (identified as a scenic roadway), clearing forest, traversing over

wetlands, and crossing through conserved lands that are managed by The Nature Conservancy. The area around the Lehigh River is also associated with the Lehigh River-Route 115 Bridge Natural Area, which is based on the presence of a Pennsylvania Rare plant species. PPL Electric minimized the effects of the Project by siting the route to parallel an existing gas pipeline ROW that currently crosses through these areas. This alignment also allowed for a relatively direct route that has reduced the potential forest and wetland impacts. The route would also cross Caughbaugh Road in the same location as the gas pipeline ROW, thereby minimizing the effect to this scenic road. As part of the permit process required for the Project, PPL Electric will also complete a botanical survey of the plant species indicated by the Pennsylvania Department of Conservation and Natural Resources (PADCNR), which has jurisdiction over rare, threatened, and endangered plants in the state, and adhere to any avoidance and compensation measures that may be required. PADEP and the Monroe County Conservation District will also evaluate the stormwater control plans to be developed for the Selected Route to assure that the measures used will provide protection to the water quality of the Lehigh River and its nearby tributaries. Although the Selected Route will cross through identified scenic and natural resources in Tobyhanna Township, these effects have been minimized through the siting process and will be further monitored through the state permitting process.

### **3.2.4.3 Clifton – Lehigh Townships Comprehensive Plan (2010)**

Clifton Township is located in the southeastern corner of Lackawanna County and in a central portion of the West Pocono Substation to North Pocono Substation Segment of the Selected Route. Lehigh Township is located in the southwestern corner of Wayne County and at the eastern end of the West Pocono Substation to North Pocono Substation Segment of the Selected Route. These townships share a common border along a section of the Lehigh River located east of I-380. Planning in Clifton and Lehigh Townships is guided by a multi-municipal comprehensive plan developed jointly by the township supervisors in 2010. The *Clifton-Lehigh Comprehensive Plan* indicates that the plan resulted from the recognition of a number of principal critical community needs including “*establishing a framework for the conservation of the historic character, residential neighborhoods, open land, and environment while concurrently providing for sustainable*

*growth.*” (Clifton-Lehigh Townships Comprehensive Plan 2010). This and other local planning needs were used as the basis for establishing several goals for the communities, which the *Clifton-Lehigh Comprehensive Plan* addresses through a series of proposed plans including a community facilities and services plan, housing plan, transportation plan, land use plan, and natural resource conservation plan. Each of the plans’ goals and objectives, as well as existing conditions, are reviewed followed by discussion on the plans’ implications and future planning policies and actions. Implementation strategies include prioritizing capital improvement projects, educating local officials on land use issues, and updating the land use management ordinances for the townships.

Review of the *Clifton-Lehigh Comprehensive Plan* in relation to the Selected Route indicates that potential effects on the goals identified by these townships have been minimized through the siting process. These goals specifically include the development of a land use plan that integrates all aspects of growth and development, as well as the preservation of open space for the maintenance of the local economy, rural character, and scenic setting of the area. The *Clifton-Lehigh Comprehensive Plan* integrated both of these goals into the proposed Land Use Plan, which assesses the existing conditions and provides information on various methods and strategies to guide growth while protecting the natural resources and rural character of the area. Although the Land Use Plan addresses the potential expansion of residential, commercial, and industrial activities in the townships, it does not address the possible development of a transmission line corridor, which could influence the types of land use activities permissible within the ROW. The influence will be minimal in Lehigh Township, where a 2-mile portion of a proposed 69 kV Connector Line would travel primarily through forested land associated with State Game Land #312. In Clifton Township, however, a several mile section of the Selected Route would traverse areas that could potentially be used for residential, commercial, or industrial land uses. Several of the road crossings, specifically over Clifton Beach Road and Sandy Beach Road, would also influence the local rural character and scenic setting of the area. PPL Electric has minimized the possible reduction in land use options by siting the Selected Route to follow property edges and avoid existing developed and proposed development areas to the extent practicable. PPL Electric has also minimized the number of road crossings to reduce the visual effect of

the route on the surrounding landscape. These measures have, conversely, resulted in the Selected Route being sited through forested lands and natural areas that are considered open space, particularly areas associated with State Game Land #135 in Clifton Township and State Game Land #312 in Lehigh Township, which is also the location of the Lehigh Pond Natural Area. PPL Electric has minimized the potential effect of the Selected Route on these public and private open space areas by coordinating with the Pennsylvania Game Commission (PGC) and private landowners on preferred routes through the specific properties, while also siting the route to be as straight as possible to reduce forest impacts. Coordination with the PGC specifically resulted in the 69 kV alignments near the Lehigh Pond Natural Area as that route would have fewer impacts on the habitat of the flying squirrel (*Glaucomys sabrinus*), a known Pennsylvania Threatened species located in the vicinity. The *Clifton-Lehigh Comprehensive Plan* indicates that over 80% of Clifton Township and over 60% of Lehigh Township is composed of undeveloped forested lands indicating ample opportunities for land use guidance and open space preservation. As such, the effect of the Selected Route on land use options and open space preservation in these two townships is anticipated to be minimal.

