

# Muddy Creek / North Delta - Conastone Solution

## General Information

Proposing entity name	Proprietary Business Information
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Yes
Company proposal ID	Proprietary Business Information
PJM Proposal ID	530
Project title	Muddy Creek / North Delta - Conastone Solution
Project description	New Muddy Creek 230 kV switchyard, New Muddy Creek - Conastone / Graceton 230 kV lines, New North Delta 500 kV switchyard, New North Delta - Conastone 500 kV line, plus various modifications to existing lines and substations. Proposal permitting and overhead costs are captured in component 25B. See attachment 1 for flowgate information.
Email	Proprietary Business Information
Project in-service date	06/2027
Tie-line impact	No
Interregional project	No
Is the proposer offering a binding cap on capital costs?	Yes
Additional benefits	

## Project Components

1. 25B - New double circuit 230kV transmission line from new Muddy Creek switchyard to the point where PPL's Manor - Graceton 230kV transmission line crosses Peach - Otter Creek 500kV transmission line
2. 25C - New single circuit 230kV transmission line from where PPL's Manor - Graceton 230kV transmission line crosses Peach Bottom - Otter Creek 500kV transmission line to where the Otter Creek - Conastone 230kV transmission line begins

3. 26d - Waugh Chapel to Brandon Shores 230kV upgrade
4. 25F - Muddy Run to Peach Bottom 230kV upgrade
5. 26A - New 500kV transmission line from new North Delta substation to BGE's Conastone substation.
6. 25a - New Muddy Creek Substation- 6 terminal
7. 25d - Graceton substation single 230kV breaker expansion
8. 26C - Conastone substation single 500kV breaker expansion
9. 26b - New North Delta Substation - 3 terminal
10. 25b2 - Muddy Creek to Graceton 230kV Brownfield Component
11. 25c2 - Muddy Creek to Conastone 230kV Brownfield Component
12. 25e - Conastone substation 230kV termination

### Greenfield Transmission Line Component

Component title	25B - New double circuit 230kV transmission line from new Muddy Creek switchyard to the point where PPL's Manor - Graceton 230kV transmission line crosses Peach - Otter Creek 500kV transmission line	
Project description	Proprietary Business Information	
Point A	Muddy Creek	
Point B	Graceton	
Point C	N/A	
	<b>Normal ratings</b>	<b>Emergency ratings</b>
Summer (MVA)	1295.000000	1863.000000
Winter (MVA)	1534.000000	1795.000000
Conductor size and type	3x 1590 kcmil Falcon ACSR	
Nominal voltage	AC	
Nominal voltage	230	
Line construction type	Overhead	

General route description	Route is approximately 6.1 miles long. Starting on the east end at the new Muddy Creek substation and routing toward the west, the double circuit 230kV circuit follows the existing Peach Bottom - Otter Creek ROW on the north side. The double circuit ends at the intersection of Manor - Graceton 230kV transmission line and Peach Bottom - Otter Creek 500kV transmission line. The line component 25B1 then continues from the end of this component south as a single circuit to Graceton substation.
Terrain description	The Project is located in York County, which is in the southernmost portion of Pennsylvania, along the state boundary with Maryland. York County lies within the Appalachian Highlands, a region characterized by a rounded/forested landscape with an elevation of 6,000 feet or less on average. The Appalachian Highlands Region is further broken down into provinces based on different land forms. York County lies almost entirely within the Piedmont Province, except for small areas in the northern portion of the County that are located within the Blue Ridge Province and the Ridge and Valley Province. The Piedmont Upland Section is located in the southern third of the County. The Piedmont Upland is characterized by rolling hills and valleys, generally with gentle to moderately steep slopes. However, steeper slopes with narrow valley bottoms dominate near the Susquehanna River. Many higher ridges are underlain by more resistant bedrock such as quartzite. This Section was formed by fluvial erosion and some peri-glacial wasting and averages about 600-700 feet in elevation. The drainage pattern of the area is considered to be dendritic. Slopes in the range of 0-8% are common throughout York County. The Piedmont Upland of Pennsylvania has a humid continental climate. Weather systems that affect the area generally originate in the central United States and move eastward over the Appalachians. Periodically, moist northward moving weather systems bring moderate and heavy precipitation to the area.
Right-of-way width by segment	The majority of the new right of way will be an expansion of an existing transmission line corridor, where a 45 ft additional width will be required beyond the existing, assumed, ROW edge.
Electrical transmission infrastructure crossings	See Attachment 4 (Google Earth .kmz) with identified major crossings.
Civil infrastructure/major waterway facility crossing plan	See Attachment 4 (Google Earth .kmz) with identified major crossings and Attachment 5 - Crossing Plan for more detail.

