

# NORTHEAST TRANSMISSION DEVELOPMENT

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*a Member of the LS Power Group*

## PROPOSALS



*In Response to the:*

**PJM RTEP – 2016 RTEP Proposal Window #1**

*April 1, 2016*

# NORTHEAST TRANSMISSION DEVELOPMENT

## TABLE OF CONTENTS

A. Executive Summary.....	1
B. Company Evaluation Information.....	2
C. Constructability.....	3
D. Analytical Assessment.....	5
E. Cost.....	6
F. Schedule.....	7
G. Operations/Maintenance.....	10

# NORTHEAST TRANSMISSION DEVELOPMENT

## A. EXECUTIVE SUMMARY

Northeast Transmission Development, LLC (“NTD”), a member of the LS Power Group (“LS Power”) is pleased to present the following projects (individually “Project” or collectively “Projects”) to resolve potential reliability criteria violations identified by PJM. The potential reliability criteria violations were identified in the 2020 Generator Deliverability and 2020 Common Mode Outage analysis for the 2016 RTEP Proposal Window #1.

NTD seeks to be the Designated Entity<sup>1</sup> for these Projects, designated by PJM to develop, construct, own, operate, maintain, and finance the Projects. NTD has demonstrated its capability to develop, finance, construct, own and operate large scale power projects, including high-voltage transmission projects. LS Power has a strong track record of success throughout the United States, including significant generation experience and the successful development, construction, and operation of hundreds of miles of high-voltage transmission.

The Projects are described below. NTD provides cost containment for each of the Projects to cap the costs to place each Project in-service. Each Project should be evaluated independently and can be placed in service as identified in the 2016 RTEP Proposal Templates.

### 1. CORNERSTONE - (2016\_1-2A)

The Project consists of a new 500/230/115 kV substation interconnecting the existing Wake to Heritage 500 kV transmission line, the existing Thelma to Lakeview 230 kV transmission line, and the existing Eatons Ferry to Carolina 115 kV transmission line. The Project has an estimated construction cost of approximately \$24.0 million and will resolve generator deliverability violations in southern Virginia.

### 2. ROGERS ROAD - CARSON - (2016\_1-2B)

The Project consists of a new approximately 29-mile 500 kV transmission line from the planned Rogers Road 500 kV switching station to the existing Carson 500 kV substation. The Project has an estimated construction cost of approximately \$88.7 million and will resolve generator deliverability violations in southern Virginia.

### 3. ROGERS ROAD - CLUBHOUSE - (2016\_1-2C)

The Project consists of a new approximately 5-mile transmission line from the existing Rogers Road 500 kV switching station to the existing Clubhouse 230 kV substation. The Project will also involve a new 500/230 kV transformer. The Project has an estimated construction cost of approximately \$27.5 million and will resolve generator deliverability violations in southern Virginia.

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<sup>1</sup> Pre-qualification ID 13-06.

# NORTHEAST TRANSMISSION DEVELOPMENT

## B. COMPANY EVALUATION INFORMATION

NTD is a member of the LS Power Group,<sup>2</sup> an experienced developer of large-scale energy projects, including several transmission projects. Since 1990, LS Power has had the technical and engineering capability to develop, own and/or operate over 30,000 MW of power generation facilities and two large high-voltage (345 kV and 500 kV) transmission projects totaling over 700 circuit-miles. LS Power currently has operating assets and development projects within PJM in Delaware, Illinois, Kentucky, New Jersey, Pennsylvania and Virginia. Additional information confirming NTD's qualifications to be selected as the Designated Entity was included in the pre-qualification documentation.

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<sup>2</sup> Located at 400 Chesterfield Center, Suite 110, St. Louis, MO 63017

# NORTHEAST TRANSMISSION DEVELOPMENT

## C. CONSTRUCTABILITY

A general Project location map for all Projects can be found in *Appendix A*. A more detailed map depicting each representative location can be found in *Appendix B*.

### 1. CORNERSTONE

The Project consists of a new 500/230/115 kV substation interconnecting the existing Wake to Heritage 500 kV transmission line, the existing Thelma to Lakeview 230 kV transmission line, and the existing Eatons Ferry to Carolina 115 kV transmission line.

#### A. CORNERSTONE 500/230/115 kV SUBSTATION

The primary component of the Project consists of a new 500/230/115 kV substation interconnecting the existing Wake to Heritage 500 kV transmission line, the existing Thelma to Lakeview 230 kV transmission line, and the existing Eatons Ferry to Carolina 115 kV transmission line. The new Cornerstone substation is proposed to be located on privately-owned land in Halifax County, North Carolina.

#### B. TRANSMISSION LINE INTERCONNECTION

The other component of the Project is constructing new towers to connect the existing Wake to Heritage 500 kV transmission line, the existing Thelma to Lakeview 230 kV transmission line, and the existing Eatons Ferry to Carolina 115 kV transmission line. This work would be completed by the incumbent transmission owner.