#### **3.2.4.4 Covington Township Comprehensive Plan (2006)**

Covington Township is located in the southeastern corner of Lackawanna County. The township is also the proposed location of the North Pocono Substation with portions of West Pocono Substation to North Pocono Substation Segment of the Selected Route extending to the southwest and portions of the North Pocono Substation to Paupack Substation Segment extending to the northeast. The *Covington Township Comprehensive Plan* was developed by township officials to address several community needs including “*establishing a framework for the conservation of the Township’s character and environment while concurrently providing for sustainable growth and development.*” (Covington Township Comprehensive Plan 2006). A broad range of community conservation goals and objectives are identified in the *Covington Township Comprehensive Plan*, including maintaining the township’s existing rural residential character and quality lifestyle, and conserving the agricultural land and forest land as important elements of the local economy and character. Specific actions necessary to

carry out the plan include identifying areas for growth within and adjacent to existing developed areas, directing development away from environmentally sensitive areas and conserving large blocks of open land. Implementation strategies for the plan include enforcement of existing land use control ordinances, and on-going updating of the ordinances to achieve the objectives of the plan.

Review of the *Covington Township Comprehensive Plan* in relation to the Selected Route indicates that potential effects on the goals related to conserving natural resources and open space and maintaining the rural character of the township have been minimized through the siting process. The western half of the route through the township would have minimal effect on these goals as the alignment would cross SR 435, a commercially lined highway, and then traverse through the Covington Industrial Park, which is composed of several sprawling warehouse buildings, large open parking lots, and a relatively treeless maintained landscape. In the eastern half, the Selected Route would span several roads including A.M. Hughes Boulevard, Lehigh Road, and Freytown Road, which specifically would be spanned in two different locations. A.M. Hughes Boulevard is a residential lined road that leads into the private Eagle Lake community. Development along this road is suburban in character and has created environmental conditions through which the new route would produce a minimal effect on the existing character and no effect on the preservation of open space. Crossings of Lehigh Road and both portions of Freytown Road would be conducted along isolated sections of secondary roads that have sparse residential development. Lehigh Road is paralleled to the east by Lackawanna State Forest land that includes Roaring Brook, as well as by the Delaware, Lackawanna, & Western Railroad, which provides scenic train tours in conjunction with the Steamtown National Historic Park in Scranton. Freytown Road is bordered at both crossing locations by forested land; portions of the northern crossing would be on Lackawanna State Forest land. Effects to the rural character of these locations have been minimized by siting the alignment to cross the roads and railroad at right angles thus reducing the visibility of the lines from traveling neighbors or tourists. Natural resource and open space effects were minimized through a cooperative alignment development process with officials from the Lackawanna State Forest. Modifications to the Selected Route through these lands resulted in avoidance of specific natural areas and a more

direct route that further reduced potential forest impacts. As a result of the siting methods and cooperative alignment development, PPL Electric has minimized the effect of the Selected Route on the natural resources, open space, and rural character of Covington Township.

#### **3.2.4.5 Madison Township Regional Comprehensive Plan (2007)**

Madison Township is located in the southeastern corner of Lackawanna County and along a short portion of the North Pocono Substation to Paupack Substation Segment of the Selected Route. Madison Township developed a comprehensive plan in conjunction with two neighboring townships, Jefferson Township in Lackawanna County and Salem Township in Wayne County. The *Regional Comprehensive Plan* is based on common goals in the region to establish a land use plan to guide development, provide for a variety of land use types including open space, and the preservation of farmland (Madison Township 2007).

Review of the *Regional Comprehensive Plan* in relation to the Selected Route indicates that potential effects on the Township's open space and farmland preservation goals have been minimized through the siting process. The Selected Route only crosses an approximately 1,500 foot long section in the lower southeastern corner of the township. This land is presently forested and privately owned. Due to a generally high water table, the surrounding area contains numerous wetlands and has been deemed a "Conservation Area" in the Madison Township Land Use Plan. Conservation Areas indicate the presence of environmentally sensitive areas that require the protection from the potential adverse effects of development. Through the siting process, many of the surrounding wetlands were avoided and no existing open space lands or farm lands were crossed. As a result of this process, the effect of the Selected Route on open space and farmland resources in Madison Township has been minimized.

#### **3.2.4.6 Sterling Township Regional Comprehensive Plan (1996)**

Sterling Township is located in the southern portion of Wayne County and in the central section of the North Pocono Substation to Paupack Substation Segment of the Selected Route. A comprehensive plan was developed for Sterling Township in coordination with two neighboring townships within Wayne County, Lehigh Township to the southwest and

Dreher Township to the southeast. The *Dreher-Lehigh-Sterling Comprehensive Plan* indicates that the plan resulted from the recognition of a number of principal needs including “*establishing a framework for the conservation of each Township’s rural character and environment while concurrently providing for sustainable growth and development.*” (Dreher-Lehigh-Sterling Townships Comprehensive Plan 1996). From these identified local planning needs, the Township’s established several goals for the communities, which the *Dreher-Lehigh-Sterling Comprehensive Plan* addresses through a series of proposed plans including a land use and environmental protection plan, open land preservation plan, and future land use plan. After summarizing the major findings of the planning process, the comprehensive plan reviews each of the individual plans in relationship to the established goals and in context of the background findings to confirm the overall growth and development direction for the townships. Implementation strategies and planning considerations in the regions and between the contiguous municipalities are also reviewed.