Environmental impacts	<p>Environmental constraints identified are manageable through implementation of an environmental avoidance, minimization, and mitigation strategy incorporated at the beginning of the routing/siting process. Co-location with existing utilities and other infrastructure was prioritized to the greatest extent practicable to minimize the environmental impact on the landscape. The proposed route crosses 6 national wetland inventory (NWI) wetlands and 4 waterbodies, but it appears that most features are small and could be avoided without permitting. Consultation with the Army Corps of Engineers, Fish and Wildlife Service, and numerous state agencies is expected. Fatal flaws have not been identified for proposed route. A cultural resource professional assisted with the routing process to identify and minimize impacts to known areas with historic sensitivities. An investigation to further identify and evaluate historic properties will be conducted to determine the presence of archaeologically or historically significant resources. Federally listed species have been identified including listed bats and the bog turtle, but no critical habitat was identified along the proposed route. If suitable habitat is identified or regulations change, agency coordination and species-specific surveys will occur. The project intends to adhere to tree removal seasonal restriction windows to avoid and minimize impacts to protected birds and bats, such as the northern long-eared bat, bald eagle, and other common raptors. Erosion control best management practices and setbacks will be engineered and utilized to prevent sedimentation from leaving the site for the protection of aquatic species and to avoid water quality impacts. There are no unique or sensitive environmental concerns or impacts with the proposed transmission line that cannot be addressed.</p>
Tower characteristics	<p>The proposed structures will be double circuit 230kV steel monopoles (TVVS-230DC) in a vertical conductor configuration. Any proposed deadend structure will be a steel monopole. See proposed structure drawing set included in Attachment 10.</p>
Construction responsibility	Proprietary Business Information
Benefits/Comments	Resolves reliability issues identified per PJM's Gen. Deliv. Process.
<b>Component Cost Details - In Current Year \$</b>	
Engineering & design	Proprietary Business Information
Permitting / routing / siting	Proprietary Business Information
ROW / land acquisition	Proprietary Business Information
Materials & equipment	Proprietary Business Information
Construction & commissioning	Proprietary Business Information
Construction management	Proprietary Business Information
Overheads & miscellaneous costs	Proprietary Business Information

Contingency	Proprietary Business Information
Total component cost	\$26,754,980.00
Component cost (in-service year)	\$23,930,641.00

### Greenfield Transmission Line Component

Component title: 25C - New single circuit 230kV transmission line from where PPL's Manor - Graceton 230kV transmission line crosses Peach Bottom - Otter Creek 500kV transmission line to where the Otter Creek - Conastone 230kV transmission line begins

Project description: Proprietary Business Information

Point A: Muddy Creek

Point B: Conastone

Point C: N/A

	Normal ratings	Emergency ratings
Summer (MVA)	1295.000000	1863.000000
Winter (MVA)	1534.000000	1795.000000

Conductor size and type: 3x 1590 kcmil Falcon ACSR

Nominal voltage: AC

Nominal voltage: 230

Line construction type: Overhead

General route description: Route is approximately 4.9 miles. Starting at the intersection of the Manor - Graceton 230kV transmission line and Peach Bottom - Otter Creek 500kV transmission line, where component 25B ends and 25B1 begins, the single circuit component 25C routes west following the existing Peach Bottom - Otter Creek ROW on the north side until it reaches the Otter Creek substation. The line component 25C1 then continues from the end of this component south as a single circuit to Conastone substation.

Terrain description

The Project is located in York County, which is in the southernmost portion of Pennsylvania, along the state boundary with Maryland. York County lies within the Appalachian Highlands, a region characterized by a rounded/forested landscape with an elevation of 6,000 feet or less on average. The Appalachian Highlands Region is further broken down into provinces based on different land forms. York County lies almost entirely within the Piedmont Province, except for small areas in the northern portion of the County that are located within the Blue Ridge Province and the Ridge and Valley Province. The Piedmont Upland Section is located in the southern third of the County. The Piedmont Upland is characterized by rolling hills and valleys, generally with gentle to moderately steep slopes. However, steeper slopes with narrow valley bottoms dominate near the Susquehanna River. Many higher ridges are underlain by more resistant bedrock such as quartzite. This Section was formed by fluvial erosion and some peri-glacial wasting and averages about 600-700 feet in elevation. The drainage pattern of the area is considered to be dendritic. Slopes in the range of 0-8% are common throughout York County. The Piedmont Upland of Pennsylvania has a humid continental climate. Weather systems that affect the area generally originate in the central United States and move eastward over the Appalachians. Periodically, moist northward moving weather systems bring moderate and heavy precipitation to the area.

Right-of-way width by segment

The majority of the new right of way will be an expansion of an existing transmission line corridor, where a 45 ft additional width will be required beyond the existing, assumed, ROW edge.

