# Wiley Rd 500/230 kV -Wheeler 500/230 kV

#### **General Information**

Proposing entity name NEETMH

Does the entity who is submitting this proposal intend to be the

Designated Entity for this proposed project?

Company proposal ID 1A-WILEY1

PJM Proposal ID 11

Project title Wiley Rd 500/230 kV -Wheeler 500/230 kV

Project description Add 1x500/230 kV Transformer ID 1 at NEETMA proposed Wheeler substation in series with new

Yes

proposed Wheeler- Gracestone 230kV OH line circuit 1

Email Johnbinh.Vu@nexteraenergy.com

Project in-service date 10/2025

Tie-line impact Yes

Interregional project No

Is the proposer offering a binding cap on capital costs?

Yes

Additional benefits Resolves reliability issues identified per PJM's Gen. Deliv. Process

# **Project Components**

- 1. Wiley Rd Substation 500/230 kV
- 2. Wheeler Substation 500/230 kV
- 3. Wiley Rd Substation -Wheeler Substation 500 kV OH
- 4. Wheeler Substation Graceton Substation 230 kV (Circuit 1 and 2)
- 5. Add 1x Phase Shifting Transformer (PST) at Hope Creek 230 kV substation ...

- 6. Add 1x Phase Shifting Transformer (PST) at Hope Creek substation to prev...
- 7. Add two line positions at Graceton (2 new CB)
- 8. Loop in existing Peach Bottom Conastone 500kV OH line circuit into NEE...
- 9. Loop in existing Peach Bottom Conastone 500kV OH line circuit into NEE...
- 10. Loop in existing Peach Bottom Delta 500kV OH line circuit into NEETMA ...
- 11. Loop in existing Peach Bottom Delta 500kV OH line circuit into NEETMA ...
- 12. Loop-In Cooper-Graceton 230 kV line into NEETMA Wlley Sub, and retire re...

# **Greenfield Substation Component**

Component title Wiley Rd Substation 500/230 kV

Project description New Wiley Rd 500/230 kV substation

Substation name Wiley Rd

Substation description New Wiley Rd 500/230 kV substation with connections to Cooper 230 kV, Delta 500 kV, Peach

Bottom 500 kV, and the new Wheeler 500/230 kV. The new Wiley Rd. substation will have a

ring-bus configuration (4 CB) and one 500/230 kV transformer

Nominal voltage AC

Nominal voltage 500/230

#### **Transformer Information**

	Name	Capacity (MVA)	
Transformer	Transformer ID 1 (Wiley-Cooper) 600		
	High Side	Low Side	Tertiary
Voltage (kV)	500	230	

Major equipment description

New Wiley Rd 500/230 kV substation with connections to Cooper 230 kV, Delta 500 kV, Peach
Bottom 500 kV, and the new Wheeler 500/230 kV. The new Wiley Rd. substation will have a

ring-bus configuration (4 CB) and one transformer

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	Normal ratings	Emergency ratings
Summer (MVA)	600.000000	800.00000
Winter (MVA)	600.000000	800.00000
Environmental assessment	See Attachment 19	
Outreach plan	See Attachment 1, Section 7.4	
Land acquisition plan	See Attachment 22	
Construction responsibility	Proposer	
Benefits/Comments	See Attachment 1, Section 3.4	
Component Cost Details - In Current Year \$		
Engineering & design	Confidential - Competitive Information	mation
Permitting / routing / siting	Confidential - Competitive Information	mation
ROW / land acquisition	Confidential - Competitive Information	mation
Materials & equipment	Confidential - Competitive Information	
Construction & commissioning	Confidential - Competitive Information	
Construction management	Confidential - Competitive Information	
Overheads & miscellaneous costs	Confidential - Competitive Information	
Contingency	Confidential - Competitive Information	
Total component cost	\$55,192,876.00	
Component cost (in-service year)	\$62,808,478.68	
Greenfield Substation Component		

