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January 17, 2017

**VIA ELECTRONIC FILING**

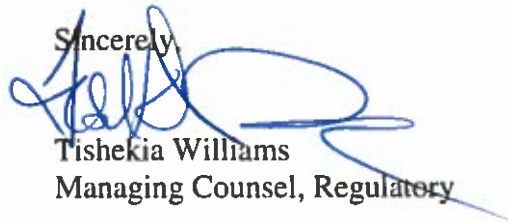
Ms. Rosemary Chiavetta, Secretary  
Pennsylvania Public Utility Commission  
Commonwealth Keystone Building, 2<sup>nd</sup> Floor  
400 North Street  
Harrisburg, PA 17120

**Re: Letter of Notification of Duquesne Light Company – South Hills Capacity Project  
Docket No. A-2017\_\_\_\_\_**

Dear Secretary Chiavetta:

Pursuant to 52 Pa. Code § 57.72(d), Duquesne Light Company ("Duquesne Light"), hereby files this Letter of Notification requesting Pennsylvania Public Utility Commission approval to reconductor 6.96 miles of the existing 138 kV Woodville-Peters circuit, known as the South Hills Capacity Project. The South Hills Capacity Project is a PJM Interconnection baseline project which must be completed by June 1, 2018. Accordingly, Duquesne Light respectfully requests expedited review and approval of this filing.

Copies of this filing will be served as indicated on the Certificate of Service as well as provided to all potentially impacted property owners. If you have any questions, please feel to contact me at 412-393-1541.

Sincerely,  
  
Tishekia Williams  
Managing Counsel, Regulatory

Enclosures  
cc: Certificate of Service

**BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Letter of Notification of Duquesne Light :  
Company, Filed Pursuant to 52 Pa. Code :  
Chapter 57 Subchapter G, for Approval to : Docket No. A-2017-\_\_\_\_\_  
Reconductor a Segment of an Existing 138KV :  
Transmission Line Located in the :  
Municipalities of Collier Township, Scott :  
Township, Upper Saint Clair Township and :  
Bethel Park in Allegheny County, PA. :  
:

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**LETTER OF NOTIFICATION OF DUQUESNE LIGHT COMPANY**

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TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

**I. INTRODUCTION**

Pursuant to 52 Pa. Code § 57.72(d), Duquesne Light Company ("Duquesne Light" or "Company"), files this Letter of Notification requesting approval from the Pennsylvania Public Utility Commission ("Commission") to reconductor 6.96 miles of the existing 138 kV ("kilovolt") Woodville-Peters ("Z-117") circuit (hereafter "South Hills Capacity Project"). The South Hills Capacity Project is a PJM Interconnection, LLC ("PJM") Baseline Project (project ID B2689.1) required to relieve congestion on two (2) Duquesne Light 138 kV facilities: the Dravosburg-West Mifflin ("Z-73") 138 kV circuit and the Woodville-Peters ("Z-117") 138 kV tie-line circuit.<sup>1</sup> The Project is approved in the 2015 PJM Regional Transmission Expansion Plan ("RTEP").

This Project is located in Collier, Scott, Upper St. Clair and Bethel Park

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<sup>1</sup> Duquesne Light will file a separate Letter of Notification for modifications to the West Mifflin-USX Clairton (Z-14) 138 kV circuit and the idle Dravosburg-Elrama (Z-15) 138 kV circuit which are associated with an overall solution to relieve the congestion on the Z-73 and Z-117 circuits.

municipalities in Allegheny County, Pennsylvania. Duquesne Light has provided information regarding this Project to impacted municipalities, which have not objected to the Project. Construction on the Project is scheduled to begin in September 2017 and must be completed in June 1, 2018. In order to ensure that Duquesne Light is able to meet the required in-service date, the Company requests review of this Letter of Notification on an expedited basis.

In support of its request for approval, Duquesne Light states as follows:

## **II. BACKGROUND**

1. Duquesne Light is a public utility as the term is defined under Section 102 of the Public Utility Code, 66 Pa.C.S. § 102 certificated by the Commission to provide electric distribution service in portions of Allegheny County and Beaver County in Pennsylvania. Duquesne Light is also an electric distribution company (“EDC”) and a default service provider as those terms are defined under Section 2803 of the Public Utility Code. 66 Pa.C.S. § 2803.

2. Duquesne Light owns approximately 677 miles of transmission lines operating at 69 kV, 138 kV, and 345 kV (kilovolts), and approximately 8,210 miles of distribution lines operating at less than 69 kV. Duquesne Light’s transmission facilities are presently operated subject to the functional control of PJM.

3. Duquesne Light's business address is as follows:

Duquesne Light Company  
411 Seventh Avenue  
Pittsburgh, PA 15219

4. Duquesne Light's attorney is:

Tishekia E. Williams (Pa. I.D. No. 208997)  
Managing Counsel, Regulatory  
Duquesne Light Company  
411 Seventh Avenue, 15th Fl..  
Pittsburgh, PA 15219  
Phone: 412-292-1541  
Fax: 412-393-5757  
E-mail: Twilliams@duqlight.com

Duquesne Light's attorney is authorized to electronically receive all notices and communications regarding this filing.

5. This Letter of Notification includes the following accompanying attachments:

- Attachment 1 – Duquesne Light's Proposal to PJM
- Attachment 2 – MAP of Woodville - Peters 138kV Line, USGS Quad - Bridgeville, PA
- Attachment 3 – Design Criteria and Safety Practices
- Attachment 4 – Typical Cross Section, 138kV Lattice Steel Tower, Right-of-Way, Duquesne Light Company, Allegheny County, PA
- Attachment 5 – Description of the Project Area

This Letter of Notification and accompanying Attachments, which are incorporated herein by reference, contain all the information required by 52 Pa. Code §57.72(d)(4).

**III. GENERAL DESCRIPTION OF THE PROJECT**

**A. TRANSMISSION PLANNING**

6. Duquesne Light has adopted reliability and planning standards to ensure adequate and appropriate levels of electric service to its customers consistent with good utility practice. Duquesne Light's reliability and planning standards were developed from and are consistent with the North American Electric Reliability Corporation ("NERC") and PJM

mandatory reliability standards.<sup>2</sup>

7. PJM is a Federal Energy Regulatory Commission (“FERC”) approved Regional Transmission Organization (“RTO”) charged with ensuring the reliability of the electric transmission system under its functional control and coordinating the movement of electricity in all or parts of thirteen states and the District of Columbia, including most of Pennsylvania. As a Transmission Owner, Duquesne Light is a member of PJM and actively participates in the PJM transmission planning process.