Electrical transmission infrastructure crossings

See Attachment 4 (Google Earth .kmz) with identified major crossings.

Civil infrastructure/major waterway facility crossing plan

See Attachment 4 (Google Earth .kmz) with identified major crossings and Attachment 5 - Crossing Plan for more detail.

Environmental impacts

Environmental constraints identified are manageable through implementation of an environmental avoidance, minimization, and mitigation strategy incorporated at the beginning of the routing/siting process. Co-location with existing utilities and other infrastructure was prioritized to the greatest extent practicable to minimize the environmental impact on the landscape. The proposed route crosses 6 national wetland inventory (NWI) wetlands and 4 waterbodies, but it appears that most features are small and could be avoided without permitting. Consultation with the Army Corps of Engineers, Fish and Wildlife Service, and numerous state agencies is expected. Fatal flaws have not been identified for proposed route. A cultural resource professional assisted with the routing process to identify and minimize impacts to known areas with historic sensitivities. An investigation to further identify and evaluate historic properties will be conducted to determine the presence of archaeologically or historically significant resources. Federally listed species have been identified including listed bats and the bog turtle, but no critical habitat was identified along the proposed route. If suitable habitat is identified or regulations change, agency coordination and species-specific surveys will occur. The project intends to adhere to tree removal seasonal restriction windows to avoid and minimize impacts to protected birds and bats, such as the northern long-eared bat, bald eagle, and other common raptors. Erosion control best management practices and setbacks will be engineered and utilized to prevent sedimentation from leaving the site for the protection of aquatic species and to avoid water quality impacts. There are no unique or sensitive environmental concerns or impacts with the proposed transmission line that cannot be addressed.

Tower characteristics The proposed structures will be single circuit 230kV steel monopoles (TVS-230) in a delta conductor configuration. Any proposed deadend structure will be a steel monopole. See proposed structure drawing set included in Attachment 10.

Construction responsibility Proprietary Business Information

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

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

Engineering & design Proprietary Business Information

Permitting / routing / siting Proprietary Business Information

ROW / land acquisition Proprietary Business Information

Materials & equipment Proprietary Business Information

Construction & commissioning Proprietary Business Information

Construction management Proprietary Business Information

Overheads & miscellaneous costs Proprietary Business Information

Contingency Proprietary Business Information

Total component cost \$15,935,150.00

Component cost (in-service year) \$17,589,424.00

**Transmission Line Upgrade Component**

Component title 26d - Waugh Chapel to Brandon Shores 230kV upgrade

Project description Proprietary Business Information

Impacted transmission line Waugh Chapel sub to Brandon Shores sub double circuit 230kV line

Point A Waugh Chapel

Point B Brandon Shores

Point C N/A

Terrain description

Upgrade is within existing ROW.

**Existing Line Physical Characteristics**

Operating voltage

230

Conductor size and type

Incumbent / Current Transmission owner specific

Hardware plan description

Utilize existing line hardware to extent possible.

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)

1573.000000

1810.000000

Winter (MVA)

1648.000000

1896.000000

Conductor size and type

Incumbent / Transmission Owner to select conductor to achieve the required ratings

Shield wire size and type

Utilize existing shield wire to extent practicable

Rebuild line length

14.4

Rebuild portion description

Proposing to upgrade limiting elements to achieve specific rating.

Right of way

Use of existing ROW to extent practicable.

Construction responsibility

Proprietary Company Information

Benefits/Comments

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

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

Engineering & design

Proprietary Business Information

Permitting / routing / siting

Proprietary Business Information

ROW / land acquisition	Proprietary Business Information
Materials & equipment	Proprietary Business Information
Construction & commissioning	Proprietary Business Information
Construction management	Proprietary Business Information
Overheads & miscellaneous costs	Proprietary Business Information
Contingency	Proprietary Business Information
Total component cost	\$5,000,000.00
Component cost (in-service year)	\$5,519,064.00

**Transmission Line Upgrade Component**

Component title	25F - Muddy Run to Peach Bottom 230kV upgrade
Project description	Proprietary Business Information
Impacted transmission line	Muddy Run sub to Peach Bottom sub 500kV line
Point A	Muddy Run
Point B	Peach Bottom
Point C	N/A
Terrain description	Upgrade is within existing ROW.

**Existing Line Physical Characteristics**

Operating voltage	230
Conductor size and type	Incumbent / Current Transmission owner specific
Hardware plan description	Utilize existing line hardware to extent possible.
Tower line characteristics	Utilize existing towers to extent practicable.

