

# Pennsylvania Border - Drakestown 500 kV line (greenfield route)

## General Information

Proposing entity name	Proprietary Information
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Proprietary Information
Company proposal ID	Proprietary Information
PJM Proposal ID	546
Project title	Pennsylvania Border - Drakestown 500 kV line (greenfield route)
Project description	Construct a new greenfield 500 kV line from outside Martins Creek substation for approximately 20 miles to a new Drakestown 500 kV Switchyard somewhere in the vicinity of 40.789964° -74.757163° depending on what site can be acquired. Utilize triple bundle 1590 ACSR with a rating of 3637 MVA SN, 4503 MVA SE, 4156 MVA WN, and 5022 MVA WE. Install dual 144 count OPGW. Acquire land and install a new Drakestown 3 bay DBDB initial, future BAAH 500 kV switchyard. Install six 500 kV, 4000 A circuit breakers and twelve 500 kV 4000 A MODS, leaving future locations for as many as 3 additional circuit breakers and bay positions. All substation conductors and equipment will have a minimum rating of 3609 MVA SN, 4149 MVA SE, 4276 MVA WN, and 4755 MVA WE. For station service, install three PVTs on the North bus, and obtain 3 phase service from local distribution system or install three PVTs on the South bus. Install portable generator hook-up. Coordinate all relaying with Albrightsville, Hopatcong, and Branchburg. Terminate fiber into the new Drakestown control house.
Email	Proprietary Information
Project in-service date	12/2032
Tie-line impact	Yes
Interregional project	No
Is the proposer offering a binding cap on capital costs?	Yes
Additional benefits	Proprietary Information

## Project Components

1. Pennsylvania Border - Drakestown 500 kV line (greenfield alternative)
2. Drakestown 500 kV Switchyard
3. Hopatcong - Branchburg 500 kV line taps into new Drakestown 500 kV yard

### Greenfield Transmission Line Component

Component title	Pennsylvania Border - Drakestown 500 kV line (greenfield alternative)	
Project description	Proprietary Information	
Point A	Drakestown	
Point B	Albrightsville	
Point C	Siegfried	
	Normal ratings	Emergency ratings
Summer (MVA)	3637.000000	4503.000000
Winter (MVA)	4156.000000	5022.000000
Conductor size and type	Triple bundle 1590 ACSR conductor	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	
General route description	Construct a new greenfield 500 kV line from outside Martins Creek substation for approximately 20 miles to the new Drakestown 500 kV Switchyard somewhere in the vicinity of 40.789964° -74.757163° depending on what site can be acquired.	
Terrain description	Greenfield adjacent to existing transmission corridors. Rolling hills.	
Right-of-way width by segment	Proposed transmission ROW width of 200 ft.	

Electrical transmission infrastructure crossings	Greystone - Portland 230 kV line, Pequest River Tap - Pequest River 115 kV line segment, Pohatcong - West Wharton 230 kV line
Civil infrastructure/major waterway facility crossing plan	Delaware River crossing
Environmental impacts	<p>The proposed project will traverse both Pennsylvania and northwestern New Jersey, requiring in-depth consultations with both states along with the National Park Service. For Pennsylvania, Proposer anticipates needing to apply for an Individual Permit in compliance with the National Pollutant Discharge Elimination System as administered by the Pennsylvania Department of Environmental Protection. Impacts to federal and state protected species typically associated with transmission development are anticipated, including time of year vegetation clearing restrictions for bat species along with potential presence/absence surveys for Bog Turtles in suitable wetland habitat. Cultural resource management activities will likely be comprised of historic architecture surveys to determine visual impacts to historic farmsteads and targeted, systemic shovel testing to determine the presence/absence of buried archaeological deposits in areas where new ground disturbing activities are required. A crossing of the Appalachian Trail is anticipated, which will trigger consultations with the National Park Service. This may include cultural resource surveys of the impacted section of trail, tribal consultations, and viewshed mitigation. New Jersey permits anticipated include an Individual Permit in compliance with the National Pollutant Discharge Elimination System as administered by the New Jersey Department of Environmental Protection. Compliance with New Jersey's Highlands Act will most likely be triggered with the current proposed scope. Impacts to federal and state protected species typically associated with transmission development are anticipated, including time of year vegetation clearing restrictions for bat species along with potential presence/absence surveys for Bog Turtles in suitable wetland habitat. Like Pennsylvania, Cultural resource management activities will likely be comprised of historic architecture surveys to determine visual impacts to historic farmsteads and targeted, systemic shovel testing to determine the presence/absence of buried archaeological deposits in areas where new ground disturbing activities are required. Municipal permits related to the development of a new switchyard will likely be needed based on final site location</p>
Tower characteristics	See attachment entitled DC 500kV.pdf for illustrations of the types of structures to be used for this upgrade.
Construction responsibility	Proprietary Information
Benefits/Comments	Proprietary Information
Component Cost Details - In Current Year \$	
Engineering & design	Proprietary Information
Permitting / routing / siting	Proprietary Information
ROW / land acquisition	Proprietary Information

