



# Reliability Analysis Update

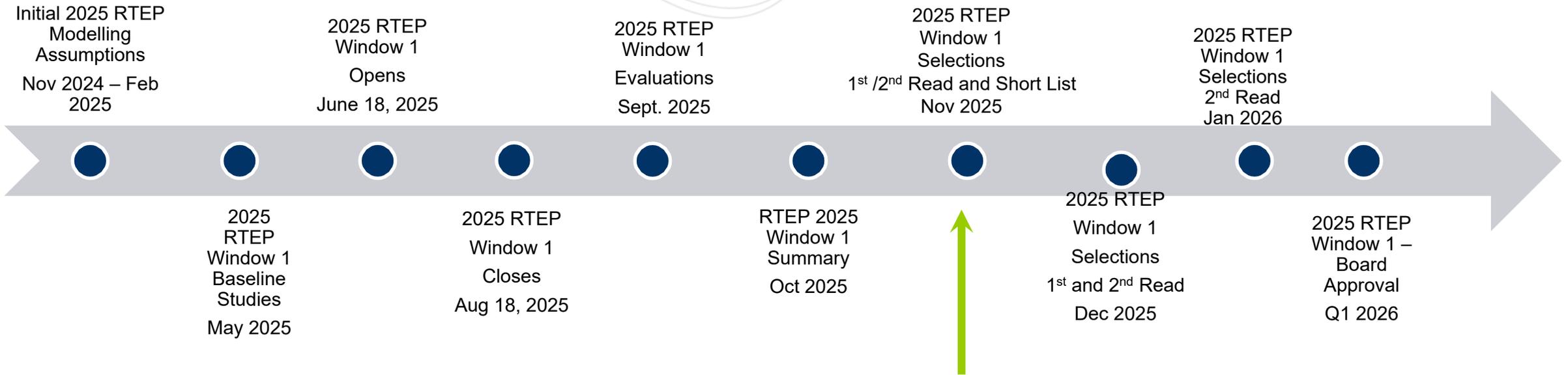
Transmission Expansion Advisory Committee  
November 4, 2025

- 2025 RTEP Window 1 - Schedule Update
- Recommended Solutions – 2025 Window 1
- First Read – 2025 Window 1
- Short List – 2025 Window 1 Regional Clusters
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- TPL-001.5 P5 Projects
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# 2025 RTEP Window 1 Update

# 2025 RTEP Window 1 – Timeline



# Recommended Solutions – 2025 Window 1

## Baseline Reliability Projects

**Process Stage:** Recommended Solution

**Criteria:** Generator Deliverability

**Assumption Reference:** 2025 RTEP assumptions

**Model Used for Analysis:** 2030 RTEP winter base case

**Proposal Window Exclusion:** None

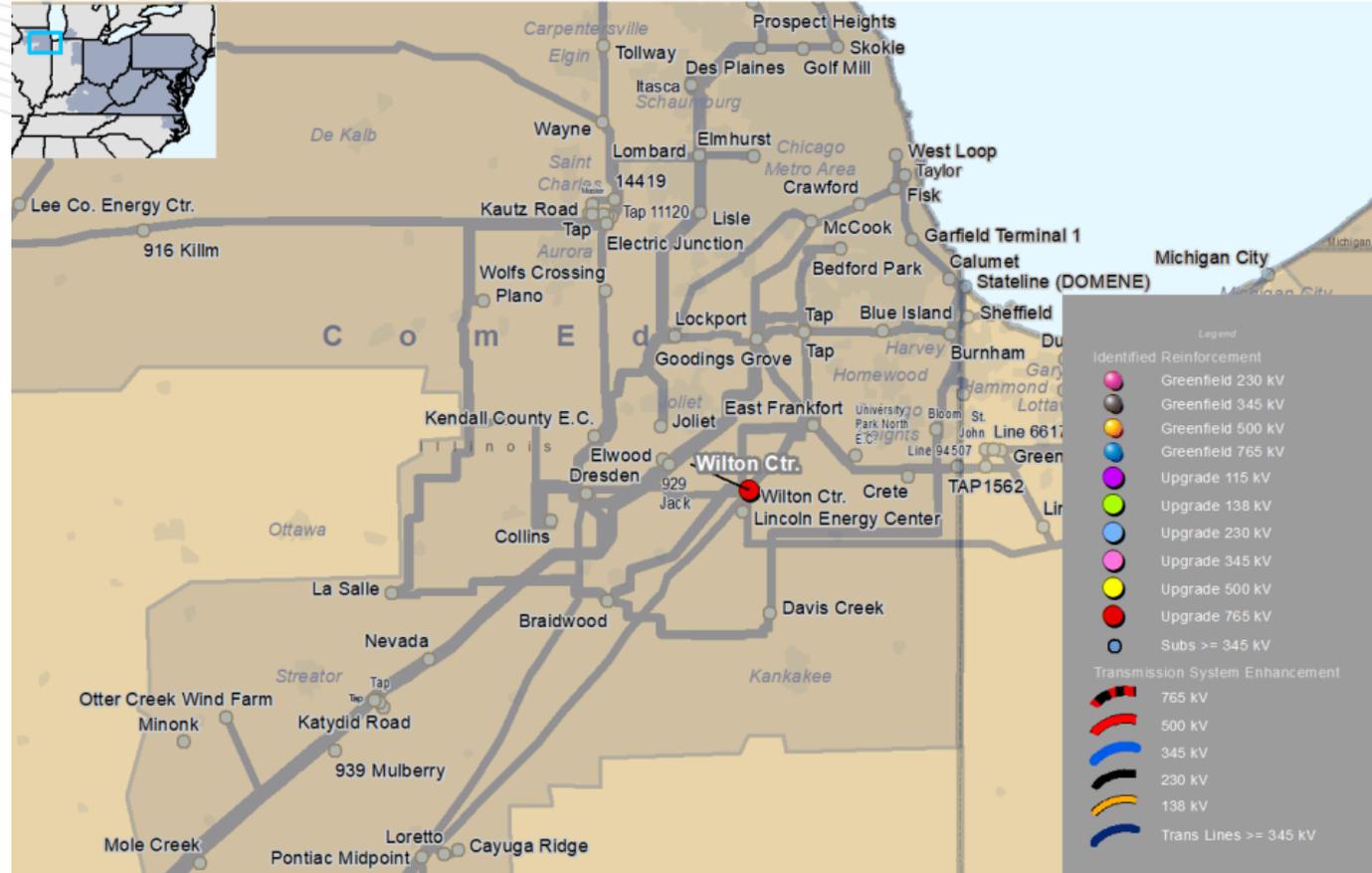
**Problem Statement:**

FG: 2025W1-GD-W177, 2025W1-GD-W178, 2025W1-GD-W185, 2025W1-GD-W186, 2025W1-GD-W175, 2025W1-GD-W189, 2025W1-GD-W176, 2025W1-GD-W27, 2025W1-GD-W28, 2025W1-GD-W38, 2025W1-GD-W39, 2025W1-GD-W188

In the 2030 RTEP winter case, the Wilton Center 765/345 kV transformers TR 93 and TR 94 are overloaded for N-1 and N-2 outages.

**Existing Facility Rating:**

Branch	SN/SLTE/SSTE/SLD WN/WLTE/WSTE/WLD (MVA)
Wilton Center 765/345 kV TR 93	1200/1379/1469/1601 1200/1379/1469/1601
Wilton Center 765/345 kV TR 94	1200/1379/1469/1601 1200/1379/1469/1601





# ComEd Transmission Zone: Baseline Wilton Center 765/345 kV

## Recommended Solution (2025-W1-906):

Install a new 765/345 kV TR91 transformer at Wilton Center substation (b4006.1).

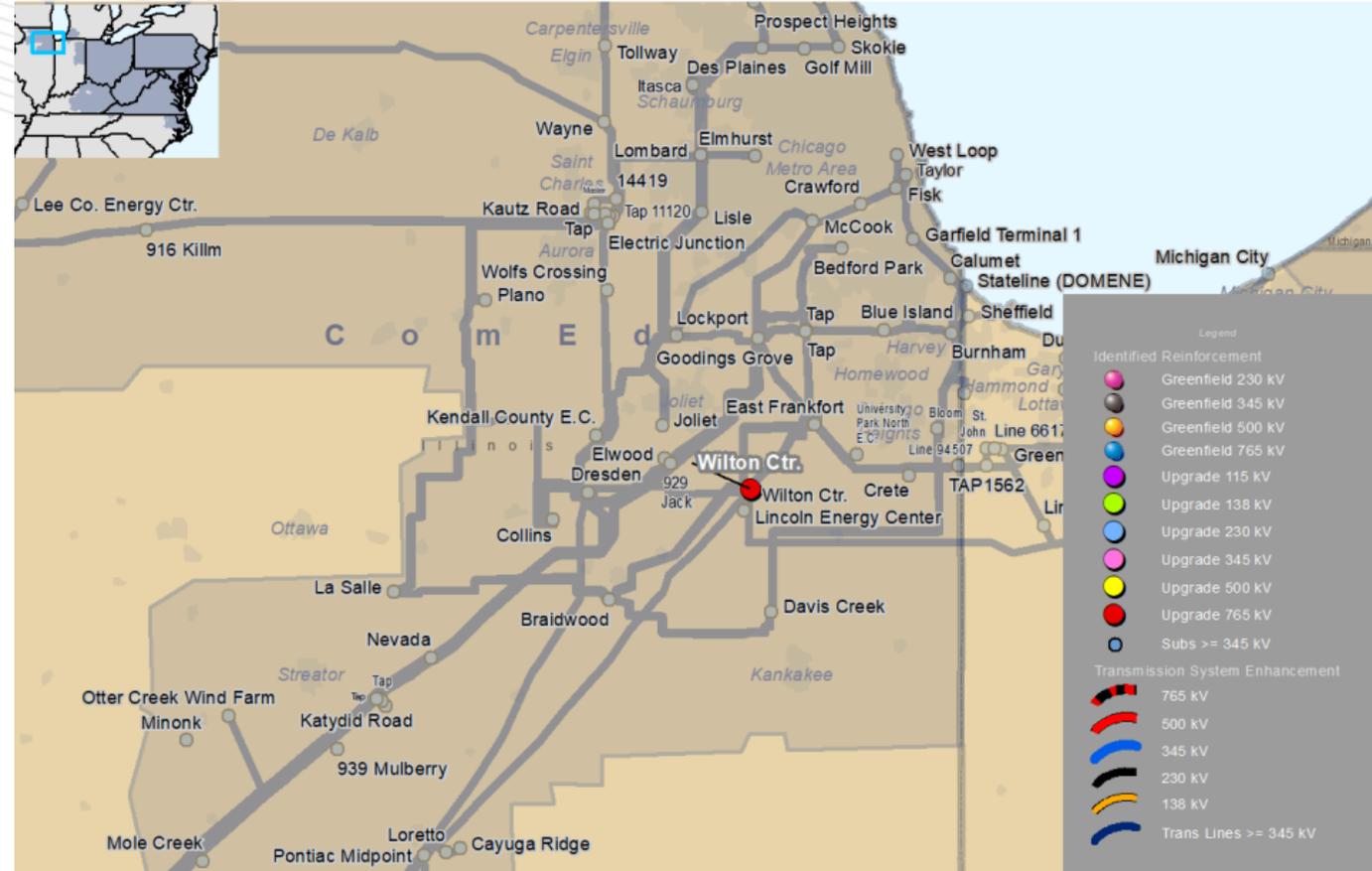
**Estimated Cost:** \$45.81 M

## Preliminary Facility Rating:

Branch	SN/SLTE/SSTE/SLD WN/WLTE/WSTE/WLD (MVA)
Wilton Center 765/345 kV TR 91	1200/1379/1469/1601 1200/1379/1469/1601

**Required In-Service Date:** 12/1/2030

**Projected In-Service Date:** 12/1/2030





# APS Transmission Zone: Baseline McCanns Rd 138 kV Switching Station

**Process Stage:** Recommended Solution

**Criteria:** N-1-1

**Assumption Reference:** 2025 RTEP assumptions

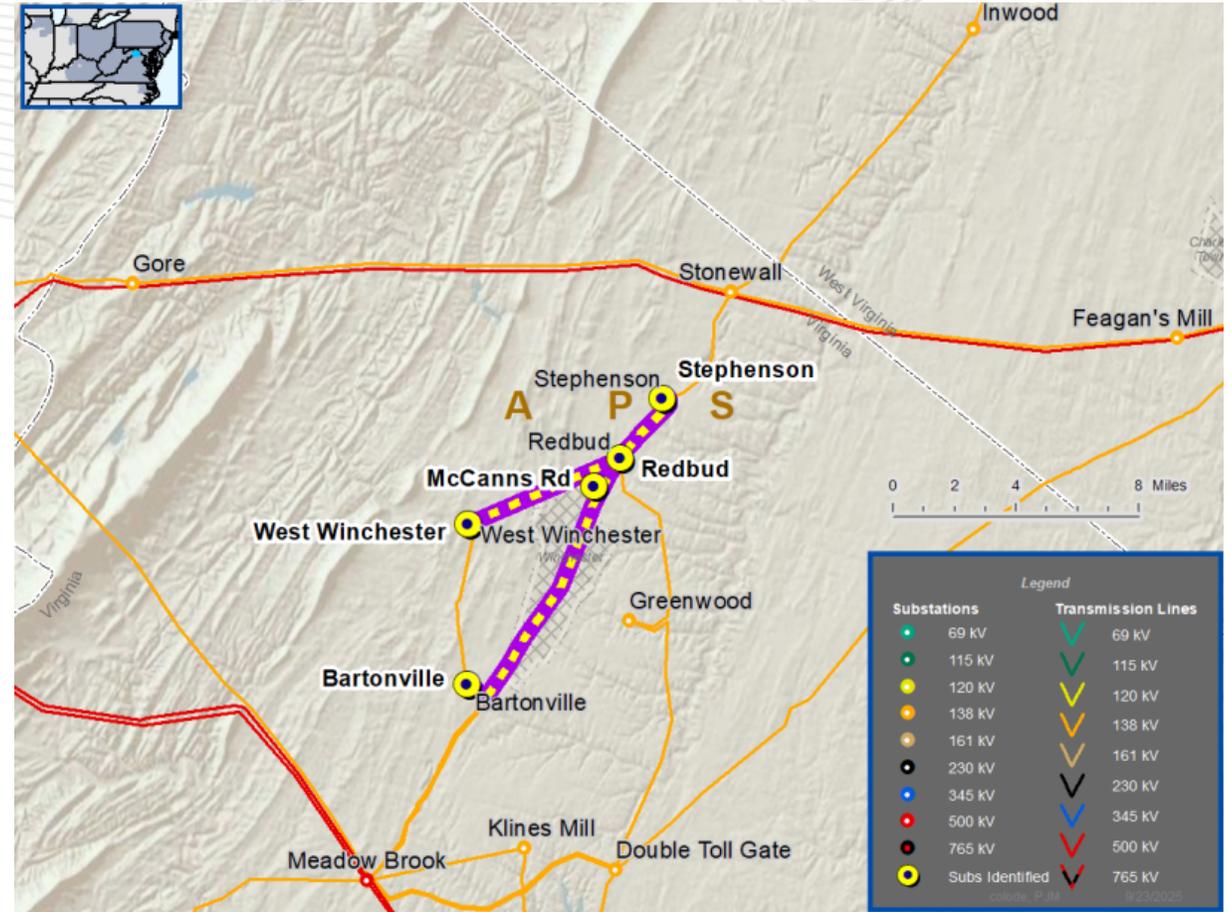
**Model Used for Analysis:** 2030 RTEP Summer and Winter base case

**Proposal Window Exclusion:** None

## Problem Statement:

2025W1-N11-WT24, 2025W1-N11-WT23, 2025W1-N11-ST7, 2025W1-N11-ST8, 2025W1-N11-WLD1 and 2025W1-N11-WLD2

In the 2030 RTEP Summer and Winter case, the Redbud to West Winchester and Double Toll Gate to Greenwood 138 kV lines are overloaded for N-1-1 contingencies. In addition, PJM also observed greater than 300 MW load loss in the winter case for N-1-1 contingencies.



# APS Transmission Zone: Baseline McCanns Rd 138 kV Switching Station

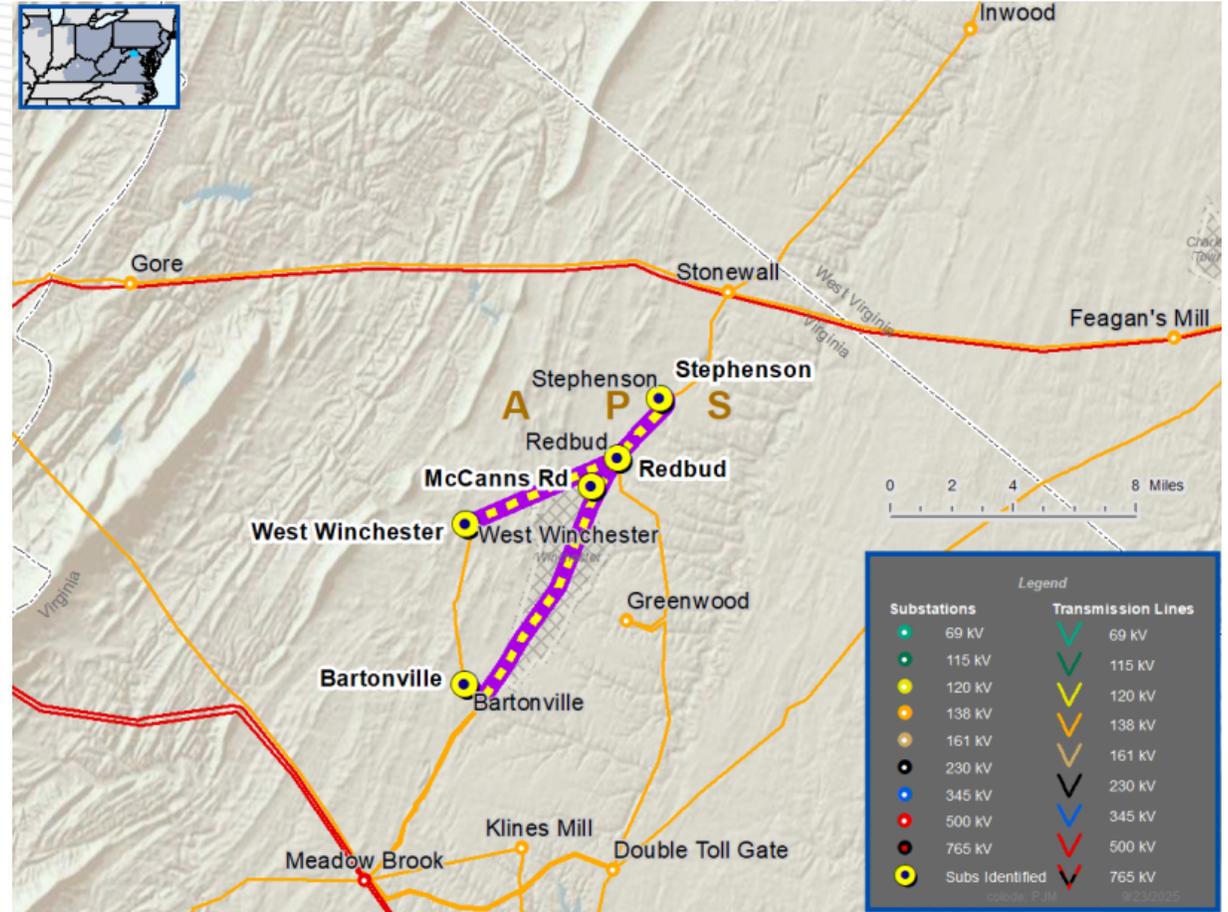
## Recommended Solution (2025-W1-631):

- Construct the McCanns Rd 138 kV Switching Station and interconnect the existing Redbud – West Winchester 138 kV Line and Bartonville – Stephenson 138 kV Line. Install OPGW for the static & install one new SCADA controlled 2000 A disconnect with whips. **(b4001.1)**
- Reconductor new Redbud McCanns Rd 138 kV Line with 795 KCMIL 45/7 ACSS for 0.5 miles from Redbud 138 kV Substation to Str. 175 of the existing Redbud - West Winchester 138 kV Line. **(b4001.2)**

Estimated Cost: \$23.87 M

Required In-Service Date: 6/1/2030

Projected In-Service Date: 6/1/2030



**Process Stage:** Recommended Solution

**Criteria:** Generator Deliverability

**Assumption Reference:** 2025 RTEP assumptions

**Model Used for Analysis:** 2030 RTEP Light Load base case

**Proposal Window Exclusion:** None

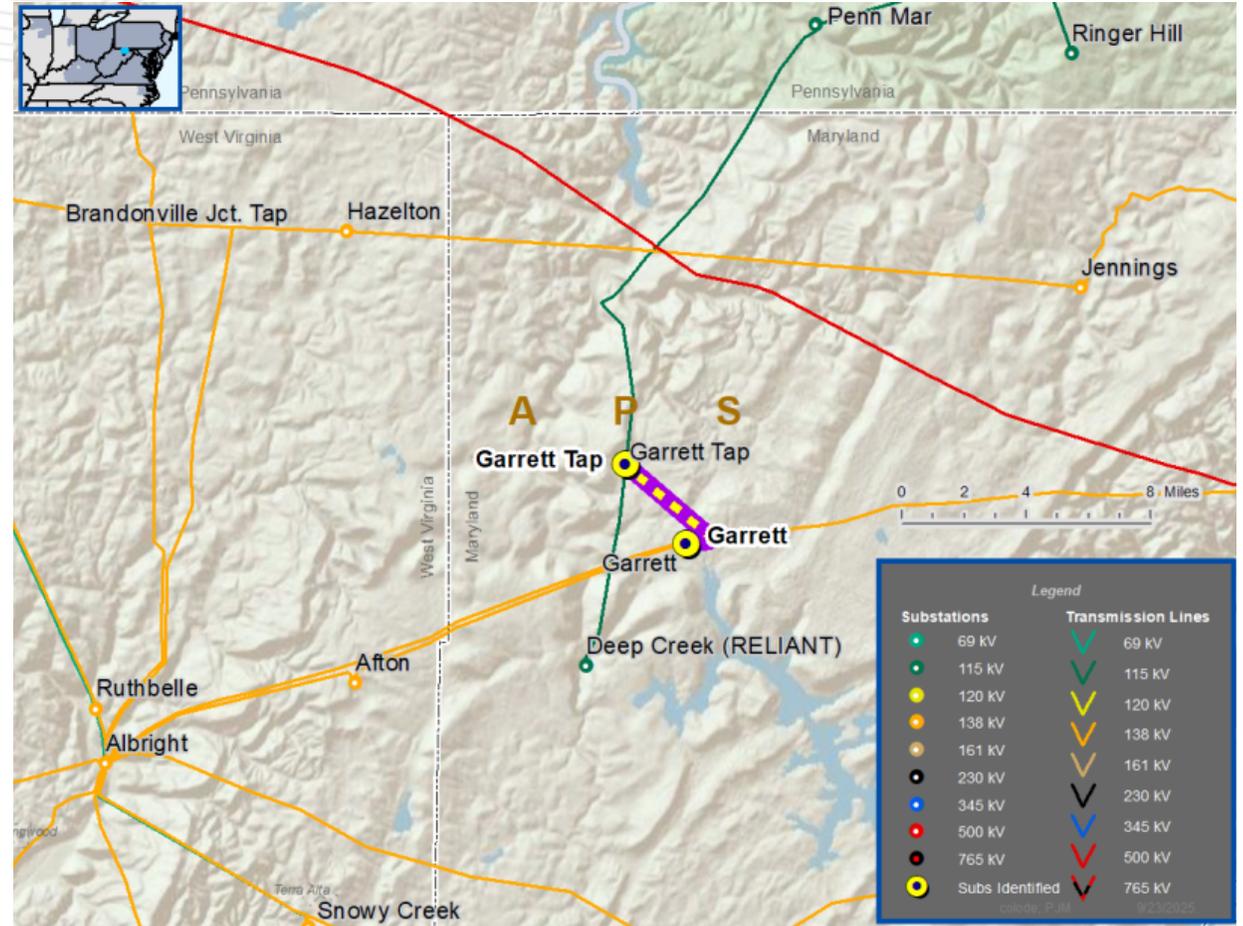
**Problem Statement:**

2025W1-GD-LL136, 2025W1-GD-LL180, 2025W1-GD-LL28 & 2025W1-GD-LL32

In the 2030 RTEP Light Load case, the Garrett to Garrett Tap 115 kV is overloaded for N-1 and N-2 outages.

**Existing Facility Rating:**

Branch	SN/SE/WN/WLD (MVA)
Garrett – Garrett Tap 115 kV	133/160/150/190



### Recommended Solution (2025-W1-692):

- Rebuild approximately 1.9 miles of 115 kV line with larger conductor. Install OPGW for the static & install one new SCADA controlled 2000 A disconnect with whips. **(b4002.1)**
- Adjust the relay settings at Penn Mar, Garrett, and Deep Creek substations to accommodate the new ratings and impedance changes associates with the Garrett- Garrett Tap 115 kV Line rebuild. **(b4002.2)**

**Estimated Cost:** \$9.15 M

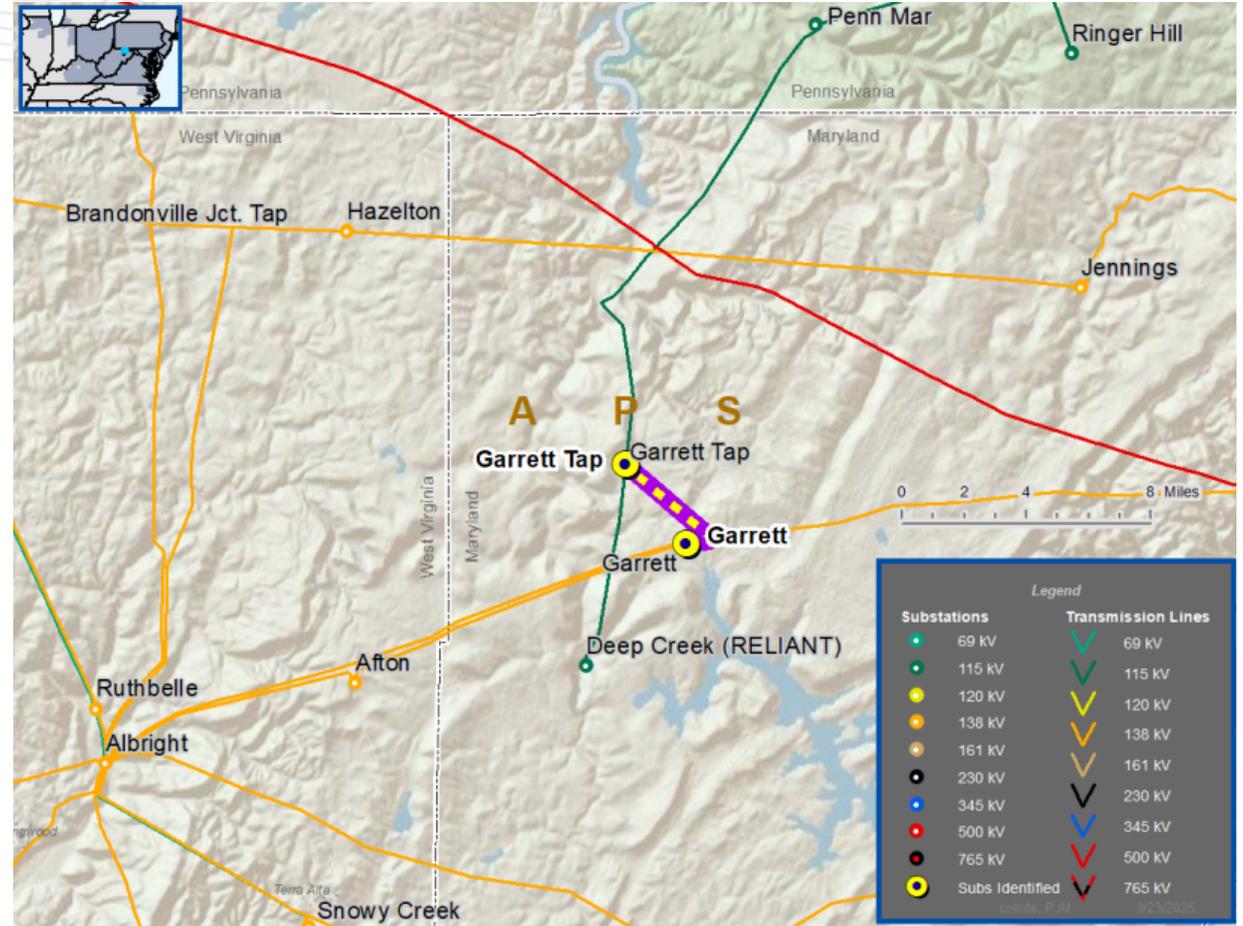
**Preliminary Facility Rating:**

Branch	SN/SE/WN/WLD (MVA)
Garrett – Garrett Tap 115 kV	417/480/417/506

**Ancillary Benefits:** Address 2024/2025 ME window violation, Addressed EOL Facility

**Required In-Service Date:** 4/15/2030

**Projected In-Service Date:** 6/1/2029





# DEOK Transmission Zone: Baseline 138 kV line College Corner - Collinsville

**Process Stage:** Recommended Solution

**Criteria:** Generator Deliverability

**Assumption Reference:** 2025 RTEP assumptions

**Model Used for Analysis:** 2030 RTEP summer base case

**Proposal Window Exclusion:** None

**Problem Statement:**

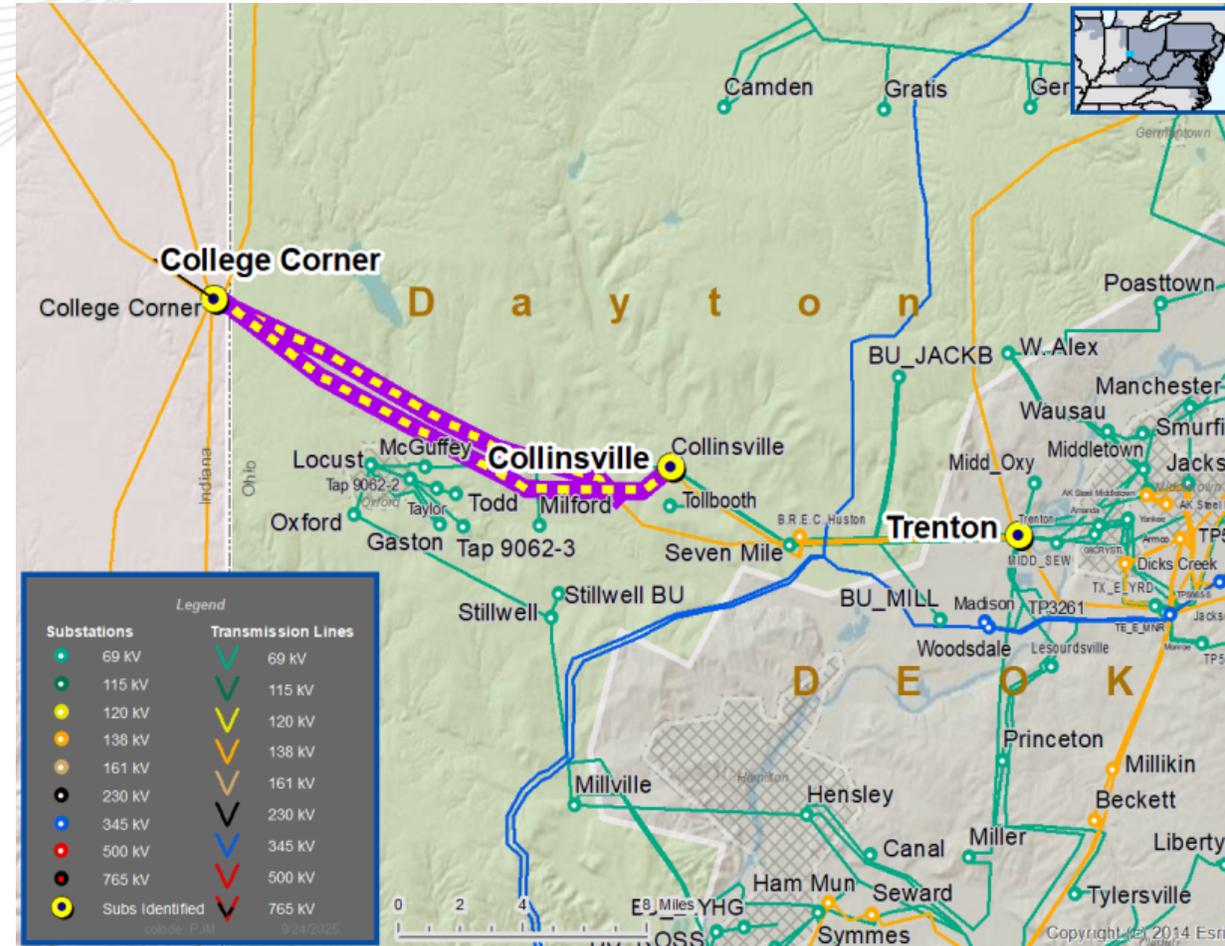
FG: 2025W1-GD-S208, 2025W1-GD-S184, 2025W1-GD-S206, 2025W1-GD-S472

138 kV line College Corner (AEP)– Collinsville (DEOK) is ~ 11.90 miles which shares common tower with 138 kV line College Corner – Trenton (DEOK).

In the 2030 RTEP summer case, 138 kV line College Corner – Collinsville is overloaded in the Generator Deliverability for N-2 outages.

**Existing Facility Rating:**

Branch 138 kV	SN/SE/WN/WE (MVA)
College Corner - Collinsville	167/178/210/224
College Corner - Trenton	185/198/234/249



# DEOK Transmission Zone: Baseline 138 kV line College Corner - Collinsville

## Recommended Solution (2025-W1-156):

Rebuild the College Corner – Collinsville 138 kV line from the OH/IN State Line to Collinsville Substation (~11.90 miles). Rebuild the 138 kV line College Corner – Trenton with common tower section (~ 11.90 miles).

Relay settings will need to be updated at DEOK's Collinsville & Trenton Substations and at the AEP's College Corner Substation (**b4003.1**).

