Ohio Seven Year Solution

General Information

Proposing entity name	Company confidential information
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Company confidential information
Company proposal ID	Company confidential information
PJM Proposal ID	570
Project title	Ohio Seven Year Solution
Project description	The proposed solution will address Ohio area violations in the PJM 2032 RTEP model. The solution includes the following components: Greentown – Teddy 765 kV line, Teddy 765/345kV substation, Teddy – Marysville 765kV line, Teddy – Beatty 345kV double-circuit line, Teddy – Cole 345kV line, Guernsey – Conesville 765kV line, Conesville – West Millersport – Adkins 765 kV line, and upgrades to existing facilities.
Email	Company confidential information
Project in-service date	10/2032
Tie-line impact	Yes
Interregional project	No
Is the proposer offering a binding cap on capital costs?	Yes
Additional benefits	Company confidential information

Project Components

1. Greentown Station Expansion
2. Greentown - Teddy 765 kV Line
3. Teddy 765/345 kV Station

4. Teddy - Marysville 765 kV
5. Marysville Station Upgrade
6. Teddy - Beatty DCT 345 kV
7. Cole Station Upgrade
8. Beatty Station Upgrade
9. Guernsey Station Upgrade
10. Guernsey - Conesville 765 kV
11. West Millersport Station Upgrade
12. Bixby - West Millersport 345 kV
13. Bixby Station Upgrade
14. West Millersport - Adkins 765 kV
15. West Millersport - Kirk 345 kV
16. Hyatt - Maliszewski Double Circuit 345 kV
17. Hayden - Cole 345 kV
18. Newark Center Station Upgrade
19. Ohio Central Extension
20. Allen Station Upgrade
21. Roberts - Kenny 138kV Rebuild
22. Wilson - Fifth Avenue 138kV line
23. McComb Station Upgrades
24. Bethel Station Upgrade
25. OSU Station Upgrade
26. Hess 138 kV Station Upgrade
27. South Kenton Station
28. Meadow Lake Station Circuit Breaker
29. Teddy - Cole 345 kV #2 Circuit
30. Conesville Station Expansion
31. Conesville - West Millersport 765 kV
32. Adkins Station Expansion

33. Ohio Central Station Upgrade
34. Kammer Dumont Structures
35. Ohio Central - Fostoria Central Structure
36. Gavin - Marysville Structures
37. East Springfield - London Structures
38. Beatty - Hayden Structures

Substation Upgrade Component

Component title	Greentown Station Expansion
Project description	Company confidential information
Substation name	Greentown 765 kV Station
Substation zone	AEP
Substation upgrade scope	Create a new 765KV line position having 3-100MVar single-phase reactors to interconnect a new 765KV Teddy line by adding 2-765KV circuit breakers and a new breaker & a half string.

Transformer Information

None

New equipment description	Create a new 765KV line position by adding 2-765KV, 5000A, 50KA line circuit breakers; 1-765KV, 5000A, 50KA reactor circuit breaker; 15-765KV, 5000A single-phase disc. switches; 3-765KV, 4000A single-phase disc. switches; 1-set of 3-765KV CCVTs; 3-sets of 3-765KV arresters; 3-765KV, 100MVar single-phase line reactors with arresters; and associated bus jumpers, bus tubing & dampening cable, strain bus, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, and equipment grounding. Install associated relay equipment in the existing control house. A station expansion will be required. Site development will include grading, fencing, and station stone.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house 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, and soil boring logs and geotechnical report are available. For the station expansion, it is assumed that property will be available for purchase if needed, wetland mitigation will not be required, and all necessary permits will be available.

Real-estate description	The acquisition of additional fee lands is not required for the Greentown Substation located in Howard County, Indiana.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$45,294,123.72
Component cost (in-service year)	$51,309,325.00

Greenfield Transmission Line Component

Component title	Greentown - Teddy 765 kV Line
Project description	Company confidential information
Point A	Greentown Station
Point B	Teddy Station
Point C	

	Normal ratings	Emergency ratings

Summer (MVA)	6625.000000	6625.000000
Winter (MVA)	6625.000000	6625.000000
Conductor size and type	6 Bundled – 795 kcmil (45/7 Strand) ACSR "Tern" conductor	
Nominal voltage	AC	
Nominal voltage	765	
Line construction type	Overhead	
General route description	The Proposing Entity assessed environmental and land use constraints and opportunities within an area that included the existing Greentown substation and the greenfield Teddy substation as the two endpoints. The evaluation resulted in the Bid Route of approximately 137 miles of greenfield line through four counties (Howard, Grant, Blackford, and Jay) in Indiana and five counties (Darke, Shelby, Miami, Champaign, and Clark) in Ohio. The 765kV line exits the existing Greentown substation and travels in a predominantly east-southeast direction until it reaches the greenfield Teddy substation from the north. No habitable structures are present within the proposed ROW. Overall, the Bid 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 Bid Route significantly reduces the number of new access roads, enhancing overall constructability.	
Terrain description	The topography along the Greentown-Teddy 765kV line is relatively flat with some gently rolling hills. Land use in the area encompasses mostly agricultural lands with some rural residential parcels in both Indiana and Ohio. The line crosses low density developed areas, a small amount of highly vegetated (wooded) rural land, state/county highways, railroads, streams, and existing utilities.	
Right-of-way width by segment	The Greentown - Teddy 765 kV greenfield route ROW will be 180 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	138kV: 39.9986, -83.7021, 138kV: 40.0606, -83.7525, 138kV: 40.0637, -83.7888, 138kV: 40.0641, -83.7943, 138kV: 40.0644, -83.7996, 138kV: 40.2047, -84.1518, 138kV: 40.3972, -85.1838, 138kV: 40.4269, -85.5525, 138kV: 40.4437, -85.7795, 345 kV: 40.1976, -84.094, 345 kV: 40.4018, -85.3002, 69kV: 40.297, -84.6587	

Civil infrastructure/major waterway facility crossing plan	Rivers 40.2254, -84.2032 Great Miami River 40.3488, -84.919 Little Salamonie River 40.0654, -83.8105 Mad River 40.3139, -84.7091 Mississinewa River 40.4186, -85.503 Mississinewa River 40.2969, -84.6526 North Fork Stillwater River 40.2969, -84.6544 North Fork Stillwater River 40.297, -84.659 North Fork Stillwater River 40.3051, -84.6869 North Fork Stillwater River Railroads 40.222, -84.1936 CSXT 40.257, -84.3309 CSXT 40.0005, -83.7021 IORY 40.0637, -83.7885 IORY 40.1725, -83.939 IORY 40.372, -85.1083 NS 40.4131, -85.3595 NS 40.4416, -85.6373 NS Pipelines 40.0644, -83.7993 40.1725, -83.9388 40.1726, -83.9379 40.2023, -84.1258 40.243, -84.2718 40.2559, -84.3254 40.2571, -84.3313 40.3695, -85.0955 40.3802, -85.1524 40.3809, -85.1527 40.3817, -85.1531 40.4118, -85.3517 40.4284, -85.5734 40.4285, -85.5755 40.453, -85.8185
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. The route also crosses named and unnamed streams in various locations. Based on existing aerial photography, the proposed route likely has unmapped wetland or drainage features. The timing of construction will be executed in accordance with state and federal agency 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 765kV single circuit line utilizes self-supporting steel lattice tower construction with the phases arranged in a delta configuration. The predominant structure types will be self-supporting suspension towers (479) and tension structures (92). All towers will be supported by drilled concrete pier foundations. Self-supporting structures will be used as an effort to keep electrical infrastructure compatible with agricultural land use that is predominate throughout the project area.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information

Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$633,786,609.77
Component cost (in-service year)	$717,955,475.00

Greenfield Substation Component

Component title	Teddy 765/345 kV Station
Project description	Company confidential information
Substation name	Teddy Station
Substation description	Construct a 765/345KV greenfield substation having a 765KV double breaker double bus design with nine(9) circuit breakers that will interconnect a new 765KV Marysville line and a new 765KV Greentown line having 3-100MVar single-phase reactors; 2-765/345KV, 2250MVA transformer (consisting of 3-750MVA single-phase units each); and a 345KV breaker & a half design with nine(9) circuit breakers that will interconnect a new 345KV Melissa #1 line, new 345KV Melissa #2 line, new 345KV Beatty line, new 345KV Cole line, and 2-345KV capacitor banks.
Nominal voltage	AC
Nominal voltage	765/345

Transformer Information

	Name	Capacity (MVA)
Transformer	Transformer Bank 1	2240 / 2524 / 2566 / 2665 MVA (SN/SE/WN/WE)

	High Side	Low Side	Tertiary
Voltage (kV)	765	345	34.5

	Name	Capacity (MVA)
Transformer	Transformer Bank 2	2240 / 2524 / 2566 / 2665 MVA (SN/SE/WN/WE)

	High Side	Low Side	Tertiary
Voltage (kV)	765	345	34.5

Major equipment description

Construct a 765/345KV greenfield substation having a 765KV double breaker double bus design, 2-765/345KV, 2250MVA transformers, and a 345KV breaker & a half design consisting of 8-765KV, 5000A, 63KA line circuit breaker; 1-765KV, 4000A, 50KA reactor circuit breaker; 48-765KV, 5000A single-phase disc. switches; 12-765KV, 4000A single-phase disc. switches; 6-sets of 3-765KV CCVTs; 9-sets of 3-765KV arresters; 6-765/345KV, 750MVA single-phase transformers with arresters; 3-765KV, 100MVar single-phase line reactors with arresters; 7-345KV, 5000A, 63KA line circuit breakers; 2-345KV, 5000A, 63KA cap. bank circuit breakers; 2-345KV, 261.9MVAR cap. banks; 26-345KV, 5000A three-phase disc. switches; 6-345KV, 5000A single-phase disc. switches; 6-sets of 3-345KV line CCVTs; 6-sets of 3-345KV arresters; AC power system; 125VDC battery & charger and associated DC power system; and associated bus jumpers, bus tubing & dampening cable, strain bus, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, ground grid, and equipment/fence grounding. Install associated relay equipment in a new 16ft x 72ft control house. The station will be established on property roughly located at GPS coordinates (39.942133, -83.706367). Site development will include grading, access road, fencing, gates, and station stone. It is assumed that property will be available for purchase, wetland mitigation will not be needed, and all necessary permits will be available. It is assumed that all necessary outages will be available.

