

Fostoria Central - Lake Ave. 345 kV DC

General Information

Proposing entity name	Company confidential and proprietary information
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Company confidential and proprietary information
Company proposal ID	Company confidential and proprietary information
PJM Proposal ID	694
Project title	Fostoria Central - Lake Ave. 345 kV DC
Project description	This proposal includes the following major system components: - Fostoria Central 345kV station expansion including 4 345kV CB's. - A new 79 mile 345kV double circuit line from Fostoria Central to Lake Avenue 345kV station. - Lake Ave 345kV station will require 3 345kV breakers.
Email	Company confidential and proprietary information
Project in-service date	12/2029
Tie-line impact	Yes
Interregional project	No
Is the proposer offering a binding cap on capital costs?	Yes
Additional benefits	Company confidential and proprietary information

Project Components

1. Fostoria Central - Lake Ave
2. Fostoria Central Station Upgrade
3. Lake Avenue Station Upgrade

Greenfield Transmission Line Component

Component title	Fostoria Central - Lake Ave	
Project description	Company confidential and proprietary information	
Point A	Fostoria Central Station	
Point B	Lake Ave Station	
Point C		
	Normal ratings	Emergency ratings
Summer (MVA)	1409.000000	1781.000000
Winter (MVA)	1959.000000	2200.000000
Conductor size and type	The new double circuit line will be constructed using 2-954,000 54/7 Cardinal ACSR conductor.	
Nominal voltage	AC	
Nominal voltage	345	
Line construction type	Overhead	
General route description	<p>The Proposing Entity assessed environmental and land use constraints and opportunities within an area that included the existing Fostoria Central and Lake Ave. substations as the two endpoints. The evaluation resulted in the Bid Route that extends approximately 79-miles of greenfield line through 5 counties (Seneca, Sandusky, Huron, Erie, and Lorain) in Ohio. The 345kV line exits the existing Fostoria Central Substation from the south, turns east, then travels in a predominantly northeast direction until it reaches the existing Lake Ave. Substation from the east. No habitable structures are present within the proposed ROW. Overall, the Route selected is the most direct route between the two existing substations and has the least overall impact on land use and environmental resources based on the Proposing Entity's qualitative review. The greenfield route significantly reduces the number of new access roads, reducing overall constructability impacts.</p>	
Terrain description	<p>The topography for the greenfield Fostoria Central–Lake Ave. 345kV route is relatively flat to rolling hills. Land use in the area encompasses mostly agricultural and residential parcels in rural Ohio. The line crosses low density developed areas, a small amount of wooded vegetated rural land, state/county highways, railroads, water crossings, and existing utilities.</p>	

Right-of-way width by segment

The greenfield Fostoria Central–Lake Ave. 345kV route ROW will be 150 feet in width and will parallel/cross existing rights-of-way to include interstates, roads, railroads, existing transmission lines/utilities, existing pipelines and best minimizes potential impacts to the natural and human environments.

Electrical transmission infrastructure crossings

In addition to these crossings, it is assumed there are additional, and smaller kV lines, being crossed along areas such as major roadways., Lat: 82° 09' 15.6" W, Long: 41° 24' 8.277" N, Lat: 82° 09' 17.074" W, Long: 41° 24' 7.84" N, Lat: 82° 09' 29.585" W, Long: 41° 24' 6.517" N, Lat: 82° 09' 29.825" W, Long: 41° 24' 6.517" N, Lat: 82° 15' 57.418" W, Long: 41° 22' 2.715" N, Lat: 82° 15' 57.778" W, Long: 41° 22' 2.719" N, Lat: 82° 16' 14.768" W, Long: 41° 22' 2.904" N, Lat: 82° 29' 38.056" W, Long: 41° 20' 9.18" N, Lat: 83° 08' 13.932" W, Long: 41° 14' 37.698" N, Lat: 83° 08' 14.126" W, Long: 41° 14' 37.698" N, Lat: 83° 25' 2.981" W, Long: 41° 08' 2.903" N, Lat: 83° 25' 4.19" W, Long: 41° 08' 2.877" N, Lat: 83° 27' 37.847" W, Long: 41° 08' 13.675" N