Wheeler Substation 500/230 kV

Component title

Project description	New Wheeler 500/230 kV substation		
Substation name	Wheeler Substation		
Substation description	New Wheeler 500/230 kV Substation which includes connections to Graceton 230 kV, NEETMA's Wiley Rd 500/230 kV substation, Peach Bottom 500 kV, and Conastone 500 kV. Wheeler will have a breaker and a Half configuration with 5 positions (7 CB) and two 500/230 kV transformers		
Nominal voltage	AC		
Nominal voltage	500/230		
Transformer Information			
	Name	Capacity (MVA)	
Transformer	Transformer ID 1 (Wheeler-Gracet200Ckt. 1)		
	High Side	Low Side	Tertiary
Voltage (kV)	500	230	
	Name	Capacity (MVA)	
Transformer	Transformer ID 2 (Wheeler-Gracet@@Ckt. 2)		
	High Side	Low Side	Tertiary
Voltage (kV)	500	230	
Major equipment description	New Wheeler 500/230 kV Substation which includes connections to Graceton 230 kV, NEETMA's Wiley Rd 500/230 kV substation, Peach Bottom 500 kV, and Conastone 500 kV. Wheeler will have a breaker and a Half configuration with 5 positions (7 CB) and two 1200MVA 500/230 kV transformers.		
	Normal ratings	Emergency ratings	
Summer (MVA)	1200.000000	1200.000000	
Winter (MVA)	1200.000000	1200.000000	

Environmental assessment See Attachment 19

Outreach plan See Attachment 1, Section 7.4

Land acquisition plan See Attachment 22

Construction responsibility Proposer

Benefits/Comments See Attachment 1, Section 3.4

**Component Cost Details - In Current Year \$** 

Engineering & design Confidential - Competitive Information

Permitting / routing / siting Confidential - Competitive Information

ROW / land acquisition Confidential - Competitive Information

Materials & equipment Confidential - Competitive Information

Construction & commissioning Confidential - Competitive Information

Construction management Confidential - Competitive Information

Overheads & miscellaneous costs Confidential - Competitive Information

Contingency Confidential - Competitive Information

Total component cost \$100,978,274.00

Component cost (in-service year) \$118,076,008.00

**Greenfield Transmission Line Component** 

Component title Wiley Rd Substation -Wheeler Substation 500 kV OH

Project description New overhead single circuit 500kV line from the new 500/230 kV Wiley Rd Substation to the new

500/230 kV Wheeler Substation

Point A Wiley Rd Substation

Point B Wheeler Substation

#### Point C

	Normal ratings	Emergency ratings
Summer (MVA)	3130.000000	4198.000000
Winter (MVA)	3520.000000	4652.000000
Conductor size and type	1590 kcmil Lapwing ACSR (2 conductors per bundle)	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	
General route description	See Attachments 4, 19, and 22	
Terrain description	See Attachment 4	
Right-of-way width by segment	See Attachment 4 and 22	
Electrical transmission infrastructure crossings	See Attachment 7	
Civil infrastructure/major waterway facility crossing plan	See Attachment 7	
Environmental impacts	See Attachment 19	
Tower characteristics	See Attachment 6	
Construction responsibility	Proposer	
Benefits/Comments	See Attachment 1, Section 3.4	
Component Cost Details - In Current Year \$		
Engineering & design	Confidential - Competitive Infor	mation
Permitting / routing / siting	Confidential - Competitive Infor	mation
ROW / land acquisition	Confidential - Competitive Infor	mation
Materials & equipment	Confidential - Competitive Infor	mation

Construction & commissioning Confidential - Competitive Information

Construction management Confidential - Competitive Information

Overheads & miscellaneous costs Confidential - Competitive Information

Contingency Confidential - Competitive Information

Total component cost \$19,478,367.00

Component cost (in-service year) \$21,548,367.00

# **Greenfield Transmission Line Component**

Component title Wheeler Substation – Graceton Substation 230 kV (Circuit 1 and 2)

Project description New overhead double circuit 230 kV line from the new 500/230 kV Wheeler Substation to the

existing 230 kV Graceton Substation

Point A Wheeler Substation

Point B Graceton Substation

Point C

	Normal ratings	Emergency ratings
Summer (MVA)	1440.000000	1930.000000
Winter (MVA)	1618.000000	2140.000000
Conductor size and type	1590 kcmil Lapwing ACSR (2 conductors per bundle)	
Nominal voltage	AC	

