# Muddy Creek / Delta - Conastone / Hunterstown - Doubs - Goose Creek 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? | Proprietary business information |
| Company proposal ID | Proprietary business information |
| PJM Proposal ID | 445 |
| Project title | Muddy Creek / Delta - Conastone / Hunterstown - Doubs - Goose Creek Solution |
| Project description | New Muddy Creek 230 kV switchyard, New Muddy Creek - Conastone/Graceton 230 kV lines, New North Delta 500/230 kV substation, New North Delta - Conastone 500 kV line, New Hunterstown - Doubs - Goose Creek 500 kV line plus various modifications to existing lines and substations Proposal permitting and overhead costs are captured on component 21B. 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. 21B - New 500kV transmission line between Hunterstown substation and Doubs substation
2. 10A - Goose Creek 500kV single breaker expansion
3. 24e - North Delta to Cooper 230kV rebuild

4. 21C - Doubs substation expansion with two new 500kV breaker and a half bays

5. 24f - North Delta to Graceton 230kV rebuild

6. 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

7. 25F - Muddy Run to Peach Bottom 230kV upgrade

8. 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

9. 29A - New 500kV transmission line from BGE Doubs substation to Dominion Goose Creek substation

10. 27d - North Peach Bottom to South Peach Bottom 500kV rebuild

11. 25d - Graceton substation single 230kV breaker expansion

12. 25a - New Muddy Creek Substation- 6 terminal

13. 24a - New North Delta Substation- 4 terminal

14. 25b2 - Muddy Creek to Graceton 230kV Brownfield Component

15. 25c2 - Muddy Creek to Conastone 230kV Brownfield Component

16. 25e - Conastone substation 230kV termination

17. 35B - Hunterstown substation single 500kV circuit breaker expansion

## Greenfield Transmission Line Component

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|---|---|
| Component title | 21B - New 500kV transmission line between Hunterstown substation and Doubs substation |
| Project description | Proprietary business information |
| Point A | Hunterstown |
| Point B | Doubs |
| Point C | |

| | **Normal ratings** | **Emergency ratings** |
|---|---|---|
| Summer (MVA) | 4357.000000 | 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 57 miles long. Starting a new dead end structure at the Hunterstown substation, the new line routes south west for about 0.25 miles before shifting south-southeast for about 7 miles before turning south-southwest and then crossing the Maryland/Pennsylvania border after about 4 miles. The new line continues south-southwest for about 17 miles beyond the state boundary until about 2-miles northeast of Walkersville, Maryland, where it shifts east to navigate around the populated and developed area surrounding Federick, Maryland, including remaining more than 20,000 ft from the Federick airport, aligned with FAA guidance. The new line routes around Federick for about 15 miles until co-locating with the Doubs - Birghton 500kV transmission line near Ijamsville, maryland. The line follows the existing transmission ROW on the north side for the remainder of the route, to Doubs substation, for about 13 miles. |
| Terrain description | The project is located in Maryland’s Frederick and Carroll Counties east of the Monocacy River, and Adams County, Pennsylvania. The Frederick Valley, through which the Monocacy flows, is nestled between the Catoctin Mountains to the west, and the lower Parrs Ridge to the east. The river valley’s topography includes little steep terrain, but some steep gradients do exist adjacent to the river. These land elevations and the degree of slope have influenced land use in the watershed. The region’s relatively flat topography has made it easily accessible for development and agriculture in some areas next to the river and its tributaries. 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 and rolling hills and valleys, generally with gentle to moderately steep slopes. |
| Right-of-way width by segment | Corridor Type: The new right of way will have its own corridor for approximately 75% of the route length. For approximately 25% of the route length, the right of way will be an expansion of an existing transmission line corridor. Approximately 85% of the route will have a ROW width of 165 ft. Approximately 15% of the route will require a ROW width of 75 ft. |
| 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. |

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|---|---|
| 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 17 national wetland inventory (NWI) wetlands and 58 waterbodies, but it appears that most features are small and could be avoided without permitting. The crossing of the Moncacy River will require additional agency consultations. 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, rusty patched bumble bee, fishes, and 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 raptorsr. 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. Routing through the Appalachian Mountains will require additional control measures and monitoring. There are no unique or sensitive environmental concerns or impacts with the proposed transmission line that cannot be addressed." |
| Tower characteristics | The majority, approximately 65%, of the proposed structures will be single circuit 500kV lattice towers (TTVS-500) in a horizontal conductor configuration. Approximately 35% of the structures will be single circuit 500kV steel monopoles (TVS-500) in a delta conductor configuration. Any proposed deadend structure will either be a lattice tower or a 3-pole, one phase per pole structure type. See proposed structure drawing set included in attachment 10. |
| Construction responsibility | Proprietary business information |
| Benefits/Comments | Proprietary business information |