**Proposed Line Characteristics**

	<b>Designed</b>	<b>Operating</b>
Voltage (kV)	230.000000	230.000000
	<b>Normal ratings</b>	<b>Emergency ratings</b>
Summer (MVA)	1573.000000	1810.000000
Winter (MVA)	1648.000000	1896.000000
Conductor size and type	Incumbent / Transmission Owner to select conductor to achieve the required ratings	
Shield wire size and type	Utilize existing shield wire to extent practicable	
Rebuild line length	4.5	
Rebuild portion description	Proposing to upgrade limiting elements to achieve specific rating.	
Right of way	Use of existing ROW to extent practicable.	
Construction responsibility	Proprietary Company Information	
Benefits/Comments	Resolves reliability issues identified per PJM's Gen. Deliv. Process	
<b>Component Cost Details - In Current Year \$</b>		
Engineering & design	Proprietary Business Information	
Permitting / routing / siting	Proprietary Business Information	
ROW / land acquisition	Proprietary Business Information	
Materials & equipment	Proprietary Business Information	
Construction & commissioning	Proprietary Business Information	
Construction management	Proprietary Business Information	
Overheads & miscellaneous costs	Proprietary Business Information	

Contingency	Proprietary Business Information
Total component cost	\$5,000,000.00
Component cost (in-service year)	\$5,519,064.00

**Greenfield Transmission Line Component**

Component title 26A - New 500kV transmission line from new North Delta substation to BGE's Conastone substation.

Project description Proprietary Business Information

Point A North Delta

Point B Conastone

Point C N/A

	<b>Normal ratings</b>	<b>Emergency ratings</b>
Summer (MVA)	4295.000000	4357.000000
Winter (MVA)	5066.000000	5196.000000
Conductor size and type	3x 1780 kcmil Chukar ACSR	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	

General route description	Route is approximately 15 miles long. Starting a new dead end structure at the new North Delta substation the lines routes southwest for about 0.75 miles before turning northeast to cross the existing Peach Bottom - Conastone 500kV transmission line. The line routes along the west side of existing Peach Bottom - Conastone 500kV transmission ROW for about 3.5 miles before crossing to the east side of the tranmission ROW to avoid impacting Elixir Farm. The line follows the east side of the existing Peach Bottom - Conastone 500kV transmission ROW for less than a mile and the deviates south-southeast for about 0.75 miles to avoid residential impacts before again following the existing Peach Bottom - Conastone 500kV transmission ROW. The line follows along the southern side of the Peach - Bottom Conastone 500kV transmission ROW for about 9 miles before terminating at the existing Conastone substation, except for at about mile 6 where the line deviates off the existing ROW to avoid residential impacts.
Terrain description	The Project traverses through Harford County, Maryland into York County, Pennsylvania. Harford County is located in northeastern Maryland in the Piedmont province, characterized by broad, rolling upland with several deep gorges cut by rivers. Features include rolling hills, pasture and fertile farmland, Quarries and iron pits, and the Susquehanna and Monocacy rivers. The Piedmont region's elevation ranges from an average of 350 feet to more than 1,200 feet. In York County the Piedmont Upland is characterized by rolling hills and valleys, generally with gentle to moderately steep slopes. However, steeper slopes with narrow valley bottoms dominate near the Susquehanna River. Many higher ridges are underlain by more resistant bedrock such as quartzite. This Section was formed by fluvial erosion and some peri-glacial wasting and averages about 600-700 feet in elevation. The drainage pattern of the area is considered to be dendritic. Slopes in the range of 0-8% are common throughout York County.
Right-of-way width by segment	The majority of the new right of way will be an expansion of an existing transmission line corridor, where a 135ft additional width will be required beyond the existing, assumed, ROW edge.
Electrical transmission infrastructure crossings	See Attachment 4 (Google Earth .kmz) with identified major crossings.
Civil infrastructure/major waterway facility crossing plan	See Attachment 4 (Google Earth .kmz) with identified major crossings and Attachment 5 - Crossing Plan for more detail.