	Normal ratings	Emergency ratings
Summer (MVA)	2240.000000	2523.000000
Winter (MVA)	2565.000000	2664.000000

Environmental assessment

The proposed substation site is located on agricultural lands near rural residential properties, approximately 1.0 mile southeast of Buck Creek State Park in Clark County, Ohio. Desktop review indicates there are no FEMA-mapped floodplains or floodways, NWI-mapped wetlands, or NHD-mapped streams intersecting the site. Field studies will be conducted for wetlands and streams, hazardous materials, and cultural resources to ensure impacts are avoided and/or minimized to the extent practicable.

Outreach plan	Public outreach is a critical component to the Proposing Entity’s siting process, so efforts will include properly informing the public; federal, state, and local agencies; local governments; and other key stakeholders on the need for, and benefits of, this Project. The Proposing Entity’s approach to public outreach is to be always candid and transparent, and to offer a variety of tools and means for directly impacted parties to engage with our staff. The Proposing Entity will provide development updates to local government officials, key stakeholders, and impacted parties as the Project progresses. Public outreach also will involve collecting information about landowner properties and communicating with directly affected landowners during the final siting process.
Land acquisition plan	The proposed Teddy substation will be 80 acres in size and located on agricultural land in Clark County, Ohio. The proposed station will be purchased in fee.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$228,334,882.09
Component cost (in-service year)	$258,658,476.00

Greenfield Transmission Line Component

Component title	Teddy - Marysville 765 kV
Project description	Company confidential information

Point A	Teddy Station	
Point B	Marysville Station	
Point C		
	Normal ratings	Emergency ratings
Summer (MVA)	5395.000000	5395.000000
Winter (MVA)	5978.000000	6614.000000
Conductor size and type	795 kcmil (45/7 Strand) ACSR “Tern” conductor	
Nominal voltage	AC	
Nominal voltage	765	
Line construction type	Overhead	
General route description	The Proposing Entity assessed environmental and land use constraints and opportunities within an area that included the existing Marysville substation and the greenfield Teddy substation as the two endpoints. The evaluation resulted in the Bid Route of approximately 35.4 miles of greenfield line through four counties (Union, Champaign, Madison, and Clark) in Ohio. The 765kV line exits the existing Marysville substation and travels in a predominantly southwestern direction until it reaches the greenfield Melissa substation from the north, paralleling existing transmission lines for approximately 9.4 miles of its total length. No habitable structures are present within the proposed ROW. Overall, the Bid 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 Bid Route significantly reduces the number of new access roads, enhancing overall constructability.	
Terrain description	The topography along the Teddy-Marysville 765kV line is relatively flat with some gently rolling hills. Land use in the area encompasses mostly agricultural lands with some rural residential parcels and existing solar generation facilities. The line crosses low density developed areas, a small amount of highly vegetated (wooded) rural land, state/county highways, railroads, streams, and existing utilities.	
Right-of-way width by segment	The Teddy – Marysville 765 kV greenfield route ROW will be 180 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	138kV: 40.0734, -83.498, 138kV: 40.1949, -83.4181, Unknown kV: 40.2061, -83.4161	

Civil infrastructure/major waterway facility crossing plan	No major waterways are crossed by the proposed Bid Route Railroads 40.2984, -83.4404 CSXT Pipelines 40.2455, -83.4241 40.2509, -83.4247 40.2577, -83.4255 40.2646, -83.4263 40.2684, -83.4279 40.2724, -83.4284
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. The route also crosses named and unnamed streams in various locations. Based on existing aerial photography, the proposed route likely has unmapped wetland or drainage features. The timing of construction will be executed in accordance with state and federal agency 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 765kV single circuit line utilizes self-supporting steel lattice tower construction with the phases arranged in a delta configuration. The predominant structure types will be self-supporting suspension towers (118) and tension structures (35). All towers will be supported by drilled concrete pier foundations. Self-supporting structures will be used as an effort to keep electrical infrastructure compatible with agricultural land use that is predominate throughout the project area.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information

Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$176,458,033.72
Component cost (in-service year)	$195,780,821.00

Substation Upgrade Component

Component title	Marysville Station Upgrade
Project description	Company confidential information
Substation name	Marysville Station
Substation zone	AEP
Substation upgrade scope	Create a new 765KV line position to interconnect a new 765KV Teddy line by adding 2-765KV circuit breakers and a new breaker & a half string; create a new 765KV line position to relocate the existing 765KV Sorenson line by adding 1-765KV circuit breaker to an existing breaker & a half string; add a 765KV STATCOM; add a 765/345KV, 2250MVA transformer (3-750MVA single-phase units); and add 2-345KV capacitor banks.

Transformer Information

None

New equipment description	Create two(2) new 765KV line positions, relocate the existing 765KV Sorenson line, install a 765KV STATCOM, install a 765/345KV, 2250MVA transformer, and install 2-345KV cap. banks by adding 3-765KV, 5000A, 50KA line circuit breakers; 18-765KV, 5000A single-phase disc. switches; 6-765KV, 4000A single-phase disc. switches; 2-sets of 3-765KV CCVTs; 5-sets of 3-765KV arresters; 1-765KV, 500MVAR STATCOM; 3-765/345KV, 750MVA single-phase transformers with arresters; 1-345KV, 4000A, 63KA line circuit breaker; 2-345KV, 4000A, 63KA cap. bank circuit breakers; 2-345KV, 261.9MVAR cap. banks; 4-345KV, 4000A three-phase disc. switches; 3-345KV, 5000A single-phase disc. switches; 1-set of 3-345KV line CCVTs; 1-set of 3-345KV arresters; and associated bus jumpers, bus tubing & dampening cable, strain bus, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, and equipment grounding. Install associated relay equipment in a 16ft x 18ft 765KV control house expansion and the existing 345KV control house. Relocation of the existing 765KV Sorenson line will require relocating existing equipment.

Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing 345KV control house has space for 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, and soil boring logs and geotechnical report are available. For the station expansion, it is assumed that property will be available for purchase if needed, wetland mitigation will not be required, and all necessary permits will be available.
Real-estate description	The acquisition of additional fee lands is not required for the Marysville Substation located in Union County, Ohio.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$281,829,324.15
Component cost (in-service year)	$319,257,149.00

Greenfield Transmission Line Component

Component title	Teddy - Beatty DCT 345 kV
Project description	Company confidential information

Point A	Teddy Station	
Point B	Beatty Station	
Point C		
	Normal ratings	Emergency ratings
Summer (MVA)	1894.000000	2103.000000
Winter (MVA)	2254.000000	2390.000000
Conductor size and type	3 Bundled – 954 kcmil (54/7 Strand) ACSR “Cardinal” conductor.	
Nominal voltage	AC	
Nominal voltage	345	
Line construction type	Overhead	
General route description	The Proposing Entity assessed environmental and land use constraints and opportunities within an area that included the existing Beatty substation and the greenfield Teddy substation as the two endpoints. The evaluation resulted in the Bid Route of approximately 35.6 miles of greenfield line through three counties (Clark, Madison, and Franklin) in Ohio. The double-circuit 345kV line exits the greenfield Teddy substation and travels in a predominantly eastern direction until it reaches the existing Beatty substation from the west, paralleling existing transmission lines for approximately 24.6 miles of its total length. No habitable structures are present within the proposed ROW. Overall, the Bid 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 Bid Route significantly reduces the number of new access roads, enhancing overall constructability.	
Terrain description	The topography along the Teddy-Beatty 345kV line is relatively flat with some gently rolling hills. Land use in the area encompasses mostly agricultural lands with some residential parcels. The line crosses mostly low density developed areas, some highly vegetated (wooded) land, state/county highways, railroads, streams, and existing utilities.	
Right-of-way width by segment	The Teddy-Beatty 345 kV greenfield 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	138kV: 39.8631, -83.3113, 138kV: 39.8638, -83.3451, 138kV: 39.8666, -83.1544, 138kV: 39.8669, -83.1672, 138kV: 39.8962, -83.6599, 345kV: 39.8646, -83.1273, 69kV: 39.86, -83.4099, 69kV: 39.8639, -83.1217, 765kV: 39.8622, -83.2942
Civil infrastructure/major waterway facility crossing plan	Rivers 39.8918 -83.6094 North Fork Little Miami River Railroads 39.8993, -83.6617 NS Pipelines 39.8646, -83.1275 39.8695, -83.4579 39.8945, -83.6442
Environmental impacts	Land use along the Bid Route corridor is a predominantly rural agricultural landscape with pockets of residential development and forested lands. The route intersects FEMA-mapped floodplains and/or floodways, and NWI-mapped wetlands primarily adjacent to streams and low-lying areas. The route also crosses named and unnamed streams in various locations. Based on existing aerial photography, the proposed route likely has unmapped wetland or drainage features. The timing of construction will be executed in accordance with state and federal agency 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 utilizes self-supporting steel lattice tower construction with the phases arranged in AEP’s patented BOLD™ configuration. The predominant structure types will be self-supporting suspension towers (160), running angle towers (9), and tension structures (23). All towers will be supported by drilled concrete pier foundations. Self-supporting structures will be used as an effort to keep electrical infrastructure compatible with agricultural land use that is predominate throughout the project area.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information

Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$175,185,619.66
Component cost (in-service year)	$194,369,073.00

Substation Upgrade Component

Component title	Cole Station Upgrade
Project description	Company confidential information
Substation name	Cole Station
Substation zone	AEP
Substation upgrade scope	Create a new 345KV line position to interconnect a new 345KV Teddy line.