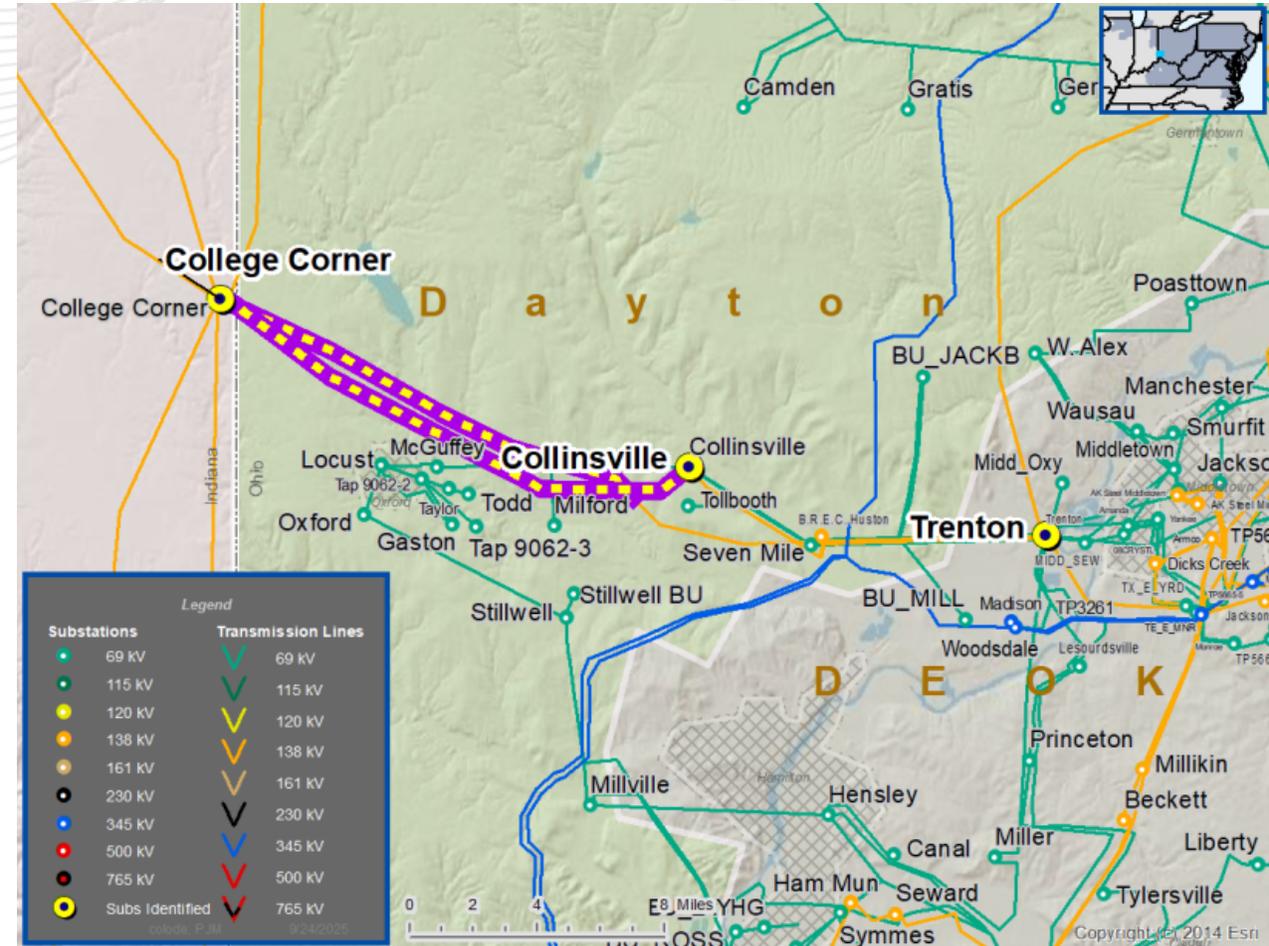
**Estimated Cost:** \$58.471 M

## Preliminary Facility Rating:

Branch 138 kV	SN/SE/WN/WE (MVA)
College Corner - Collinsville	167/245/210/271
College Corner - Trenton	185/198/234/249

**Required In-Service Date:** 06/2030

**Projected In-Service Date:** 06/2030



**Process Stage:** Recommended Solution

**Criteria:** Baseline Load Growth Deliverability & Reliability

**Assumption Reference:** 2030 RTEP Assumption

**Model Used for Analysis:** 2030 RTEP Summer

**Proposal Window Exclusion:** Substation Equipment Exclusion

**Problem Statement:** In the 2030 RTEP Summer Baseline analysis there was an overload observed on Claymont – Linwood 230kV circuit. The violation was posted as part of the 2025 Window 1: 2025-W1-GD-S39

**Existing Facility Rating:** 654SN/800SE, 748WN/892WE MVA

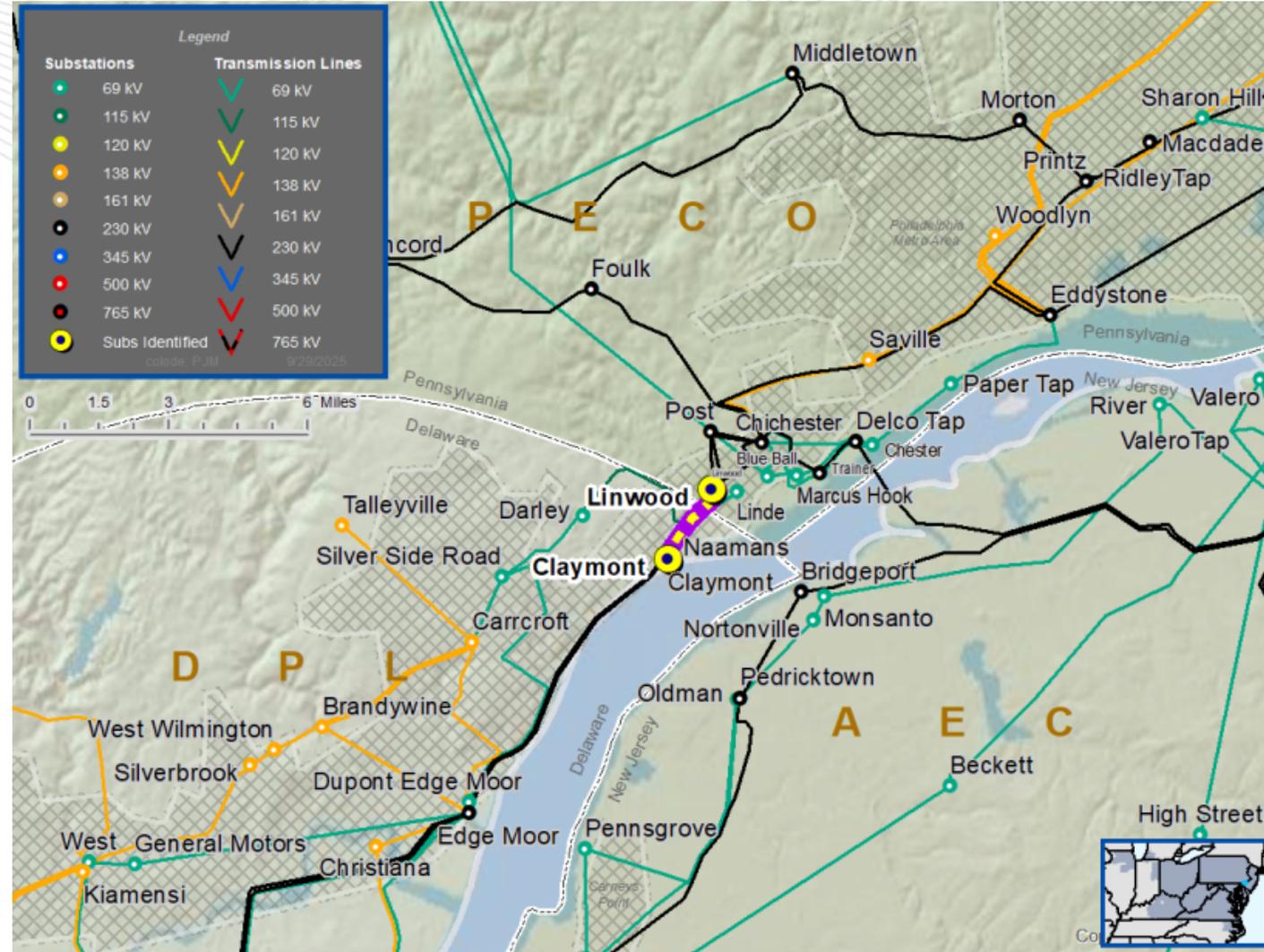
**Proposed Facility Rating:** 654SN/809SE, 753WN/911WE MVA

**Recommended Solution:**

Upgrade existing 1590 ACSR stranded bus at Claymont substation to increase the rating on the Claymont – Linwood 230 kV circuit. **(b4004.1)**

**Estimated Cost:** \$0.031M

**Required In-Service:** 06-01-2030



**Process Stage:** Recommended Solution

**Criteria:** Baseline Load Growth Deliverability & Reliability

**Assumption Reference:** 2030 RTEP Assumption

**Model Used for Analysis:** 2030 RTEP Summer

**Proposal Window Exclusion:** Substation Equipment Exclusion

**Problem Statement:**

In the 2030 RTEP Summer baseline analysis there were multiple overloads observed on Chichester – Trainer 230kV circuit. The violations were posted as part of the 2025 Window 1: 2025-W1-GD-S220, 2025-W1-GD-S221, 2025-W1-GD-S222, 2025-W1-GD-S223, 2025-W1-GD-S224, 2025-W1-GD-S225, 2025-W1-GD-S411, 2025-W1-GD-S412

**Existing Facility Rating:** 721SN/772E, 756WN/772WE MVA

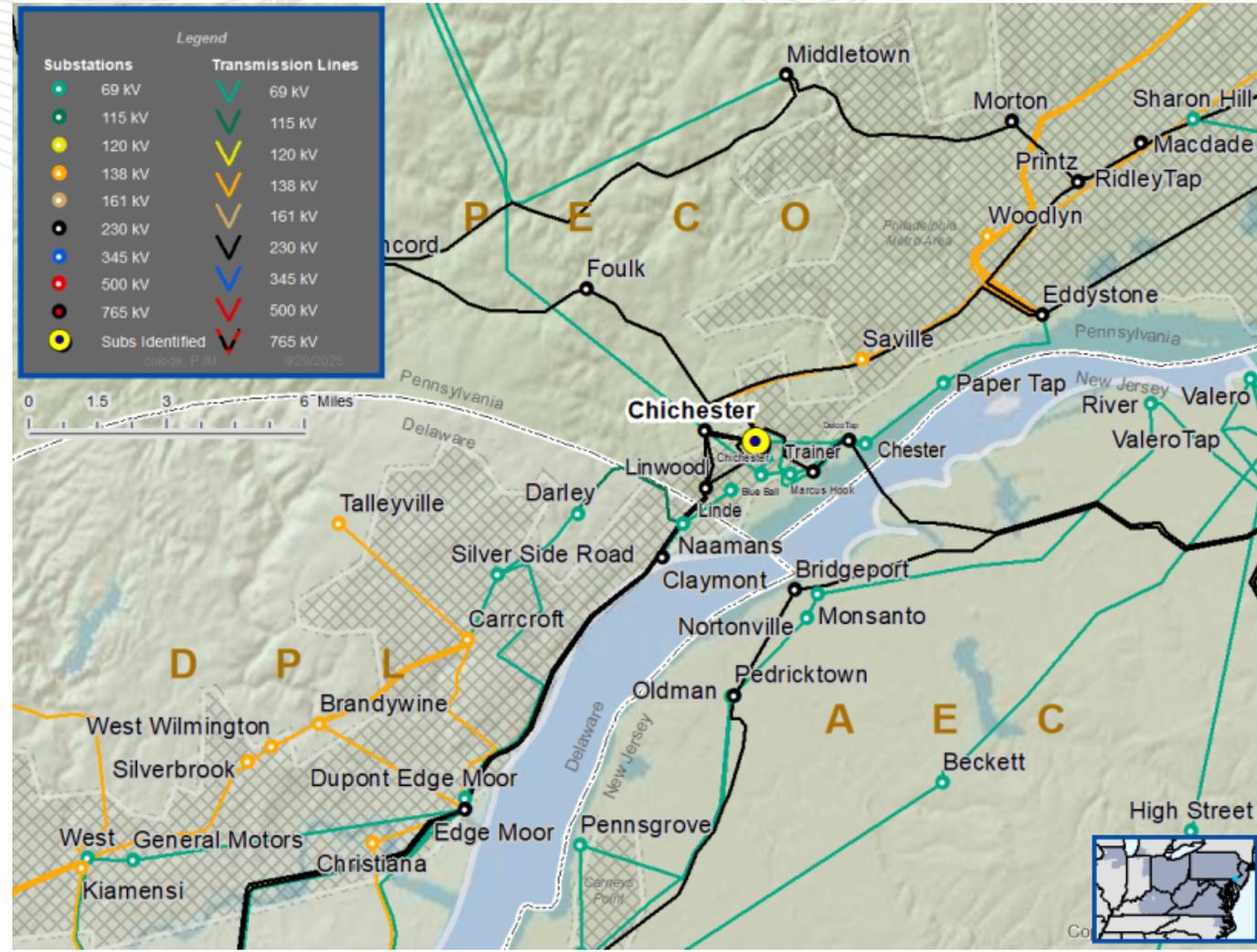
**Proposed Facility Rating:** 721SN/841E, 756WN/877WE MVA

**Recommended Solution:**

Replace existing and install new relays at Chichester 230 kV substation to increase the rating on Chichester – Trainer 230 kV circuit. **(b3942.1)**

**Estimated Cost:** \$0.691M

**Required In-Service:** 06-01-2030



**Process Stage:** Recommend Solution

**Criteria:** Baseline Load Growth Deliverability & Reliability

**Assumption Reference:** 2030 RTEP Assumption

**Model Used for Analysis:** 2030 RTEP Summer

**Proposal ID:** 2025-W1-656

**Problem Statement:** In the 2030 RTEP Summer N-1-1 and IPD analysis, there were multiple overloads observed on Roseland – Livingston 230kV and Roseland – Laurel 230kV. The violations were posted as part of the 2025 Window 1: 2025-W1-N11-ST158, 2025-W1-N11-ST159, 2025-W1-N11-ST160, 2025-W1-N11-ST161, 2025-W1-N11-ST156, 2025-W1-N11-ST157, 2025-W1-IPD-S185, 2025-W1-IPD-S188

**Existing Facility Rating:** 731SN/885SE, 821WN/978WE MVA

**Proposed Facility Rating:** 934SN/1080SE, 999WN/1143WE MVA

**Recommended Solution (2025-W1-656):**

Replace the existing 1590 ACSR single conductor on the Roseland to Livingston 230kV line with a 1590 ACSS single conductor. **(b4005.1)**

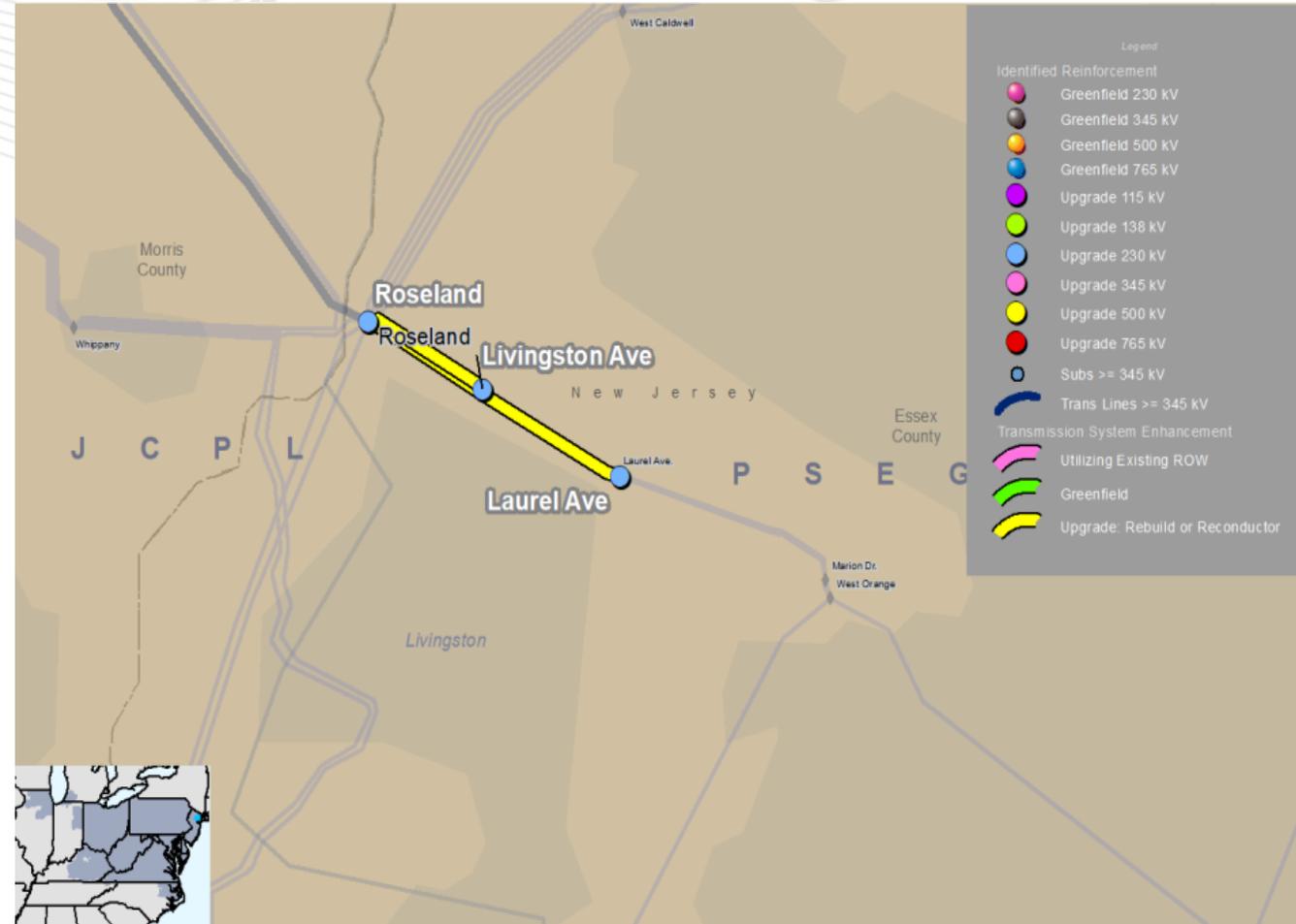
Replace the existing 1590 ACSR single conductor on the Roseland to Laurel Ave 230kV line with a 1590 ACSS single conductor. **(b4005.2)**

**Estimated Cost:** \$9.93M

**Ancillary Benefits:**

The project will install an advanced power conductor with high temperature rating. This conductor provides greater capacity for an existing transmission corridor.

**Required In-Service:** 06-01-2030



# First Read – 2025 Window 1

## Baseline Reliability Projects



# DEOK Transmission Zone: Baseline Woodsdale 345 kV Reliability & Reconfigure

**Process Stage:** First Read

**Criteria:** Generator Deliverability

**Assumption Reference:** 2025 RTEP assumptions

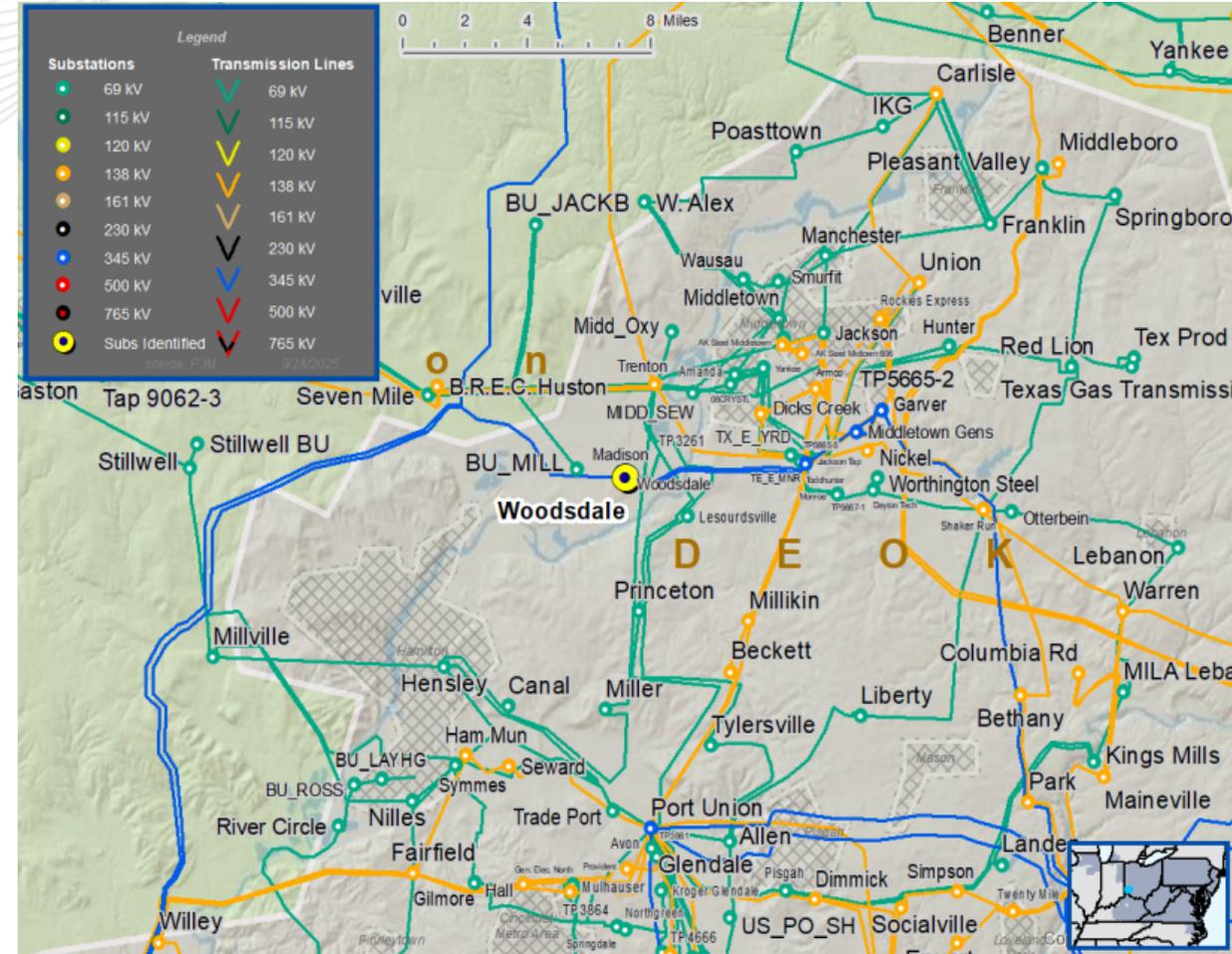
**Model Used for Analysis:** 2030 RTEP summer base case

**Proposal Window Exclusion:** Substation equipment exclusion

**Problem Statement:**

FG: 2025-W1-GD-S203, 2025-W1-GD-S204

In the 2030 RTEP summer case, the Woodsdale - Todhunter ckt 1 and Woodsdale - Todhunter ckt 2 345 kV lines are overloaded in the PJM Generation Deliverability Analysis for N-2 outage.



# DEOK Transmission Zone: Baseline Woodsdale 345 kV Reliability & Reconfigure

## Proposed Solution:

Currently two DEOK Supplemental Projects that are planned at Woodsdale Substation: s3447.1 & s3601.1. DEOK will convert all of s3447.1 & parts of s3601.1 to address these reliability violations.

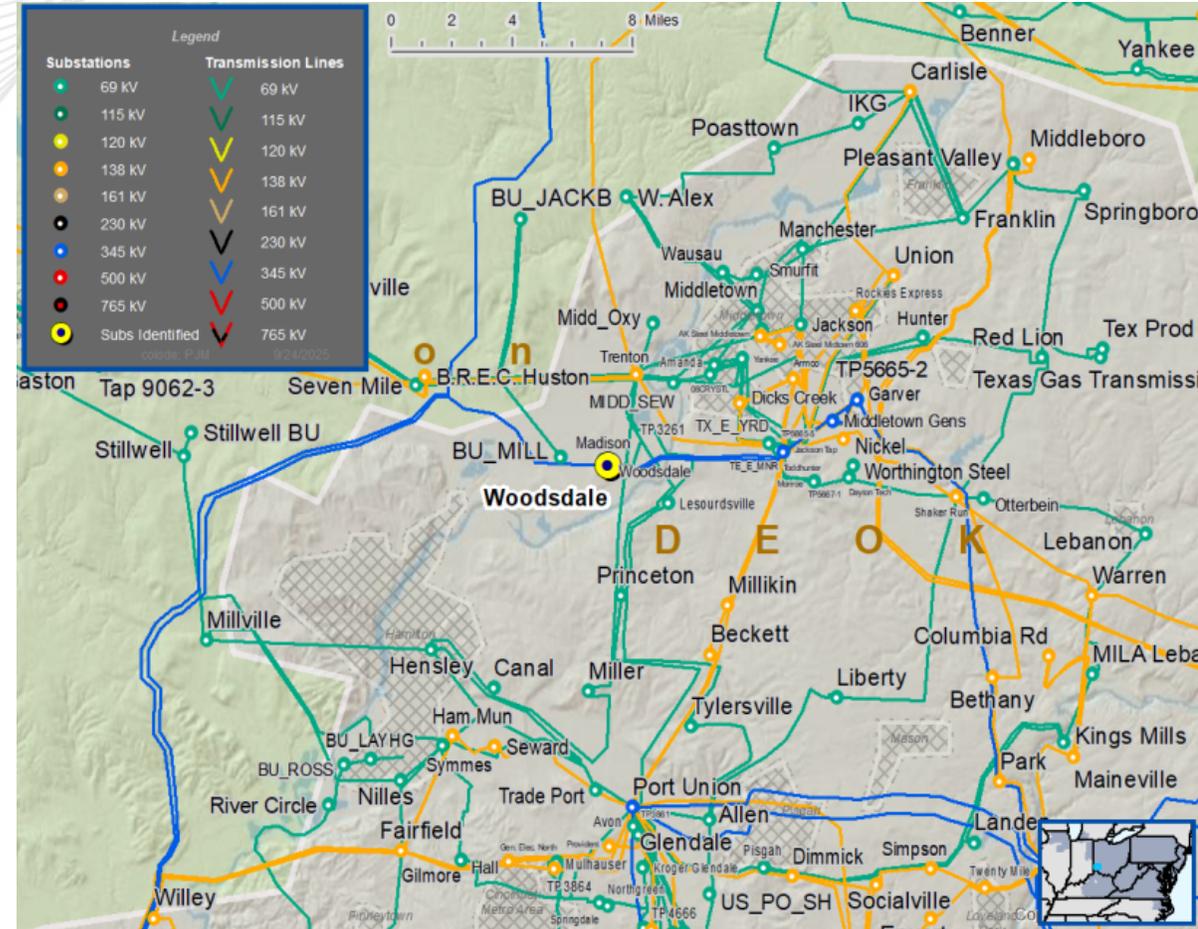
The 345 kV ring bus at Woodsdale Substation will be reconfigured into a 345 kV breaker-and-half yard to improve substation reliability. Additionally, all 2000A equipment at Woodsdale Substation will be upgraded to 3000A to increase substation capacity.

**Estimated Cost:** \$36.818 M

**Alternatives:** N/A

**Required In-Service Date:** 11/16/2028

**Projected In-Service Date:** 11/16/2028



**Process Stage:** First Read

**Criteria:** FERC 715 Criteria

**Assumption Reference:** 2025 RTEP assumptions

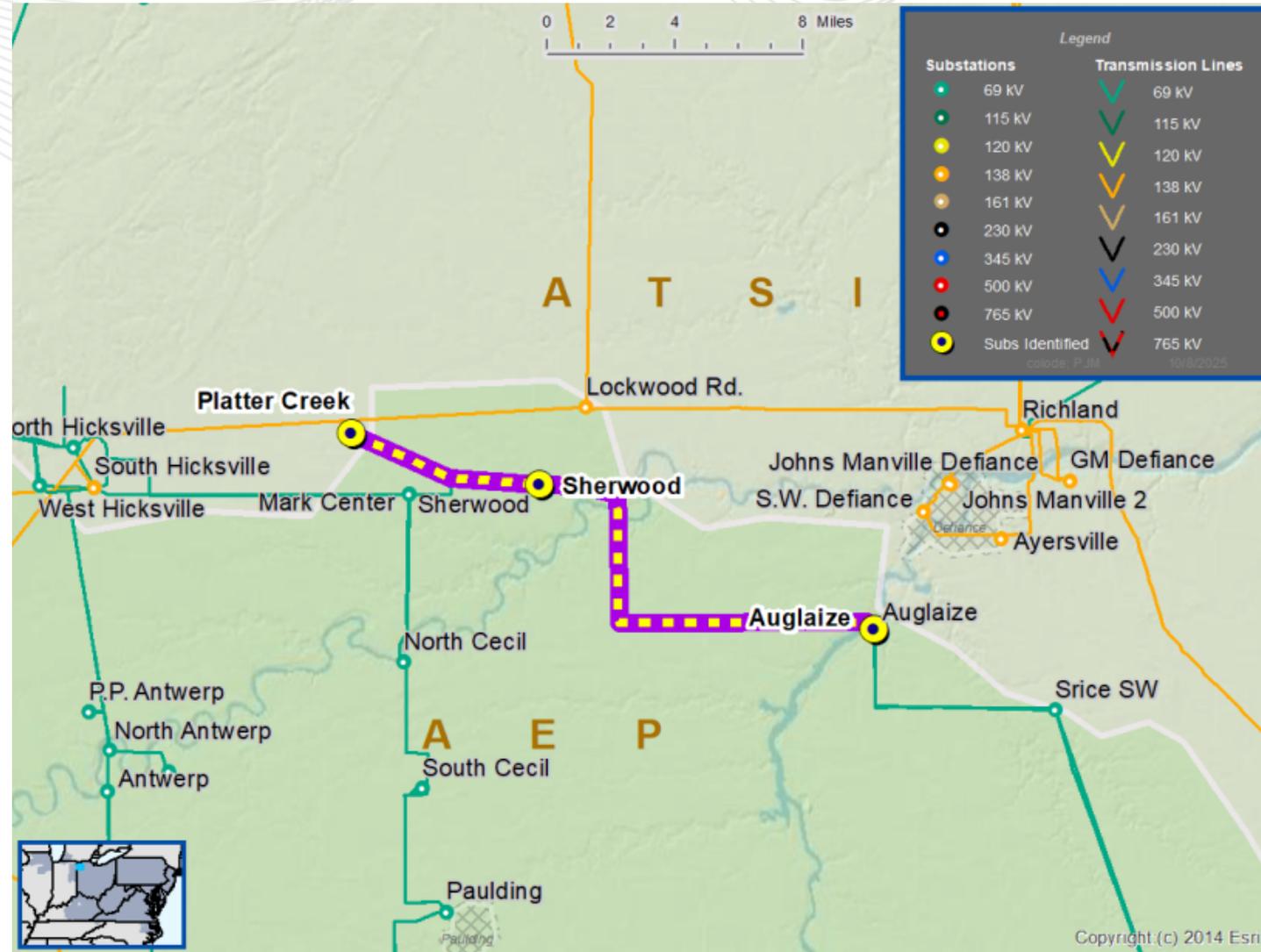
**Model Used for Analysis:** 2030 RTEP Summer and Light Load base case

**Proposal Window Exclusion:** None

**Problem Statement:**

FG: 2025W1-AEP-T1, 2025W1-AEP-T2, 2025W1-AEP-T3, 2025W1-AEP-T4, 2025W1-AEP-T5, 2025W1-AEP-T6.

In the 2030 RTEP Summer and Light Load case, 69 kV Platter Creek-Sherwood-Auglaize lines are overloaded in FERC 715 study for N-1 outages.





# AEP Transmission Zone: Baseline Cluster AEP-1

- As part of the 2025 RTEP Window 1, the projects listed in the table below were proposed to address Cluster AEP-1

Proposal ID #	Project Type	Entity	Project Title	Project Description	kV Level	Estimated Cost (\$M)
385	UPGRADE	AEP	Platter Creek 69kV Station Reconfiguration	Reconfigure 69kV lines at Platter Creek to mitigate breaker contingency violation.	69	\$1.646
724	UPGRADE	AEP	Platter Creek-Sherwood-Auglaize 69kV Line Rebuild	Rebuild approximately 14.6 miles of the Platter Creek-Sherwood and Sherwood-Auglaize 69kV circuits with single circuit steel poles.	69	\$28.679

- The line asset associated with the Platter Creek proposal was originally installed in the 1920s. If not ordered as a baseline rebuild project, that line would need to be addressed for asset renewal reasons in the near future. Thus, compared to station reconfiguration (proposal 385), rebuild (proposal 724) is the preferred path moving forward.

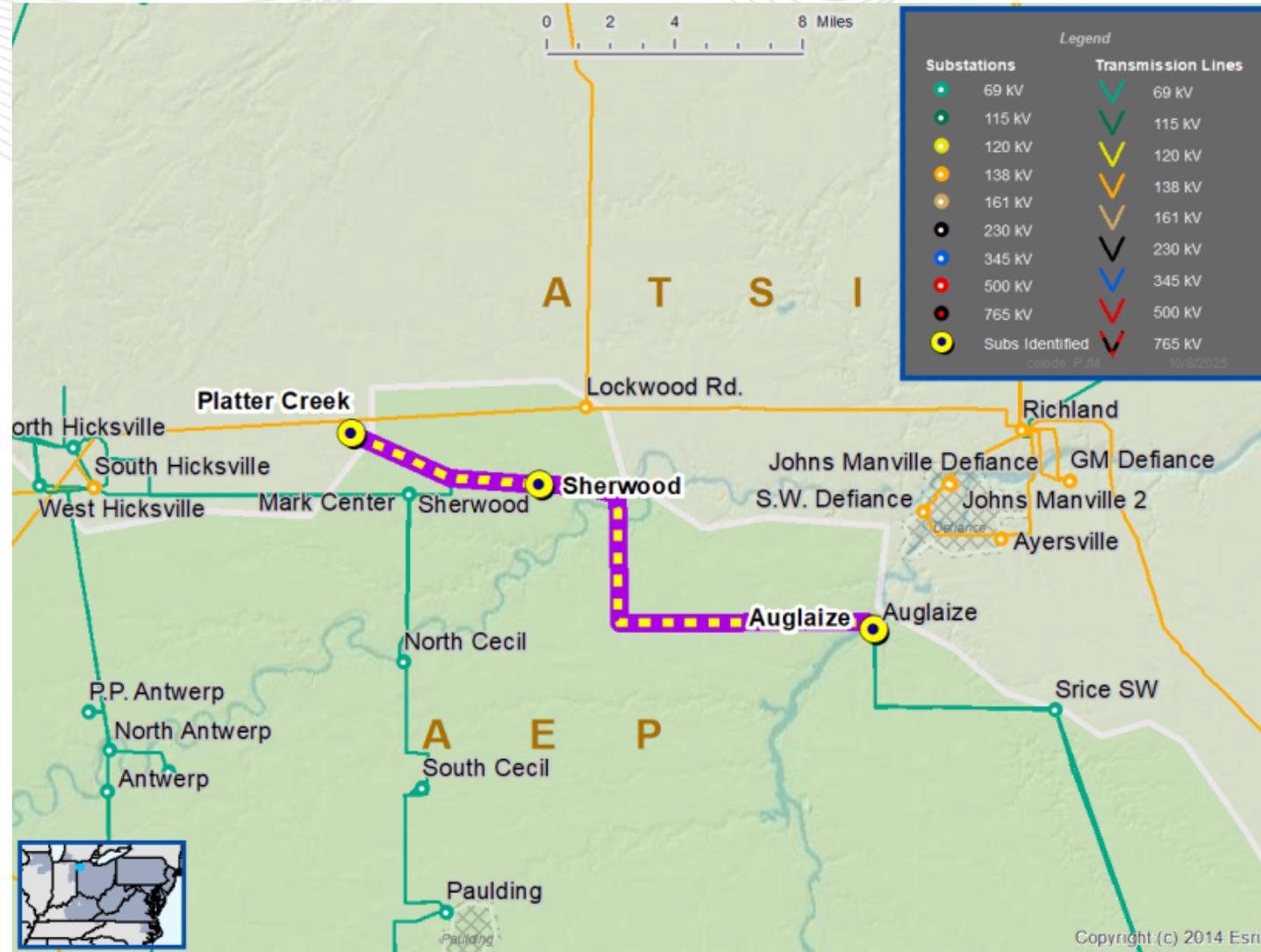
## Proposed Solution: (2025-W1-724)

Rebuild the ~14.6-mile Auglaize-Mark Center 69 kV line (Platter Creek-Sherwood & Sherwood-Auglaize 69 kV circuits) with single circuit 69 kV line.

