

Bow Creek 500/230kV Project

General Information

Proposing entity name

Confidential Information

Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?

Company proposal ID

PJM Proposal ID

738

Project title

Bow Creek 500/230kV Project

Project description

The Bow Creek Project includes a new 500/230kV substation interconnecting the Juniata - Alburdis 500kV transmission line. The 500kV portion will include a 3 position ring bus. The proposed project will include a 500/230kV transformer stepping down to a new 5 position 230kV ring bus substation that will interconnect the existing North Hershey - Hummelstown and North Lebanon - Copperstone 230kV lines. Two new double circuit 230kV lines will be created to interconnect the North Hershey - Hummelstown and North Lebanon - Copperstone 230kV transmission lines to the new Bow Creek Substation.

Email

Project in-service date

06/2025

Tie-line impact

Yes

Interregional project

No

Is the proposer offering a binding cap on capital costs?

Yes

Additional benefits

Project Components

1. Bow Creek 500/230kV Substation
2. Bow Creek - North Hershey / Hummelstown 230kV Double Circuit Transmissio...

- 3. Bow Creek - North Lebanon/ Copperstone 230kV Double Circuit Transmission...
- 4. T-Line Interconnection: North Hershey - Hummelstown and North Lebanon - ...
- 5. Bow Creek 500kV T-Line Interconnection

Greenfield Substation Component

Component title	Bow Creek 500/230kV Substation
Project description	
Substation name	Bow Creek Substation
Substation description	The 500/230kV Bow Creek Substation will interconnect the existing Juniata - Alburdis 500kV transmission line with a new 500kV three-position ring bus substation. The 500kV substation will connect to the new 230kV substation via a new 500/230kV 1500 MVA transformer. The 230kV substation will be a five-position ring bus that will interconnect the existing Hummelstown - North Hershey & Copperstone - North Lebanon 230kV lines.
Nominal voltage	AC
Nominal voltage	500/230

Transformer Information

	Name	Capacity (MVA)		
Transformer	Bow Creek 500/230kV Transformer	1500		
		High Side	Low Side	Tertiary
Voltage (kV)		500	230	
Major equipment description	500kV circuit breakers (3) will have a continuous current rating of 4000A, a 3464 MVA rating, and a short circuit current rating of 63kA. 500kV terminal equipment will be rated at 4000A. 230kV circuit breakers (5) will have a continuous current rating of 4000A, a 1593 MVA rating, and a short circuit current rating of 63kA. 230kV terminal equipment will be rated at 4000A. The 500/230kV transformer will have a capacity of 1500 MVA.			
		Normal ratings	Emergency ratings	

Summer (MVA)	1200.000000	1500.000000
Winter (MVA)	1320.000000	1650.000000

Environmental assessment

The proposed Project was sited to avoid and minimize impacts to wetlands or other areas of environmental concern based on GIS data. It is possible that the Project cannot avoid impacts to a limited number of wetlands and waterways. If so, Proposer expects the Project will be subject to regulation under certain permitting programs, namely Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, and Section 401 of the Clean Water Act. Proposer will engage a qualified consultant to conduct a wetlands delineation of the selected site/route in order to establish the extent of proposed impacts and the need for specific permits from the state or U.S. Army Corps of Engineers. In addition to the permits described above, Proposer has identified other permits which may be required for the construction of the Project. Proposer considers these permits to be minor due to the more limited effort to prepare applications and the less intensive permitting processes which follow. These include permits related to airspace clearance, stormwater/erosion and sedimentation control, road crossings, and utility and railroad crossings.

Outreach plan

Proposer will identify and engage stakeholders, such as community officials and landowners within the Project area, early in the process and maintain an active dialogue throughout. Public meetings may be held to offer a venue for landowners and other interested community members to learn about the Project and for Proposer to learn more about specific landowner and community preferences. Proposer plans to make information available on its website and provide notification of public meetings to landowners within the Project area as required in the siting approval process.

Land acquisition plan

The Project will be located primarily on new right-of-way to be purchased by Proposer. In addition, Proposer will procure any necessary easements required to access the site. Proposer will assign a Right-of-Way Manager to oversee all real estate related activities for the Project including appraisals, title work, surveying, land acquisition and restoration. A right-of-way agent will contact the property owner(s) in person to explain the Project and, as necessary, secure permission to conduct surveys, archaeological studies, etc. The right-of-way agent will be the primary point of contact to negotiate with the property owner to acquire the substation site and any required easements on a mutually agreeable basis. To the extent that negotiations reach an impasse, Proposer will be able to pursue eminent domain. The right-of-way agents will continue to act as a liaison with the property owners during construction and through the restoration process.