8. In order to ensure reliable and economic transmission service, PJM prepares an annual Regional Transmission Expansion Plan (“RTEP”) to ensure power continues to flow reliably and economically to customers. As part of PJM’s RTEP process, Duquesne Light’s transmission systems are analyzed for economic or Market Efficiency opportunities. PJM’s Market Efficiency analysis is an evaluation process that results in facilities planned to achieve economic efficiencies.

9. Through the RTEP process, PJM evaluates the cost effectiveness of alternative options for improving transmission efficiency. The measure of projected congestion is based on a market analysis of future system conditions performed with a commercially available economic dispatch market analysis tool. Market Efficiency projects must pass PJM’s threshold test and bright line economic efficiency test. This test specifies that a proposed solution’s savings must exceed its projected revenue requirements, on a 15 year present worth basis, by at least 25% (the threshold cost/benefit test).<sup>3</sup>

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<sup>2</sup> Duquesne Light’s reliability and planning standards are set forth in its FERC Form No. 715 annual report.

<sup>3</sup> PJM’s Market Efficiency planning process is outlined in Schedule 6 Regional Transmission Expansion Planning Protocol, Section 1.5.7 Development of Economic-based Enhancements or Expansions of the PJM Operating Agreement and PJM Manual 14B: PJM Region Transmission Planning Process <http://www.pjm.com/~media/documents/manuals/m14b.ashx>

10. The South Hills Capacity Projects was evaluated and approved through the PJM RTEP process. A copy of Duquesne Light's proposal submitted to PJM is attached as Attachment 1. Duquesne Light submitted the Project to PJM on February 27, 2015 for review and inclusion in the 2015 RTEP. The Project was presented before stakeholders at the PJM Transmission Expansion Advisory Committee ("TEAC") meeting on September 10, 2015, and approved by the PJM Board.<sup>4</sup>

## **B. DESCRIPTION OF THE LINE ROUTE**

11. The South Hills Capacity Project, as discussed herein, involved work that will be performed on a single circuit (Z-117). The Z-117 circuit is located in the Municipalities of Collier, Scott, Upper St. Clair, and Bethel Park in Allegheny County.

12. A map depicting the Project area is included and marked as Attachment 2. As shown on the map, the existing line configuration for the Z-117 circuit begins at Woodville substation and travels south for 1.36 miles to loop structures 3376-1 and 3376-2. The existing circuit Z-117 loops through the Universal Stainless and Alloy Products ("USAP") plant for a distance of 0.40 miles and returns back to tower 3376-1. From tower 3376-1, the line continues south and then east towards West Penn Power pole 27A for a distance of 5.20 miles. The total distance for reconductoring the line is 6.96 miles.

13. From pole WPP #27A to Peters substation, the Z-117 line is owned and operated by West Penn Power.<sup>5</sup> The distance of the segment owned and operated by West Penn Power is 1.87 miles. Other than the loop to the USAP plant, which is occupied solely by the Z-117 circuit, the recondored portion of Z-117 circuit is located on a double circuit line with Z-

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<sup>4</sup> The Project was included in the 2015 RTEP as baseline project b2698.1 and b2698.2.

<sup>5</sup> The portion of the line owned and operated by West Penn Power are not proposed to be modified as part of this Project.

117 occupying the western or southern side of the alignment and Woodville-Piney Fork (“Z-106”) occupying the northern or eastern side of the alignment. Currently both circuits are conductored with 795 aluminum conductor steel reinforced (“ASCR”) 26/7 Drake.

### **C. THE PROPOSED PROJECT**

14. Subject to Commission approval, Duquesne Light proposes to replace the conductors on the existing Z-117 circuit along the Duquesne Light portion of the circuit between Duquesne Light’s Woodville substation and West Penn Power’s pole 27A near West Penn Power’s Peters substation. The existing 795 ACSR, 26/7 conductors will be replaced with 795 trapezoidal aluminum conductor steel supported (“ACSS/TW”), 20/7 Drake conductors. Minor structural reinforcements such as bolt replacements and structural bracing will be required to meet the latest National Electric Safety Code (“NESC”) loading criteria and Duquesne Light design criteria. The line is currently operated at 138 kV and will operate at 138 kV at the conclusion of the Project. No new structures will be installed as a part of this Project.

### **D. NEED FOR THE PROJECT**

15. PJM identified congestion on the Dravosburg-West Mifflin (Z-73) 138 kV circuit, and the Woodville-Peters (Z-117) 138 kV tie-line circuit that should be alleviated to help ensure continued economic operations of the bulk power system. To relieve the PJM identified congestion, Duquesne Light proposes to reconductor a portion of the Woodville-Peters (Z-117) 138 kV tie-line, reconfigure the idled Dravosburg-Elrama (Z-15) line segment, reconfigure the present West Mifflin-USS Clairton (Z-14) 138 kV circuits, and create the Dravosburg-USS Clairton (Z-15) and West-Mifflin-Wilson (Z-14) 138 kV circuits.<sup>6</sup> During the initial phase of the Project, Duquesne Light will reconductor its portion of the Woodville-Peters (Z-117) tie-

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<sup>6</sup> Refer to Footnote 1 regarding the scope of this LON.

line in order to increase the circuit loading capabilities which will relieve the congestion that PJM identified in their Market Efficiency Analysis.

16. The Project meets PJM's Market Efficiency planning criteria including the required 1.25 benefit to cost ratio. PJM determined the benefit to cost ratio for this project to be 1.98.

#### **E. HEALTH AND SAFETY**

17. The Project will not create any unreasonable risk of danger to the public health or safety.

18. The Project will be designed, constructed, operated, and maintained in a manner that meets or surpasses all applicable NESC minimum standards. The Project will conform to Duquesne Light's design criteria, construction standards, and safety practices. *See Attachment 3-Duquesne Light Engineering Design Criteria.*

19. The Project is not expected to have any impact on pipelines, other utilities or telecommunications.<sup>7</sup>

20. The Finleyville Airport is located approximately 6.1 miles from the nearest transmission line. The second closest airport is Pittsburgh International Airport, which is approximately 14.9 miles from the nearest transmission line construction. There are no expected impacts to the airports based on the distance, presence of the existing transmission facilities, and the facts that the structures will not be raised or changed.