-

Nominal voltage 230

Line construction type Overhead

General route description See Attachments 4 and 22

Terrain description See Attachment 4

Right-of-way width by segment See Attachment 4 and 22

Electrical transmission infrastructure crossings

No electrical transmission infrastructure crossings

Civil infrastructure/major waterway facility crossing plan

The Wheeler to Graceton 230 kV (Circuit 1 and 2) has one civil infrastructure crossing at Wheeler School Road. NEETMA anticipates an overhead crossing and will obtain the permit/agreement with

the applicable agency

Environmental impacts See Attachment 19

Tower characteristics See Attachment 6

Construction responsibility Proposer

Benefits/Comments See Attachment 1, Section 3.4

**Component Cost Details - In Current Year \$** 

Engineering & design Confidential - Competitive Information

Permitting / routing / siting Confidential - Competitive Information

ROW / land acquisition Confidential - Competitive Information

Materials & equipment Confidential - Competitive Information

Construction & commissioning Confidential - Competitive Information

Construction management Confidential - Competitive Information

Overheads & miscellaneous costs Confidential - Competitive Information

Contingency Confidential - Competitive Information

Total component cost \$3,330,000.00

Component cost (in-service year) \$3,604,499.00

**Substation Upgrade Component** 

Component title Add 1x Phase Shifting Transformer (PST) at Hope Creek 230 kV substation to prevent downstream

overload on Hope-Creek LS Power Ckt. 1

Project description

Add 1x Phase Shifting Transformer (PST) at Hope Creek substation to prevent downstream overload on Hope Creek- LS Power 230kV Ckt. 1

Substation name Hope Creek 230 kV

Substation zone PSEG

Substation upgrade scope

Add 1x Phase Shifting Transformer (PST) at Hope Creek substation to prevent downstream overload on Hope Creek- LS Power 230kV Cable Ckt. 1

#### **Transformer Information**

Transformer

Name Capacity (MVA)

Hope Creek 230 kV PST - Ckt. 1 766

High Side Low Side Tertiary

Voltage (kV) 230 230

New equipment description AC Substation: Phase Shifter

Substation assumptions

Use available space in sub to add phase shifting transformer

Real-estate description No expansion of substation fence anticipated

Construction responsibility PSEG

Benefits/Comments Resolves reliability issues identified per PJM's Gen. Deliv. Process

**Component Cost Details - In Current Year \$** 

Engineering & design Confidential - Competitive Information

Permitting / routing / siting Confidential - Competitive Information

ROW / land acquisition Confidential - Competitive Information

Materials & equipment Confidential - Competitive Information

Construction & commissioning Confidential - Competitive Information

Construction management Confidential - Competitive Information

Overheads & miscellaneous costs Confidential - Competitive Information

Contingency Confidential - Competitive Information

Total component cost \$15,000,000.00

Component cost (in-service year) \$16,240,000.00

#### **Substation Upgrade Component**

Component title

Add 1x Phase Shifting Transformer (PST) at Hope Creek substation to prevent downstream overload on Hope Creek- LS Power 230kV Ckt. 2

Project description Add 1x Phase Shifting Transformer (PST) at Hope Creek substation to prevent downstream

overload on Hope Creek- LS Power 230kV Ckt. 2

Substation name Hope Creek 230 kV

Substation zone PSEG

Substation upgrade scope Add 1x Phase Shifting Transformer (PST) at Hope Creek substation to prevent downstream

overload on Hope Creek- LS Power 230kV Cable Ckt. 2

#### **Transformer Information**

Name Capacity (MVA)

Transformer Hope Creek 230 kV PST - Ckt. 2 766

High Side Low Side Tertiary

Voltage (kV) 230

New equipment description AC Substation: Phase Shifter

Substation assumptions

Use available space in sub to add phase shifting transformer

Real-estate description No expansion of substation fence anticipated

Construction responsibility PSEG

Benefits/Comments Resolves reliability issues identified per PJM's Gen. Deliv. Process

**Component Cost Details - In Current Year \$** 

Engineering & design Confidential - Competitive Information

Permitting / routing / siting Confidential - Competitive Information

ROW / land acquisition Confidential - Competitive Information

Materials & equipment Confidential - Competitive Information

Construction & commissioning Confidential - Competitive Information

Construction management Confidential - Competitive Information

Overheads & miscellaneous costs Confidential - Competitive Information

Contingency Confidential - Competitive Information

Total component cost \$15,000,000.00

Component cost (in-service year) \$16,240,000.00

**Substation Upgrade Component** 

Component title Add two line positions at Graceton (2 new CB)