Construction responsibility

Confidential Information

Benefits/Comments

Component Cost Details - In Current Year \$

Engineering & design	Confidential Information
Permitting / routing / siting	
ROW / land acquisition	
Materials & equipment	
Construction & commissioning	
Construction management	
Overheads & miscellaneous costs	
Contingency	
Total component cost	\$37,001,289.00
Component cost (in-service year)	\$40,445,492.00

Greenfield Transmission Line Component

Component title	Bow Creek - North Hershey / Hummelstown 230kV Double Circuit Transmission Line	
Project description		
Point A	Bow Creek	
Point B	North Hershey	
Point C	Hummelstown	
	Normal ratings	Emergency ratings
Summer (MVA)	723.000000	781.000000
Winter (MVA)	723.000000	781.000000
Conductor size and type	Double Bundle 795 "Drake" ACSS	
Nominal voltage	AC	

Nominal voltage	230
Line construction type	Overhead
General route description	See Routing Map attachment for information on the general project route. Most high-voltage transmission projects will require a state siting approval. To begin the siting approval process, Proposer plans to hold pre-application meetings with the regulatory agency to introduce Proposer and the Project, as well as confirm its understanding of the process. Shortly thereafter, Proposer will simultaneously begin collecting siting data and start its outreach efforts so that public siting input is incorporated at the earliest stages of the Project. Once Proposer identifies a preferred site/route and at least one viable alternative site/route, Proposer will carry out the environmental and detailed engineering work described in the Site Selection/ Routing Analysis section above in order to establish a highly- detailed Project plan to support the siting applications.
Terrain description	The terrain traversed by the project features gently rolling hills and crosses a combination of agricultural and forested areas.
Right-of-way width by segment	The project proposes to utilize a right-of-way width of 125 feet. The two double circuit lines will parallel each other, giving a total right-of-way of 250 feet.
Electrical transmission infrastructure crossings	Electrical infrastructure crossings may be required depending on final line route and substation configuration. This will be coordinated during the detailed design process with the interconnection PTO.
Civil infrastructure/major waterway facility crossing plan	No civil infrastructure or major waterway crossings.
Environmental impacts	The proposed Project was sited to avoid and minimize impacts to wetlands or other areas of environmental concern based on GIS data. It is possible that the Project cannot avoid impacts to a limited number of wetlands and waterways. If so, Proposer expects the Project will be subject to regulation under certain permitting programs, namely Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, and Section 401 of the Clean Water Act. Proposer will engage a qualified consultant to conduct a wetlands delineation of the selected site/route in order to establish the extent of proposed impacts and the need for specific permits from the state or U.S. Army Corps of Engineers. In addition to the permits described above, Proposer has identified other permits which may be required for the construction of the Project. Proposer considers these permits to be minor due to the more limited effort to prepare applications and the less intensive permitting processes which follow. These include permits related to airspace clearance, stormwater/erosion and sedimentation control, road crossings, and utility and railroad crossings.

Tower characteristics The preliminary design for the transmission line utilizes tubular steel monopole structures with double circuit, double-bundle 795 "Drake" ACSS conductor in a vertical configuration and a single optical groundwire.

Construction responsibility Confidential Information

Benefits/Comments

Component Cost Details - In Current Year \$

Engineering & design Confidential Information

Permitting / routing / siting

ROW / land acquisition

Materials & equipment

Construction & commissioning

Construction management

Overheads & miscellaneous costs

Contingency

Total component cost \$5,413,359.00

Component cost (in-service year) \$5,917,254.00

Greenfield Transmission Line Component

Component title Bow Creek - North Lebanon/ Copperstone 230kV Double Circuit Transmission Line

Project description

Point A Bow Creek

Point B North Lebanon

Point C Copperstone

Normal ratings

Emergency ratings

Summer (MVA)	746.000000	903.000000
Winter (MVA)	746.000000	903.000000
Conductor size and type	Double Bundle 795 "Drake" ACSS	
Nominal voltage	AC	
Nominal voltage	230	
Line construction type	Overhead	
General route description	<p>See Routing Map attachment for information on the general project route. Most high-voltage transmission projects will require a state siting approval. To begin the siting approval process, Proposer plans to hold pre-application meetings with the regulatory agency to introduce Proposer and the Project, as well as confirm its understanding of the process. Shortly thereafter, Proposer will simultaneously begin collecting siting data and start its outreach efforts so that public siting input is incorporated at the earliest stages of the Project. Once Proposer identifies a preferred site/route and at least one viable alternative site/route, Proposer will carry out the environmental and detailed engineering work in order to establish a highly- detailed Project plan to support the siting applications.</p>	
Terrain description	<p>The terrain traversed by the project features gently rolling hills and crosses a combination of agricultural and forested areas.</p>	
Right-of-way width by segment	<p>The project proposes to utilize a right-of-way width of 125 feet. The two double circuit lines will parallel each other, giving a total right-of-way of 250 feet.</p>	
Electrical transmission infrastructure crossings	<p>Electrical infrastructure crossings may be required depending on final line route and substation configuration. This will be coordinated during the detailed design process with the interconnection PTO.</p>	
Civil infrastructure/major waterway facility crossing plan	<p>No civil infrastructure or major waterway crossings.</p>	

Environmental impacts

The proposed Project was sited to avoid and minimize impacts to wetlands or other areas of environmental concern based on GIS data. It is possible that the Project cannot avoid impacts to a limited number of wetlands and waterways. If so, Proposer expects the Project will be subject to regulation under certain permitting programs, namely Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, and Section 401 of the Clean Water Act. Proposer will engage a qualified consultant to conduct a wetlands delineation of the selected site/route in order to establish the extent of proposed impacts and the need for specific permits from the state or U.S. Army Corps of Engineers. In addition to the permits described above, Proposer has identified other permits which may be required for the construction of the Project. Proposer considers these permits to be minor due to the more limited effort to prepare applications and the less intensive permitting processes which follow. These include permits related to airspace clearance, stormwater/erosion and sedimentation control, road crossings, and utility and railroad crossings.

