# Kammer to Juniata to Spicewood 765 kV

## General Information

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| Proposing entity name | Proprietary & Confidential Information |
| Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project? | Proprietary & Confidential Information |
| Company proposal ID | Proprietary & Confidential Information |
| PJM Proposal ID | 687 |
| Project title | Kammer to Juniata to Spicewood 765 kV |
| Project description | Build a new 765 kV line from Kammer substation into PPL zone |
| Email | Proprietary & Confidential Information |
| Project in-service date | 12/2031 |
| Tie-line impact | No |
| Interregional project | No |
| Is the proposer offering a binding cap on capital costs? | Yes |
| Additional benefits | Proprietary & Confidential Information |

## Project Components

1. B-20-A) Kammer - Buttermilk Falls 765kV
2. B-21-A) Buttermilk Falls - Mountain Stone 765kV
3. B-24-A) Mountain Stone-Juniata 500kV
4. E-07-B) Stoney Creek - Slykerville 230kV
5. E-18-B) Montour-Catawissa 230kV
6. E-20-A) Catawissa - Stoney Creek 500kV

7. E-28-B) Frackville/Columbia - Catawissa 230kV Loop-In
8. E-31-A) Mountain Stone - Westwood 765kV
9. E-34-A) Westwood - Frackville 230kV
10. E-35-A) Westwood - Spicewood 765kV
11. B-19-B) Buttermilk Falls 765kV Substation
12. B-06-C) Mountain Stone 765kV Substation
13. E-17-D) Catawissa 500kV Substation
14. E-19-C) Stoney Creek 500kV Substation
15. E-32-A) Westwood 765kV Substation
16. E-36-A) Spicewood 765kV Substation
17. B-30-A) South Bend - Keystone 500kV terminal equipment upgrade
18. B-32-A) Keystone-Juniata 500 kV terminal equipment upgrade
19. B-33-A) Mountaineer-Belmont 765 kV terminal equipment upgrade
20. B-01-A) Kammer substation upgrade
21. B-07-A) Juniata substation upgrade
22. B-34-A) Conemaugh circuit breaker upgrades
23. E-16-B) Montour substation upgrade
24. E-10-C) Slykerville (SLKY) substation upgrade
25. E-33-A) Frackville (New PPL) substation upgrade

## Greenfield Transmission Line Component

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|---|---|
| Component title | B-20-A) Kammer - Buttermilk Falls 765kV |
| Project description | Proprietary & Confidential Information |
| Point A | Kammer |
| Point B | Buttermilk Falls |
| Point C | |

| Normal ratings | Emergency ratings |
|---|---|

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|---|---|---|
| Summer (MVA) | 6904.000000 | 7690.000000 |
| Winter (MVA) | 8180.000000 | 8874.000000 |
| Conductor size and type | 6 bundled 715 KCMIL ACSR/GA2 Redwing | |
| Nominal voltage | AC | |
| Nominal voltage | 765 | |
| Line construction type | Overhead | |
| General route description | The approximately 114-mile primarily greenfield route exits Kammer substation to the east and travels approximately 16 miles through Marshall County, West Virginia to the Pennsylvania border. The route then travels northeast for the remaining approximately 98 miles through Greene County, Fayette County, Westmoreland County, and Indiana County, Pennsylvania to reach the proposed Buttermilk Falls substation. | |
| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, moderately sloped terrain, with elevation within the Project ranging from a high of 2,170 ft above sea level to a low of 646 ft above sea level. The Project is entirely located within 6 Level IV ecoregions including Forested Hills and Mountains, Loam High Lime Till Plains, Monongahela Transition Zone, Permian Hills, Pittsburgh Low Plateau, and Uplands and Valleys of Mixed Land Use. According to the NLCD, the Project area largely consists of cultivated cropland, deciduous forest, hay/pasture, mixed forest, shrub/scrub, open water, and developed, open space. | |
| Right-of-way width by segment | The majority of the route, approximately 90%, will have a ROW width of 200 ft. Approximately 10% of the route will have a ROW width of 175 ft in more congested areas. The proposed ROW will be an expansion of existing transmission line corridors for approximately 43% of the route length, the remainder will be greenfield ROW. | |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. | |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). | |

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| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses numerous aquatic resources, including wetlands, lakes/ponds, and streams but most features could be spanned & avoided with minimal impacts. According to FEMA, multiple 100-year floodplains are crossed by the route. This represent total amount of features crossed by the route & impacts from the Project would be significantly less. Major watercourses crossed by the Project include the Monongahela, Youghiogheny and Conemaugh Rivers, some of which will require agency authorizations for navigable water crossings. No fatal flaws have been identified for the Project. Multiple previously recorded archaeological sites, cemeteries, historic districts, & architectural resources were recorded within vicinity of the route. Eight federally listed species (4 endangered and 4 proposed) No critical habitat for any federally listed species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. No 'Major Federal Action' that would invoke NEPA is anticipated to result from the proposed route. See Attachment 08 – Permitting Plan. |
| Tower characteristics | The proposed structures will mostly be single circuit 765kV lattice self-supporting or guyed-v towers in a horizontal conductor configuration. Delta configuration may be required in some locations. All angle structures will be self-supporting. See structure drawing set included in Attachment 10. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |

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| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $694,716,467.00 |
| Component cost (in-service year) | $786,007,916.00 |

## Greenfield Transmission Line Component

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|---|---|
| Component title | B-21-A) Buttermilk Falls - Mountain Stone 765kV |
| Project description | Proprietary & Confidential Information |
| Point A | Buttermilk Falls |
| Point B | Mountain Stone |
| Point C | |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 6904.000000 | 7690.000000 |
| Winter (MVA) | 8180.000000 | 8874.000000 |

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|---|---|
| Conductor size and type | 6 bundled 715 KCMIL ACSR/GA2 Redwing |
| Nominal voltage | AC |
| Nominal voltage | 765 |
| Line construction type | Overhead |
| General route description | The approximately 108-mile route exits the proposed Buttermilk Falls substation and travels northeast for 20 miles through Indiana County and Cambria County, Pennsylvania to the existing Keystone - Juniata 500kV corridor. The route then turns east and, where feasible, parallels the Keystone - Juniata 500kV corridor for the remaining approximately 88 miles through Cambria County, Blair County, Huntingdon County, Mifflin County, Juniata County, and Perry County, Pennsylvania before terminating at the proposed Mountain Stone substation. |

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| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, moderately sloped terrain, with elevation within the Project ranging from a high of 2,595 ft above sea level to a low of 482 ft above sea level. The Project is located within 6 Level IV ecoregions including Forested Hills and Mountains, Northern Dissected Ridges and Knobs, Northern Limestone/Dolomite Valleys, Northern Sandstone Ridges, Northern Shale Valleys, and Uplands and Valleys of Mixed Land Use. According to the NLCD, the Project area largely consists of cultivated cropland, deciduous forest, hay/pasture, mixed forest, shrub/scrub, open water, and developed, open space. |
| Right-of-way width by segment | The majority of the route, approximately 98%, will have a ROW width of 200 ft. Approximately 2% of the route will have a ROW width of 175 ft in more congested areas. The proposed ROW will be an expansion of existing transmission line corridors for approximately 42% of the route length, the remainder will be greenfield ROW. |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). |
| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses numerous aquatic resources, including wetlands, lakes/ponds, and streams but most features could be spanned & avoided with minimal impacts. According to FEMA, multiple 100-year floodplains are crossed by the route. This represent total amount of features crossed by the route & impacts from the Project would be significantly less. Major watercourses crossed by the Project include the Juniata River, some of which may require agency authorizations for navigable water or State Scenic River crossings. No fatal flaws have been identified for the Project. Multiple previously recorded archaeological sites, cemeteries, historic districts & architectural resources were recorded within vicinity of the route. Seven federally listed species (3 endangered and 4 proposed) have known ranges along the proposed route. No critical habitat for any federally listed species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed route. See Attachment 08 – Permitting Plan. |
| Tower characteristics | The proposed structures will mostly be single circuit 765kV lattice self-supporting or guyed-v towers in a horizontal conductor configuration. Delta configuration may be required in some locations. All angle structures will be self-supporting. See structure drawing set included in Attachment 10. |