Project description Add two line positions at Graceton (2 new CB)

Substation name Graceton 230 kV

Substation zone BGE

Substation upgrade scope Add 2 CB

**Transformer Information** 

None

New equipment description AC Substation : Upgrade - add two line positions

Substation assumptions Open positions available per TO provided one-lines

Real-estate description No expansion of substation fence anticipated

Construction responsibility BGE

Benefits/Comments Resolves reliability issues identified per PJM's Gen. Deliv. Process

**Component Cost Details - In Current Year \$** 

Engineering & design Confidential - Competitive Information

Permitting / routing / siting Confidential - Competitive Information

ROW / land acquisition Confidential - Competitive Information

Materials & equipment Confidential - Competitive Information

Construction & commissioning Confidential - Competitive Information

Construction management Confidential - Competitive Information

Overheads & miscellaneous costs Confidential - Competitive Information

Contingency Confidential - Competitive Information

Total component cost \$8,080,000.00

Component cost (in-service year) \$8,740,000.00

**Transmission Line Upgrade Component** 

Component title

Loop in existing Peach Bottom - Conastone 500kV OH line circuit into NEETMA proposed Wheeler

500kV substation and use existing conductors

Project description Loop in existing Peach bottom - Conastone 500kV OH line circuit 1 into NEETMA proposed

Wheeler 500kV substation, use existing conductors on the section Wheeler - Conastone

Impacted transmission line

New NEETMA-Wheeler substation to Conastone 500 kV line

Point A Wheeler

Point B Conastone

Point C

Terrain description Expect to utilize existing easements/utility owned property, no expansion anticipated **Existing Line Physical Characteristics** 500 Operating voltage Same as existing Conductor size and type Utilize existing line hardware to extent practicable Hardware plan description Tower line characteristics Utilize existing towers to extent practicable **Proposed Line Characteristics** Designed Operating Voltage (kV) 500.000000 500.000000 **Normal ratings Emergency ratings** Summer (MVA) 2920.000000 3620.000000 Winter (MVA) 2920.000000 3620.000000 Conductor size and type Same as existing Shield wire size and type Utilize existing shield wire to extent practicable Rebuild line length 0.1 miles Rebuild portion description Add new dead-end structures to bring the Peach Bottom-Conastone 500 kV line into Wheeler 500 kV Right of way Use of existing ROW, no expansion anticipated Construction responsibility **BGE** Benefits/Comments Resolves reliability issues identified per PJM's Gen. Deliv. Process **Component Cost Details - In Current Year \$** 

Confidential - Competitive Information

Engineering & design

Permitting / routing / siting Confidential - Competitive Information

ROW / land acquisition Confidential - Competitive Information

Materials & equipment Confidential - Competitive Information

Construction & commissioning Confidential - Competitive Information

Construction management Confidential - Competitive Information

Overheads & miscellaneous costs Confidential - Competitive Information

Contingency Confidential - Competitive Information

Total component cost \$3,000,000.00

Component cost (in-service year) \$3,250,000.00

## **Transmission Line Upgrade Component**

Component title Loop in existing Peach Bottom - Conastone 500kV OH line circuit into NEETMA proposed Wheeler

500kV substation and use existing conductors

Project description Loop in existing Peach bottom - Conastone 500kV OH line circuit into NEETMA proposed Wheeler

500kV substation, use existing conductors on the section Peach Bottom - Wheeler

Impacted transmission line

New NEETMA-Wheeler sub to Peach Bottom 1 South 500 kV line

Point A Wheeler

Point B Peach Bottom

Point C

Terrain description Expect to utilize existing easements/utility owned property, no expansion anticipated

