



**COMPANY EVALUATION AND CONSTRUCTABILITY INFORMATION  
FOR NEET 1D\_2016 – FLOWGATE 102 SOLUTION  
PLEASANT SHADE 500/230 kV SUBSTATION**

**Submitted to:**



**April 1, 2016**

**2016 RTEP Proposal Window #1**

**Prepared by:**



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**SIGNATURE PAGE**

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Approvals:



4/1/2016

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**David Davis**  
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Date



4/1/2016

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## A. EXECUTIVE SUMMARY

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NextEra Energy Transmission, LLC (NEET) and NextEra Energy Transmission MidAtlantic, LLC (NEET MidAtlantic) are pleased to submit for consideration in the 2016 Regional Transmission Expansion Plan Proposal Window #1 the Rogers Road to Pleasant Shade transmission project.

NextEra Energy, Inc. (NextEra) is a leading clean energy company with consolidated revenues of approximately \$17 billion, approximately 46,400 megawatts of generating capacity, and approximately 14,300 employees in 27 states and Canada as of year-end 2015. Headquartered in Juno Beach, Florida, NextEra's principal subsidiaries are:

- Florida Power & Light Company, which serves more than 4.8 million customer accounts in Florida and is one of the largest rate-regulated electric utilities in the United States,
- NextEra Energy Resources, LLC, which, together with its affiliated entities, is the world's largest generator of renewable energy from the wind and sun, and
- NEET which owns and operates and will be building transmission assets in several US states and Canada.

Through its subsidiaries, NextEra has been recognized by third parties for its efforts in sustainability, corporate responsibility, ethics and compliance, and diversity. In March of 2016, NextEra was ranked No. 1 in the electric and gas utilities industry in Fortune's 2016 list of "World's Most Admired Companies" and has been named a World's Most Ethical Company® for the 9<sup>th</sup> time by the Ethisphere Institute, the global leader in defining and advancing the standards of ethical business practices.

As requested by PJM Interconnection, LLC (PJM), NEET has organized this proposal in conformance with PJM's Greenfield Project Proposal Template.

### Name and Address of the Proposing Entity

#### **NextEra Energy Transmission MidAtlantic, LLC**

700 Universe Blvd  
UST/JB  
Juno Beach, FL 33408

### Proposal Window and associated violation/issue being addressed

- 2016 RTEP Proposal Window #1
- Generator Deliverability Violation – Flowgate 102
- Rogers Road – Carson 500 kilovolt (kV) Thermal Overload



**Violations caused by proposal/nearby violations not addressed by proposal**

The proposed project consists of a 500/230 kilovolt (kV) substation and an approximately [redacted] long 500 kV transmission line. Powerflow analysis results show that [redacted]

Identify projects that span (e.g. ties between or taps) between two PJM Transmission owner zones or between PJM and a neighboring Balancing Authority. This group includes transmission that spans two or more affiliated companies.

The project is [redacted]

**Indication of intentions to construct/own/operate/maintain**

NEET MidAtlantic is seeking to be designated to construct, own, and maintain the proposed project. Based on PJM's approval in the prequalification process, NEET MidAtlantic requests Designated Entity status for this project.

**Description of the proposed solution and corresponding violation(s) that it resolves**

[redacted]

Flowgate 102: Rogers Road – Carson has been identified by PJM as being overloaded for the Generator Deliverability test. NEET's proposed project will resolve the Generator Deliverability overload based on studies performed by NEET's consultant, PWR Solutions. NEET has also performed N-1 and N-1-1 analysis and found that the proposed project will not have a negative impact on other transmission elements in the area.

Further details for NEET's proposed project can be found in Table 1:

Table 1: **Project Details**

Pleasant Shade 500/230 kV Substation Details	
<b>Substation</b>	Pleasant Shade
<b>Nominal Voltage</b>	500/230 kV
<b>Location</b>	[redacted]

[redacted]

Pleasant Shade 500/230 kV Substation Details	
<b>Configuration</b>	500 kV: Single Breaker 230 kV: Four Breaker Ring Bus
<b>Transformer</b>	Three Single Phase 500/230 kV Individual Rating: 200/250 MVA (Normal/Emergency) Combined Rating: 600/750 MVA (Normal/Emergency) Fourth Single Phase included as a spare

Rogers Road –Pleasant Shade 500 kV Transmission Line	
<b>From Substation</b>	Rogers Road 500 kV Switchyard
<b>To Substation</b>	Pleasant Shade 500/230 kV Substation
<b>Length</b>	[REDACTED]
<b>Nominal Voltage</b>	500 kV
<b>Conductor</b>	[REDACTED]
<b>Rating (Normal/Emergency)</b>	4300/4300 MVA
<b>Shield Wire</b>	[REDACTED] [REDACTED]
<b>Structure Type</b>	Guyed V





Pleasant Shade – Clubhouse 230 kV Transmission Line	
From Substation	Pleasant Shade 230 kV Substation
To Substation	Clubhouse 230/115 kV Substation
Length	[REDACTED]
Nominal Voltage	230 kV
Conductor	[REDACTED]
Rating (Normal/Emergency)	600/750 MVA
Shield Wire	[REDACTED] [REDACTED]
Structure Type	Lattice

NEET, working with its consultant [REDACTED]s, modeled the project using the latest powerflow data available from PJM. Through this modeling, NEET verified that its proposed project eliminates the identified Generator Deliverability overload on Flowgate 102. Additional details concerning the project can be found in the appendices as outlined below:

- Appendix 1: Powerflow analysis showing that the project has no adverse impact to the system (N-1, N-1-1, and Generator Deliverability);
- Appendix 2: Single-Line Diagram of the proposed project;
- Appendix 3: Aerial Maps of the proposed project;
- Appendix 4: Powerflow Modeling of the proposed project;
- Appendix 5: Contingency files associated with the proposed project

In sum, NEET's proposed project provides a cost-effective solution to [REDACTED]  
[REDACTED]

**Description of how the project should be considered; only as a whole or if portions of the project should be considered as well**

The proposed project consists of a 500/230 kilovolt (kV) substation and an approximately [REDACTED] 500 kV transmission line, and should be considered as a whole.

### High Level overview of cost and cost commitment

NEET estimates that the total project will cost approximately \$47.5 million (in 2016 dollars), of which approximately \$41.5 million is estimated to be designated to NEET and approximately \$6.0 million is estimated to be performed by the incumbent transmission owner. NEET further estimates that the total project will cost approximately \$51.6 million (In-Service Year dollars), of which approximately \$45.1 million is estimated to be designated to NEET and approximately \$6.5 million is estimated to be performed by the incumbent transmission owner.

### Additional benefits of your proposal above solving the identified violation/constraints

The proposed project resolves the Generator Deliverability overload issue identified by PJM. Further, it enhances the 500 kV transmission system allowing for more efficient delivery of power to key load pockets. There are also potential market efficiency improvements that could be associated with the project.



## B. COMPANY EVALUATION INFORMATION

### Name and address of the entity including a primary and secondary point of contact

The name and address of the proposing entity is:

Name of company:	<b>NextEra Energy Transmission MidAtlantic, LLC</b>				
Mailing Address:	700 Universe Boulevard, UST/JB				
City:	Juno Beach	State:	Florida	Zip:	33408

The points of contact are:

	Primary Contact	Secondary Contact
Contact Name:	<b>David Davis</b> Executive Director, Development NextEra Energy Transmission, LLC	<b>Stephen Gibelli</b> Director of Regulatory Affairs NextEra Energy Transmission, LLC
Address:	700 Universe Boulevard, UST/JB Juno Beach, Florida 33408	700 Universe Boulevard, FEW/JB Juno Beach, FL 33408
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Please ensure that all correspondence regarding this proposal is sent to both the primary and secondary contact personnel.