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| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $633,348,168.00 |
| Component cost (in-service year) | $716,575,319.00 |

## Greenfield Transmission Line Component

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|---|---|
| Component title | B-24-A) Mountain Stone-Juniata 500kV |
| Project description | Proprietary & Confidential Information |
| Point A | Mountain Stone |
| Point B | Juniata |
| Point C | |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 5210.000000 | 5803.000000 |

| | | |
|---|---|---|
| Winter (MVA) | 6173.000000 | 6697.000000 |
| Conductor size and type | 3 bundled 1780 KCMIL ACSS/MA3 84/19 Chukar | |
| Nominal voltage | AC | |
| Nominal voltage | 500 | |
| Line construction type | Overhead | |
| General route description | The approximately 0.6-mile route exits the proposed Mountain Stone substation and travels south before terminating at the Juniata substation. | |
| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, sloped terrain, with elevation ranging from a high of 931 ft above sea level to a low of 646 ft above sea level. The Project is located entirely within the Northern Limestone/Dolomite Valleys Level IV ecoregion. According to the NLCD, the Project area largely consists of cultivated cropland, deciduous forest, shrub/scrub, and developed, open space. | |
| Right-of-way width by segment | The route will have a 200 ft ROW width. The proposed route will be greenfield. | |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. | |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). | |

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| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses multiple aquatic resources, including wetlands, lakes/ponds, and streams but most features could be spanned & avoided with minimal impacts. According to FEMA, no 100-year floodplains are crossed by the route. This represents total amount of features crossed by the route & impacts from the Project would be significantly less. No major watercourses are which will require agency authorizations for navigable water and/or State Scenic River crossings. No fatal flaws have been identified for the Project. No previously recorded archaeological sites, cemeteries, & architectural resources were recorded within the route. Also, no historic districts are crossed by the proposed route. Five federally listed species (2 endangered, and 3 proposed) have known ranges along the proposed route. No critical habitat for any federally listed species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. No 'Major Federal Action' that would invoke NEPA is anticipated to result from the proposed route. See Attachment 08 – Permitting Plan. |
| Tower characteristics | The proposed structures will mostly be single circuit 500kV lattice self-supporting or guyed-v towers in a horizontal conductor configuration. Delta configuration may be required in some locations. All angle structures will be self-supporting. See structure drawing set included in Attachment 10. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |

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| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $5,320,922.00 |
| Component cost (in-service year) | $6,020,136.00 |

## Greenfield Transmission Line Component

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|---|---|
| Component title | E-07-B) Stoney Creek - Slykerville 230kV |
| Project description | Proprietary & Confidential Information |
| Point A | Stoney Creek |
| Point B | Slykerville |
| Point C | |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 1573.000000 | 1809.000000 |
| Winter (MVA) | 1648.000000 | 1896.000000 |

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|---|---|
| Conductor size and type | 2 bundled 1590 KCMIL ACSS/MA3 54/19 Falcon |
| Nominal voltage | AC |
| Nominal voltage | 230 |
| Line construction type | Overhead |
| General route description | The approximately 1-mile greenfield route exits the proposed Stoney Creek substation heading Southeast to the assumed Slykerville substation location in Luzerne County and Carbon County, PA. |

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| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, flat lands, with elevation ranging from a high of 1,798 ft above sea level to a low of 1,618 ft above sea level. The Project is entirely located entirely within the Anthracite Subregion Level IV ecoregion. According to the NLCD, the Project area largely consists of deciduous forest, shrub/scrub, barren land, and developed, open space. |
| Right-of-way width by segment | The route will have a 125 ft ROW width. The proposed ROW will be an expansion of existing transmission line corridors for approximately 44% of the route length, the remainder will be greenfield ROW. The proposed route will be greenfield |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). |
| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses numerous aquatic resources, including wetlands, lakes/ponds, and streams but most features could be spanned & avoided with minimal impacts. According to FEMA, no 100-year floodplains or regulated floodways are crossed by the route. This represents total amount of features crossed by the route & impacts from the Project would be significantly less. No major watercourses are crossed which would require agency authorizations for navigable water and/or State Scenic River crossings. No fatal flaws have been identified for the Project. No previously recorded archaeological sites, cemeteries, & architectural resources were recorded within the route. Also, no historic districts are crossed by the proposed route. Five federally listed species (3 endangered and 2 proposed) have known ranges along the proposed route. No critical habitat for any federally listed species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. See Attachment 08 – Permitting Plan. |
| Tower characteristics | Approximately 100% of the proposed structures will be a single circuit 230kV steel monopole in a vertical conductor configuration utilizing braced post insulators. All structures will be self-supporting. See structure drawing set included in Attachment 10. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |

| Component Cost Details - In Current Year $ | |
|---|---|
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $7,455,730.00 |
| Component cost (in-service year) | $8,435,475.00 |

## Greenfield Transmission Line Component

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|---|---|---|
| Component title | E-18-B) Montour-Catawissa 230kV | |
| Project description | Proprietary & Confidential Information | |
| Point A | Montour | |
| Point B | Catawissa | |
| Point C | | |
| | Normal ratings | Emergency ratings |
| Summer (MVA) | 1573.000000 | 1809.000000 |
| Winter (MVA) | 1648.000000 | 1896.000000 |
| Conductor size and type | 2 bundled 1590 KCMIL ACSS/MA3 54/19 Falcon | |

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|---|---|
| Nominal voltage | AC |
| Nominal voltage | 230 |
| Line construction type | Overhead |
| General route description | The approximately 17-mile route runs southeast from the existing Montour substation to the proposed Catawissa substation. The route parallels about 5 miles of the existing PPL Montour to Columbia 230 kV corridor and the PPL Columbia to Frackville 230 kV corridor where possible. The route crosses through Montour County and Columbia County in Pennsylvania. |
| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, flat lands, with intermittent peaks of elevation ranging from a high of 1,196 ft above sea level to a low of 450 ft above sea level. The Project is located within 2 Level IV ecoregions (North Sandstone Ridges, and Northern Shale Valleys). According to the NLCD, the Project area largely consists of deciduous forest, cultivated cropland, hay/pasture, mixed forest, open water, and developed, open space. |
| Right-of-way width by segment | The route will have a 125 ft ROW width. The proposed ROW will be an expansion of existing transmission line corridors for approximately 52% of the route length, the remainder will be greenfield ROW. The proposed route will be greenfield |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). |

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|---|---|
| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses numerous aquatic resources, including wetlands, lakes/ponds, and streams but most features could be spanned & avoided with minimal impacts. According to FEMA, multiple 100-year floodplains are crossed by the route. This represent total amount of features crossed by the route & impacts from the Project would be significantly less. The proposed Project crosses the Susquehanna River which may require agency authorizations for navigable water and/or State Scenic River crossings. No fatal flaws have been identified for the Project. Multiple previously recorded archaeological sites & architectural resources were recorded within the vicinity of the route. However, no cemeteries or historic districts are crossed by the proposed route. Six federally listed species (3 endangered, and 3 proposed) have known ranges along the proposed route. Critical habitat for one federally listed freshwater mussel species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed route. See Attachment 08 – Permitting Plan. |
| Tower characteristics | Approximately 94% of the proposed structures will be a single circuit 230kV steel monopole in a vertical conductor configuration utilizing braced post insulators. Approximately 6% of the proposed structures will be single circuit 230kV 3-Pole structures with horizontal conductor configuration for transmission crossings. All structures will be self-supporting. See structure drawing set included in Attachment 10. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |

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| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $66,702,810.00 |
| Component cost (in-service year) | $75,468,107.00 |

## Greenfield Transmission Line Component

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|---|---|
| Component title | E-20-A) Catawissa - Stoney Creek 500kV |
| Project description | Proprietary & Confidential Information |
| Point A | Catawissa |
| Point B | Stoney Creek |
| Point C | |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 5210.000000 | 5803.000000 |
| Winter (MVA) | 6173.000000 | 6697.000000 |

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|---|---|
| Conductor size and type | 3 bundled 1780 KCMIL ACSS/MA3 84/19 Chukar |
| Nominal voltage | AC |
| Nominal voltage | 500 |
| Line construction type | Overhead |
| General route description | The approximately 26-mile route heads southeast from the proposed Catawissa substation and travels 10-miles through Columbia County, PA. The route turns east near the Schuylkill County line and continues for 16- miles before turning south to parallel the Harwood - Siegfried 230kV corridor and terminating into the proposed Stony Creek substation. |