Review of the *Dreher-Lehigh-Sterling Comprehensive Plan* in relation to the Selected Route indicates that potential effects on the goals related to maintaining the rural character of the township, conserving open space, and conserving natural resources have been minimized through the siting process. The Selected Route travels through isolated forested portions located along the southern section of Sterling Township and encounters more developed areas of the township as it turns to the north near the eastern boundary of the township. Only one local road crossing, SR 191 (Sterling Road), is encountered along the southern portion of the alignment, whereas three local roads are encountered along the eastern edge, specifically Peet Road, SR 196 (Twin Rocks Road), and Forks Bridge Road. Residential development along these roads is sparse except for SR 196, which has a few homes in proximity to the crossing location. The siting processes used during this analysis have resulted in an alignment that crosses these roads at right angles thereby minimizing their visibility to locals and visitors using these roads. Since the Selected Route will be generally concealed from view within the isolated forests and only briefly seen at these few road crossing locations, the potential effect on the rural character of Sterling Township would be considered marginal. In terms of open space, the Selected Route does not cross any existing lands preserved as open space and avoids the few areas

that are associated with farmland preservation. The Selected Route also avoids several recognized natural areas, including the Freytown Swamp, the Thousand Acre Swamp, and the Butternut Creek natural areas, which contain sensitive environmental resources such as threatened and endangered plant species, boreal conifer wetlands, and high quality trout streams. Furthermore, the siting process also avoided most of the NWI-identified wetlands and minimized the number of stream crossings where practicable. Where these resources were unavoidable, the Selected Route was sited to cross the features at right angles to minimize the potential effect. As a result of these avoidance and minimization measures, the Selected Route will have a limited effect on the rural character, open space conservation, and natural resource protection goals identified by Sterling Township.

#### **3.2.4.7 Salem Township Regional Comprehensive Plan (2007)**

Salem Township is located in southern Wayne County and is in the central section of the North Pocono Substation to Paupack Substation Segment of the Selected Route. A comprehensive plan for the township was coordinated with neighboring Madison Township (see **Section 3.2.4.5**) and Jefferson Township, both of which are located to the west in Lackawanna County. The resulting *Regional Comprehensive Plan* is based on common goals including the establishment of a land use plan to guide development, establishment of a variety of land use types including open space, and the preservation of farmland. The *Regional Comprehensive Plan* describes the area as a “*recreation and vacation destination [resulting] in large concentrations of development around the larger bodies of water.*” (Salem Township, 2007). Salem Township, which borders the northern edge of Lake Wallenpaupack, was noted as having the largest percent of developed land among the three townships. This concentration of development is reportedly due to the township’s proximity to I-84 and the large number of seasonal resorts found within the township. To guide the process of establishing a land use plan, the three townships reviewed existing development opportunities and constraints (steep slopes, water table levels), population trends, housing conditions and needs, and assessed the economic situation of the area. The resulting Regional Land Use Plan provides recommendations for future land use in the region using broad descriptive categories such as residential, agriculture, conservation, commercial, and industrial. Decisions for the

location of these anticipate land uses were based on existing land use (*i.e.*, agriculture), soil capabilities (*i.e.*, residential), and the presence of sensitive natural resources (*i.e.*, conservation). Seasonal high water tables were found to cover approximately 70% of Salem Township and were considered to be the township’s primary development constraint.

Review of the *Regional Comprehensive Plan* in relation to the Selected Route indicates that potential effects on the goals related to establishing open space and preserving farmland have been minimized through the siting process. Based on the Regional Land Use Plan, the Selected Route would pass through areas primarily deemed “Conservation”, with a small portion near Reed Road and Ledgesdale Road being deemed “Residential”, where the recommended housing density would use one- to two-acre lots. As noted in the *Regional Comprehensive Plan*, the Conservation area can be used for residential development but at a recommended density of five-acre lots. By siting the Selected Route along the edge of existing parcel lines, the potential to develop these primarily forested properties into residential lots or preserve them as open space are still viable options. Similarly, in the limited section where the Selected Route would cross the proposed Residential expansion area, the siting process resulted in an alignment that followed parcel edges or spanned specific parcels in such a manner as to still provide opportunities for residential land use options. Furthermore, in the few areas where agricultural land uses are crossed, the Selected Route has been sited to use field edges or to cross in narrow locations so that pole placements would not interfere with the farm operations. As a result of the siting processes used in developing the Selected Route, PPL Electric has minimized the potential effect on the developed land use plan, as well as on the open space provision and farmland protection goals identified by Salem Township.

#### **3.2.4.8 Paupack Township Regional Comprehensive Plan (2007)**

Paupack Township is located in the southeastern portion of Wayne County and borders the northern edge of Lake Wallenpaupack. The township is also the proposed location of the Paupack Substation with portions of the North Pocono Substation to Paupack Substation Segment of the Selected Route extending from the southwest toward the new substation. A regional comprehensive plan was developed between Paupack Township

and its neighboring municipalities, specifically Lake Township to the west and Palmyra Township and Hawley Borough to the east. The *Lake Region Comprehensive Plan* is based on their identified necessity to guide land use and plan for community facilities and transportation needs in an area. Conversion of second-home vacation spots into first-home bedroom communities has resulted in the growth of permanent residents in these townships and increased the demands for public services and facilities (Paupack Township 2007). Components of the plan are comprised of background studies on the area including an evaluation of the existing land use, establishment of a set of goals and objectives for the plan, and a review of the sub-plans associated with the comprehensive plan, including a land use plan, a housing plan, and a transportation plan. Primary goals presented in the *Lake Region Comprehensive Plan* were focused on the growing population and addressed basic growth issues including residential subdivision design, transportation improvements, community facility needs, and the provision of more local parks. Tourism and recreation, however, were acknowledged as being critical in terms of economic development goals for the area. Specific goals identified in the plan to address these activities included increasing protection of the area's natural resources and maintaining the water quality of Lake Wallenpaupack.