### Pre-Qualification submittal identification number

NEET's and NEET MidAtlantic's PJM pre-qualification ID Number is Q13-18.



Additional company information, not already included in the pre-qualification, relevant to the specific proposal project:

### NextEra's Transmission Experience

The NextEra family of companies have a wealth of experience in transmission line and substation siting, design, construction, operation and maintenance (O&M), and financing – including a substantial amount of experience for extra high-voltage (EHV) transmission line and substation projects. The NextEra companies operate over 8,500 circuit miles of high-voltage transmission lines and approximately 770 substations. The NextEra companies own and operate over 1,100 miles of 500 kV transmission lines.

NextEra's substantial experience developing, constructing, and operating 500 kV facilities, most notably Florida Power & Light Company's (FPL) 500 kV System, as well as NextEra's ability to apply resources across the United States (e.g., Lone Star Transmission, LLC (Lone Star)) and ability to meet aggressive construction schedules (e.g., the Texas Clean Energy Express), is summarized below.

### FPL's 500 kV System

FPL designed, constructed, and currently operates and maintains over 1,100 miles of 500 kV transmission lines. This system includes 4,636 structures and twelve 500 kV substations. Initial design and construction of the FPL 500 kV network began in the 1970s and continued through the 1990s. FPL regularly makes capital improvements and performs maintenance activities to ensure the reliable, long-term operation of the system.

The 500 kV network traverses the state of Florida, from the Florida/Georgia border to the Miami area – a distance of over 370 miles. As such, the system is of vital importance to the state, providing bulk power transfers and ensuring reliability. Due to the vast geographical distance that the network spans, the terrain and soil conditions are diverse across the system. Such diversity requires different structure and foundation design solutions depending on the specific conditions.

A significant portion of the network was constructed on undrained surfaces with challenging soil conditions. One of the specific 500 kV projects built on undrained land was the Corbett – Conservation transmission project. The project entailed development of a new 60-mile, 500 kV line, constructed partially through the wetlands of Florida. As such, the project required a redesign of traditional 500 kV structures and the use of road-less construction methods, including using helicopters for erection.

In addition to the initial design and construction, a comprehensive condition assessment and proactive maintenance program has been implemented for all 500 kV facilities to ensure their continued reliability.



## Lone Star

NEET's subsidiary, Lone Star, was awarded a Certificate of Convenience and Necessity from the Public Utility Commission of Texas to become a new-entrant regulated public utility to develop, construct, and operate approximately 300 miles of double circuit and 30 miles of single circuit 345 kV lines, five 345 kV substations, and associated facilities. In early 2013, Lone Star completed construction and energized the project on-time and for tens of millions of dollars less than its initial cost estimate for the \$700+ million project. This project is part of the Electric Reliability Council of Texas (ERCOT) Competitive Renewable Energy Zone transmission grid improvement program, mandated by the Texas Legislature. The Lone Star team, including support from NEET and other NextEra affiliates, managed all aspects of this project including development, permitting, land acquisition, regulatory filings, design, construction, and operations to establish a new transmission utility in Texas.

NEET established a Lone Star operations team, which included targeted support from FPL personnel. The operations team assisted Lone Star in obtaining the necessary pre-operations certifications from the North American Electric Reliability Corporation (NERC) and the Texas Reliability Entity as a NERC registered Transmission Operator, and, also, a Transmission Service Provider from ERCOT. Lone Star relies on shared NextEra affiliate Transmission and Substation personnel, processes and procedures, and Lone Star also benefits from the operational efficiencies of a well-established, shared support organization in the NextEra family of companies. This example demonstrates how NextEra can apply its resources to projects that may be located anywhere in the U.S.

## Texas Clean Energy Express

The Texas Clean Energy Express project is an example of an EHV transmission project completed on a very aggressive schedule. A NextEra subsidiary launched this transmission project to interconnect a large wind generation site to an additional host utility. The project includes a 213-mile, 345 kV transmission line with two 345 kV substations. From conception to commercial operation, this project was completed in only 16 months. It demonstrates NextEra's ability to design, develop, and construct transmission lines on extremely short timeframes, while completing appropriate processes for engineering, land acquisition, material and equipment procurement, geotechnical and ground-based surveying, environmental permitting, mitigation measures for existing utility crossings, and pre-operational testing.

## NextEra's Development Experience

NEET is a wholly-owned, indirect subsidiary of NextEra. NEET MidAtlantic, through NEET, will draw upon the resources of the NextEra family of companies to ensure successful project execution. NextEra companies have a long-standing presence in PJM as developers, owners, and operators of clean energy generation and transmission voltage level facilities. NEET can draw on these resources and this experience to operate effectively and efficiently in the region.



## NextEra

NextEra, headquartered in Juno Beach, Florida, is a leading clean energy company with consolidated revenues of approximately \$17 billion, with approximately 46,400 megawatts of generating capacity, and 14,300 employees in 27 states and 4 Canadian provinces as of year-end 2015. NextEra has over 50 years of technical expertise in engineering, constructing, and operating large infrastructure projects, including transmission systems. NextEra's family of companies constructed, owns, operates, and maintains more than 66,000 miles of distribution lines, approximately 8,500 circuit miles of transmission lines between 69 kV and 500 kV, and 770 substations across North America. Additionally, NextEra is a nationally-recognized company which has a demonstrated capability for completing large transmission projects in a timely and cost-effective manner.

## FPL

A principal subsidiary of NextEra and affiliate of NEET, FPL is the largest rate-regulated electric utility in Florida, and one of the largest in the United States. As of December 31, 2015, FPL's assets totaled approximately \$42.5 billion, and FPL's generating resources for serving load consisted of 26,073 megawatts (MWs), of which 25,254 MW were served from FPL-owned facilities. FPL serves more than 9.5 million people through approximately 4.8 million customer accounts in Florida. Due to FPL's ongoing investment in smart, cost-effective, and efficient technologies, FPL is able to provide the most affordable electric service in Florida. For example, FPL's typical residential customer bill continues to be the lowest of the state's 55 electric utilities (based on a 1,000 kilowatt-hour typical bill) and 30% lower than the national average in 2015.

As shown in the chart below, FPL's reliability was better than any other investor-owned utility in Florida in 2014.

Table 2: **FPL Transmission Reliability Comparison**

FPL 2014 IOU Transmission/Substation Reliability (Adjusted) Comparison					
	FPL	DEF	TECO	Gulf	FPUC
SAIDI	2.8	8.4	15.5	14.8	16.8

Note: SAIDI: System Average Interruption Duration Index, DEF: Duke Energy Florida, TECO: Tampa Electric Company, Gulf: Gulf Power Company, FPUC: Florida Public Utility Company

## NextEra Energy Resources (NEER)

A principal subsidiary of NextEra and affiliate of NEET, NEER is the largest producer of energy from the wind and sun in the world. As of December 31, 2015, NEER had nearly 12,414 MWs of wind generating capacity and nearly 1,026 MWs of solar generation in its portfolio. Electric output from NEER's generating assets is sold to companies and businesses with an interest in clean energy, including utilities, retail electricity providers, power cooperatives, municipal electric providers, and large industrial

customers. NEER has earned a strong reputation in power plant development, construction, and operations based on standardized processes, best practices, and superior execution.