Civil infrastructure/major waterway facility crossing plan

The greenfield Fostoria Central-Lake Ave. 345kV line route crosses & runs parallel with multiple railroads, numerous water facilities, and large underground pipelines. The most notable water crossings are the Sandusky River located at Lat: 41°14'38.61"N, Lon: 83°08'27.55"W, the Huron River located at Lat: 41°20'13.54"N, Lon: 82°34'44.30"W, & the Vermilion River located at Lat: 41°20'42.23"N, Lon: 82°21'03.42"W. The Norfolk Southern railroad crossings are located at Lat: 41°08'13.68"N, Lon: 83°27'41.98"W, at Lat: 41°09'42.20"N, Lon: 83°23'07.16"W, at Lat: 41°11'12.15"N, Lon: 83°18'49.57"W, at Lat: 41°12'27.59"N, Lon: 83°15'13.36"W, at Lat: 41°13'10.28"N, Lon: 83°13'11.45"W, at Lat: 41°14'22.47"N, Lon: 83°09'41.31"W, at Lat: 41°14'58.71"N, Lon: 83°03'43.34"W, at Lat: 41°15'19.16"N, Lon: 83°00'56.81"W, at Lat: 41°15'23.96"N, Lon: 83°00'36.41"W, at Lat: 41°15'47.85"N, Lon: 82°57'39.28"W, at Lat: 41°15'47.57"N, Lon: 82°56'38.70"W, at Lat: 41°15'46.45"N, Lon: 82°53'08.06"W, at Lat: 41°14'52.72"N, Lon: 82°51'08.55"W and at Lat: 41°17'48.09"N, Lon: 82°46'09.55"W. The CSX railroad crossings are located at Lat: 41°08'03.76"N, Lon: 83°24'23.42"W & Lat: 41°15'39.51"N, Lon: 82°47'12.85"W. The Northern Ohio & Western railroad crossing is located at Lat: 41°15'39.51"N, Lon: 82°47'12.85"W. The Railroad Wheeling railroad crossing is located at Lat: 41°15'39.51"N, Lon: 82°47'12.85"W. The transmission line runs parallel with and crosses over several pipelines frequently.

Environmental impacts	Land use along the Bid Route corridor is a predominantly rural agricultural landscape with pockets of residential development. The route intersects FEMA-mapped floodplains and/or floodways and NWI-mapped wetlands primarily adjacent to streams and low-lying areas. Named and unnamed streams also bisect the route in various locations. Based on existing aerial photography, the proposed route likely has unmapped wetland or drainage features. Timing of construction will be executed in accordance with state and federal agencies criteria as needed. Desktop studies and record reviews for the station parcel and line route will be conducted for wetlands and streams, hazardous materials, and cultural resources. Following field studies, data will be digitized and provided to engineering so that pole locations and the station is sited to maximize avoidance of sensitive resources. For example, poles will be placed outside of or span wetlands, streams, and floodplains to the greatest extent possible. Existing access and roads will be utilized to access pole locations. If necessary, temporary access roads to pole locations will be identified and field surveyed for environmental and cultural resources and will be adjusted to avoid or minimize impacts.
Tower characteristics	This 345kV double circuit line will utilize self-supporting Breakthrough Overhead Line Design (BOLD) lattice tower construction that is a compact, high-efficiency, vertically configured tower type. Suspension, running corner, and tension structures will utilize drilled-pier concrete foundations.
Construction responsibility	Company confidential and proprietary information
Benefits/Comments	Company confidential and proprietary information
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information
Permitting / routing / siting	Company confidential and proprietary information
ROW / land acquisition	Company confidential and proprietary information
Materials & equipment	Company confidential and proprietary information
Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	\$280,268,060.00

Component cost (in-service year) \$315,444,171.00

Substation Upgrade Component

Component title Fostoria Central Station Upgrade

Project description Company confidential and proprietary information

Substation name Fostoria Central Station

Substation zone AEP

Substation upgrade scope Create two (2) new 345KV line positions to Fostoria Central Station (double circuit line) by adding one (1) 345KV CB & a half string, two (2) 345KV phase-over-phase take-off towers, 3-345KV circuit breakers, and other associated items. Expand the station fenced area by approximately 238.5ft x 339ft.