Review of the *Lake Region Comprehensive Plan* in relation to the Selected Route indicates that potential effects on the goals related to protecting the natural character of the region and the water quality of Lake Wallenpaupack have been minimized through the siting process. Forest impacts were minimized through placement of the alignment to parallel the edge of open fields, along existing roads and transmission line ROWs, and to be as straight and direct as possible while also avoiding the surrounding social and environmental resources. Other avoidance procedures similarly minimized stream and wetland crossings to the extent practicable. Protection of these aquatic resources, which all flow into Lake Wallenpaupack, would also be addressed during development of the alignment through erosion and control measures that will be established in conjunction with county and state oversight. These measures will be extensive due to the High Quality of Exceptional Value classification of the streams and wetlands. Through the siting processes used in developing the Selected Route, PPL Electric has minimized effects on the natural character and water quality goals identified by Paupack Township,

and are cognizant of the need to provide protection to these resources during the development stages and into the future.

### **3.3 Compliance with Potential Permit and Mitigation Requirements**

The following is a discussion of the anticipated Project impacts and potential permit and mitigation requirements of the proposed Northeast-Pocono Reliability Project.

PPL Electric is working diligently with relevant property owners to secure the necessary ROW easement areas along each of the proposed segments and connector routes to minimize the impact on existing and future land use. Efforts were made during the transmission line siting process to minimize impacts on existing and future land uses, as well as avoid sensitive natural resources such as wetlands and streams. Where potential impacts are unavoidable, mitigating factors will be employed. As part of the permitting process, any required waterway or floodplain encroachment permits will be obtained from PADEP and the United States Army Corps of Engineers (USACE) prior to construction and PPL Electric will comply with all special conditions placed on the permits. In addition, to address water quality standards within the EV-designated and HQ-designated watersheds along the Project corridor, PPL Electric will comply with the regulations of the NPDES permit program, obtain the required soil erosion and sedimentation control permits, and follow the specified conditions required for the permit.

#### **3.3.1 Land Use**

Siting analyses for the Selected Route was conducted with acknowledgement of existing and proposed land uses. Some impact on existing and future land use may occur, including clearing of forest areas and reducing potential areas for residential or commercial development. Establishment of ROW easement areas also preclude certain uses such as constructing structures, installing swimming pools, or establishing fruit orchards and tree farms within the easement area. PPL Electric is working with property owners to locate the ROW easement across their land to minimize the impact on existing and future land uses. These property owners will be compensated at present land values for the ROW easement area that crosses their property.

The Selected Route will also be designed to avoid conflicts with the existing transportation network and other utilities currently located or proposed along the route. Several major roadways including the Pennsylvania Turnpike, I-81, I-380, and I-84 will be spanned by the various segments of the Project. PennDOT Highway Occupancy Permits or equivalent type permits will be acquired by PPL Electric for these major highways and all other state roads prior to construction. Permit processes include review of the plans to assure that the transmission pole locations and development are in compliance with current safety regulations regarding height and sight clearances. This permit process will also be used to coordinate the actual crossing of the highways with the conductor wires, which often requires the temporary closure of the highway. Such permits are not required for railroad crossings, but similar plan reviews and safety coordination will be conducted for the Delaware, Lackawanna, & Western Railroad crossing near Gouldsboro. Aviation coordination will be conducted through the Federal Aviation Association (FAA) and the Pennsylvania Aviation Association (PAA). To assure that the poles are properly recorded by these agencies, information on the location and height of the new poles will be provided to them through use of Form 7460-1 and AV-57 (Notice of Proposed Construction or Alteration), respectively. PPL Electric will comply with any additional lighting or other visual aids that may be required by these agencies to assure aviation safety in the region.

### **3.3.2 Natural Features**

Vegetation clearing is required to ensure the safe and reliable operation of the line on the Selected Route. Vegetation clearing processes and measures are found in PPL Electric’s “*Specifications for Initial Clearing and Control of Vegetation On or Adjacent to Electric Line Right-of-Way through Use of Herbicides, Mechanical, and Hand Clearing Techniques*” (**Attachment 11**). This process will allow for the re-generation of compatible species of low growing trees, shrubs, and grasses where practicable. Herbicides used on the ROW will be EPA-approved and will be applied selectively in accordance with all label instructions. Mitigation for these impacts, primarily to state owned lands, will be required and may involve land conservation efforts by PPL Electric. Determination of the mitigation requirements for the forest impacts, as well as for impacts to the other natural resources, will be part of the permit review process.

Wetlands along the Selected Route were delineated in 2012 by certified wetland specialists using PADEP and USACE approved methodologies based on the *“Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region”* (USACE 2009). This task documented 83 wetlands covering an area of 88.4 acres within the ROW of the Selected Route. These wetland areas have been added to the construction drawings and were used to guide the placement of transmission structures to avoid or minimize wetland impacts. Through this process, only 9 of the 414 (2%) required transmission poles will be located within a wetland. All required permits for these unavoidable wetland impacts will be obtained from the PADEP and the USACE prior to construction. Mitigation in the form of wetland creation, enhancement, or conservation may be required for these wetland impacts.