## NEET

NEET currently owns, operates, and maintains transmission utilities in New Hampshire and Texas, and is developing transmission projects throughout North America. In January of 2015, the California Independent System Operator (CAISO) selected NEET West, a subsidiary of NEET, as the developer for the Suncrest 230 kV 300 MVAR dynamic reactive power support project under its 2013-2014 transmission plan. CAISO specifically cited NEET West's operational experience, which it draws from the NextEra family of companies, as one of the factors in its selection. NEET West was the first non-incumbent to win a CAISO competitive solicitation transmission project. In March of the same year, CAISO again selected NEET West as the developer for the Estrella 230/70 kV substation located in Pacific Gas & Electric (PG&E) service territory, in San Luis Obispo County, California.

In August 2013, the Ontario Energy Board selected Upper Canada Transmission Inc. (UCT), a partnership of NextEra Energy Canada ULC (a NEET affiliate), Enbridge Transmission Holdings Inc., and Borealis EWT Inc. as the developer for the East-West Tie, which involves construction of a new, approximately 250-mile long double circuit 230 kV electrical transmission line running between Thunder Bay and Wawa, Ontario. The East-West Tie, in conjunction with an existing transmission line, will increase capacity and reliability of the Bulk Electric System between northeast and northwest Ontario. UCT prevailed in a competitive proceeding involving six applicants who submitted detailed proposals for the project.

In addition, as explained above, Lone Star, a wholly-owned subsidiary of NEET, constructed, operates, and maintains 300 miles of double-circuit and 30 miles of single-circuit 345 kV transmission line, using spun concrete and tubular steel monopoles with braced post insulators. The project traverses various terrains and geological conditions, which required multiple specialized foundation types. The project also required the construction of three large greenfield substations and two series compensation stations.

Lone Star's primary and backup energy management system (EMS) is in Florida and primary and back-up control centers are located in Austin, Texas for system operations. In addition to its Texas operations team, Lone Star relies on shared FPL affiliate transmission and substation personnel, processes and procedures, and benefits from the operational efficiencies of a well-established shared services organization.

## NextEra's Engineering Expertise

The NextEra family of companies has a highly qualified engineering organization that will lead the execution of the project. NextEra's design and engineering capabilities include:

- In-house engineering expertise in transmission line and substation engineering and design; civil and structure engineering; protection, control, and communications systems expertise;



- Experienced transmission line designers and subject-matter experts that will develop the scope of work documents for the construction plan, including structure drawings, plan and profile drawings, and construction specifications; and
- Long-standing, collaborative relationships with many of the most experienced engineering firms in the power industry, which are already being used to support wind, solar, fossil, and transmission projects in development – bringing cost certainty and execution confidence.
- Strength in material and equipment procurement:
  - Experienced in-house procurement staff with the ability to work through vendor selection;
  - Long-standing relationships with vendors and significant buying power that allows NEET to access better pricing from reputable suppliers, as well as expedite purchase and delivery during critical times;
  - Established procurement processes that incorporate quality, cost, reliability, financial stability, delivery, field support, safety track record, commitment to continuous improvement, and innovation when selecting suppliers; and
  - Practice of buying major and critical equipment in advance, mitigating risks such as delivery delays or material cost escalation.

Also, the NextEra family of companies have a long history and significant experience in the construction of transmission lines, substation facilities, and related infrastructure. The NextEra team has proven capabilities in constructing and managing high voltage transmission line projects in compliance with the design, reliability, and operational standards set forth by a variety of authorities in North America. Between 2007 and 2013, NEET and its affiliates completed over 1,100 miles of new transmission voltage level line construction at voltages ranging from 69 kV to 500 kV. NextEra's experience includes the full range of activities needed to support successful project development, including:

- Licensing and permitting: We have extensive experience with licensing and permitting processes in PJM, as well as other jurisdictions. We have over 35 staff members who are specifically focused on permitting and licensing activities, and have the following capabilities:
  - Experience developing strategy and planning for emerging federal and state legislative and regulatory developments that have the potential to impact ongoing activities;
  - Ability to evaluate and ensure compliance with and the appropriate adherence to federal, state and local environmental requirements including environmental audits;
  - Expertise identifying and obtaining required licenses and regulatory agency approvals to construct new non-utility fossil and renewable energy generating facilities, gas infrastructure and transmission facilities;
  - Experience performing environmental due diligence for potential acquisitions, divestitures, and financings; and
  - Experience promoting environmental relationships with external environmental groups, and integrating and communicating sustainability.





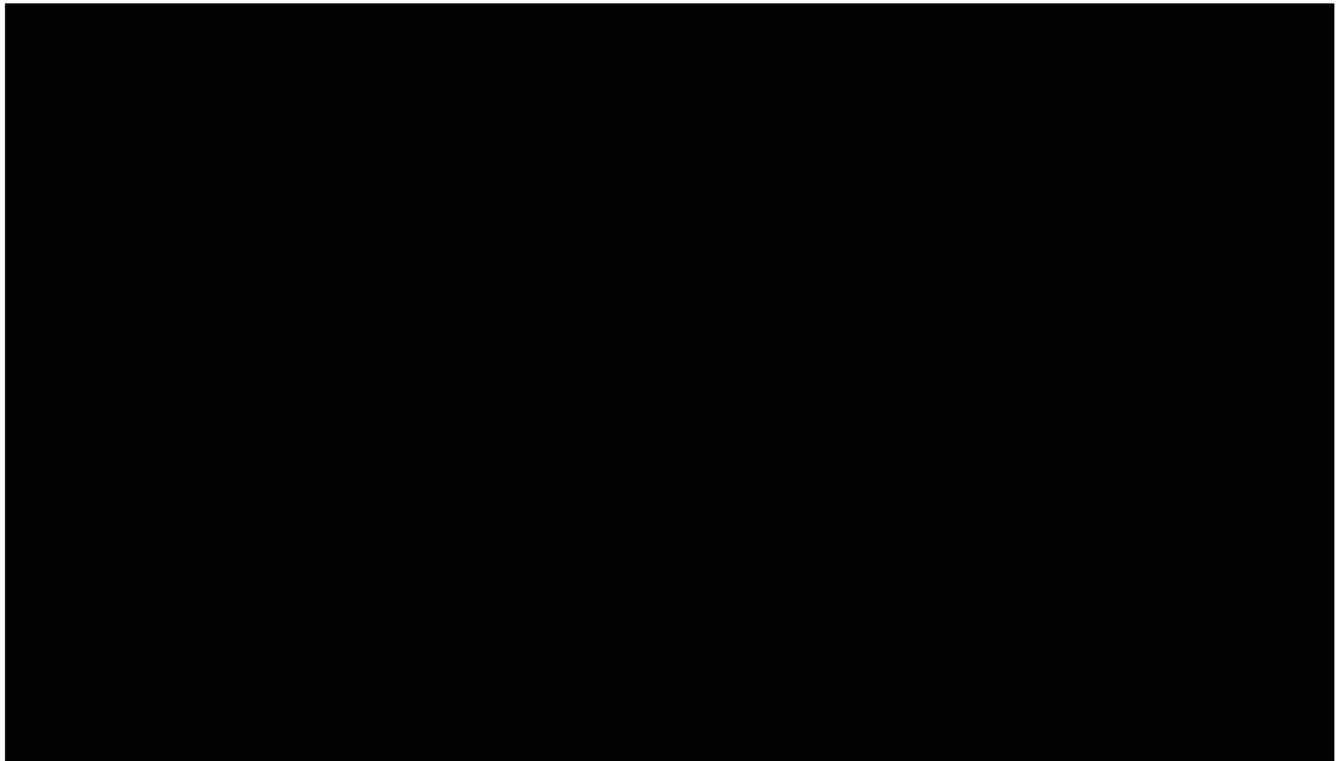
- Environmental and other regulatory approvals: NEET has numerous environmental professionals who work solely on new project development activities. They are involved in projects from the concept stage through the first year of operation and bring the following capabilities:
  - An emphasis on environmental sustainability and responsibility for assessing environmental issues and developing mitigation strategies; ensuring the timely receipt of environmental approvals; assisting project teams in understanding environmental regulatory requirements and ensuring environmental compliance during construction; and liaising with regulators;
  - In-house aquatic environment experts, soils experts, wildlife biologists, geotechnical engineers, and environmental engineers;
  - Established environmental compliance monitoring program via a permit condition compliance matrix, regular compliance team meetings, and formal environmental audits; and
  - Relationships with qualified and trained environmental inspectors to monitor work being completed on rights-of-way (ROW), and specifically to identify any additional mitigation to ensure compliance with regulations.
- Operations and maintenance: NextEra has a substantial O&M organization that delivers operational excellence. These capabilities include:
  - Supporting NEET's operations with in-house and external specialists that have industry experience operating and maintaining a variety of transmission equipment, including switched capacitors, static VAR compensators, substations, and transmission lines up to 500 kV. NextEra's transmission specialists currently support NEET's existing transmission-voltage level facilities in the PJM region, listed below. In addition to receiving support from the existing staff supporting assets in the PJM region, the project would be monitored and controlled by NEET's in-house Transmission Operations team, located in Austin, Texas;
  - NextEra's O&M of more than 8,500 circuit miles of transmission lines and 770 substations across North America, including more than 3,200 miles of 230 kV lines and over 11,00 miles of 500 kV lines; and
  - NextEra's experience owning, operating, and maintaining reactive power support equipment, including 365 MVARs of synchronous condensers, 8,115 MVARs of transmission level manually switched capacitors, and 3,000 MVARs of series compensation equipment. These assets include 345 kV Reactive Power Compensation equipment. The total power transformer capability operated and maintained by NextEra affiliates is approximately 160,000 MVA, of which over 139,000 MVA is subject to NERC Reliability Standards.