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| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, flat lands, with elevation ranging from a high of 1,877 ft above sea level to a low of 838 ft above sea level. The Project is located within 3 Level IV ecoregions (Anthracite Subregion, North Sandstone Ridges, and Northern Shale Valleys). According to the NLCD, the Project area largely consists of deciduous forest, shrub/scrub, barren land, and developed, open space. |
| Right-of-way width by segment | The route will have a 200 ft ROW width. The proposed ROW will be an expansion of existing transmission line corridors for approximately 5% of the route length, the remainder will be greenfield ROW. The proposed route will be greenfield. |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). |
| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses numerous aquatic resources, including wetlands, lakes/ponds, and streams but most features could be spanned & avoided with minimal impacts. According to FEMA, multiple 100-year floodplains are crossed by the route. This represent total amount of features crossed by the route & impacts from the Project would be significantly less. No major watercourses are which will require agency authorizations for navigable water and/or State Scenic River crossings. No fatal flaws have been identified for the Project. Multiple previously recorded archaeological sites & architectural resources were recorded within the vicinity of the route. However, no cemeteries or historic districts are crossed by the proposed route. Five federally listed species (3 endangered, and 2 proposed) have known ranges along the proposed route. No critical habitat for any federally listed species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed route. See Attachment 08 – Permitting Plan. |
| Tower characteristics | The proposed structures will mostly be single circuit 500kV lattice self-supporting or guyed-v towers in a horizontal conductor configuration. Delta configuration may be required in some locations. All angle structures will be self-supporting. See structure drawing set included in Attachment 10. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |

| Component Cost Details - In Current Year $ | |
|---|---|
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $130,558,907.00 |
| Component cost (in-service year) | $147,715,420.00 |

## Greenfield Transmission Line Component

| | | |
|---|---|---|
| Component title | E-28-B) Frackville/Columbia - Catawissa 230kV Loop-In | |
| Project description | Proprietary & Confidential Information | |
| Point A | Columbia | |
| Point B | Catawissa | |
| Point C | Frackville | |
| | Normal ratings | Emergency ratings |
| Summer (MVA) | 1573.000000 | 1809.000000 |
| Winter (MVA) | 1648.000000 | 1896.000000 |
| Conductor size and type | 2 bundled 1590 KCMIL ACSS/MA3 54/19 Falcon | |

| | |
|---|---|
| Nominal voltage | AC |
| Nominal voltage | 230 |
| Line construction type | Overhead |
| General route description | The approximately 2-mile route travels northeast from the existing Frackville - Colombia 230kV corridor to proposed Catawissa substation in Colombia County, PA. |
| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, flat lands and rolling terrain, with elevation ranging from a high of 949 ft above sea level to a low of 697 ft above sea level. The Project is located within 2 Level IV ecoregions (North Sandstone Ridges, and Northern Shale Valleys). According to the NLCD, the Project area largely consists of deciduous forest, cultivated cropland, hay/pasture, and developed, open space. |
| Right-of-way width by segment | The route will have a 150 ft ROW width. .The proposed route will be greenfield. |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). |
| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses multiple aquatic resources, including wetlands, lakes/ponds, and streams but most features could be spanned & avoided with minimal impacts. According to FEMA, one 100-year floodplain is crossed by the route. This represents total amount of features crossed by the route & impacts from the Project would be significantly less. The proposed Project does not cross any waterways which will require agency authorizations for navigable water and/or State Scenic River crossings. No fatal flaws have been identified for the Project. No previously recorded archaeological sites, cemeteries, & architectural resources were recorded within the route. Also, no historic districts are crossed by the proposed route. Four federally listed species (3 endangered, and 1 proposed) have known ranges along the proposed route. No critical habitat for any federally listed species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed route. See Attachment 08 – Permitting Plan. |

| | |
|---|---|
| Tower characteristics | The proposed structures will be a single circuit 230kV steel monopole in a vertical conductor configuration utilizing braced post insulators. All structures will be self-supporting. See structure drawing set included in Attachment 10. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $16,792,983.00 |
| Component cost (in-service year) | $18,999,720.00 |

## Greenfield Transmission Line Component

| | |
|---|---|
| Component title | E-31-A) Mountain Stone - Westwood 765kV |
| Project description | Proprietary & Confidential Information |
| Point A | Mountain Stone |
| Point B | Westwood |
| Point C | |

| | Normal ratings | Emergency ratings |
|---|---|---|

| | | |
|---|---|---|
| Summer (MVA) | 6904.000000 | 7690.000000 |
| Winter (MVA) | 8180.000000 | 8874.000000 |
| Conductor size and type | 6 bundled 715 KCMIL ACSR/GA2 Redwing | |
| Nominal voltage | AC | |
| Nominal voltage | 765 | |
| Line construction type | Overhead | |
| General route description | The approximately 62-mile route heads north from the proposed Mountain Stone substation for approximately 18 miles through Perry County and Juniata County, Pennsylvania before heading east for the remaining approximately 44 miles through Northumberland County and Schuylkill County, Pennsylvania. | |
| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, rolling terrain with intermittent peaks and valleys, with elevation within the Project ranging from a high of 1,751 ft above sea level to a low of 379 ft above sea level. The Project is located within 4 Level IV ecoregions (Anthracite Subregion, North Sandstone Ridges, Northern Dissected Ridges and Knobs, and Northern Shale Valleys. According to the NLCD, the Project area largely consists of deciduous forest, cultivated cropland, hay/pasture, mixed forest, open water, and developed, open space. | |
| Right-of-way width by segment | The majority of the route, approximately 99%, will have a ROW width of 200 ft. Approximately 1% of the route will have a ROW width of 175 ft in more congested areas. The proposed ROW will be an expansion of existing transmission line corridors for approximately 31% of the route length, the remainder will be greenfield ROW. | |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. | |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). | |

| | |
|---|---|
| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses numerous aquatic resources, including wetlands, lakes/ponds, and streams but most features could be spanned & avoided with minimal impacts. According to FEMA, multiple 100-year floodplains are crossed by the route. This represent total amount of features crossed by the route & impacts from the Project would be significantly less. The proposed Project crosses the Susquehanna River, which may require agency authorizations for navigable water and/or State Scenic River crossings. No fatal flaws have been identified for the Project. Multiple previously recorded archaeological sites, cemeteries, & architectural resources were recorded within the vicinity of the route. However, no historic districts are crossed by the proposed route. Seven federally listed species (3 endangered, and 4 proposed) have known ranges along the proposed route. The critical habitat for one federally listed freshwater mussel species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed route. See Attachment 8 - Permitting Plan. |
| Tower characteristics | The proposed structures will mostly be single circuit 765kV lattice self-supporting or guyed-v towers in a horizontal conductor configuration. Delta configuration may be required in some locations. All angle structures will be self-supporting. See structure drawing set included in Attachment 10. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |

| | |
|---|---|
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $355,293,214.00 |
| Component cost (in-service year) | $401,981,660.00 |

