



# Reliability Analysis Update

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Transmission Expansion Advisory Committee

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# Changes to Existing Projects

## Baseline Reliability Projects



# Dominion Transmission Zone: Baseline Possum Point 2<sup>nd</sup> 500-230 kV Tx

**Existing Baseline b2443.6**

**Date Project Last Presented:** 12/11/2013, 01/09/2014, 11/11/2014, 06/08/2017 & 01/10/2019

**Problem Statement:** Based on recent generation retirements (Possum Point Units #3 & #4) and the PJM 2018 Load Forecast updates indicates that for a NERC Category P1 – single contingency that Possum Point 500/230 kV Tx #1 overloads for a loss of the Possum Point – Ox 500 kV Line #571 under Dominion’s critical stress case criteria.

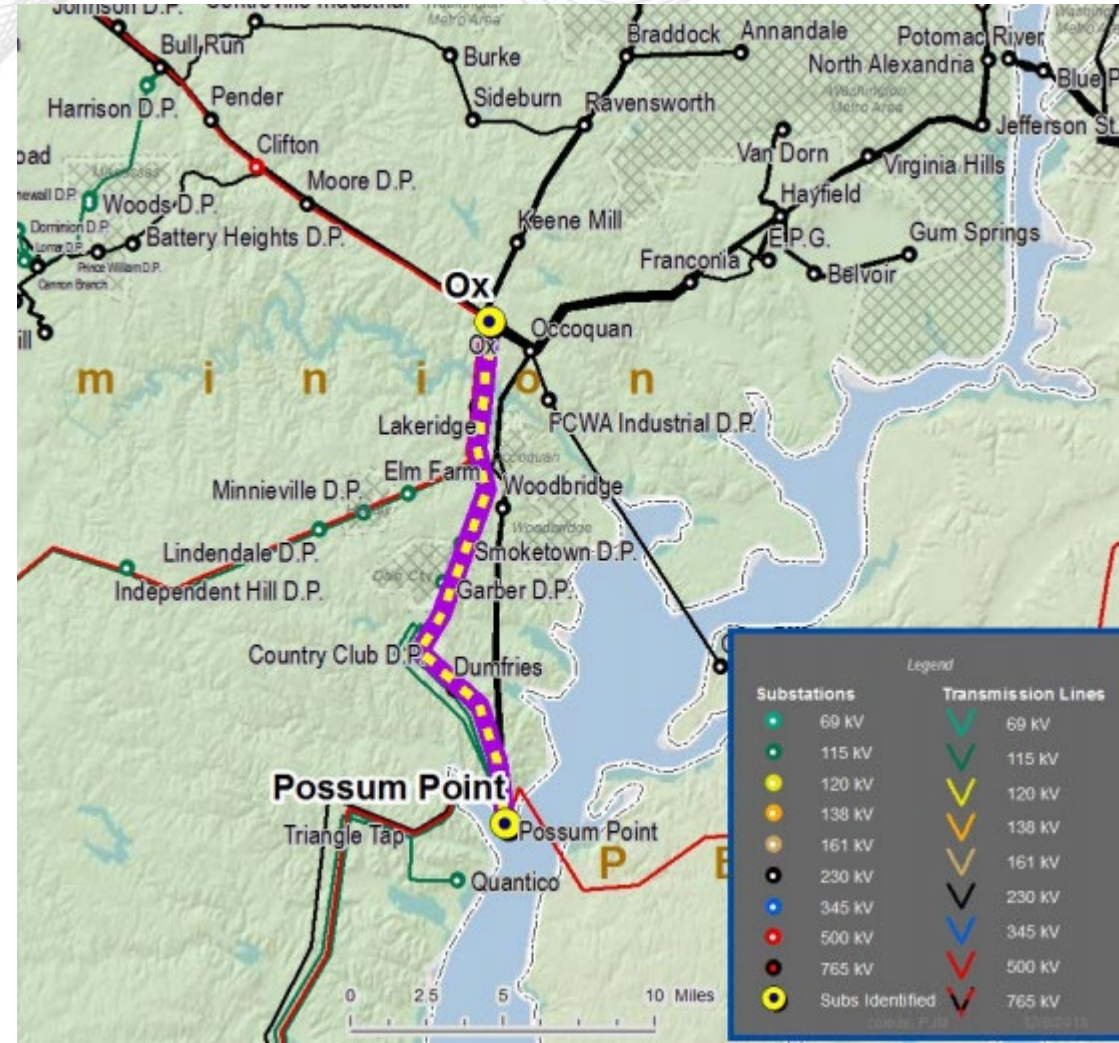
**Updated criteria evaluation:** Updated Summer 2023 & 2025 RTEP Models indicated deficiencies are no longer present. There were significant reductions in flows on the 500 kV System not only on the Dominion System but also the PEPCO Burches Tie Line for the 2024 and 2025 RTEP Models based on many factors. No single factor can be identified.