### NextEra Project Operation Experience

As explained above, NextEra has a well-qualified O&M team, and NEET will leverage both internal and contractor resources for the safe, reliable, and efficient operation and maintenance of the project. Below are highlights of our O&M capabilities:



- NextEra companies own NERC registered assets in all eight NERC regions, including being a NERC registered Transmission Owner in five regions and a Transmission Operator in two regions. NextEra has processes and procedures in place to comply with all applicable reliability criteria, including NERC Reliability Standards in all regions in which it owns and operates assets.
- NextEra companies have access to over 750 power system professionals including technicians and other staff with expertise in all aspects of transmission and substation equipment installation, maintenance, and repair. The Power Delivery Performance & Diagnostics Center (PDDC) in South Florida serves as a hub for technical knowledge, as well as remote condition assessment in support of operations; in the PDDC we use advanced technology to monitor and manage equipment, detect and prevent issues before they happen.



- NextEra staff oversees a large number of transmission projects annually, including major system upgrades and maintenance initiatives, and also supports O&M services in 27 U.S. states and in 4 Canadian provinces at transmission level facilities and for regulated transmission assets in the Florida, ISO New England, and ERCOT systems;
- As part of FPL's experience in the Florida peninsula, FPL has faced and overcome a wide variety of operating challenges ranging from hurricanes, tornados, and other high wind conditions, to salt spray contamination, avian interaction, lightning, and managing a peninsular system at the edge of the Eastern Interconnection. Every outage in the FPL transmission system is followed up by an Event Response Process in which FPL uses diagnostic techniques to identify the root cause in an effort to prevent recurrence;



- NextEra staff's capabilities are confirmed by the low transmission outage rate. NEET affiliate FPL exhibited top-decile transmission reliability performance in a recent benchmarking study (2014 Southeast Electric Exchange Reliability Survey, SAIDI performance);
- NextEra staff implements O&M transmission solutions that include new designs, new condition assessment processes, and/or new products. Our staff often works directly with equipment manufacturers to develop these solutions in order to continually improve the reliability of our transmission systems. This background prepares us well to manage geographic and climate conditions that we are likely to face in future projects; and
- NEET will rely on affiliate transmission operations personnel both in the project area and in support functions to ensure a rapid response to emergency operating conditions. NextEra field operations personnel, directly and through applicable contracts with third-party vendors in the project area, will respond to all operating events during normal and emergency conditions. NextEra companies are experienced at devising recovery plans, specifically for storms, to help respond to system emergencies.

The NextEra companies have extensive experience adhering to standardized construction, maintenance, and operating practices, including the following:

- NERC Reliability Standards
- ANSI C2-2012 National Electrical Safety Code
- ASCE 74 Guidelines for Electrical Transmission Line Structure, 3rd Edition, 2010
- ASCE 10-97 Design of Latticed Steel Transmission Structures
- CIGRE 299 Guide for Selection of Weather Parameters for Bare Overhead Conductor Ratings
- IEEE 738-2006 Standard for Calculating the Current-Temperature of Bare Overhead Conductors
- IEEE 1243 Guide for Improving the Lightning Performance of Transmission Lines
- IEEE 1313.2 Guide for the Application of Insulation Coordination

### NextEra's Experience in PJM

The following table describes NEER's experience working in the geographical region of PJM on transmission voltage level projects.



Table 3: NEER's PJM Territory Transmission Voltage Level Substations and Transmission Lines

Substation Description	Location	Voltage Level	Length (miles)	Total megavolt-ampere (MVA)	Service Year
<b>MARCUS HOOK (MH 50 Substation)</b> Number of Breakers: 1 Bus Configuration: Single	PA	69 kV	N/A	72 MVA	1987
<b>MARCUS HOOK (MH 750 Substation)</b> Number of Breakers: 1 Bus Configuration: Ring	PA	230 kV	N/A	990 MVA	2004
<b>SAYREVILLE (Sayreville Substation)</b> Number of Breakers: 7 Bus Configuration: Double	NJ	230 kV	N/A	399 MVA	1991
<b>WAYMART WINDFARM (Brownell)</b> Number of Breakers: 1 Bus Configuration: Single	PA	69 kV	N/A	80 MVA	2005
<b>MEYERSDALE WIND (Meyersdale North)</b> Number of Breakers: 1 Bus Configuration: Single	PA	115 kV	N/A	33 MVA	2003



Transmission Voltage Level Line Description	Location	Voltage Level	Length (miles)	Nominal Rating	Service Year
<b>MOUNTAINEER WIND ENE</b> Construction: Overhead Pole Material: Wood Pole Configuration: Monopole # of Circuits: 1	WV	138 kV	3.0	138 kV	2002
<b>WAYMART WINDFARM</b> Construction: Overhead Pole Material: Wood Pole Configuration: Monopole # of Circuits: 1	PA	69 kV	2.5	69 kV	2005

**NextEra's Project Execution Track Record**

NEET has the experience, team, resources, and track record to stand behind and deliver on the proposed schedule. Since 2003, NextEra has constructed 114 new, stand-alone infrastructure projects, of which 86% were completed on time or early, and an overall average of 24 days early. Note that every one of these projects included a transmission voltage level component. NextEra delivered all of its stand-alone transmission and transmission voltage projects during this timeframe on time. In the aggregate, these projects represent over \$29.5 billion of capital expenditures. The following table provides a summary of our ability to meet project schedules across various projects, including transmission projects.