Environmental impacts	<p>Environmental constraints identified are manageable through implementation of an environmental avoidance, minimization, and mitigation strategy incorporated at the beginning of the routing/siting process. Co-location with existing utilities and other infrastructure was prioritized to the greatest extent practicable to minimize the environmental impact on the landscape. The proposed route crosses 4 forested national wetland inventory (NWI) wetlands and 8 waterbodies, but it appears that most features are small and could be avoided without permitting. Consultation with the Army Corps of Engineers, Fish and Wildlife Service, and numerous state agencies in Maryland and Pennsylvania are expected. Fatal flaws have not been identified for proposed route. A cultural resource professional assisted with the routing process to identify and minimize impacts to known areas with historic sensitivities. An investigation to further identify and evaluate historic properties will be conducted to determine the presence of archaeologically or historically significant resources. Federally listed species have been identified including listed bats, Maryland dater, and the bog turtle, but no critical habitat was identified along the proposed route. If suitable habitat is identified or regulations change, agency coordination and species-specific surveys will occur. The project intends to adhere to tree removal seasonal restriction windows to avoid and minimize impacts to protected birds and bats, such as the northern long-eared bat, bald eagle, and other common raptors. Erosion control best management practices and setbacks will be engineered and utilized to prevent sedimentation from leaving the site for the protection of aquatic species and to avoid water quality impacts. There are no unique or sensitive environmental concerns or impacts with the proposed transmission line that cannot be addressed.</p>
Tower characteristics	<p>The proposed structures will be single circuit 500kV lattice towers (TTVS-500) in a horizontal configuration. Any proposed deadend structure will either be a steel lattice tower or a 3-pole, one phase per pole configuration. See proposed structure drawing set included in attachment 10.</p>
Construction responsibility	Proprietary Business Information
Benefits/Comments	Resolves reliability issues identified per PJM's Gen. Deliv. Process
<b>Component Cost Details - In Current Year \$</b>	
Engineering & design	Proprietary Business Information
Permitting / routing / siting	Proprietary Business Information
ROW / land acquisition	Proprietary Business Information
Materials & equipment	Proprietary Business Information
Construction & commissioning	Proprietary Business Information
Construction management	Proprietary Business Information

Overheads & miscellaneous costs	Proprietary Business Information
Contingency	Proprietary Business Information
Total component cost	\$50,507,450.00
Component cost (in-service year)	\$55,750,774.00

### Greenfield Substation Component

Component title	25a - New Muddy Creek Substation- 6 terminal
Project description	Proprietary Business Information
Substation name	Muddy Creek
Substation description	AC Air Insulated Substation (AIS): New proposed 230 kV Substation. New Ring Bus switchyard, six (6) line terminals, six (6) 230kV, 5000A, 80 kAIC Breakers
Nominal voltage	AC
Nominal voltage	230

### Transformer Information

None		
Major equipment description	AC Air Insulated Substation (AIS): New proposed 230 kV Substation. New Ring Bus switchyard, six (6) line terminals, six (6) 230kV, 5000A, 80kAIC Breakers	
	<b>Normal ratings</b>	<b>Emergency ratings</b>
Summer (MVA)	0.000000	0.000000
Winter (MVA)	0.000000	0.000000

## Environmental assessment

Environmental constraints identified are manageable through implementation of an environmental avoidance, minimization, and mitigation strategy incorporated at the beginning of the routing/siting process. Co-location with existing utilities and other infrastructure was prioritized to the greatest extent practicable to minimize the environmental impact on the landscape. The proposed site crosses no national wetland inventory (NWI) wetlands or waterbodies but is located near Muddy Creek. Fatal flaws have not been identified for proposed site. A cultural resource professional assisted with the siting process to identify and minimize impacts to known areas with historic sensitivities. An investigation to further identify and evaluate historic properties will be conducted to determine the presence of archaeologically or historically significant resources. Federally listed species have been identified including listed bats, but no critical habitat was identified in the area of the substation site. If suitable habitat is identified or regulations change, agency coordination and species-specific surveys will occur. The project intends to adhere to tree removal seasonal restriction windows to avoid and minimize impacts to protected birds and bats, such as the northern long-eared bat, bald eagle, and other common raptors. Erosion control best management practices and setbacks will be engineered and utilized to prevent sedimentation from leaving the site for the protection of aquatic species and to avoid water quality impacts. There are no unique or sensitive environmental concerns or impacts with the proposed substation site that cannot be addressed.

## Outreach plan

The Company is committed to working with all interested stakeholders through a robust public outreach program to address/respond to community concerns and inform the public about the project to the greatest extent practicable. The Company believes a well-designed public outreach program can have numerous benefits, including fostering a cooperative relationship with landowners and other stakeholders, expediting the regulatory permitting process, and assisting with project development. In general, the purpose of the community outreach plan is to gain community support for the project. In the affected communities, the Company's public outreach plan will educate the public and relevant stakeholders on specific project details to enable timely regulatory approvals and construction activities. Elements of the public outreach plan will include the following: 1) Identify potential issues at an early stage by engagement with key community stakeholders at the outset; 2) Broaden the community engagement process to identify potential and relevant community benefits that can facilitate community support for the proposed project; 3) Develop a broad base of community support for the proposed project before the regulatory agencies; and 4) Develop a comprehensive administrative record documenting the community outreach process that can be presented to the regulatory agency or, in the event of a legal challenge, to the appropriate court. The outreach plan proposes to dedicate considerable time and resources in engaging the community, and specifically the affected community during the planning process to identify highly sensitive areas that have the least amount of cultural, environmental, and social impacts on the community. The plans will reflect avoidance of impacts rather than mitigation. However, in some cases, if avoidance is not possible, then the Company will involve the community in providing appropriate and practical mitigation measures. The Company will commence its public outreach activities following project award.

