

Harmon-Yager 138kV Greenfield Line

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 6 (Harmon-Yager 138 kV In & Out)
PJM Proposal ID	839
Project title	Harmon-Yager 138kV Greenfield Line
Project description	<p>The Proposing Entity is not seeking consideration as the Designated Entity for the Project. The proposal assumes that the incumbent(s) would perform all work associated with the proposed solution. Project Description Info: Bring the existing Harmon – Yager 138 kV line “in & out” of Brewster station. Build two separate but parallel 3.46 mile greenfield 138 kV lines from Brewster to the existing Harmon – Yager 138 kV line, approximately 3 miles east of Brewster, and 1.8 miles along the Harmon – Yager 138 kV line from Harmon. Retire the existing Harmon – Brewster 69 kV line, 69 kV buswork at Brewster, and existing 69/12 kV transformers (assumed incumbent upgrades). Replace with 138 kV buswork and equipment. Install three 138/12 kV transformers (assumed incumbent upgrade). This project will satisfy AMPT’s 3.2.7 Delivery Point Exposure Criteria by connecting two independent sources 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 (Harmon – Yager 138 kV line).</p>
Project in-service date	10/2025
Tie-line impact	No
Interregional project	No
Is the proposer offering a binding cap on capital costs?	No
Additional benefits	

Project Components

1. Greenfield 138 kV Lines

2. Brewster Station Upgrade

Greenfield Transmission Line Component

Component title	Greenfield 138 kV Lines	
Point A	Yager Station 138 kV - 247700	
Point B	Brewster Station 138 kV - 239767	
Point C	Harmon Station 138 kV - 239354	
	Normal ratings	Emergency ratings
Summer (MVA)	200.000000	241.000000
Winter (MVA)	225.000000	285.000000
Conductor size and type	The new lines will be constructed using 556 (26/7) ACSR Dove conductor.	
Nominal voltage	AC	
Nominal voltage	The new tie lines will be constructed as 138kV AC lines.	
Line construction type	Overhead	

General route description

The Proposing Entity evaluated 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 needed to interconnect to First Energy's existing Harmon - Yager 138kV line 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 both local roads 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 3.47 miles in length and is located in mainly along agricultural parcels with scattered residential development to First Energy's existing Harmon - Yager 138kV line. 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 issue became apparent when trying to parallel two 138kV transmission lines along U.S. Route 62 and Lawndell Rd. The Ohio Power Siting Board (OPSB) regulates 138kV lines over 2.0 miles and will require one (1) full application for the two greenfield 138kV transmission lines before construction may proceed.

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 1,107 feet above sea level.

Right-of-way width by segment

The proposed Brewster 138kV lines will require the acquisition of 3.46 miles of two paralleling transmission lines of 100' (50'/50') wide ROW each for a total of ROW width of 200' (100'/100'). The project will begin at the existing Brewster Station in Stark Co., Ohio and run in a northerly direction for in and out on the existing Harmon-Yager 138kV Line in Stark Co., 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 Co. Clerk's Office which classified/assessed the land use as agricultural and residential. The private land requirements include acquiring 200' (100'/100') wide ROW in Stark Co., OH where the land use is predominantly agricultural with scattered residential lands.

Electrical transmission infrastructure crossings

The project will involve one (1) electrical transmission infrastructure crossing under the existing Brewster - Harmon 69kV Line. The location of the crossing is approximately: 400 42' 21.16" N, 81 35' 29.18"W

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 Corman (RJ Railroad Company) in Stark County, Ohio at 40deg42'-6.97"N; 81deg34'-51.31"W.
Environmental impacts	Existing land along the route is rural, agricultural, and adjacent to roadways. Land use south of Harmon Station is undeveloped. Elm Run, its tributaries, and a very small portion of the 100-year floodplain transects the line. Based on the National Wetland Inventory and aerial photographs, wetlands are located along the route. Physical impacts to streams within the project area 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 impacts and pole foundations within delineated wetlands.
Tower characteristics	Each new 138kV line will require (49) tubular galvanized steel pole structures. The predominate structure type (36 structures) will be a tangent monopoles with braced post insulators arranged in an alternating configuration. Additionally, the line will also require (1) vertically configured running angle poles, and (12) 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	\$17,988,320.00
Component cost (in-service year)	\$20,246,013.00

Substation Upgrade Component

Component title	Brewster Station Upgrade
Substation name	Brewster Station 138 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. Additionally the 69kV lines will be converted to new 138K lines coming in to the station. This proposal will also require for the 69KV portion of the station to be upgraded to 138KV while keeping the two incoming lines independent. A new 138KV configuration is planned to be implemented within the exiting fence line. The plan is to maintain the existing station footprint as it is currently with an expansion of the East fence of about 20'. The 138kV upgrades are planned in concert with a series of upgrades required at the distribution level of this existing station. The distribution upgrades are not a part of this proposal. Please see attached station layout. Equipment colored in blue refers to upgrades required at the distribution level while equipment colored in red refers to upgrades included in this proposal.

Transformer Information

None

New equipment description	<p>138kV initial box bay structure that will be designated for the new 138kV Harmon Line. 6 – 138KV line side CCVTs. This will require (1) individual pier foundation with the corresponding steel structure. 2 – 138KV Wave Trap to be installed on its own structure with a corresponding pier foundation. 3 - 88kV MCOV surge arresters that will be tapped of the incoming Harmon Line. 1 – 138kV, 3000, 40kA circuit breaker for the Harmon Line. This breaker will require a slab foundation and 6 jumpers. 138kV initial box bay structure along with an adder bay that will be designated for the new 138kV Yager Line. 138kV, 3000, 40kA circuit breaker for the Yager Line. This breaker will require a slab foundation and 6 jumpers. 3 - 88kV MCOV surge arresters that will be tapped of the incoming Yager Line. Remove all transmission related 69KV equipment consisting of 2-69KV circuit breakers, 4-69KV group-operated CB disc. switches; 2-sets of 69KV, 2-element, billing metering (2-CTs and 2-PTs) & steel str.; 2-sets of 3-69KV line arresters; 1-69KV group-operated bustie disc. switch & steel str.; two (2) H-frame style take-off tower steel str.; 1-wood shield pole str.; 6-shield wires; ten (10) 1-phase, 14ft tall, bus support str.; six (6) 1-phase, 18ft tall, bus support str.; and associated bus jumpers, bus tubing & dampening cable, insulators, foundations, yard lighting, control cables, conduits, and equipment grounding. Remove associated relay equipment.</p>
Substation assumptions	<p>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. Additionally the 69kV lines will be converted to new 138K lines coming in to the station. This proposal will also require for the 69KV portion of the station to be upgraded to 138KV while keeping the two incoming lines independent. A new 138KV configuration is planned to be implemented within the exiting fence line. The plan is to maintain the existing station footprint as it is currently with an expansion of the East fence of about 20'. This 138KV upgrades are planned in concert with a series of upgrades required at the distribution level of this existing station. The distribution upgrades are not a part of this proposal. Please see attached station layout. Equipment colored in blue refers to upgrades required at the distribution level while equipment colored in red refers to upgrades included in this proposal.</p>
Real-estate description	<p>The incumbent's existing Brewster Station fence will need expanding in an easterly direction on 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.</p>
Construction responsibility	<p>The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.</p>
Additional comments	
Component Cost Details - In Current Year \$	
Engineering & design	<p>The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.</p>
Permitting / routing / siting	<p>The redacted content contains proprietary and company confidential information the Proposing Entity requests be held from public view.</p>

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	\$2,711,519.00
Component cost (in-service year)	\$3,051,838.00

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) 45

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.