Table 4: **NEET's ability to meet project schedules**

	Number of Projects	% On Time or Early	Avg. Days Ahead of Schedule
Transmission	3	100%	22
Gas/Solar	22	95%	32
Wind	89	83%	21
<b>Total</b>	<b>114</b>	<b>86%</b>	<b>24</b>

NEET, by being able to draw from expertise across the NextEra family of companies, supplemented with key consultant expertise, has the capacity to successfully execute the project on-time and within budget. NextEra's project management experience in managing and adhering to scope and schedule for transmission projects is highlighted by summaries of the two following projects:

*Blythe Energy Project:* This 230 kV voltage level transmission interconnection line—located approximately seven miles west of the California and Arizona border—is an excellent example of a challenging project that was delivered ahead of schedule and under budget. The 67 mile, single and double circuit 230 kV voltage level transmission line was built to interconnect NEER's 520 MW natural gas-fired Blythe Energy Plant with the Southern California Edison (SCE) 230 kV transmission grid. The line paralleled existing 161 kV and 500 kV lines for 30% of the route and was constructed within a 100-foot ROW. Additionally, the project was built in an environmentally sensitive Desert Tortoise and Mojave Fringe-Toed Lizard habitat in the Mojave Desert in Southeastern California. The project required cultural, archaeological, biological, paleontological, and Native American inspectors on site during all periods of construction. In addition, the new line crossed numerous existing transmission lines and paralleled a major gas infrastructure line into Southern California, creating various design and execution challenges. NEER, in conjunction with Southern California Gas (SCG), initiated pipeline mitigation studies and identified mitigation improvements, and SCG constructed the improvements. Despite these challenges, the project was completed approximately 25% below its original budget of \$100 million and 51 days ahead of schedule.

*Lone Star's Competitive Renewable Energy Zone Project:* This project is another example of superior management of project scope and schedule. Lone Star's transmission system consists of 300 miles of double circuit and 30 miles of single circuit 345 kV transmission lines, broken into three segments, with five 345 kV substations. Managing a project which traverses a long distance and diverse terrains presents scope and schedule challenges. The Lone Star project team used geographic information system (GIS) based project management software to coordinate land acquisition and construction activities, as well as to track progress, report to management and document quality assurance and quality control processes. Using Primavera software, the project team conducted weekly project schedule reviews, including validation sessions with management and monthly executive dashboard reviews on all work streams. The project team also participated in regular engineering design reviews; assisted in managing the coordination of design criteria, system studies, equipment and material



specifications, procurement, and relay protection settings with all interconnecting utilities in Texas; and ensured that all required changes were executed according to NextEra's change management processes. The Lone Star team was able to effectively manage design and construction of this large, complex project and successfully complete it on time and more than \$50 million under budget.

As with the other comparable projects described above and throughout this application, NEET will employ best practices in project management, including rigorous adherence to schedule and effective oversight, to complete the project. These proven project management techniques, as well as our transmission and substation experience, will be used to ensure timely project delivery and cost control.

### **NextEra's Financial Strength**

NEET benefits from the extensive, enterprise-wide financial resources of NextEra. A Fortune 100 company, NextEra's year-end 2015 balance sheet included over \$82 billion of assets and \$22 billion of shareholder equity, with more than 67% of NextEra's \$17 billion in 2015 revenues derived from regulated utility sources. Consequently, NEET, through its parent company, has the financial capacity to finance, develop, construct, operate, and maintain projects over the long-term.

Current and historical financial information related to NextEra, including Annual Reports and financial statements filed with the Securities and Exchange Commission can be obtained from the following links:

[NextEra- Annual Reports<sup>1</sup>](#)

[NextEra- Financial Statements<sup>2</sup>](#)

### **NextEra Energy Capital Holdings (NEECH)**

NextEra Energy Capital Holdings, Inc. (NEECH) is a wholly-owned subsidiary of NextEra which holds ownership interests in and provides funding for NextEra's operating subsidiaries, other than FPL. NEET plans to finance the project from development through operations with corporate parent funding, both equity and debt, received from NEECH. NEECH maintains a strong investment grade credit rating and has access to and regularly secures financing in public debt and equity markets on behalf of NextEra and affiliates, including NEET. At some point in the future, after construction and during operation, the project could benefit from a portfolio financing of multiple assets that could be undertaken by NEET, or another NextEra affiliate. NEET's project will be supported by NEECH's approximately \$4.6 billion of net available liquidity, primarily consisting of bank revolving line of credit facilities and cash equivalents, less letters of credit issued under the credit facilities, and commercial paper outstanding and notes payable. Consequently, NEET, through NextEra and its financial affiliate NEECH, has the financial capacity to finance, develop, construct, operate, and maintain projects over the long-term.

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<sup>1</sup> Link references [www.investor.nexterenergy.com](http://www.investor.nexterenergy.com)

<sup>2</sup> Link references [www.investor.nexterenergy.com](http://www.investor.nexterenergy.com)

NEECH's current credit ratings are as follows:

Table 5: **NEECH's Credit Ratings**

Company	Moody's	S&P	Fitch
NEECH	Baa1	A-	A-

As discussed previously, during development, permitting and construction, and operation, the project will be supported 100% through corporate parent funding, which will consist of both equity and debt. Therefore, ratepayers will receive the benefit of a project constructed with strong equity support, without any risk of project-level leverage. Further, corporate parent funding benefits ratepayers by avoiding unnecessary and costly third-party transaction costs and providing the flexibility to complete the Project under a range of possible scenarios (e.g., construction delays, regulatory interventions, etc.).

On or around the date of commercial operation, NEET will seek to convert its short-term variable rate debt into long-term fixed rate financing.

The project may further benefit from a portfolio financing post-construction that could include a series of multiple fixed rate debt issuances that align with the forecasted depreciable net book value of the project assets, when viewed as a diversified portfolio. Such a structure allows ratepayers to benefit from a portfolio of debt terms and rates which minimize the overall financing cost.

NEET's affiliate, Lone Star, recently utilized a similar permanent financing structure for its recently energized transmission assets. Lone Star was able to issue its debt, excluding issuance costs, at a blended weighted average long-term cost of 3.46%, which was lower than the 3.59% weighted average cost of debt for A-rated utility debt of the same weighted average life as Lone Star debt. Additionally, comparable transaction analysis indicated that such financing carries the lowest credit spreads of any private placement, and the lowest coupon rate for a 30-year debt issuance in recent history for a regulated utility in Texas. As a result of this financing, Lone Star has the lowest cost of debt and the lowest cost of capital of any investor-owned utility in Texas.

Another NEET affiliate, New Hampshire Transmission, LLC, owner and operator of the Seabrook Substation in New Hampshire, recently refinanced its long-term debt with NEECH. The flexible financing, approved by both state and federal regulators, provides access to commercially attractive cost debt, when needed, without incurring unnecessary or costly transaction fees.