**Total Estimated Cost: \$28.7M**

**Required In-Service: 4/15/2030**

**Projected IS Date: 2/28/2030**



**Process Stage:** First Read

**Criteria:** Generator Deliverability

**Assumption Reference:** 2025 RTEP assumptions

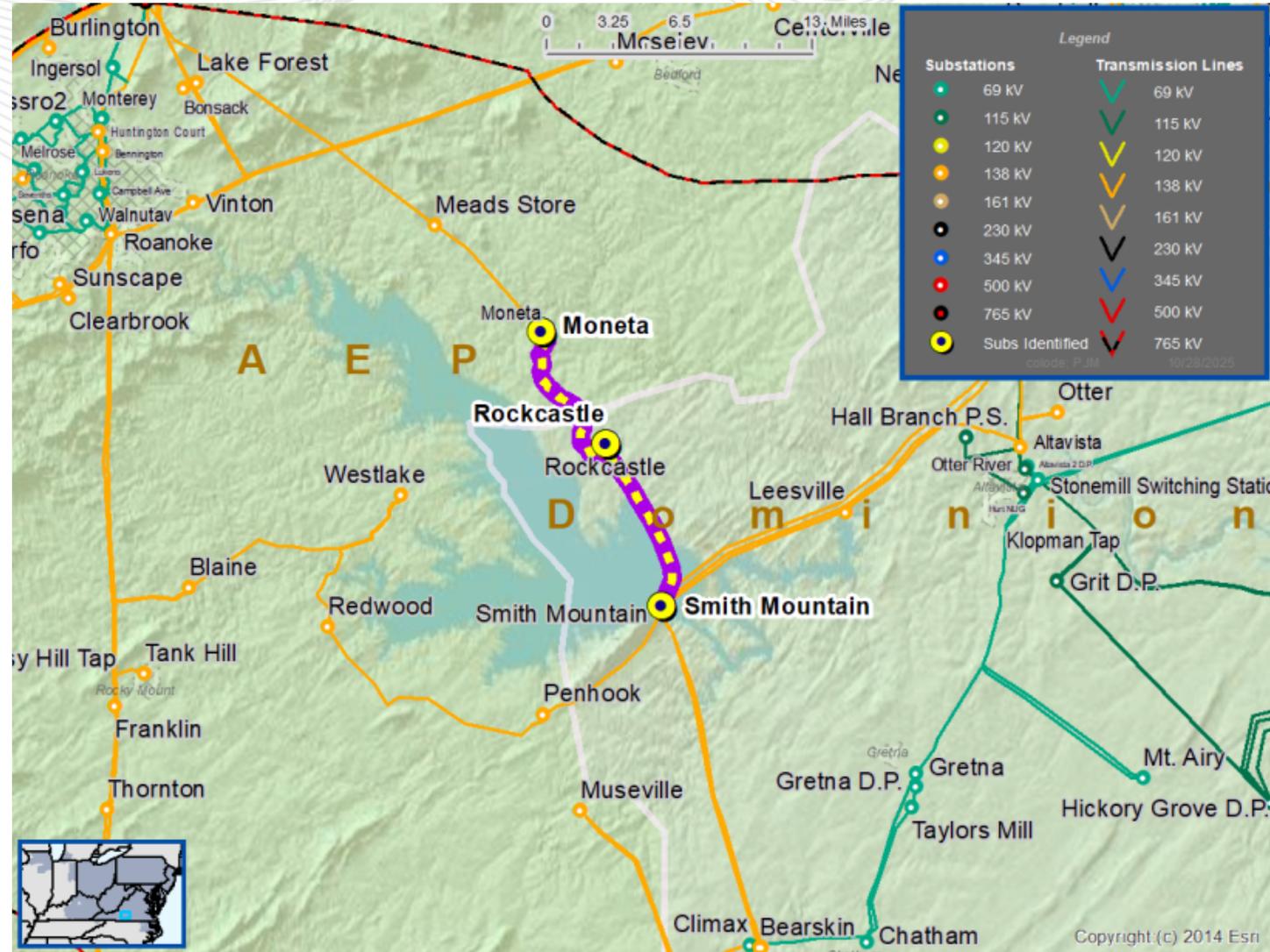
**Model Used for Analysis:** 2030 RTEP Summer base case

**Proposal Window Exclusion:** None

**Problem Statement:**

FG: 2025W1-GD-S480, 2025W1-GD-S488.

In the 2030 RTEP Summer case, the 138 kV Smith Mountain – Rockcastle - Moneta line is overloaded for a N-2 contingency in generator deliverability test.





# AEP Transmission Zone: Baseline Cluster AEP-5

- As part of the 2025 RTEP Window 1, the projects listed in the table below were proposed to address Cluster AEP-5

Proposal ID #	Project Type	Entity	Project Title	Project Description	kV Level	Estimated Cost (\$M)
63	UPGRADE	AEP	Smith Mountain - Rockcastle - Moneta 138 kV Rebuild	Rebuild 12.2 miles of the Smith Mountain - Rockcastle - Moneta 138 kV line and replace station conductor at Smith Mountain station.	138	\$39.402
689	UPGRADE	AEP	Smith Mountain - Rockcastle - Moneta 138 kV Sag Study	Perform a sag study on the Smith Mountain - Rockcastle - Moneta 138 kV line and construct mitigations to raise emergency ratings of the line. Replace station conductor at Smith Mountain station.	138	\$9.879

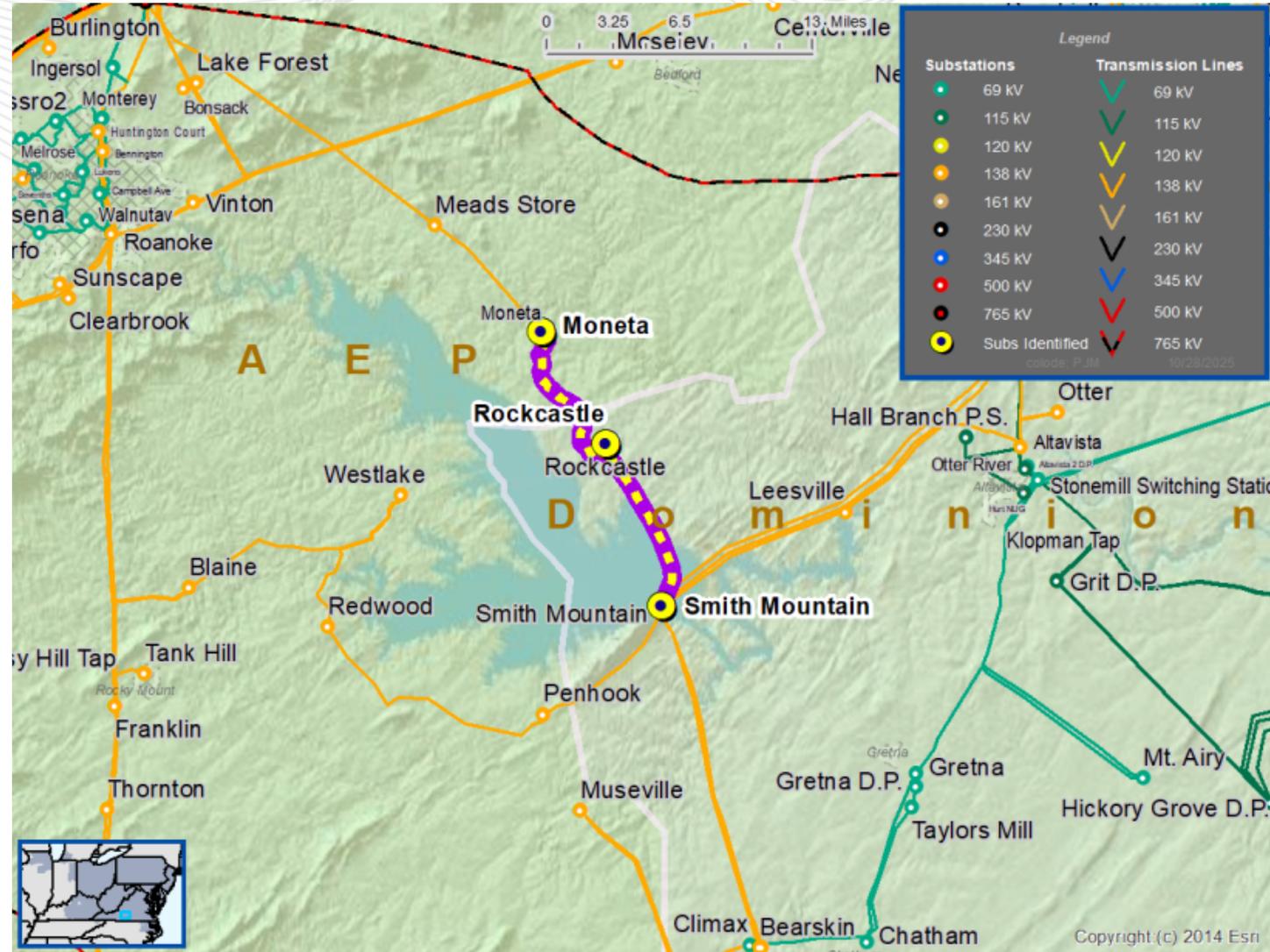
## Proposed Solution: (2025-W1-689)

Perform a sag study on the Smith Mountain - Rockcastle - Moneta 138 kV line and construct mitigations to raise emergency ratings of the line. Replace station conductor at Smith Mountain station.

**Total Estimated Cost:** \$9.879M

**Required In-Service:** 06/01/2030

**Projected IS Date:** 06/01/2029



**Process Stage:** First Read

**Criteria:** N-1-1

**Assumption Reference:** 2025 RTEP assumptions

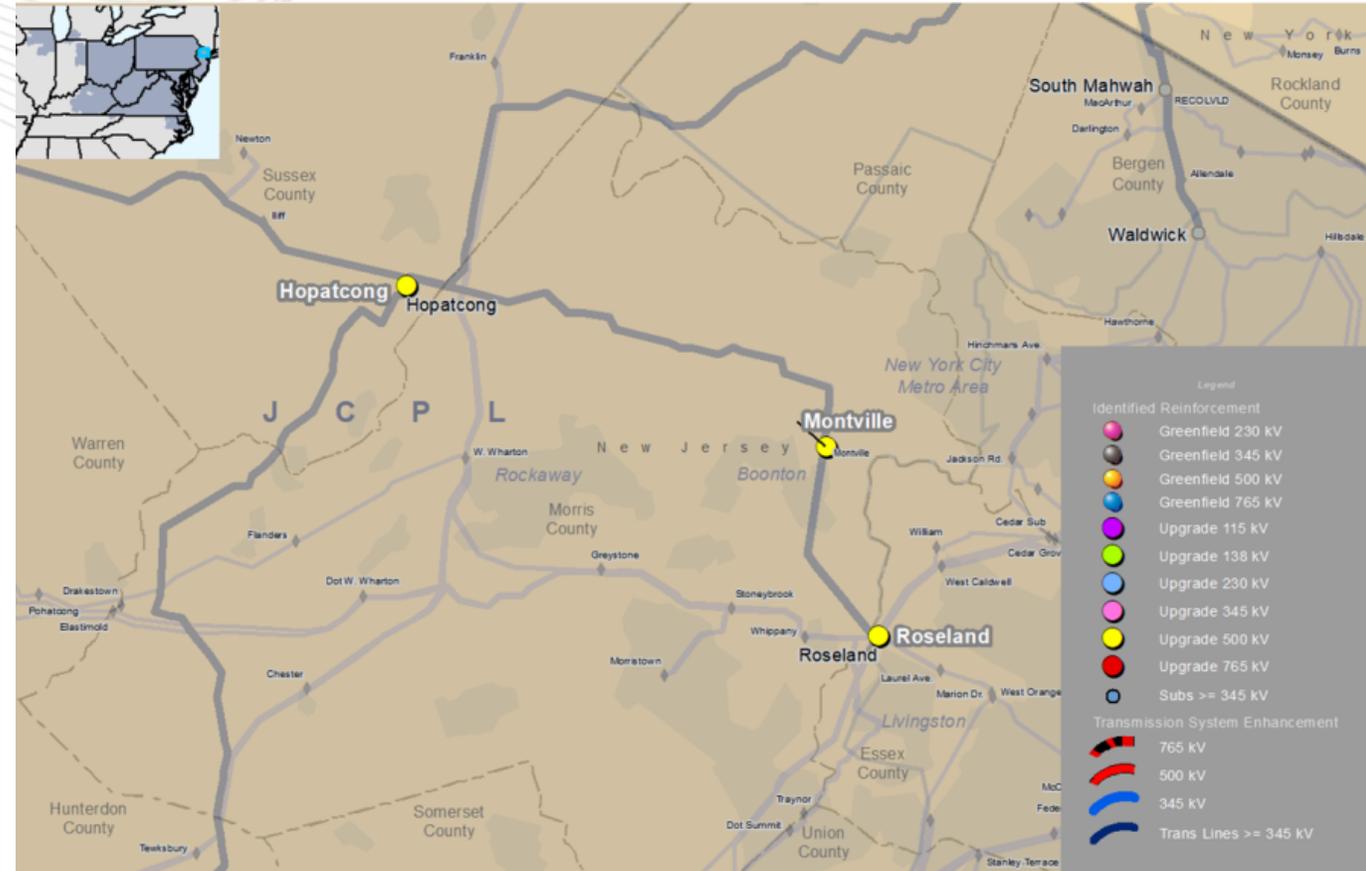
**Model Used for Analysis:** 2030 RTEP Summer

**Proposal Window Exclusion:** None

**Problem Statement:**

2025W1-N11-SVM206244, 2025W1-N11-SVD206244, 2025W1-N11-SVD206260, 2025W1-N11-SVD206264, FG-140-1/2/3

In the 2030 RTEP Summer case, under N-1-1 contingency condition, voltage collapse and load loss greater than 300 MW is observed at Montville and surrounding 34.5 kV system.



## Proposed Solution (2025-W1-140):

At Montville Substation, install a 500 kV three breaker ring bus. Install a 500/230 kV transformer. Install new breaker string in the 230 kV yard to create a breaker and a half layout. Re-terminate the 230-34.5 kV transformers.

Loop the adjacent Roseland - Hopatcong 500 kV line into the new 500 kV switchyard at Montville Substation.

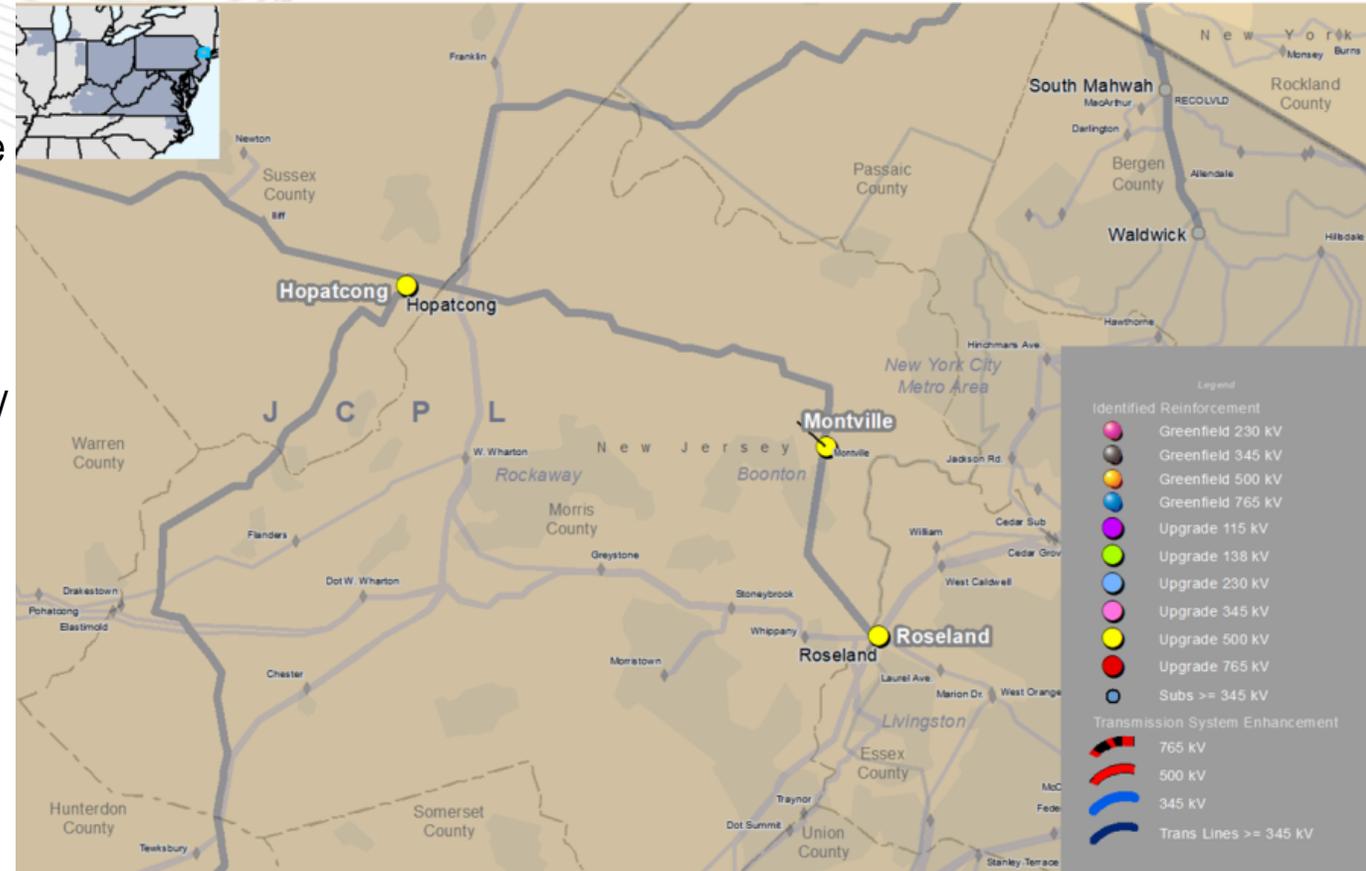
Montville-Whippany 34.5 kV K115 Line and the Montville-Whippany 34.5 kV O93 Line: Replace the 2-pole wood structure #154 with a monopole and UG riser. Install approximately 200-ft of new UG conductor to be spliced with existing section of UG conductor into Montville Substation.

**Estimated Cost:** \$66.83 M

**Alternatives:** Previous project (b2003) to build a new 230 kV line from Whippany to Montville was cancelled due to routing and permitting issues.

**Required In-Service Date:** 6/1/2030

**Projected In-Service Date:** 11/1/2029





# Dominion Transmission Zone: Baseline Hopewell – Chesterfield – Basin 230 kV

**Process Stage:** First Read

**Criteria:** Summer/Winter/Light Load Gen Deliv, Summer/Light Load IPD, Summer/Light Load N-1

**Assumption Reference:** 2025 RTEP assumptions

**Model Used for Analysis:** 2030 RTEP Summer/Winter/Light Load Base Case

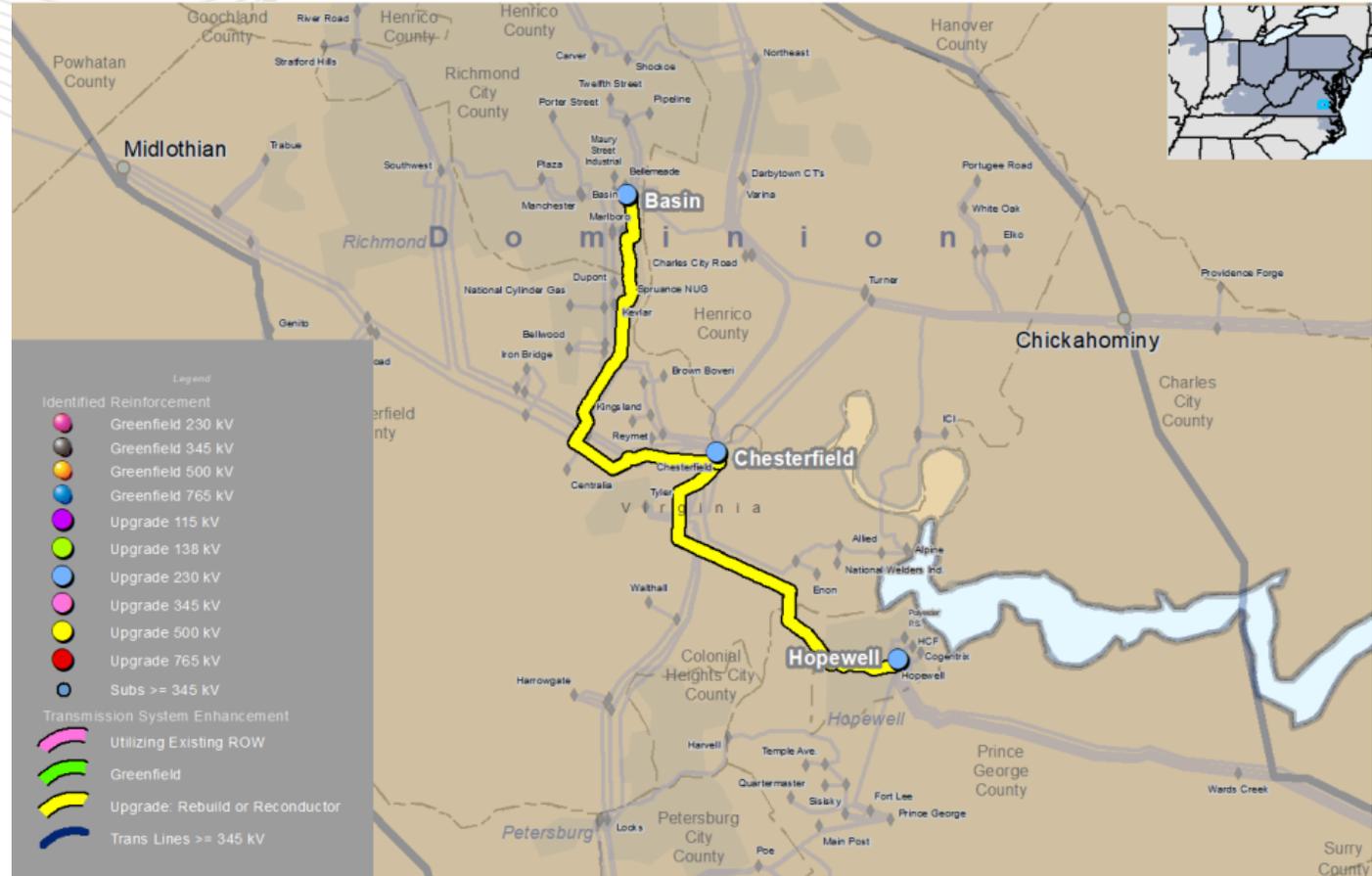
**Proposal Window Exclusion:** None

**Problem Statement:**

In the 5-year 2030 RTEP summer/winter/light load case, the Chesterfield – Basin and Chesterfield – Hopewell 230kV lines are overloaded in the gen deliv, IPD, and N-1 tests for multiple contingencies.

**Existing Facility Rating:**

Branch (230kV)	SN/SE/WN/WE (MVA)
Chesterfield – Basin	705/705/782/782
Chesterfield – Hopewell	1046/1046/1160/1160





# Dominion Transmission Zone: Baseline Hopewell – Chesterfield – Basin 230 kV

## Proposed Solution (2025-W1-911):

- Rebuild approximately 12.5 miles of 230kV line with larger conductor between Chesterfield and Basin
- Rebuild approximately 3 miles of 230kV line with larger conductor between Chesterfield and Hopewell
- Upgrade all Line #259 terminal equipment, line leads, and bus at Chesterfield & Basin substations to be rated to 4000A.
- Install new 230kV circuit breaker at Chesterfield Substation

**Estimated Cost:** \$113.55 M

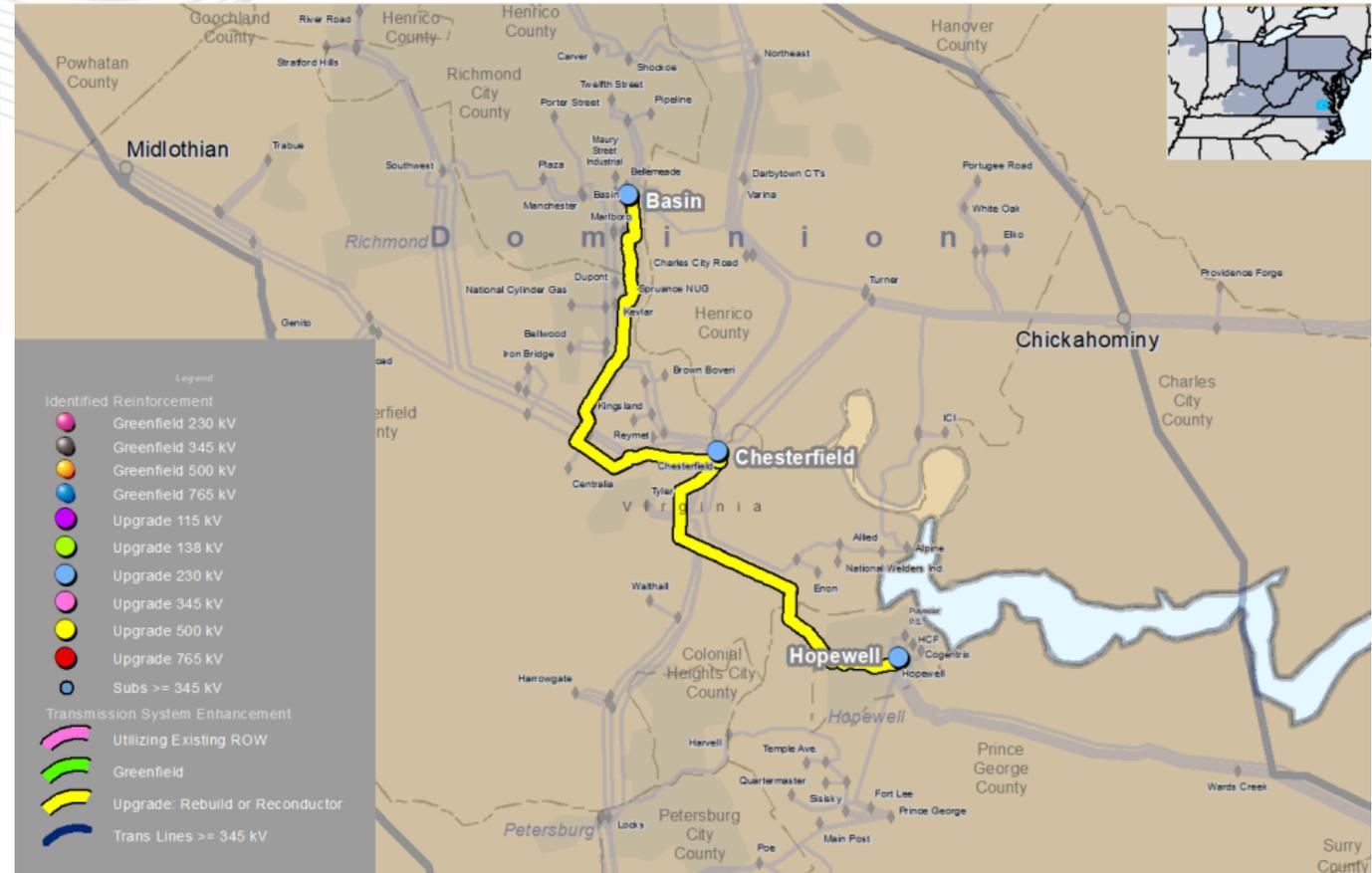
## Preliminary Facility Rating:

Branch (230kV)	SN/SE/WN/WE (MVA)
Chesterfield – Basin	705/705/782/782
Chesterfield – Hopewell	1573/1573/1648/1648

**Alternatives:** N/A

**Required In-Service Date:** 6/1/2030

**Projected In-Service Date:** 6/1/2030





# Dominion Transmission Zone: Baseline 500kV Line #565 Rebuild (End of Life Criteria)

**Process Stage:** First Read

**Criteria:** Dominion's FERC 715 Planning Criteria (C.2.9 – End of Life Criteria)

**Assumption Reference:** FERC 715 Planning Criteria

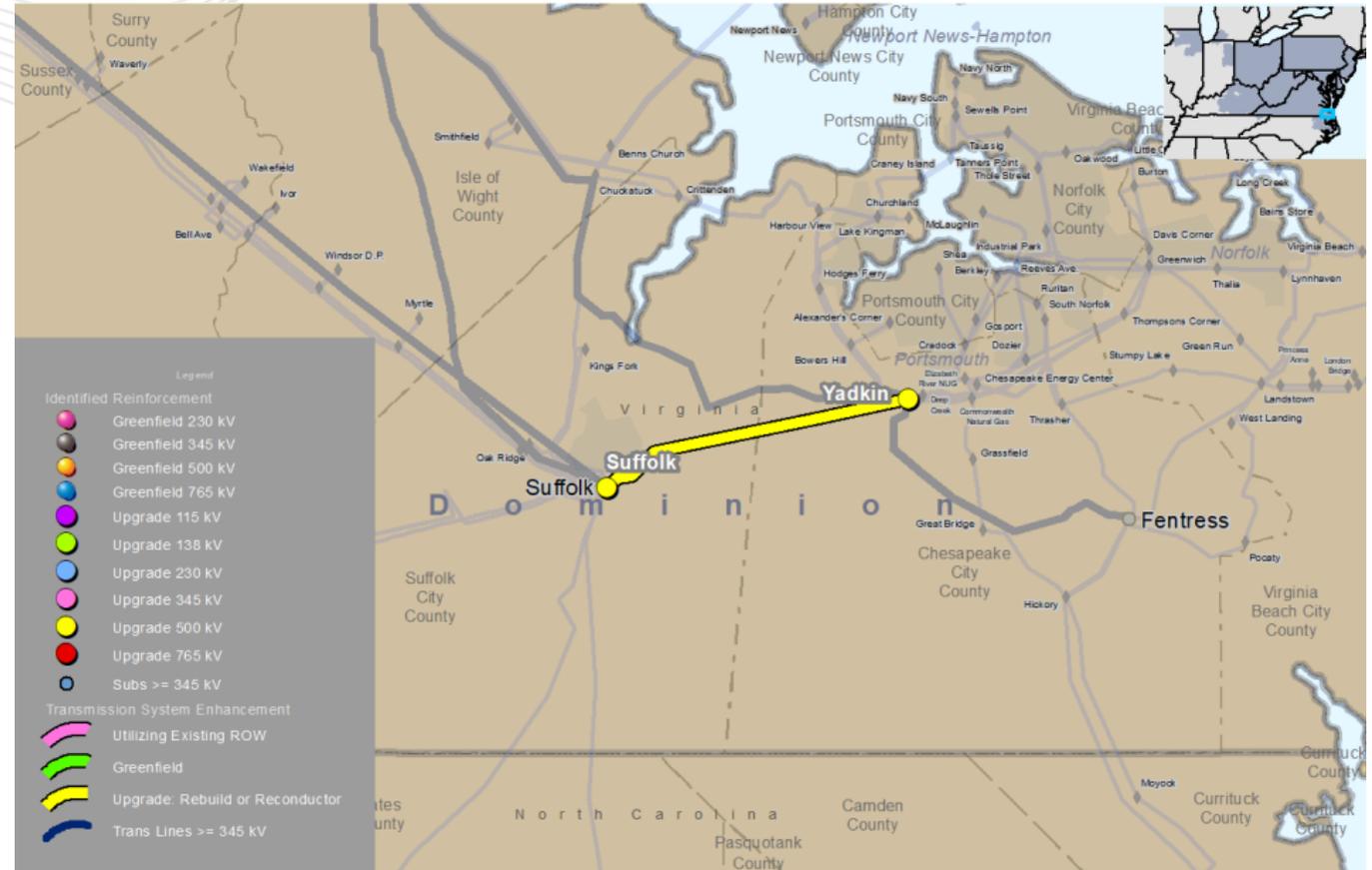
**Model Used for Analysis:** 2025 Series 2030 RTEP Cases

**Problem Statement:**

- The 565 line is approximately 13.43 miles of 500 kV transmission line from Suffolk to Yadkin. The line is a combination of weathering-steel 5-series towers and aluminum guyed-Y towers. These structures were installed in 1970 and are approaching the end of their service life.
- Weathering-steel 5-series towers have been problematic for many years and are experiencing packout and deterioration. They were extensively rehabbed in 2020. They have fallen into the observed pattern where Dominion can expect to return for future maintenance if the line is not rebuilt by the requested target date.
- The porcelain insulators along this line have deteriorated significantly, and several have failed in recent years. Due to the location of this line, access to the structures is limited which increases the time and complexity of repairs and restoration. (2025W1-DOM-EOL1)

**Existing Facility Rating:**

Branch (500kV)	SN/SE/WN/WE (MVA)
Suffolk - Yadkin	2552/2598/2987/3013





# Dominion Transmission Zone: Baseline 500kV Line #565 Rebuild (End of Life Criteria)

## Proposed Solution (2025-W1-911):

- Rebuild approximately 13.2 miles of 500kV line #565 between Septa and Yadkin
- Uprate Line 565 equipment at Suffolk & Yadkin substations to 5000A