**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 | $264,271,980.00 |
| Component cost (in-service year) | $276,628,182.00 |

## Substation Upgrade Component

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|---|---|
| Component title | 10A - Goose Creek 500kV single breaker expansion |
| Project description | Proprietary business information |
| Substation name | Goose Creek |
| Substation zone | Dominion |
| Substation upgrade scope | Expand existing 500kV Goose Creek ring bus by adding one 500kV breaker and two MODs. |

## Transformer Information

None

| | |
|---|---|
| New equipment description | AC Substation: Add one (1) new 500 kV breaker to existing ring. |
| Substation assumptions | Area south of substation fence is available. |
| Real-estate description | Expected expansion of fenceline is within utility owned property. |
| Construction responsibility | Proprietary business information |
| Benefits/Comments | Proprietary business information |

**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 |

## Transmission Line Upgrade Component

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|---|---|
| Component title | 24e - North Delta to Cooper 230kV rebuild |
| Project description | Proprietary business information |
| Impacted transmission line | Cooper sub to Graceton sub 230kV line |
| Point A | North Delta |
| Point B | Cooper |
| Point C | N/A |
| Terrain description | Rebuild is within existing ROW |

**Existing Line Physical Characteristics**

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|---|---|
| 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 | 0.75 miles | |
| Rebuild portion description | Proposing to rebuild the entire line to achieve specific rating. | |
| Right of way | Use of existing ROW to extent practicable. | |
| Construction responsibility | Proprietary business information | |
| Benefits/Comments | Proprietary business information | |
| **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 | $1,837,500.00 | |
| Component cost (in-service year) | $2,028,256.00 | |

## Substation Upgrade Component

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|---|---|
| Component title | 21C - Doubs substation expansion with two new 500kV breaker and a half bays |
| Project description | Proprietary business information |
| Substation name | Doubs |
| Substation zone | Allegheny Power |
| Substation upgrade scope | Add two new 500kV breaker and a half bays by adding a total of 4 breakers. Terminate the two new 500kV greenfield transmission lines into the new bays created. Recommend relocating the existing Doubs - Goose Creek 500kV line and Doubs - Brighton per the provided one-line diagram to avoid transmission line crossings of the new 500kV transmission lines with the existing transmission lines. |

## Transformer Information

None

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|---|---|
| New equipment description | AC substation: Add two (2) new breaker and a half (BAAH) bays and four (4) new 500kV breakers. |
| Substation assumptions | The use of a spare bay appears to be available. Area west of substation fence is available. |
| Real-estate description | Expected expansion of fenceline is within utility owned property. |
| Construction responsibility | Proprietary business information |
| Benefits/Comments | Proprietary business information |

**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 | $14,000,000.00 |
| Component cost (in-service year) | $15,453,380.00 |

## Transmission Line Upgrade Component

| | |
|---|---|
| Component title | 24f - North Delta to Graceton 230kV rebuild |
| Project description | Proprietary business information |
| Impacted transmission line | Cooper sub to Graceton sub 230kV line |
| Point A | North Delta |
| Point B | Graceton |
| Point C | N/A |
| Terrain description | Rebuild 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 | New double circuit structures will be required. |

**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 | 6.5 miles | |
| Rebuild portion description | Proposing to rebuild the entire line to achieve specific rating. | |
| Right of way | Use of existing ROW to extent practicable. | |
| Construction responsibility | Proprietary business information | |
| Benefits/Comments | Proprietary business information | |
| **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 | $15,925,000.00 | |
| Component cost (in-service year) | $17,578,220.00 | |

## Greenfield Transmission Line Component

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|---|---|
| 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 |

| | **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 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. |

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|---|---|
| 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. |

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|---|---|
| Tower characteristics | 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. |
| Construction responsibility | Proprietary business information |
| Benefits/Comments | Proprietary business information |

**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 | $21,679,980.00 |
| Component cost (in-service year) | $23,930,641.00 |

## Transmission Line Upgrade Component

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|---|---|
| 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**

| | **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 | 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 business information |
| Benefits/Comments | Proprietary business information |

**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 |

## 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 | Proprietary business information |
| **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 |

