

# Natrium Area Line Reconfiguration

## General Information

Proposing entity name	AEPSCT
Company proposal ID	AEP_I
PJM Proposal ID	538
Project title	Natrium Area Line Reconfiguration
Project description	AEP proposes to reconfigure the existing Natrium-New Martinsville 138kV line and the Kammer-Ormet #4 138kV line to become Natrium-Ormet and Kammer-New Martinsville. In addition, 3.2 miles of 138kV line into Natrium will need to be rebuilt along with upgrades at Natrium to accommodate the circuit reconfigurations. A span of 4/0 ACSR will be replaced on the Colombian-Conner Run 69 kV line. Proposed increased ratings: 243049 to 246067: 383/449/485/534 245928 to 245951: 82/90/107/113 235378 to 246108: 148/192/180/228 243774 to 246067: 292/330/324/358
Project in-service date	06/2025
Tie-line impact	Yes
Interregional project	No
Is the proposer offering a binding cap on capital costs?	No
Additional benefits	

## Project Components

1. Natrium 138 kV Bus Replacement
2. Conner Run-Columbian Switch 69 kV Reconductor
3. Natrium-Kammer-Ormet-Paden City 138 kV Line Rebuild and Reconfiguration

## Substation Upgrade Component

Component title	Natrium 138 kV Bus Replacement
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Substation name	Natrium
Substation zone	205 - AEP
Substation upgrade scope	Replace 138kV bus existing between CB-BT1 and along the 138kV Main Bus # 1 dropping to CBH1. The conductor between these points spans three bays and is made up of 500MCM copper conductors. It is the intent of this project to replace the 500MCM conductors of the main bus # 1 and the cross busses with a 1272 KCM AAC conductor. Along with replacing the three phase conductors of the main bus # 1, the dead end clamp and strain insulators will be replaced.

**Transformer Information**

None	
New equipment description	1272 KCM AAC conductor to replace existing 500MCM bus
Substation assumptions	Extended outages are available to replace bus work
Real-estate description	N/A
Construction responsibility	AEP
Additional comments	

**Component Cost Details - In Current Year \$**

Engineering & design	Detailed cost breakdown
Permitting / routing / siting	Detailed cost breakdown
ROW / land acquisition	Detailed cost breakdown
Materials & equipment	Detailed cost breakdown
Construction & commissioning	Detailed cost breakdown
Construction management	Detailed cost breakdown
Overheads & miscellaneous costs	Detailed cost breakdown
Contingency	Detailed cost breakdown
Total component cost	\$291,187.19

Component cost (in-service year) \$.00

### Transmission Line Upgrade Component

Component title Conner Run-Columbian Switch 69 kV Reconductor

Impacted transmission line Conner Run-Columbian Switch 69 kV Line

Point A Conner Run

Point B Columbian Switch

Point C

Terrain description hilly

### Existing Line Physical Characteristics

Operating voltage 69

Conductor size and type 4/0 ACSR 6/1 "Penguin"

Hardware plan description Old hardware to be replaced

Tower line characteristics Wood pole line

### Proposed Line Characteristics

	<b>Designed</b>	<b>Operating</b>
Voltage (kV)	69.000000	69.000000
	<b>Normal ratings</b>	<b>Emergency ratings</b>
Summer (MVA)	129.000000	180.000000
Winter (MVA)	162.000000	202.000000
Conductor size and type	795 kcm ACSR (26/7) Drake	
Shield wire size and type	7#10 alumoweld	

Rebuild line length	57 feet - one span to be replaced
Rebuild portion description	Replace a single span of 4/0 ACSR from Moundsville - Natrium str 93L to Carbon Tap switch located between Colombia Carbon and Conner Run stations. Remainder of line is 336 ACSR.
Right of way	N/A
Construction responsibility	AEP
Additional comments	

**Component Cost Details - In Current Year \$**

Engineering & design	Detailed cost breakdown
Permitting / routing / siting	Detailed cost breakdown
ROW / land acquisition	Detailed cost breakdown
Materials & equipment	Detailed cost breakdown
Construction & commissioning	Detailed cost breakdown
Construction management	Detailed cost breakdown
Overheads & miscellaneous costs	Detailed cost breakdown
Contingency	Detailed cost breakdown
Total component cost	\$12,210.00
Component cost (in-service year)	\$.00

**Transmission Line Upgrade Component**

Component title	Natrium-Kammer-Ormet-Paden City 138 kV Line Rebuild and Reconfiguration
Impacted transmission line	Natrium-Paden City and Kammer-Ormet 138 kV Lines
Point A	Natrium
Point B	Kammer