**Recommended Solution:** Cancel the Project.

**Project Status:** Engineering

**Estimated Cost:** \$550K to date

**Original Estimated Project Cost:** \$21M (b2443.6)





# Dominion Transmission Zone: Baseline Possum Point 230kV Breaker Replacements

**Process Stage:** Cancellation

**Criteria:** Over Duty Breaker

**Assumption Reference:** none

**Model Used for Analysis:** 2025 short circuit model

**Proposal Window Exclusion:** Station Equipment

**Problem Statement:**

Nineteen (19) Possum Point 230kV breakers are over duty:

H892, H8T2078, H992, H9T237, 23792, G6BTGT, GT92, 202292, 252T2022, 21592, G5T215, 25292, G492, G592, G6A92, G6B92, G4T2001, 200192, 207892

**Significant Driver:**

**b2443.6:** Install 2<sup>nd</sup> Possum Point 500/230 kV transformer.

**Existing Facility Rating:** 63kA interrupting rating

**Solution Cancellation Driver:** Possum Point 5 Retirement

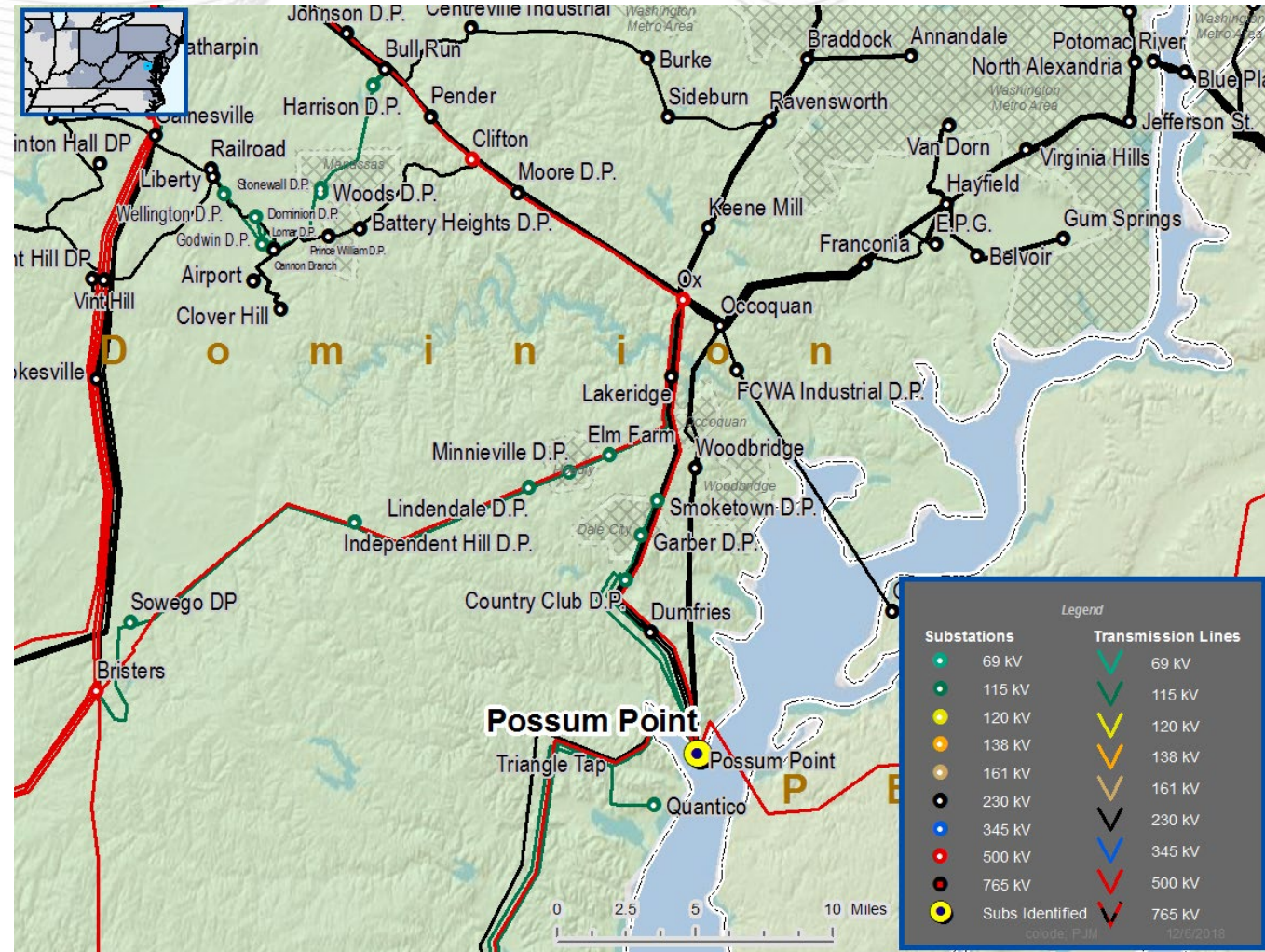
**Recommended Solution Cancellation:**

**b2443.7:** Replace the nineteen (19) Possum Point 230kV breakers with 80kA breakers: H892, H8T2078, H992, H9T237, 23792, G6BTGT, GT92, 202292, 252T2022, 21592, G5T215, 25292, G492, G592, G6A92, G6B92, G4T2001, 200192, 207892

- Estimated Cost:** \$19M Replace the nineteen breakers with 80kA breakers (\$1M each)

**Required In-Service:** 6/1/2023

**Previously Presented:** 1/10/2019





# 2020 RTEP Window 4

- Timeline
  - Window 4 Opened: March 1, 2021
  - Window 4 Closed: April 2, 2021
- 13 proposals received from 5 entities
  - 5 proposals include cost containment provisions
  - 13 proposal include greenfield construction



# 2020 RTEP Proposal Window 4 - Proposals

Proposal ID#	Project type	Project Description	Total Construction Cost \$M	Zone	kV Level	Analysis	Flowgate
862	Greenfield	Provide a secondary feed to Brewster 69 kV by tapping the existing Cloverdale – E. Wooster 138 kV line, and connecting it to Brewster 69 kV station via a greenfield 138/69 kV substation (Fine Fork Station) and a new 5-mile 69 kV line between the greenfield tap location and the Brewster 69 kV station.	\$17.70	ATSI	138/69 kV	FERC 715 TO Criteria	AMPT-O1