**Existing Line Physical Characteristics** 

Operating voltage 500

Conductor size and type Same as existing

Hardware plan description

Utilize existing line hardware to extent practicable

Tower line characteristics

Utilize existing towers to extent practicable

Designed

#### **Proposed Line Characteristics**

Voltage (kV) 500.000000 500.000000

Normal ratings Emergency ratings

Operating

Summer (MVA) 2920.000000 3620.000000

Winter (MVA) 2920.000000 3620.000000

Conductor size and type Same as existing

Shield wire size and type

Utilize existing shield wire to extent practicable

Rebuild line length 0.1 miles

Rebuild portion description Install new dead-end structures in order to loop in the

Right of way

Use of existing ROW, no expansion anticipated

Construction responsibility BGE

Benefits/Comments Resolves reliability issues identified per PJM's Gen. Deliv. Process

**Component Cost Details - In Current Year \$** 

Engineering & design Confidential - Competitive Information

Permitting / routing / siting Confidential - Competitive Information

ROW / land acquisition Confidential - Competitive Information

Materials & equipment Confidential - Competitive Information

Construction & commissioning Confidential - Competitive Information

Construction management Confidential - Competitive Information

Overheads & miscellaneous costs Confidential - Competitive Information

Contingency Confidential - Competitive Information

Total component cost \$3,000,000.00

Component cost (in-service year) \$3,250,000.00

### **Transmission Line Upgrade Component**

Component title Loop in existing Peach Bottom - Delta 500kV OH line circuit into NEETMA proposed Wiley Rd

500kV substation and use existing conductors

Project description Loop in existing Peach Bottom - Delta 500kV OH line circuit into NEETMA proposed Wiley Rd

500kV substation, use existing conductors on the section Peach Bottom - Wiley

Operating

Impacted transmission line

New NEETMA-Wiley Rd substation to Peach Bottom 1 South 500 kV line

Point A Wiley Rd

Point B Peach Bottom

Point C

Terrain description Expect to utilize existing easements/utility owned property, no expansion anticipated

Designed

**Existing Line Physical Characteristics** 

Operating voltage 500

Conductor size and type Same as existing

Hardware plan description

Utilize existing line hardware to extent practicable

Tower line characteristics

Utilize existing towers to extent practicable

**Proposed Line Characteristics** 

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Voltage (kV)	500.000000	500.000000

	Normal ratings	Emergency ratings
Summer (MVA)	2338.000000	2931.000000
Winter (MVA)	2338.000000	2931.000000
Conductor size and type	Same as existing	
Shield wire size and type	Utilize existing shield wire to extent practicable	
Rebuild line length	0.1 miles	
Rebuild portion description	0.1 miles	
Right of way	Use of existing ROW, no expansion anticipated	
Construction responsibility	PECO	
Benefits/Comments	Resolves reliability issues identified per PJM's Gen. Deliv. Process	
Component Cost Details - In Current Year \$		
Engineering & design	Confidential - Competitive Infor	mation
Permitting / routing / siting	Confidential - Competitive Information	
ROW / land acquisition	Confidential - Competitive Information	
Materials & equipment	Confidential - Competitive Information	
Construction & commissioning	Confidential - Competitive Information	
Construction management	Confidential - Competitive Information	
Overheads & miscellaneous costs	Confidential - Competitive Information	
Contingency	Confidential - Competitive Information	
Total component cost	\$3,000,000.00	
Component cost (in-service year)	\$3,250,000.00	

### **Transmission Line Upgrade Component**

Component title

Loop in existing Peach Bottom - Delta 500kV OH line circuit into NEETMA proposed Wiley Rd

500kV substation and use existing conductors

Project description Loop in existing Peach Bottom - Delta 500kV OH line circuit into NEETMA proposed Wiley Rd

500kV substation, use existing conductors on the section Wiley - Delta

Impacted transmission line

New NEETMA-Wiley Rd substation to Delta 500 kV line

Point A Wiley Rd

Point B Delta

Point C

Terrain description Expect to utilize existing easements/utility owned property, no expansion anticipated

**Existing Line Physical Characteristics** 

Operating voltage 500

Conductor size and type Same as existing

Hardware plan description

Utilize existing line hardware to extent practicable

Tower line characteristics Utilize existing towers to extent practicable

**Proposed Line Characteristics** 

Designed Operating

Voltage (kV) 500.000000 500.000000

Normal ratings Emergency ratings

Summer (MVA) 2338.000000 2931.000000

Winter (MVA) 2338.000000 2931.000000

Conductor size and type Same as existing

Shield wire size and type

Utilize existing shield wire to extent practicable

Rebuild line length 0.1 miles

Rebuild portion description 0.1 miles

Right of way

Use of existing ROW, no expansion anticipated

Construction responsibility PECO

Benefits/Comments Resolves reliability issues identified per PJM's Gen. Deliv. Process