Materials & equipment	Proprietary Information
Construction & commissioning	Proprietary Information
Construction management	Proprietary Information
Overheads & miscellaneous costs	Proprietary Information
Contingency	Proprietary Information
Total component cost	\$158,052,440.10
Component cost (in-service year)	\$202,838,740.54

### Greenfield Substation Component

Component title	Drakestown 500 kV Switchyard
Project description	Proprietary Information
Substation name	Drakestown 500 kV Switchyard
Substation description	Acquire land and install a new Drakestown 3 bay DBDB initial, future BAAH 500 kV switchyard. Install six 500 kV, 4000 A circuit breakers and twelve 500 kV 4000 A MODS, leaving future locations for as many as 3 additional circuit breakers and bay positions. All substation conductors and equipment will have a minimum rating of 3609 MVA SN, 4149 MVA SE, 4276 MVA WN, and 4755 MVA WE. For station service, install three PVTs on the North bus, and obtain 3 phase service from local distribution system or install three PVTs on the South bus. Install portable generator hook-up. Coordinate all relaying with Albrightsville, Hopatcong, and Branchburg. Terminate fiber into the new Drakestown control house.
Nominal voltage	AC
Nominal voltage	500
Transformer Information	
None	

Major equipment description Three 500 kV BAAH bays Six 500 kV 4000 A circuit breakers Twelve 500 kV 4000 A MODs All substation conductors and equipment will have a minimum rating of 3609 MVA SN, 4149 MVA SE, 4276 MVA WN, and 4755 MVA WE Three PVTs on the North bus Obtain 3 phase service from local distribution system or install three PVTs on the South bus One portable generator hook-up Fiber as necessary for protection of all new facilities

	Normal ratings	Emergency ratings
Summer (MVA)	3609.000000	4149.000000
Winter (MVA)	4276.000000	4755.000000

Environmental assessment The proposed project will traverse both Pennsylvania and northwestern New Jersey, requiring in-depth consultations with both states along with the National Park Service. For Pennsylvania, Proposer anticipates needing to apply for an Individual Permit in compliance with the National Pollutant Discharge Elimination System as administered by the Pennsylvania Department of Environmental Protection. Impacts to federal and state protected species typically associated with transmission development are anticipated, including time of year vegetation clearing restrictions for bat species along with potential presence/absence surveys for Bog Turtles in suitable wetland habitat. Cultural resource management activities will likely be comprised of historic architecture surveys to determine visual impacts to historic farmsteads and targeted, systemic shovel testing to determine the presence/absence of buried archaeological deposits in areas where new ground disturbing activities are required. A crossing of the Appalachian Trail is anticipated, which will trigger consultations with the National Park Service. This may include cultural resource surveys of the impacted section of trail, tribal consultations, and viewshed mitigation. New Jersey permits anticipated include an Individual Permit in compliance with the National Pollutant Discharge Elimination System as administered by the New Jersey Department of Environmental Protection. Compliance with New Jersey's Highlands Act will most likely be triggered with the current proposed scope. Impacts to federal and state protected species typically associated with transmission development are anticipated, including time of year vegetation clearing restrictions for bat species along with potential presence/absence surveys for Bog Turtles in suitable wetland habitat. Like Pennsylvania, Cultural resource management activities will likely be comprised of historic architecture surveys to determine visual impacts to historic farmsteads and targeted, systemic shovel testing to determine the presence/absence of buried archaeological deposits in areas where new ground disturbing activities are required. Municipal permits related to the development of a new switchyard will likely be needed based on final site location.