#### **F. DESCRIPTION OF RIGHT-OF-WAY**

21. Duquesne Light obtained right-of-way for the Woodville-Peters (Z-117) circuit in 1950. The width of the Company's right-of-way is generally 85 ft for the Woodville-Peters

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<sup>7</sup> Duquesne Light will perform work on one transmission tower with telecommunication as a part of this Project. Tower #3382 currently has Sprint PCS antennas mounted on the peak of the structure. The construction work related to the reconductoring will not affect the top portion of the tower where the PCS antennas are installed. Accordingly, the Project will have little to no impact to this tower.

(Z-117) circuit. The line was originally constructed in 1953 as a double circuit 138 kV line between Woodville and Elrama substations. These lines were constructed to 138 kV standards and in accordance with the standards in effect at the time of design and construction. The right-of-way and the structure configuration will not change as the result of the reconductoring. A cross-sectional diagram showing the typical arrangement of towers for circuit Z-117 is attached hereto and incorporated herein as Attachment 4.

22. Duquesne Light's vegetation management practices are based on maintenance rights acquired, voltage of the line involved, proximity of trees to the facilities, and the species and condition of trees involved. Attachment 5 – Description of the Project Area details the Company's vegetation management and land use procedures relative to this project.

23. There are no state lands, national parks, state parks, or local parks within the Project area. The Project will not affect any recreational areas or natural landmarks. The Project will not traverse or affect any unique geological, scenic, or natural areas.

24. Duquesne Light will review the Project with the Pennsylvania Historical and Museum Commission ("PHMC") to determine whether the project will have any impacts to cultural and archaeological resources. Duquesne Light will coordinate with and comply with any surveys or conditions required by the PHMC.

25. Duquesne Light will obtain all necessary environmental permits. Duquesne Light will comply with all of the terms and conditions placed on those permits.

26. Duquesne Light will acquire any required soil erosion and sedimentation control permits and will comply with any conditions placed on those permits. Duquesne Light also will develop an Erosion and Sedimentation Control Plan. A Post Construction Stormwater Management/Site Restoration ("PCSM") Plan will be prepared if required.

## **G. NOTICE**

27. Duquesne Light has provided information regarding the Project to representatives of Collier Township, Scott Township, Upper St. Clair Township, and Bethel Park Township in Allegheny County. These entities have not objected to the Project.

28. Copies of this Letter of Notification will be served on the governmental agencies, municipalities, and other public entities agencies in accordance with 52 Pa. Code § 57.72(d)(3).

29. All landowners potentially impacted by the reconductoring will be notified concerning the project, potential temporary project impacts and receive a copy of this filing. Damages, if any, would be restored.

30. Duquesne Light has reviewed the Pennsylvania Natural Diversity Inventory ("PNDI") records under the jurisdiction of the Pennsylvania Department of Conservation and Natural Resources, the Pennsylvania Fish and Boat Commission ("PFBC"), the Pennsylvania Game Commission, and the U.S. Fish and Wildlife Service. Based on this review, no further review is required by these jurisdictional agencies. Since the Project will be located entirely within the existing right-of-way and involve changes to the conductors and minor tower reinforcement, it is anticipated that the Project will have no material impact to any wildlife or vegetation listed as threatened, endangered, or species of special concern. Notwithstanding, Duquesne Light will, to the extent required, coordinate with these agencies, acquire any required permits, and comply with any conditions placed on those permits.

## **H. LETTER OF NOTIFICATION**

31. Duquesne Light is proceeding by means of a Letter of Notification, instead of a full Application, pursuant to the Commission's regulations at 52 Pa, Code §§ 57.72(d)(1)(i) and 57.72(d)(1)(v).

32. The transmission line work associated with this Project qualifies for use of a Letter of Notification because the entire Project will be constructed entirely within the existing right-of-way or property that is owned in fee by Duquesne Light Company.

33. The transmission line work associated with this Project further qualifies for use of a Letter of Notification because the existing conductors on the line are being replaced with no significant changes in the size, character, design or configuration of the conductors and it does not substantially alter the right-of-way.

## **IV. EXPEDITED REVIEW AND CONSIDERATION**

34. As discussed above, the South Hills Capacity Project has been identified and approved as a PJM baseload project necessary to relieve congestion and help ensure the continued economic operation of the bulk power system.

35. Duquesne Light is required to complete this Project by June 1, 2018. As a Transmission Owner within PJM and a signatory to the PJM Consolidated Transmission Owners Agreement ("TOA"), PJM has the authority to designate construction responsibility for baseline projects.

36. Inability to meet the required in-service date may result in Duquesne Light's failure to meet its obligations under the TOA. Accordingly, the Company respectfully requests expedited review and consideration of this filing.

V. **CONCLUSION**

WHEREFORE, in consideration of the foregoing, Duquesne Light respectfully requests that the Pennsylvania Public Utility Commission grant Duquesne Light Company approval, on an expedited basis, to proceed with the reconductoring of the proposed line as described in this Letter of Notification.

Respectfully submitted,



Tishekia E. Williams, (Pa. I.D. No. 208997)  
Managing Counsel, Regulatory  
Duquesne Light Company  
411 Seventh Avenue, 15<sup>th</sup> Floor  
Pittsburgh, PA 15219  
Phone: 412-393-1541  
412-393-1482  
Email: [twilliams@duqlight.com](mailto:twilliams@duqlight.com)


*Counsel for Duquesne Light Company*

DATE: January 16, 2017

**VERIFICATION**

I, Meenah Shyu, PE, Transmission Design Engineer at Duquesne Light Company hereby state that the facts set forth above are true and correct to the best of my knowledge, information and belief; that I expects Duquesne Light Company to be able to prove the same at time of hearing; and that I understands the statements herein are made subject to the penalties of 18 Pa.CS § 4904 relating to unsworn falsification to authorities.