Point C	Paden City, Ormet
Terrain description	Rural/hilly
<b>Existing Line Physical Characteristics</b>	
Operating voltage	138 kV
Conductor size and type	334.4 kcm ACSR (26/7) Linnet and 1,033.5 kcm ACSR (45/7) Ortolan
Hardware plan description	N/A. To be replaced
Tower line characteristics	Galvanized steel double circuit lattice towers installed in 1957 and two pole wood H-Frame structures installed in 1947 with some structure replacements in 1976, 1988, 1999, 2006 and 2015

**Proposed Line Characteristics**

	<b>Designed</b>	<b>Operating</b>
Voltage (kV)	138.000000	138.000000
	<b>Normal ratings</b>	<b>Emergency ratings</b>
Summer (MVA)	296.000000	398.000000
Winter (MVA)	375.000000	452.000000
Conductor size and type	1,033.5 kcm ACSR (45/7) Ortolan and 795 kcm ACSS (26/7) Drake/ACSS	
Shield wire size and type	7#8 Alumoweld	
Rebuild line length	3.2 miles	
Rebuild portion description	Install additional poles near T33 on the Kammer - Ormet #1 138 kV Line and T18 Natrium - Monongahela 138 kV line to rearrange the circuits to create a new Natrium-Ormet circuit and Kammer-Padan City circuit. Rebuild between the reconfiguration point back to Natrium station using 795 ACSS conductor.	

Right of way	<p>This project addresses the rebuild of the existing Natrium – Paden City 138kV transmission line (line also known as Natrium – Monongahela 138kV). Minimal right-of-way acquisition is expected to support the centerline rebuild solution. Existing easements in place for the transmission line, along with a clearly maintained existing line corridor, provide a rebuild solution that primarily leverages these existing rights. Additional easement rights will be needed to address some restrictive existing easements. The project rebuild will begin at the existing Natrium Station site, and run in a general southeastern direction to existing Structure 18, where the line will then re-route to connect into the existing Kammer – Ormet #1 138kV transmission line. Aside from anticipated labor associated with completing all necessary right-of-way acquisition support and non-environmental permitting work, no additional action is anticipated as part of this project at this time. This existing transmission line is located in Marshall County, West Virginia. A review of existing easements held enables a solution that minimizes additional right-of-way acquisition. Right-of-way will acquisition will be necessary for approximately seventeen (17) parcels. A tabletop analysis found no properties owned by public entities. Land use types within the project footprint are largely vacant/agricultural, with some residential properties also impacted based off current zoning. These properties, however, are largely owned by industrial entities and may later be developed as such. All property information was identified through Marshall County online property information listings.</p>
Construction responsibility	AEP
Additional comments	Business proprietary information
<b>Component Cost Details - In Current Year \$</b>	
Engineering & design	Detailed cost breakdown
Permitting / routing / siting	Detailed cost breakdown
ROW / land acquisition	Detailed cost breakdown
Materials & equipment	Detailed cost breakdown
Construction & commissioning	Detailed cost breakdown
Construction management	Detailed cost breakdown
Overheads & miscellaneous costs	Detailed cost breakdown
Contingency	Detailed cost breakdown
Total component cost	\$5,331,198.63
Component cost (in-service year)	\$.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
AEP-T237	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T238	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T221	245928	05COLOMBI	245943	05NATRIUM	1	69	205	FERC 715 Thermal
AEP-T222	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T223	245928	05COLOMBI	245943	05NATRIUM	1	69	205	FERC 715 Thermal
AEP-T225	245928	05COLOMBI	245943	05NATRIUM	1	69	205	FERC 715 Thermal
AEP-T226	245928	05COLOMBI	245943	05NATRIUM	1	69	205	FERC 715 Thermal
AEP-T227	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T228	245928	05COLOMBI	245943	05NATRIUM	1	69	205	FERC 715 Thermal
AEP-T229	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T230	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T231	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T232	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T233	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T234	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T219	245928	05COLOMBI	245951	05CONNERRN	1	69	205	FERC 715 Thermal
AEP-T239	245930	05CRESAPS	245950	05MCELROY	1	69	205	FERC 715 Thermal
AEP-T240	245930	05CRESAPS	245938	05KAMMER	1	69	205	FERC 715 Thermal
AEP-T250	245930	05CRESAPS	245950	05MCELROY	1	69	205	FERC 715 Thermal
AEP-T243	245930	05CRESAPS	245950	05MCELROY	1	69	205	FERC 715 Thermal
AEP-T244	245930	05CRESAPS	245950	05MCELROY	1	69	205	FERC 715 Thermal

## New Flowgates

None

## **Financial Information**

Capital spend start date 06/2023

Construction start date 01/2025

Project Duration (In Months) 24

## **Additional comments**

None