## Land acquisition plan

See Attachment 9 for Land Acquisition Plan.

## Construction responsibility

Proprietary Business Information

Benefits/Comments

Resolves reliability and market efficiency issues identified per PJM's. process. Substation is a switchyard with no voltage transformation.

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

Engineering & design

Proprietary Business Information

Permitting / routing / siting

Proprietary Business Information

ROW / land acquisition

Proprietary Business Information

Materials & equipment

Proprietary Business Information

Construction & commissioning

Proprietary Business Information

Construction management

Proprietary Business Information

Overheads & miscellaneous costs

Proprietary Business Information

Contingency

Proprietary Business Information

Total component cost

\$8,218,000.00

Component cost (in-service year)

\$9,071,134.00

**Substation Upgrade Component**

Component title

25d - Graceton substation single 230kV breaker expansion

Project description

Proprietary Business Information

Substation name

Graceton

Substation zone

BG&E

Substation upgrade scope

Add a new 230kV circuit breaker and one MOD.

**Transformer Information**

None

New equipment description

AC Substation: Add one (1) new 230 kV breaker to existing bay in breaker and a half (BAAH) bus.

Substation assumptions	The use of a position within a bay appears to be available.
Real-estate description	No expansion of substation fence anticipated
Construction responsibility	Proprietary Company Information
Benefits/Comments	Resolves reliability issues identified per PJM's Gen. Deliv. Process
<b>Component Cost Details - In Current Year \$</b>	
Engineering & design	Proprietary Business Information
Permitting / routing / siting	Proprietary Business Information
ROW / land acquisition	Proprietary Business Information
Materials & equipment	Proprietary Business Information
Construction & commissioning	Proprietary Business Information
Construction management	Proprietary Business Information
Overheads & miscellaneous costs	Proprietary Business Information
Contingency	Proprietary Business Information
Total component cost	\$1,400,000.00
Component cost (in-service year)	\$1,545,338.00
<b>Substation Upgrade Component</b>	
Component title	26C - Conastone substation single 500kV breaker expansion
Project description	Proprietary Business Information
Substation name	Conastone
Substation zone	BG&E
Substation upgrade scope	Add one new 500kV circuit breaker at Conastone to terminate the new greenfield North Delta to Conastone 500kV transmission line.

## Transformer Information

None	
New equipment description	AC Substation: Add one (1) new 500 kV breaker to existing bay in breaker and a half (BAAH) bus.
Substation assumptions	The use of a position within a bay appears to be available.
Real-estate description	No expansion of substation fence anticipated
Construction responsibility	Proprietary Company Information
Benefits/Comments	Resolves reliability issues identified per PJM's Gen. Deliv. Process

## Component Cost Details - In Current Year \$

Engineering & design	Proprietary Business Information
Permitting / routing / siting	Proprietary Business Information
ROW / land acquisition	Proprietary Business Information
Materials & equipment	Proprietary Business Information
Construction & commissioning	Proprietary Business Information
Construction management	Proprietary Business Information
Overheads & miscellaneous costs	Proprietary Business Information
Contingency	Proprietary Business Information
Total component cost	\$1,400,000.00
Component cost (in-service year)	\$1,545,338.00

## Greenfield Substation Component

Component title	26b - New North Delta Substation - 3 terminal
Project description	Proprietary Business Information
Substation name	North Delta

Substation description AC Air Insulated Substation (AIS): New proposed 500 kV Substation. New Ring Bus switchyard, three (3) line terminals, three (3) 500 kV, 5000A, 63kAIC Breakers

Nominal voltage AC

Nominal voltage 500

### Transformer Information

None

Major equipment description AC Air Insulated Substation (AIS): New proposed 500 kV Substation. New Ring Bus switchyard, three (3) line terminals, three (3) 500 kV, 5000A, 63kAIC Breakers

	<b>Normal ratings</b>	<b>Emergency ratings</b>
Summer (MVA)	0.000000	0.000000
Winter (MVA)	0.000000	0.000000

Environmental assessment Environmental constraints identified are manageable through implementation of an environmental avoidance, minimization, and mitigation strategy incorporated at the beginning of the routing/siting process. Co-location with existing utilities and other infrastructure was prioritized to the greatest extent practicable to minimize the environmental impact on the landscape. The proposed site crosses no national wetland inventory (NWI) wetlands or waterbodies. Fatal flaws have not been identified for proposed site. A cultural resource professional assisted with the siting process to identify and minimize impacts to known areas with historic sensitivities. An investigation to further identify and evaluate historic properties will be conducted to determine the presence of archaeologically or historically significant resources. Federally listed species have been identified with potential to occur in the area including listed bats and bog turtles, but no critical habitat was identified in the area of the substation site. If suitable habitat is identified or regulations change, agency coordination and species-specific surveys will occur. The project intends to adhere to tree removal seasonal restriction windows to avoid and minimize impacts to protected birds and bats, such as the northern long-eared bat, bald eagle, and other common raptors. Erosion control best management practices and setbacks will be engineered and utilized to prevent sedimentation from leaving the site for the protection of aquatic species and to avoid water quality impacts. There are no unique or sensitive environmental concerns or impacts with the proposed substation site that cannot be addressed.