Transformer Information

None

New equipment description Create two (2) new 345KV line positions to Fostoria Central Station (double circuit line) by adding one(1) 345KV CB & a half string, 3-345KV, 5000A, 63KA circuit breakers; 6-345KV, 3000A, 3-phase, motor-operated CB disc. sw. & steel str.; 2-345KV, 3000A, 3-phase, motor-operated line disc. sw. & steel str.; 6-345KV CB arresters & steel str.; 6-345KV line CCVT's & steel str.; 2-345KV, 3-phase, motor-operated line discharge grounding switches & steel str.; 15-345KV, 1-phase low single insulator bus support str.; 18-345KV, high single insulator bus support str.; 6-345KV, 1-phase high double insulator bus support str.; 12-345KV, 1-phase bi-level double insulator bus support str.; 2-345KV H-frame take-off towers; 2-345KV phase-over-phase take-off towers; and associated bus jumpers, bus tubing & dampening cable/connectors, insulators, foundations, yard lighting, control cables, conduits, cable trench, and equipment grounding. Install associated relay equipment in the existing control enclosure. Expand the station fenced area by approximately 238.5ft x 339ft. This includes site grading, fence addition/relocation, station stone, ground grid, and fence grounding.

Substation assumptions This proposal assumes that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control enclosure has space for the new relay equipment, ground grid resistivity test data are available, ground grid upgrades will not be needed, the existing cable trench has space for the new control cables, soil boring logs and geotechnical report are available, wetland mitigation will not be needed, all necessary permits will be available, and land will be available to install the equipment outlined in this description

Real-estate description All necessary land rights are acquired

Construction responsibility	Company confidential and proprietary information
Benefits/Comments	Company confidential and proprietary information
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information
Permitting / routing / siting	Company confidential and proprietary information
ROW / land acquisition	Company confidential and proprietary information
Materials & equipment	Company confidential and proprietary information
Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	\$10,334,566.00
Component cost (in-service year)	\$11,631,644.00
Substation Upgrade Component	
Component title	Lake Avenue Station Upgrade
Project description	Company confidential and proprietary information
Substation name	Lake Ave Station
Substation zone	ATSI
Substation upgrade scope	Create two (2) new 345KV line positions to Lake Avenue Station (double circuit line) by adding one (1) 345KV CB & a half string, one (1) 345KV adder box bay with two (2) line take-off positions on the same side, 4-345KV circuit breakers, and other associated items. Expand the station fenced area by 50ft x 469ft.

Transformer Information

None

New equipment description

Create two (2) new 345KV line positions to Lake Avenue Station (double circuit line) by adding one (1) 345KV CB & a half string, 4-345KV, 5000A, 63KA circuit breakers; 8-345KV, 3000A, 3-phase, motor-operated CB disc. sw. & steel str.; 6-345KV CB arresters & steel str.; 9-345KV bus/line CCVT's & steel str.; 2-345KV, 3-phase, motor-operated line discharge grounding switches & steel str.; 4-345KV, 1-phase low single insulator bus support str.; 12-345KV, high single insulator bus support str.; 6-345KV, 1-phase bi-level double insulator bus support str.; 1-345KV adder box bay with two (2) line take-off positions on the same side; and associated bus jumpers, bus tubing & dampening cable/connectors, insulators, foundations, yard lighting, control cables, conduits, cable trench, and equipment grounding. Install associated relay equipment in the existing control enclosure. Expand the station fenced area by 50ft x 469ft. This includes site grading, fence addition/relocation, station stone, ground grid, and fence grounding.

Substation assumptions

This proposal assumes that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control enclosure has space for the new relay equipment, ground grid resistivity test data are available, ground grid upgrades will not be needed, the existing cable trench has space for the new control cables, soil boring logs and geotechnical report are available, wetland mitigation will not be needed, all necessary permits will be available, and land will be available to install the equipment outlined in this description.