## Greenfield Transmission Line Component

| | |
|---|---|
| Component title | E-34-A) Westwood - Frackville 230kV |
| Project description | Proprietary & Confidential Information |
| Point A | Westwood |
| Point B | Frackville |
| Point C | |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 1573.000000 | 1809.000000 |
| Winter (MVA) | 1648.000000 | 1896.000000 |

| | |
|---|---|
| Conductor size and type | 2 bundled 1590 KCMIL ACSS/MA3 54/19 Falcon |
| Nominal voltage | AC |
| Nominal voltage | 230 |
| Line construction type | Overhead |
| General route description | The approximately 2 mile route parallels the Frackville to Eldred 230 kV where feasible between proposed Westwood and existing Frackville substations. |
| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, sloped terrain, with elevation within the Project ranging from a high of 1,701 ft above sea level to a low of 1,148 ft above sea level. The Project is located within 2 Level IV ecoregions (Anthracite Subregion and North Sandstone Ridges). According to the NLCD, the Project area largely consists of deciduous forest, mixed forest, and developed, open space. |

| | |
|---|---|
| Right-of-way width by segment | The route will have a 125 ft ROW width. The proposed ROW will be an expansion of existing transmission line corridors for approximately 72% of the route length, the remainder will be greenfield ROW. The proposed route will be greenfield. |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). |
| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses a single aquatic resource, (stream) and could be spanned & avoided with minimal impacts. According to FEMA, no 100-year floodplains are crossed by the route. This represent total amount of features crossed by the route & impacts from the Project would be significantly less. No major watercourses are which will require agency authorizations for navigable water and/or State Scenic River crossings. No fatal flaws have been identified for the Project. No previously recorded archaeological sites, cemeteries, & architectural resources were recorded within the route. Also, no historic districts are crossed by the proposed route. Four federally listed species (2 endangered, and 2 proposed) have known ranges along the proposed route. No critical habitat for any federally listed species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed route. See Attachment 8 - Permitting Plan. |
| Tower characteristics | The majority, approximately 70% of the proposed structures will be a single circuit 230kV steel monopole in a vertical conductor configuration utilizing braced post insulators. Approximately 30% of the proposed structures will be single circuit 230kV 3-Pole structures with horizontal conductor configuration for transmission crossings. All structures will be self-supporting. See structure drawing set included in Attachment 10. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |

| | |
|---|---|
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $10,419,841.00 |
| Component cost (in-service year) | $11,789,095.00 |

## Greenfield Transmission Line Component

| | |
|---|---|
| Component title | E-35-A) Westwood - Spicewood 765kV |
| Project description | Proprietary & Confidential Information |
| Point A | Westwood |
| Point B | Spicewood |
| Point C | |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 6904.000000 | 7690.000000 |
| Winter (MVA) | 8180.000000 | 8874.000000 |

| | |
|---|---|
| Conductor size and type | 6 bundled 715 KCMIL ACSR/GA2 Redwing |
| Nominal voltage | AC |
| Nominal voltage | 765 |
| Line construction type | Overhead |

| | |
|---|---|
| General route description | The approximately 38-mile route exits Westwood substation and travels east through Schuylkill County and Carbon County, Pennsylvania, paralleling the Siegfried to Frackville 230kV corridor where feasible. |
| Terrain description | A detailed inspection of the USGS topographic map reveals relatively consistent, sloping terrain with moderate peaks and valleys, with elevation ranging from a high of 1,736 ft above sea level to a low of 420 ft above sea level. The Project is located within 3 Level IV ecoregions (Anthracite Subregion, North Sandstone Ridges, and Northern Shale Valleys). According to the NLCD, the Project area largely consists of deciduous forest, cultivated cropland, hay/pasture, mixed forest, open water, scrub/shrub, wetlands and developed, open space. |
| Right-of-way width by segment | The majority of the route, approximately 100%, will have a ROW width of 200 ft. The proposed ROW will be an expansion of existing transmission line corridors for approximately 13% of the route length, the remainder will be greenfield ROW. |
| Electrical transmission infrastructure crossings | See Attachment 4 (Google Earth .kmz file) for crossing locations. |
| Civil infrastructure/major waterway facility crossing plan | See Attachment 5 (Crossing Plan) and Attachment 4 (Google Earth .kmz file). |
| Environmental impacts | Environmental constraints were evaluated within the vicinity of the proposed project centerline and are manageable through avoidance, minimization, and mitigation strategies incorporated at the onset of the routing/siting process. The proposed route crosses numerous aquatic resources, including wetlands, lakes/ponds, and streams but most features could be spanned & avoided with minimal impacts. According to FEMA, multiple 100-year floodplains are crossed by the route. This represent total amount of features crossed by the route & impacts from the Project would be significantly less. No major watercourses are crossed which will require agency authorizations for navigable water and/or State Scenic River crossings. No fatal flaws have been identified for the Project. Multiple previously recorded archaeological sites, cemeteries, & architectural resources were recorded within the vicinity of the route. However, no historic districts are crossed by the proposed route. Six federally listed species (3 endangered, 1 threatened, and 2 proposed) have known ranges along the proposed route. No critical habitat for any federally listed species intersects the route. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination, mitigation, & an in-depth routing/siting process. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed route. See Attachment 8 - Permitting Plan. |

| | |
|---|---|
| Tower characteristics | The proposed structures will mostly be single circuit 765kV lattice self-supporting or guyed-v towers in a horizontal conductor configuration. Delta configuration may be required in some locations. All angle structures will be self-supporting. See structure drawing set included in Attachment 10. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $209,402,951.00 |
| Component cost (in-service year) | $236,920,219.00 |

## Greenfield Substation Component

| | |
|---|---|
| Component title | B-19-B) Buttermilk Falls 765kV Substation |
| Project description | Proprietary & Confidential Information |
| Substation name | Buttermilk Falls |
| Substation description | AC Air Insulated Substation (AIS): New proposed 765-500kV Substation. New 765kV breaker and a half (BAAH) switchyard with one (1) bay, two (2) line terminals, five (5) 765kV, 5000A, 63kAIC breakers, two (2) 765kV, 300MVAR shunt line reactor, one (1) 765-500kV, 3125 MVA transformer bank. New 500kV Double breaker double bus (DBDB) switchyard with three (3) bays, three (3) line terminals, six (6) 500kV, 5000A, 63kAIC breakers. |

| | |
|---|---|
| Nominal voltage | AC |
| Nominal voltage | 765/500 |

## Transformer Information

| | Name | Capacity (MVA) |
|---|---|---|
| Transformer | 765-500kV Xfrm #1 | 3125 |

| | High Side | Low Side | Tertiary |
|---|---|---|---|
| Voltage (kV) | 765 | 500 | |

| | |
|---|---|
| Major equipment description | AC Air Insulated Substation (AIS): New proposed 765-500kV Substation. New 765kV breaker and a half (BAAH) switchyard with one (1) bay, two (2) line terminals, five (5) 765kV, 5000A, 63kAIC breakers, two (2) 765kV, 300MVAR shunt line reactor, one (1) 765-500kV, 3125 MVA transformer bank. New 500kV Double breaker double bus (DBDB) switchyard with three (3) bays, three (3) line terminals, six (6) 500kV, 5000A, 63kAIC breakers. |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 3125.000000 | 4000.000000 |
| Winter (MVA) | 3500.000000 | 4250.000000 |

| | |
|---|---|
| Environmental assessment | Environmental constraints were evaluated within the vicinity of the proposed project Environmental constraints were evaluated within the proposed substation parcel and are manageable through avoidance, minimization, and mitigation strategies. The proposed parcel contains one NWI-mapped wetlands. According to FEMA, no portion of the proposed substation parcel contains any 100-year floodplains or regulated floodways. No major watercourses are located within the proposes parcel. However, it is assumed any overland flow will drain to Trout Run and its downstream tributaries. No fatal flaws have been identified for the Project. Based on publicly available data, no previously recorded archaeological sites, cemeteries, or architectural resources were recorded within the immediate vicinity of the proposed substation parcel. Additionally, no historic districts located within the immediate vicinity of the Site. Four federally (2 endangered and two proposed) have known ranges within the vicinity of the site. No critical habitat was identified within the vicinity of the proposed substation parcel. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination and mitigation. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed project. See Attachment 08 – Permitting Plan. |
| Outreach plan | The proposer is committed to informing the public about the project to the greatest extent practicable while working with all interested stakeholders including landowners through a robust public outreach program to address and respond to community concerns. A well-designed public outreach program can have numerous benefits, including fostering cooperative relationships 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 proposer'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 in order to develop a project that has the least amount of cultural, environmental, and social impacts. The plans will reflect avoidance of impacts rather than mitigation. However, in some cases, if avoidance is not possible, then the proposer will involve landowners and other stakeholders in providing appropriate and practical mitigation measures. Public outreach activities by the proposer will begin following project award. |

| | |
|---|---|
| Land acquisition plan | See Attachment 9. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $170,291,024.00 |
| Component cost (in-service year) | $192,668,663.00 |