Transformer Information

None

New equipment description	Create a new 345KV line position by adding 1-set of 3-345KV arresters and associated bus jumpers, bus tubing & dampening cable, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, and equipment grounding. Install associated relay equipment in the existing control house.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house 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, additional station stone will not be needed, and space will be available to install the equipment outlined in this description.
Real-estate description	The acquisition of additional fee lands is not required for the Cole Substation located in Franklin County, Ohio.

Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$1,000,000.00
Component cost (in-service year)	$1,109,504.00

Substation Upgrade Component

Component title	Beatty Station Upgrade
Project description	Company confidential information
Substation name	Beatty Station
Substation zone	AEP
Substation upgrade scope	Create a new 345KV line position and circuit breaker & a half string to interconnect a new 345KV Teddy line by adding 2-345KV circuit breakers.

Transformer Information

None

New equipment description	Create a new 345KV line position and circuit breaker & a half string by adding 2-345KV, 5000A, 63KA line circuit breakers; 4-345KV, 4000A three-phase disc. switches; 1-set of 3-345KV CCVTs; 1-set of 3-345KV arresters; and associated bus jumpers, bus tubing & dampening cable, insulators, steel structures, foundations, yard lighting, control cables, conduits, and equipment grounding. Install associated relay equipment in the existing control house.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house 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, additional station stone will not be needed, and space will be available to install the equipment outlined in this description.
Real-estate description	The acquisition of additional fee lands is not required for the Beatty Substation located in Franklin County, Ohio.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$3,857,100.62
Component cost (in-service year)	$4,279,467.00

Substation Upgrade Component

Component title	Guernsey Station Upgrade
Project description	Company confidential information
Substation name	Guernsey Station
Substation zone	AEP
Substation upgrade scope	Create a new 765KV line position to interconnect a new 765KV Conesville line by adding 1-765KV circuit breaker to the existing 765KV ring bus.

Transformer Information

None

New equipment description	Create a new 765KV line position by adding 1-765KV, 4000A, 63KA line circuit breaker; 1-set of 3-765KV CCVTs; 2-sets of 3-765KV arresters; and associated bus jumpers, bus tubing & dampening cable, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, and equipment grounding. Install associated relay equipment in a 12ft x 16ft control house expansion.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new 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, additional station stone will not be needed, and space will be available to install the equipment outlined in this description.
Real-estate description	The acquisition of additional fee lands is not required for the Guernsey Substation located in Guernsey County, Ohio.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information

Component Cost Details - In Current Year $

Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information

Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$5,541,762.21
Component cost (in-service year)	$6,148,605.00

Greenfield Transmission Line Component

Component title	Guernsey - Conesville 765 kV
Project description	Company confidential information
Point A	Guernsey Station
Point B	Conesville Station
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	5300.000000	5300.000000
Winter (MVA)	5300.000000	5300.000000

Conductor size and type	6 Bundled – 795 kcmil ACSR “Tern” conductor
Nominal voltage	AC
Nominal voltage	765
Line construction type	Overhead

General route description	The Proposing Entity assessed environmental and land use constraints and opportunities within an area that included the existing Guernsey substation and the existing Conesville substation as the two endpoints. The evaluation resulted in the Bid Route of approximately 32 miles of greenfield line through three counties (Coshocton, Muskingum, and Guernsey) in Ohio. The 765kV line exits the existing Guernsey substation and travels in a predominantly northwestern direction until it reaches the existing Conesville substation from the southeast, paralleling existing transmission lines for approximately 20.6 miles of its total length. No habitable structures are present within the proposed ROW. Overall, the Bid 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 Bid Route significantly reduces the number of new access roads, enhancing overall constructability.
Terrain description	The topography along the Guernsey-Conesville 765kV line is relatively hilly. Land use in the area encompasses mostly forested and agricultural areas, with few residential parcels in rural southeastern Ohio. The line crosses low density developed areas, a significant amount of highly vegetated (wooded) rural land, state/county highways, railroad, streams, and existing utilities.
Right-of-way width by segment	The Guernsey – Conesville 765 kV greenfield route ROW will be 180 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	138kV: 40.0171, -81.7017, 138kV: 40.0304, -81.7745, 765 kV 39.945, -81.6353, Unknown kV: 39.9301, -81.5389
Civil infrastructure/major waterway facility crossing plan	No rivers are crossed by the Bid Route, however the northern terminus is approximately 0.4-mi northeast of the Muskingum River Railroads 40.0052, -81.6632 CUOH 40.19, -81.8797 OHCR Pipelines 39.9305, -81.5915 39.9307, -81.5797 39.9309, -81.542 39.9311, -81.5746 39.9319, -81.5634 39.9328, -81.5508 39.9331, -81.6114 39.9334, -81.6143 39.9339, -81.6182 39.9808, -81.6506 39.9934, -81.6565 39.998, -81.6579 40.0064, -81.6644 40.0108, -81.6689 40.0114, -81.6786 40.0239, -81.7384 40.0255, -81.748 40.0379, -81.8145 40.0432, -81.8438 40.084, -81.8727 40.1623, -81.866 40.1629, -81.866 40.1656, -81.8668

Environmental impacts	Land use along the Bid Route corridor is predominantly forested with pockets of agricultural development and rural residences. The route intersects FEMA-mapped floodplains and/or floodways, and NWI-mapped wetlands primarily adjacent to streams and low-lying areas. The route also crosses named and unnamed streams in various locations. Based on existing aerial photography, the proposed route likely has unmapped wetland or drainage features. The timing of construction will be executed in accordance with state and federal agency criteria as needed. Desktop studies and record reviews for the line route will be conducted for wetlands and streams and cultural resources. Following field studies, data will be digitized and provided to engineering so that pole locations 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 765kV single circuit line utilizes self-supporting steel lattice tower construction with the phases arranged in a delta configuration. The predominant structure types will be self-supporting suspension towers (107) and tension structures (32). All towers will be supported by drilled concrete pier foundations. Self-supporting structures will be used as an effort to keep electrical infrastructure compatible with agricultural land use that is common throughout the project area.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$166,168,865.05

Component cost (in-service year)	$184,364,952.00

Substation Upgrade Component

Component title	West Millersport Station Upgrade
Project description	Company confidential information
Substation name	West Millersport Station
Substation zone	AEP
Substation upgrade scope	Construct a new 765 kV West Millersport yard with a double breaker double bus design with four(4) circuit breakers that will interconnect a new 765KV Conesville line and a new 765KV Adkins line; a 765/345KV, 2250MVA transformer (3-750MVA single-phase units); and a 345KV line position with one(1) circuit breaker that will interconnect with the existing 345KV yard.

Transformer Information

	Name	Capacity (MVA)
Transformer	Transformer Bank 1	2240 / 2524 / 2566 / 2665 MVA (SN/SE/WN/WE)

	High Side	Low Side	Tertiary
Voltage (kV)	765	345	34.5

New equipment description	Construct a 765KV greenfield substation having a 765KV double breaker double bus design consisting of 6-765KV, 5000A, 63KA line circuit breakers; 1-765KV, 4000A, 50KA reactor circuit breaker; 36-765KV, 5000A single-phase disc. switches; 6-765KV, 4000A single-phase disc. switches; 5-sets of 3-765KV CCVTs; 6-765KV, 5000A line traps; 6-line tuners; 7-sets of 3-765KV arresters; 3-765KV, 100MVar single-phase line reactors with arresters; AC power system; 125VDC battery & charger and associated DC power system; and associated bus jumpers, bus tubing & dampening cable, strain bus, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, ground grid, and equipment/fence grounding. Install associated relay equipment in a new 16ft x 60ft control house.
Substation assumptions	It is assumed that all necessary outages will be available. It is assumed that property will be available for purchase, wetland mitigation will not be needed, and all necessary permits will be available.