Real-estate description

Any land need for expansion will be easily obtained.

Construction responsibility

Company confidential and proprietary information

Benefits/Comments

Company confidential and proprietary information

Component Cost Details - In Current Year \$

Engineering & design

Company confidential and proprietary information

Permitting / routing / siting

Company confidential and proprietary information

ROW / land acquisition

Company confidential and proprietary information

Materials & equipment

Company confidential and proprietary information

Construction & commissioning

Company confidential and proprietary information

Construction management

Company confidential and proprietary information

Overheads & miscellaneous costs

Company confidential and proprietary information

Contingency

Company confidential and proprietary information

Total component cost \$37,766,420.00

Component cost (in-service year) \$42,506,437.00

Congestion Drivers

None

Existing Flowgates

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2024W1-GD-S865	238549	02AVERY	239108	02SHNROK	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S866	238549	02AVERY	239108	02SHNROK	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S885	238570	02BEAVER	238845	02JONSON	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S353	238569	02BEAVER	239725	02LAKEAVE	2	345	202	Summer Gen Deliv	Included
2024W1-GD-S855	238590	02BRWELL	238728	02FORD	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S858	238590	02BRWELL	238728	02FORD	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S861	238768	02GRNFLD	238974	02N DEPT	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S864	238768	02GRNFLD	238974	02N DEPT	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S848	238768	02GRNFLD	238981	02NASA	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S849	238768	02GRNFLD	238981	02NASA	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S868	239290	02HAYES	238549	02AVERY	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S872	239290	02HAYES	238549	02AVERY	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S850	238874	02LAKVEW	238768	02GRNFLD	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S853	238974	02N DEPT	238590	02BRWELL	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S856	238974	02N DEPT	238590	02BRWELL	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S851	238981	02NASA	238570	02BEAVER	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S852	238981	02NASA	238570	02BEAVER	1	138	202	Summer Gen Deliv	Included
2024W1-GD-S897	239030	02OTTAWA	238874	02LAKVEW	1	138	202	Summer Gen Deliv	Included
2024W1-N1-ST100	238549	02AVERY	239108	02SHNROK	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST101	238549	02AVERY	239108	02SHNROK	1	138/138	202/202	Summer Thermal	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2024W1-N1-ST103	239290	02HAYES	238549	02AVERY	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST104	239290	02HAYES	238549	02AVERY	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST33	238768	02GRNFLD	238981	02NASA	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST34	238768	02GRNFLD	238981	02NASA	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST37	238981	02NASA	238570	02BEAVER	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST38	238874	02LAKVEW	238768	02GRNFLD	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST39	238981	02NASA	238570	02BEAVER	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST48	238974	02N DEPT	238590	02BRWELL	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST49	238974	02N DEPT	238590	02BRWELL	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST55	238590	02BRWELL	238728	02FORD	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST56	238590	02BRWELL	238728	02FORD	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST73	238768	02GRNFLD	238974	02N DEPT	1	138/138	202/202	Summer Thermal	Included
2024W1-N1-ST76	238768	02GRNFLD	238974	02N DEPT	1	138/138	202/202	Summer Thermal	Included

New Flowgates

Company confidential and proprietary information

Financial Information

Capital spend start date 02/2025

Construction start date 06/2027

Project Duration (In Months) 58

Cost Containment Commitment

Cost cap (in current year) Company confidential and proprietary information

Cost cap (in-service year) Company confidential and proprietary information

Components covered by cost containment

1. Fostoria Central - Lake Ave - Transource

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	No
Overheads & miscellaneous costs	No
Taxes	No
AFUDC	No
Escalation	No
Additional Information	Company confidential and proprietary information
Is the proposer offering a binding cap on ROE?	Yes
Would this ROE cap apply to the determination of AFUDC?	Yes
Would the proposer seek to increase the proposed ROE if FERC finds that a higher ROE would not be unreasonable?	No
Is the proposer offering a Debt to Equity Ratio cap?	Company confidential and proprietary information

Additional Comments

None