## Greenfield Substation Component

| | |
|---|---|
| Component title | B-06-C) Mountain Stone 765kV Substation |
| Project description | Proprietary & Confidential Information |
| Substation name | Mountain Stone |
| Substation description | AC Air Insulated Substation (AIS): New proposed 765-500kV Substation. New 765kV Double breaker double bus (DBDB) switchyard with two (2) bays, two (2) line terminals, eight (8) 765kV, 5000A, 63kAIC breakers, two (2) 765kV, 300MVAR shunt line reactors, two (2) 765-500kV, 3125 MVA transformer banks. |
| Nominal voltage | AC |

| | |
|---|---|
| Nominal voltage | 765/500 |

## Transformer Information

| | Name | Capacity (MVA) |
|---|---|---|
| Transformer | 765-500kV Xfmr#1 | 3125 |

| | High Side | Low Side | Tertiary |
|---|---|---|---|
| Voltage (kV) | 765 | 500 | |

| | Name | Capacity (MVA) |
|---|---|---|
| Transformer | 765-500kV Xfmr#2 | 3125 |

| | High Side | Low Side | Tertiary |
|---|---|---|---|
| Voltage (kV) | 765 | 500 | |

| | |
|---|---|
| Major equipment description | AC Air Insulated Substation (AIS): New proposed 765-500kV Substation. New 765kV Double breaker double bus (DBDB) switchyard with two (2) bays, two (2) line terminals, eight (8) 765kV, 5000A, 63kAIC breakers, two (2) 765kV, 300MVAR shunt line reactors, two (2) 765-500kV, 3125 MVA transformer banks. |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 3125.000000 | 4000.000000 |
| Winter (MVA) | 3500.000000 | 4250.000000 |

| | |
|---|---|
| Environmental assessment | Environmental constraints were evaluated within the proposed substation parcel and are manageable through avoidance, minimization, and mitigation strategies. The proposed parcel contains one NWI-mapped wetlands. According to FEMA, no portion of the proposed substation parcel contains any 100-year floodplains or regulated floodways. No major watercourses are located within the proposes parcel. However, it is assumed any overland flow will drain to Trout Run and its downstream tributaries. No fatal flaws have been identified for the Project. Based on publicly available data, no previously recorded archaeological sites, cemeteries, or architectural resources were recorded within the immediate vicinity of the proposed substation parcel. Additionally, no historic districts located within the immediate vicinity of the Site. Four federally (2 endangered and two proposed) have known ranges within the vicinity of the site. No critical habitat was identified within the vicinity of the proposed substation parcel. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination and mitigation. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed project. See Attachment 08 – Permitting Plan. |
| Outreach plan | The proposer is committed to informing the public about the project to the greatest extent practicable while working with all interested stakeholders including landowners through a robust public outreach program to address and respond to community concerns. A well-designed public outreach program can have numerous benefits, including fostering cooperative relationships 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 proposer'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 in order to develop a project that has the least amount of cultural, environmental, and social impacts. The plans will reflect avoidance of impacts rather than mitigation. However, in some cases, if avoidance is not possible, then the proposer will involve landowners and other stakeholders in providing appropriate and practical mitigation measures. Public outreach activities by the proposer will begin following project award. |
| Land acquisition plan | See Attachment 9. |

| | |
|---|---|
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $214,962,751.00 |
| Component cost (in-service year) | $243,210,621.00 |

## Greenfield Substation Component

| | |
|---|---|
| Component title | E-17-D) Catawissa 500kV Substation |
| Project description | Proprietary & Confidential Information |
| Substation name | Catawissa |
| Substation description | AC Air Insulated Substation (AIS): New proposed 500-230kV Substation. New 500kV double breaker double bus (DBDB) switchyard with three (3) bays, three (3) line terminals, eight (8) 500kV, 5000A, 63kAIC breakers, two (2) 500-230kV, 1700 MVA transformer banks. New 230kV switchyard with two (2) bays, three (3) line terminals, four (4) 230kV, 5000A, 63kAIC breakers. |
| Nominal voltage | AC |
| Nominal voltage | 500/230 |

## Transformer Information

| | Name | | Capacity (MVA) |
|---|---|---|---|
| Transformer | 500-230kV Xfmr #1 | | 1700 |
| | High Side | Low Side | Tertiary |
| Voltage (kV) | 500 | 230 | |

| | Name | | Capacity (MVA) |
|---|---|---|---|
| Transformer | 500-230kV Xfmr #2 | | 1700 |
| | High Side | Low Side | Tertiary |
| Voltage (kV) | 500 | 230 | |

| | |
|---|---|
| Major equipment description | AC Air Insulated Substation (AIS): New proposed 500-230kV Substation. New 500kV double breaker double bus (DBDB) switchyard with three (3) bays, three (3) line terminals, eight (8) 500kV, 5000A, 63kAIC breakers, two (2) 500-230kV, 1700 MVA transformer banks. New 230kV switchyard with two (2) bays, three (3) line terminals, four (4) 230kV, 5000A, 63kAIC breakers. |

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 1500.000000 | 2000.000000 |
| Winter (MVA) | 1500.000000 | 2000.000000 |

| | |
|---|---|
| Environmental assessment | Environmental constraints were evaluated within the proposed substation parcel and are manageable through avoidance, minimization, and mitigation strategies. The proposed parcel contains one NWI-mapped wetlands. According to FEMA, no portion of the proposed substation parcel contains any 100-year floodplains or regulated floodways. No major watercourses are located within the proposes parcel. However, it is assumed any overland flow will drain to Catawissa Creek and its downstream tributaries. No fatal flaws have been identified for the Project. Based on publicly available data, no previously recorded archaeological sites, cemeteries, or architectural resources were recorded within the immediate vicinity of the proposed substation parcel. Additionally, no historic districts located within the immediate vicinity of the Site. Four federally listed species (3 endangered and 1 proposed) have known ranges within the vicinity of the site. No critical habitat was identified within the vicinity of the proposed substation parcel. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination and mitigation. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed project. See Attachment 08 – Permitting Plan. |
| Outreach plan | The proposer is committed to informing the public about the project to the greatest extent practicable while working with all interested stakeholders including landowners through a robust public outreach program to address and respond to community concerns. A well-designed public outreach program can have numerous benefits, including fostering cooperative relationships 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 proposer'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 in order to develop a project that has the least amount of cultural, environmental, and social impacts. The plans will reflect avoidance of impacts rather than mitigation. However, in some cases, if avoidance is not possible, then the proposer will involve landowners and other stakeholders in providing appropriate and practical mitigation measures. Public outreach activities by the proposer will begin following project award. |
| Land acquisition plan | See Attachment 9. |

| | |
|---|---|
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $117,287,040.00 |
| Component cost (in-service year) | $132,699,520.00 |

## Greenfield Substation Component

| | |
|---|---|
| Component title | E-19-C) Stoney Creek 500kV Substation |
| Project description | Proprietary & Confidential Information |
| Substation name | Stoney Creek |
| Substation description | AC Air Insulated Substation (AIS): New proposed 500-230kV Substation. New 500kV double breaker double bus (DBDB) switchyard with three (3) bays, three (3) line terminals, eight (8) 500kV, 5000A, 63kAIC breakers, one (1) 500kV, +/- 500 MVAR STATCOM, two (2) 500-230kV, 1700 MVA transformer banks. New 230kV DBDB switchyard with one (1) bay, one (1) line terminal, four (4) 230kV, 5000A, 63kAIC breakers. |
| Nominal voltage | AC |
| Nominal voltage | 500/230 |

## Transformer Information

| | Name | | Capacity (MVA) |
|---|---|---|---|
| Transformer | 500-230kV Xfmr #1 | | 1700 |
| | High Side | Low Side | Tertiary |
| Voltage (kV) | 500 | 230 | |

| | Name | | Capacity (MVA) |
|---|---|---|---|
| Transformer | 500-230kV Xfmr #2 | | 1700 |
| | High Side | Low Side | Tertiary |
| Voltage (kV) | 500 | 230 | |

Major equipment description

AC Air Insulated Substation (AIS): New proposed 500-230kV Substation. New 500kV double breaker double bus (DBDB) switchyard with three (3) bays, three (3) line terminals, eight (8) 500kV, 5000A, 63kAIC breakers, one (1) 500kV, +/- 500 MVAR STATCOM, two (2) 500-230kV, 1700 MVA transformer banks. New 230kV DBDB switchyard with one (1) bay, one (1) line terminal, four (4) 230kV, 5000A, 63kAIC breakers.