Real-estate description	The proposed West Millersport Substation will be 60 acres in size and located on agricultural land in Fairfield County, Ohio. The proposed station will be purchased in fee. The new yard will be established on property roughly located at GPS coordinates (39.714753, -83.172517). Site development will include grading, access road, fencing, gates, and station stone.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$118,108,319.10
Component cost (in-service year)	$136,603,140.00

Greenfield Transmission Line Component

Component title	Bixby - West Millersport 345 kV
Project description	Company confidential information
Point A	Bixby Station
Point B	West Millersport Station
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	1385.000000	1841.000000
Winter (MVA)	1750.000000	2092.000000
Conductor size and type	3 Bundled – 954 kcmil ACSR “Cardinal” conductor.	
Nominal voltage	AC	
Nominal voltage	345	
Line construction type	Overhead	
General route description	The Proposing Entity assessed environmental and land use constraints and opportunities within an area that included the existing West Millersport substation and existing structure 284 of the Ohio Central-Bixby 345kV line as the two endpoints. The evaluation resulted in the Bid Route of approximately 3 miles utilizing mostly existing ROW through two counties (Fairfield and Licking) in Ohio. The 345kV line exits the existing West Millersport substation and travels directly north until it reaches the existing Ohio Central-Bixby 345kV line at Structure 284, paralleling 3 miles of existing transmission line. No habitable structures are present within the proposed ROW. Overall, the Bid Route selected is the most direct route between the two endpoints and has the least overall impact on land use and environmental resources based on the Proposing Entity’s qualitative review. The Bid Route significantly reduces the number of new access roads, enhancing overall constructability.	
Terrain description	The topography along the West Millersport-Bixby 345kV line is relatively flat. Land use in the area encompasses mostly agricultural lands, with few residential parcels. The line also crosses county highways, streams, and existing utilities.	
Right-of-way width by segment	The Bixby - West Millersport 345 kV greenfield 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	No existing transmission facilities will be crossed by the Bid Route	
Civil infrastructure/major waterway facility crossing plan	No major rivers or streams, or railways are crossed by the proposed Bid Route Pipeline 39.909, -82.567	

Environmental impacts	Land use along the Bid Route corridor is a predominantly rural agricultural landscape with pockets of residential development. The route intersects NWI-mapped wetlands primarily adjacent to streams and low-lying areas. The route also crosses named and unnamed streams in various locations. Based on existing aerial photography, the proposed route likely has unmapped wetland or drainage features. The timing of construction will be executed in accordance with state and federal agency criteria as needed. Desktop studies and record reviews for the line route will be conducted for wetlands and streams and cultural resources. Following field studies, data will be digitized and provided to engineering so that pole locations 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 single circuit line utilizes tubular steel monopole construction with the phases arranged in a delta configuration. The predominant structure types will be self-supporting suspension structures (17) and tension structures (5). All structures will be supported by drilled concrete pier foundations. Stee monopole structures will be used as an effort to keep electrical infrastructure compatible with agricultural land use that is predominate throughout the project area.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$12,000,001.00

Component cost (in-service year)	$13,879,104.00

Substation Upgrade Component

Component title	Bixby Station Upgrade
Project description	Company confidential information
Substation name	Bixby Station
Substation zone	AEP
Substation upgrade scope	New relaying at Bixby Station for new 345kV tie to West Millersport.

Transformer Information

None

New equipment description	Replace 2 line relaying panels in Bixby station control house with new relays for line to West Millersport (previously Ohio Central).
Substation assumptions	The existing control house relay panels will be retired and the space will be re-used for the new relays.
Real-estate description	No additional land will be required to be purchased in fee for Bixby Station.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information

Component Cost Details - In Current Year $

Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information

Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$75,000.00
Component cost (in-service year)	$86,744.00

Greenfield Transmission Line Component

Component title	West Millersport - Adkins 765 kV
Project description	Company confidential information
Point A	West Millersport Station
Point B	Adkins Station
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	6625.000000	6625.000000
Winter (MVA)	6625.000000	6625.000000

Conductor size and type	6 Bundled – 795 kcmil (45/7 Strand) ACSR “Tern” conductor
Nominal voltage	AC
Nominal voltage	765
Line construction type	Overhead

General route description	The Proposing Entity assessed environmental and land use constraints and opportunities within an area that included the greenfield Adkins substation and the existing West Millersport substation as the two endpoints. The evaluation resulted in the Bid Route of approximately 42 miles of greenfield line through two counties (Pickaway and Fairfield) in Ohio. The 765kV line exits the greenfield Adkins substation and travels in a predominantly northeastern direction until it reaches the existing West Millersport substation from the south. No habitable structures are present within the proposed ROW. Overall, the Bid 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 Bid Route significantly reduces the number of new access roads, enhancing overall constructability.
Terrain description	The topography along the Adkins-West Millersport 765kV line is relatively flat with some gently rolling hills. Land use in the area encompasses mostly agricultural lands with some rural residential parcels and existing solar generation facilities. The line crosses low density developed areas, a small amount of highly vegetated (wooded) rural land, state/county highways, railroads, streams, and existing utilities.
Right-of-way width by segment	The West Millersport - Adkins 765 kV greenfield route ROW will be 180 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	138kV: 39.7324, -82.9764, 138kV: 39.7603, -82.7351, 138kV: 39.7655, -82.9588, 345kV 39.7221, -83.11, 69kV: 39.7156, -83.1397, 69kV: 39.7262, -83.0218, 69kV: 39.7324, -82.9619, 69kV: 39.7609, -82.7388, 69kV: 39.761, -82.7393, 69kV: 39.7612, -82.7405, 69kV: 39.7648, -82.7998, 69kV: 39.7792, -82.6903, 765kV 39.7122, -83.1637
Civil infrastructure/major waterway facility crossing plan	Rivers 39.7304 -83.0063 Scioto River 39.7608 -82.7386 Hocking River Railroads 39.7324, -82.9622 CSXT 39.779, -82.6906 IORY 39.8515, -82.6493 KNWA 39.7324, -82.9616 NS Pipelines 39.7113, -83.1756 39.7159, -83.138 39.7263, -83.0214 39.7573, -82.9593 39.7603, -82.7321 39.7617, -82.744 39.7794, -82.6868

Environmental impacts	Land use along the Bid Route corridor is a predominantly agricultural landscape with pockets of forested areas and residential development. The route intersects FEMA-mapped floodplains and/or floodways, and NWI-mapped wetlands primarily adjacent to streams and low-lying areas. The route also crosses named and unnamed streams in various locations. Based on existing aerial photography, the proposed route likely has unmapped wetland or drainage features. The timing of construction will be executed in accordance with state and federal agency criteria as needed. Desktop studies and record reviews for the line route will be conducted for wetlands and streams and cultural resources. Following field studies, data will be digitized and provided to engineering so that pole locations 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 765kV single circuit line utilizes self-supporting steel lattice tower construction with the phases arranged in a delta configuration. The predominant structure types will be self-supporting suspension towers (134) and tension structures (37). All towers will be supported by drilled concrete pier foundations. Self-supporting structures will be used as an effort to keep electrical infrastructure compatible with agricultural land use that is predominate throughout the project area.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$201,833,315.00

Component cost (in-service year)	$233,438,802.00

Transmission Line Upgrade Component

Component title	West Millersport - Kirk 345 kV
Project description	Company confidential information
Impacted transmission line	Muskingum River - Central 345kV double circuit
Point A	West Millersport Station
Point B	Kirk Station
Point C	
Terrain description	The topography along the West Millersport-Kirk 345kV line is relatively flat. Land use in the area encompasses mostly agricultural lands, with few residential parcels.

Existing Line Physical Characteristics

Operating voltage	345kV
Conductor size and type	2303 kcmil ACAR 54/37 conductor
Hardware plan description	The existing line hardware will be removed, and new line hardware will be installed.
Tower line characteristics	The existing Muskingum River - Central 345kV double circuit line utilizes self-supporting steel lattice tower construction with the phases arranged in a vertical configuration. The line was installed in 1955, and the structures and foundations are in good condition. There are no know maintenance conditions for any of the towers on this line.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	345.000000	345.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1385.000000	1790.000000

Winter (MVA)	1750.000000	1790.000000
Conductor size and type	2 Bundled – 954 kcmil ACSR 54/7 “Cardinal” conductor.	
Shield wire size and type	(2) 0.646 OPGW	
Rebuild line length	6.37 miles	
Rebuild portion description	This 6.37 mile section of the Muskingum River - Central 345kV line will be rebuilt using double circuit steel monopole structures arranged in a vertical configuration. The structures will be supported by concrete pier foundations. The rebuilt section of line will be constructed within the existing 150’ wide easement. Steel monopole structures will be used as an effort to keep electrical infrastructure compatible with agricultural land use that is common throughout the project area.	
Right of way	Existing Right of Way will be utilized.	
Construction responsibility	Company confidential information	
Benefits/Comments	Company confidential information	
Component Cost Details - In Current Year $		
Engineering & design	Company confidential information	
Permitting / routing / siting	Company confidential information	
ROW / land acquisition	Company confidential information	
Materials & equipment	Company confidential information	
Construction & commissioning	Company confidential information	
Construction management	Company confidential information	
Overheads & miscellaneous costs	Company confidential information	
Contingency	Company confidential information	
Total component cost	$24,300,000.00	
Component cost (in-service year)	$28,105,186.00	

Transmission Line Upgrade Component

Component title	Hyatt - Maliszewski Double Circuit 345 kV
Project description	Company confidential information
Impacted transmission line	Hyatt – Maliszewski double circuit 345 kV
Point A	Hyatt 345/138 kV Station
Point B	Maliszewski 345/138 kV Station
Point C	
Terrain description	The topography along the Hyatt - Maliszewski 138/345kV line is relatively flat. Land use in the area encompasses mostly residential and commercial use properties.