Date: Jan 16, 2017

  
Meenah Shyu, PE

**BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Letter of Notification of Duquesne Light :  
Company, Filed Pursuant to 52 Pa. Code :  
Chapter 57 Subchapter G, for Approval to : Docket No. A-2017-\_\_\_\_\_  
Reconductor a Segment of an Existing 138KV :  
Transmission Line Located in the :  
Municipalities of Collier Township, Scott :  
Township, Upper Saint Clair Township and :  
Bethel Park in Allegheny County, PA. :  
:

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served a true copy of the Application and Exhibits upon the participants listed below in accordance with the requirements of 52 Pa. Code § 57.74(b) (relating to service of copies):

**VIA CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

Bob Caun – Director  
Collier Township Planning, Zoning & Land Development Commission  
Municipal Building  
2418 Hilltop Road, Suite 100  
Presto, PA 15142

Mark Mox – Chairman  
Scott Township Planning Commission  
301 Lindsay Road  
Scott Township, PA 15106

Robert W. Stevenson – Chairman  
Upper St. Clair Township Planning Commission  
1820 McLaughlin Run Road  
Upper St. Clair, PA 15241

Thomas W. Klevan – Chairman  
Bethel Park Planning and Zoning Commission  
5100 West Library Avenue  
Bethel Park, PA 15102-2787

Allegheny County Planning Commission  
Rich Fitzgerald – County Executive  
Allegheny County  
436 Grant Street  
Pittsburgh, PA 15219

Patrick McDonnell – Acting Secretary  
Department of Environmental Protection  
Rachel Carson State Office Building  
400 Market Street  
Harrisburg, PA 17101

Leslie S. Richards – Secretary  
PA Department of Transportation  
Keystone Building  
400 North St.  
Harrisburg, PA 17120

Nancy Moses – Chairman  
Historical and Museum Commission  
State Museum Building  
300 North Street  
Harrisburg, PA 17120

Donna Killingsworth – Manager Real Estate  
Pittsburgh & Ohio Central RR Co, c/o Genesee & Wyoming Railroad Services, Inc,  
13901 Sutton Park Dr., S Suite 160  
Jacksonville, FL 32224

Donald Newman – Chairman of the Board  
Allegheny County Conservation District  
River Walk Corporate Center  
33 Terminal Way, Suite 325B  
Pittsburgh, PA 15219

John Soprano – Director  
Bureau of Enforcement and Investigation  
Penn Center, 2601 N. 3<sup>rd</sup> Street  
Harrisburg, PA 17110

Tanya J. McCloskey – Acting Consumer Advocate  
Pennsylvania Office of Consumer Advocate  
555 Walnut Street  
Forum Place, 5<sup>th</sup> Floor  
Harrisburg, PA 17101-1923

John R. Evans – Small Business Advocate  
Pennsylvania Office of Small Business  
300 North Second Street, Suite 202  
Harrisburg, PA 17101

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Bureau of Investigation & Enforcement  
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Tori Geisler  
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2800 Pottsville Pike, P.O. Box 16001  
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*Counsel for Duquesne Light Company*

Date: January 16, 2017



***Duquesne Light***  
*Our Energy...Your Power*

## **2014/15 RTEP Long Term Proposal Window**

2014/15 RTEP Market Efficiency

[Public Version]

Submitted February 27, 2015

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## **Contact Information**

Name and address of the proposing entity:

Duquesne Light Company  
411 Seventh Avenue  
Pittsburgh, PA 15219

Questions regarding this proposal can be directed to:

Jason Harchick, PE  
Manager, Transmission Planning  
[jharchick@duqlight.com](mailto:jharchick@duqlight.com)  
412-393-8391

## **Statement of Intent to be the Designated Entity for the Proposed Project**

Duquesne Light Company intends to be the Designated Entity for the proposed project.

## 1.0 Background

This proposal by Duquesne Light Company (Duquesne) responds to the October 30, 2014 Request for Proposal - PJM 2014/15 RTEP Long Term Proposal Window (RFP) which seeks solutions to identified Reliability Criteria violations, Market Efficiency congestion, and Reliability Pricing Model (RPM) limiting constraints. Specifically, this proposal addresses the Market Efficiency congestion results recommended for proposals specific to the congestion of the Duquesne Woodville to USAP 138 kV line and the Dravosburg to West Mifflin 138 kV line. Within this proposal, Duquesne provides a solution to relieve the congestion with a benefit/cost ratio above 1.25.

Provided with the PJM RFP is a spreadsheet containing a complete set of Market Efficiency congestion results. The results for the Dravosburg to West Mifflin 138 kV line indicate 567 and 589 hours of congestion resulting in market congestion of \$4.7 to \$7.1 million for the study years of 2019 and 2022 respectively. The results for the Woodville to USAP 138 kV line indicate 131 and 218 hours of congestion resulting in market congestion of \$1.7 and \$4.7 million for the two study years. Duquesne's proposal addresses the above referenced congestion results.

## 2.0 Proposed Solution

### 2.1 Description of Proposed Solution

The Duquesne proposal recommends one solution to address congestion on both the Woodville to USAP 138 kV line and the Dravosburg to West Mifflin 138 kV line. The proposal is a combination of two separate projects that combined as well as individually exceed the 1.25 benefit/cost ratio threshold.

The first segment of Duquesne's proposed solution is to upgrade the Duquesne-owned portion of the Woodville [DLC]-Peters [APS] (Z-117) 138 kV tie line. The Woodville to USAP 138 kV line is part of the larger Z-117 tie line. The Duquesne proposal includes upgrading the Duquesne portion of this circuit by replacing the 6.91 miles of line conductor and upgrading to the terminal equipment at the Duquesne Woodville and USAP substations.

The second segment of Duquesne's proposed solution is to utilize the idled Dravosburg-Elrama (Z-15) 138 kV circuit<sup>1</sup> and reroute it creating a new Dravosburg -USS Clairton (Z-15) 138kV circuit. The existing West Mifflin-USS Clairton (Z-14) 138 kV circuit will be re-routed to Wilson substation creating a West Mifflin-Wilson (Z-14) 138 kV circuit. The present Z-14 and idled Z-15 circuits share a common tower line that occupies the same corridor as the circuits that currently serve Wilson substation and therefore pass close by Wilson substation. Existing overhead conductor will be utilized except for approximately 200 feet of new conductor required to connect the circuit to the Wilson line position and for the addition of tower jumpers. Terminal equipment upgrades will also take place at Dravosburg, Wilson, and USS Clairton substations.

Both segments of Duquesne's proposal upgrade and reconfigure Duquesne-owned facilities and occur entirely on existing Duquesne property and right-of-way.

See Figure 1 and Figure 2 in Appendix 1 for present and proposed single line diagrams for this project.