Streams along the Selected Route were also delineated in 2012 using PADEP and USACE approved methodologies. This task documented 60 perennial or intermittent stream crossings within the ROW of the Selected Route. According to PADEP’s Title 25, Chapter 93 *Water Quality Standards*, the Selected Route will cross 27 EV designated streams, as well as 33 HQ designated streams (PADEP 2012). Long-term impacts to these watercourses are expected to be minimal, as they will be spanned by the proposed transmission line, but some mitigation efforts may be required as a result of the reduction in riparian buffer along these features. Due to the water quality level in these watersheds, an Individual NPDES permit will be required to mitigate any potential short-term impacts of erosion and sedimentation during construction. As part of the Individual NPDES process, additional and more sophisticated Best Management Practices (BMPs) may be required during construction to maintain the high water quality standards in the watersheds and obtain the NPDES permit.

FEMA and state-identified floodplains are found adjacent to watercourses and identify the areas that routinely flood during heavy rain events. Encroachment within a floodplain area is discouraged by the regulatory agencies due to the potential of the structure to increase the flooding hazard in the local area. According to PADEP’s Title 25, Chapter 106 *Floodplain Management*, floodways are more specifically *“The channel of the watercourse and those portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year flood. The boundary of the 100-year*

*floodway is as indicated on the maps and flood insurance studies provided by FEMA. In an area where neither FEMA maps nor studies have defined the boundary of the floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet landward from the top of the bank of the stream.” (PADEP 2012).* Where practicable, transmission structures will be constructed outside the floodplain areas. Due to the steep, narrow valleys associated with many of the waterways along the Selected Route, many of the floodplains and floodways will be relatively narrow and can be spanned by the transmission line. For those locations where the floodplains are not avoidable, additional analysis of the proposed structures may be required by PADEP to confirm the activity will not create flooding conditions in the local area. No structures will be located in the floodway of any stream.

### **3.3.3 Rare, Threatened, and Endangered Species**

Coordination with state and federal agencies regarding potential rare, threatened and endangered species along the Selected Route were initiated in October 2011 (**Attachment 14**). Responses from the USFWS indicated that federally protected species of concern (SOC) that may occur in the Project area included the federally-threatened bog turtle (*Glyptemys muhlenbergii*) and the federally-endangered Indiana bat (*Myotis sodalist*). Based on USFWS guidance, specific studies for the bog turtle were limited to sections of the West Pocono 138 kV connector lines located in Monroe County. Phase I habitat studies were conducted by a qualified surveyor who identified one wetland along this portion of the connector line that contained the required habitat conditions. This wetland was subsequently subjected to a Phase II presence/absence analysis, which concluded that bog turtles are not present in that wetland (USFWS Clearance Letter 2012 to be provided). Conversely, Indiana bat studies were required along the entire length of the Selected Route and associated connector lines. In the summer of 2012, qualified bat surveyors used the USFWS-issued “*Indiana Bat Mist-Netting Guidelines*” to evaluate approximately 121 sites during the mist-netting season (May 15 – August 15). These mist-netting sites, which were coordinated with the USFWS and PGC, were established in locations near the proposed ROW alignment that were conducive for bat travel including stream valleys, forested access road corridors, and breaks between open fields. No Indiana bats were captured during this effort. A report documenting the methods and

findings of this study is being developed that will be provided to the USFWS for their review. Of note, an Indiana bat survey was not conducted along the West Pocono 138/69 kV connector lines as the feasibility of that alignment was in question during the mist-netting time frame. An Indiana bat survey will be coordinated for this section, or appropriate equivalent, in 2013.

In addition to the surveys required for these two specific SOC, the USFWS has further recommended that guidelines be established that will result in the avoidance and minimization of potential impacts to migratory birds and eagles within and around the Project area. This recommendation is the result of USFWS's role in enforcing the Migratory Bird Treaty Act, which prohibits the taking, killing, possession, or transportation of migratory birds, and the Bald and Golden Eagle Protection Act, which prohibits the killing, selling or harming of eagles, their nests, or their eggs. Coordinated efforts among the Rural Utilities Service, USFWS, Edison Electric Institute, and the National Audubon Society provided PPL Electric with information related to raptor electrocutions, high-risk structure configurations, and developed methods to reduce electrocutions. PPL Electric has used this information to develop an Avian Protection Plan that will be submitted to USFWS in support of the proposed Northeast-Pocono Reliability Project.

In addition to the federal SOC, several state-listed species were identified that may be located within the Project area. The PFBC indicated that the timber rattlesnake (*Crotalus horridus*), a state candidate species, is known in the vicinity of the Jenkins-West Pocono Segment of the Project area. A PFBC-approved herpetologist will perform a Phase I habitat assessment along this segment in late 2012.

Correspondence with the PGC noted the potential presence of two state-listed bat species: the state-threatened eastern small-footed bat (*Myotis leibii*), and the special concern northern myotis (*Myotis septentrionalis*). Surveys for the eastern small-footed bat were required for the entire Selected Route and associated connector lines, whereas a survey for the northern myotis was only required for the Jenkins-West Pocono Segment. According to PGC guidance, these surveys were conducted by a USFWS-qualified bat surveyor using the USFWS-issued "*Indiana Bat Mist-Netting Guidelines.*" Coordination

with USFWS and PGC confirmed that the bat surveyor conducting the Indiana bat surveys could also conduct the surveys for the state-listed species. These surveys were conducted simultaneously during the summer of 2012.

Results of the state-listed bat survey indicated the presence of a small-footed bat population along the Jenkins-West Pocono Segment. Following the mist-netting guidelines, the surveyors applied transmitters to the bats and tracked their movements through the process of telemetry, which provided information of the roosting location of the bats. This information, as well as the report documenting the results of the bat mist-netting activity for the Project area will be submitted to PGC when available. Of note, a survey for the eastern small-footed bat was not conducted along the West Pocono 138/69 kV connector line as the feasibility of that alignment was in question during the mist-netting time frame. An eastern small-footed bat survey will be coordinated for this section, or appropriate equivalent, in 2013.