Existing Line Physical Characteristics

Operating voltage	138/345
Conductor size and type	2303 kcmil ACAR 54/37 conductor / 1414 kcmil ACSR/PE 62/19 conductor
Hardware plan description	The existing line hardware will be removed, and new line hardware will be installed.
Tower line characteristics	The existing Central – East Lima 345kV double circuit line utilizes self-supporting steel lattice tower construction with the phases arranged in a vertical configuration. The line was installed in 1955, and the structures and foundations are in good condition. There are no know maintenance conditions for any of the towers on this line.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	345.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1385.000000	1841.000000
Winter (MVA)	1750.000000	2092.000000

Conductor size and type	2 Bundled – 954 kcmil ACSR 54/7 “Cardinal” conductor
Shield wire size and type	(2) 0.646” OPGW
Rebuild line length	5.25 miles
Rebuild portion description	This 5.25 mile section of the Central – East lima 345kV line will be rebuilt using double circuit steel monopole structures arranged in a vertical configuration. The structures will be supported by concrete pier foundations. The rebuilt section of line will be constructed within the existing 150’ wide easement. Steel monopole structures will be used as an effort to keep electrical infrastructure compatible with residential land use that is prevalent throughout the project area.
Right of way	Existing Right of Way will be utilized.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$34,125,000.00
Component cost (in-service year)	$39,468,703.00

Transmission Line Upgrade Component

Component title	Hayden - Cole 345 kV

Project description	Company confidential information
Impacted transmission line	Hayden - Cole 345 kV
Point A	Hayden Station
Point B	Cole Station
Point C	
Terrain description	The topography along the Hayden - Cole 345kV line is relatively flat. Land use in the area encompasses mostly agricultural lands, with few residential parcels.

Existing Line Physical Characteristics

Operating voltage	Double Circuit Line: 138kV/345kV
Conductor size and type	2 Bundle 954 kcmil ACSR 45/7 “Rail” conductor
Hardware plan description	The existing line hardware will be removed, and new line hardware will be installed.
Tower line characteristics	The existing Beatty – Hayden 345kV double circuit line utilizes self-supporting steel lattice tower construction with the phases arranged in a vertical configuration. The line was installed in 1975, and the structures and foundations are in good condition. There are no know maintenance conditions for any of the towers on this line.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	345.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1385.000000	1503.000000
Winter (MVA)	1750.000000	2092.000000

Conductor size and type	2 Bundle 954 kcmil ACSR 54/7 “Cardinal” conductor
Shield wire size and type	2) 0.646” OPGW

Rebuild line length	7.89 Miles
Rebuild portion description	This 7.89-mile section of the Beatty – Hayden 345kV line will be rebuilt using double circuit steel monopole structures arranged in a vertical configuration. The structures will be supported by concrete pier foundations. The rebuilt section of line will be constructed within the existing 150’ wide easement. Steel monopole structures will be used as an effort to keep electrical infrastructure compatible with both agricultural and residential land use that is prevalent throughout the project area.
Right of way	Existing Right of Way will be utilized.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$37,872,000.00
Component cost (in-service year)	$43,802,453.00

Substation Upgrade Component

Component title	Newark Center Station Upgrade
Project description	Company confidential information

Substation name	Newark Center 138 kV
Substation zone	AEP
Substation upgrade scope	Replace wavetrap and limiting bus conductor at Newark Center Station to accommodate new tap into Ohio Central.

Transformer Information

None

New equipment description	New 138kV wavetrap, bus tubing, bus jumpers, and associated connectors. All equipment will have a continuous current rating to meet/exceed 438/481/569/604 MVA.
Substation assumptions	It is assumed all necessary outages will be available, existing bus supports can accommodate the new bus tubing, and the existing CCVT/structure can accommodate the new wave trap.
Real-estate description	The acquisition of additional fee lands is not required for the Newark Center Substation located in Union County, Ohio.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information

Component Cost Details - In Current Year $

Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$700,000.00

Component cost (in-service year)	$809,614.00

Transmission Line Upgrade Component

Component title	Ohio Central Extension
Project description	Company confidential information
Impacted transmission line	Conesville-Newark Center 138kV & Ohio Central 345kV Extension
Point A	Conesville Station
Point B	Newark Center Station
Point C	
Terrain description	Terrain along the Conesville – Newark Center line is relatively flat with some gentle rolling hills. Land use is primarily agricultural with some residential properties.

Existing Line Physical Characteristics

Operating voltage	345kV
Conductor size and type	2 Bundle 954 kcmil ACSR 54/7 “Cardinal” conductor
Hardware plan description	The existing line hardware will be removed, and new line hardware will be installed.
Tower line characteristics	The existing Ohio Central 345kV Extension will be extended by one span to cut into the existing Conesville - Kirk 138kV Line. The existing 345kV line will then loop the existing Conesville – Kirk 138kV Line into Ohio Central Station. The existing Ohio Central 345kV Extension double circuit line utilizes self-supporting steel monopole structures with the phases arranged in a vertical configuration. The line was installed in 2015, and the structures and foundations are in near new condition. There are no know maintenance conditions for any of the structures on this line.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	345.000000	138.000000
	Normal ratings	Emergency ratings

Summer (MVA)	548.000000	715.000000
Winter (MVA)	601.000000	756.000000
Conductor size and type	2 Bundle 954 kcmil ACSR 54/7 “Cardinal” conductor	
Shield wire size and type	(2) 0.646” OPGW	
Rebuild line length	200 ft.	
Rebuild portion description	The existing Ohio Central 345kV Extension will be extended by one span to cut into the existing Conesville - Kirk 138kV Line. The existing 345kV line will then loop the existing Conesville – Kirk 138kV Line into Ohio Central Station. The only new work required is to install 4 new 3-pole steel pole structures to tie Structure 47 on the existing Conesville – Kirk 138kV Line to Structure 1 on the the existing Ohio Central 345kV Extension. These structures will be supported by concrete pier foundations.	
Right of way	Existing Right of Way will be utilized.	
Construction responsibility	Company confidential information	
Benefits/Comments	Company confidential information	
Component Cost Details - In Current Year $		
Engineering & design	Company confidential information	
Permitting / routing / siting	Company confidential information	
ROW / land acquisition	Company confidential information	
Materials & equipment	Company confidential information	
Construction & commissioning	Company confidential information	
Construction management	Company confidential information	
Overheads & miscellaneous costs	Company confidential information	
Contingency	Company confidential information	
Total component cost	$3,500,001.00	

Component cost (in-service year)	$4,048,072.00

Substation Upgrade Component

Component title	Allen Station Upgrade
Project description	Company confidential information
Substation name	Allen Station
Substation zone	AEP
Substation upgrade scope	Replace 1272 KCM bus conductor at Allen station on Allen-Tillman 138kV line.

Transformer Information

None

New equipment description	Replace bus conductor and associated connectors at Allen station with a higher ampacity equipment to achieve future ratings on the Allen-Tillman 138kV line of 323/451/408/506 MVA.
Substation assumptions	It is assumed all necessary outages will be available, and bus connectors will have to be replaces to accommodate the new jumpers.
Real-estate description	The acquisition of additional fee lands is not required for the Allen Substation located in Allen County, Indiana.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information

Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$50,000.00
Component cost (in-service year)	$57,830.00

Transmission Line Upgrade Component

Component title	Roberts - Kenny 138kV Rebuild
Project description	Company confidential information
Impacted transmission line	Roberts - Kenny 138kV
Point A	Roberts
Point B	Kenny
Point C	
Terrain description	Underground
Existing Line Physical Characteristics	
Operating voltage	138
Conductor size and type	138kV underground cable
Hardware plan description	Hardware will not be re-used for the replacement project.
Tower line characteristics	N/A
Proposed Line Characteristics	

	Designed	Operating
Voltage (kV)	138.000000	138.000000

	Normal ratings	Emergency ratings
Summer (MVA)	285.000000	368.000000
Winter (MVA)	377.000000	438.000000
Conductor size and type	5000 KCM XLPE cable per phase	
Shield wire size and type	N/A	
Rebuild line length	3.18 miles	
Rebuild portion description	This project covers the rebuild of the existing 3.18 mi Kenny - Roberts 138kV Line. Approximately 3.18 miles of new underground T-line using a concrete duct bank system from Kenny Station to Griggs Terminal will be installed. It is anticipated that a single 5,000 KCM XLPE cable per phase will be required to meet capacity requirements. The existing line bores under the Scioto River and the existing pipe type cable will be retired by removing the oil and cable from the carrier pipe. Existing vaults will be filled and abandoned. The proposed route will generally follow the same centerline. Assumptions: - (4) existing manholes will need to be filled - (9) manholes to be installed - Substation termination to be fully removed and replaced. - Single 5000 KCM XLPE cable per phase meets capacity requirement - utilize public ROW - Existing line routes will be used - 1 HDD under the Scioto River	
Right of way	ROW for existing Roberts - Kenny 138kV UG line will be re-used with additional ROW/easements acquired as necessary.	
Construction responsibility	Company confidential information	
Benefits/Comments	Company confidential information	
Component Cost Details - In Current Year $		
Engineering & design	Company confidential information	
Permitting / routing / siting	Company confidential information	
ROW / land acquisition	Company confidential information	
Materials & equipment	Company confidential information	
Construction & commissioning	Company confidential information	
Construction management	Company confidential information	

Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$66,364,219.00
Component cost (in-service year)	$73,631,339.00

Transmission Line Upgrade Component

Component title	Wilson - Fifth Avenue 138kV line
Project description	Company confidential information
Impacted transmission line	Wilson - Fifth Avenue
Point A	Wilson
Point B	Fifth Avenue
Point C	
Terrain description	Urban, flat
Existing Line Physical Characteristics	
Operating voltage	138
Conductor size and type	636 ACSR 26/7 Grossbeak
Hardware plan description	Existing hardware is planned to be re-used and will be replaced as needed.
Tower line characteristics	The line consists mostly of single-circuit steel lattice structures built in 1955.
Proposed Line Characteristics	

	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings

Summer (MVA)	223.000000	310.000000
Winter (MVA)	247.000000	285.000000
Conductor size and type	No conductor will be replaced.	
Shield wire size and type	No shield wire will be replaced.	
Rebuild line length	N/A	
Rebuild portion description	N/A	
Right of way	No new ROW is expected to be necessary.	
Construction responsibility	Company confidential information	
Benefits/Comments	Company confidential information	
Component Cost Details - In Current Year $		
Engineering & design	Company confidential information	
Permitting / routing / siting	Company confidential information	
ROW / land acquisition	Company confidential information	
Materials & equipment	Company confidential information	
Construction & commissioning	Company confidential information	
Construction management	Company confidential information	
Overheads & miscellaneous costs	Company confidential information	
Contingency	Company confidential information	
Total component cost	$18,255,715.00	
Component cost (in-service year)	$20,254,781.00	

Substation Upgrade Component

Component title	McComb Station Upgrades

Project description	Company confidential information
Substation name	McComb 138/13 kV Station
Substation zone	AEP
Substation upgrade scope	Install a third 138/13 kV transformer at McComb station, install two 138kV breakers at McComb station and reconfigure to ring-bus to accommodate the third 138/13kV transformer, install one 13kV low-side breaker, 13kV bus work, and one 13kV bus-tie breaker.