**Estimated Cost: \$74.3 M**

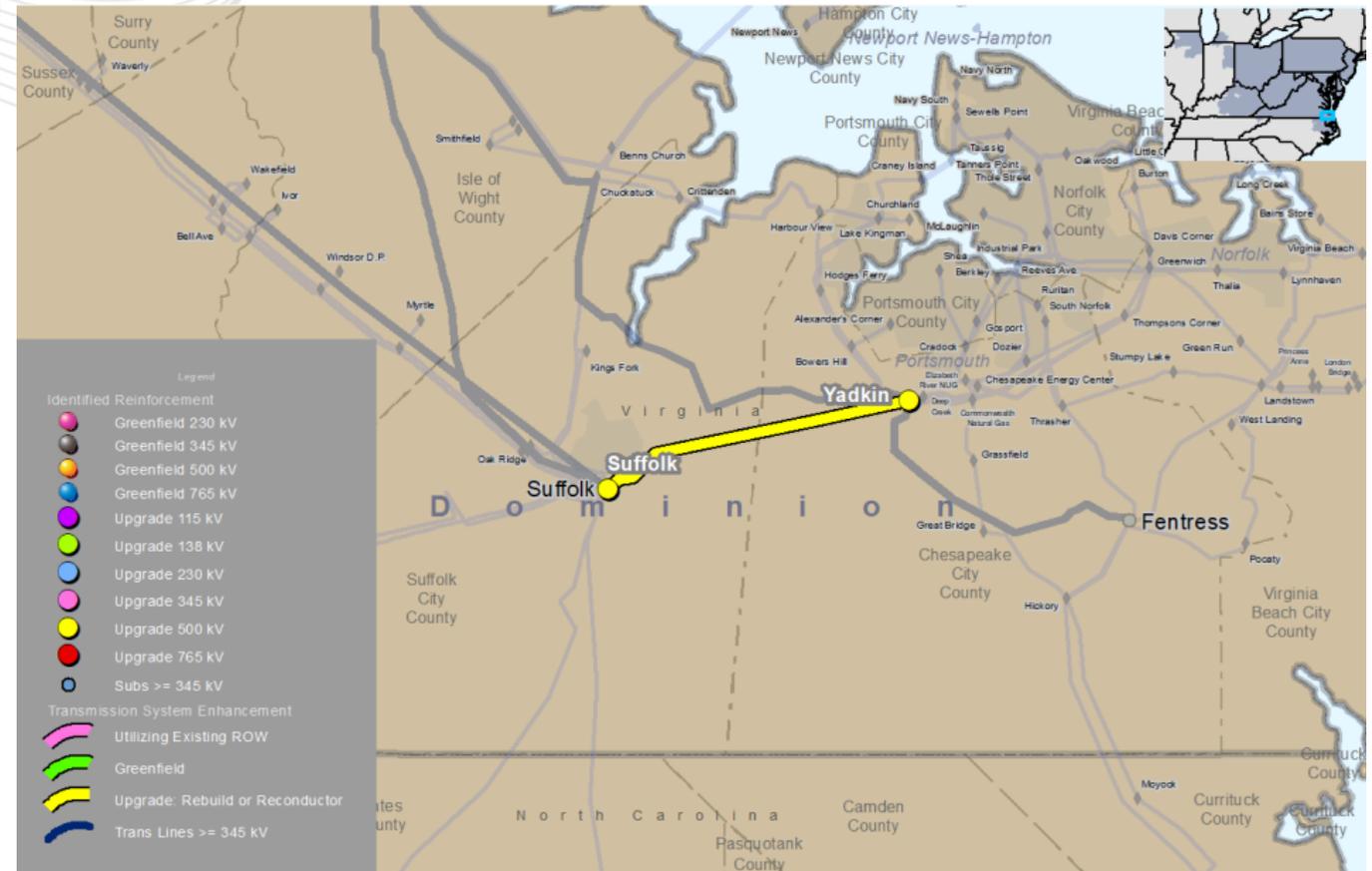
## Preliminary Facility Rating:

Branch (500kV)	SN/SE/WN/WE (MVA)
Suffolk – Yadkin	4357/4357/5155/5155

**Alternatives: N/A**

**Required In-Service Date: 6/1/2030**

**Projected In-Service Date: 6/1/2030**





# Dominion Transmission Zone: Baseline Charlottesville – Fork Union – BreMO 230 kV

**Process Stage:** First Read

**Criteria:** Light Load Gen Deliv, Light Load IPD

**Assumption Reference:** 2025 RTEP assumptions

**Model Used for Analysis:** 2030 RTEP Light Load Base Case

**Proposal Window Exclusion:** None

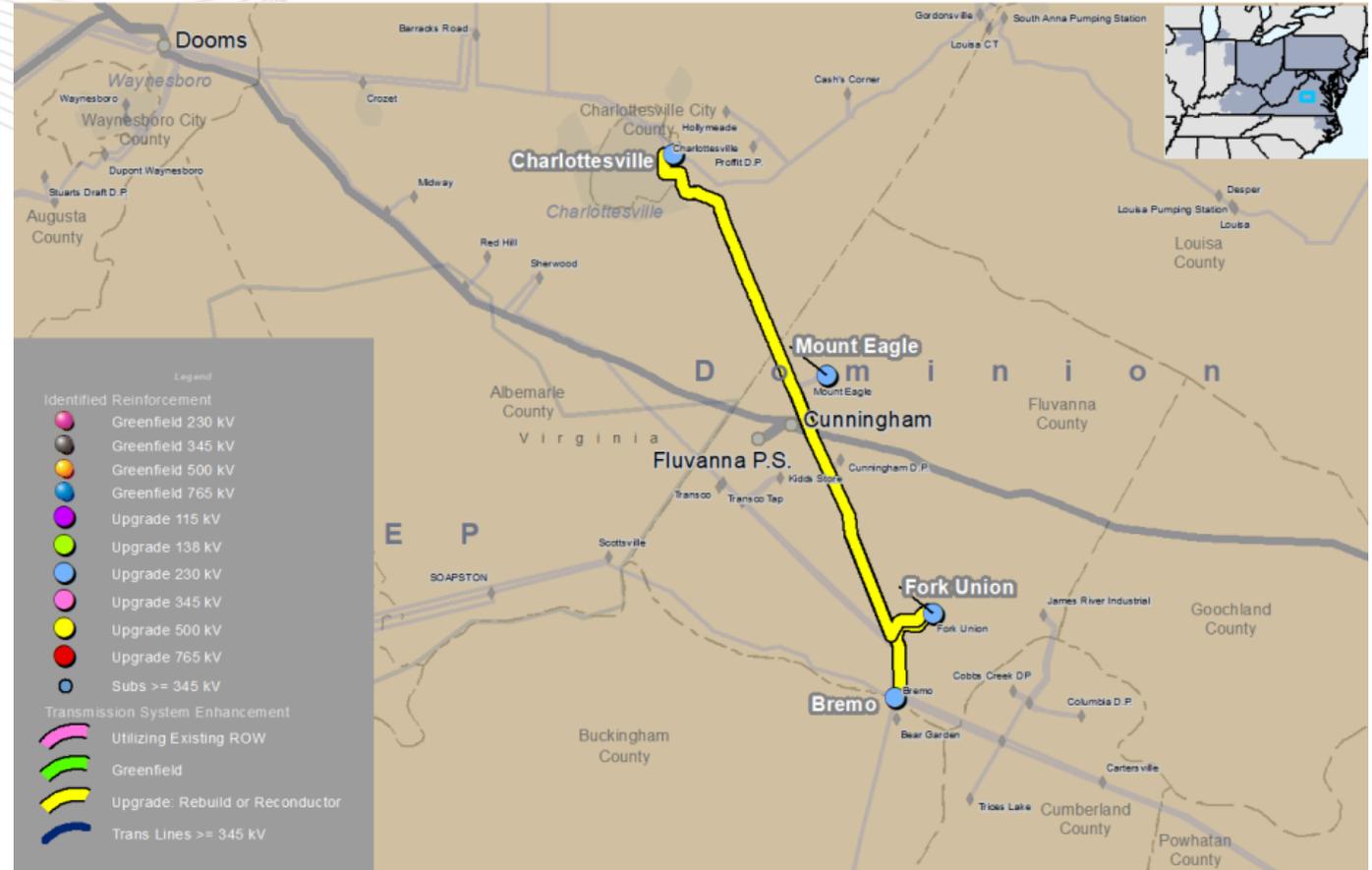
**Problem Statement:**

2025W1-GD-LL13, 2025W1-GD-LL25, 2025W1-IPD-LL43, 2025W1-GD-LL1NEW, 2025W1-GD-LL33

In the 5-year 2030 RTEP light load case, the Charlottesville – Fork Union - BreMO 230kV lines are overloaded in the gen deliv and IPD tests for multiple contingencies.

**Existing Facility Rating:**

Branch (230kV)	SN/SE/WN/WE (MVA)
Charlottesville – Fork Union	703/703/890/890
Fork Union – BreMO	721/721/913/913





# Dominion Transmission Zone: Baseline Charlottesville – Fork Union – Bremo 230 kV

## Proposed Solution (2025-W1-911):

- Rebuild approximately 24 miles of 230kV line with larger conductor between Charlottesville and Fork Union
- Rebuild approximately 1.74 miles of 230kV line with larger conductor between Fork Union and Bremo
- Upgrade all Line #2028 terminal equipment, line leads, and bus at Charlottesville and Fork Union substations to be rated to 4000A
- Upgrade all Line #2193 terminal equipment, line leads, and bus at Fork Union and Bremo substations to be rated to 4000A
- Upgrade disconnect switches 202809 and 202806 at Mt. Eagle Tap to 4000 A

**Estimated Cost:** \$127.05 M

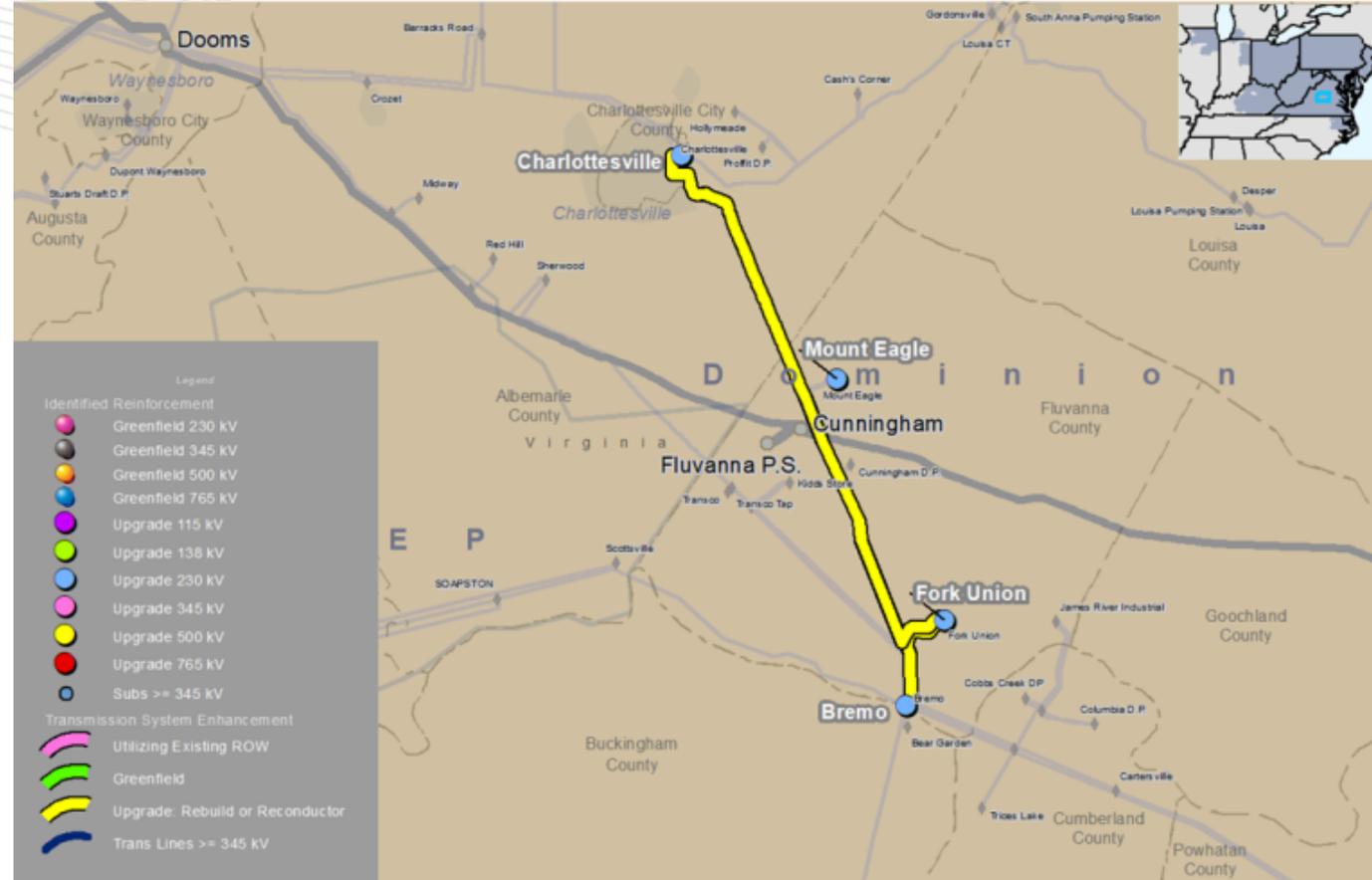
## Preliminary Facility Rating:

Branch (230kV)	SN/SE/WN/WE (MVA)
Charlottesville – Fork Union	1573/1573/1648/1648
Fork Union – Bremo	1573/1573/1648/1648

**Alternatives:** Additional 230kV scope provided in proposal 975

**Required In-Service Date:** 6/1/2030

**Projected In-Service Date:** 6/1/2030





# DOM Transmission Zone: Baseline 2030 Baseline Solutions

- As part of the 2025 RTEP Window 1, the projects listed in the table below were proposed to address DOM 2030 flowgates

Proposal ID #	Project Type	Entity	Project Title	Project Description	kV Level	Estimated Cost (\$M)
911	UPGRADE	DOM	2030 Solution	<p>This proposal includes the following projects:</p> <ol style="list-style-type: none"> <li>993189 - Line 2028 Rebuild - Charlottesville - Fork Union.</li> <li>993418 - Line 259 Uprate - Chesterfield to Basin.</li> <li>993450 - Line 2193 Rebuild - Brema to Fork Union</li> <li>993584 - Lines 211 &amp; 228 Uprate - Chesterfield to Hopewell.</li> <li>993584 - Line 565 Rebuild - Suffolk to Yadkin</li> </ol>	230	314.90
975	GREENFIELD	DOM	2030 Western Solution	<p>This Proposal is an alternate option for the following components in the 2030 Solution Proposal (PJM ID: 911):</p> <ol style="list-style-type: none"> <li>993189 - Line 2028 Rebuild - Charlottesville to Fork Union</li> <li>993450 - Line 2193 Rebuild - Brema to Fork Union</li> </ol> <p>Wreck and Rebuild Line#2193 Brema – Fork Union. Disconnect 230 kV Line #2111 Bear Garden- Brema at the Brema terminal and extend Line #2111 approximately 1.6 miles to Fork Union. The extension should not share circuit structures with Line #2193. Terminate line #2111 at Fork Union to create a Bear Garden – Fork Union 230 kV line.</p> <p>Rebuild line 2028 using double circuit structures. Build a new 230kV line from Fork Union station to Gordonsville, bypassing Charlottesville. This new line will share the double circuit structures with Line #2028, Line #2054 (Charlottesville-Hollymead Junction, coordinate with Project 993132) and Line #2135 (Hollymead Junction – Gordonsville coordinate with Project 993133).</p> <p>Build a new double-circuit 230 kV from Gordonsville to Southall and a new double-circuit 230 kV from Southall to North Anna. Coordination with project 993097 is needed.</p>	230	318.16

# Short List – 2025 Window 1 Regional Clusters

## Baseline Reliability Projects



# MAAC/South RTEP

# Mid-Atlantic Evaluation Progress

## **PPL Load Growth:**

- PPL zonal load in the year 2030 increased by approximately 5 GW from the 2024 to the 2025 load forecast
  - The load growth is primarily driven by data center demand and trends indicate this growth will continue beyond the 2030
  - PPL submitted additional ~3.5GWs not included in the 2025 load forecast

## **NJOSW In-service Delay Impact:**

- The scenario with the removal of the 7.5GW NJOSW in-service increases the transfer to the Mid-Atlantic region
- The need for regional transfer to MAAC from West and South increased, resulting in additional overload on five 500 kV transmission lines.
- These lines primarily support power flows from the west and south toward the Mid-Atlantic region
  - The Keystone – Juniata 500 kV is overloaded regardless of NJOSW or the additional PPL Load (West to East flows)

## **NJOSW In-service Delay + PPL (~3.5GWs) Load**

- The removal of the NJOSW combined with the additional PPL (~3.5GWs) load further increased the need for transfer to Mid-Atlantic region.
- This increase represents the increase in the short term (due to NJOSW delays) or for the further timeframe (due to forecasted MAAC load increase/retirements)

- **2030 Year Analysis:**

- Higher Regional Transfers into MAAC – Within capability of planned transmission system by 2030.
- A few local thermal violations identified in the Mid-Atlantic region for 2030
  - Multiple 230 kV transmission lines within PPL zone
- The Juniata – Sunbury 500 kV transmission line is in the 2030 RTEP End of Life list
  - PPL FERC Form 715 criteria violations



# 2025 Window 1 – Mid-Atlantic Region Analysis Overview

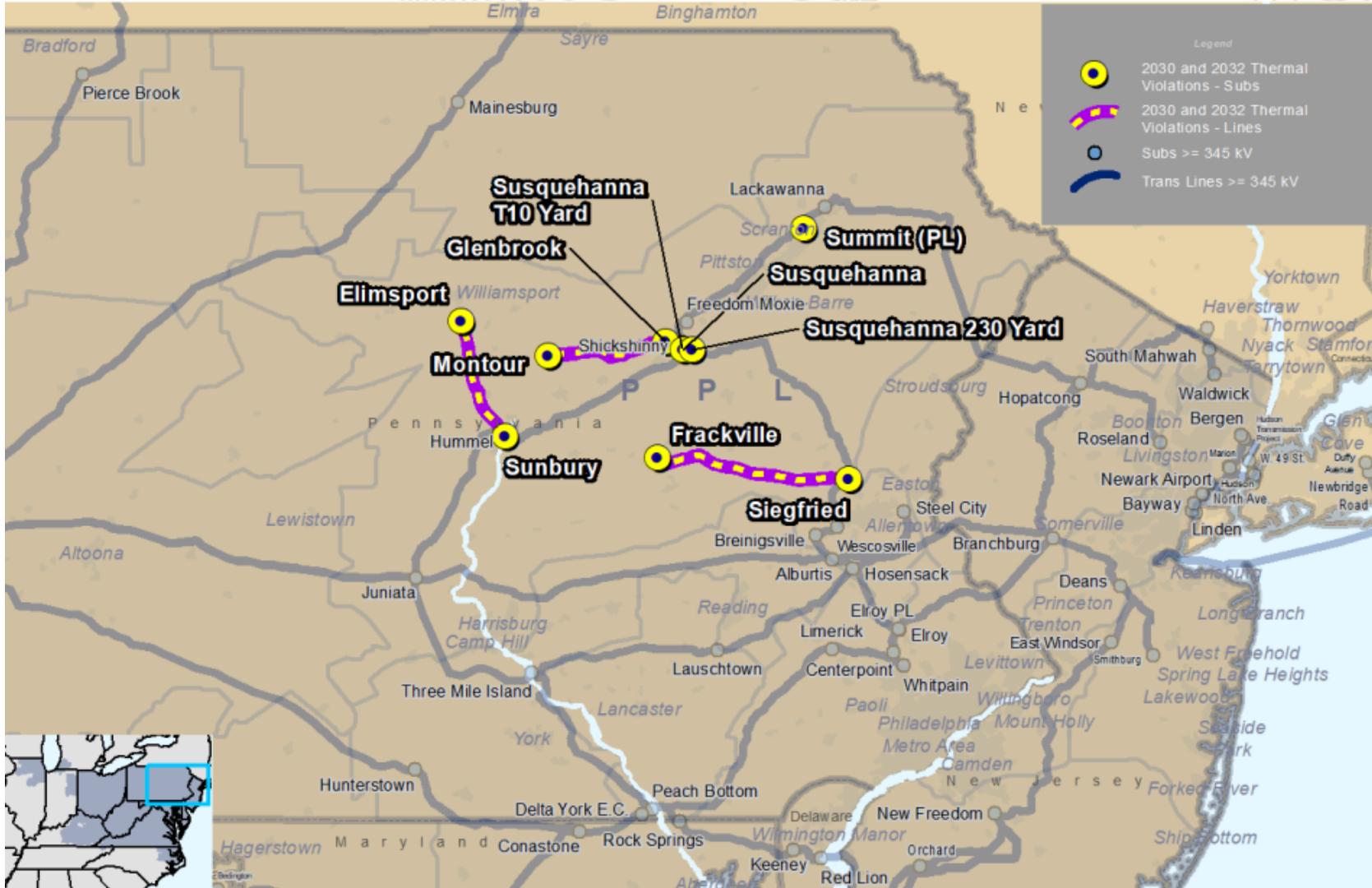
## 2032 Year Analysis:

Multiple Scenarios were analyzed and included in the proposal evaluation process

- In 2032 base case with the NJOSW in-service:
  - Two new 500 kV violations
  - The Rock Springs – Bramah 500 kV is impacted by the NJOSW (Atlantic Shore line to MAAC) and will be revisited as needed in the future
- In 2032 base case without the NJOSW:
  - Scenario 4 – the base 2032 case with the NJOSW (7500 MW) removed
    - Six 500kV transmission lines are overloaded
    - These lines primarily support power flows from the west and south toward the Mid-Atlantic region
    - Several 230 kV facilities identified with thermal violations (The majority located in PPL zone).
    - Voltage collapse for several regional facilities including the loss of the recently approved 765 kV line from Amos – Rocky Point.
- 2032 Scenario 4 with future PPL data center load (~3.5GW not included in the 2025 load forecast + NJOSW delayed)
  - Increase the loading on the 500 kV lines listed in the Scenario 4
  - Increase the regional transfer to the Mid-Atlantic from West and South

2032 MAAC 500 kV Violations		
Overloaded Facility	2032 Base Scenario	2032 Scenario 4 (2032 Base and NJOSW Removed)
Rock Springs - Bramah 500 kV	X	
Keystone - Juniata 500 kV	X	X
Keystone - Conemaugh 500 kV		X
South Bend - Keystone 500 kV		X
Conemaugh - Juniata 500 kV		X
Doubs - Brighton 500 kV		X
Possum Point - Burches Hill 500 kV		X





- A total of 47 projects were proposed to address violations in the Mid-Atlantic region:
  - Eight of the proposals by MAIT (FirstEnergy) and NextEra/Exelon to address regional transfer capabilities
  - Twenty-nine proposals by PPL, TRNSLK, NextEra/Exelon, and LS Power to address violations within the PPL zone and adjacent areas
  - Five proposed projects by Exelon/DPL/PECO aim to address violations in the DPL and PECO areas
  - Three proposed projects by Exelon/PEPCO aim to address violations on the PEPCO and PEPCO/Dominion ties
  - One proposal was submitted by First Energy/JCPL to address voltage violations in the JCPL zone
  - One proposal was submitted by PSEG to address thermal violations in the PSEG zone
- Most solutions proposed to address the 2030 violations involve upgrades to existing facilities or local fixes
- The more comprehensive solutions are intended to address both local and regional long-term issues expected in 2032 and beyond

- Six entities submitted 40 proposals to address the MAAC Regional & MAAC/PPL needs.
  - PPL submitted 25 proposals - three (3) proposals are portfolios (combined proposals). Scope includes substations upgrades and rebuilding/reconductoring transmission lines to address the MAAC/PPL needs.
  - TRNSLK submitted one (1) proposal consisting of constructing a 500 kV substation and transmission line between PPL and JCPL. This project requires coordination with PPL's projects to address the MAAC/PPL needs.
  - First Energy (MAIT) submitted four (4) proposals consisting of constructing 500 kV transmission lines to address MAAC Regional needs.
  - LS Power submitted one (1) proposal consisting of 500kV substations and transmission lines to address the MAAC/PPL needs.
  - Exelon (PEPCO) submitted three (3) proposals consisting of building a new 500 kV substation, rebuilding a 500 kV transmission line, and constructing a new 500 kV transmission line to address the both local and regional needs.
  - NextEra submitted six (6) proposals consisting of constructing new 230kV, 500kV, and 765 kV transmission lines and substations. One (1) of the six (6) proposals is a portfolio and one (1) proposal could be combined with an Exelon submitted proposal. The NextEra proposals aim to address both MAAC/PPL needs and MAAC Regional needs. One (1) of the proposed projects will address the MAAC/PPL zone violations and will be constructed within the PPL territory.

# MAAC/PPL Cluster

### Proposals considered in the MAAC/PPL cluster

Several proposals attempt to address the PPL zone violations identified due to the internal PPL load growth.

Seven sets of proposals (portfolios) are considered in this cluster evaluation

- PPL proposed three portfolios including combined individual proposed projects. One portfolio address the 2030 violations and is scalable to build the other two portfolios which are proposed to address further load growth. Majority of the projects are upgrades to existing facilities or use an existing ROW
- One proposal by LS Power includes 500 kV transmission lines as well as 500/230 kV substations, all greenfield.
- Two proposals by NextEra include 500 kV transmission lines, 500/230 kV as wells as 500/345/230 kV substations, all greenfield





# MAAC/PPL Cluster Definitions

Cluster Name/ (Proposing Entity)	Portfolio/Combination Proposal ID	Individual Proposal ID	High Level Description	Cost (\$ M)	Total Cost (\$M)
MAAC/PPL 1 (PPL)	158 Portfolio 1	855	Two new 500 kV substation (Kelayres/low side Slykerville will be expansion to the Slykerville M3- not greenfield) and (Necopeck is greenfield 500 kV and tap to the Susq-Sunb 500kV). New 500 kV line Kelayres - Necopeck 500 (12 miles)	145.75	415.07
		824	Reconductor Susquehanna - Tomhicken 230 kV 1 & 2 DCT lines	29.73	
		688	Monroe 230kV and 138kV reconfiguration and 2nd Monroe 230/138 kV transformer	39.21	
		16	Rebuild an existing 500 kV (Juniata-Sunbury) with SCT	162.89	
		647	Station reconfiguration (Jenkins 230/69 kV Substation)	10.17	
		588	Reconductor the remaining scope of the M3 project (s2373) - Glen Brook - Susquehanna T10 1 & 2 DCT and New 230 kV line (Susquehanna T10 - Susquehanna -2.7 miles)	27.31	
MAAC/PPL 2 (PPL)	558 Portfolio 2	317	Susq-Sunbury 500kV loop into the new Kelayres with additional 13 miles line	227.42	536.38
		824	Reconductor Susquehanna - Tomhicken 230 kV 1 & 2 DCT lines	29.73	
		688	Monroe 230kV and 138kV reconfiguration and 2nd Monroe 230/138 kV transformer	39.21	
		16	Rebuild an existing 500 kV (Juniata-Sunbury) with SCT	162.89	
		958	Reconductor/rebuild the remaining scope of the M3 project (s2373 - 19 miles) - Montour - Glen Brook 230 kV 1 & 2 DCT line is about 6 miles	39.65	
		647	Station reconfiguration (Jenkins 230/69 kV Substation)	10.17	
MAAC/PPL 3 (PPL)	853 Portfolio 3	588	Reconductor the remaining scope of the M3 project (s2373) - Glen Brook - Susquehanna T10 1 & 2 DCT and New 230 kV line (Susquehanna T10 - Susquehanna -2.7 miles)	27.31	768.92
		317	Susq-Sunbury 500kV loop in to the new Kelayres with additional 13 miles line	227.42	
		422	Replace DCT line with two single circuits (Susquehanna - Tomhicken 230 kV 1 & 2). New structure within existing ROW	60.82	
		333	New 230 kV line (Kelayres/Slykerville – Tresckow) – both stations are M3 project	20.13	
		688	Monroe 230kV and 138kV reconfiguration and 2nd Monroe 230/138 kV transformer	39.21	
		16	Rebuild an existing 500 kV (Juniata-Sunbury) with SCT	162.89	
		946	Additional 500kV two lines into Keylayres station by loop in and out of the Susq – Wescosville 500 kV line	181.32	
		958	Reconductor/rebuild the remaining scope of the M3 project (s2373 - 19 miles) - Montour - Glen Brook 230 kV 1 & 2 DCT line is about 6 miles	39.65	
		647	Station reconfiguration (Jenkins 230/69 kV Substation)	10.17	



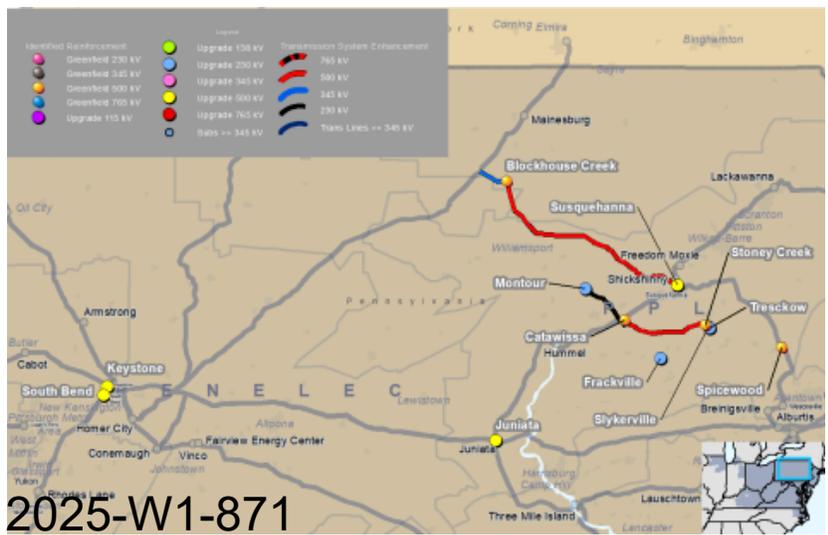
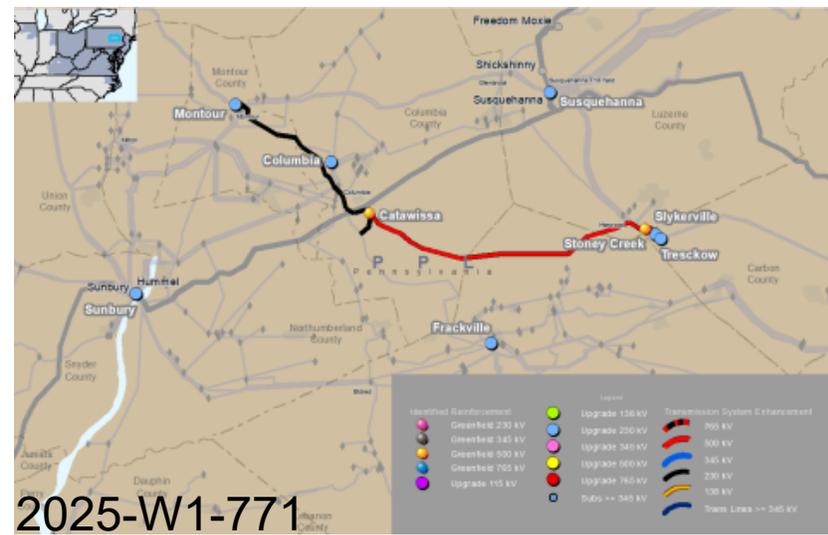
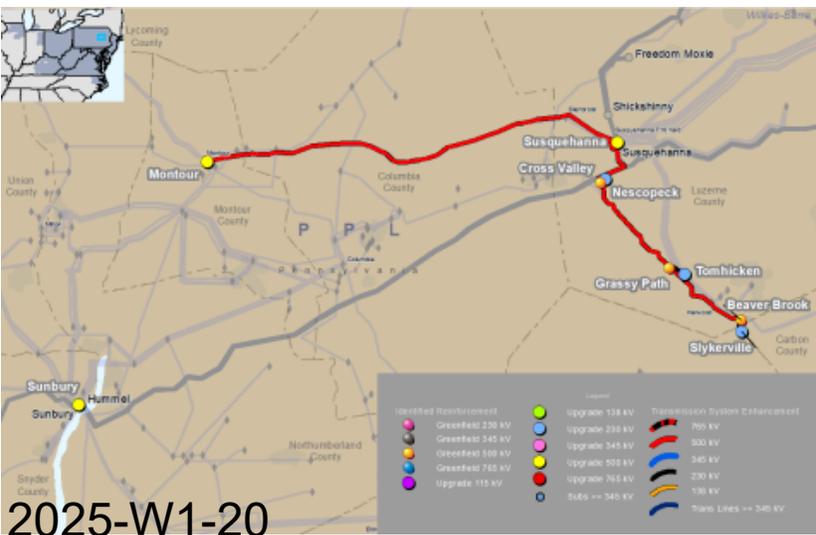
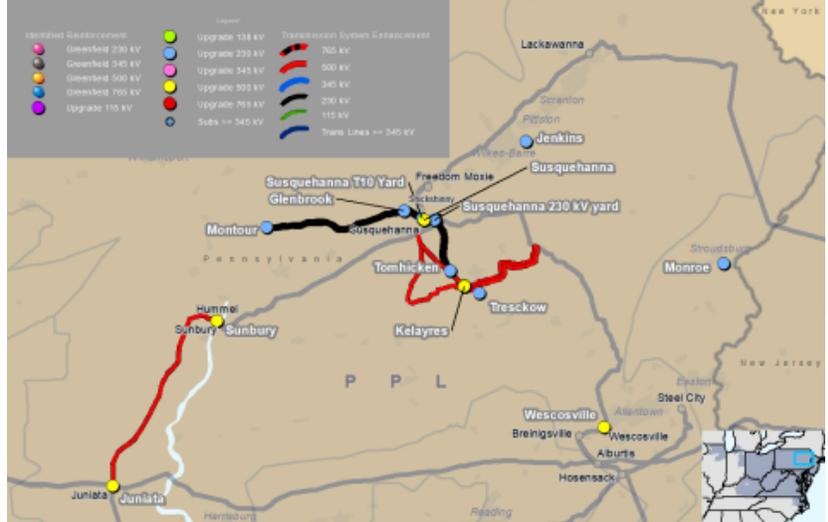
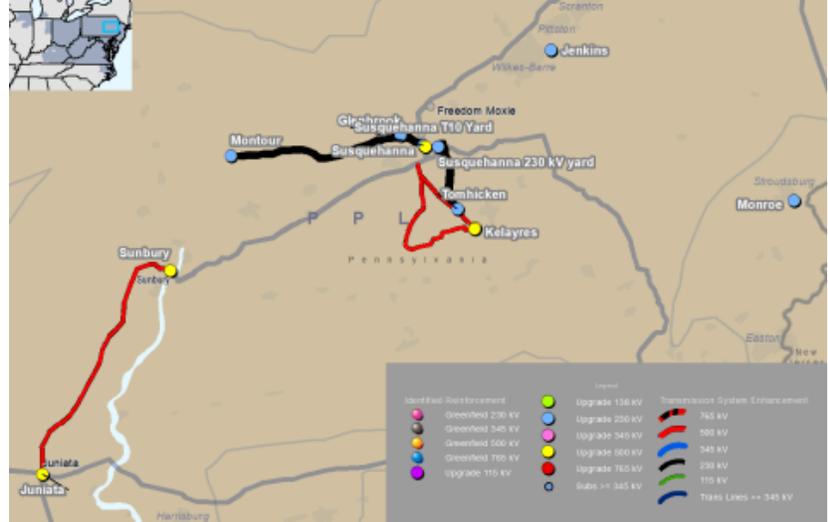
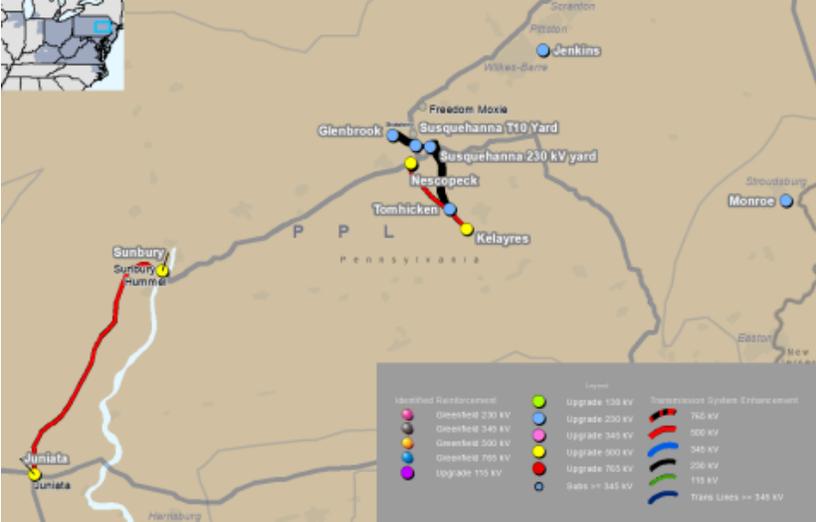
# MAAC/PPL Cluster Definitions

Cluster Name (Proposing Entity)	Portfolio/Combination Proposal ID	Individual Proposal ID	High Level Description	Cost (\$ M)	Total Cost (\$M)
MAAC/PPL 4 (LS Power)	20	20	Three new 500 kV substations (Cross Valley 500 kV/NESC 230 kV (M3), Grassy Path 500 kV/Tomhicken 230 kV (M3), Beaver Brook 500kV/Slykerville 230 kV (M3).	494.29	494.29
			The Susq-Sunb 500 kV line will loop into the Cross Valley station.		
			New 500 kV lines (Montour - Cross Valley ( 32 miles), Cross Valley - Grassy Path (8 miles), Grassy Path - Beaver Brook (6 miles)		
			Montour 500/230 kV transformer		
MAAC/PPL 5 (NextEra/Exelon)	771	771	Construct 500/230 kV (Catawissa) substation, high side will loop into the Sunbury - Susquehanna 500 kV line and the low side will loop into the Colombia - Frackville 230 kV line. Build new 26 miles 500 kV line from Catawissa to new Stoney Brook 500/230 kV substation near the Harwood/Slykerville/Terckow delivery points. Two new 230 kV circuits from Stoney Brook –Slykerville	539.25	539.25
MAAC/PPL 6 (NextEra/Exelon)	871	871	Proposal 871 is a combination of 771 and additional scope.	1,136	1,136
			The additional scope includes a new 500/345/230 kV substation (Blockhous Creek). The 345 kV will loop into the Mainesburg-Homer City, and the 230 kV will loop onto the Marshall-Lobo.		
			Construct 500 kV circuit from Blockhous Creek to Susquehanna (65 miles)		
MAAC/PPL 7 (PPL)	558 Portfolio 2 + 3 <sup>rd</sup> Kelayres 500/230 kV transformer	317	Susq-Sunbury 500kV loop into the new Kelayres with additional 13 miles line	227.42	565.4
		824	Reconductor Susquehanna - Tomhicken 230 kV 1 & 2 DCT lines	29.73	
		688	Monroe 230kV and 138kV reconfiguration and 2nd Monroe 230/138 kV transformer	39.21	
		16	Rebuild an existing 500 kV (Juniata-Sunbury) with SCT	162.89	
		958	Reconductor/rebuild the remaining scope of the M3 project (s2373 - 19 miles) - Montour - Glen Brook 230 kV 1 & 2 DCT line is about 6 miles	39.65	
		647	Station reconfiguration (Jenkins 230/69 kV Substation)	10.17	
		588	Reconductor the remaining scope of the M3 project (s2373) - Glen Brook - Susquehanna T10 1 & 2 DCT and New 230 kV line (Susquehanna T10 - Susquehanna -2.7 miles)	27.31	
		853	Add Third 500/230 kV transformer at the new Kelayres	29.02	

2025-W1-158

2025-W1-558

2025-W1-853



2025-W1-20

2025-W1-771

2025-W1-871

- **MAAC/PPL 1 (PPL)**
  - PPL proposal ID 158 (portfolio 1) addresses the 2030 identified violations but doesn't provide margin for future load growth in PPL zone including the additional PPL submitted ~ 3.5 GW load .
- **MAAC/PPL 2 (PPL)**
  - PPL proposal ID 558 (Portfolio 2) addresses the 2030 and 2032 identified violations. The project also mitigates majority of violations due to additional ~ 3.5 GW load in PPL, with the exception of a couple of remaining overloads
- **MAAC/PPL 3 (PPL)**
  - PPL proposal ID 853, is the most comprehensive and most expensive portfolio. The project addresses all thermal and voltage violations identified in the 2030 and 2032 base. The project also mitigates violations due to additional ~ 3.5 GW load in PPL. Project caused 100% loading on a new 230 kV line

- **MAAC/PPL 4 (LS Power)**
  - LS Power proposal ID 20, addresses thermal violations identified in the 2030 and 2032 base. However, there are remaining local voltage violations that were not addressed. Doesn't address the violations due to additional PPL Load (~ 3.5 GW). The project doesn't address the PPL TO criteria violations due to EOL.
- **MAAC/PPL 5 (NextEra/Exelon)**
  - NextEra proposed 771 project, addresses thermal violations identified in the 2030 and 2032 base. However, there are remaining local voltage violations that were not addressed. The project doesn't provide margin, when added the ~ 3.5 GW PPL load. The project doesn't address the PPL TO criteria violations due to EOL.
- **MAAC/PPL 7 (PPL 558 + PPL Transformer Component 853)**
  - This portfolio includes the PPL proposed project # 558 and one component from PPL proposed ID 853 (add a third Kelayres 500/230 kV transformer). The project addresses all thermal and voltage violations identified in the 2030 and 2032 base. The project also mitigates violations due to additional ~ 3.5 GW load in PPL.