In addition to the bat surveys, PGC noted the need to conduct flying squirrel (*Glaucomys sabrinus*) and eastern small-footed bat habitat assessments. As with the bat mist-net surveys, communication with PGC confirmed that the bat surveyor conducting the bat surveys could also conduct the habitat assessments. Habitat assessments for the flying squirrel, a state-endangered SOC, were specifically conducted along the North Pocono connector lines located primarily in State Game Land #312, and along the North Pocono-Paupack Segment north of SR 191 in Wayne County. Eastern small footed bat habitat surveys were conducted along the Jenkins-West Pocono Segment, with a specific focus on rocky habitat areas preferred by the bat species. A report documenting the findings of these habitat assessments will be provided to PGC when available.

Responses from the PADCNR have indicated that the following plants or communities may be present within the Project area:

- Horned Bladderwort (*Utricularia cornuta*) – State plant species of Special Concern.
- Few-seeded Sedge (*Carex oligosperma*) – State plant species of Special Concern.
- Common Labrador-tea (*Ledum groenlandicum*) – State plant species of Special Concern.

- Creeping Snowberry (*Gaultheria hispidula*) – State plant species of Special Concern.
- Rhodora-Mixed Heath- Scrub Oak Shrubland – State Community of Special Concern.
- Scrub Oak Shrubland - State Community of Special Concern (PADCNR).
- Leatherleaf-Cranberry Peatland - State Community of Special Concern.
- Red Dart moth (*Diarsia rubifera*) – State terrestrial invertebrate species of Special Concern.
- Bog Copper (*Lycaena epixanthe*) – State terrestrial invertebrate species of Special Concern.
- A Noctuid Moth (*Platyperigea meralis*) – State terrestrial invertebrate species of Special Concern.

Botanical studies for the Jenkins-West Pocono Segment were conducted in August 2012. Findings along this segment included small populations of the horned bladderwort and the creeping snowberry, as well as the identification of two other SOC: roundleaf serviceberry (*amelanchier sanguinea*), a proposed endangered species; and Bicknell's sedge (*carex bicknelli*), a state-endangered species. Additionally, an approximately 8.0 acre section of the scrub oak shrubland community was identified and delineated along the crest of Wyoming Mountain near the wind farm, and an 0.5 acre of the leatherleaf-cranberry peatland community was noted in the large wetland complex located south of the wind farm. This wetland also included a quaking bog area that contained the horned bladderwort. All of these areas will be documented in the botanical survey report to be submitted to PADCNR. These sensitive areas will be avoided as much as practicable but impacts may occur that may involve mitigation efforts.

Botanical studies for the West Pocono-North Pocono Segment and North Pocono-Paupack Segment were also conducted in August 2012 and involved similar plants and communities. None of the plants or communities identified by PADCNR were noted along either of these alignments. The results of these surveys will be documented in a report that will be issued to PADCNR when available.

### 3.3.4 Cultural Resources

Cultural resource coordination with the Pennsylvania Historical and Museum Commission (PHMC) was initiated in October 2011 (**Attachment 15**). Response from

PHMC regarding the Jenkins-West Pocono Segment indicated the need to conduct an assessment of the potential effect of the West Pocono 138/69 kV connector lines on the National Register-listed Stoddartsville Historic District located near SR 115 and the Lehigh River in Monroe County. The PHMC response for the West Pocono-North Pocono Segment noted the presence of the National Register-eligible Delaware, Lackawanna & Western Railroad but concluded that the Project activity will have no effect on the resource. No other structural resource evaluations were required for the remaining portions of the Project area. According to the PHMC responses, there is a high probability that significant archaeological sites are located within the Project area and that Phase I archaeological surveys are required for the entire Project area.

An evaluation of the Stoddartsville Historic District was conducted in July 2012, which provided information on the height of the proposed poles, distance of the alignment from the historic district, and an assessment of the landscape and vegetation in the general area. Based on this evaluation, PHMC responded in August 2012 with a finding that the proposed West Pocono 138/69 kV connector lines would have no effect on the Stoddartsville Historic District (PHMC 2012).

The Phase I archaeological investigations have been divided into two steps: Phase 1A, a high-level review of the Project area topography and human settlement patterns used to determine high-to-low probability areas, and Phase 1B, a field analysis of the Project area guided by the findings of the Phase 1A process. The Phase 1A report, submitted to PHMC in August 2012, concluded that the pre-contact sensitivity model indicates that there are pockets of high sensitivity for archaeological resources throughout the proposed corridor, and that the historical overview and map analysis confirms that there is a wide variety of potential historic-period archaeology property types within the Project area. Based on this analysis, the recommendation to PHMC is that a Phase 1B survey be conducted in the area of potential effects (APE) to locate potentially significant archaeological resources that may be impacted by the proposed Project. The focus of the Phase 1B survey will be areas of anticipated ground disturbance including the proposed pole locations, floodplain crossings, new access road locations, and the footprints of the new substations and work areas. The Phase 1B survey would be conducted by means of a pedestrian survey that implements a series of shovel test units (STUs) at specific

intervals depending on the modeled sensitivity of the area. Response from PHMC regarding the Phase 1B survey has indicated that they support this plan of action. Phase 1B activities are proposed to begin in late 2012.