Transformer Information

	Name	Capacity (MVA)
Transformer	Transformer #3	50

	High Side	Low Side	Tertiary
Voltage (kV)	138	13	

New equipment description	New equipment will include one 138/13kV transformer with associated wire and cabling, foundation, jumpers, and surge arresters, two 138kV and two 13kV breakers with associated wire and cabling, foundation, support structure, jumpers, and surge arresters, 138kV and 13kV buswork to accommodate the new transformer and breakers, and new relays and telecom equipment in the existing control house.
Substation assumptions	The AC/DC cabinets have adequate space for the new equipment, control house has adequate space for the new relays, the existing ground grid is adequate to support the new equipment.
Real-estate description	The acquisition of additional fee lands is not required for McComb station.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information

Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$7,187,418.68
Component cost (in-service year)	$8,312,911.00

Substation Upgrade Component

Component title	Bethel Station Upgrade
Project description	Company confidential information
Substation name	Bethel Station
Substation zone	AEP
Substation upgrade scope	Replace 1-138KV circuit breaker (C).

Transformer Information

None

New equipment description	Replace 1-138KV, 2000A, 40KA circuit breaker with 1-138KV, 3000A, 63KA line circuit breaker and associated bus jumpers, foundation, control cables, conduits, and equipment grounding. Install associated relay equipment in the existing control house.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house 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, additional station stone will not be needed, and space will be available to install the equipment outlined in this description.
Real-estate description	No additional land is required for the Bethel Station upgrades.

Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$500,000.00
Component cost (in-service year)	$578,296.00

Substation Upgrade Component

Component title	OSU Station Upgrade
Project description	Company confidential information
Substation name	OSU Station
Substation zone	AEP
Substation upgrade scope	Replace 1-138KV circuit breaker (#101).

Transformer Information

None

New equipment description	Replace 1-138KV, 1600A, 41.8KA circuit breaker with 1-138KV, 3000A, 63KA line circuit breaker and associated bus jumpers, foundation, control cables, conduits, and equipment grounding. Install associated relay equipment in the existing control house.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house 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, additional station stone will not be needed, and space will be available to install the equipment outlined in this description.
Real-estate description	No additional land is required for the OSU station upgrades.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$500,000.00
Component cost (in-service year)	$578,296.00

Substation Upgrade Component

Component title	Hess 138 kV Station Upgrade

Project description	Company confidential information
Substation name	Hess Station
Substation zone	AEP
Substation upgrade scope	Replace 1-138KV circuit breaker (#3) to alleviate a CT thermal limit. New ratings on Fifth Ave-Hess South 138kV line 223/310/247/285 (SN/SE/WN/WE MVA).

Transformer Information

None

New equipment description	Replace 1-138KV, 1600A circuit breaker and associated disc. switches with 1-138KV, 3000A, 63KA line circuit breaker; 2-138KV, 3000A three-phase disc. switches; and associated bus jumpers, bus tubing & dampening cable, insulators, steel structures, foundations, control cables, conduits, and equipment grounding. Install associated relay equipment in the existing control house.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house 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, additional station stone will not be needed, and space will be available to install the equipment outlined in this description.
Real-estate description	The acquisition of additional fee lands is not required for the Hess Substation located in Franklin County, Ohio.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information

Component Cost Details - In Current Year $

Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information

Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$700,000.00
Component cost (in-service year)	$809,614.00

Substation Upgrade Component

Component title	South Kenton Station
Project description	Company confidential information
Substation name	South Kenton Station
Substation zone	AEP
Substation upgrade scope	Replace line side disconnect switches and bus tie switch on East Lima line at South Kenton station with 600A switches.

Transformer Information

None

New equipment description	Replace three switches at South Kenton station (line side disconnect and one bus tie switch) with 600A switches.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house 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, additional station stone will not be needed, and space will be available to install the equipment outlined in this description.
Real-estate description	No additional land is required for the South Kenton Station upgrades.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information

Component Cost Details - In Current Year $

Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$110,000.00
Component cost (in-service year)	$127,225.00

Substation Upgrade Component

Component title	Meadow Lake Station Circuit Breaker
Project description	Company confidential information
Substation name	Meadow Lake Station
Substation zone	AEP
Substation upgrade scope	Replace 4-345KV circuit breakers (A, A1, B, B1).

Transformer Information

None

New equipment description	Replace 4-345KV, 3000A circuit breakers and associated disc. switches with 4-345KV, 5000A, 63KA line circuit breakers; 8-345KV, 4000A three-phase disc. switches; and associated bus jumpers, foundations, control cables, conduits, and equipment grounding. Install associated relay equipment in the existing control house.

Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house 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, additional station stone will not be needed, and space will be available to install the equipment outlined in this description.
Real-estate description	No additional land is required for the Meadow Lake station upgrades.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$4,000,000.00
Component cost (in-service year)	$4,626,368.00

Transmission Line Upgrade Component

Component title	Teddy - Cole 345 kV #2 Circuit
Project description	Company confidential information
Impacted transmission line	Teddy – Cole 345 kV

Point A	Teddy Station
Point B	Cole Station
Point C	
Terrain description	The topography along the Beatty-Cole 345kV line is relatively flat with some gently rolling hills. Land use in the area encompasses mostly agricultural lands with residentials areas increasing as the line travels north toward the Cole substation The line crosses mostly low to mid-density developed areas, state/county highways, railroads, streams, and existing utilities.
Existing Line Physical Characteristics	
Operating voltage	345
Conductor size and type	2 Bundled - 954 kcmil (45/7 Strand) ACSR “Rail” conductor
Hardware plan description	This project requires installing a second circuit on the vacant side of an existing 9.7-mile long 345kV AC overhead transmission line between the existing Cole Station and the existing Beatty Station. All hardware and conductor associated with installing the second circuit will be new.
Tower line characteristics	The existing 345kV double circuit line utilizes self-supporting steel lattice tower construction with the phases arranged in a vertical configuration. The line was installed in 1975, and the structures and foundations are in good condition. There are no know maintenance conditions for any of the towers on this line. The predominant structure types will be self-supporting suspension towers (43), running angle towers (6), and tension structures (9). All towers are supported by drilled concrete pier foundations. The existing self-supporting structures are being utilized to minimize any additional impacts and to keep electrical infrastructure compatible with agricultural land use that is predominate throughout the project area.
Proposed Line Characteristics	

	Designed	Operating
Voltage (kV)	345.000000	345.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1385.000000	1750.000000
Winter (MVA)	1385.000000	1750.000000

Conductor size and type	2 Bundled – 954 kcmil (45/7 Strand) ACSR “Rail” conductor.

Shield wire size and type	The existing line currently carries a single 3/8” EHS (7 Strand) Steel shield wire. A second shield wire will be added with the new circuit. The new shield wire will be a 0.646” Optical Ground Wire (OPGW).
Rebuild line length	No portion of this line will be rebuilt as part of this project. The length of the new circuit will be 9.7-miles.
Rebuild portion description	No portion of this line will be rebuilt as part of this project.
Right of way	The Proposing Entity assessed environmental and land use constraints and opportunities within the existing corridor between the existing Beatty substation and the existing Cole substation as the two endpoints. The evaluation resulted in the addition of approximately 9.8 miles of 345kV conductor on existing unoccupied tower arms in Franklin County, Ohio. The 345kV line exits the existing Beatty substation and travels west, before turning north toward the Cole Substation, utilizing existing ROW for the entirety of its length. No habitable structures are present within the proposed ROW. Overall, the Bid Route has the least overall impact on land use and environmental resources based on the Proposing Entity’s qualitative review and its use of existing ROW. The Bid Route significantly reduces the number of new access roads, enhancing overall constructability. The topography along the Beatty-Cole 345kV line is relatively flat with some gently rolling hills. Land use in the area encompasses mostly agricultural lands with residentials areas increasing as the line travels north toward the Cole substation The line crosses mostly low to mid-density developed areas, state/county highways, railroads, streams, and existing utilities. The existing Beatty-Cole 345 kV ROW is 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.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information

Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$21,630,661.00
Component cost (in-service year)	$23,999,296.00

Substation Upgrade Component

Component title	Conesville Station Expansion
Project description	Company confidential information
Substation name	Conesville Station
Substation zone	AEP
Substation upgrade scope	Upgrade the existing Conesville substation to include a 765 kV yard and expand the 345 kV yard. The 765 kV yard will have a 765KV double breaker double bus design with six(6) circuit breakers that will interconnect a new 765KV Guernsey line and a new 765KV West Millersport line; a 765/345KV, 2250MVA transformer (3-750MVA single-phase units); and a 345KV line position with one(1) circuit breaker that will interconnect with the 345KV yard. Replace Wavetrap and circuit switcher AA in 138 kV yard.