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 1500.000000 | 2000.000000 |
| Winter (MVA) | 1500.000000 | 2000.000000 |

| | |
|---|---|
| Environmental assessment | Environmental constraints were evaluated within the proposed substation parcel and are manageable through avoidance, minimization, and mitigation strategies. The proposed parcel contains one NWI-mapped wetlands. According to FEMA, no portion of the proposed substation parcel contains any 100-year floodplains or regulated floodways. No major watercourses are located within the proposes parcel. However, it is assumed any overland flow will drain to Catawissa Creek and its downstream tributaries. No fatal flaws have been identified for the Project. Based on publicly available data, no previously recorded archaeological sites, cemeteries, or architectural resources were recorded within the immediate vicinity of the proposed substation parcel. Additionally, no historic districts located within the immediate vicinity of the Site. Four federally listed species (2 endangered and 2 proposed) have known ranges within the vicinity of the site. No critical habitat was identified within the vicinity of the proposed substation parcel. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination and mitigation. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed project. See Attachment 08 – Permitting Plan. |
| Outreach plan | The proposer is committed to informing the public about the project to the greatest extent practicable while working with all interested stakeholders including landowners through a robust public outreach program to address and respond to community concerns. A well-designed public outreach program can have numerous benefits, including fostering cooperative relationships 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 proposer'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 in order to develop a project that has the least amount of cultural, environmental, and social impacts. The plans will reflect avoidance of impacts rather than mitigation. However, in some cases, if avoidance is not possible, then the proposer will involve landowners and other stakeholders in providing appropriate and practical mitigation measures. Public outreach activities by the proposer will begin following project award. |
| Land acquisition plan | See Attachment 9. |

| | |
|---|---|
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $165,942,615.00 |
| Component cost (in-service year) | $187,748,837.00 |

## Greenfield Substation Component

| | |
|---|---|
| Component title | E-32-A) Westwood 765kV Substation |
| Project description | Proprietary & Confidential Information |
| Substation name | Westwood |
| Substation description | AC Air Insulated Substation (AIS): New proposed 765-230kV Substation. New 765kV Double breaker double bus (DBDB) switchyard with two (2) bays, two (2) line terminals, six (6) 765kV, 5000A, 63kAIC breakers, two (2) 765kV, 300MVAR shunt line reactors, one (1) 765-230kV, 1400 MVA transformer bank. |
| Nominal voltage | AC |
| Nominal voltage | 765/230 |

## Transformer Information

| | Name | Capacity (MVA) |
|---|---|---|
| Transformer | 765-230kV Xfmr #1 | 1400 |

| | High Side | Low Side | Tertiary |
|---|---|---|---|
| Voltage (kV) | 765 | 230 | |

Major equipment description

AC Air Insulated Substation (AIS): New proposed 765-230kV Substation. New 765kV Double breaker double bus (DBDB) switchyard with two (2) bays, two (2) line terminals, six (6) 765kV, 5000A, 63kAIC breakers, two (2) 765kV, 300MVAR shunt line reactors, one (1) 765-230kV, 1400 MVA transformer bank.

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 1500.000000 | 2000.000000 |
| Winter (MVA) | 1500.000000 | 2000.000000 |

Environmental assessment

Environmental constraints were evaluated within the proposed substation parcel and are manageable through avoidance, minimization, and mitigation strategies. The proposed parcel contains no NWI-mapped wetlands. According to FEMA, no portion of the proposed substation parcel contains any 100-year floodplains or regulated floodways. No major watercourses are located within the proposes parcel. However, it is assumed any overland flow will drain to Dry Run and its downstream tributaries. No fatal flaws have been identified for the Project. Based on publicly available data, no previously recorded archaeological sites, cemeteries, or architectural resources were recorded within the immediate vicinity of the proposed substation parcel. Additionally, no historic districts located within the immediate vicinity of the Site. Four federally listed species (2 endangered and 2 proposed) have known ranges within the vicinity of the site. No critical habitat was identified within the vicinity of the proposed substation parcel. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination and mitigation. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed project. See Attachment 08 – Permitting Plan.

| | |
|---|---|
| Outreach plan | The proposer is committed to informing the public about the project to the greatest extent practicable while working with all interested stakeholders including landowners through a robust public outreach program to address and respond to community concerns. A well-designed public outreach program can have numerous benefits, including fostering cooperative relationships 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 proposer'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 in order to develop a project that has the least amount of cultural, environmental, and social impacts. The plans will reflect avoidance of impacts rather than mitigation. However, in some cases, if avoidance is not possible, then the proposer will involve landowners and other stakeholders in providing appropriate and practical mitigation measures. Public outreach activities by the proposer will begin following project award. |
| Land acquisition plan | See Attachment 9. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |

| | |
|---|---|
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $134,208,303.00 |
| Component cost (in-service year) | $151,844,376.00 |

## Greenfield Substation Component

| | |
|---|---|
| Component title | E-36-A) Spicewood 765kV Substation |
| Project description | Proprietary & Confidential Information |
| Substation name | Spicewood |
| Substation description | AC Air Insulated Substation (AIS): New proposed 765-500-230kV Substation. New 765kV Double breaker double bus (DBDB) switchyard with one (1) bay, one (1) line terminal, three (3) 765kV, 5000A, 63kAIC breakers, one (1) 765kV, 300MVAR shunt line reactors, one (1) 765-500, 3125 MVA transformer bank. New 500kV double breaker double bus (DBDB) switchyard with two (2) bays, two (2) line terminals, seven (7) 500kV, 5000A, 63kAIC breakers, two (2) 500-230kV, 1700 MVA transformer banks. New 230kV breaker and a half (BAAH) switchyard with two (2) bays, four (4) line terminals, eight (8) 230kV, 5000A, 63kAIC breakers. |
| Nominal voltage | AC |
| Nominal voltage | 765/500/230 |

## Transformer Information

| | Name | | Capacity (MVA) | |
|---|---|---|---|---|
| Transformer | 765-500kV Xfmr #1 | | 3125 | |
| | High Side | Low Side | | Tertiary |
| Voltage (kV) | 765 | 500 | | |
| | Name | | Capacity (MVA) | |
| Transformer | 765-500kV Xfmr #2 | | 1700 | |

| | High Side | Low Side | Tertiary |
|---|---|---|---|
| Voltage (kV) | 500 | 230 | |

| | Name | Capacity (MVA) |
|---|---|---|
| Transformer | 765-500kV Xfmr #3 | 1700 |

| | High Side | Low Side | Tertiary |
|---|---|---|---|
| Voltage (kV) | 500 | 230 | |

Major equipment description

AC Air Insulated Substation (AIS): New proposed 765-500-230kV Substation. New 765kV Double breaker double bus (DBDB) switchyard with one (1) bay, one (1) line terminal, three (3) 765kV, 5000A, 63kAIC breakers, one (1) 765kV, 300MVAR shunt line reactors, one (1) 765-500, 3125 MVA transformer bank. New 500kV double breaker double bus (DBDB) switchyard with two (2) bays, two (2) line terminals, seven (7) 500kV, 5000A, 63kAIC breakers, two (2) 500-230kV, 1700 MVA transformer banks. New 230kV breaker and a half (BAAH) switchyard with two (2) bays, four (4) line terminals, eight (8) 230kV, 5000A, 63kAIC breakers.