Tower characteristics

The preliminary design for the transmission line utilizes tubular steel monopole structures with double circuit, double-bundle 795 "Drake" ACSS conductor in a vertical configuration and a single optical groundwire.

Construction responsibility

Confidential Information

Benefits/Comments

Component Cost Details - In Current Year \$

Engineering & design

Confidential Information

Permitting / routing / siting

ROW / land acquisition

Materials & equipment

Construction & commissioning

Construction management

Overheads & miscellaneous costs

Contingency

Total component cost

\$5,413,359.00

Component cost (in-service year)

\$5,917,254.00

Transmission Line Upgrade Component

Component title	T-Line Interconnection: North Hershey - Hummelstown and North Lebanon - Copperstone
Project description	
Impacted transmission line	North Hershey - Hummelstown and North Lebanon - Copperstone
Point A	North Hershey / North Lebanon
Point B	Hummelstown / Copperstone
Point C	
Terrain description	The terrain traversed by the project features gently rolling hills and crosses a combination of agricultural and forested areas.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	N/A
Hardware plan description	N/A
Tower line characteristics	N/A

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	746.000000	903.000000
Winter (MVA)	746.000000	903.000000
Conductor size and type	N/A	
Shield wire size and type	N/A	

Rebuild line length	<0.25 miles
Rebuild portion description	The existing line will be broken and two new double circuit dead-end towers installed to connect the new Bow Creek - North Hershey / Hummelstown and Bow Creek - North Lebanon/ Copperstone lines to the existing lines.
Right of way	The existing right-of-way will be reused to facilitate the transmission interconnection facilities necessary to loop the lines into the new substation.
Construction responsibility	Confidential Information
Benefits/Comments	
Component Cost Details - In Current Year \$	
Engineering & design	Confidential Information
Permitting / routing / siting	
ROW / land acquisition	
Materials & equipment	
Construction & commissioning	
Construction management	
Overheads & miscellaneous costs	
Contingency	
Total component cost	\$1,380,000.00
Component cost (in-service year)	\$1,508,455.00
Transmission Line Upgrade Component	
Component title	Bow Creek 500kV T-Line Interconnection
Project description	
Impacted transmission line	Juniata - Alburdis

Point A	Juniata		
Point B	Alburtis		
Point C			
Terrain description	The terrain description is mostly farmland.		
Existing Line Physical Characteristics			
Operating voltage	500		
Conductor size and type	N/A		
Hardware plan description	N/A		
Tower line characteristics	N/A		
Proposed Line Characteristics			
	Designed	Operating	
Voltage (kV)	500.000000	500.000000	
	Normal ratings	Emergency ratings	
Summer (MVA)	2702.000000	3112.000000	
Winter (MVA)	2702.000000	3112.000000	
Conductor size and type	N/A		
Shield wire size and type	N/A		
Rebuild line length	<0.25 miles		
Rebuild portion description	The existing line will be broken and new deadend towers installed to facilitate looping into the new Bow Creek 500kV Substation.		
Right of way	The existing right-of-way will be reused to facilitate the transmission interconnection facilities necessary to loop the lines into the new substation.		

Construction responsibility

Confidential Information

Benefits/Comments

Component Cost Details - In Current Year \$

Engineering & design

Confidential Information

Permitting / routing / siting

ROW / land acquisition

Materials & equipment

Construction & commissioning

Construction management

Overheads & miscellaneous costs

Contingency

Total component cost

\$1,150,000.00

Component cost (in-service year)

\$1,257,046.00

Congestion Drivers

CD #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
ME-7	207950	CUMB TR2	208004	JUNI BU1	1	230	229	Market Efficiency	Included

Existing Flowgates

None

New Flowgates

None

Financial Information

Capital spend start date	01/2022
Construction start date	01/2024
Project Duration (In Months)	41

Cost Containment Commitment

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

Components covered by cost containment

1. Bow Creek 500/230kV Substation - Proposer
2. Bow Creek - North Hershey / Hummelstown 230kV Double Circuit Transmissio... - Proposer
3. Bow Creek - North Lebanon/ Copperstone 230kV Double Circuit Transmission... - Proposer

Cost elements covered by cost containment

Engineering & design	Yes
Permitting / routing / siting	Yes
ROW / land acquisition	Yes
Materials & equipment	Yes
Construction & commissioning	Yes
Construction management	Yes
Overheads & miscellaneous costs	Yes
Taxes	Yes
AFUDC	Yes

Escalation

No

Additional Information

Confidential Information

Is the proposer offering a binding cap on ROE?

Is the proposer offering a Debt to Equity Ratio cap?

Additional Comments

None