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<sup>1</sup> This circuit was idled in 2014 as part of PJM baseline project b2174.7

## 2.2 Location of Proposed Project

The proposal, including both segments, takes place entirely on Duquesne-owned property and right-of-way in Allegheny County in the Commonwealth of Pennsylvania.

## 2.3 Construction Schedule

The proposed schedule for this project is detailed below. The schedule assumes that PJM has assigned Duquesne to be the Designated Entity for this project prior to July 31, 2014. All terminal equipment will be constructed within existing Duquesne substations. Modifications to the 138kV circuits will be made entirely within Duquesne-owned right-of-way or property; no additional right-of-way or property is required. The modifications proposed in this proposal will require approval from the Pennsylvania Public Utility Commission (PAPUC). Based on 52 Pa. Code § 57.72, the scope of this project meets the requirements for approval with a Letter of Notification rather than a full siting application.

Engineering	8/1/2015 through 12/1/2016
Siting	6/1/2016 through 12/31/2016
Procurement	1/1/2017 through 9/15/2017
Construction	9/15/2017 through 5/31/2018
In Service Date	5/31/2018

## 2.4 Cost Estimates

This project is estimated to cost \$11,184,000.00. A breakdown of these costs by component is included in Table 1.

Table 1: Project Cost Estimate by Component

Component	Description	Cost Estimate
Component 1	Reconductor 6.91 miles of the Woodville [DLC]-Peters [APS] (Z-117)138 kV tie line	\$ 9,677,000.00
Component 2	Replace Z-117 138kV line breaker at Woodville and upgrade Woodville and USAP substation terminal equipment	\$ 553,000.00
Component 3	Establish the Dravosburg-USS Clairton (Z-14) and West Mifflin-Wilson (Z-15) 138kV circuits and install new 138kV breaker at Dravosburg	\$ 954,000.00
<b>Total</b>		<b>\$ 11,184,000.00</b>

## 3.0 Results and Analyses

### 3.1 Market Efficiency Analysis

Duquesne contracted with Ventyx to perform the market efficiency simulations associated with this proposal. The economic simulations were performed in accordance with PJM's market efficiency simulation procedures and the *Market Efficiency Modeling Practices Document* that accompanied PJM's RFP. For each of four calendar years – 2015, 2019, 2022, and 2025 – a market simulation was

performed, with and without the transmission project in service, using ABB's PROMOD IV® nodal market simulation software.

The change in net load payment benefits and change in production cost benefits were entered by zone for each of the simulation years into the PJM Market Efficiency Benefit Cost Tool. Duquesne's proposal provides \$109.4M of benefit based on the low voltage calculation method. This tool was also used to determine a benefit/cost ratio of 6.72 based on the projected project cost and in-service date.

Duquesne has provided the PJM Market Efficiency Benefit Cost Tool for the proposed solution and individually for the two segments, which combined comprise Duquesne's complete proposed solution. Additionally, Duquesne has provided a PROMOD model change file in XML format and a PSSE IDEV file compatible with the PJM 2018 RTEP power flow case for the proposed project.

### **3.2 Steady State Analysis**

The Siemens Power Technologies International Load Flow program (PSS/E) was used to perform both a thermal and voltage analysis of the transmission system. The base case utilized for this study was provided by PJM for the 2014 RTEP proposal window. The contingency files supplied with the case were updated to reflect the changes resulting from this proposal. Updated contingency files are being provided to PJM with this proposal and individual changes have been highlighted in a separate attachment. These updated contingency files were used to test for NERC Category B (N-1), Category C1 (bus), Category C2 (breaker failure), and Category C5 (common structure) contingencies. NERC Category C3 (N-1-1) contingencies were tested utilizing the global double command inherent to PSS/E.

The steady state analysis indicated that the proposed solution does not create any new thermal or voltage violations.

### **3.3 Short Circuit Analysis**

A short circuit analysis was performed using CAPE to analyze the impacts of Duquesne's proposed solution. A 2019 short circuit case was utilized for this assessment.

The short circuit analysis indicated that this proposal does not increase the maximum fault duty of any breakers beyond their rated fault duty.

## **4.0 Qualification of the Sponsor**

Duquesne intends to be the Designated Entity for the proposed project. As documented in Duquesne's Prequalification Package accepted by PJM on January 29, 2014 (PJM ID Q13-17), Duquesne has the technical and engineering qualifications relevant to construction, operation and maintenance as well as demonstrated experience to develop, construct, maintain and operate the transmission facilities such as those contained within this proposal.

<http://www.pjm.com/~media/planning/rtep-dev/expand-plan-process/ferc-order-1000/pre-qual-duquesne-light-company.ashx>

## **Attachments**

The following documents have been included as attachments to this proposal:

- DLC 2014-15 RTEP Long Term Window Proposal ME Benefit Cost Tool Full Project.xlsx
- DLC 2014-15 RTEP Long Term Window Proposal ME Benefit Cost Tool Segment1.xlsx
- DLC 2014-15 RTEP Long Term Window Proposal ME Benefit Cost Tool Segment2.xlsx
- DLC 2014-15 RTEP Long Term Window Proposal ME PROMOD Model Changes v11.1.4.XML
- DLC 2014-15 RTEP Long Term Window Proposal ME PROMOD Monitor File.eve
- DLC 2014-15 RTEP Long Term Window Proposal Market Efficiency Project Proposal.idv
- DLC 2014-15 RTEP Long Term Window Proposal Contingency File Changes.pdf
- 2019\_RTEP\_Summer\_Single\_04302014-With DLCO Proposal.con
- 2019\_RTEP\_Summer\_Bus\_04302014 -With DLCO Proposal.con
- 2019\_RTEP\_Summer\_Line\_FB\_04302014 -With DLCO Proposal.con
- 2019\_RTEP\_Summer\_Tower\_04302014 -With DLCO Proposal.con

## Appendix 1 Diagrams

Figure 1: DLC Market Efficiency Single Line Diagram (Present – February 2015)

[Redacted Single Line Diagram]