## Greenfield Transmission Line Component

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|---|---|
| Component title | 29A - New 500kV transmission line from BGE Doubs substation to Dominion Goose Creek substation |
| Project description | Proprietary business information |
| Point A | Doubs |
| Point B | Goose Creek |
| Point C | N/A |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 2680.000000 | 3400.000000 |
| Winter (MVA) | 2680.000000 | 3400.000000 |

| | |
|---|---|
| Conductor size and type | OH: 3x 1780 kcmil Chukar ACSR UG: 3x 6000 kcmil Cables per Phase |
| Nominal voltage | AC |
| Nominal voltage | 500 |
| Line construction type | Overhead, Underground |

| | |
|---|---|
| General route description | Route is approximate 19 miles long. Starting a new dead end structure a the Doubs substation, the line follows the existing Doubs - Pleasant View 500kV transmission line ROW for about 6 miles. The line deviates from the existing ROW for about 4 miles to avoid conflict with existing structures including the Dickerson Power Plant, before again co-locating with the existing transmission ROW about 2 miles south of Dickerson Power Plant. The line co-locates with the existing transmission ROW for about 5 miles until the Potomac River, where it transitions underground to reduce viewshed impacts at the river crossing, which is planned to be a horizontal directional drill (HDD) crossing on the east side of the Leesburg Water Treatment Plant. The line again co-locates with the existing transmission ROW and remains underground for about 3 miles until reaching the existing Goose Creek substation where it will transition to overhead and then terminate into the bus expansion. The line is planned to HDD under the Harry Byrd Hwy, to avoid major traffic impacts. |
| Terrain description | The Project is located in the valley south of the Potomac River in Loundon County. A former agricultural region, the area is now densely developed with commercial buildings and planned residential communities within commuting distance to Washington, D.C. Some industrial facilities are located to the south of the project area. Slopes are gentle, approximately 4%. The project terminates on the north side of the Potomac River in Montgomery, Maryland where the topography is generally rolling. Elevations range from a low of near sea level along the Potomac River to about 875 feet. |
| Right-of-way width by segment | The new right of way will be an expansion of an existing transmission line corridor for approximately 60% of the route length and will be 165 ft wide. The route will have its own right of way corridor for approximately 20% of its length with a width of 150 ft in select congested areas. Approximately 20% of the route will be underground in narrower and congested areas where overhead construction was considered not feasible. Where underground transmission line segments are not sited by permits issued by the Authority Having Jurisdiction, a 25 ft wide right of way would be required for construction. |
| 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 17 national wetland inventory (NWI) wetlands and 58 waterbodies, but it appears that most features are small and could be avoided without permitting. The crossing of the Potomac River will require additional agency consultations. Consultation with the Army Corps of Engineers, Fish and Wildlife Service, and numerous state agencies in Virginia and Maryland are expected. Additional cordination for this route will include working with the Potomac Heritage National Scenc Trail, and the Chesapeake and Ohio National Historical Park. 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, the rusty patched bumble bee, and clam species, 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 Tri-colored Bat, 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 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. The portion of the route proposed to be underground will utilize duct bank construction with 3-cables per phase and splicing vaults at regular intervals. See structure drawing set included in attachment 10. |
| Construction responsibility | Proprietary business information |
| Benefits/Comments | Proprietary business information |
| **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 | $186,834,200.00 |
| Component cost (in-service year) | $206,229,998.00 |

## Transmission Line Upgrade Component

| | |
|---|---|
| Component title | 27d - North Peach Bottom to South Peach Bottom 500kV rebuild |
| Project description | Proprietary business information |
| Impacted transmission line | North Peach Bottom to South Peach Bottom 500kV |
| Point A | North Peach Bottom |
| Point B | South Peach Bottom |
| Point C | N/A |
| Terrain description | Upgrade is within existing ROW |

**Existing Line Physical Characteristics**

| | |
|---|---|
| Operating voltage | 500 |
| 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) | 500.000000 | 500.000000 |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 4295.000000 | 4357.000000 |
| Winter (MVA) | 5066.000000 | 5196.000000 |
| 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 | 1.03 miles | |
| 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 business information | |
| Benefits/Comments | Proprietary business information | |
| **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 | $1,514,100.00 | |
| Component cost (in-service year) | $1,671,283.00 | |

## 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 business information |
| Benefits/Comments | Proprietary business information |

**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 | 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 |

| | **Normal ratings** | **Emergency ratings** |
|---|---|---|
| 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 | Proprietary business information |
| **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 |