# MAAC/PPL Cluster Result Summary

Portfolio/ Combination #	Entity	2030 Performance	2032 Base Performance	2032 Scen 4 Performance	2032 PPL Δ Load Performance	Cost \$M
MAAC/PPL #1	PPL (158) Portfolio 1	No violation	4 - 230kV loading >94%	3 - 230 kV loading >120%	3 - 230 kV loading >120%	415
				4 - 230 kV loading >104%	4 - 230 kV loading >104%	
MAAC/PPL #2	PPL (558) Portfolio 2	No violation	No violation	2 -500/230 kV loading >101%	2 -500/230 kV loading >101%	536
				1 - 230 kV loading >94%	1 - 230 kV loading >94%	
MAAC/PPL #3	PPL (853) Portfolio 3	No violation	No violation	1 - 230 kV loading >100%	1 - 230 kV loading >100%	769
MAAC/PPL #4	LS Power	500 kV EOL violation	No violation	2 - 230 kV loading >100%	2 - 230 kV loading >100%	494
		Local voltage violations		2 - 230 kV loading >95%	2 - 230 kV loading >95%	
MAAC/PPL #5	NextEra/Exelon	500 kV EOL violation	No violation	3 - 230 kV loading >98%	3 - 230 kV loading >98%	539
		Local voltage violations		2 - 230 kV loading >94%	2 - 230 kV loading >94%	
MAAC/PPL #6	NextEra/Exelon	500 kV EOL violation	No violation	2 - 230 kV loading >94%	2 - 230 kV loading >94%	1136
		Local voltage violations		3 - 230 kV loading >92%	3 - 230 kV loading >92%	
MAAC/PPL #7	PPL (558) Portfolio 2 + Kelayres 3rd 500/230 kV transformer	No violation	No violation	No violation	No violation	565

**Criteria:** Baseline Load Growth Deliverability & Reliability

**Assumption Reference:** 2030 RTEP Assumption

**Model Used for Analysis:** 2030 RTEP Summer

**Proposal ID:** 2025-W1-558

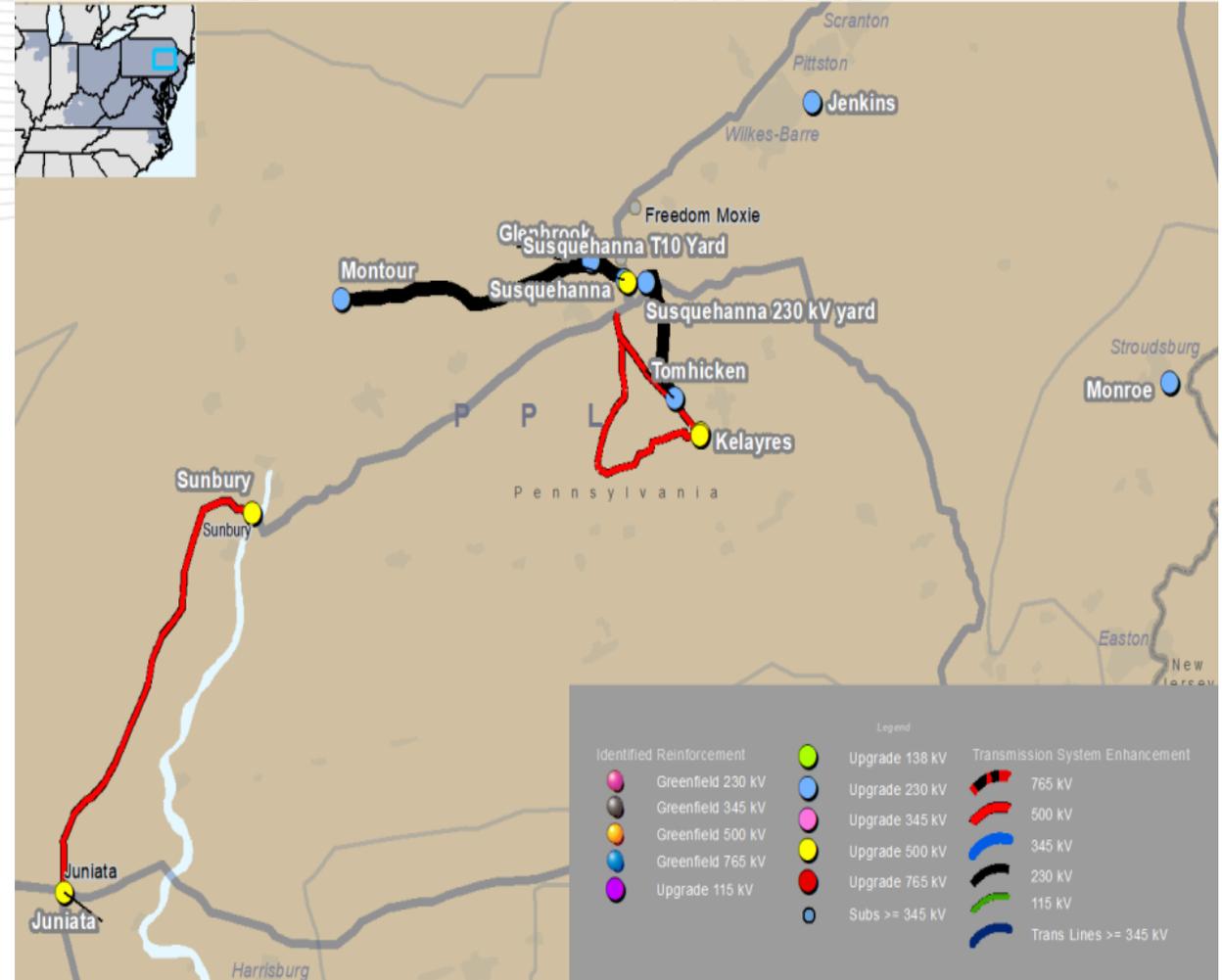
**Problem Statement:** In the 2030 RTEP analysis, multiple overloads in the Susquehanna and Juniata area of PPL are present. The violations were posted as part of the 2025 Window 1.

**Proposed Solution (2025-W1-558):**

Individual Proposal ID	High Level Description
317	Susq-Sunbury 500kV loop into the new Kelayres with additional 13 miles line
824	Reconductor Susquehanna - Tomhicken 230 kV 1 & 2 DCT lines
688	Monroe 230kV and 138kV reconfiguration and 2nd Monroe 230/138 kV transformer
16	Rebuild an existing 500 kV (Juniata-Sunbury) with SCT
958	Reconductor/rebuild the remaining scope of the M3 project (s2373 - 19 miles) - Montour - Glen Brook 230 kV 1 & 2 DCT line is about 6 miles
647	Station reconfiguration (Jenkins 230/69 kV Substation)
588	Reconductor the remaining scope of the M3 project (s2373) - Glen Brook - Susquehanna T10 1 & 2 DCT and New 230 kV line (Susquehanna T10 - Susquehanna -2.7 miles)
853	Add Third 500/230 kV transformer at the new Kelayres

**Estimated Total Cost:** \$565.4M

**Projected ISD:** 6/1/2030





# 2025 Window 1 RTEP MAAC Regional Transfer Cluster Proposal Summary

### All proposals submitted to address MAAC Regional West – East Transfer Needs:

Several proposals attempt to address the regional transfer needs and as further impacted by (i) the additional PPL load growth and (ii) the anticipated delay of the NJOSW

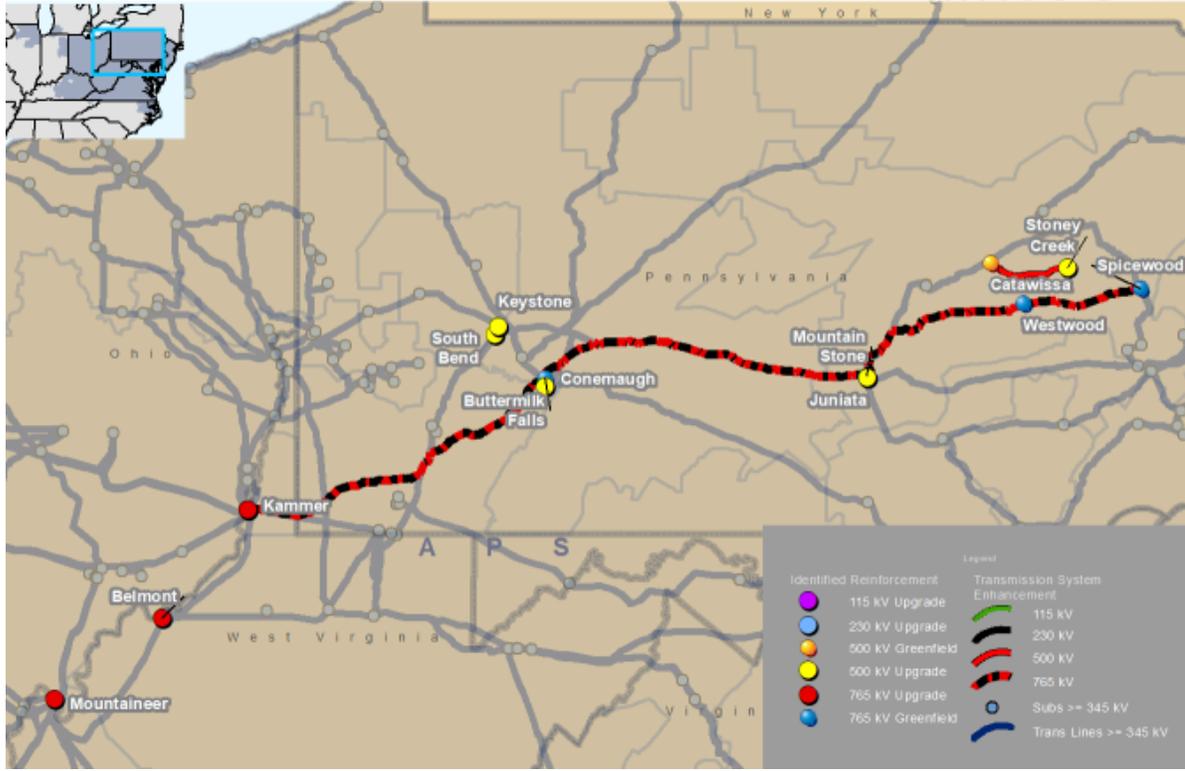
- Two proposals recommend variations of 765 kV development from Kammer to Juniata in the PPL Transmission Zone
  - Reinforces the entire West - East Corridor from the current 765 kV system edge at Kammer through the MAAC region terminating at Juniata and/or Spicewood (PPL Datacenter ally)
  - Proposal #'s 237 (222 mi) and 687 (321 mi 765 kV and 26 mi 500 kV) by NextEra/Exelon
- Multiple proposals recommend variants of Keystone - Susquehanna area 500 kV development.
  - Proposal #'s 493, 578, 826, 838 by MAIT (FirstEnergy)
- The MAIT (First Energy) 500 kV proposals and the NextEra/Exelon 765 kV proposal 237 overlap about 50% of their proposed routes
  - Overlap routes for about 100 miles



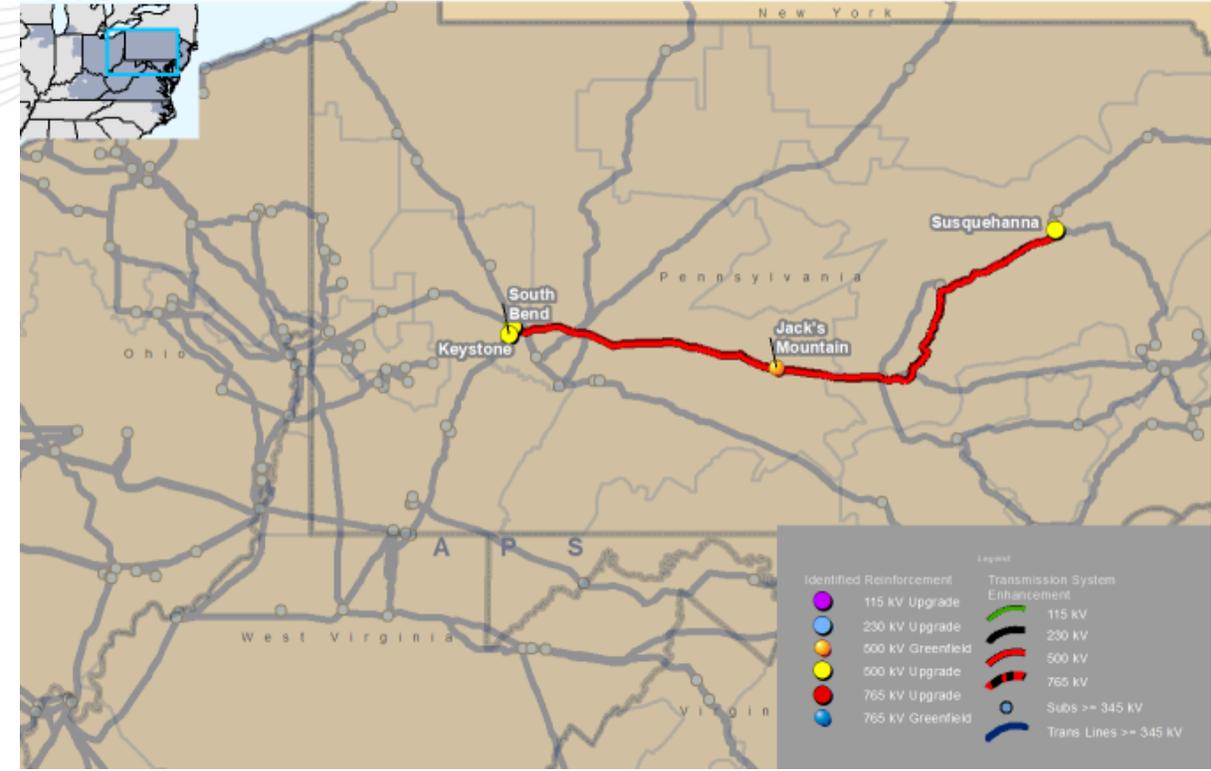
# MAAC Regional Transfer Proposed Solutions Evaluation Progress

## MAAC Regional Cluster Proposals

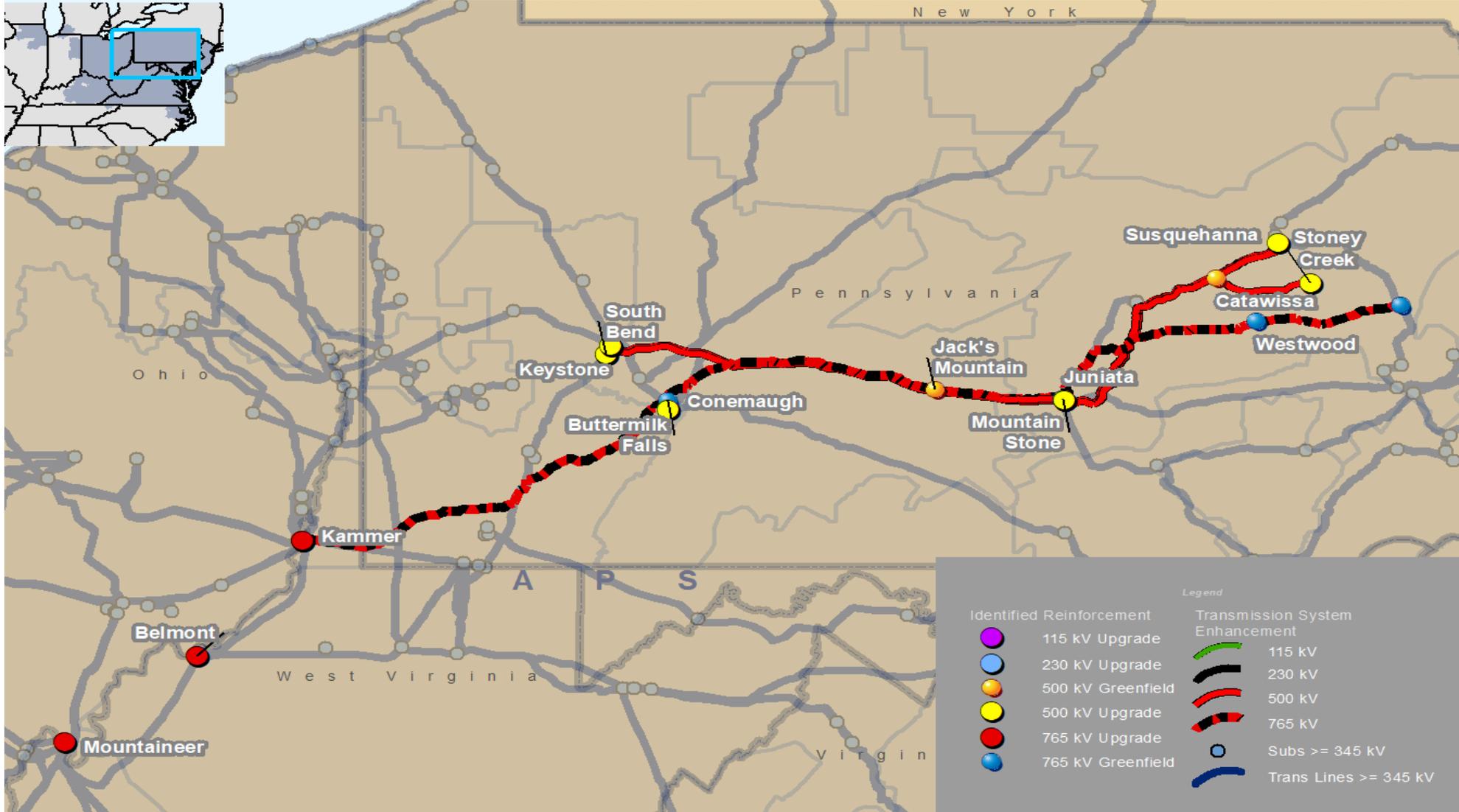
Proposing Entity	Proposal ID	High Level Description	Total Cost (\$ M)
MAIT (First Energy)	2025-W1-838	Construct No. 1 500 kV circuit Keystone - Susquehanna (~200 miles) Construct No. 2 500 kV circuit Keystone - Susquehanna (~200 miles)	\$2,252
MAIT (First Energy)	2025-W1-826	Keystone - Susquehanna 500 kV Double Circuit - Build a new 500 kV double circuit Line from Keystone Substation to Susquehanna Substation (~200 miles)	\$1,155
MAIT (First Energy)	2025-W1-493	Build Jacks Mountain Substation with STATCOM +/- 500 MVAR Keystone - Jacks Mountain No. 1 and No. 2 500 kV Lines Double Circuit (~86 miles) Jacks Mountain - Susquehanna No. 1 and No. 2 500 kV Lines Double Circuit (~114 miles)	\$1,515
MAIT (First Energy)	2025-W1-578	Build Jacks Mountain Substation with STATCOM +/- 500 MVAR Keystone - Jacks Mountain No. 1 500 kV Line (~86 miles) and Jacks Mountain - Susquehanna No. 1 500 kV Line (~114 miles) Keystone - Jacks Mountain No. 2 500 kV Line (~86 miles) and Jacks Mountain - Susquehanna No. 2 500 kV Line (~114 miles)	\$2,418
NextEra/Exelon	2025-W1-237	Construct one 765 kV line from Kammer - Juniata. The new line is 114 miles from Kammer to new 765/500 kV substation (Buttermilk Falls - loop in to the Keystone - Conemaugh 500 kV) and continue for 108 miles to new 765/500 kV substation (Mountain Stone) and connect to Juniata 500	\$1,739
NextEra/Exelon	2025-W1-687	Proposal 687 is a combination of 237 and 771 plus additional scope. The additional scope includes 62 miles of new 765 kV line from Mountain Stone to new Westwood Sub 765/230 kV (230 kV will be connected to Frackville Sub). Continue the 765 kV line (38 miles) from Westwood to new Spicewood 765/500/230 kV, the 500 kV will loop into the Susquehanna - Wescosville 500 kV and the 230 kV will loop into the Slykerville - Siegfried and Slykerville - East Palmerton lines.	\$3,239



2025-W1-687 & 2025-W1-237



2025-W1-493, 2025-W1-578,  
2025-W1-826, 2025-W1-838



### All proposals submitted to address MAAC Regional West – East Transfer Needs:

Evaluated five Individual and Combined Proposals to Address the MAAC Regional Needs

- Two proposals are a variation of 2 x 500 kV transmission lines from Keystone to Susquehanna
- One option includes 1 x 500 kV transmission line from Keystone – Susquehanna
- NextEra/Exelon Proposal #237 is \$1.7 billion that is 99 miles shorter than NextEra/Exelon Proposal #687 and is sufficient to address current regional transfer needs in the timeframe studied
  - NextEra/Exelon Proposal#687 was not considered as the extension beyond Juniata could be advanced separately (in the future) as need arises.
- One cluster solution combined two regional solution (1 x 765kV and 1 x 500kV), from Kammer – Juniata and Keystone – Susquehanna, respectively.
- PJM is also considering one alternate to the above option (1 x 765kV and 1 x 500kV), from Kammer – Juniata and Sunbury - Kelayres, respectively.

Evaluated MAAC Regional Cluster Individual / Combined proposals			
Cluster Name	Proposing Entity	Proposal ID	High Level Description
MAAC 1	MAIT/FE	826	Construct Two 500 kV transmission lines from Keystone - Susquehanna (Double Circuit Tower line)
MAAC 2	NextEra/Exelon	237	Construct one 765 kV line from Kammer - Juniata. The new line is 114 miles from Kammer to new 765/500 kV substation (Buttermilk Falls - loop into the Keystone - Conemaugh 500 kV), and continue for 108 miles to new 765/500 kV substation (Mountain Stone) and connect to Juniata 500
MAAC 3	NextEra/Exelon /MAIT	237	Construct one 765 kV line from Kammer - Juniata. The new line is 114 miles from Kammer to new 765/500 kV substation (Buttermilk Falls - loop in to the Keystone - Conemaugh 500 kV), and continue for 108 miles to new 765/500 kV substation (Mountain Stone) and connect to Juniata 500
		838 component	FE (838) Component #12 (Keystone - Susquehanna 500 kV Line #1: Construct new Line)
MAAC 4	MAIT/FE	578	Construct Two 500 kV transmission lines from Keystone - Susquehanna (two single circuit), with switching station (Jack's Mt.+ STATCOM) midway.
MAAC 5	MAIT/FE	838 component (1-500 kV)	Construct one 500 kV circuit Keystone - Susquehanna (~200 miles)

<p><b>Proposal Analysis</b></p>	<p>Complete</p>
<p><b>Evaluation Progress</b></p>	<ul style="list-style-type: none"> <li>• The regional transfer reinforcement are not required in the 2032 base case</li> <li>• The need for the Regional West – East transfer is observed with the NJOSW offline in the Scenario 4 model.</li> <li>• The need is further observed with the additional data center load in PPL</li> <li>• Either the delay of the NJOSW integration in MAAC or PPL additional load growth beyond baseline triggers the need for West-East regional transfer reinforcements</li> </ul>
<p><b>Portfolio Analysis</b></p>	<p>2032 Scenario 4 Base Case</p> <ul style="list-style-type: none"> <li>• The Regional West – East transfer increased in this scenario resulting in an overload on six 500 kV transmission lines feeding the Mid-Atlantic region.</li> <li>• All proposals address the identified thermal violations, with the exception of 1- 500 kV &gt;100% for the MAAC1 and MAAC 5             <ul style="list-style-type: none"> <li>• MAAC 1 and 4 are similar projects with the MAAC 4 having a STATCOM, and both provide similar performance</li> <li>• MAAC 5 provided no margin, and multiple lines are loaded &gt;95%</li> <li>• MAAC 3 provides the most margin</li> </ul> </li> </ul>

### Portfolio Analysis (cont.)

- 2032 Scenario 4 Base Case + PPL Load analysis result
- The Regional West – East transfer are significant in this scenario resulting in an overload on several 500 kV transmission lines feeding the Mid-Atlantic region.
  - MAAC 1 and 4 are similar in nature and provide similar performance and address majority of the needs.
  - MAAC 1 is half the price of MAAC 4 thus MAAC 4 will not be considered in the short list
  - MAAC 5 didn't address the violations identified and result in less transfer West to East resulting in multiple 500 kV overload. The MAAC 5 option will not be considered in the short list
  - MAAC 3 address the identified violations and provides margin

Portfolio / Combination #	Entity	2032 Scen 4 Performance	2032 PPL Δ Load Performance	Cost \$
MAAC #1	MAIT/FE	1 - 500 kV loading >100% 3 - 500 kV loading >90%	2 - 500 kV loading >100% 4 - 500 kV loading >93%	\$1,155
MAAC #2	NextEra/Exelon	2 - 500 kV loading >94% 3 - 500 kV loading >90%	3 - 500 kV loading >100% 3 - 500 kV loading >90%	\$1,739
MAAC #3	NextEra/Exelon /MAIT	1 - 500kV >90%	N/A	\$2,816
MAAC #4	MAIT/FE	See MAAC 1	2 - 500 kV loading >100% 3 - 500 kV loading >93%	\$2,418
MAAC #5	MAIT/FE	1 - 500 kV loading >104% 3 - 500 kV loading >90%	3 - 500 kV loading >105% 2 - 500 kV loading >100% 2 - 500 kV loading >94%	\$1,077

### Transfer Capability Analysis

#### Assumptions:

##### Source:

West Source (765 kV) – (100%)

##### Sink:

PPL Load 1 – (100%)

PPL Load 2 – (100%)

PPL Load 3 – (PPL Load 1&2-50/50%)

**PJM conducted Transfer Capability analysis for three key proposals – regional West - East needs.**

- The source is assumed to be on the PJM West 765 kV
- The sink is set on the PPL zone

#### 2030 Summer base case - Two sets of scenarios performed

##### 1) Without the PPL cluster solution:

- MAIT Proposal ID 826
- NextEra/Exelon Proposal ID 237

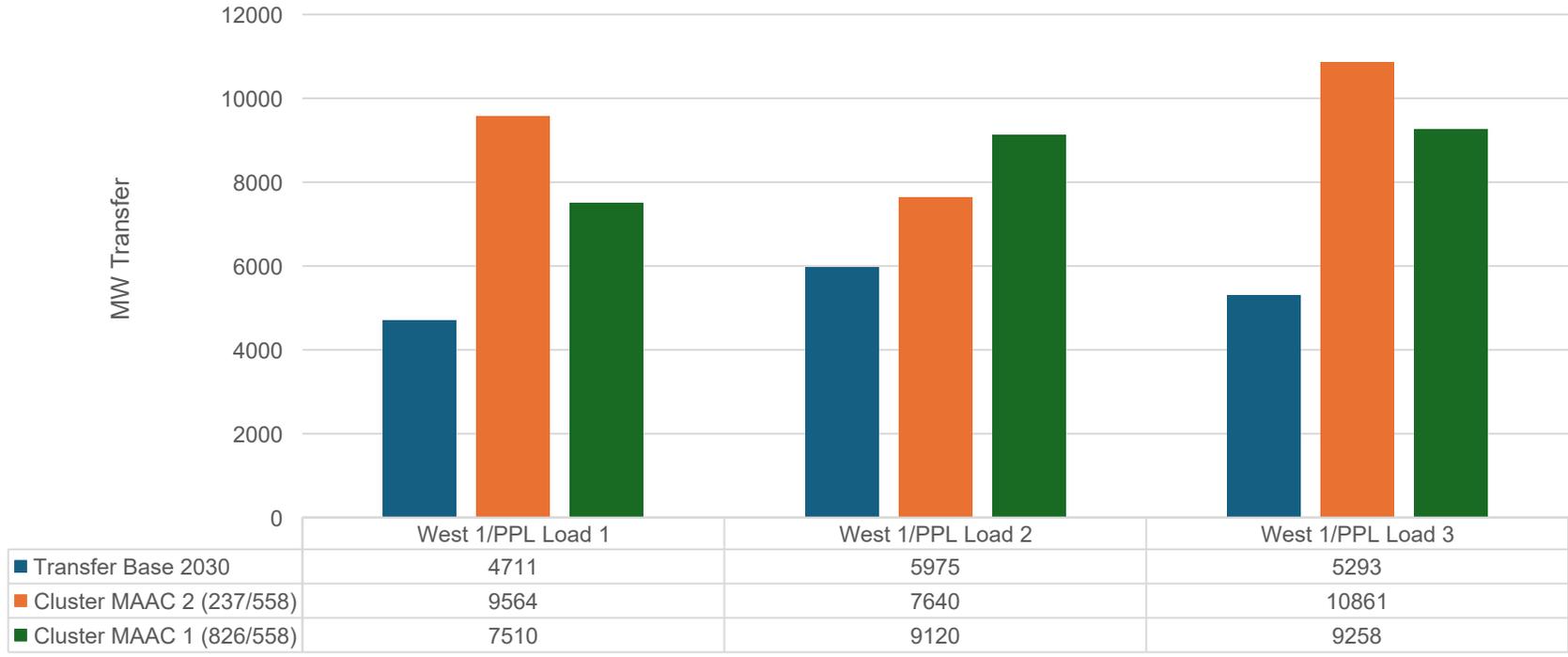
##### 2) With the PPL Cluster solution (PPL Proposal ID 558):

- MAIT Proposal ID 826
- NextEra/Exelon Proposal ID 237
- Combinations of Proposal 237 and one 500kV line from Keystone – Susquehanna
- Single 500kV line from Keystone – Susquehanna (Component from MAIT proposals)

#### 2032 Summer base case

- Proposal 826, 558 and 616
- Proposal 237, 558, and 616
- Combinations of Proposal 237, one 500kV line from Keystone – Susquehanna, and 616
- Proposal 558, single 500kV line from Keystone – Susquehanna, and 616