### **3.3.5 Community Features and Conserved Lands**

Community features, which include schools, day care centers, churches, and cemeteries, were identified and effectively avoided during the route selection process. As such, none of these features are located along the Selected Route and no impacts to these features are anticipated.

Conserved lands involve areas preserved as private or public open space. Private open space generally involves land trusts such as Pocono Heritage Land Trust and North Branch Land Trust, who focus on obtaining parcels of land to preserve based on existing natural or cultural features (*i.e.*, Bear Creek Camp in Luzerne County). Other land trust organizations, such as the Natural Lands Trust and The Nature Conservancy, preserve lands that are often open to the public for passive recreation (*i.e.*, Bear Creek Preserve in Luzerne County). Public conserved lands include state parks, state forests, and state game lands. Several private and public conserved lands were identified within the study area during the route selection process. During this process, specific attention was given to avoid the private conserved lands, but due to the size and location of the public conserved lands, some were not avoidable. In an effort to minimize impacts to the resources on these lands, PPL Electric coordinated with the landowners, primarily the PADCNR for the state forest lands and the PGC for the state game lands, to determine the best alignment across the lands. Input from these meetings has been incorporated into the Selected Route to the satisfaction of the PADCNR and PGC. Aside from sections of the Lackawanna State Forest and several state game lands, no other conserved lands are located along the Selected Route.

### **3.3.6 Anticipated Agency Requirements and Permits**

In summation of the items reviewed above, several specific animal studies and archaeological surveys still need to be conducted that may provide information on possible avoidance and impact areas along the Selected Route. Given the level of natural resource impacts anticipated for the forest clearing and stream and wetland crossings

required for the Project, the presence of EV and HQ waterways, and the variety of environmentally sensitive habitats along the Selected Route, an Individual Joint Permit Application process that incorporates both the PADEP Chapter 105 and the USACE Section 404 permit requirements is expected. Similarly, as a result of the EV and HQ water standards, an Individual NPDES permit is expected from PADEP for erosion and sedimentation control during construction. **Attachment 7** (Agency Permit Matrix) provides an overview of the State and Federal permits and associated cultural and environmental compliance measures that will be required.

### **3.4 ROW Acquisition Status**

There are a total of 126 property owners across 177 parcels along the transmission line routes selected for the proposed Northeast-Pocono Reliability Project. To date, agreements have been secured from 89 property owners. PPL Electric will continue to negotiate with the 37 unsigned property owners. All of the property owners have been informed of the need for the ROW easement and negotiations are ongoing.

### **3.5 Sensitive Features within 2 Miles**

Desktop and field efforts were conducted to locate and identify archaeological, geologic, historic, scenic, and wilderness areas within 2 miles of the Selected Route. Most of the scenic and historic areas were addressed during initial analysis of the Project Study Area and were incorporated into the siting analysis conducted for the Selected Route. **Figure 4-12** provides an overview of these culturally and environmentally sensitive features within 2 miles of the Selected Route.

## 4.0 PUBLIC OUTREACH OVERVIEW

PPL Electric Utilities announced its intent to build the new, approximately 60-mile, Northeast-Pocono Reliability Project on February 9, 2011. Since that time, PPL Electric has undertaken public outreach activities to provide information and seek input on the proposed Northeast-Pocono Reliability Project from the public and government officials.

### Summary of Public Outreach Activities:

- Calls, E-mails and Meetings with Government Officials – PPL Electric representatives made phone calls, sent e-mails and met with local, state and federal government officials to brief them on the Project and invite them to the planned public open houses.
- Letters – PPL Electric sent more than 33,000 letters to all residents and businesses within the Project study area to provide the public with information about the Project and to invite them to planned open houses. After the proposed transmission line routes were defined, letters were mailed out to residents within the 1,000-foot corridor and to open house attendees. The initial Project announcement/public open house letters were mailed out to the public on February 9, 2011 and open house invitation letters were mailed out on June 22, 2011 and October 7, 2011.
- Fact Sheet – A fact sheet was developed to provide the public with an overview of the Project and a detailed description of the line routes. This document also included information on the planned open houses. The fact sheet was updated and expanded as additional information became available, and distributed to the public through mailings and during open house events. It also was placed on the Project website.
- Project-specific Web Site – A Project-specific web site, located at <http://nep.pplreliablepower.com/>, provides the ability for the public to learn more information and submit comments about the Project. Feedback received through the website was one of the many ways that PPL Electric incorporated public

comment in the route selection process. Updates on the Project and interactive maps of the potential routes were also posted on the website.

- Open House Advertisements – PPL Electric announced the three rounds of open houses in advertisements that were published in the following newspapers on the following dates:
  - 2/23/11 – Wilkes-Barre Citizens Voice
  - 2/23/11 – Wilkes-Barre Times Leader
  - 2/23/11 – Pocono Record
  - 2/23/11 – Honesdale Wayne Independent
  - 2/23/11 – Hawley News Eagle
  - 2/23/11 – Carbondale News
  - 2/23/11 – Mountaintop Eagle
  - 2/23/11 – Hunlock Creek Suburban News
  - 2/23/11 – Moscow Villager
  - 2/23/11 – Scranton Times-Tribune
  - 2/24/11 – Milford Pike County Dispatch
  - 6/29/11 – Wilkes-Barre Citizens Voice
  - 6/29/11 – Wilkes-Barre Times Leader
  - 6/29/11 – Pocono Record
  - 6/29/11 – Honesdale Wayne Independent
  - 6/29/11 – Hawley News Eagle
  - 6/29/11 – Carbondale News
  - 6/29/11 – Mountaintop Eagle
  - 6/29/11 – Hunlock Creek Suburban News
  - 6/29/11 – Moscow Villager
  - 6/29/11 – Scranton Times-Tribune
  - 6/30/11 – Milford Pike County Dispatch
  - 10/17/11 – Scranton Times Tribune
  - 10/17/11 – Stroudsburg Pocono Record
  - 10/17/11 – Wayne Independent
  - 10/17/11 – Wilkes-Barre Citizens Voice