### 2. ROGERS ROAD - CARSON

The Project consists of a new approximately 29-mile 500 kV single circuit transmission line from the planned Rogers Road 500 kV switching station to the existing Carson 500 kV substation.

#### A. ROGERS ROAD 500 kV SWITCHING STATION INTERCONNECTION

The first component of the Project consists of interconnecting to the planned Rogers Road 500 kV switching station and associated terminal improvements. This work would be completed by the incumbent transmission owner.

# NORTHEAST TRANSMISSION DEVELOPMENT

## **B. ROGERS ROAD - CARSON 500 kV TRANSMISSION LINE**

The second component of the Project is a new approximately 29-mile 500 kV single circuit transmission line from the planned Rogers Road 500 kV switching station to the existing Carson 500 kV substation. The representative route is located in Greensville County, Sussex County and Dinwiddie County, Virginia.

## **C. CARSON 500 kV SUBSTATION INTERCONNECTION**

The third component of the Project consists of interconnecting to the existing Carson 500 kV substation and associated terminal improvements. This work would be completed by the incumbent transmission owner.

## **3. ROGERS ROAD - CLUBHOUSE**

The Project consists of a new approximately 5-mile transmission line from the existing Rogers Road 500 kV switching station to the existing Clubhouse 230 kV substation, along with a new 500/230 kV transformer.

### **A. ROGERS ROAD 500 kV SUBSTATION INTERCONNECTION**

The first component of the Project consists of interconnecting to the planned Rogers Road 500 kV substation and associated terminal improvements. This work would be completed by the incumbent transmission owner.

### **B. ROGERS ROAD NORTH 500/230 kV SUBSTATION**

The second component of the Project is a new 500/230 kV substation at or near the existing Rogers Road switching station with associated 500 kV interconnection to the existing Rogers Road 500 kV switching station.

### **C. ROGERS ROAD - CLUBHOUSE TRANSMISSION LINE**

The third component of the Project is a new approximately 5-mile single circuit transmission line from the new Rogers Road North 500/230 kV substation to the existing Clubhouse 230 kV substation. The representative route is located in Greensville County, Virginia.

### **D. CLUBHOUSE 230 kV SUBSTATION INTERCONNECTION**

The fourth component of the Project consists of interconnecting to the existing Clubhouse 230 kV substation and associated terminal improvements. This work would be completed by the incumbent transmission owner.

## D. ANALYTICAL ASSESSMENT

The Project one-line diagrams can be found in *Appendix C* and a preliminary sketch of the proposed configuration can be found in *Appendix D*.

NTD determined the technical specifications for each Project including ratings and impedances, which are each specified in the modeling files submitted for review by PJM. NTD has completed an extensive modeling effort to evaluate the merits of the Projects. The model results demonstrate that the Projects will resolve potential reliability criteria violations as identified in *Appendix E*.

NTD conducted a power flow contingency analysis using the power flow case and contingency files provided by PJM to identify any potential violations of thermal ratings due to the addition of a Project. NTD's analysis showed no Projects created new thermal overloads on the PJM system.

## **E. COST**

### **1. PROJECT COST ESTIMATES**

The total cost for each Project, both in current year dollars and in-service year dollars, and a detailed breakdown of estimated costs for each component of each Project is identified in *Appendix F*.

An estimated yearly cash flow for each Project is included as *Appendix G*.

# NORTHEAST TRANSMISSION DEVELOPMENT

## F. SCHEDULE

NTD has prepared execution plans for all Project components outlining major Project development, construction and operations activities. NTD identified and evaluated any potential fatal flaws for all Projects and confirmed the preliminary feasibility of each Project proposed for consideration by PJM. A detailed conceptual schedule for each proposed Project component can be found in *Appendix K*. NTD's schedule allots sufficient time to complete each aspect of the Project to meet the identified in-service date, including sufficient float to avoid a delay in the event of unforeseen issues.

LS Power will assign a Project Director to oversee the Project through development, construction and operations/maintenance. *Appendix L* contains an organizational chart depicting the management structure NTD intends to implement the Project. The following sections summarize each of the major activities during the development, construction, and operations and maintenance phases of the Project.

### A. SITE SELECTION/ROUTING ANALYSIS

NTD will conduct a detailed analysis to identify preferred and alternative routes/sites taking into consideration factors such as safety, environmental impacts and land use. The detailed analysis will include data collection, field evaluation, environmental review, engineering analysis, right-of-way review and agency and public review. The detailed analysis will identify all information necessary to support development of the application for any siting approval process.

### B. COMMUNITY AND LANDOWNER ENGAGEMENT

NTD will identify and engage stakeholders, such as community officials and landowners within the Project area, early in the process and maintain an active dialogue throughout. Public meetings may be held to offer a venue for landowners and other interested community members to learn about the Project and for NTD to learn more about specific landowner and community preferences. NTD plans to make information available on its website and provide notification of public meetings to landowners within the Project area as required in the siting approval process.