## Greenfield Substation Component

| | |
|---|---|
| Component title | 24a - New North Delta Substation- 4 terminal |
| Project description | Proprietary business information |
| Substation name | North Delta |
| Substation description | AC Air Insulated Substation (AIS): New proposed 500 - 230 kV Substation. New Breaker and a Half (BAAH) 500 kV switchyard with two (2) bays, two (2) line terminals, six (6) 500 kV, 5000A, 63kAIC breakers and two 500 kV - 230 kV transformer banks. New 230kV BAAH Switchyard with two (2) bays, three (3) line terminals, seven (7) 230 kV, 5000A, 80 kAIC breakers |
| Nominal voltage | AC |
| Nominal voltage | 500/230 |

## Transformer Information

| | Name | | Capacity (MVA) |
|---|---|---|---|
| Transformer | Transformer 1 | | 1559/1940 |
| | **High Side** | **Low Side** | **Tertiary** |
| Voltage (kV) | 500 | 230 | N/A |

| | Name | | Capacity (MVA) |
|---|---|---|---|
| Transformer | Transformer 2 | | 1559/1940 |
| | **High Side** | **Low Side** | **Tertiary** |
| Voltage (kV) | 500 | 230 | N/A |

| | |
|---|---|
| Major equipment description | AC Air Insulated Substation (AIS): New proposed 500 - 230 kV Substation. New Breaker and a Half (BAAH) 500 kV switchyard with two (2) bays, two (2) line terminals, six (6) 500 kV, 5000A, 63kAIC breakers and two 500 kV - 230 kV transformer banks. New 230kV BAAH Switchyard with two (2) bays, three (3) line terminals, seven (7) 230 kV, 5000A, 80 kAIC breakers |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 1559.000000 | 1940.000000 |
| Winter (MVA) | 1785.000000 | 2168.000000 |

| | |
|---|---|
| Environmental assessment | Environmental constraints identified are manageable through implementation of an environmental avoidance, minimization, and mitigation strategy incorporated at the beginning of the 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 is an actively maintained agricultural field, and no national wetland inventory (NWI) wetlands or waterbodies are crossed. Fatal flaws have not been identified. 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 in the general area, including listed bats. However at this time no tree clearing is required for this location. If suitable habitat for bats, or any other protected species, is identified or regulations change, agency consultation 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 Tri-colored Bat, 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 | The substation is being proposed to be built on a parcel that is already under purchase option. |

| | |
|---|---|
| Construction responsibility | Proprietary business information |
| Benefits/Comments | Proprietary business information |
| **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 | $62,405,000.00 |
| Component cost (in-service year) | $68,883,443.00 |

## 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**

| | **Designed** | **Operating** |
|---|---|---|
| Voltage (kV) | 230.000000 | 230.000000 |
| | **Normal ratings** | **Emergency ratings** |
| 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 business information |
| Benefits/Comments | Proprietary business information |

**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 | $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**

| | Designed | Operating |
|---|---|---|
| Voltage (kV) | 230.000000 | 230.000000 |
| | **Normal ratings** | **Emergency ratings** |
| 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 business information | |
| Benefits/Comments | Proprietary business information | |

**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 business information |
| Benefits/Comments | Proprietary business information |

**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 |

## Substation Upgrade Component

| | |
|---|---|
| Component title | 35B - Hunterstown substation single 500kV circuit breaker expansion |
| Project description | Proprietary business information |
| Substation name | Hunterstown |
| Substation zone | Metropolitan Edison Company |
| Substation upgrade scope | Termination work for Hunterstown to Doubs Line. Add one 500kV circuit breaker and two MODs at Hunterstown. |

## Transformer Information

| | **Name** | **Capacity (MVA)** |
|---|---|---|
| Transformer | n/a | n/a |

| | **High Side** | **Low Side** | **Tertiary** |
|---|---|---|---|
| Voltage (kV) | 0 | 0 | 0 |

| | |
|---|---|
| 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 business information |
| Benefits/Comments | Proprietary business information |

**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 |

## Congestion Drivers

None

## Existing Flowgates

None

## New Flowgates

Proprietary business 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. 21B - New 500kV transmission line between Hunterstown substation and Doubs substation - NEETMA
2. 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
3. 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
4. 29A - New 500kV transmission line from BGE Doubs substation to Dominion Goose Creek substation - NEETMA
5. 25a - New Muddy Creek Substation- 6 terminal - NEETMA
6. 24a - New North Delta Substation- 4 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