## Outreach plan

Proposer will provide comprehensive siting and right of way (ROW) support for the following segments:

- S01 – Lackawanna – Siegfried 500kV line – site and construct a new 500 kV line 50 miles to the existing Susquehanna – Wescosville 500 kV line and rebuild ~23 miles of the Susquehanna –Wescosville to a new Siegfried 500 kV yard
- S02 – Siegfried 500 kV switchyard – site and construct a new 500kV switchyard adjacent to the existing Siegfried substation. Split the Susquehanna – Wescosville transmission line and re-terminate in the new yard.
- S03 – Siegfried – Drakestown 500 kV line – Site and construct a new Siegfried – Drakestown 500 kV transmission line - Utilize the existing Martins Creek – Siegfried #2 transmission between Siegfried and Martins Creek and then site new ~20 mile greenfield transmission line to new Drakestown 500 kV yard
- S04 – Drakestown 500 kV Switchyard - site and construct a new 500kV switchyard in Drakestown

Proposer Siting will prepare and file a Full Siting Application (FSA) with the Pennsylvania (PUC) and a Siting Application with New Jersey Board of Public Utilities (NJ BPU) to obtain necessary approvals, and our siting efforts. Siting of the transmission lines and switchyard locations will include reviewing environmental, regulatory, and land-use constraints to determine an appropriate alignment and location which minimizes potential impacts. Where possible, Proposer will utilize existing electric transmission corridors and other linear opportunities to minimize new social and environmental impacts. Upon completion of the siting activities, the Proposer ROW team will acquire all needed ROW in compliance with its procedures and industry best practices. Potential siting and ROW risks include inability to acquire all needed ROW, interactions with adjacent landowners, and potential interveners in the Siting approval process. The Proposer Siting and ROW team will engage proactively with landowners and serve as project liaisons to address concerns and maintain positive relationships throughout the project. This includes communicating the project need, timeline, activities, construction impacts and site restoration.

Land acquisition plan

Proposer will provide comprehensive siting and right of way (ROW) support for the following segments: • S01 – Lackawanna – Siegfried 500kV line – site and construct a new 500 kV line 50 miles to the existing Susquehanna – Wescosville 500 kV line and rebuild ~23 miles of the Susquehanna –Wescosville to a new Siegfried 500 kV yard • S02 – Siegfried 500 kV switchyard – site and construct a new 500kV switchyard adjacent to the existing Siegfried substation. Split the Susquehanna – Wescosville transmission line and re-terminate in the new yard. • S03 – Siegfried – Drakestown 500 kV line – Site and construct a new Siegfried – Drakestown 500 kV transmission line - Utilize the existing Martins Creek – Siegfried #2 transmission between Siegfried and Martins Creek and then site new ~20 mile greenfield transmission line to new Drakestown 500 kV yard • S04 – Drakestown 500 kV Switchyard - site and construct a new 500kV switchyard in Drakestown Proposer Siting will prepare and file a Full Siting Application (FSA) with the Pennsylvania (PUC) and a Siting Application with New Jersey Board of Public Utilities (NJ BPU) to obtain necessary approvals, and our siting efforts. Siting of the transmission lines and switchyard locations will include reviewing environmental, regulatory, and land-use constraints to determine an appropriate alignment and location which minimizes potential impacts. Where possible, Proposer will utilize existing electric transmission corridors and other linear opportunities to minimize new social and environmental impacts. Upon completion of the siting activities, the Proposer ROW team will acquire all needed ROW in compliance with its procedures and industry best practices. Potential siting and ROW risks include inability to acquire all needed ROW, interactions with adjacent landowners, and potential interveners in the Siting approval process. The Proposer Siting and ROW team will engage proactively with landowners and serve as project liaisons to address concerns and maintain positive relationships throughout the project. This includes communicating the project need, timeline, activities, construction impacts and site restoration.