- 10/17/11 – Wilkes-Barre Times Leader
  - 10/19/11 – Carbondale News
  - 10/19/11 – Hawley News Eagle
  - 10/19/11 – Hunlock Creek
  - 10/19/11 – Moscow Villager
  - 10/19/11 – Mountaintop Eagle
  - 10/20/11 – Milford Pike County Dispatch
- News releases – PPL Electric distributed news releases on February 9, 2011, June 23, 2011 and October 11, 2011 to a wide range of news media throughout the Project area to update residents and inform them about upcoming open houses.
  - One-on-one meetings – PPL Electric held individual one-on-one meetings with interested residents and businesses near the Project. Key constituent meetings were also held to inform local officials. These meetings were held on the following dates:
    - March 3, 2011 – Bennoco’s in Hamlin, Pa.
    - March 4, 2011 – The Village Squire in Blakeslee, Pa.
    - February 16, 2012 – PPL’s East Mountain Business Center
    - February 17, 2012 – PPL’s Lake Wallenpaupack Environmental Learning Center
  - Open Houses – PPL Electric held three rounds of open houses to provide the public with information about the Project and to seek their input. Thirteen open houses were held at the following locations and dates in March, July and October 2011:

**Round One**

1. *Monday, March 7, 2011, 5 p.m. to 8 p.m.*  
*Western Wayne Middle School, Lake Ariel (South Canaan Twp.), PA*
2. *Tuesday, March 8, 2011, 5 p.m. to 8 p.m.*  
*Greene-Dreher Volunteer Fire Association Hall, Newfoundland, PA*
3. *Tuesday, March 15, 2011, 5 p.m. to 8 p.m.*  
*Thornhurst Fire & Rescue, Thornhurst, PA*
4. *Wednesday, March 16, 2011, 5 p.m. to 8 p.m.*  
*PPL East Mountain Business Center, Wilkes-Barre, PA*

**Round Two**

5. *Monday, July 11, 2011, 5 p.m. to 8 p.m.*  
*Pocono Community Church, Tobyhanna, PA*
6. *Tuesday, July 12, 2011, 5 p.m. to 8 p.m.*  
*Thornhurst Fire & Rescue, Thornhurst, PA*
7. *Wednesday, July 13, 2011, 5 p.m. to 8 p.m.*  
*PPL East Mountain Business Center, Wilkes-Barre, PA*
8. *Tuesday, July 19, 2011, 5 p.m. to 8 p.m.*  
*Gouldsboro Volunteer Fire Company, Gouldsboro, PA*
9. *Wednesday, July 20, 2011, 5 p.m. to 8 p.m.*  
*Greene-Dreher Volunteer Fire Association Hall, Newfoundland, PA*
10. *Thursday, July 21, 2011, 5 p.m. to 8 p.m.*  
*Western Wayne Middle School, Lake Ariel (South Canaan Twp.), PA*

**Round Three**

11. *Tuesday, October 25, 2011, 5 p.m. to 7 p.m.*  
*Gouldsboro Volunteer Fire Company, Gouldsboro, PA*
12. *Wednesday, October 26, 2011, 5 p.m. to 7 p.m.*  
*Greene-Dreher Volunteer Fire Association, Newfoundland, PA*
13. *Thursday, October 27, 2011, 5 p.m. to 7 p.m.*  
*Thornhurst Fire & Rescue, Thornhurst, PA*

## 5.0 SUMMARY AND CONCLUSIONS

The Northeast-Pocono Reliability Project siting study was conducted to identify an overhead transmission line alignment that would result in the least amount of impact to the natural and built environments, while satisfying the need to construct a new 230 kV transmission line in the Project Study Area. The methodology identified major constraints in the Project Study Area to develop Alternative Corridors, used a quantitative and qualitative evaluation process to generate and compare Alternative Routes within those corridors, and provided a framework from which to select the Alternative Route most suited for overhead electric transmission lines.

The Project Study Area, Alternative Corridors, and Alternative Routes were generated based on the quantitative evaluation of a comprehensive spatial database developed for the area. The evaluation was conducted from three primary perspectives: (1) protection of the natural environment, (2) protection of the built environment, and (3) engineering considerations. The quantitative evaluation was supplemented by a qualitative assessment and review by a Siting Team composed of experts in fields associated with transmission line siting, design and construction, as well as environmental assessments, permitting, and public outreach.

Two Alternative Routes were identified within the Jenkins-West Pocono Segment, three Alternative Routes were identified within the West Pocono-North Pocono Segment, and three Alternative Routes were identified within the North Pocono-Paupack Segment. Quantitative metrics were calculated and compared for each route within a specific segment. A qualitative assessment was also conducted between each of the routes within a specific segment. Based on these evaluation processes the Siting Team chose **Alternative Route B** as the Selected Route for the Jenkins-West Pocono Segment, **Alternative Route D-1** as the Selected Route for the new West Pocono-North Pocono Segment, and **Alternative Route F-1** as the Selected Route for the new North Pocono-Paupack Segment. This alignment is illustrated in **Figure 4-11**.

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