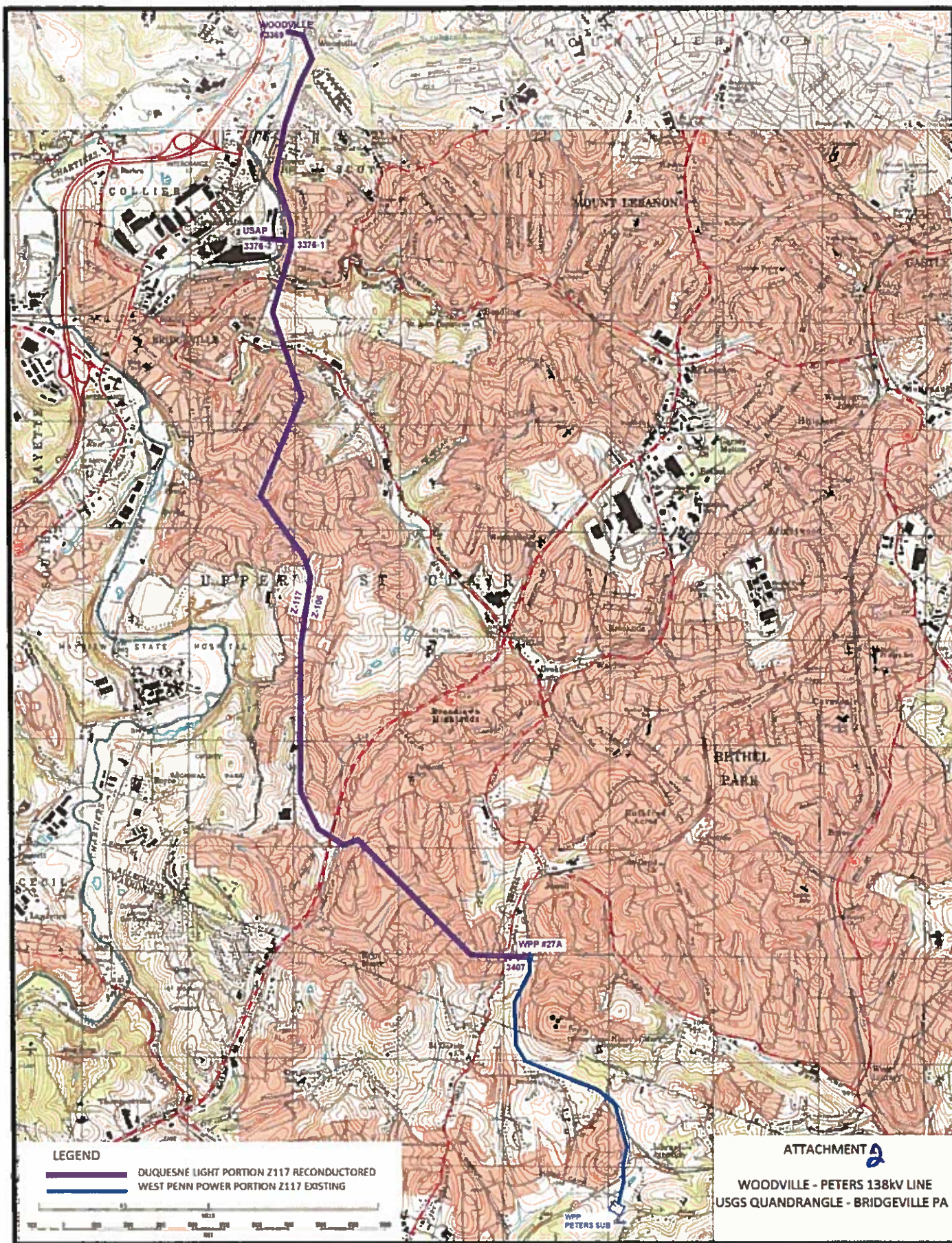
Figure 2: DLC Market Efficiency Single Line Diagram (Proposed – May 2018)

[Redacted Single Line Diagram]

**Figure 3: Aerial View of Wilson Substation**

[Redacted Aerial View]

2014 RTEP Proposal Template																						
Version 1   Posted 6/27/2014		Solution																				
Overloaded Facilities																						
FG #	Analysis Type	Fr Bus	Fr Name	To Bus	To Name	CKT	KVs	A/ess	General Description/Scope	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6	Component 7	Component 8	Component 9	Component 10	Cost* (\$ Millions)		
N/A	Market Efficiency		Woodville		USAP	1	138	DLC	Reconductor approximately 7 miles of the Woodville Peters (Z-117) 138kV circuit, reconfigure the West Millin-US5 Clarion (Z-14) 138kV circuit to establish the Dravosburg US5 Clarion (Z-14) 138kV circuit and the West Millin Wilson (Z-15) 138kV circuit	Reconductor 6.91 miles of the Woodville (DLC) Peters (APS) (Z-117) 138kV tie line	Replace 2 117 138kV line breakers at Woodville and upgrade Woodville and USAP substation terminal equipment	Establish the Dravosburg-US5 Clarion (Z-14) and West Millin-Wilson (Z-15) 138kV circuits and install new 138kV breaker at Dravosburg										11.184
N/A	Market Efficiency		Dravosburg		West Millin	1	138	DLC	Reconductor approximately 7 miles of the Woodville Peters (Z-117) 138kV circuit, reconfigure the West Millin-US5 Clarion (Z-14) 138kV circuit to establish the Dravosburg US5 Clarion (Z-14) 138kV circuit and the West Millin Wilson (Z-15) 138kV circuit													
<p>Please see example template for details on how to fill out this template  <a href="http://www.pjm.com/media/158483/rtep-dev-expansion-process-1000/rtep-proposal-2014-rtep-proposal-2014-template.pdf">http://www.pjm.com/media/158483/rtep-dev-expansion-process-1000/rtep-proposal-2014-rtep-proposal-2014-template.pdf</a></p> <p><b>Note A: PJM requires the following files to be provided:</b></p> <ol style="list-style-type: none"> <li>1. Keys to model the proposed upgrade for each component (please only use unused bus numbers for the creation of new buses)</li> <li>2. Updated Contingency if upgrade is a new facility or changes the configuration of an existing facility</li> <li>3. Single line diagram if upgrade is new facility or changes the configuration of an existing facility</li> <li>4. Project specifics, including but not limited to: Conductor type, mileage, tower type, configuration and technology</li> </ol> <p><b>Note B: For more detailed projects an additional narrative may be needed to address specifics of a project including (when applicable):</b></p> <ol style="list-style-type: none"> <li>1. Short Circuit and Stability evidence</li> <li>2. Location plan for work at existing substations</li> <li>3. Aerial map of the project that reflects route(s) for new facilities</li> <li>4. Assumptions and/or modifications associated with any protection and control (relaying) work at existing stations</li> <li>5. Durations and Outages of existing facilities required to complete construction</li> <li>6. Right of ways, siting and permitting</li> </ol> <p>*Detailed cost estimates for each component including a description of assumptions (eg. Base cost, risk and contingency costs, and total cost)</p> <p><b>FYI:</b> The upgrades list above are examples based on existing upgrades.</p>																						
<p>Revision History  V1   Posted 6/27/2014</p>																						