Construction responsibility

Proprietary Information

Benefits/Comments

Proprietary Information

Component Cost Details - In Current Year \$

Engineering & design

Proprietary Information

Permitting / routing / siting

Proprietary Information

ROW / land acquisition

Proprietary Information

Materials & equipment

Proprietary Information

Construction & commissioning

Proprietary Information

Construction management

Proprietary Information

Overheads & miscellaneous costs

Proprietary Information

Contingency	Proprietary Information	
Total component cost	\$74,263,384.83	
Component cost (in-service year)	\$95,306,921.15	
<b>Transmission Line Upgrade Component</b>		
Component title	Hopatcong - Branchburg 500 kV line taps into new Drakestown 500 kV yard	
Project description	Proprietary Information	
Impacted transmission line	Hopatcong - Branchburg 500 kV line	
Point A	Hopatcong	
Point B	Branchburg	
Point C		
Terrain description	Existing transmission corridor. Rolling hills. Adjacent to proposed Drakestown 500 kV Switchyard.	
<b>Existing Line Physical Characteristics</b>		
Operating voltage	500	
Conductor size and type	Unknown	
Hardware plan description	New hardware to be installed for new tap structures.	
Tower line characteristics	See attachment entitled DC 500kV.pdf for illustrations of the types of structures to be used for this upgrade.	
<b>Proposed Line Characteristics</b>		
	Designed	Operating
Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	3637.000000	4503.000000



Winter (MVA)	4156.000000	5022.000000
Conductor size and type	Triple bundle 1590 ACSR conductor	
Shield wire size and type	Dual 144 count OPGW	
Rebuild line length	Less than 1 mile	
Rebuild portion description	Bifurcate the Hopatcong - Branchburg 500 kV line near the new Drakestown 500 kV Switchyard and extend the lines into the new yard on DCT towers for less than 1 mile.	
Right of way	Minimal or no new ROW should be necessary as this is a short tap of an existing line.	
Construction responsibility	Proprietary Information	
Benefits/Comments	Proprietary Information	
Component Cost Details - In Current Year \$		
Engineering & design	Proprietary Information	
Permitting / routing / siting	Proprietary Information	
ROW / land acquisition	Proprietary Information	
Materials & equipment	Proprietary Information	
Construction & commissioning	Proprietary Information	
Construction management	Proprietary Information	
Overheads & miscellaneous costs	Proprietary Information	
Contingency	Proprietary Information	
Total component cost	\$13,731,250.00	
Component cost (in-service year)	\$14,743,185.47	

### Congestion Drivers

None

## Existing Flowgates

None

## New Flowgates

Proprietary Information

## Financial Information

Capital spend start date 01/2025

Construction start date 06/2029

Project Duration (In Months) 95

## Cost Containment Commitment

Cost cap (in current year) Proprietary Information

Cost cap (in-service year) Proprietary Information

## Components covered by cost containment

1. Pennsylvania Border - Drakestown 500 kV line (greenfield alternative) - PPL

2. Drakestown 500 kV Switchyard - PPL

## Cost elements covered by cost containment

Engineering & design Yes

Permitting / routing / siting No

ROW / land acquisition No

Materials & equipment No

Construction & commissioning	No
Construction management	Yes
Overheads & miscellaneous costs	No
Taxes	No
AFUDC	No
Escalation	No
Additional Information	Proprietary Information
Is the proposer offering a binding cap on ROE?	No
Is the proposer offering a Debt to Equity Ratio cap?	Proprietary Information

## Additional Comments

None