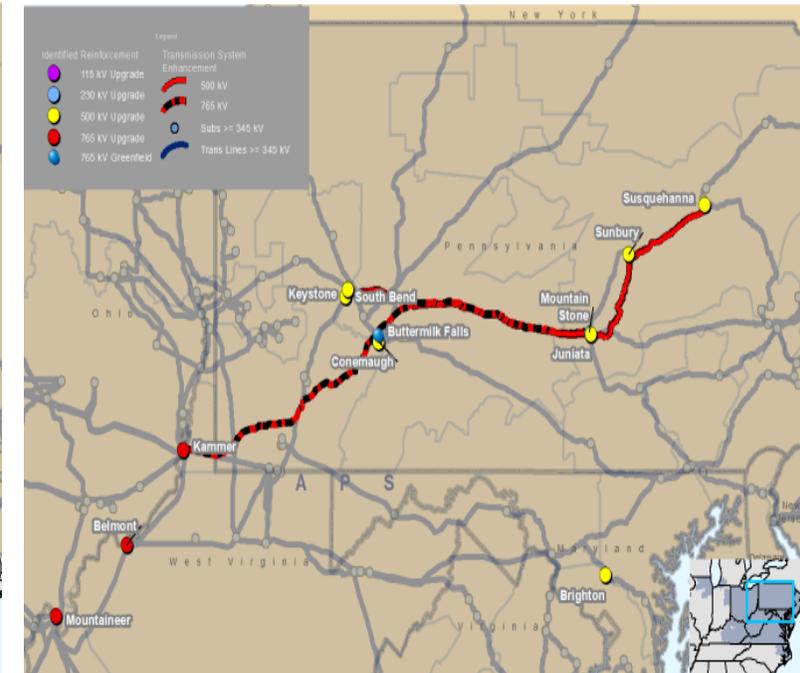
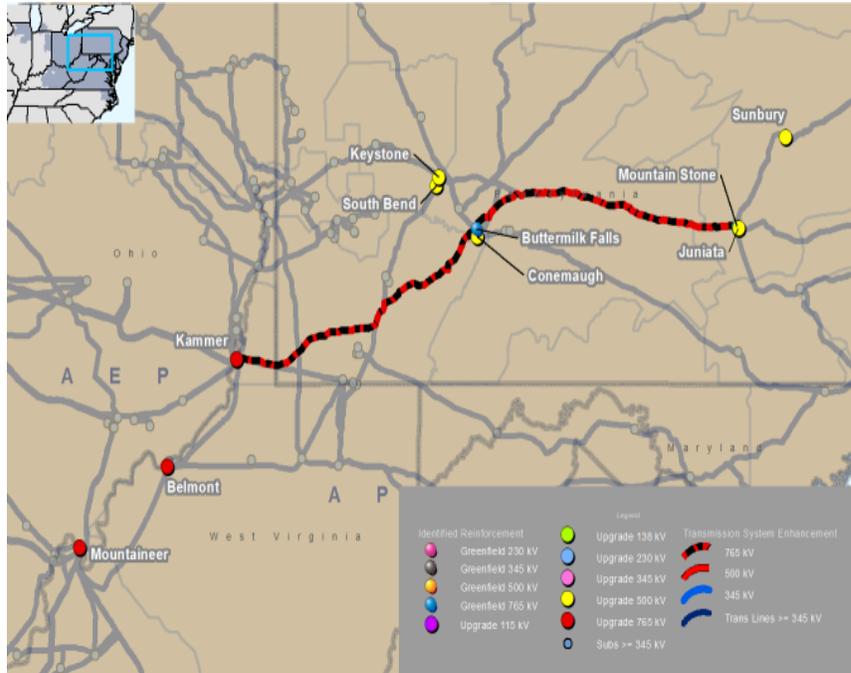
## Transfer Comparison For MAAC Regional + PPL Local Proposals Based on the 2030 Summer



## Transfer Comparison For MAAC Regional + PPL Local + Dominion Proposals Based on the 2032 Summer



- **MAAC 1 (Double circuit 500 kV)** – MAIT/FirstEnergy Proposal ID 826 (Keystone – Susquehanna 500 kV)
- **MAAC 2 (1 - 765 kV circuit)** – NextEra/Exelon Proposal ID 237 (Kammer – Juniata 765 kV)
- **MAAC 3 (1 - 765 kV & 1-500 kV circuits)**
  - NextEra/Exelon Proposal ID 237 (Kammer – Juniata 765 kV)
  - Component from MAIT/FirstEnergy Proposals (Keystone – Susquehanna 500 kV)
- **MAAC 6** - PJM is considering one alternate to the above option 765 kV Kammer – Juniata and 500 kV Juniata - Sunbury – Kelayres (Evaluations haven't been performed yet)
- All shortlisted proposals meet the posted need.
- All support the need to supply the future load growth in the MAAC/PPL region.
- All proposals increase the West – East transfer, including the transfer need due to the in-service delay of the NJOSW
- All help offload the bulk transmission flow from South towards the Mid-Atlantic region



- MAAC 1 (1 - 765 kV circuit)
- NextEra/Exelon Proposal ID 237  
– (Kammer – Juniata 765 kV)

- MAAC 2 (Double circuit 500 kV)
- MAIT-First Energy Proposal ID 826  
(Keystone – Susquehanna 500 kV)

- MAAC 3 (1 - 765 kV & 1-500 kV circuits)
  - NextEra/Exelon Proposal ID 237 (Kammer – Juniata 765 kV)
  - Component from MAIT-First Energy Proposals (Keystone – Susquehanna 500 kV)

MAAC

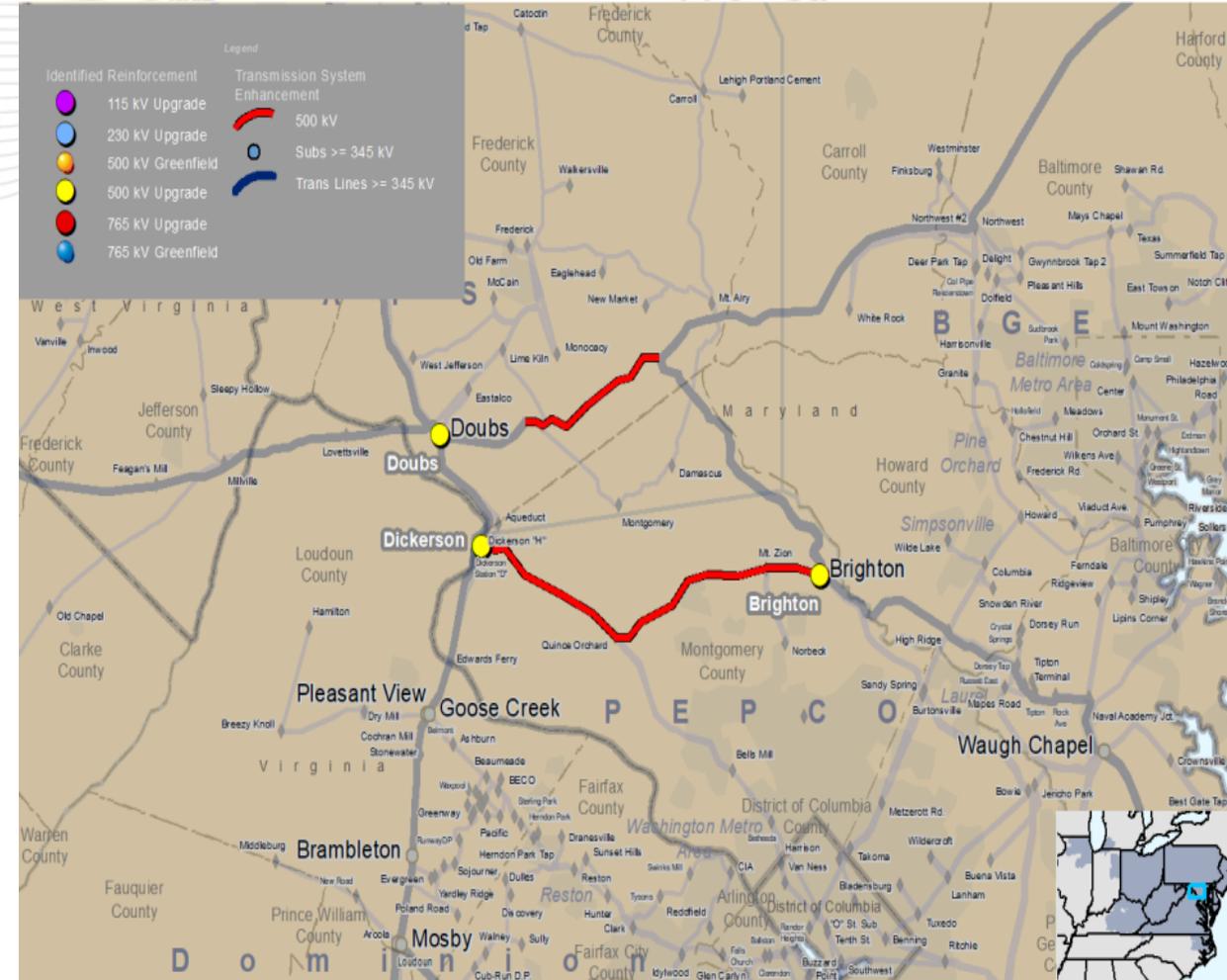
Additional Regional Needs/Studies

(Pending or Deferred)

## Proposals still under investigation/evaluation:

- PEPCO submitted Three proposals to address Violations identified in the South PEPCO vicinity including ties between Dominion and PEPCO.
- This area is impacted by reinforcements in the MAAC and Dominion regions.
- Proposal further indicates the need for additional transmission reinforcement into BGE (import capability)
- PJM is still evaluating these proposals – will finalize by the December TEAC (final selection/First Read).

Proposal ID	Total Cost (\$ M)	High Level Description
371	857.22	New 500 kV substation (Dickerson) by cutting into the Aspen - Rocky Point 500 kV line. New 500 kV line (Dickerson - Brighton (25 miles) - mix of greenfield and brownfield). One Dickerson 500/230 kV transformer.
851	101.86	Rebuilding the BGE portion of the Doubs – Brighton line 500kV (approximately ~11 miles)
919	257.61	New 500 kV substation (Dickerson) by cutting into the Aspen - Rocky Point 500 kV line installing two new 500/230kV transformers.



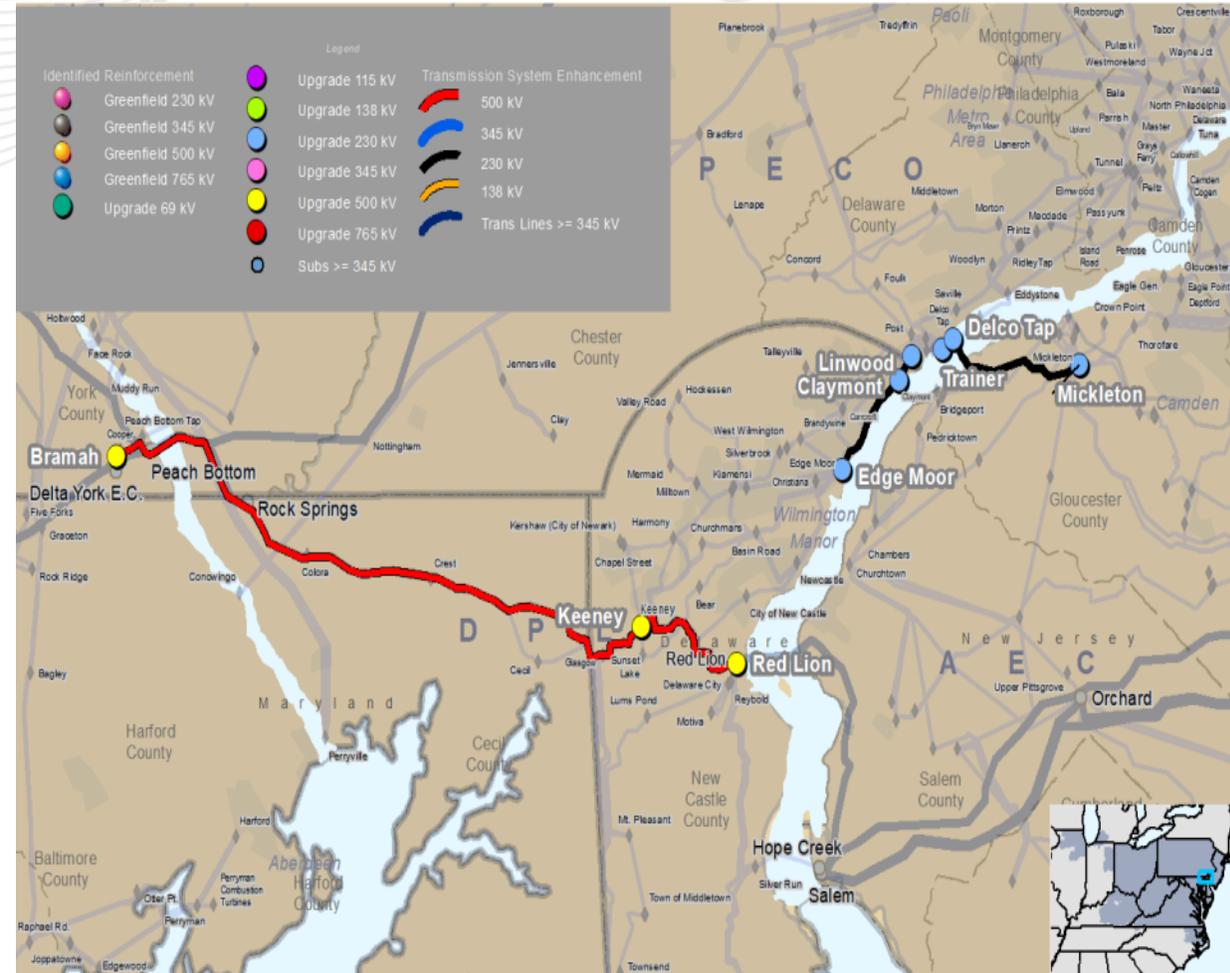


# Exelon/DPL/PECO Proposed Solutions

## Proposals subject to deferred evaluation:

- DPL and PECO submitted proposals to address 2032 Violations
- DPL proposed projects to address violations impacted by the NJOSW
- PECO proposed projects to address 230 kV violations expected in 2032, which do not require long lead times
- PJM will proceed with evaluating the proposals should the need arise (Deferred for this window)

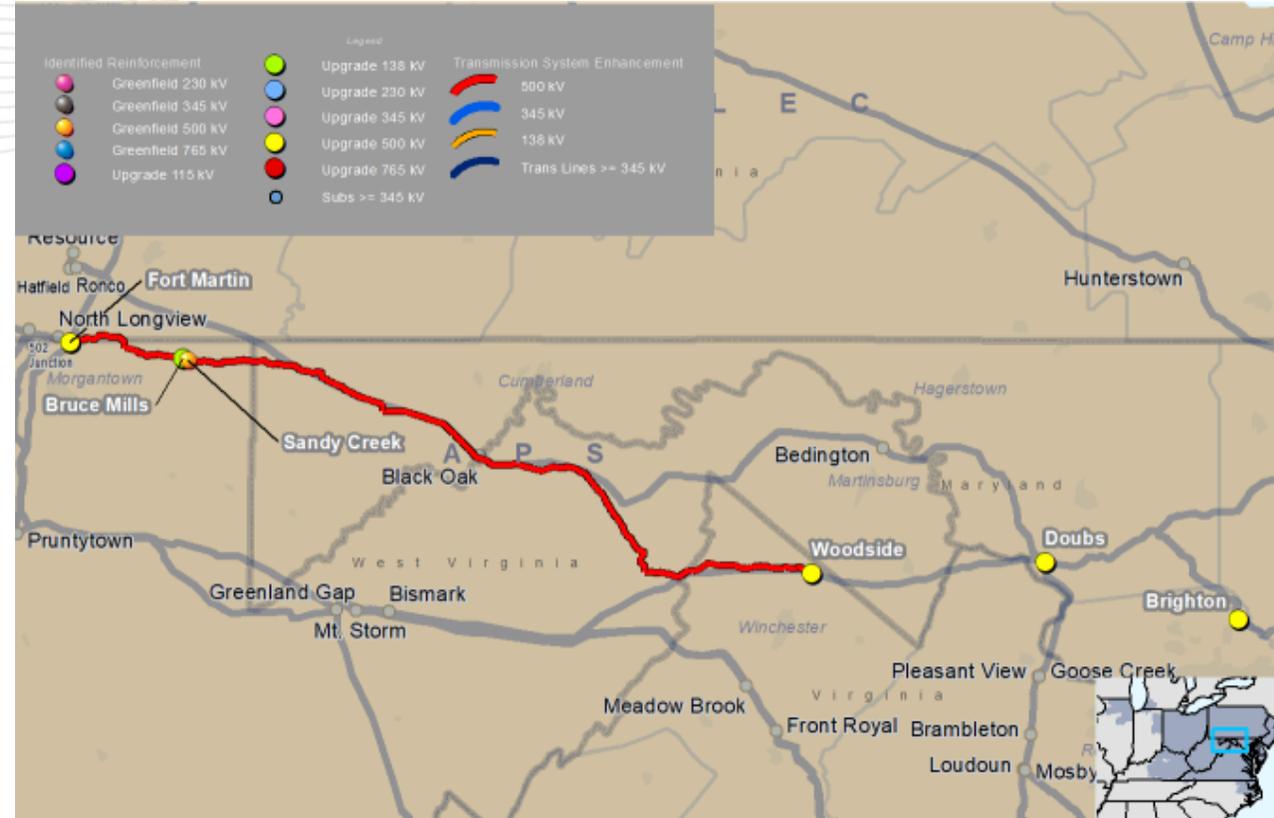
Proposing Entity	Proposal ID	Total Cost (\$ M)	High level Description
DPL	465	491.16	Construct new 500kV line from Keeney EHV to Bramah. Rebuild part of the existing 5025 line as double circuited and utilize existing ROW with 5025 and 5014 from Keeney - Bramah. Upgrade remote substations to create necessary terminal positions for new line.
DPL	823	90.70	Rebuild the 23011 Red Lion-Keeney 230kV line to 500kV standards and upgrade disconnect switches at Keeney substation. The line will be operated at 230kV with future capability to energize at 500kV.
PECO	125	67.58	Reconductor 2301 / 220-38 line Trainer - Delco - Mickleton to increase ratings of facility to minimum 1094 MVA rating. Replace substation terminal equipment to achieve minimum rating. Replace structures with 500/230KV double-circuit poles for future potential 500KV expansion (ACE only).
PECO	579	10.60	Rebuild 220-84 230 kV Tie-line from Linwood to Claymont substation and upgrade terminal equipment at Claymont substation to meet future capacity requirements.
PECO	758	76.85	Rebuild 220-85 230 kV Tie-line from Linwood to Edgemoor substation and upgrade terminal equipment at Edgemoor substation to meet future capacity requirements.



## Proposals removed from consideration:

- NextEra submitted proposal ID 896 to address some of the 2032 thermal and voltage violations in the AP South and Dominion area
- Resolved minimal posted flowgates and provides the least benefit
- No further analysis/action.

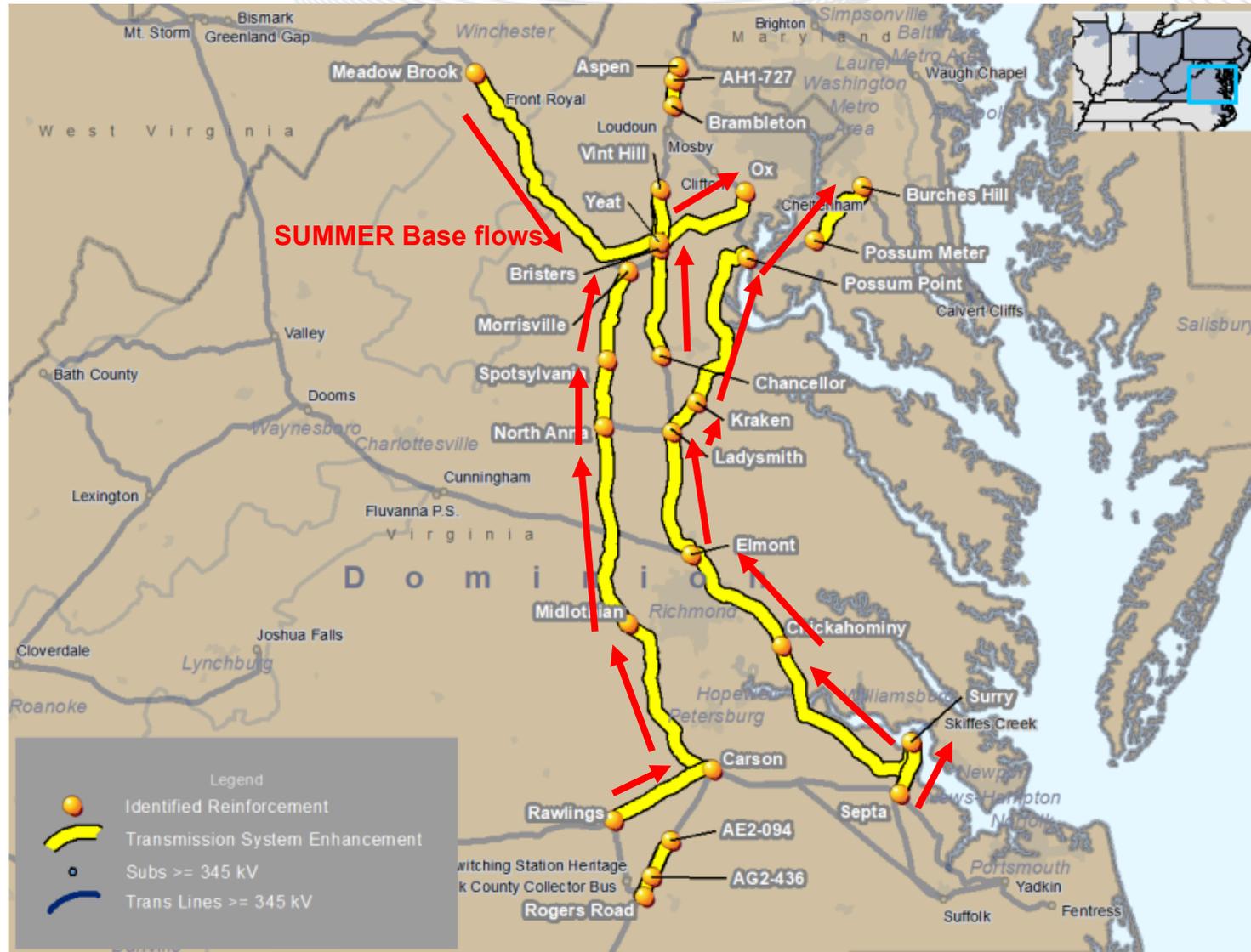
Proposing Entity	Proposal ID	Total Cost (\$ M)	High level Description
NextEra	896	571.70	Convert the 500kV single circuit 502 Junction - Woodside 500kV project under development (PJM Baseline Upgrade ID b3800.102) to a double circuit configuration between Fort Martin and the NEETMA/APS interconnection point in Frederick County, VA, to accommodate Circuit 1 (b3800.102: 502 Junction – Black Oak – Woodside 500kV) and Circuit 2 (Fort Martin – Sandy Creek – Woodside 500kV).



# Southern Cluster

- The Dominion area is experiencing multiple 500kV violations along its primary South - North corridor in 2032.
  - Violations are predominantly being driven by:
    - Additional generation added in the south that is flowing to the load centers in northern VA (NOVA).
    - Increases in load with a heavier concentration in the NOVA area.
    - Further increase in PJM load overall – currently, an increase in data center load external to Dominion (PPL zone).
  - These needs require long-lead, backbone enhancements requiring more than 5 years to develop.

- The 2032 case is showing the need to reinforce the southern 500 kV transmission backbone.
  - This 500 kV corridor includes multiple South - North 500kV elements.
  - The southern transmission backbone will support the transfer of resource capacity from the southern edge of the PJM system into the Northern VA and help balance flows between West - East and South - North.
- 230 kV transmission lines: Chesterfield – Basin & Chesterfield – Hopewell will be addressed as part of the 2030 set of violations.



## All proposals submitted to address Dominion 2032 regional flows recommend 765 kV, 500kV or HVDC developments:

All proposals offer additional south to north paths to transfer power from planned generation in the south to load centers in the north.

- 4 Dominion proposals recommend a +/- 525 kV HVDC link variants from Heritage to Mosby.
- Multiple proposals offer 765 kV developments with one or more lines heading to the Morrisville area.
- A couple of proposals focus on 500 kV developments with some additional 230kV reinforcements in the northern Virginia area.



# 2025 RTEP Window 1 Proposals Overview

Dominion Regional Cluster Proposals – 2032			
Proposing Entity	Proposal ID	High Level Description	Total Cost (\$ M)
Dominion	2025-W1-275 (1A - HVDC)	• New HVDC Transmission Link from Heritage to Mosby (~185 miles), new 500kV line Elmont-Kraken, various 500kV rebuilds, new 765/500kV switching station & various substation equipment upgrades.	\$4819.51
Dominion	2025-W1-326 (1B - HVDC)	• New HVDC Transmission Link from Heritage to Mosby (~185 miles), new 500kV line Chickahominy-Kraken, new 500kV line Skiffes Creek-Chickahominy, various 500kV rebuilds, new 765/500kV switching station & various substation equipment upgrades.	\$5009.03
Dominion	2025-W1-547 (1C - HVDC)	• New HVDC Transmission Link from Heritage to Mosby (~185 miles), new 500kV line Vontay-Kraken, various 500kV rebuilds, new 765/500kV switching station & various substation equipment upgrades.	\$4904.5
Dominion	2025-W1-352 (1D - HVDC)	• New HVDC Transmission Link from Heritage to Mosby (~185 miles), new 500kV line North Anna-Vontay, various 500kV rebuilds, new 765/500kV switching station & various substation equipment upgrades.	\$5013.97
Dominion	2025-W1-705 (2A – 765kV)	• New 765kV line from Heritage to Yeat (~152 miles), new 500kV line Chickahominy-Kraken, new 500kV line Skiffes Creek-Chickahominy, various 500kV rebuilds, new 765/500kV switching station & various substation equipment upgrades.	\$2864.73
Dominion	2025-W1-848 (2B – 765kV)	• New 765kV line from Heritage to Yeat (~152 miles), new 500kV line Vontay-Kraken, various 500kV rebuilds, new 765/500kV switching station & various substation equipment upgrades.	\$2969.05
Dominion	2025-W1-352 (2C – 765kV)	• New 765kV line from Heritage to Yeat (~152 miles), various 500kV rebuilds & various substation equipment upgrades.	\$2273.85
Dominion	2025-W1-616 (3A – 616)	• New 500kV line from Heritage-Morrisville, new 500kV line Finneywood-Cunningham, new 500kV line Morrisville-Cunningham, various 500kV rebuilds, new 765/500kV switching station & various substation equipment upgrades.	\$2349.26
Transource	2025-W1-331 (2-765kV)	• Construct Bagpipe 765kV, Vontay 765kV, Durandal 765/500kV, Starfruit 765/230kV, Lodi 765/500kV, and Kaladin 500/230kV substations. Construct Bagpipe–Vontay, Joshua Falls–Durandal 765kV, Durandal–Starfruit 765kV, Starfruit–Lodi 765kV, Lodi–Cunningham 500kV, Lodi–Kaladin 500kV, Kaladin–North Anna 500kV, and Kaladin–Morrisville 500kV lines.	\$2895.32
Transource	2025-W1-781 (1-765kV)	• Construct Durandal 765/500kV, Starfruit 765/230kV, Lodi 765/500kV & Kaladin 500/230kV substations. Construct Joshua Falls–Durandal 765kV, Durandal–Starfruit 765kV, Starfruit–Lodi 765kV, Lodi–Cunningham 500kV, Lodi–Kaladin 500kV, Kaladin–North Anna 500kV, and Kaladin–Morrisville 500kV lines.	\$1986.45
TRAIL	2025-W1-938 (765kV)	• New Lea Anna 765 kV, Ladysmith 765 kV, Rogers Rd 765 kV, Centerville Rd 765 kV, Perkins Rd 765 kV, Creekward 500 kV Switchyards, substation expansions at the following locations: Bristers 500 kV, Morrisville 500 kV, Rogers Rd 500 kV, Carson 500 kV, new substations at the following locations: Bristers 765/500 kV, Morrisville 765/500 kV, Lea Anna 765/500 kV, Ladysmith 765/500 kV, Rogers Rd 765/500 kV, Perkins Rd 765/500 kV, new transmission lines: Lea Anna - Ladysmith 765 kV, Ladysmith - Bristers 765 kV, Lea Anna - Morrisville 765 kV, Centerville Rd - Rogers Rd 765 kV, Rogers Rd - Perkins Rd 765 kV, Perkins Rd - Lea Anna 765 kV, Carson - Creekward 500 kV Line & relay setting revisions at Ladysmith	\$3426.93
LS Power	2025-W1-260 (500kV)	• New 765/500kV Middle Fork, 500kV South Fork and 500kV Turkey Creek Substations, Substation expansions at the following locations: Warrenton, Wheeler, Brickyard, Vint Hill, Cunningham, Morrisville, Rawlings, Carson Expansion, new 500kV lines: Front Royal - Vint Hill, Cunningham - Middle Fork #1 & #2, Middle Fork - Morrisville #1 & 2 and Rawlings - South Fork.	\$2207.36

- All HVDC proposals have similar configuration and cost.
- All 765 kV solutions follow similar routes (reinforcing South - North) corridor and will require heavy greenfield development.
- 500 kV option(s) considered in view of offered capacity vs ROW greenfield impact introduced by 765kV developments.
- Narrow down and consequently shortlist a front runner HVDC option and HVAC option for final evaluation/selection (shortlist).



# Dominion Regional Result Summary

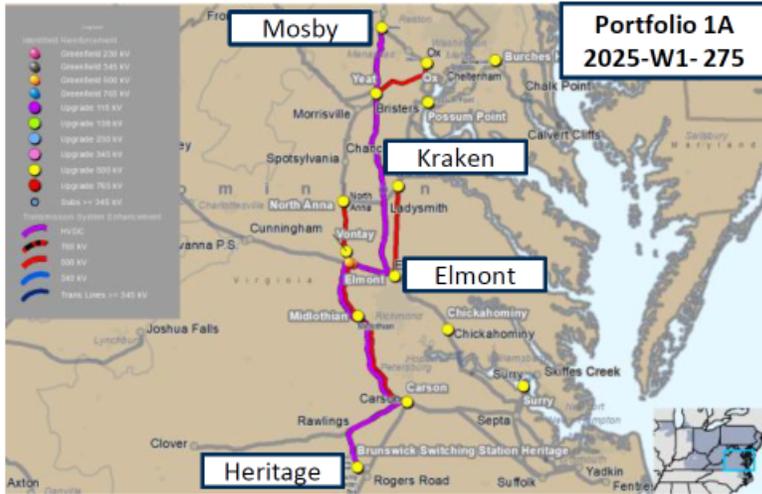
Portfolio/ Combination #	Entity	2032 Base Performance	2032 S4 + PPL Load	Cost \$	Notes
275 (1A-HVDC)	Dominion	0 - 500kV violations > 100% 2 - 500 kV loadings > 90%	0 - 500kV violations > 100% 3 - 500 kV loading > 90%	\$4,820	
326 (1B-HVDC)	Dominion	0 - 500kV violations > 100% 0 - 500 kV loading > 90%	N/A	\$5,009	
547 (1C-HVDC)	Dominion	0 - 500kV violations > 100% 1 - 500 kV loading > 90%	N/A	\$4,905	
352 (1D-HVDC)	Dominion	0 - 500kV violations > 100% 2 - 500 kV loadings > 90%	N/A	\$5,014	
705 (2A-765kV)	Dominion	0 - 500kV violations > 100% 2 - 500 kV loadings > 90%	1 - 500kV violation > 100% 2 - 500 kV loading > 90%	\$2,865	
848 (2B-765kV)	Dominion	0 - 500kV violations > 100% 2 - 500 kV loadings > 90%	0 - 500kV violations > 100% 2 - 500 kV loading > 90%	\$2,969	
474 (2C-765kV)	Dominion	1 - 500kV violation > 100% 1 - 500 kV loading > 90%	N/A	\$2,274	
616 (3-500kV)	Dominion	0 - 500kV violations > 100% 1 - 500 kV loading > 90%	0 - 500kV violations > 100% 3 - 500 kV loading > 90%	\$2,349	
260	LS Power	6 - 500kV violations > 100% 2 - 500 kV loadings > 90%	N/A	\$2,207	
331 (2-765kV)	Transource	0 - 500kV violations > 100% 2 - 500 kV loadings > 90%	3 - 500kV violation > 100% 2 - 500 kV loading > 90%	\$2,895	500kV LN #574 Elmont - Ladysmith currently being reconductored to 4330 MVA (b3020). Loaded to ~97% under single contingency in 2032 Base. Overloaded in S4+PPL Load scenario: ~102%.
781 (1-765kV)	Transource	6 - 500kV violations > 100% 4 - 500 kV loadings > 90%	N/A	\$1,986	
938	Trail	7 - 500kV violations > 100%	N/A	\$3,427	

**Note:** Unique monitored EHV lines in Dominion only

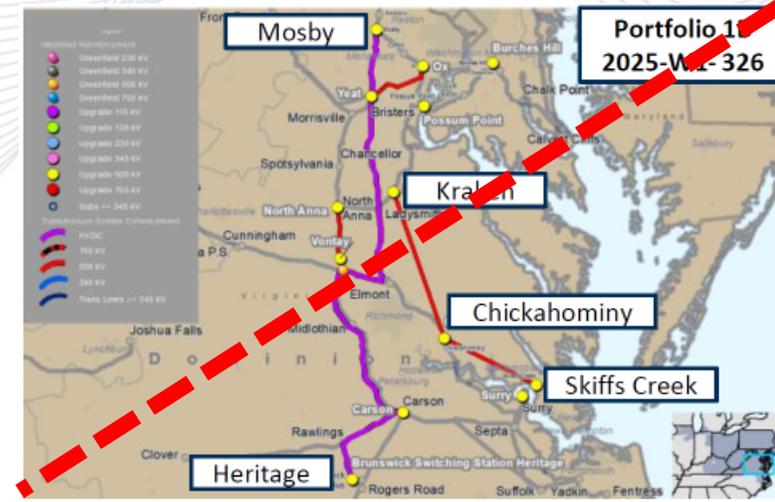


# 2025W1 Dominion Area (Preliminary Regional Short-List)

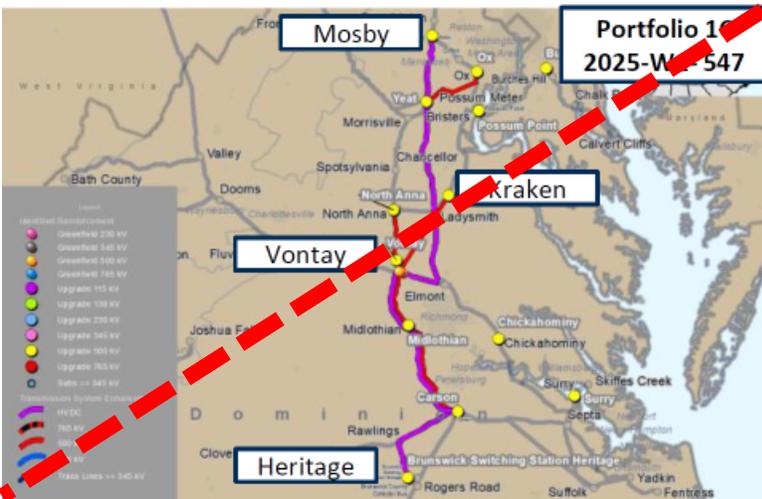
Dominion – HVDC



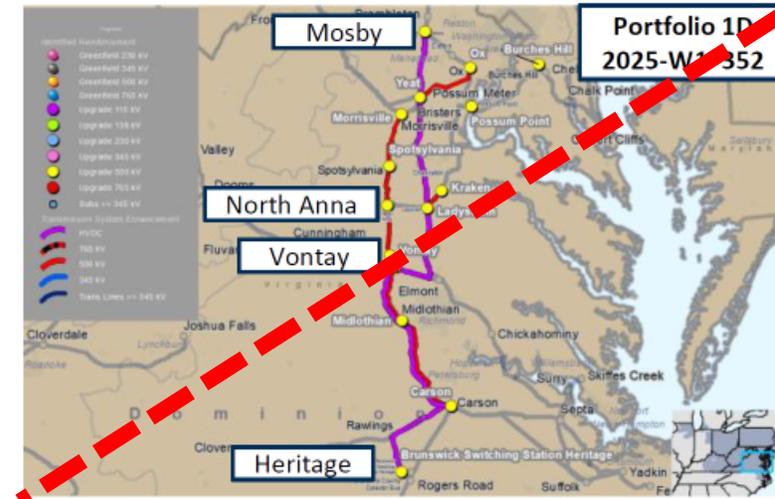
Portfolio 1A -- 2025-W1-275  
\$4819.51 M