Transformer Information

	Name	Capacity (MVA)	
Transformer	Transformer Bank 1	2240 / 2524 / 2566 / 2665 MVA (SN/SE/WN/WE)	
	High Side	Low Side	Tertiary
Voltage (kV)	765	345	34.5

New equipment description	Construct a 765/345KV station yard having a 765KV double breaker double bus design, 1-765/345KV, 2250MVA transformer, and 1-345KV line consisting of 6-765KV, 4000A, 63KA line circuit breakers; 39-765KV, 4000A single-phase disc. switches; 5-sets of 3-765KV CCVTs; 6-sets of 3-765KV arresters; 3-765/345KV, 750MVA single-phase transformers with arresters; 1-345KV, 5000A, 63KA line circuit breaker; 1-345KV, 5000A three-phase disc. switch; 3-345KV, 5000A single-phase disc. switches; 1-set of 3-345KV line CCVTs; 1-set of 3-345KV arresters; AC power system; 125VDC battery & charger and associated DC power system; and associated bus jumpers, bus tubing & dampening cable, strain bus, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, ground grid, and equipment/fence grounding. Install associated relay equipment in a new 16ft x 60ft control house. Replace Wavetrap and circuit switcher AA in 138 kV yard.
Substation assumptions	It is assumed that all necessary outages will be available. It is assumed that property will be available for purchase, wetland mitigation will not be needed, and all necessary permits will be available.
Real-estate description	The proposed Conesville 765 kV yard will be 60 acres in size and located on agricultural land in rural Coshocton County, Ohio. The proposed station will be purchased in fee. The new yard will be established on property roughly located at GPS coordinates (40.191441, -81.882419). Site development will include grading, access road, fencing, gates, and station stone. No additional land is required for the upgrades for the 345 and 138 kV yards.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information

Total component cost	$140,968,702.05
Component cost (in-service year)	$156,405,281.00

Greenfield Transmission Line Component

Component title	Conesville - West Millersport 765 kV
Project description	Company confidential information
Point A	Conesville Station
Point B	West Millersport Station
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	5300.000000	5300.000000
Winter (MVA)	5300.000000	5300.000000

Conductor size and type	6 Bundled – 795 kcmil (45/7 Strand) ACSR “Tern” conductor.
Nominal voltage	AC
Nominal voltage	765
Line construction type	Overhead

General route description	The Proposing Entity assessed environmental and land use constraints and opportunities within an area that included the existing Conesville substation and the existing West Millersport substation as the two endpoints. The evaluation resulted in the Bid Route of approximately 49 miles utilizing mostly existing ROW through three counties (Coshocton, Muskingum, and Licking) in Ohio. The 765kV line exits the existing Conesville substation and travels in a predominantly southwestern direction until it reaches the existing West Millersport substation from the east, utilizing approximately 45.9 miles of existing 345kV ROW, and paralleling an additional 2 miles of existing transmission line. As this is a voltage upgrade, the ROW will require an expansion from 150 feet to 180 feet to accommodate the 765kV line. No habitable structures are present within the proposed ROW. Overall, the Bid 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 Bid Route significantly reduces the number of new access roads, enhancing overall constructability.
Terrain description	The topography along the Conesville-West Millersport 765kV line is relatively hilly. Land use in the area encompasses mostly forested and agricultural areas, with few residential parcels in rural southeastern Ohio. The line crosses low density developed areas, a significant amount of highly vegetated (wooded) rural land, state/county highways, railroad, streams, and existing utilities.
Right-of-way width by segment	The Conesville – West Millersport 765 kV greenfield route ROW will be 30 feet additional width to the existing 150' ROW 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	138kV: 39.8925, -82.5686, 138kV: 39.8928, -82.5768, 138kV: 39.931, -82.525, 138kV: 40.1008, -82.0635, 138kV: 40.1151, -82.0465, 138kV: 40.1235, -82.0296, 138kV: 40.1739, -81.875, 345kV: 39.8928, -82.5764, 345kV: 40.1124, -82.0513, 69kV: 39.9001, -82.5667, 69kV: 39.9002, -82.5685, 69kV: 39.9491, -82.3923, 69kV: 39.9546, -82.2986, 765kV: 40.0944, -82.0795
Civil infrastructure/major waterway facility crossing plan	Rivers 39.931 -82.5267 South Fork Licking River 39.9419 -82.4916 South Fork Licking River 39.9471 -82.4851 South Fork Licking River 39.9496 -82.4778 South Fork Licking River 40.0652 -82.1995 Licking River 40.1346 -81.9822 Muskingum River 40.1369 -81.9671 Muskingum River 40.1604 -81.9077 Muskingum River Railroads 40.0549, -82.2013 CUOH 40.1306, -82.008 OHCR 40.19, -81.8797 OHCR Pipelines 39.9273, -82.5655 39.9291, -82.5523 39.9294, -82.5584 39.9311, -82.5248 39.9313, -82.5198 39.949, -82.3912 39.9498, -82.4337 39.95, -82.4648 39.9501, -82.4761 40.0706, -82.1985 40.0737, -82.198 40.0757, -82.1961 40.0768, -82.1883 40.077, -82.1822 40.0772, -82.1786 40.079, -82.1649 40.0806, -82.1523 40.092, -82.091 39.927, -82.5666

Environmental impacts	Land use along the Bid Route corridor is a mix of rural forested and agricultural lands 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. The route also crosses named and unnamed streams in various locations. Based on existing aerial photography, the proposed route likely has unmapped wetland or drainage features. The timing of construction will be executed in accordance with state and federal agency criteria as needed. Desktop studies and record reviews for the line route will be conducted for wetlands and streams and cultural resources. Following field studies, data will be digitized and provided to engineering so that pole locations 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 765kV single circuit line utilizes self-supporting steel lattice tower construction with the phases arranged in a delta configuration. The predominant structure types will be self-supporting suspension towers (159) and tension structures (44). All towers will be supported by drilled concrete pier foundations. Self-supporting structures will be used as an effort to keep electrical infrastructure compatible with agricultural land use that is common throughout the project area.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$248,977,454.65

Component cost (in-service year)	$287,965,339.00

Substation Upgrade Component

Component title	Adkins Station Expansion
Project description	Company confidential information
Substation name	Adkins 765 kV Station
Substation zone	AEP
Substation upgrade scope	Construct a 765KV yard at Adkins station with a 765 kV double breaker double bus design with seven (7) circuit breakers that will interconnect the existing 765KV Marysville line, a new 765KV West Millersport line, and the existing 765KV Flatlick line having 3-100MVar single-phase reactors.

Transformer Information

None

New equipment description	Construct a 765KV yard having a 765KV double breaker double bus design consisting of 6-765KV, 5000A, 63KA line circuit breakers; 1-765KV, 4000A, 50KA reactor circuit breaker; 36-765KV, 5000A single-phase disc. switches; 6-765KV, 4000A single-phase disc. switches; 5-sets of 3-765KV CCVTs; 6-765KV, 5000A line traps; 6-line tuners; 7-sets of 3-765KV arresters; 3-765KV, 100MVar single-phase line reactors with arresters; AC power system; 125VDC battery & charger and associated DC power system; and associated bus jumpers, bus tubing & dampening cable, strain bus, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, ground grid, and equipment/fence grounding. Install associated relay equipment in a new 16ft x 60ft control house.
Substation assumptions	It is assumed that all necessary outages will be available. It is assumed that property will be available for purchase, wetland mitigation will not be needed, and all necessary permits will be available
Real-estate description	The new yard will be established on property roughly located at GPS coordinates (39.714753, -83.172517). Site development will include grading, access road, fencing, gates, and station stone. The proposed substation site is located on agricultural lands near rural residential properties, just east of AEPs existing Adkins substation in Pickaway County, Ohio. Desktop review indicates there are no FEMA-mapped floodplains or floodways, NWI-mapped wetlands, or NHD-mapped streams intersecting the site. Field studies will be conducted for wetlands and streams, hazardous materials, and cultural resources to ensure impacts are avoided and/or minimized to the extent practicable.
Construction responsibility	Company confidential information

Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$102,977,072.61
Component cost (in-service year)	$119,102,461.00

Substation Upgrade Component

Component title	Ohio Central Station Upgrade
Project description	Company confidential information
Substation name	Ohio Central 138 kV Station
Substation zone	AEP
Substation upgrade scope	Install two new 138 kV circuit breakers and use the existing Ohio Central extension line to cut into the Newark Central – Conesville 138kV line. New ratings: Ohio Central-Conesville 548/601/715/756 Ohio Central-Newark 438/481/569/604

Transformer Information

None

New equipment description	Two 138 kV circuit breakers to meet/exceed the line ratings above. Scope also includes associated jumpers, switches, insulators, foundations, control cables, conduits, and equipment grounding. Install associated relay equipment in the existing control house.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house has space for the new relay equipment, ground grid resistivity test data is available, ground grid upgrades will not be needed, the existing cable trench has space for the new control cables, sand oil boring logs and geotechnical reports are available.
Real-estate description	The acquisition of additional fee lands is not required for the Ohio Central Substation located in Muskingum County, Ohio.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$3,000,000.00
Component cost (in-service year)	$3,469,776.00

Transmission Line Upgrade Component

Component title	Kammer Dumont Structures

Project description	Company confidential information
Impacted transmission line	Kammer – Dumont 765 kV
Point A	Guernsey Station
Point B	Vassel Station
Point C	
Terrain description	The topography along the Kammer-Dumont 765kV line is relatively hilly. Land use in the area encompasses mostly forested areas, with few residential parcels. The line crosses low density developed areas, a significant amount of highly vegetated (wooded) rural land.