In addition to the capital markets, NextEra often looks to the bank market for attractive financing opportunities. Banks can sometimes provide greater flexibility with respect to our financing needs, but generally speaking, bank loans are considered an equivalent source of financing and the two are used interchangeably to support the company's development pipeline. Strong demand exists from banks to lend to good quality credits with stable cash flow at attractive rates. Through NEECH, NEET has access to a balanced and well-diversified lending group that can support bank financing.





## Commitment by the entity to execute the Consolidated Transmission Owners Agreement, if the entity becomes a Designated Entity

If it is selected to be the Designated Entity, NEET MidAtlantic is prepared to execute the Consolidated Transmission Owners Agreement.

### NextEra's Experience Responding to Contingencies

The NextEra family of companies has vast experience developing project-specific plans to address and timely remedy challenges to project facilities, including facility and system restoration plans that document the actions to be followed in order to reestablish the electric system in a stable and orderly manner in the event of partial or total shutdown of individual facilities or its power systems. Every outage in NextEra's transmission system is followed up by an Event Response Process in which NextEra uses diagnostic techniques to identify the root cause of a problem to prevent recurrence. Solutions to transmission O&M challenges include new designs, new conditions assessment processes, and/or new products. NextEra often works directly with equipment manufacturers to develop these solutions in order to continually improve the reliability of its transmission systems. This approach has prepared us well to manage extreme geographic and climate conditions that are likely to be faced by future projects.

FPL's service area is uniquely susceptible to impacts of severe weather systems such as tropical storms and hurricanes, and NextEra has a comprehensive plan to respond safely and as quickly as possible when the electric infrastructure is damaged by a hurricane, tropical storm, or any other severe weather event. This plan has been held up as a model for other utilities. NextEra recognizes that the severity and nature of storm damage can vary widely, and, therefore, takes into consideration the fact that power restoration will be affected by the path and intensity of the storm, the storm's impact on other utilities, and how quickly additional restoration workers and supplies can reach the impacted area. NextEra updates its storm plan every year based on lessons learned from the previous year's storms across North America.

Additionally, NEET's previously filed pre-qualification documents contain more information regarding its ability to restore transmission facilities.

### NextEra's Experience Acquiring Rights of Way

Virginia law provides that a non-incumbent utility, which incorporates as a public service corporation, may obtain a certificate of public convenience and necessity (CPCN) to develop, construct, and operate transmission facilities, as well as the right to exercise eminent domain. Additionally, the non-incumbent utility may ask the Virginia State Corporation Commission to consider the feasibility of co-locating transmission on an incumbent utility's ROWs. See Code of Virginia, Title 56, Ch. 10.1 § 56-265.2 (CPCN); Title 56, Ch. 2 § 56-49 (right of public service corporation to exercise eminent domain); and Title 56, Ch. 10 § 56-259 (joint use of public service corporation ROW, including dispute resolution process when corporation denies joint use). A non-incumbent approach to developing transmission was

reviewed and approved in the TrailCo case in Virginia,<sup>3</sup> and NEET plans to follow that approach. It is also important to understand that Virginia law does not afford an absolute preference to the use of existing ROW; rather, the public service corporation proposing the use of new ROW has the burden to show that existing ROWs “cannot adequately serve the needs of the company.” Code of Virginia, Title § 56-46.1; *Virginia Electric and Power Company v. Citizens*, 284 S.E.2d. 613, 615 (Va. Sup. Ct. 1981) (statute “merely places a burden . . . that existing right-of-way cannot be used.”); see, also, *Virginia Electric and Power Company, For Certificate of Public Convenience and Necessity in King George County*, Case No. PUE-2011-00113, Final Order at 7 (Oct. 4, 2012) (use of new ROW). Other siting factors are also relevant when considering the transmission route (and the use of existing versus new ROW), including minimizing adverse impact on scenic assets, historical districts, and environmental impacts. Code of Virginia, Title 56, Ch. 1 § 56-46.1. In short, Virginia law provides a non-incumbent utility, like NEET, the same rights to develop, construct, and operate transmission facilities in Virginia as an incumbent utility.

Moreover, NextEra and its subsidiaries, including NEET, have significant and geographically diverse experience in acquiring ROW for energy infrastructure across North America. In constructing a transmission project, many of NextEra's business organizations, such as Land Services, Law, and Environmental Services, are responsible for negotiating and acquiring the necessary land interests for a project. These professionals are active through the corridor and route selection process, and the environmental assessment phase in support of regulatory applications.

In addition to its in-house expertise, NextEra has engaged consultants with local experience acquiring ROW in the vicinity of the project. NextEra's consultants have vast experience acquiring ROWs in Virginia, working on 11 transmission projects in the state in the last 10 years, including acquiring ROW and easements for a 65-mile 500 kV line that included approximately 44 miles of ROW. That project consisted of approximately 203 parcels and traveled through three counties in northwest Virginia.

To support its ROW acquisition effort, NEET will build a detailed schedule for the acquisition of parcels to include titles, appraisals, negotiations, relocations, and closings. The schedules will include a work breakdown structure that details every deliverable associated with acquiring ROW to include route inspection authorizations or survey permission letters, appraisal inspection letters, scheduling appraisals, scheduling appraisal reviews, initial offers, negotiations, and closing. NextEra's consultant has ROW staff located in Richmond, Virginia, approximately one hour from the proposed project.

As part of the routing and ROW acquisition process, extensive outreach to impacted stakeholders is undertaken. This effort includes active involvement in various open houses, informal meetings, and

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<sup>3</sup> In an Order issued on October 7, 2008 in Case Nos. PUE-2007-00031 and PUE-2007-00033, the Virginia State Corporation Commission provided TrailCo a CPCN to construct, operate, and maintain a 500 kilovolt transmission line from a proposed 502 Junction Substation in Pennsylvania through West Virginia and connecting into Frederick and Warren Counties, Virginia, connecting with Allegheny Power's Meadow Brook Substation in Warren County and continuing to a point in Warren County approximately 300 feet west of the western boundary of the Appalachian National Scenic Trail property.

individual consultations with stakeholders that are directly-impacted, directly adjacent, and within a prescribed radius of a project. Following the routing process, the responsible NextEra business organization engages in discussions with directly impacted landowners to negotiate and acquire the necessary land interests to support project execution and completion.

The schedule to complete acquisition of required land for projects is typically 8-12 months, with potential right of entry processes following receipt of the primary permit. Right-of-entry processes typically take 18-20 weeks.

With respect to the PJM region, NEER's generating assets required the acquisition of property and ROWs in multiple states. While the individual manner of acquiring property and ROWs varies slightly from project to project, most projects generally follow the processes described above.



## C. PROPOSED PROJECT CONSTRUCTABILITY INFORMATION

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### Scope of Project

The Pleasant Shade 500/230 kV Substation portion consists of:

[REDACTED]

The Rogers Road – Pleasant Shade 500 kV Transmission Line portion consists of:

[REDACTED]

Is the project being proposed as a solution to Cross-Border issues?

This project is not being proposed as a solution to a Cross-Border issue.

Is evaluation for Interregional Cost Allocation desired?

Evaluation for Interregional Cost Allocation is not desired.

Has the proposal been evaluated in a coordinated interregional analysis under PJM Tariff or Agreement provision? Please specify the analysis and applicable tariff or Agreement provisions

The proposal has not been evaluated in a coordinated interregional analysis.