185	Greenfield	The Brewster - Iron Man 69kV Transmission Project will include a new 3-position substation interconnecting the West Wilmot - Beartown 69kV transmission line. The proposed project will include a new 69kV transmission line to connect the new substation with a new line position at the Brewster 69kV Substation.	\$7.10	ATSI	69 kV	FERC 715 TO Criteria	AMPT-O1
20	Greenfield	Build a 6.5 mile greenfield 69 kV line from Brewster station to the future Alpine station. Expand Alpine station to a 5 breaker ring bus to accommodate the new line from Brewster. Perform station work at Brewster to accommodate the new line.	\$10.10	ATSI, AEP	69 kV	FERC 715 TO Criteria	AMPT-O1



# 2020 RTEP Proposal Window 4 – Proposals

Proposal ID#	Project type	Project Description	Total Construction Cost \$M	Zone	kV Level	Analysis	Flowgate
991	Greenfield	Build a greenfield 69 kV station “East Wilmot” to tap the line from Beartown station to the future Alpine station. Build East Wilmot station as a 3 breaker ring bus. Build a 5.3 mile greenfield 69 kV line from Brewster station to East Wilmot station. Perform station work at Brewster to accommodate the new line.	\$11.80	ATSI, AEP	69 kV	FERC 715 TO Criteria	AMPT-O1
380	Greenfield	Build a greenfield 138/69 kV station “Pigeon Run” to tap the South Canton – Apple Creek 138 kV line. Build Pigeon Run station as a 4-breaker station with a 90 MVA 138/69 kV transformer. Build a 4.2 mile greenfield 69 kV line from Brewster station to Pigeon Run station. Perform station work at Brewster to accommodate the new line.	\$13.90	ATSI, AEP	138/69 kV	FERC 715 TO Criteria	AMPT-O1
74	Greenfield	Build a greenfield 345/69 kV station “Crossroads” to tap the 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.	\$19.80	ATSI	345/69 kV	FERC 715 TO Criteria	AMPT-O1





