

Brewster-Crossroads Greenfield Line and Station

General Information

Proposing entity name	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Company proposal ID	Proposal 4 (Brewster-Crossroads)
PJM Proposal ID	74
Project title	Brewster-Crossroads Greenfield Line and Station
Project description	Designated Entity Statement of Intent: The Proposing Entity is not seeking consideration as the Designated Entity for the Project. The proposal assumes that the incumbent(s) will perform all work associated with the proposed solution. Project Description Info: Build a greenfield 345/69 kV station "Crossroads" to tap the ATSI owned Harmon – Star 345 kV line. Build Crossroads station as a 4-breaker station with a 90 MVA 345/69 kV transformer. Build a 2.8 mile greenfield 69 kV line from Brewster station to Crossroads station. Perform station work at Brewster to accommodate the new line. This project will satisfy AMPT's 3.2.7 Delivery Point Exposure Criteria by connecting a second independent source to the load delivery point at Brewster station. Tie-line Impact Info: This project has no tie-line impact. The proposed greenfield 69 kV line will connect the same two PJM transmission owner zones: Area 202 ATSI (Brewster Station) and Area 202 ATSI (Crossroads Station).
Project in-service date	11/2024
Tie-line impact	No
Interregional project	No
Is the proposer offering a binding cap on capital costs?	No
Additional benefits	

Project Components

1. Greenfield 69 kV Line
2. Crossroads Station 345 kV Cut-ins

3. Greenfield Station

4. Brewster Station Upgrade

Greenfield Transmission Line Component

Component title Greenfield 69 kV Line

Point A Brewster Station 69kV -239767

Point B Crossroads Station 69 kV - 78910

Point C

	Normal ratings	Emergency ratings
Summer (MVA)	93.000000	128.000000
Winter (MVA)	117.000000	144.000000
Conductor size and type	The new line will be constructed using 477 (26/7) ACSR Hawk conductor.	
Nominal voltage	AC	
Nominal voltage	This project requires construction of a 2.85 mile long 69kV AC line.	
Line construction type	Overhead	

General route description

The Proposing Entity reviewed the Proposed Route in respect to potential impacts to the surrounding communities, environment, constructability, operations and maintenance considerations, and cost effectiveness. Solutions were initially considered within a study area (see attached kmz), as the Proposed Solution utilized the proposed Crossroads Substation location and the existing Brewster Substation. This area was further refined based on an assessment of the existing infrastructure and the availability of property and/or suitable space. The Proposing Entity's Siting Team reviewed routes paralleling local roads, railroad lines, and parcel boundaries from the two project endpoints. Potential Routes were dismissed due to conflicts with the identified constraints in the study area. Major constraints include a U.S. Army Corps of Engineers (USACE) Levee, existing transmission lines, Fairless Schools, and several smaller constraints including cemeteries and habitable structures. Many of the identified constraints in the area were avoided or minimized by the Proposed Route. Starting at the existing Brewster Substation, the Proposed Route is approximately 2.85 miles in length and is located in mainly along agricultural parcels with scattered residential development to the proposed Crossroads Substation. The Proposed Route generally parallels parcel boundaries instead of overbuilding distribution lines within road ROW, which would bring the new transmission line within proximity of several habitable structures and require tree clearing along roads. This conflict is apparent when the Routing Team reviewed utilizing Kings Hwy SE in Brewster, OH. Mt. Eaton St. SW has an existing 69kV line and the Fairless School District athletic fields on the south side with a distribution line with several homes and mature trees along the north side. The Proposed Route avoids the conflicts along Kings Hwy SE and Mt. Eaton St. SW by crossing a USACE Levee perpendicularly, a known desire from USACE, and then parallels parcel boundaries until crossing over Mt. Eaton ST. SW to continue north paralleling Baymere Ave SW. The Siting Team also reviewed potential routes along the USACE Levee to the north of Brewster Substation but there are several homes that would be within the proposed 60' ROW and building a new transmission line within USACE property would likely not be approved.