List the specific Regional and Interregional violations and issues from the Regional and/or Interregional analyses that identified the violations and issues addressed by the proposal

Not applicable.

[REDACTED]

Detailed breakdown of all proposal elements

General Description

Pleasant Shade 500/230 kV Substation

[Redacted text block]

Rogers Road to Pleasant Shade 500 kV Transmission Line

[Redacted text block]

Geographic Description

Pleasant Shade 500/230 kV Substation

The terrain of the site is typical of the Piedmont Physiographic Province and is comprised of gently rolling hills and valleys. Slopes range from 0 to 7 percent according to the U.S. Department of Agriculture (USDA) Soil Survey.

Rogers Road to Pleasant Shade 500 kV Transmission Line

The terrain of this area is typical of the Piedmont Physiographic Province and is comprised of gently rolling hills and valleys. Slopes range from 0 to 15 percent according to the USDA Soil Survey.

Route Description including existing/new ROW, if new ROW is required details on obtaining land

Pleasant Shade 500/230 kV Substation

[Redacted text block]



[Redacted text block]

## Rogers Road to Pleasant Shade 500 kV Transmission Line

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

### Summary of Methods

#### Rogers Road – Pleasant Shade 500 kV Transmission Line and Pleasant Shade 500/230 kV Substation

[REDACTED] completed a desktop review of potential transmission line routes and substation sites based on preliminary information provided by NEET. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] utilized publicly available GIS information and online database sources such as:

- U.S. Fish and Wildlife (USFWS) National Wetland Inventory (NWI);
- National Hydrography Dataset (NHD);
- Federal Emergency Management Agency (FEMA) 100-year floodplain boundaries;
- U.S. Department of Agriculture (USDA) web soil survey;
- USFWS Information Planning and Conservation System (IPAC);
- Virginia Department of Game and Inland Fisheries (DGIF) Virginia Fish and Wildlife Information System (VAFWIS);
- Virginia Department of Conservation and Recreation (DCR) Division of Natural Heritage Data Explorer (DNH);
- Center for Conservation Biology (CCB) Eagle Nest Locator;
- Virginia Department of Historic Resources (VDHR) Cultural Resource Information Service (V-CRIS); and

[REDACTED]

Sites satisfying the minimum criteria were identified as a result of this effort. The sites were further refined based on the extent of constraining factors present onsite, as well as the potential difficulty in obtaining the required land for development and securing the appropriate approvals. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## Potential Siting Issues Related to Environmental and Cultural Impacts

### Rogers Road to Pleasant Shade Segment

Using the information sited above, potential constraints to development such as streams, wetlands, regulatory floodplains, known bald eagle nest sites, potential T&E species, and cultural resources were assessed. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

A summary of potential environmental and cultural resources that may be impacted by the proposed substation location and transmission line is provided below. However, verification of actual potential impacts can only be completed through future field studies.

### New Pleasant Shade 500 kV/230 kV Substation

- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]

### Rogers Road to Pleasant Shade 500 kV Transmission Line

- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]
- █ [Redacted]



[REDACTED]

### ROW and land acquisition plan and approach

To support its ROW acquisition effort, NEET will build a detailed schedule for the acquisition of parcels to include titles, appraisals, negotiations, relocations, and closings. The schedules will include a work breakdown structure that details every deliverable associated with acquiring ROW to include route inspection authorizations or survey permission letters, appraisal inspection letters, scheduling appraisals, scheduling appraisal reviews, initial offers, negotiations, and closing. NextEra's consultant has ROW staff located in Richmond, Virginia, approximately one hour from the proposed project.

As part of the routing and ROW acquisition process, extensive outreach to impacted stakeholders is undertaken. This effort includes active involvement in various open houses, informal meetings, and individual consultations with stakeholders that are directly-impacted, directly adjacent, and within a prescribed radius of a project. Following the routing process, the responsible NextEra business organization engages in discussions with directly impacted landowners to negotiate and acquire the necessary land interests to support project execution and completion.

The schedule to complete acquisition of required land for projects is typically 8-12 months, with potential right of entry processes following receipt of the primary permit. Right-of-entry processes typically take 18-20 weeks.

With respect to the PJM region, NEER's generating assets required the acquisition of property and ROWs in multiple states. While the individual manner of acquiring property and ROWs varies slightly from project to project, most projects generally follow the processes described above.

NEET MidAtlantic's cost estimate conservatively assumes the acquisition of the ROW. When evaluating comparable projects, PJM should ensure ROW costs are consistently reflected as either a component of the estimated capital cost, or as an annual operating cost, in the bid proposal.

### Permitting Plan and Approach

[REDACTED]

[REDACTED]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

Discussion of potential public opposition

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted]

**Physical characteristics**

**Pleasant Shade 500/230 kV Substation**

Site Area: [Redacted]

**Rogers Road to Pleasant Shade 500 kV Transmission Line**

[Redacted]

**Maps and supporting diagrams**

Appendix 3 shows the aerial maps of the project.

**Specific location of interconnection with incumbent TO facilities and assumptions that were made for this proposal**

[Redacted]

[Redacted] NEET assumes Dominion will be responsible for accommodating NEET's proposed 500 kV line. See Appendix 2 for the single line diagrams.

[Redacted]

[Redacted] NEET assumes DVP will be responsible for accommodating NEET's proposed 500 kV line. See Appendix 2 for the single line diagrams.

**Generation/Transmission outages required for construction, proposed coordination with Generation/Transmission owner**

NEET has assumed that PJM will be able to schedule outages such that there will be no impact on NEET's schedule or cost.

**Total cost of project and total cost for each major component (e.g. new transmission line, modification work at substation A, and modification at Substation B)**

Please see Appendix 6 for a detailed description of estimated project costs, assumptions, and any cost commitments.

[Redacted]

Identification of construction responsibility of each component

Pleasant Shade 500/230 kV Substation

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Rogers Road – Pleasant Shade 500 kV Transmission Line

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

## D. ANALYTICAL ASSESSMENT

NEET studied the project according to various PJM RTEP analyses including:







- N-1 Contingency Analysis
- N-1-1 Contingency Analysis
- Generator Deliverability Analysis

NEET utilized the powerflow data supplied by PJM to study the proposed project.

The project resolves the targeted generator deliverability issue, Flowgate 102 Carson – Rogers Road 500 kV overload. Additionally, it does not result in any additional violations on the PJM transmission system.