**Component Cost Details - In Current Year \$** 

Engineering & design Confidential - Competitive Information

Permitting / routing / siting Confidential - Competitive Information

ROW / land acquisition Confidential - Competitive Information

Materials & equipment Confidential - Competitive Information

Construction & commissioning Confidential - Competitive Information

Construction management Confidential - Competitive Information

Overheads & miscellaneous costs Confidential - Competitive Information

Contingency Confidential - Competitive Information

Total component cost \$3,000,000.00

Component cost (in-service year) \$3,250,000.00

**Transmission Line Upgrade Component** 

Component title Loop-In Cooper-Graceton 230 kV line into NEETMA WIley Sub, and retire remaining portion to

Graceton 230 kV

Project description Loop-In Cooper-Graceton 230 kV line into NEETMA WIley Sub, and retire remaining portion to

Graceton 230 kV

Impacted transmission line

New NEETMA-Wiley Rd substation to Cooper 230 kV line

Point A Wiley Rd Cooper Point B Point C Terrain description Expect to utilize existing easements/utility owned property, no expansion anticipated **Existing Line Physical Characteristics** Operating voltage 230 Conductor size and type Same as existing Hardware plan description Utilize existing line hardware to extent practicable Tower line characteristics Utilize existing towers to extent practicable **Proposed Line Characteristics** Designed Operating Voltage (kV) 230.000000 230.000000 **Normal ratings Emergency ratings** Summer (MVA) 463.000000 578.000000 Winter (MVA) 463.000000 578.000000 Conductor size and type Same as existing Utilize existing shield wire to extent practicable Shield wire size and type Rebuild line length 0.1 miles Install new dead-end structures to re-terminate the Cooper-Graceton 230 kV and modify it to be Rebuild portion description Cooper-Wiley 230 kV line. Retire the remaining portion from Wiley to Graceton.

option for

Right of way

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New structures will utilize existing rights-ofway, or rights-of-way that NEETMA has secured an

Construction responsibility Benefits/Comments **Component Cost Details - In Current Year \$** Engineering & design Permitting / routing / siting ROW / land acquisition Materials & equipment Construction & commissioning Construction management Overheads & miscellaneous costs Contingency Total component cost Component cost (in-service year) **Congestion Drivers** None **Existing Flowgates** 

**PECO** 

Resolves reliability issues identified per PJM's Gen. Deliv. Process

Confidential - Competitive Information

\$2,000,000.00

\$2,160,000.00

None

**New Flowgates** 

None

# **Financial Information**

Capital spend start date 01/2022

Construction start date 12/2024

Project Duration (In Months) 45

#### **Cost Containment Commitment**

Cost cap (in current year) Confidential - Competitive Information

Cost cap (in-service year) Confidential - Competitive Information

### Components covered by cost containment

1. Wiley Rd Substation 500/230 kV - Proposer

2. Wheeler Substation 500/230 kV - Proposer

3. Wiley Rd Substation - Wheeler Substation 500 kV OH - Proposer

4. Wheeler Substation - Graceton Substation 230 kV (Circuit 1 and 2) - Proposer

### Cost elements covered by cost containment

Engineering & design Yes

Permitting / routing / siting Yes

ROW / land acquisition Yes

Materials & equipment Yes

Construction & commissioning Yes

Construction management Yes

Overheads & miscellaneous costs Yes

Taxes Yes

AFUDC Yes

Escalation Yes

Additional Information Confidential - Competitive Information

Is the proposer offering a binding cap on ROE?

Would this ROE cap apply to the determination of AFUDC?

Yes

Would the proposer seek to increase the proposed ROE if FERC No

finds that a higher ROE would not be unreasonable?

Is the proposer offering a Debt to Equity Ratio cap?

Confidential - Competitive Information

Additional cost containment measures not covered above

# **Additional Comments**

None