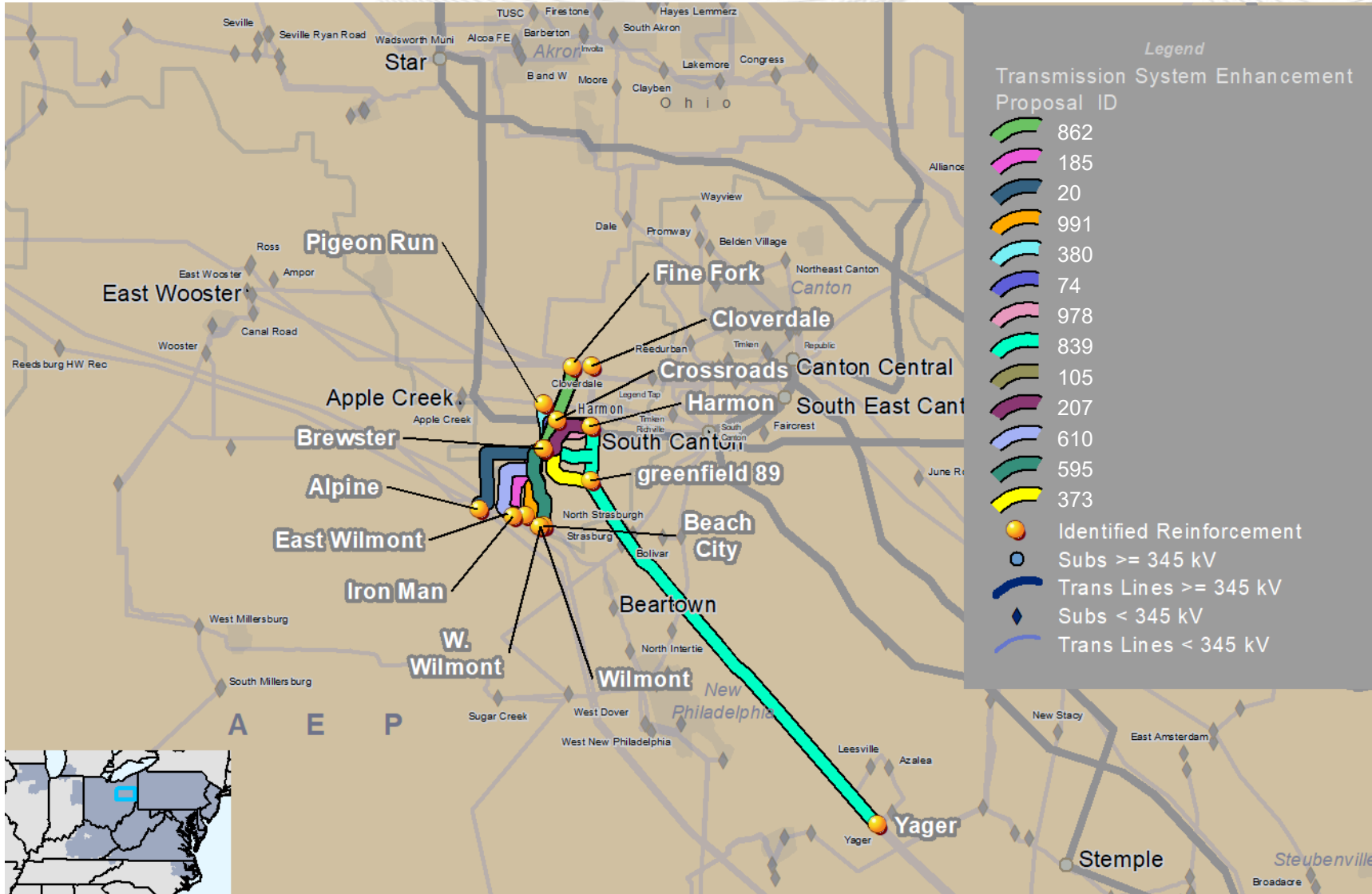
# 2020 RTEP Proposal Window 4 – Proposals