Portfolio 1B -- 2025-W1-547  
\$5009.03 M



Portfolio 1C -- 2025-W1-547  
\$4904.50 M

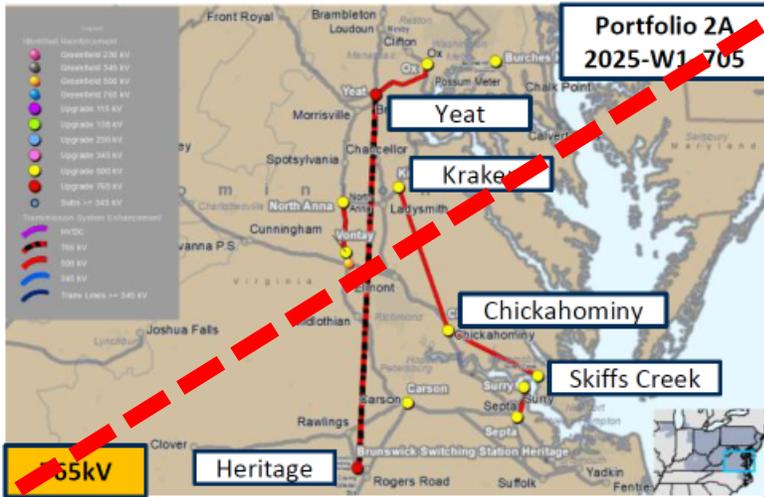


Portfolio 1D -- 2025-W1-352  
\$5013.97 M

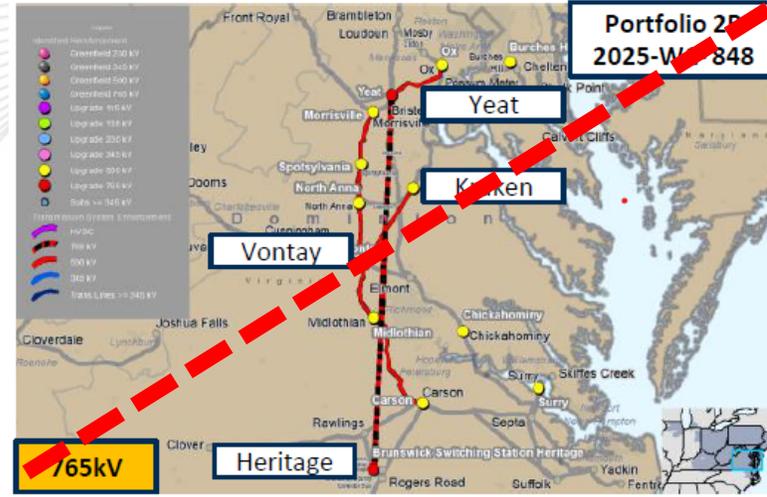


# 2025W1 Dominion Area (Preliminary Regional Short-List)

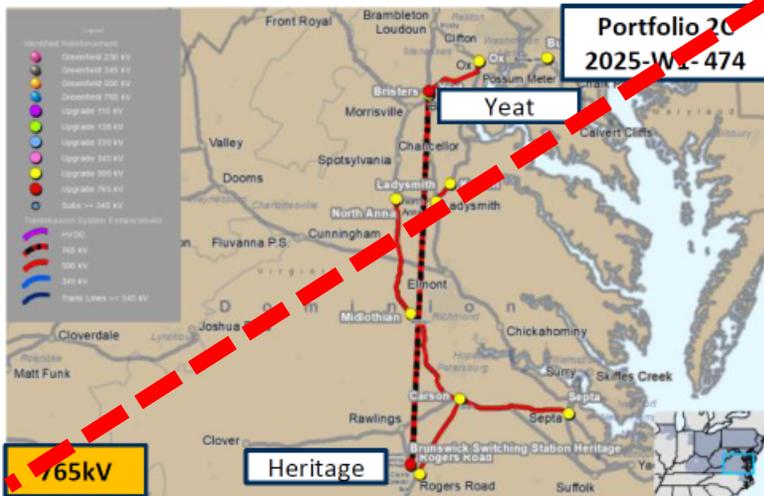
## Dominion HVAC Solutions – 765kV & 500kV



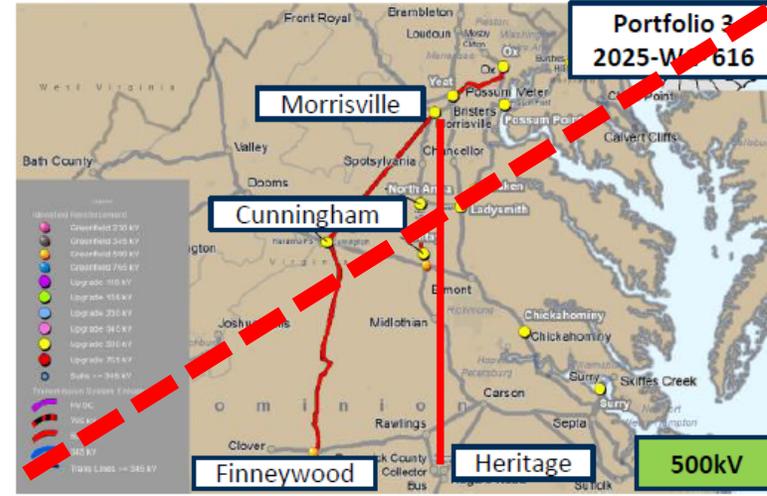
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\$2864.73 M



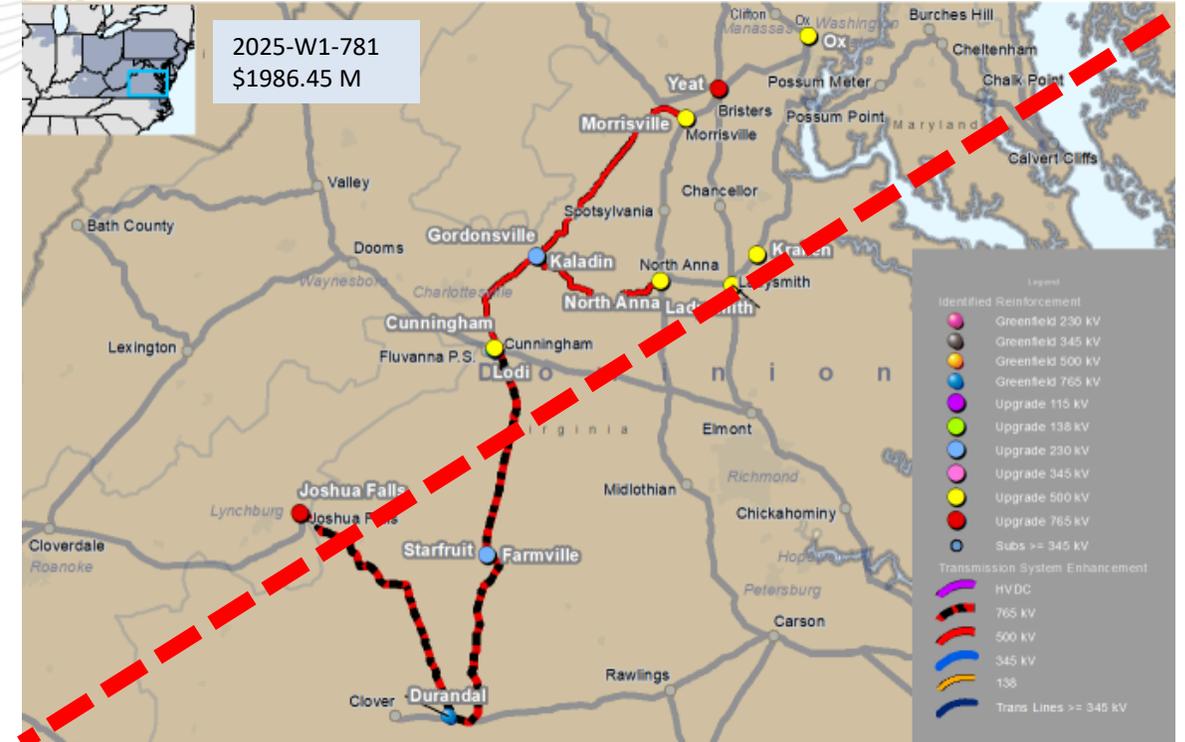
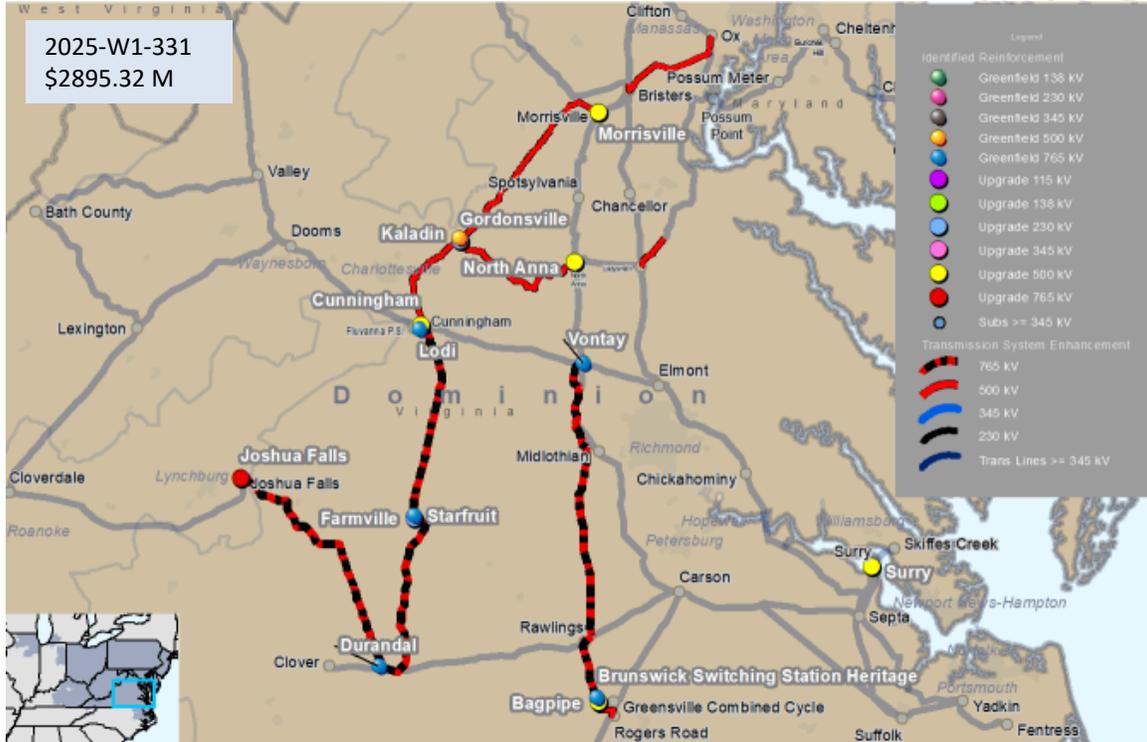
Portfolio 2B -- 2025-W1-848  
\$2969.05 M

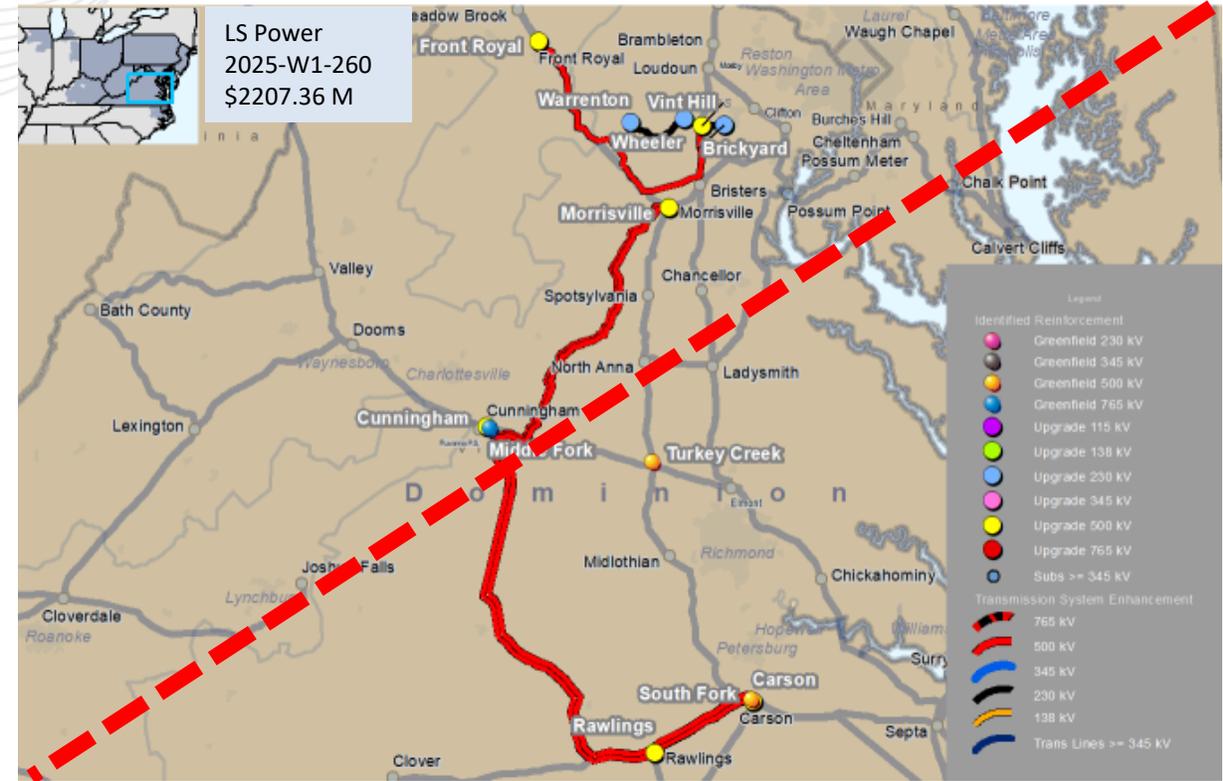
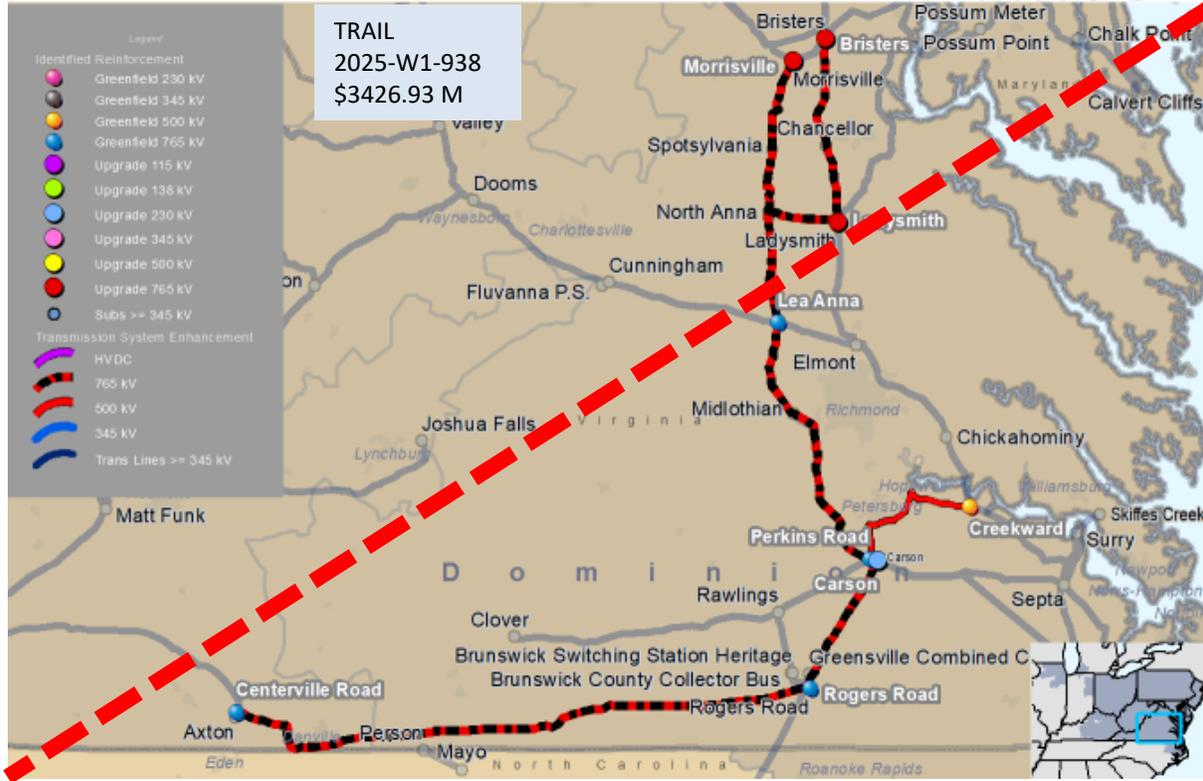


Portfolio 2C -- 2025-W1-474  
\$2273.85 M



Portfolio 3 -- 2025-W1-616  
\$2349.26 M

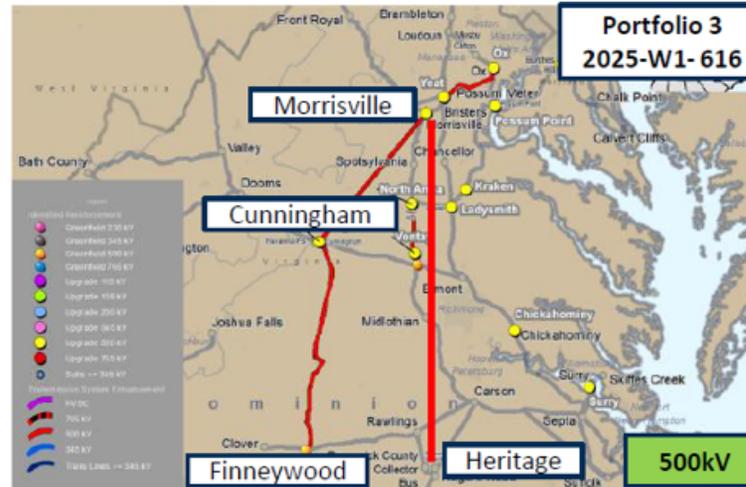
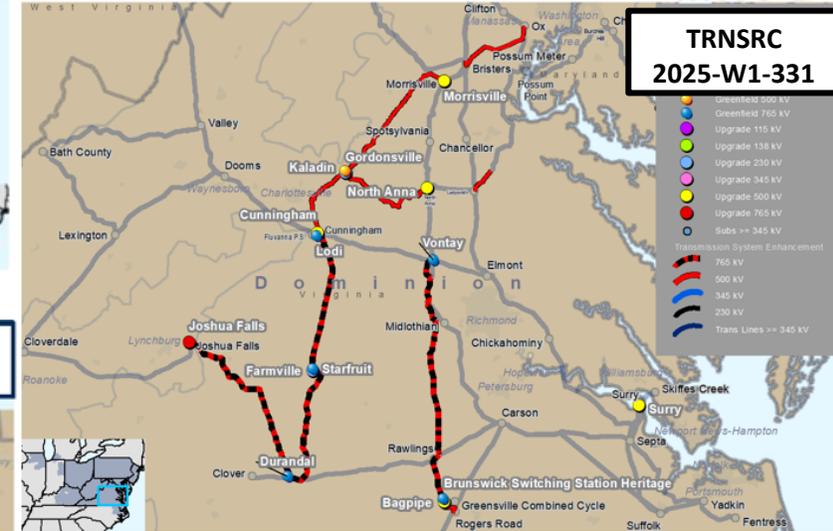
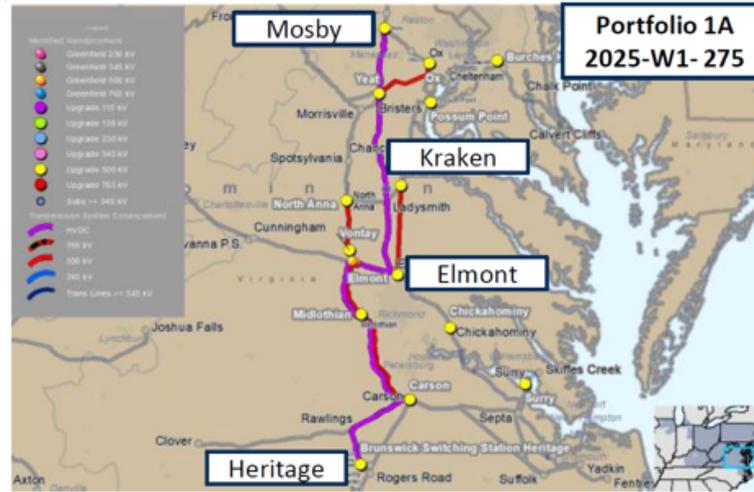




- All shortlisted proposals offer additional backbone paths from southern Dominion “towards” the Morrisville 500 kV Station
  - Direct path to connect generation in the south to the load center in the north
- While all preliminary short-listed proposals meet the posted need (at varying degrees), some offer more complete and even additional benefits / robustness merits such as;
  - Direct injection of power closer to the data center alley area in Northern Virginia
  - More operational flexibility between north and south transfers
  - Minimizing short circuit issues that are already present in Dominion
  - Higher transfer capability from south to north

# Focusing on Short-listed proposals offering “similar” Transfer-Capability merits

- Proposal 275 provides for a +/- 525 kV HVDC link from Heritage in the south to a termination point further north of Morrisville at Mosby.
  - A new 500kV line from Elmont to Kraken is also part of the proposal.
- Proposal 331 provides for another 765kV source from AEP (Joshua Falls) to a station called Durandal in Dominion before heading north towards Cunningham and stepping down to a 500kV line as it heads towards Morrisville.
  - An additional 765kV line development is also part of the proposal starting around Heritage and terminating at Vontay.
  - A couple of additional Dominion upgrades added to the scope.
- Proposal 616 offers 2 new 500kV line reinforcements with additional 500kV upgrades.
  - Finneywood – Cunningham – Morrisville
  - Heritage – Morrisville



- Sink Definition

Sub System	Sink A
DOM1 (NOVA area)	100%

- Source Definition  
(West/South)

Source 1	Source 2
50%/50%	0%/100%



# West Cluster (AEP/DATYON/ATI/DEOK)

- Solutions were grouped based on proposed in-service-dates.
- 2030 performance was first evaluated using components/groups/portfolios expected to be in-service by 2030.
- 2032 analysis accounted for proposals to be in service (full configuration)
- Reliability analysis (Gen Deliv, N-1 and N-1-1) as well as transfer analysis was conducted to evaluate proposal merits.

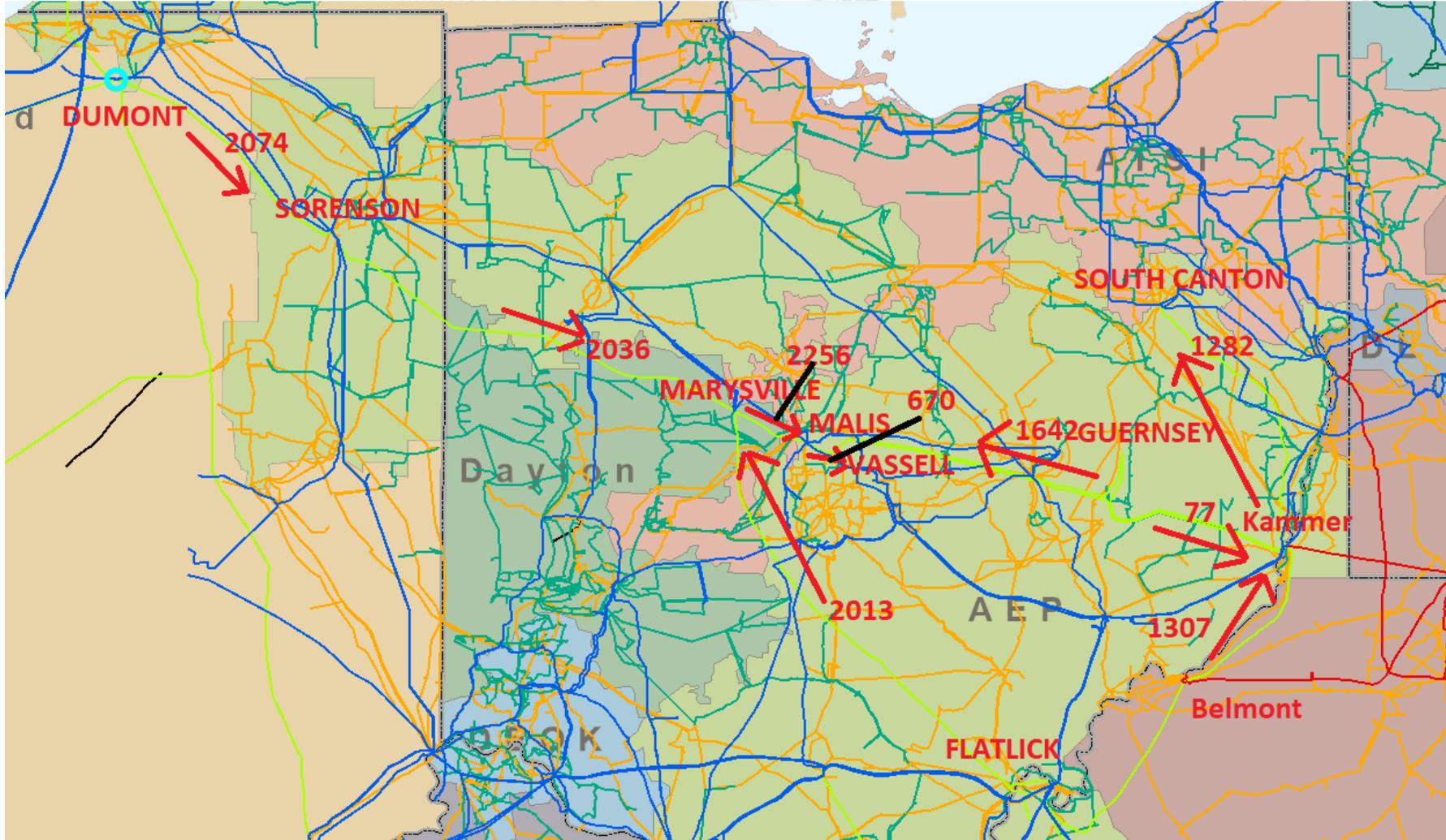
## Drivers

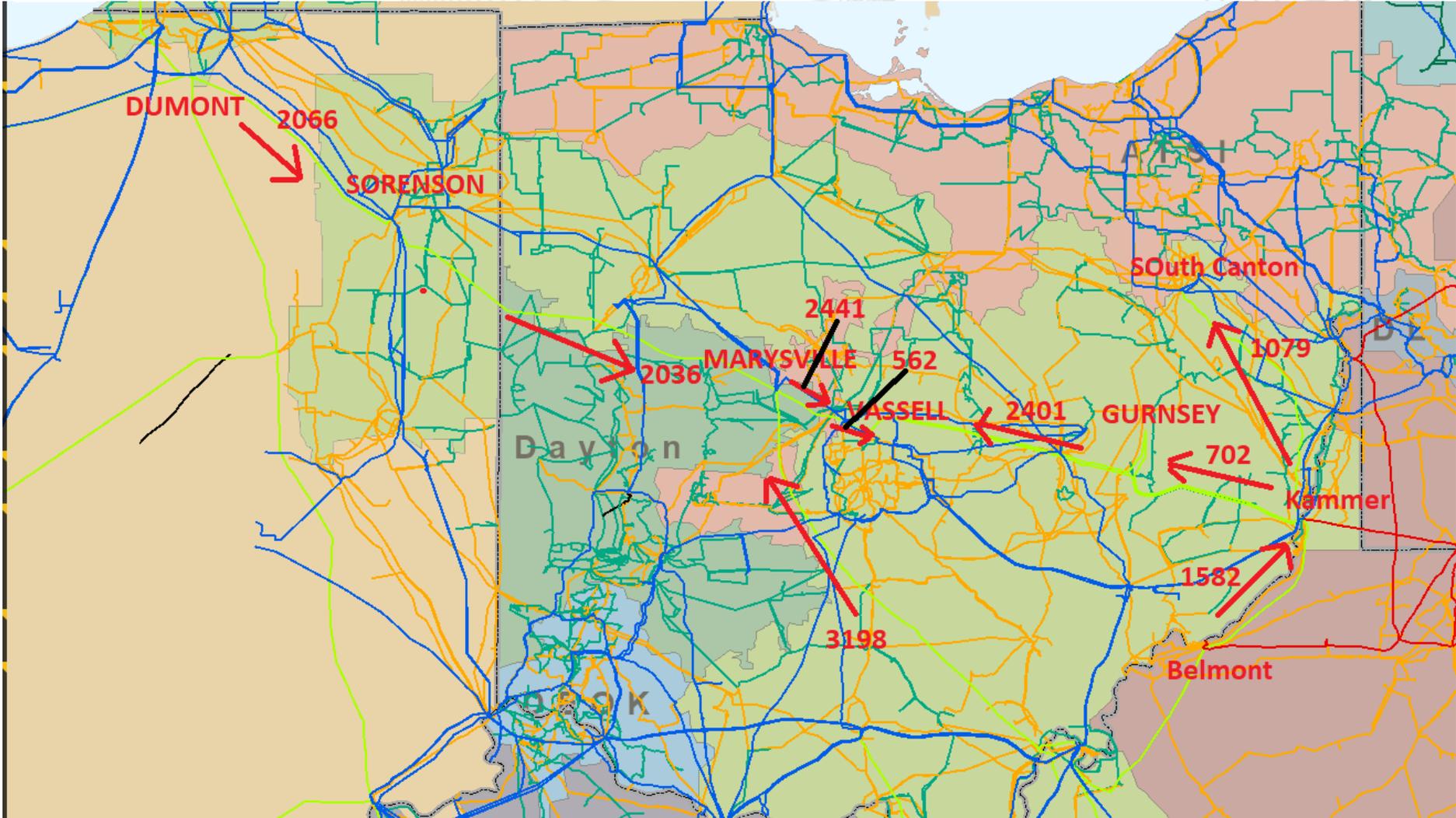
- Load increase in Columbus area
- Load increase at Melissa area
- Regional flows towards Eastern and Southern PJM Regions.