Existing Line Physical Characteristics

Operating voltage	765
Conductor size and type	4 Bundled 954 kcmil ACSR “Rail” conductor.
Hardware plan description	The existing line hardware will be removed, and new line hardware will be installed.
Tower line characteristics	This project requires lowering the existing Kammer – Dumont 765kV line between structures 169 and 170 to facilitate crossing the proposed Conesville – Guernsey 765kV Line. The existing line structures were installed in 1970. Neither structure has any known maintenance conditions. Both structures will be removed, and new tubular steel 3-pole tension structures will be installed. The new tubular steel pole structures will be supported by concrete pier foundations.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	765.000000	765.000000
	Normal ratings	Emergency ratings
Summer (MVA)	5395.000000	5978.000000
Winter (MVA)	5523.000000	9914.000000
Conductor size and type	4 Bundled 954 kcmil ACSR “Rail” conductor	

Shield wire size and type	The two 7#8 Alumoweld shield wires will be transferred to the new structures, but not replaced
Rebuild line length	0.25 Miles
Rebuild portion description	This project requires lowering the existing Kammer – Dumont 765kV line between structures 169 and 170 to facilitate crossing the proposed Conesville – Guernsey 765kV Line. Both existing structures will be removed, and new tubular steel 3-pole tension structures will be installed. The new tubular steel pole structures will be supported by concrete pier foundations
Right of way	The existing ROW will be used.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$2,000,000.00
Component cost (in-service year)	$2,219,007.00

Transmission Line Upgrade Component

Component title	Ohio Central - Fostoria Central Structure
Project description	Company confidential information

Impacted transmission line	Ohio Central - Fostoria Central 345 kV
Point A	Ohio Central
Point B	Galion
Point C	
Terrain description	The terrain in the area is relatively flat and primarily agricultural with some adjacent forested areas.
Existing Line Physical Characteristics	
Operating voltage	345
Conductor size and type	345
Hardware plan description	The existing hardware will be used
Tower line characteristics	There is no plan to change existing structures with the exception of modification to one structure (10) which will be removed and replaced with a lower structure to lower the line.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	345.000000	345.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1236.000000	1308.000000
Winter (MVA)	1355.000000	1428.000000

Conductor size and type	The existing conductor will be used.
Shield wire size and type	No changes to shield wire are planned.
Rebuild line length	No portion of this line will be rebuilt.
Rebuild portion description	No portion of this line will be rebuilt.
Right of way	The existing ROW will be used.

Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$1,000,000.00
Component cost (in-service year)	$1,156,592.00

Transmission Line Upgrade Component

Component title	Gavin - Marysville Structures
Project description	Company confidential information
Impacted transmission line	Gavin- Marysville 765kV
Point A	Marysville
Point B	Flatlick
Point C	

Terrain description	The topography along the Teddy-Beatty 345kV line is relatively flat with some gently rolling hills. Land use in the area encompasses mostly agricultural lands with some residential parcels. The line crosses mostly low density developed areas, some highly vegetated (wooded) land, state/county highways, railroads, streams, and existing utilities.

Existing Line Physical Characteristics

Operating voltage	765
Conductor size and type	4 Bundled 1351.5 kcmil ACSR “Dipper” conductor
Hardware plan description	The existing line hardware will be removed, and new line hardware will be installed.
Tower line characteristics	This project requires raising the existing Gavin- Marysville 765kV line between structures 358 and 359 to facilitate crossing the proposed Teddy – Beatty 345kV Line. The existing line structures were installed in 1973. Neither structure has any known maintenance conditions. Both structures will be removed, and new tubular steel H-frame suspension structures will be installed. The new tubular steel pole structures will be supported by concrete pier foundations

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	765.000000	765.000000
	Normal ratings	Emergency ratings
Summer (MVA)	4047.000000	4349.000000
Winter (MVA)	4047.000000	4349.000000

Conductor size and type	4 Bundled 1351.5 kcmil ACSR “Dipper” conductor
Shield wire size and type	The two 7#8 Alumoweld shield wires will be transferred to the new structures, but not replaced.
Rebuild line length	0.25 Miles
Rebuild portion description	This project requires raising the existing Gavin- Marysville 765kV line between structures 358 and 359 to facilitate the crossing the proposed Teddy – Beatty 345kV Line. Two existing structures will be removed, and new tubular steel H-frame suspension structures will be installed. The new tubular steel pole structures will be supported by concrete pier foundations.

Right of way	Existing ROW will be used
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$3,000,000.00
Component cost (in-service year)	$3,328,511.00

Transmission Line Upgrade Component

Component title	East Springfield - London Structures
Project description	Company confidential information
Impacted transmission line	East Springfield - London 138 kV
Point A	East Springfield
Point B	London
Point C	

Terrain description	The topography along the Teddy-Beatty 345kV line is relatively flat with some gently rolling hills. Land use in the area encompasses mostly agricultural lands with some residential parcels. The line crosses mostly low density developed areas, some highly vegetated (wooded) land, state/county highways, railroads, streams, and existing utilities.

Existing Line Physical Characteristics

Operating voltage	138kV
Conductor size and type	The conductor size for this line is unknown. It is assumed that the lowered structures would utilize the existing conductor.
Hardware plan description	The existing line hardware will be removed, and new line hardware will be installed.
Tower line characteristics	This project requires lowering the existing First Energy East Springfield 138kV line between structures 29 and 30 on the proposed Teddy - Beatty 345kV Line. The install date for the First Energy East Springfield 138kV line is unknown, and it is not known if either structure has any known maintenance conditions. Both structures will be removed, and 4 new tubular steel 3-pole tension structures will be installed. The new tubular steel pole structures will be supported by concrete pier foundations.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	186.000000	217.000000
Winter (MVA)	227.000000	276.000000

Conductor size and type	The conductor size for this line is unknown. It is assumed that the lowered structures would utilize the existing conductor.
Shield wire size and type	The shield wire size for this line is unknown. It is assumed that the lowered structures would utilize the existing shield wire.
Rebuild line length	0.2 Miles

Rebuild portion description	This project requires lowering the existing First Energy East Springfield 138kV line between structures 29 and 30 on the proposed Teddy - Beatty 345kV Line. 2 existing double circuit lattice towers structures will be removed, and 4 new tubular steel 3-pole tension structures will be installed. The new tubular steel pole structures will be supported by concrete pier foundations.
Right of way	The existing ROW will be used.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$1,000,000.00
Component cost (in-service year)	$1,109,504.00

Transmission Line Upgrade Component

Component title	Beatty - Hayden Structures
Project description	Company confidential information
Impacted transmission line	Beatty - Hayden 345 kV
Point A	Beatty

Point B	Cole Station
Point C	
Terrain description	The area topography is relatively flat with some gently rolling hills. Land use in the area encompasses mostly agricultural lands with some residential parcels. The line crosses mostly low density developed areas, some highly vegetated (wooded) land, state/county highways, railroads, streams, and existing utilities.

Existing Line Physical Characteristics

Operating voltage	345kV
Conductor size and type	4 Bundled 954 kcmil ACSR “Rail” conductor
Hardware plan description	The existing line hardware will be removed, and new line hardware will be installed.
Tower line characteristics	This project requires lowering the existing Beatty - Hayden 345kV line between structures 2 and 3 to facilitate crossing the proposed Teddy – Beatty 345kV Line. The existing line structures were installed in 1975. Neither structure has any known maintenance conditions. Both structures will be removed, and new tubular steel 3-pole tension structures will be installed. The new tubular steel pole structures will be supported by concrete pier foundations.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	345.000000	345.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1409.000000	1781.000000
Winter (MVA)	1409.000000	1781.000000

Conductor size and type	4 Bundled 954 kcmil ACSR “Rail” conductor
Shield wire size and type	The 3/8” EHS 7-Strand Steel shield wire will be transferred to the new structures, but not replaced.
Rebuild line length	0.2

Rebuild portion description	This project requires lowering the existing Beatty - Hayden 345kV line between structures 2 and 3 to facilitate crossing the proposed Teddy – Beatty 345kV Line. Both structures will be removed, and new tubular steel 3-pole tension structures will be installed. The new tubular steel pole structures will be supported by concrete pier foundations.
Right of way	The existing ROW will be used.
Construction responsibility	Company confidential information
Benefits/Comments	Company confidential information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential information
Permitting / routing / siting	Company confidential information
ROW / land acquisition	Company confidential information
Materials & equipment	Company confidential information
Construction & commissioning	Company confidential information
Construction management	Company confidential information
Overheads & miscellaneous costs	Company confidential information
Contingency	Company confidential information
Total component cost	$3,000,000.00
Component cost (in-service year)	$3,328,511.00

Congestion Drivers

None

Existing Flowgates

None

New Flowgates

Company confidential information

Financial Information

Capital spend start date	03/2026
Construction start date	05/2030
Project Duration (In Months)	79

Cost Containment Commitment

Cost cap (in current year)	Company confidential information
Cost cap (in-service year)	Company confidential information

Components covered by cost containment

1. Greentown - Teddy 765 kV Line - Transource
2. Teddy - Marysville 765 kV - Transource
3. Teddy - Beatty DCT 345 kV - Transource
4. Guernsey - Conesville 765 kV - Transource
5. West Millersport - Adkins 765 kV - Transource
6. Conesville - West Millersport 765 kV - Transource

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	No
Escalation	Yes
Additional Information	Company 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?	Company confidential information
Additional cost containment measures not covered above	Company confidential information

Additional Comments

Please reach out to the primary contact with clarifications as needed. Thank you.