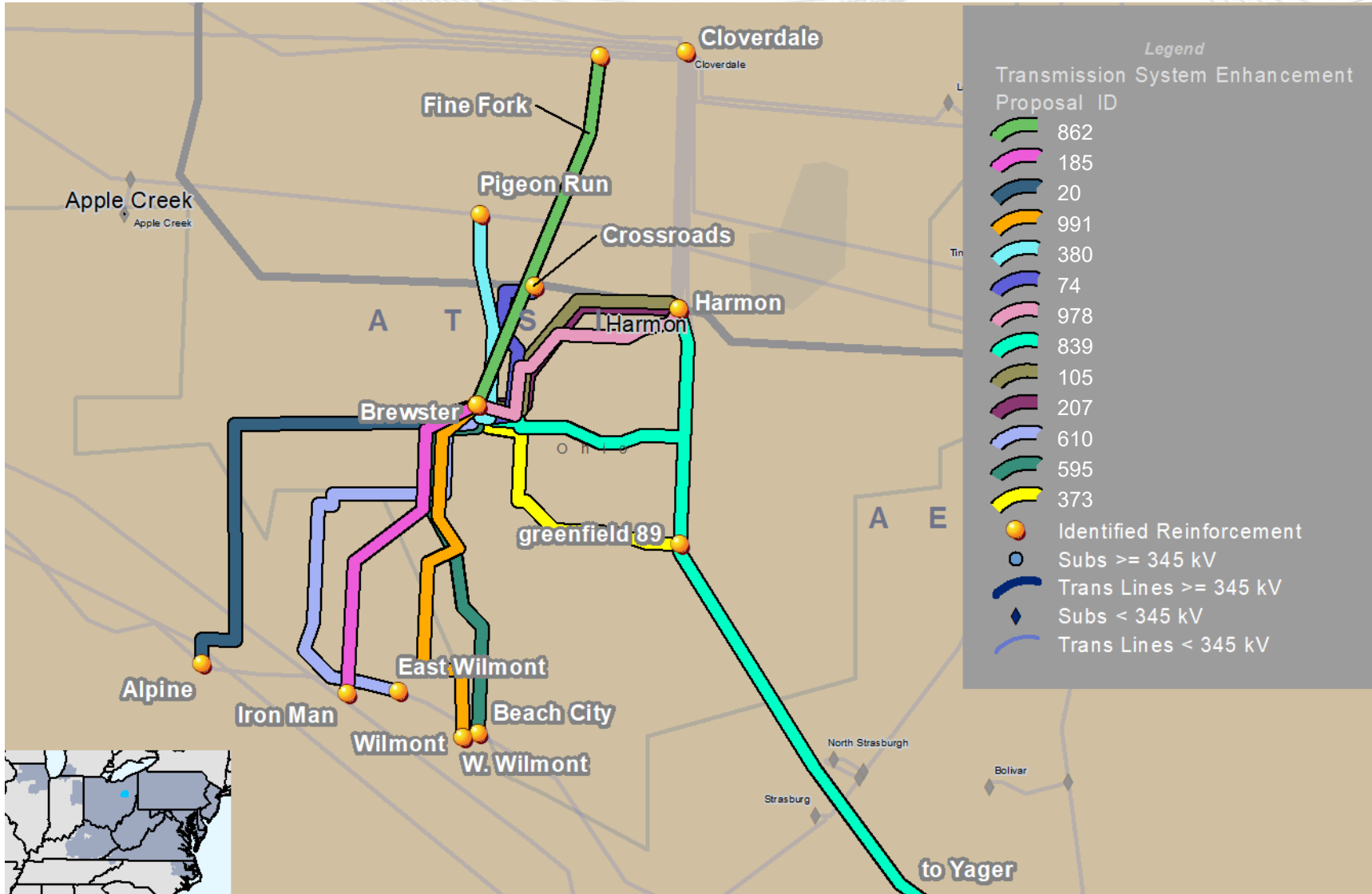
Proposal ID#	Project type	Project Description	Total Construction Cost \$M	Zone	kV Level	Analysis	Flowgate
978	Greenfield	Build a 3.73 mile greenfield 69 kV line from Harmon station to Brewster station in parallel with the existing AMPT line. Install a new 69 kV breaker at Harmon station and perform related station work to accommodate the new line. Modify the 69 kV bus at Harmon station to convert the existing breaker “B26” into a bus-tie breaker. Perform station work at Brewster to accommodate the new line.	\$9.50	ATSI	69 kV	FERC 715 TO Criteria	AMPT-O1
839	Greenfield	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. Replace with 138 kV buswork and equipment. Install three 138/12 kV transformers.	\$20.70	ATSI	138/69 kV	FERC 715 TO Criteria	AMPT-O1
105	Greenfield	Convert the 69 kV yard at Harmon into a six (6) breaker 69 kV ring bus. Build a new 69 kV line from Harmon to Brewster (Brewster-Harmon #2 69kV) in a different ROW and on independent structures than the existing Brewster-Harmon 69 kV line with 556 kcmil ACSR conductor, terminate the line just outside of the Brewster Muni substation at the customer dead end structure.	\$16.50	ATSI	69 kV	FERC 715 TO Criteria	AMPT-O1