Terrain description

The Project terrain is predominately rolling agricultural lands with scattered residential in Stark County, Ohio. Elevation along the proposed route ranges from approximately 965 to 1,173 feet above sea level, with an average elevation of 1,010 feet.

Right-of-way width by segment

The proposed Brewster – Crossroads 69kV Line will require the acquisition of 2.85 miles of transmission line of 60' (30'/30') wide ROW. The project will begin at the existing Brewster Station in Stark County, Ohio and run in a northerly direction to the Proposing Entity's proposed Crossroads Station in Stark County, Ohio. The tabletop analysis found there were no public lands required for this Project. The private land use is predominantly agricultural and scattered residential that the tabletop analysis found and was verified through the Stark County Clerk's Office which classified/assessed the land use as agricultural and residential. The private land requirements include acquiring 60' (30'/30') wide ROW in Stark County, Ohio where the land use is predominantly agricultural with scattered residential lands.

Electrical transmission infrastructure crossings	The project will involve two (2) electrical transmission infrastructure crossing under the existing Brewster - Harmon 69kV Line. The location of the first crossing is approximately: 400 42' 21.16" N, 81 35' 29.18"W The location of the second crossing is approximately: 400 42' 19.70" N, 81 34' 52.46"W The Proposed Route crossed existing transmission lines in locations to minimize impacts to the existing transmission lines (e.g., midspan for crossing over a larger voltage line and near an existing structure if crossing under an existing transmission line).
Civil infrastructure/major waterway facility crossing plan	The Project will involve one (1) electrical transmission crossing over one (1) levee belonging to the United States of America approximately 350' east of the Incumbent's existing Brewster Station & 400' southwest of Kings Highway SE in Stark County, Ohio at 40deg42'-22.14"N; 81deg35'-30.30"W. The Project will involve one (1) electrical transmission crossing over the rail line belonging to Wheeling & Lake Erie Railroad Company in Stark County, Ohio at 40deg42'-46.02"N; 81deg34'-26.60"W.
Environmental impacts	Existing land along the route is rural, agricultural, and adjacent to roadways. Elm Run, associated tributaries, and a very small portion of the Elm Run 100-year floodplain transects the line. Based on review of the National Wetland Inventory and aerial photographs, limited wetlands are located near Brewster Station. Physical impacts to streams are not anticipated. It is anticipated a Nationwide Permit from the Army Corps of Engineers and Section 401 Water Quality Certification from Ohio EPA will be required for temporary access and pole foundations within delineated wetlands.
Tower characteristics	The new 69kV line will require (38) tubular galvanized steel pole pole structures. The predominate structure type (25 structures) will be a tangent monopoles with braced post insulators arranged in an alternating configuration. Additionally, the line will also require (2) vertically configured running angle poles, and (8) deadend structures. The tangent pole structures will be supported by direct embedded foundations. The running angle pole structures will be supported by direct embedded foundations and guy and anchor systems. The deadend pole structures will be supported by a combination of direct embedded foundations with guy and anchor systems, and concrete pier foundations utilizing full length anchor bolts.
Construction responsibility	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Additional comments	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Component Cost Details - In Current Year \$	
Engineering & design	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Permitting / routing / siting	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.

ROW / land acquisition	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Materials & equipment	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Construction & commissioning	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Construction management	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Overheads & miscellaneous costs	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Contingency	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Total component cost	\$6,455,568.00
Component cost (in-service year)	\$7,054,173.00

Greenfield Transmission Line Component

Component title	Crossroads Station 345 kV Cut-ins	
Point A	Harmon Station 345 kV - 239353	
Point B	Crossroads Station 345 kV - 123456	
Point C	Star Station 345 kV - 239122	
	Normal ratings	Emergency ratings
Summer (MVA)	1366.000000	1693.000000
Winter (MVA)	1603.000000	1989.000000
Conductor size and type	The new lines will be constructed using two-bundled 954 (54/7) ACSR Cardinal conductor.	
Nominal voltage	AC	