Outreach plan	<p>The Company is committed to working with all interested stakeholders through a robust public outreach program to address/respond to community concerns and inform the public about the project to the greatest extent practicable. The Company believes a well-designed public outreach program can have numerous benefits, including fostering a cooperative relationship with landowners and other stakeholders, expediting the regulatory permitting process, and assisting with project development. In general, the purpose of the community outreach plan is to gain community support for the project. In the affected communities, the Company's public outreach plan will educate the public and relevant stakeholders on specific project details to enable timely regulatory approvals and construction activities. Elements of the public outreach plan will include the following: 1) Identify potential issues at an early stage by engagement with key community stakeholders at the outset; 2) Broaden the community engagement process to identify potential and relevant community benefits that can facilitate community support for the proposed project; 3) Develop a broad base of community support for the proposed project before the regulatory agencies; and 4) Develop a comprehensive administrative record documenting the community outreach process that can be presented to the regulatory agency or, in the event of a legal challenge, to the appropriate court. The outreach plan proposes to dedicate considerable time and resources in engaging the community, and specifically the affected community during the planning process to identify highly sensitive areas that have the least amount of cultural, environmental, and social impacts on the community. The plans will reflect avoidance of impacts rather than mitigation. However, in some cases, if avoidance is not possible, then the Company will involve the community in providing appropriate and practical mitigation measures. The Company will commence its public outreach activities following project award. "</p>
Land acquisition plan	See Attachment 9 for Land Acquisition Plan.
Construction responsibility	Proprietary Business Information
Benefits/Comments	Resolves reliability and market efficiency issues identified per PJM's. process. Substation is a switchyard with no voltage transformation.
<b>Component Cost Details - In Current Year \$</b>	
Engineering & design	Proprietary Business Information
Permitting / routing / siting	Proprietary Business Information
ROW / land acquisition	Proprietary Business Information
Materials & equipment	Proprietary Business Information
Construction & commissioning	Proprietary Business Information
Construction management	Proprietary Business Information

Overheads & miscellaneous costs	Proprietary Business Information
Contingency	Proprietary Business Information
Total component cost	\$16,541,000.00
Component cost (in-service year)	\$18,258,169.00

**Transmission Line Upgrade Component**

Component title	25b2 - Muddy Creek to Graceton 230kV Brownfield Component
Project description	Proprietary Business Information
Impacted transmission line	Manor sub to Graceton sub 230kV line
Point A	Muddy Creek
Point B	Graceton
Point C	N/A
Terrain description	Upgrade is within existing ROW.

**Existing Line Physical Characteristics**

Operating voltage	230
Conductor size and type	Incumbent / Current Transmission owner specific
Hardware plan description	Utilize existing line hardware to extent possible.
Tower line characteristics	Utilize existing towers to extent practicable. There is an open position on the existing transmission towers for a new circuit.

**Proposed Line Characteristics**

	<b>Designed</b>	<b>Operating</b>
Voltage (kV)	230.000000	230.000000
	<b>Normal ratings</b>	<b>Emergency ratings</b>

Summer (MVA)	1295.000000	1863.000000
Winter (MVA)	1534.000000	1795.000000
Conductor size and type	Incumbent / Transmission Owner to select conductor to achieve the required ratings.	
Shield wire size and type	Utilize existing shield wire to extent practicable.	
Rebuild line length	9.3	
Rebuild portion description	Proposing to build the new circuit on the existing tower due to there being an available position on the current double circuit towers with only one circuit installed.	
Right of way	Use of existing ROW to extent practicable.	
Construction responsibility	Proprietary Company Information	
Benefits/Comments	Resolves reliability issues identified per PJM's Gen. Deliv. Process.	
<b>Component Cost Details - In Current Year \$</b>		
Engineering & design	Proprietary Business Information	
Permitting / routing / siting	Proprietary Business Information	
ROW / land acquisition	Proprietary Business Information	
Materials & equipment	Proprietary Business Information	
Construction & commissioning	Proprietary Business Information	
Construction management	Proprietary Business Information	
Overheads & miscellaneous costs	Proprietary Business Information	
Contingency	Proprietary Business Information	
Total component cost	\$13,671,000.00	
Component cost (in-service year)	\$15,090,226.00	

**Transmission Line Upgrade Component**

Component title	25c2 - Muddy Creek to Conastone 230kV Brownfield Component
Project description	Proprietary Business Information
Impacted transmission line	Otter Creek sub to Conastone sub 230kV
Point A	Muddy Creek
Point B	Conastone
Point C	N/A
Terrain description	Upgrade is within existing ROW

**Existing Line Physical Characteristics**

Operating voltage	230
Conductor size and type	Incumbent / Current Transmission owner specific
Hardware plan description	Utilize existing line hardware to extent possible.
Tower line characteristics	Utilize existing towers to extent practicable. There is open position on the existing transmission towers for a new circuit.