### C. PERMITTING

As with all of LS Power's development projects, LS Power employees will directly oversee all Project permitting activities. From senior management to project managers and environmental, electrical and project engineers to support services including legal, administrative, regulatory and others, the Project will benefit from LS Power's detail-oriented and hands-on philosophy. In addition to LS Power personnel, NTD will utilize qualified third-party firms to support permitting and development efforts. In its experience, LS Power has found that working with local consultants and legal counsel provides both invaluable insight and the benefit of established relationships with permitting agencies. Additionally, LS Power has strong working relationships with numerous equipment manufacturers, suppliers, contractors and engineers to provide specialized technical data as necessary to support permitting; such

# NORTHEAST TRANSMISSION DEVELOPMENT

information includes, for example, the most current equipment offerings and respective performance data, construction techniques to minimize impacts and permitting complexity and procurement and installation schedules. NTD has already held preliminary discussions with third-party support firms to confirm expectations on schedule and feasibility for permitting processes, procurement and construction, which information is incorporated in this Proposal. NTD will be involved in each step of the development process, carefully managing and reviewing work to ensure the various aspects of the Project fit together upon completion, ultimately being financeable and constructible.

## **D. SITING APPROVAL**

Most high-voltage transmission projects will require a state siting approval. To begin the siting approval process, NTD plans to hold pre-application meetings with the regulatory agency to introduce NTD and the Project, as well as confirm its understanding of the process. Shortly thereafter, NTD will simultaneously begin collecting siting data and start its outreach efforts so that public siting input is incorporated at the earliest stages of the Project. Once NTD identifies a preferred site/route and at least one viable alternative site/route, NTD will carry out the environmental and detailed engineering work described in the Site Selection/Routing Analysis section above in order to establish a highly-detailed Project plan to support the siting applications.

## **E. WETLANDS AND WATERWAYS**

All proposed Projects were sited to avoid and minimize impacts to wetlands or other areas of environmental concern based on GIS data. It is possible that a Project cannot avoid impacts to a limited number of wetlands and waterways. If so, NTD expects the Project will be subject to regulation under certain permitting programs, namely Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, and Section 401 of the Clean Water Act. NTD will engage a qualified consultant to conduct a wetlands delineation of the selected site/route in order to establish the extent of proposed impacts and the need for specific permits from the state or U.S. Army Corps of Engineers.

## **F. VARIOUS MINOR PERMITS**

In addition to the permits described above, NTD has identified other permits which may be required for the construction of the Project. NTD considers these permits to be minor due to the more limited effort to prepare applications and the less intensive permitting processes which follow. These include permits related to airspace clearance, stormwater/erosion and sedimentation control, road crossings, and utility and railroad crossings.

## **G. RIGHT-OF-WAY ACQUISITION**

The Project will be located primarily on new right-of-way to be acquired by NTD predominately in the form of easements. NTD will assign a Right-of-Way Manager to oversee all real estate related activities for the Project including appraisals, title work, surveying, land acquisition and restoration.

# NORTHEAST TRANSMISSION DEVELOPMENT

A land valuation study will be prepared to establish acreage values for the Project area to serve as the basis for consistent offers for securing easements. Title work will be prepared for each parcel and provided to the survey team for use in preparing legal descriptions for each easement. A right-of-way agent will contact each property owner in person to explain the Project and, as necessary, secure permission to conduct surveys, archaeological studies, etc. Right-of-way agents will be the primary point of contact and negotiate with property owners to acquire the easements on a mutually agreeable basis. To the extent that negotiations reach an impasse, NTD will be able to pursue eminent domain. The right-of-way agents will continue to act as a liaison with the property owners during construction and through the restoration process.

## **H. PROJECT CONSTRUCTION**

NTD intends to follow the same approach for construction as was most recently used to construct the Cross Texas Transmission facilities in Texas. NTD will assign a Construction Manager, an Engineering Manager and a Permit/Compliance Manager to oversee, construction, engineering and compliance activities. This will include quality assurance, field inspectors, coordination activities, outage planning, document control, and various specialists. *Appendix L* provides an organizational structure depicting NTD's planned management arrangement.

# NORTHEAST TRANSMISSION DEVELOPMENT

## **G. OPERATIONS/MAINTENANCE**

For all Project components, NTD intends to follow the same approach for operations and maintenance as is being used for the Cross Texas Transmission Facilities in Texas. NTD will maintain a reliable system and ensure safety and compliance with all applicable codes and standards. NTD will assign a Planning and Operations Manager to oversee the planning, maintenance, real-time operations, and emergency response activities. NTD will actively monitor the condition of the Project, perform condition based maintenance activities and replace equipment as needed. *Appendix L* provides an organizational structure depicting NTD's planned management arrangement.

### **1. OPERATIONS PLAN**

NTD will have a transmission operations center to provide 24/7 monitoring of the Project to monitor and control voltage levels, power flows, or other parameters of the Project, as well as implement procedures needed for emergency or planned maintenance.

### **2. MAINTENANCE PLAN**

NTD will implement an active, thorough inspection and maintenance program for the Project consistent with industry practices including transmission line inspections, vegetative and right-of-way maintenance, and substation maintenance.