Nominal voltage	The new tie lines will be constructed as 345kV AC lines.
Line construction type	Overhead
General route description	The Proposing Entity reviewed locations for the two (2) 345kV loops in and out of the proposed Crossroads Station from First Energy's existing Harmon – Star 345kV line. The locations of the tie-lines were evaluated with respect to potential impacts to the surrounding communities, environment, constructability, operations and maintenance considerations, and cost effectiveness. The proposed tie-line locations and ROW are located within the same landowner as the proposed Crossroads Station location and will avoid tree clearing and other environmental impacts. The Ohio Power Siting Board (OPSB) regulate the 345kV structures into the proposed Crossroads Substation and will require a Letter of Notification (LON) before construction may proceed.
Terrain description	The Project terrain is predominately rolling agricultural lands in Stark County, Ohio for two (2) 345kV loops in and out of the proposed Crossroads Station to First Energy's existing Harmon – Star 345kV Line.
Right-of-way width by segment	The proposed two (2) 345kV lines to loop in & out of the proposed Crossroads Station just south of the incumbent's existing Harmon – Star 345kV Line. The two (2) 345kV lines will require 0.15 of a mile of 150' (75'/75') wide ROW. The project will begin at the Proposing Entity's proposed Crossroads station in Stark County, Ohio and run in a northerly direction to the incumbent's existing Harmon – Star 345kV Line in Stark County, Ohio. The tabletop analysis found there were no public lands required for this Project. The private land use is predominantly agricultural and scattered residential that the tabletop analysis found and was verified through the Stark County Clerk's Office which classified/assessed the land use as agricultural.
Electrical transmission infrastructure crossings	The Project in Stark County, Ohio will not involve Electrical Transmission Infrastructure Crossings.
Civil infrastructure/major waterway facility crossing plan	The Project in Stark County, Ohio will not involve any civil infrastructure/major waterway facility crossings.
Environmental impacts	Existing land along the route is agricultural. Based on review of the National Wetland Inventory and aerial photographs, streams and wetlands are not located near the proposed line.
Tower characteristics	Each new 345kV tie line will require two tubular galvanized steel, deadend monopole structures. The vertically configured monopole structure will be constructed on a concrete pier foundation utilizing a full length anchor bolt cage. The arrangement of the structures is attached with the station attachments.
Construction responsibility	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Additional comments	

Component Cost Details - In Current Year \$

Engineering & design	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Permitting / routing / siting	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
ROW / land acquisition	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Materials & equipment	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Construction & commissioning	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Construction management	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Overheads & miscellaneous costs	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Contingency	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Total component cost	\$1,344,000.00
Component cost (in-service year)	\$1,468,625.00

Greenfield Substation Component

Component title	Greenfield Station
Substation name	Crossroads
Substation description	Construct a greenfield station to install a 3 – breaker ring bus that will interconnect the following 345KV lines = HARMON 345KV and STAR 345KV. Also, install a 345/69 KV Transformer so that a new 69KV line can be established from this new greenfield station to the existing Brewster Station. This scope is assuming that the land adjacent to the location at which these lines converge is available for purchase and it will require minimum grading on a parcel of approximately 325' x 400' in size. On this parcel we will require approximately a 270' x 325' fenced area. Access to this site will require an access road.

Nominal voltage AC
 Nominal voltage 345 kV

Transformer Information

	Name	Capacity (MVA)		
Transformer	CROSSROADS STA -T1	90 MVA		
	High Side	Low Side	Tertiary	
Voltage (kV)	345	69	13.8	
Major equipment description	345/69/13.8KV 90MVA Power Transformer with corresponding slab foundation. 3 – 345kV, 3000A, 50kA breakers that will require a large slab foundations. Install corresponding jumpers with both sides of the breaker. 9 – 345KV bus CCVTs. This will require 3 sets of 3 individual pier foundations along with corresponding steel structures. 1 – 69kV, 2000A, 50kA breaker that will require a slab foundations. Install corresponding jumpers with both sides of the breaker. 3 – 69KV line side CCVTs. This will require 1 set of pier foundations along with corresponding steel structure.			
	Normal ratings	Emergency ratings		
Summer (MVA)	90.000000	90.000000		
Winter (MVA)	90.000000	90.000000		
Environmental assessment	Land use at the proposed Crossroads Station is undeveloped/agricultural. Based on review of the National Wetland Inventory and aerial photographs, streams and wetlands are not located near the proposed station footprint.			
Outreach plan	Public outreach is a critical component to the siting process, so efforts should 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 as the incumbent desires.			