**Proposed Line Characteristics**

	<b>Designed</b>	<b>Operating</b>
Voltage (kV)	230.000000	230.000000
	<b>Normal ratings</b>	<b>Emergency ratings</b>
Summer (MVA)	1295.000000	1863.000000
Winter (MVA)	1534.000000	1795.000000
Conductor size and type	Incumbent / Transmission Owner to select conductor to achieve the required ratings.	
Shield wire size and type	Utilize existing shield wire to extent practicable.	
Rebuild line length	14.7	

Rebuild portion description	Proposing to build the new circuit on the existing tower due to there being an available position on the current double circuit towers with only one circuit installed.
Right of way	Use of existing ROW to extent practicable.
Construction responsibility	Proprietary Company Information
Benefits/Comments	Resolves reliability issues identified per PJM's Gen. Deliv. Process

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

Engineering & design	Proprietary Business Information
Permitting / routing / siting	Proprietary Business Information
ROW / land acquisition	Proprietary Business Information
Materials & equipment	Proprietary Business Information
Construction & commissioning	Proprietary Business Information
Construction management	Proprietary Business Information
Overheads & miscellaneous costs	Proprietary Business Information
Contingency	Proprietary Business Information
Total component cost	\$21,609,000.00
Component cost (in-service year)	\$23,852,293.00

**Substation Upgrade Component**

Component title	25e - Conastone substation 230kV termination
Project description	Proprietary Business Information
Substation name	Conastone
Substation zone	BG&E
Substation upgrade scope	Terminate new Muddy Creek to Conastone 230kV transmission line at Conastone

## Transformer Information

None	
New equipment description	AC substation: terminate new 230kV transmission line into spare position in the western most bay.
Substation assumptions	The use of a position within a bay appears to be available.
Real-estate description	No expansion of substation fence anticipated
Construction responsibility	Proprietary Company Information
Benefits/Comments	Resolves reliability issues identified per PJM's Gen. Deliv. Process

## Component Cost Details - In Current Year \$

Engineering & design	Proprietary Business Information
Permitting / routing / siting	Proprietary Business Information
ROW / land acquisition	Proprietary Business Information
Materials & equipment	Proprietary Business Information
Construction & commissioning	Proprietary Business Information
Construction management	Proprietary Business Information
Overheads & miscellaneous costs	Proprietary Business Information
Contingency	Proprietary Business Information
Total component cost	\$700,000.00
Component cost (in-service year)	\$772,669.00

## Congestion Drivers

None

## Existing Flowgates

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-W50	200064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Winter Gen Deliv	Included

## New Flowgates

Proprietary Company Information

## Financial Information

Capital spend start date 09/2023

Construction start date 07/2025

Project Duration (In Months) 45

## Cost Containment Commitment

Cost cap (in current year) Proprietary Business Information

Cost cap (in-service year) Proprietary Business Information

## Components covered by cost containment

1. 25B - New double circuit 230kV transmission line from new Muddy Creek switchyard to the point where PPL's Manor - Graceton 230kV transmission line crosses Peach - Otter Creek 500kV transmission line - NEETMA
2. 25C - New single circuit 230kV transmission line from where PPL's Manor - Graceton 230kV transmission line crosses Peach Bottom - Otter Creek 500kV transmission line to where the Otter Creek - Conastone 230kV transmission line begins - NEETMA
3. 26A - New 500kV transmission line from new North Delta substation to BGE's Conastone substation. - NEETMA
4. 25a - New Muddy Creek Substation- 6 terminal - NEETMA
5. 26b - New North Delta Substation - 3 terminal - NEETMA

## 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	No
AFUDC	No
Escalation	No
Additional Information	Proprietary Business Information
Is the proposer offering a binding cap on ROE?	Yes
Would this ROE cap apply to the determination of AFUDC?	Yes
Would the proposer seek to increase the proposed ROE if FERC finds that a higher ROE would not be unreasonable?	No
Is the proposer offering a Debt to Equity Ratio cap?	Proprietary Business Information
Additional cost containment measures not covered above	Proprietary Business Information

## **Additional Comments**

None