The complete details of NEET's analytical assessment can be found in the zip files uploaded to PJM's website. As verified by emails received from PJM, the following files were submitted to PJM at approximately 1:50pm on March 17, 2016:

NEET1D\_2016 Pleasant Shade 500/230 kV substation- Appendices & RTEP Template Final submitted.zip" contained the following files:

Name	Date modified	Type	Size
 Appendix 1 - Powerflow Results - NEET1...	3/17/2016 12:30 PM	Adobe Acrobat D...	140 KB
 Appendix 2 - SLG - NEET1D_2016	3/17/2016 1:36 PM	Adobe Acrobat D...	760 KB
 Appendix 3 - Aerial Map - NEET1D_2016	3/17/2016 1:36 PM	Adobe Acrobat D...	1,684 KB
 Appendix 4 - Contingencies - NEET1D_20...	3/17/2016 1:36 PM	CON File	8 KB
 Appendix 5 - NEET1D_2016.idv	3/17/2016 1:36 PM	IDV File	2 KB
 NEET1D_2016-RTEP Proposal Template 2...	3/17/2016 1:36 PM	Microsoft Excel W...	51 KB

NEET has, through the March 17, 2016 proposal submittal, provided PJM with the following:

- Detailed analysis report on proposed solutions, including:
  - Breaker one-line diagrams to illustrate system topology and substation configuration
  - Spreadsheets of analysis as appropriate
- Equipment parameters and assumptions
  - All parameters (Ratings, impedances, mileage, etc.)
  - For reactive devices, settings and outputs
  - For synchronous machines, MW and MVAR output assumptions

- All necessary PSS/E idev files or appropriate data to model upgrade
- Any other supporting documentation required by PJM to perform verification review, that isn't explicitly stated in this document
- Proposal Template spreadsheet (in excel format) including flowgates the project is addressing, general scope, detailed solution components, and total cost

As requested by PJM, an updated RTEP Proposal Template (in excel format) which includes both an overall project cost and detailed cost of each component is being submitted with this Greenfield RTEP Proposal document (Redacted and Un-redacted).



## E. COST

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NEET estimates that the total project will cost approximately \$47.5 million (in 2016 dollars), of which approximately \$41.5 million is estimated to be designated to NEET and approximately \$6.0 million is estimated to be performed by the incumbent transmission owner. NEET further estimates that the total project will cost approximately \$51.6 million (In-Service Year dollars), of which approximately \$45.1 million is estimated to be designated to NEET and approximately \$6.5 million is estimated to be performed by the incumbent transmission owner.

A more detailed cost breakdown and explanation of NEET's cost cap estimate is included in Appendix 6 of this application, including the details of the cost commitment being offered by NEET.



## F. SCHEDULE

Detailed conceptual schedule for proposed project, including environmental, routing, and permitting:

Table 6: **Pleasant Shade Milestone Schedule**

Schedule Milestones	Date
Project Award	[REDACTED]
Permitting Complete (including federal/state/local)	[REDACTED]
Site Acquisition/ROW Complete	[REDACTED]
Engineering and Design Complete	[REDACTED]
Material Procurement	[REDACTED]
Start Construction/Activities	[REDACTED]
Start Testing and Commissioning	[REDACTED]
Project COD	[REDACTED]



## G. OPERATIONS/MAINTENANCE

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### Overview plan for operating and maintaining the transmission facilities for the proposed project

#### Previous experience

NEET will leverage in-house and third-party resources for the safe, reliable, and efficient maintenance of the project. In particular, NEET will bring significant O&M capabilities as outlined below:

- Well-established O&M practices and standardized processes, which are already being used at NextEra's operating transmission facilities.
- Access to over 750 power system professionals, including technicians and other staff, with expertise in all aspects of transmission and substation equipment installation, maintenance and repair. Many of these personnel will provide support to NEET through our PDDC located in south Florida. This center serves as a hub for technical knowledge, as well as remote condition assessment and field asset health information, in support of operations.
- Experiences from operating and maintaining power delivery assets in all NERC jurisdictions at voltages up to 500 kV.
- An excellent record of transmission and substation reliability, built on robust design and O&M programs that incorporate condition assessment, diagnostics, and asset management for effective and efficient investment of resources and capital.
- Experience addressing a wide variety of operating challenges ranging from hurricanes, tornadoes, and other high wind conditions, dust contamination, avian interaction, and lightning. For example, every outage in the FPL transmission system, as well as the Lone Star system, is followed up by an Event Response Process in which NextEra uses diagnostic techniques to identify the root cause to prevent reoccurrence. Solutions to transmission O&M problems include new designs, new conditions assessment processes, and/or new products. NextEra often works directly with equipment manufacturers to develop these solutions in order to continually improve the reliability of its transmission systems. This has prepared NEET well to manage extreme geographic and climate conditions that NEET is likely to face in future projects.

The NextEra family of companies' framework that provides control, audit, and oversight of maintenance for its transmission and substation assets is called the Op Model. The NextEra family of companies' Op Model is a centralized database of its transmission and substation processes. For each process, the Op Model provides, (where applicable): overview, flowcharts, procedures, forms, standards, training, and support application tools. For all of NextEra's transmission and substation facility needs the Op Model provides key processes and procedures to support standards of equipment maintenance, including: Safety; Risk; NERC and Environmental Compliance; Training; Contingency Planning; Restoration; ROW; Switching; Maintenance; Testing; Work Management; Protection; Reliability Metric; Troubleshooting; and Event Response.

The existing maintenance plan for NextEra companies covers all elements of the proposed project. NextEra practices are controlled by a formalized program of procedures and processes and reinforced by continuous monitoring and condition assessment practices.

The NextEra family of companies' transmission line patrols, inspections, and maintenance practices address: conductor, (overhead ground wire and optical fiber ground wire); bonding and grounding; guys and anchors; hardware; insulators; ROW ; structures and foundations; thermography inspection; corona inspection; and vegetation management.

The NextEra family of companies has inventory and spare strategies for routine maintenance requirements and loss of functionality for all its facilities. NextEra's practices include spare parts management, storage plans for spares, spare parts identification and records, periodic inventory of spare parts, usage of spare parts and replenishment of inventory. NEET will develop Service Level Agreements with experienced vendors for its facilities in the PJM region. These agreements will provide necessary consumable spares for all types of line, substation, protection and control, vegetation management, and environmental needs.

### Intentions for a control center

It is anticipated that the proposed project will be operated from Lone Star's control center and use a similar data acquisition architecture. Lone Star operates a multi-site EMS with redundant servers and telecommunications to two data centers. The proposed project facilities will be dual scanned from both data centers and redundant ICCP (Inter-Control Center Communications Protocol or IEC 60870-6/TASE.2) servers will exchange supervisory control and data acquisition (SCADA) data with PJM and other neighboring entities. The EMS will include displays and alarm processing to ensure transmission operations has real-time situational awareness. In addition, the EMS has Power Flow and Contingency Analysis applications to study what-if scenarios. The EMS support personnel will perform daily checks of the applications and hardware to ensure they are in proper working order. The EMS system has several monitoring mechanisms to notify the EMS support personnel to respond to issues. The EMS support team will also have the skillsets necessary to enhance applications and/or systems to meet safety, reliability and business requirements. These transmission operations facilities are designed and operated to meet applicable NERC Transmission Operation Reliability Standard requirements.

NEET's Lone Star control center will provide operational coordination with PJM, and will also coordinate with local operational support with high voltage technicians staffed and managed from NextEra's existing Meyersdale, PA facility. The local operational obligations will include site safety management, lock-out-tag-out and 24/7 out-of-hours response.

### Maintenance contracts

The NextEra family of companies has experience with their existing overhead line, substation, and environmental service level agreements for assets throughout North America. These existing agreements provide the special tools, spares and skill-sets needed for non-emergency routine maintenance work and emergency response services for high voltage transmission facilities. The contractors providing



these services include [REDACTED], whose services include substation repair, ground inspection crews, small repair line crews, conductor repair crews, and aerial inspections.

NEET will rely on transmission maintenance personnel both in the project area and in support functions throughout the NextEra affiliate company organizations to ensure rapid response to emergency operating conditions. NextEra field operations personnel, directly and through applicable contracts with third-party vendors in the project area, will respond to any and all operating events during normal and emergency conditions. In addition to proven event response processes NextEra companies are experienced at devising recovery plans, specifically for storms, to help respond to system emergencies.