Land acquisition plan	The proposed Crossroads Station will be sited south of Elton Street SW, 0.17 of a mile west of Browndale Avenue SW in Stark County, Ohio on undeveloped land agricultural lands. The tabletop analysis found there were no public lands required for this Project. The private land use is agricultural as tabletop analysis found and was verified through the Stark County Clerk's Office which classified/assessed the land use as agricultural. The private land requirements include approximately 10.50 acres for the new station site/detention pond/grading and 0.30 of an acre of access road from Elton Street SW to the new station site. The total Project acreage is 10.80 acres. Station site and access road placement were chosen to minimize impacting farming operations.
Construction responsibility	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Additional comments	
Component Cost Details - In Current Year \$	
Engineering & design	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Permitting / routing / siting	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
ROW / land acquisition	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Materials & equipment	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Construction & commissioning	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Construction management	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Overheads & miscellaneous costs	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Contingency	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Total component cost	\$11,307,527.00
Component cost (in-service year)	\$12,356,040.00

Substation Upgrade Component

Component title	Brewster Station Upgrade
Substation name	Brewster Station 69 kV - 239767
Substation zone	Area 202 ATSI – Zone 1234 FE-MASS
Substation upgrade scope	At the existing AMPT – Brewster Station utilize the available T-Line arrangement on the 69kV Line and re-configure the line by removing the existing tie line connection and making the existing 69kV lines independent of each other. Install 2 sets of 3 – 69KV line CCVTs. This will require (1) individual pier foundation with each of the corresponding steel structures. Expand the station footprint onto the existing available space on the east side and install a new fence line totaling 220'. Include 3 – 20' gates. Install 2 - single 69KV CCVT to be located along the existing 69KV bus at two different locations. This installation will require a pier foundation and corresponding supporting steel for each. Removal of existing fencing and gates along the East side of station will be required.

Transformer Information

None	
New equipment description	Install 2 sets of 3 – 69KV line CCVTs. This will require 1 individual pier foundations with each of the corresponding steel structures. Install 2 - single 69KV CCVT to be located along the existing 69KV bus at two different locations.
Substation assumptions	This proposal assumes that space for the proposed expansion of the station will be available along with space to install the equipments outlined in this description.
Real-estate description	The incumbent's existing Brewster Station fence will need expanding in an easterly direction in land presently owned by the incumbent. The fence expansion will not require any additional real estate to be purchased for the project in Stark County, Ohio.
Construction responsibility	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Additional comments	

Component Cost Details - In Current Year \$

Engineering & design	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Permitting / routing / siting	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.

ROW / land acquisition	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Materials & equipment	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Construction & commissioning	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Construction management	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Overheads & miscellaneous costs	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Contingency	The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.
Total component cost	\$647,713.00
Component cost (in-service year)	\$707,773.00

Congestion Drivers

None

Existing Flowgates

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type
AMPT-O1	239767	02BREWSTR	239355	02HARMON	1	69	202	FERC 715

New Flowgates

None

Financial Information

Capital spend start date 01/2022

Construction start date 12/2023

Project Duration (In Months) 34

Additional comments

PLEASE NOTE – due to a “timeout” issue during upload of large zip files (~38MB), the Proposing Entity split the large “Project analysis attachments” on the General Information page, Supporting Documents section, into two attachments per recommendation of PJM staff. File 1 of 2 is in the “Project analysis attachments” location, and File 2 of 2 is in the “Market efficiency simulation modeling files” location.