Ohio Five 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	51
Project title	Ohio Five Year Solution
Project description	The proposed solutions will address Ohio area violations in the PJM 2030 RTEP model. The solution includes the following components: Teddy 765/345kV substation, Teddy – Marysville 765kV line, Teddy – Beatty 345kV double-circuit line, the Teddy – Cole 345kV line, Guernsey – Conesville 765kV line, and upgrades to existing AEP facilities.
Email	Company confidential information
Project in-service date	10/2030
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. Teddy 765/345 kV Station
2. Teddy - Marysville 765 kV
3. Marysville Station Expansion
4. Teddy - Beatty DCT 345 kV

5. Cole Station Upgrade
6. Beatty Station Expansion
7. Guernsey Station Expansion
8. Guernsey - Conesville 765 kV
9. Conesville Station Expansion
10. Kammer - Dumont Structures
11. Gavin - Marysville Structures
12. East Springfield - London Structures
13. Beatty - Hayden Structures
14. Teddy - Cole 345 kV

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 one(1) circuit breaker that will interconnect a new 765KV Marysville line; a 765/345KV, 2250MVA transformer (3-750MVA single-phase units); and a 345KV breaker & a half design with eight(8) 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	745/345 kV

Transformer Information

	Name	Capacity (MVA)
Transformer	Transformer Bank 1	2240 / 2524 / 2566 / 2665 MVA

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, a 765/345KV, 2250MVA transformer, and a 345KV breaker & a half design consisting of 1-765KV, 5000A, 63KA line circuit breaker; 12-765KV, 5000A single-phase disc. switches; 3-765KV, 4000A single-phase disc. switches; 2-sets of 3-765KV CCVTs; 1-set of 3-765KV arresters; 3-765/345KV, 750MVA single-phase transformers with arresters; 6-345KV, 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; 3-345KV, 5000A single-phase disc. switches; 5-sets of 3-345KV line CCVTs; 5-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	2565.000000
Winter (MVA)	2523.000000	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	$124,080,471.90
Component cost (in-service year)	$137,667,729.00

Greenfield Transmission Line Component

Component title	Teddy - Marysville 765 kV
Project description	Company confidential information
Point A	Teddy 765 kV
Point B	Marysville 765 kV
Point C	

	Normal ratings	Emergency ratings

Summer (MVA)	5395.000000	5395.000000
Winter (MVA)	5978.000000	6614.000000
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 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 Teddy 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	138 kV: 40.0734, -83.498, 138 kV: 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 Expansion
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; 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, and install 2-345KV cap. banks by adding 3-765KV, 5000A, 50KA line circuit breakers; 18-765KV, 5000A single-phase disc. switches; 3-765KV, 4000A single-phase disc. switches; 2-sets of 3-765KV CCVTs; 5-sets of 3-765KV arresters; 1-765KV, 500MVAR STATCOM; 2-345KV, 4000A, 63KA cap. bank circuit breakers; 2-345KV, 261.9MVAR cap. banks; 2-345KV, 4000A three-phase disc. switches; 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 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 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	$236,829,324.15
Component cost (in-service year)	$262,762,985.00

Greenfield Transmission Line Component

Component title	Teddy - Beatty DCT 345 kV
Project description	Company confidential information
Point A	Teddy 345
Point B	Beatty 345
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	2390.000000	2390.000000

Winter (MVA)	2390.000000	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	$175,185,620.00
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 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.

Transformer Information

None

New equipment description	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 Expansion
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 Expansion
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 breakers 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 765kV
Point B	Conesville 765kV
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	5395.000000	5978.000000
Winter (MVA)	5395.000000	6614.000000

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 a predominantly rural forested landscape 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 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 (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	Conesville Station Expansion
Project description	Company confidential information
Substation name	Conesville Station
Substation zone	AEP
Substation upgrade scope	Expand the Conesville substation to include a 765 kV yard with a 765 kV double breaker double bus design and four(4) circuit breakers that will interconnect a new 765KV Guernsey 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	XMFR 1	2240 / 2524 / 2566 / 2665 MVA (SN/SE/WN/WE)

	High Side	Low Side	Tertiary
Voltage (kV)	765	345	

New equipment description	Construct a 765/345KV greenfield substation having a 765KV double breaker double bus design, 1-765/345KV, 2250MVA transformer, and 1-345KV line consisting of 4-765KV, 4000A, 63KA line circuit breakers; 27-765KV, 4000A single-phase disc. switches; 4-sets of 3-765KV CCVTs; 4-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.

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 expansion to Conesville substation will be 60 acres in size and located on agricultural land in rural Coshocton County, Ohio. The proposed land 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.
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	$131,468,702.50
Component cost (in-service year)	$145,864,996.00

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 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.
Existing Line Physical Characteristics	
Operating voltage	765 kV
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	5523.000000
Winter (MVA)	5978.000000	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 Right of Way 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	Gavin - Marysville Structures
Project description	Company confidential information
Impacted transmission line	Gavin - Marysville 765 kV
Point A	Marysville Station

Point B	Flatlick Station
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 right of way 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 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	138 kV
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	227.000000
Winter (MVA)	217.000000	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 right of way 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 Station
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	1409.000000
Winter (MVA)	1781.000000	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

Transmission Line Upgrade Component

Component title	Teddy - Cole 345 kV
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 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	1385.000000
Winter (MVA)	1750.000000	1750.000000
Conductor size and type	2 Bundled – 954 kcmil 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. 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 Bid Route likely has unmapped wetland or drainage features.
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	$21,630,661.02
Component cost (in-service year)	$23,999,296.00

Congestion Drivers

None

Existing Flowgates

None

New Flowgates

Company confidential information

Financial Information

Capital spend start date	03/2026
Construction start date	03/2029
Project Duration (In Months)	55

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. Teddy - Marysville 765 kV - Transource
2. Teddy - Beatty DCT 345 kV - Transource
3. Guernsey - Conesville 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

None