| | Normal ratings | Emergency ratings |
|---|---|---|
| Summer (MVA) | 3125.000000 | 4000.000000 |
| Winter (MVA) | 3500.000000 | 4250.000000 |

| | |
|---|---|
| Environmental assessment | Environmental constraints were evaluated within the proposed substation parcel and are manageable through avoidance, minimization, and mitigation strategies. The proposed parcel contains no NWI-mapped wetlands. According to FEMA, no portion of the proposed substation parcel contains any 100-year floodplains or regulated floodways. No major watercourses are located within the proposes parcel. However, it is assumed any overland flow will drain to Aquashicola Creek and its downstream tributaries. No fatal flaws have been identified for the Project. Based on publicly available data, no previously recorded archaeological sites, cemeteries, or architectural resources were recorded within the immediate vicinity of the proposed substation parcel. Additionally, no historic districts located within the immediate vicinity of the Site. Five federally listed species (3 endangered, 1 threatened, and 1 proposed) have known ranges within the vicinity of the site. No critical habitat was identified within the vicinity of the proposed substation parcel. If suitable habitat is identified or regulations change, agency coordination & species-specific surveys will occur. The project intends to follow suggested tree removal windows & general time of year restrictions to avoid/minimize impacts to species such as federally listed bats and migratory birds, among others. Industry standard construction BMPs & avoidance and minimization measures will be used to prevent unanticipated impacts to natural resources to the maximum extent practicable. There are no environmental concerns with the proposed project that cannot be addressed through agency coordination and mitigation. No ‘Major Federal Action’ that would invoke NEPA is anticipated to result from the proposed project. See Attachment 08 – Permitting Plan. |
| Outreach plan | The proposer is committed to informing the public about the project to the greatest extent practicable while working with all interested stakeholders including landowners through a robust public outreach program to address and respond to community concerns. A well-designed public outreach program can have numerous benefits, including fostering cooperative relationships 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 proposer'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 in order to develop a project that has the least amount of cultural, environmental, and social impacts. The plans will reflect avoidance of impacts rather than mitigation. However, in some cases, if avoidance is not possible, then the proposer will involve landowners and other stakeholders in providing appropriate and practical mitigation measures. Public outreach activities by the proposer will begin following project award. |
| Land acquisition plan | See Attachment 9. |

| | |
|---|---|
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $234,022,718.00 |
| Component cost (in-service year) | $264,775,225.00 |

## Transmission Line Upgrade Component

| | |
|---|---|
| Component title | B-30-A) South Bend - Keystone 500kV terminal equipment upgrade |
| Project description | Proprietary & Confidential Information |
| Impacted transmission line | South Bend - Keystone 500kV |
| Point A | South Bend |
| Point B | Keystone |
| Point C | |
| Terrain description | Existing line to remain intact as-is. Proposal is to uprate remote end terminals at South Bend and Keystone to match conductor ratings. |

| | |
|---|---|
| Existing Line Physical Characteristics | |
| Operating voltage | 500 |
| Conductor size and type | Per transmission owner system. |
| Hardware plan description | Existing line to remain intact as-is. Proposal is to uprate remote end terminals at South Bend and Keystone to match conductor ratings. |
| Tower line characteristics | Existing line to remain intact as-is. Proposal is to uprate remote end terminals at South Bend and Keystone to match conductor ratings. |
| Proposed Line Characteristics | |

| | Designed | Operating |
|---|---|---|
| Voltage (kV) | 500.000000 | 500.000000 |
| | Normal ratings | Emergency ratings |
| Summer (MVA) | 3573.000000 | 4378.000000 |
| Winter (MVA) | 4050.000000 | 5194.000000 |

| | |
|---|---|
| Conductor size and type | N/A |
| Shield wire size and type | N/A |
| Rebuild line length | N/A |
| Rebuild portion description | Existing line to remain intact as-is. Proposal is to uprate remote end terminals at South Bend and Keystone to match conductor ratings. |
| Right of way | Existing right-of-way to remain as-is. Proposal is to uprate remote end terminals at South Bend and Keystone to match conductor ratings. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |

| | |
|---|---|
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $4,683,750.00 |
| Component cost (in-service year) | $4,683,750.00 |

## Transmission Line Upgrade Component

| | |
|---|---|
| Component title | B-32-A) Keystone-Juniata 500 kV terminal equipment upgrade |
| Project description | Proprietary & Confidential Information |
| Impacted transmission line | Keystone - Juniata 500kV |
| Point A | Keystone |
| Point B | Juniata |
| Point C | |
| Terrain description | Existing line to remain intact as-is. Proposal is to uprate terminal equipment to match conductor ratings. |
| Existing Line Physical Characteristics | |
| Operating voltage | 500 |
| Conductor size and type | Per transmission owner system. |
| Hardware plan description | Existing line to remain intact as-is. Proposal is to uprate terminal equipment to match conductor ratings. |

| | | |
|---|---|---|
| Tower line characteristics | Existing right-of-way to remain as-is. Proposal is to upgrade terminal equipment to match conductor ratings. | |
| Proposed Line Characteristics | | |
| | Designed | Operating |
| Voltage (kV) | 500.000000 | 500.000000 |
| | Normal ratings | Emergency ratings |
| Summer (MVA) | 2939.000000 | 3732.000000 |
| Winter (MVA) | 3618.000000 | 4423.000000 |
| Conductor size and type | N/A | |
| Shield wire size and type | N/A | |
| Rebuild line length | N/A | |
| Rebuild portion description | Existing line to remain intact as-is. Proposal is to uprate terminal equipment to match conductor ratings. | |
| Right of way | Existing right-of-way to remain as-is. Proposal is to upgrade terminal equipment to match conductor ratings. | |
| Construction responsibility | Proprietary & Confidential Information | |
| Benefits/Comments | Proprietary & Confidential Information | |
| Component Cost Details - In Current Year $ | | |
| Engineering & design | Proprietary & Confidential Information | |
| Permitting / routing / siting | Proprietary & Confidential Information | |
| ROW / land acquisition | Proprietary & Confidential Information | |
| Materials & equipment | Proprietary & Confidential Information | |
| Construction & commissioning | Proprietary & Confidential Information | |

| | |
|---|---|
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $4,683,750.00 |
| Component cost (in-service year) | $4,683,750.00 |

## Transmission Line Upgrade Component

| | |
|---|---|
| Component title | B-33-A) Mountaineer-Belmont 765 kV terminal equipment upgrade |
| Project description | Proprietary & Confidential Information |
| Impacted transmission line | Mountaineer - Belmont 765kV |
| Point A | Mountaineer |
| Point B | Belmont |
| Point C | |
| Terrain description | Existing line to remain intact as-is. Proposal is to uprate terminal equipment to match conductor ratings. |

Existing Line Physical Characteristics

| | |
|---|---|
| Operating voltage | 765 |
| Conductor size and type | Per transmission owner system. |
| Hardware plan description | Existing line to remain intact as-is. Proposal is to uprate terminal equipment to match conductor ratings. |
| Tower line characteristics | Existing right-of-way to remain as-is. Proposal is to upgrade terminal equipment to match conductor ratings. |

Proposed Line Characteristics

| | Designed | Operating |
|---|---|---|

| | | |
|---|---|---|
| Voltage (kV) | 765.000000 | 765.000000 |
| | Normal ratings | Emergency ratings |
| Summer (MVA) | 4558.000000 | 5523.000000 |
| Winter (MVA) | 5757.000000 | 5757.000000 |
| Conductor size and type | N/A | |
| Shield wire size and type | N/A | |
| Rebuild line length | N/A | |
| Rebuild portion description | Existing line to remain intact as-is. Proposal is to uprate terminal equipment to match conductor ratings. | |
| Right of way | Existing right-of-way to remain as-is. Proposal is to upgrade terminal equipment to match conductor ratings. | |
| Construction responsibility | Proprietary & Confidential Information | |
| Benefits/Comments | Proprietary & Confidential Information | |
| Component Cost Details - In Current Year $ | | |
| Engineering & design | Proprietary & Confidential Information | |
| Permitting / routing / siting | Proprietary & Confidential Information | |
| ROW / land acquisition | Proprietary & Confidential Information | |
| Materials & equipment | Proprietary & Confidential Information | |
| Construction & commissioning | Proprietary & Confidential Information | |
| Construction management | Proprietary & Confidential Information | |
| Overheads & miscellaneous costs | Proprietary & Confidential Information | |
| Contingency | Proprietary & Confidential Information | |
| Total component cost | $6,752,344.00 | |

| | |
|---|---|
| Component cost (in-service year) | $6,752,344.00 |

## Substation Upgrade Component

| | |
|---|---|
| Component title | B-01-A) Kammer substation upgrade |
| Project description | Proprietary & Confidential Information |
| Substation name | Kammer |
| Substation zone | AEP |
| Substation upgrade scope | Expand the existing breaker and a half (BAAH) 765kV Switchyard by adding (1) 345kV breaker and one line position. |