**Duquesne Light Company  
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**I. Engineering Design Criteria**

The National Electrical Safety Code (“NESC”) is a set of rules to safeguard the general public during the installation, operation, and maintenance of electric power lines. The NESC contains the basic provisions considered necessary for the safety of employees and the general public. Some of the provisions covered are based on structure loads and operating clearances of the conductors. Although it is not intended as a design specification, the NESC establishes minimum design requirements. Duquesne Light Company (“Duquesne Light”) has developed design specifications and safety rules that meet or surpass all requirements specified by the NESC.

Engineering design criteria for all transmission line projects include NESC loading requirements and clearances for design, construction, and operation. NESC defines the “loads” on conductors and supporting structures, plus wind pressure on the conductors and supporting structures. Loading requirements are the loads on the conductors and structures that are anticipated assuming certain ice and wind conditions. Loading requirements always contain “safety factors” to allow for unknown or unanticipated contingencies. The clearances and loading requirements contained in the NESC were developed to ensure public safety and welfare.

**II. Duquesne Light’s transmission line design standards meet or surpass the NESC standards.**

According to the NESC standards, construction Grades B, C, or N<sup>1</sup> may be used for

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<sup>1</sup>The relative order of grades of construction for conductors and supporting structures is B, C, and N with grade B being the highest.

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transmission lines except at crossings of railroad tracks and limited access highways where Grade B construction is specified. However, DLC designs all of its transmission lines for Grade B construction. The use of Grade B design and construction specifies enhancements such as larger minimum cross arm dimensions, larger-minimum conductor size, and increased safety factors.

Additionally, Duquesne Light's engineering design criteria also surpasses the NESC standards in its clearance requirements. Duquesne Light designs 138kV transmission lines to meet 30 feet of ground clearance under the worst-case load scenario, which is 9.4 feet more than the NESC minimum of 20.6 feet, for new construction. For reconductor projects and spans with new structures, DLC strives to obtain either 30 feet of ground clearance or NESC+10%. For all other clearances, NESC+10% is used.

Finally, another example where Duquesne Light surpasses the NESC standards is in the structure overload factors. Duquesne Light applies overload factors of 1.1 for NESC 250C and NESC 250D loads compared to the NESC requirement of using 1.0 overload factors for NESC 250C and NESC 250D loads.

**III. Periodic Maintenance Program on All Transmission Lines**

Duquesne Light ensures the continued public safety from our transmission line infrastructure through various maintenance and inspection programs. For example, Duquesne Light uses advanced survey technology called "LiDAR" to perform routine inspections of as-built conditions to ensure clearance requirements. This technology allows Duquesne Light to model

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its transmission system three-dimensionally to analyze clearances from the conductors to the world around them, including vegetation, homes, pools, roads, and more. This program provides DLC with accurate as-built records to ensure compliance with designs while also identifying any new or changing conditions to surrounding landscape.

Other DLC Maintenance programs for inspected towers include:

- a. Ground inspections, performed by Duquesne Light mobile workers walking around the base of the structures, for approximately 300-350 structures annually. These inspections focus heavily on foundations, structure integrity, and failed hardware, though additional information may be noted.
- b. Aerial inspections, performed by Duquesne Light subcontractors from a helicopter employing former Journey Linemen, utilizing telescoping lens cameras on approximately 400-500 structures annually. These inspections focus heavily on hardware and potential structural defects in tower members although additional information may be noted.

**IV. Personnel Safety Rules**

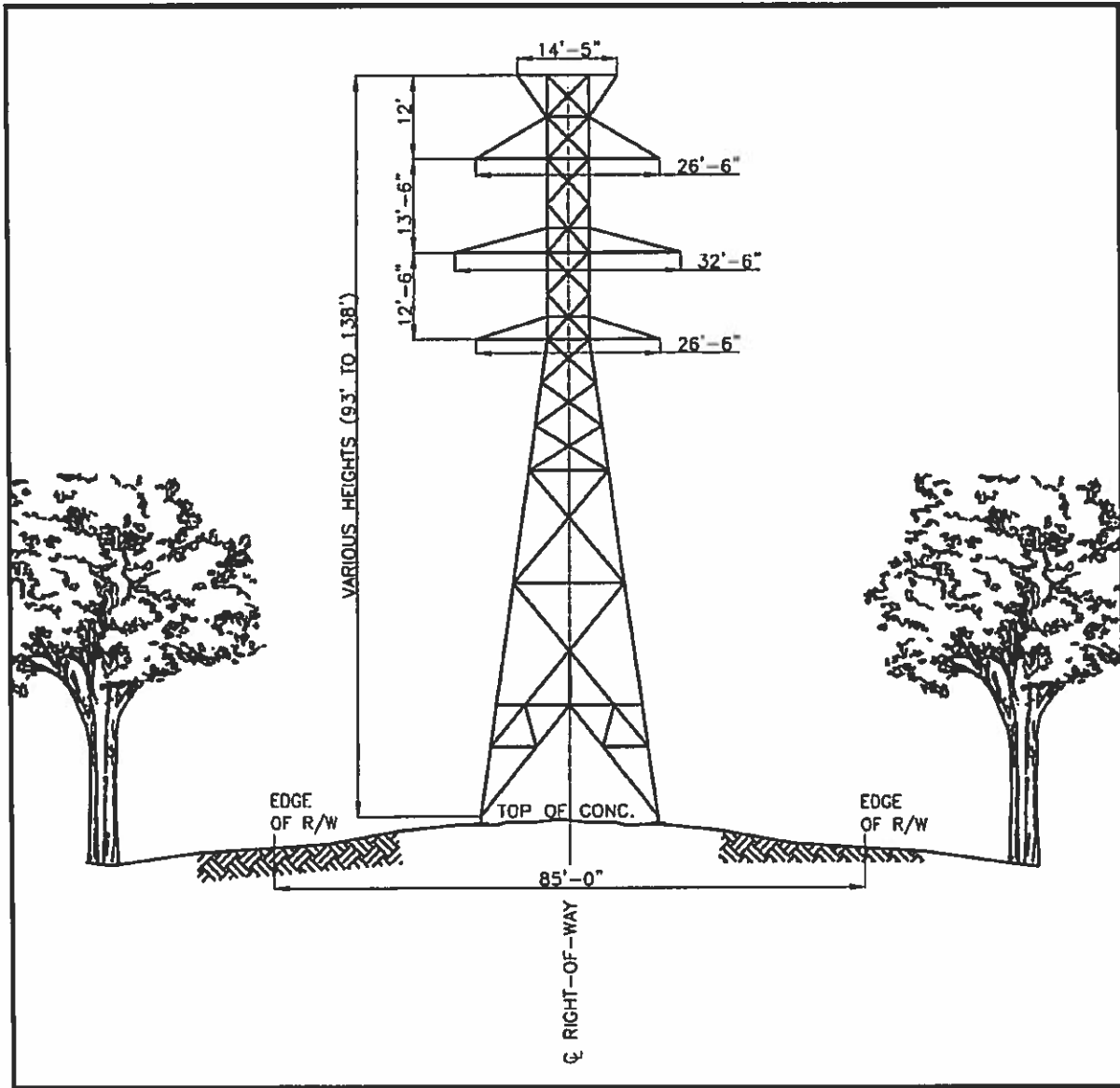
Duquesne Light follows OSHA regulations to ensure safe practices. Duquesne Light's safety rules and good practices provide that:

1. Only qualified employees and trainees working under their direct supervision may work on or with exposed energized lines or parts of equipment operating at 50 volts or more, and must be familiar with the minimum approach distances as indicated by OSHA regulations.
2. Before work is commenced, a job briefing will be held with all employees to orient each employee as to:
  - a. The hazards associated with the job
  - b. The work procedures involved
  - c. Any special precautions to be taken
  - d. All energy source controls

**Duquesne Light Company  
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- e. Personal protective equipment required
- 3. When working in elevated locations, above 4 feet, employees shall use appropriate fall protection systems. Each employee working from an aerial lift, bucket truck, or man lift shall use a full body harness and either a shock absorbing lanyard or self-retracting lanyard. Duquesne Light strives to ensure that all fall protection follows OSHA regulations.
- 4. Prior to climbing towers and other similar structures a documented visual inspection shall be conducted by a competent person to:
  - a. Determine type or work, materials, and construction methods required.
  - b. Determine physical condition of the structure.
  - c. Contact Engineering to determine if a structural analysis has been performed to identify tie off and anchorage points for construction activities.
  - d. Tie off and anchorage points follow the OSHA regulations, in which the tie off points can support 5,000 lbs per employee or a twice the impact load per employee.
  - e. Determine the type of fall protection systems to be used, appropriate anchorage points and complete documented fall safety analysis.

All work is to be inspected prior to construction to evaluate the site conditions. If there are any concerns about the integrity of a structure, Duquesne Light's Engineering Department is engaged to perform the appropriate investigation and analysis to provide guidance for safely completing the job.



Attachment 4 - Typical Cross Section 138kV Steel Lattice Tower Right-of-Way  
 Duquesne Light Company, Allegheny County, PA

**Duquesne Light Company  
South Hills Capacity Project  
Description of the Project Area**

**Engineering Description**

Duquesne Light Company's ("Duquesne Light" or "Company") double circuit 138kV transmission line running from Woodville Substation to Pole 27A (marked as "WPP #27A" on Attachment 1) supports circuits Z-117 and Z-106. The 6.96-mile existing line is located in Allegheny County in Pennsylvania. It was constructed in 1953 and consists of approximately forty (40) galvanized steel lattice towers with aluminum arms and grillage foundations. In order to increase capacity and maintain required clearances, Duquesne Light is proposing to replace the existing 795kcmil ACSR conductor on the Z-117 circuit with a new 795kcmil ACSS/TW 20/7 Drake conductor. All towers along the Z-117 line were modeled in Power Lines System-TOWER<sup>1</sup> and then checked with the new conductor in Power Lines System-CADD<sup>2</sup> per NESC design criteria. Based on this review, the Company determined that some towers will require structural reinforcements such as bolt replacements and structural bracing which will be completed as a part of this project. No new structures are required for the Project.

**Vegetation Management**

The Project is being completed within an existing transmission line corridor. In areas where vegetation management is required, Duquesne Light will apply the Wire Zone/Border Zone management technique, which is recognized as an industry best practice to manage vegetation and ensure the safe and reliable delivery of electricity. Under the Wire Zone/Border

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<sup>1</sup> PLS-TOWER is software used to analyze, design and optimizes steel lattice towers for transmission and substation applications.

<sup>2</sup> PLS-CADD is a line design program that includes all the terrain, sag-tension, loads, clearances and drafting functions necessary for the design of an entire power line.

**Duquesne Light Company  
South Hills Capacity Project  
Description of the Project Area**

Zone management technique, non-compatible species in both the Wire zone and Border Zone areas are removed. Areas within the Wire Zone are cleared of all woody vegetation leaving only grasses and other herbaceous plants, such as low-growing shrubs. Areas within the Border Zone are cleared of all vegetation that would exceed 15 feet at maturity. The Wire Zone/Border Zone management technique also requires vegetation management operations to extend to “danger trees” located outside the right-of-way that present a hazard to a transmission line. Danger trees are those that, in falling, would either strike the conductors or pass within the minimum clearances required for the conductors.

**Land Use**

Impacts to land use and the environment are anticipated to be minimal because the reconducted segment of Z-117 will use the existing tower structures. No additional tower structures are required for the Project.

The Project may temporarily impact some landowners’ access to their property. All landowners whose access to their property could be potentially impacted will be notified in writing of the possible use of their land, and the Company will secure access easements as may be necessary and appropriate. Duquesne Light has the right to trim or remove, and control the growth of any trees, brush or shrubbery, and to remove obstructions, which at any time interfere with or threaten to interfere with the access of its easement(s). Duquesne Light will remedy any and all damage caused by construction, operation, maintenance, rebuilding or removal of said transmission systems in accordance with the terms of its easements granted and good businesses dealings.