# 2020 RTEP Proposal Window 4 – Proposals

Proposal ID#	Project type	Project Description	Total Construction Cost \$M	Zone	kV Level	Analysis	Flowgate
207	Greenfield	Expand the Harmon 69 kV bus and add one 69 kV circuit breaker to provide a line exit to Brewster for a second 69 kV line. Build a new 69 kV line from Harmon to Brewster (Brewster-Harmon #2 69kV) in a different ROW and on independent structures than the existing Brewster-Harmon 69 kV line with 556 kcmil ACSR conductor, terminate the line just outside of the Brewster Muni substation at the customer dead end structure	\$9.20	ATSI	69 kV	FERC 715 TO Criteria	AMPT-O1
610	Greenfield	Build a 5.5 mile-long 69 kV transmission line from the existing Brewster 69 kV substation to a new three breaker ring bus switchyard on the existing West Wilmot to Beartown 69 kV transmission line. The tap point on the West Wilmot to Beartown 69 kV transmission line will be approximately 1.3 miles from West Wilmot 69 kV substation.	\$13	ATSI, AEP	69 kV	FERC 715 TO Criteria	AMPT-O1
595	Greenfield	Building a 4.7 mile-long 69 kV transmission line from the existing Brewster 69 kV substation to a new three breaker ring bus switchyard on the existing West Wilmot to Beartown 69 kV transmission line. The tap point on the West Wilmot to Beartown 69 kV transmission line will be approximately 3.7 miles from West Wilmot 69 kV substation.	\$12.10	ATSI, AEP	69 kV	FERC 715 TO Criteria	AMPT-O1
373	Greenfield	Build a 4.4 mile-long 69 kV transmission line from the existing Brewster 69 kV substation to a new 138/ 69 kV substation on the existing Cloverdale to Yager 138 kV transmission line. The new 138/ 69 kV substation will involve a three breaker ring, a 138-69 kV step-down transformer and a breaker on the LV side of the step-down transformer. The proposed 138/ 69 kV substation will be approximately 6.2 miles from Cloverdale 138 kV substation.	\$15.80	ATSI	138/69 kV	FERC 715 TO Criteria	AMPT-O1





- PJM evaluating proposals



# 2021 RTEP

- Current schedule (currently targeting the schedule below)
  - Post updates to models as required
  - Preliminary Summer N-1 and Generation Deliverability posted
  - Requesting FERC Form 715 analysis results from transmission owners by May 21. PJM will review and then post as soon as possible
  - Targeting second-third week of June to open 2021 RTEP proposal window

- The Transource 9A Market Efficiency project construction schedule is being impacted due to siting process
- PJM is preparing for a retool of the 2021 RTEP to examine the impacts for the delay to the projected completion
- PJM identified the following concerns:
  - Reliability issues due to project delay
    - Potential issues previously identified need to be reviewed and validated
  - Possible impacts to the New Services Queue projects that may be reliant on the 9A project or with reinforcements impacted by the removal of the 9A project



- PJM will monitor status of 9A project
- If no decision is made on siting status of project by end of May, PJM will engage Transmission Owners to begin preparations for reliability tests to examine impacts associated with possibility project is not constructed
  - Additional reliability projects needed?
  - Operational concerns?
- PJM will perform retool of 2021 RTEP, with the changes specific to the removal of the 9A project depending on the decision by PAPUC, following the posting of violations and opening of the 2021 RTEP Short-term project proposal window

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## Reliability Analysis Update



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Version No.	Date	Description
1	5/6/2021	<ul style="list-style-type: none"><li>• Original slides posted</li></ul>
2	5/7/2021	<ul style="list-style-type: none"><li>• Added slides to discuss 2021 RTEP retool (slides 16 &amp; 17)</li></ul>
3	5/11/2021	<ul style="list-style-type: none"><li>• Updated maps on slides 11 and 12</li></ul>
4	6/4/2021	<ul style="list-style-type: none"><li>• Updated slide 3 to include additional project cancellation information.</li></ul>