## Transformer Information

None

| | |
|---|---|
| New equipment description | Add (1) 765kV, 5000A, 63kAIC breaker and (1) line position. |
| Substation assumptions | Assumes required equipment upgrades occur in existing footprint. |
| Real-estate description | Based on publicly available parcel data and imagery, upgrades are expected to fit fully within existing fence line on incumbent owned property. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |

| | |
|---|---|
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $13,504,688.00 |
| Component cost (in-service year) | $13,504,688.00 |

## Substation Upgrade Component

| | |
|---|---|
| Component title | B-07-A) Juniata substation upgrade |
| Project description | Proprietary & Confidential Information |
| Substation name | Juniata |
| Substation zone | PPL |
| Substation upgrade scope | Expand the existing 500kV switchyard by adding (2) 500kV breakers to main busses. |

## Transformer Information

None

| | |
|---|---|
| New equipment description | Add (2) 5000A, 63kAIC breakers. |
| Substation assumptions | Assumes expansion of existing fence line to the southeast, remaining on utility owned property. Minor reconfiguration of an existing line entry may be required to support the addition of the proposed breaker/line positions. |
| Real-estate description | The substation fenceline likely requires expansion for at least one of the new terminations, but work can be contained on utility property. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |

| | |
|---|---|
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $9,952,969.00 |
| Component cost (in-service year) | $9,952,969.00 |

## Substation Upgrade Component

| | |
|---|---|
| Component title | B-34-A) Conemaugh circuit breaker upgrades |
| Project description | Proprietary & Confidential Information |
| Substation name | Conemaugh |
| Substation zone | PENELEC |
| Substation upgrade scope | Replace (9) 500kV breakers in existing switchyard. |

## Transformer Information

None

| | |
|---|---|
| New equipment description | Replace (9) 500kV breakers with 500kV, 5000A, 63kAIC breakers. |
| Substation assumptions | Assumes required equipment upgrades occur in existing footprint. |
| Real-estate description | Based on publicly available parcel data and imagery, upgrades are expected to fit fully within existing fence line on incumbent owned property. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |

Component Cost Details - In Current Year $

| | |
|---|---|
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $23,418,750.00 |
| Component cost (in-service year) | $23,418,750.00 |

## Substation Upgrade Component

| | |
|---|---|
| Component title | E-16-B) Montour substation upgrade |
| Project description | Proprietary & Confidential Information |
| Substation name | Montour |
| Substation zone | PPL |
| Substation upgrade scope | Add (1) new 230kV breaker to create (1) new line position. |

## Transformer Information

| | Name | Capacity (MVA) |
|---|---|---|
| Transformer | NA | NA |

| High Side | Low Side | Tertiary |
|---|---|---|

| | | | |
|---|---|---|---|
| Voltage (kV) | NA | NA | NA |
| New equipment description | Add (1) 230kV, 5000A, 63kAIC breaker. | | |
| Substation assumptions | Assumes required equipment upgrades occur in existing footprint. | | |
| Real-estate description | Based on publicly available parcel data and imagery, upgrades are expected to fit fully within existing fence line on incumbent owned property. | | |
| Construction responsibility | Proprietary & Confidential Information | | |
| Benefits/Comments | Proprietary & Confidential Information | | |
| Component Cost Details - In Current Year $ | | | |
| Engineering & design | Proprietary & Confidential Information | | |
| Permitting / routing / siting | Proprietary & Confidential Information | | |
| ROW / land acquisition | Proprietary & Confidential Information | | |
| Materials & equipment | Proprietary & Confidential Information | | |
| Construction & commissioning | Proprietary & Confidential Information | | |
| Construction management | Proprietary & Confidential Information | | |
| Overheads & miscellaneous costs | Proprietary & Confidential Information | | |
| Contingency | Proprietary & Confidential Information | | |
| Total component cost | $2,282,813.00 | | |
| Component cost (in-service year) | $2,282,813.00 | | |

## Substation Upgrade Component

| | |
|---|---|
| Component title | E-10-C) Slykerville (SLKY) substation upgrade |
| Project description | Proprietary & Confidential Information |
| Substation name | Slykerville (SLKY) |

| | |
|---|---|
| Substation zone | PPL |
| Substation upgrade scope | Add (2) 230kV breakers in switchuard to accept (2) new line positions. |

## Transformer Information

None

| | |
|---|---|
| New equipment description | Add (2) 230kV, 5000A, 63kAIC breakers. |
| Substation assumptions | Assumes required equipment upgrades occur in existing footprint. |
| Real-estate description | No public imagery or general arrangement was available at time of proposal submission. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $4,453,406.00 |
| Component cost (in-service year) | $4,453,406.00 |

## Substation Upgrade Component

| | |
|---|---|
| Component title | E-33-A) Frackville (New PPL) substation upgrade |

| | |
|---|---|
| Project description | Proprietary & Confidential Information |
| Substation name | Frackville (New PPL) |
| Substation zone | PPL |
| Substation upgrade scope | Terminate (1) line into an open bay position. |

## Transformer Information

None

| | |
|---|---|
| New equipment description | Terminate (1) line into an open bay position. |
| Substation assumptions | Assumes that fenceline must be expanded to east to accomodate upgrades. |
| Real-estate description | Based on publicly available parcel data and imagery, upgrades are expected to occur fully on transmission-owner owned property. |
| Construction responsibility | Proprietary & Confidential Information |
| Benefits/Comments | Proprietary & Confidential Information |
| Component Cost Details - In Current Year $ | |
| Engineering & design | Proprietary & Confidential Information |
| Permitting / routing / siting | Proprietary & Confidential Information |
| ROW / land acquisition | Proprietary & Confidential Information |
| Materials & equipment | Proprietary & Confidential Information |
| Construction & commissioning | Proprietary & Confidential Information |
| Construction management | Proprietary & Confidential Information |
| Overheads & miscellaneous costs | Proprietary & Confidential Information |
| Contingency | Proprietary & Confidential Information |
| Total component cost | $2,282,813.00 |
| Component cost (in-service year) | $2,282,813.00 |

## Congestion Drivers

None

## Existing Flowgates

None

## New Flowgates

Proprietary & Confidential Information

## Financial Information

| | |
|---|---|
| Capital spend start date | 01/2026 |
| Construction start date | 10/2029 |
| Project Duration (In Months) | 71 |

## Cost Containment Commitment

| | |
|---|---|
| Cost cap (in current year) | Proprietary & Confidential Information |
| Cost cap (in-service year) | Proprietary & Confidential Information |

### Components covered by cost containment

1. B-20-A) Kammer - Buttermilk Falls 765kV - Proposer
2. B-21-A) Buttermilk Falls - Mountain Stone 765kV - Proposer
3. B-24-A) Mountain Stone-Juniata 500kV - Proposer
4. E-07-B) Stoney Creek - Slykerville 230kV - Proposer
5. E-18-B) Montour-Catawissa 230kV - Proposer
6. E-20-A) Catawissa - Stoney Creek 500kV - Proposer
7. E-28-B) Frackville/Columbia - Catawissa 230kV Loop-In - Proposer

8. E-31-A) Mountain Stone - Westwood 765kV - Proposer
9. E-34-A) Westwood - Frackville 230kV - Proposer
10. E-35-A) Westwood - Spicewood 765kV - Proposer
11. B-19-B) Buttermilk Falls 765kV Substation - Proposer
12. B-06-C) Mountain Stone 765kV Substation - Proposer
13. E-17-D) Catawissa 500kV Substation - Proposer
14. E-19-C) Stoney Creek 500kV Substation - Proposer
15. E-32-A) Westwood 765kV Substation - Proposer
16. E-36-A) Spicewood 765kV Substation - Proposer

## Cost elements covered by cost containment

| | |
|---|---|
| Engineering & design | Yes |
| Permitting / routing / siting | Yes |
| ROW / land acquisition | Yes |
| Materials & equipment | Yes |
| Construction & commissioning | Yes |
| Construction management | Yes |
| Overheads & miscellaneous costs | Yes |
| Taxes | No |
| AFUDC | No |
| Escalation | No |
| Additional Information | Proprietary & Confidential Information |
| Is the proposer offering a binding cap on ROE? | Yes |
| Would this ROE cap apply to the determination of AFUDC? | No |

| | |
|---|---|
| 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 & Confidential Information |
| Additional cost containment measures not covered above | Proprietary & Confidential Information |

## Additional Comments

None