## Violations

- Thermal overloads in AEP/Dayton/ATSI
- Widespread voltage issues in AEP/Dayton/ATSI/DEOK







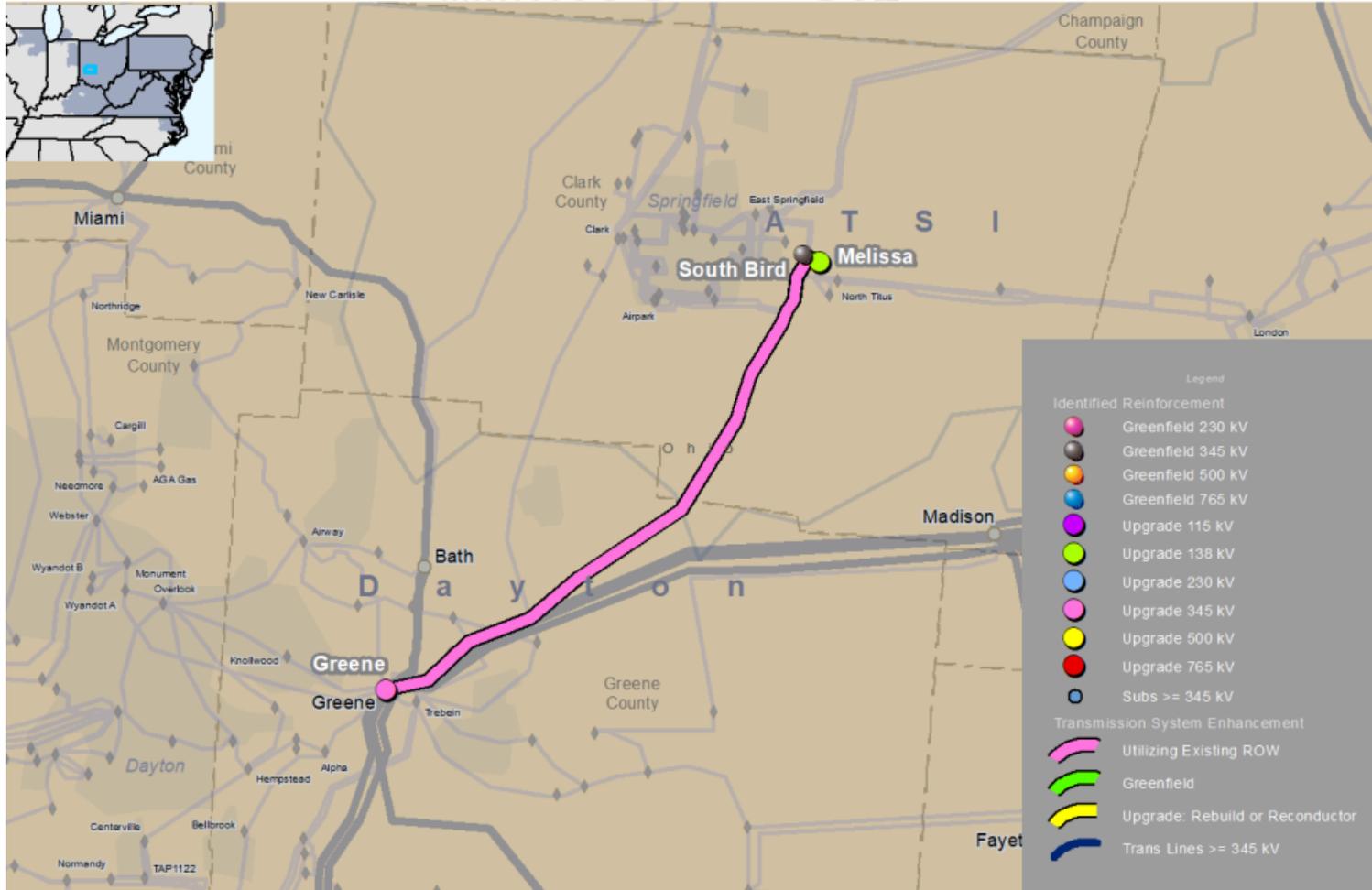
- A total of 29 proposals, from five different proposing entities, were proposed to address violations in the West Cluster:
  - Eleven of the proposals are for new 765kV and/or 345kV transmission projects targeting solving the regional needs
  - Four of the proposals are adding STATCOMs at various 765 and 345kV substations mainly to address voltage violation needs
  - Thirteen of the proposals are for transmission upgrades addressing in-zone needs by the incumbent Transmission Owner (AEP)
  - One proposal (a new 345KV line) from a non-incumbent addressing a thermal violation in AEP



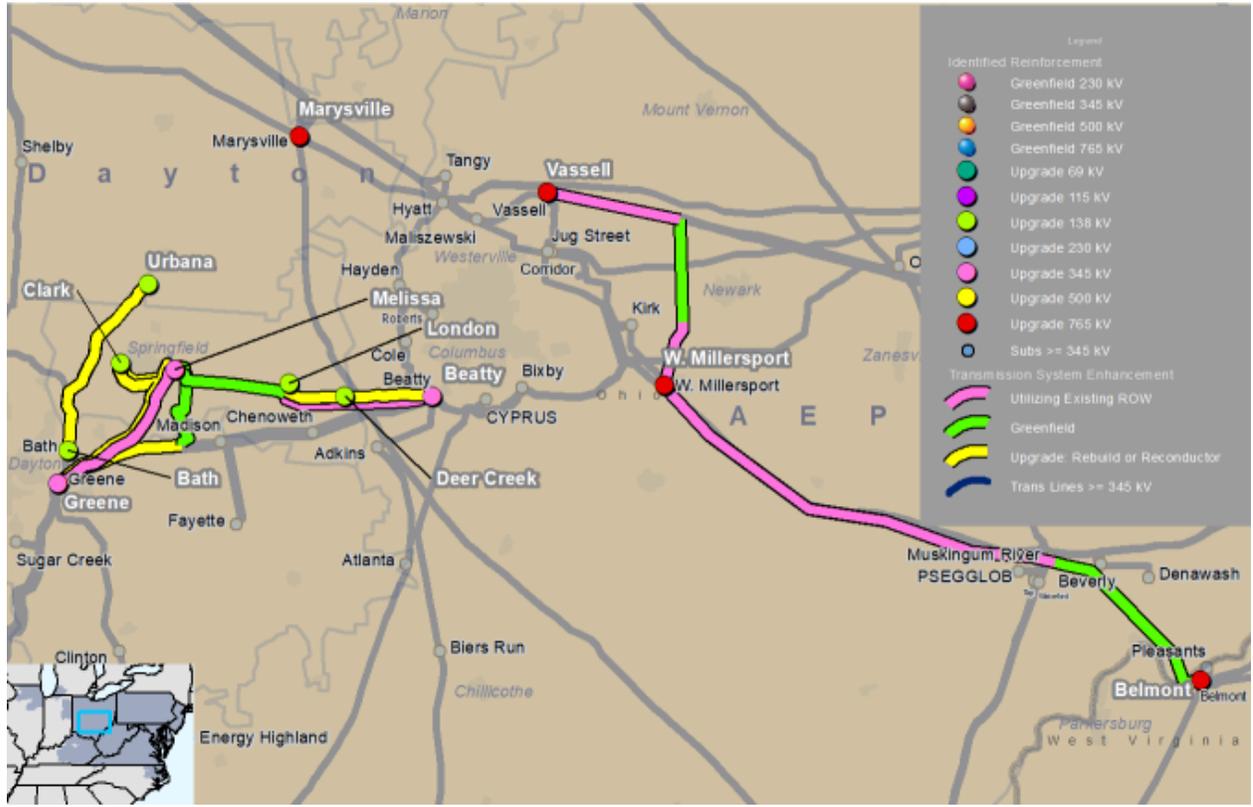
# Western Cluster - Regional Proposals

Proposal ID #	Proposing Entity	Cost (\$)	Target area(s)	Projected ISD
543	CNTLTM	121,407,651	Melissa area	06/2030
239	TRNSRC/FE	1,492,405,528	Melissa area/Columbus area	06/2030
334	TRNSRC/FE	1,690,256,560	Melissa area/Columbus area	06/2030
423	PSEGRT/AES Ohio/PPL	475,107,434	Melissa area	06/2031
60	PSEGRT/AES Ohio/PPL	1,333,608,268	Columbus area	03/2032
907	PSEGRT/AES Ohio/PPL	1,841,181,553	Melissa area/Columbus area	03/2032
619	PSEGRT/AES Ohio/PPL	1,942,649,642	Melissa area/Columbus area	03/2032
51	TRNSRC/FE	1,051,220,541	Melissa area/Columbus area	10/2030
570	TRNSRC/FE	2,775,191,200	Melissa area/Columbus area	10/2031*
152	NXTMID/Exelon	2,921,116,446	Melissa area/Columbus area	12/2031
109	NXTMID/Exelon	3,321,996,359	Melissa area/Columbus area	06/2031

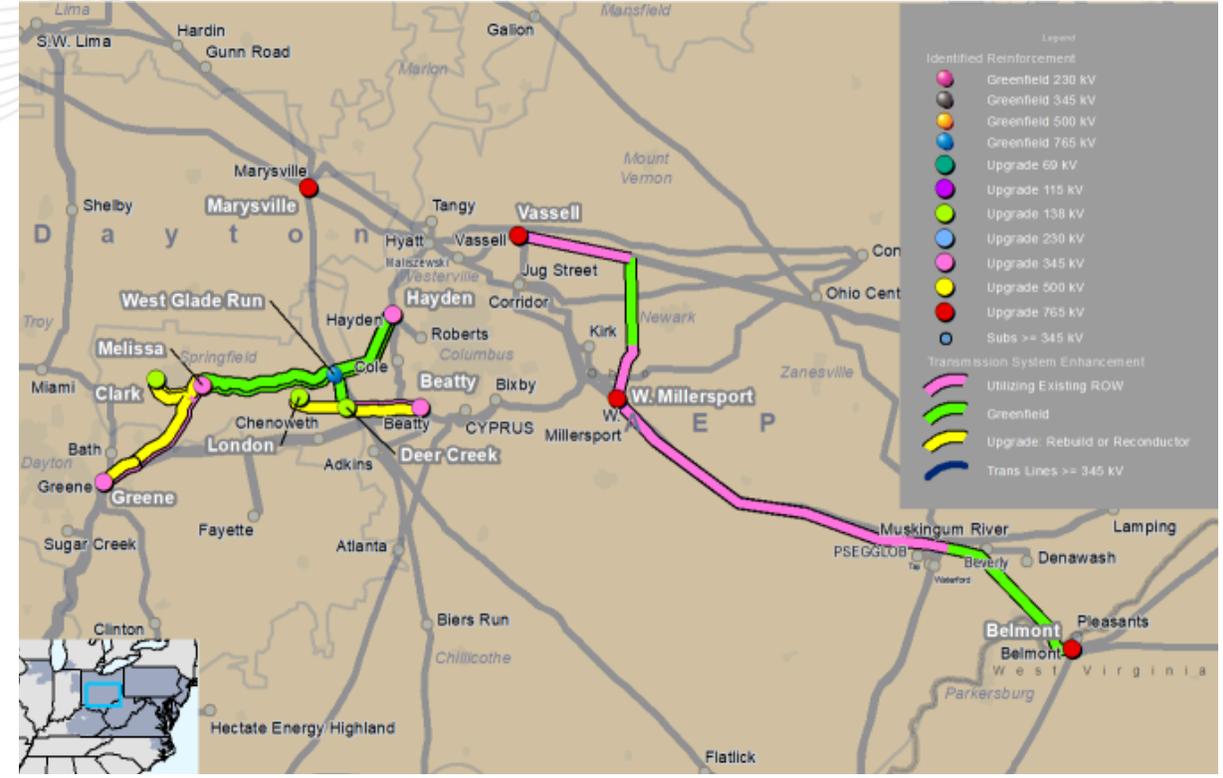
\* Updated date from TRNSRC



239

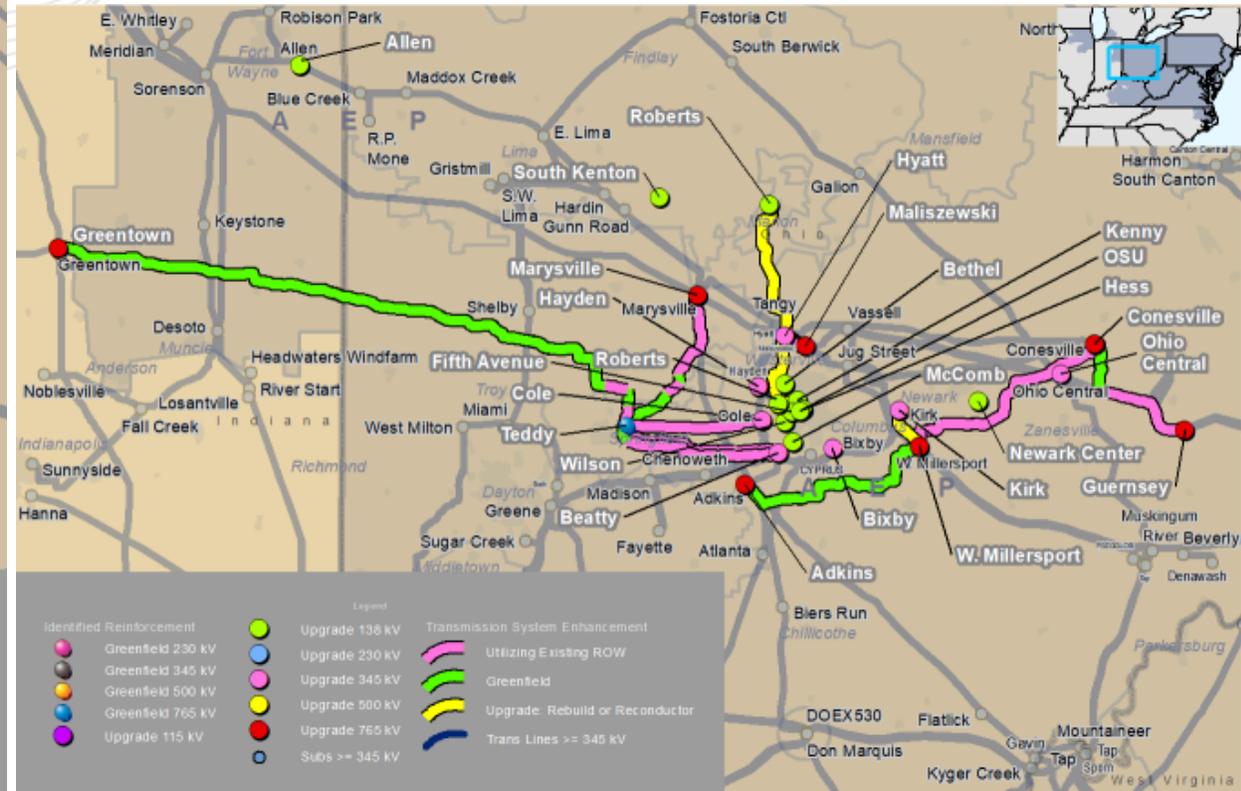
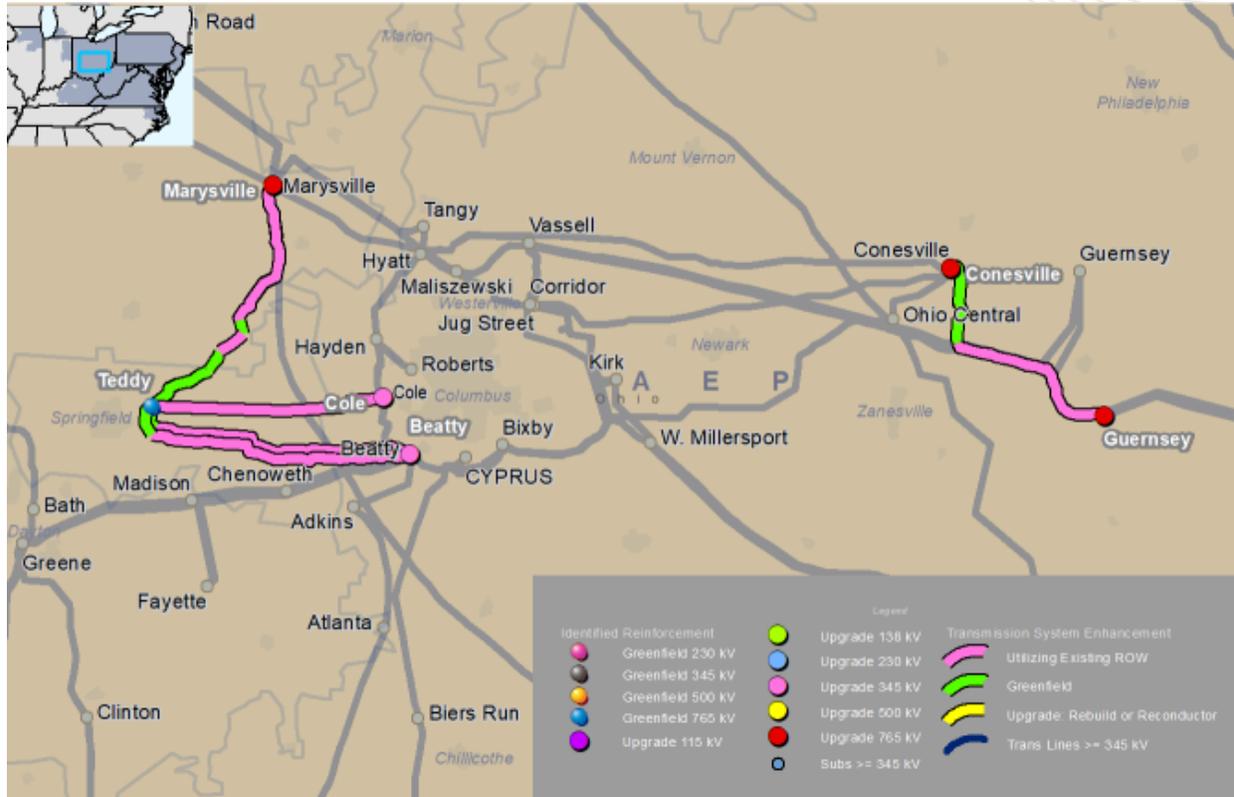


334

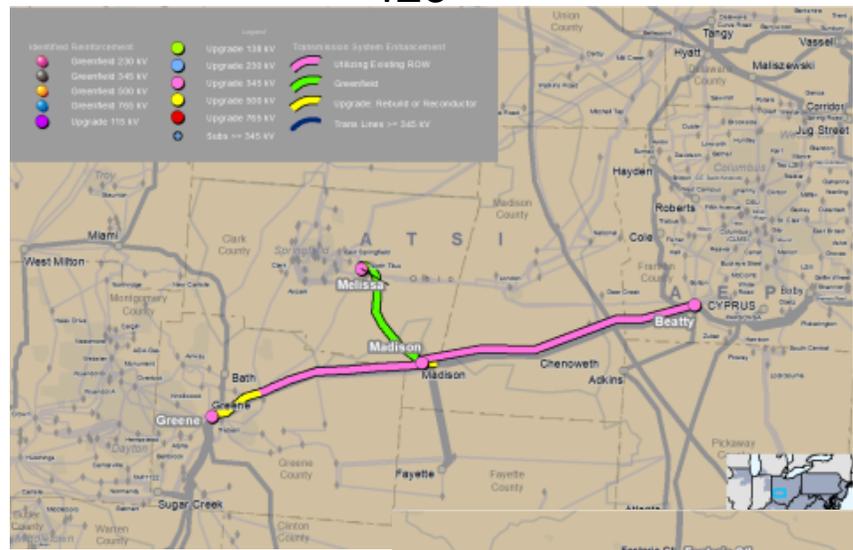


## 51

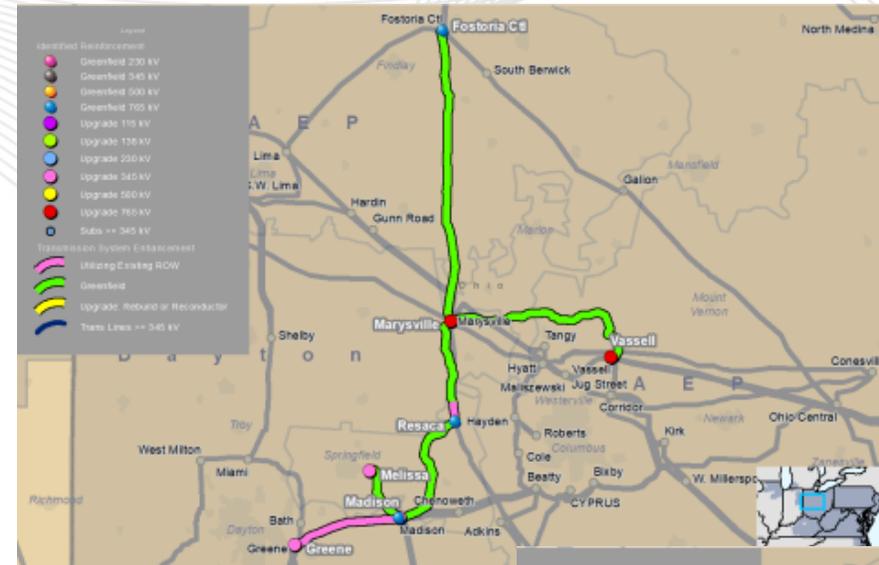
## 570



423



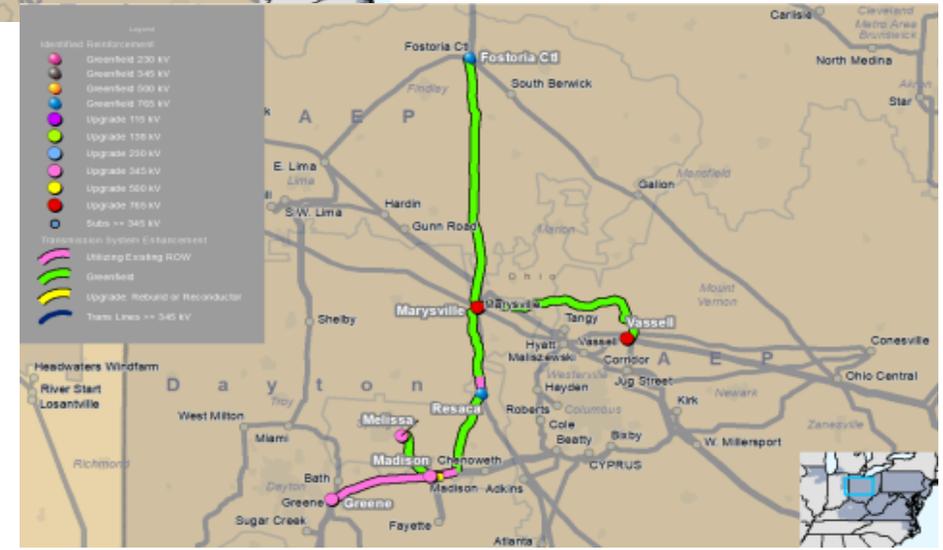
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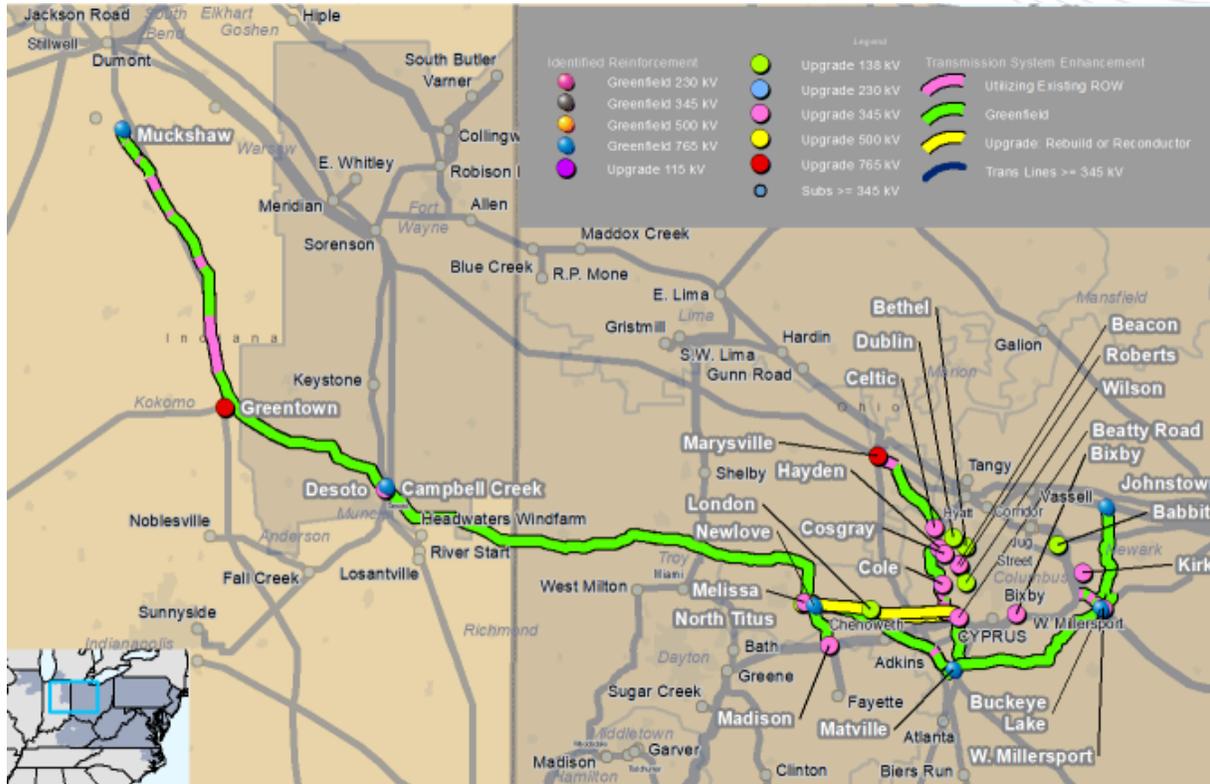
60



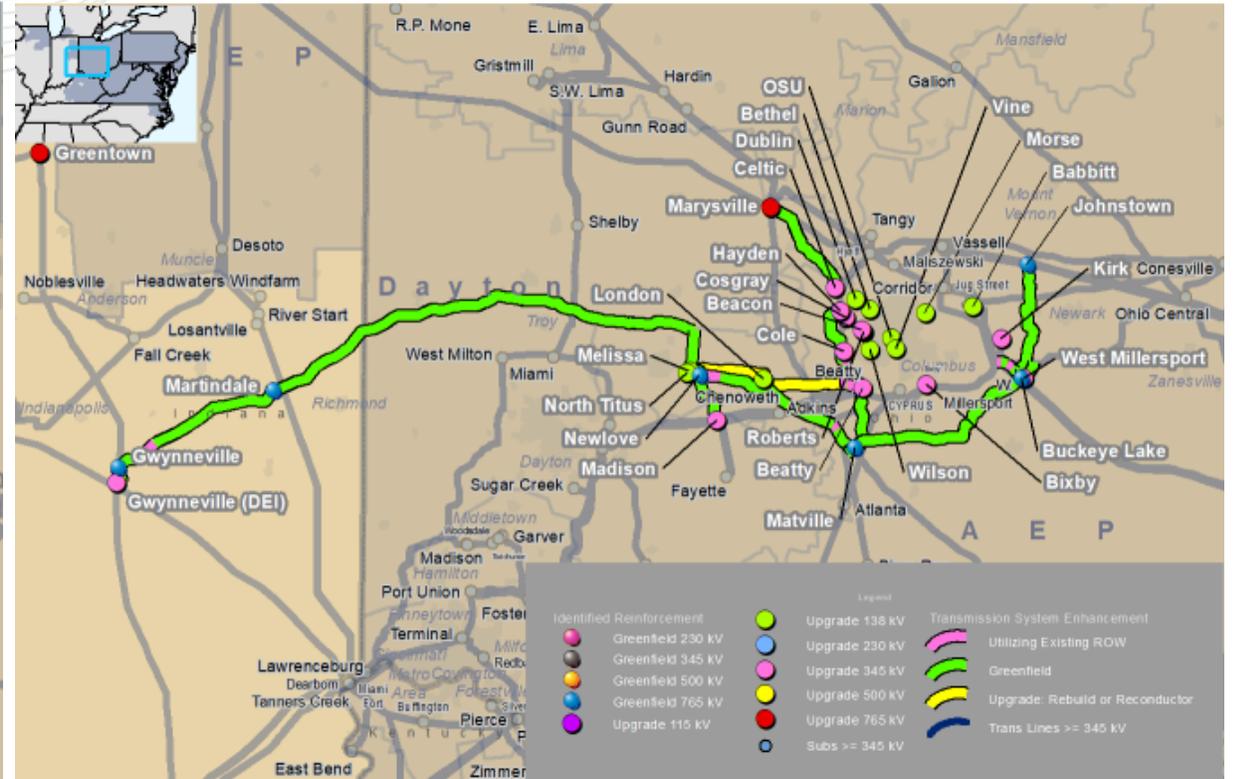
907



109



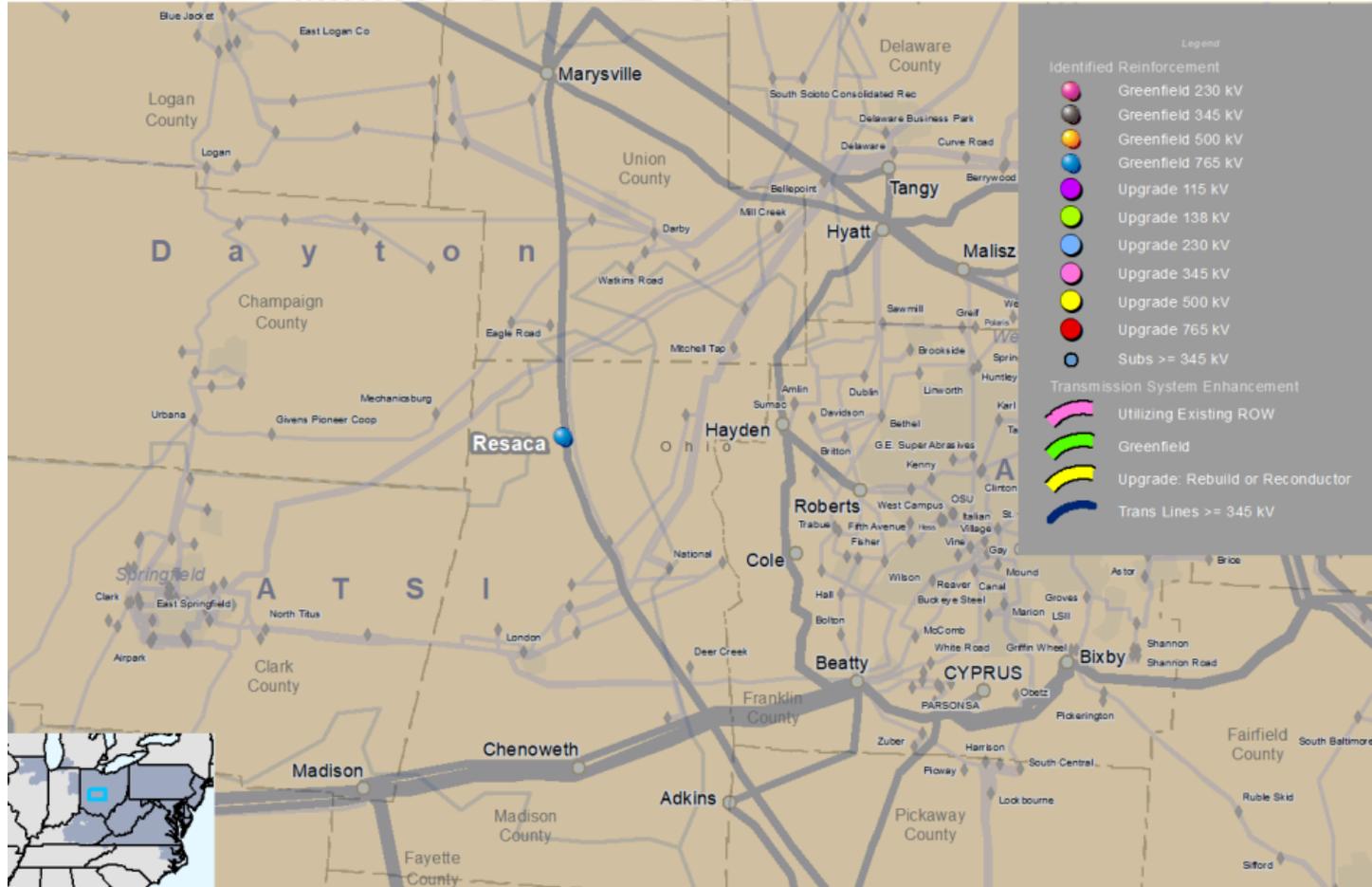
152

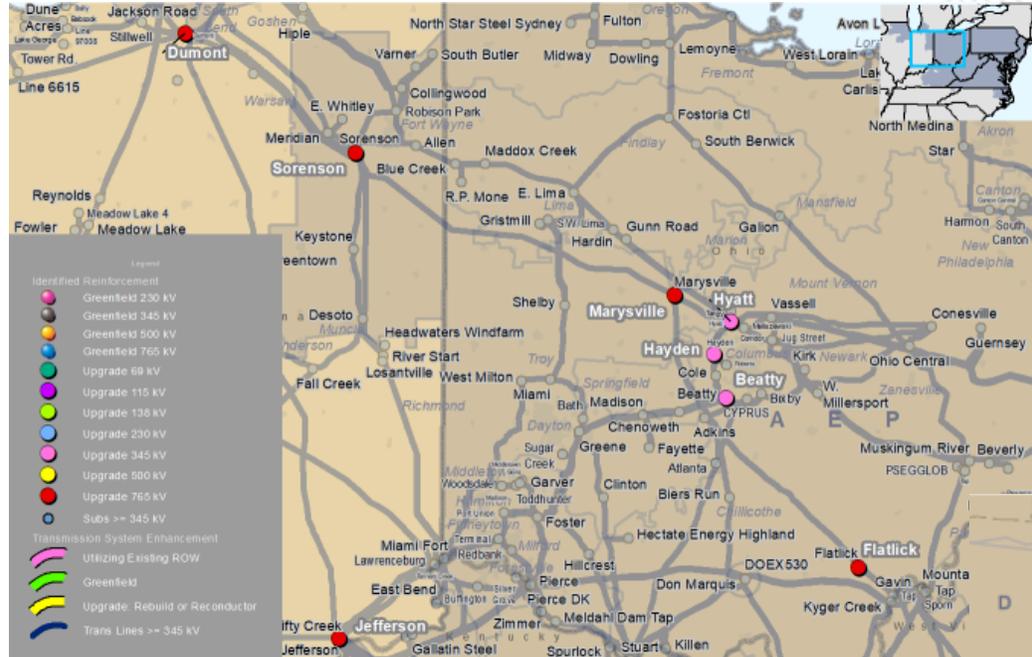


- All eleven regional proposals include new 765KV and/or 345KV greenfield transmission lines to serve the load pockets.
- Most proposals target to solve both Melissa area and Columbus area issues. Some proposals only target one of the areas.
- Four proposals have projected IS dates in 2030 and the rest proposals have projected IS dates beyond 2030.

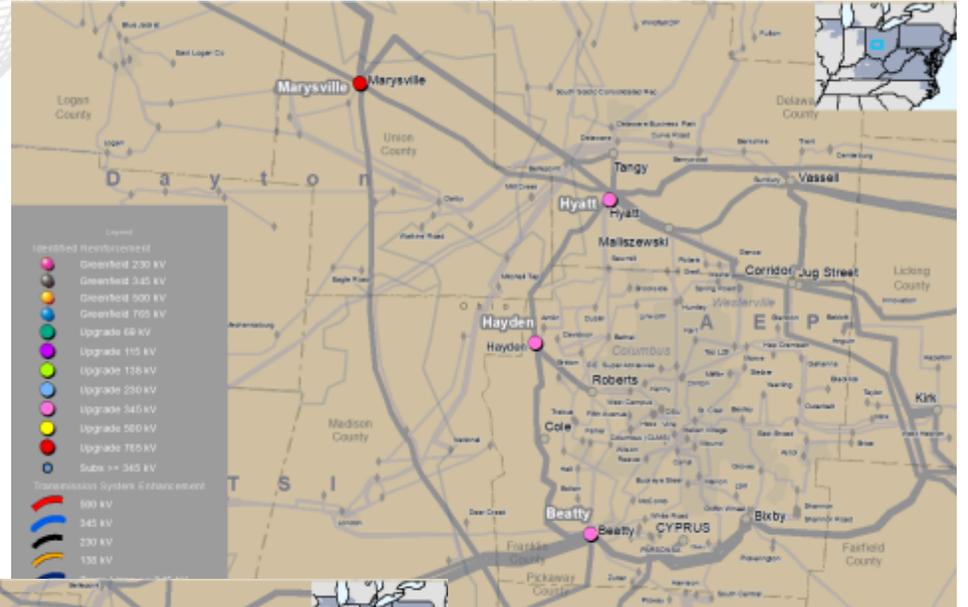
**Adding STATCOMs at various 765 and 345 Substations (241 needs to be combined with most of the PSEG proposals), while AEP STATCOM proposals mainly address the voltage issues in the Columbus area.**

Proposal ID #	Proposing Entity	Cost (\$)	Target area(s)	Projected ISD
241	PSEGRT/AES Ohio/PPL	143,361,000	Melissa area/Columbus area	03/2032
749	AEP	589,740,053	Melissa area/Columbus area	05/2030
517	AEP	736,606,322	Melissa area/Columbus area	05/2030
981	AEP	976,340,801	Melissa area/Columbus area	05/2030



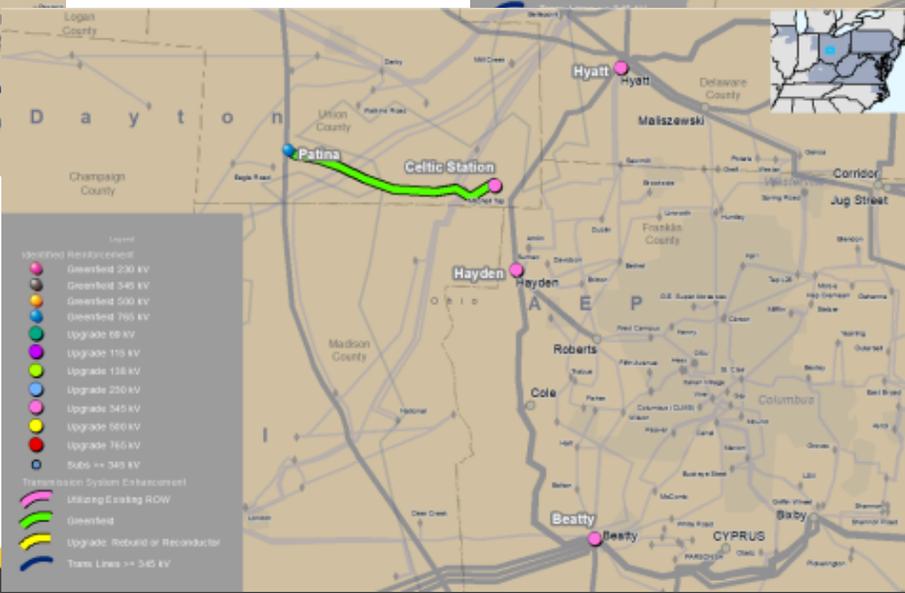


749



981

517



- Local proposals to fix the thermal overloads in AEP zone

Proposal ID #	Proposing Entity	Cost (\$)	Target area	Projected ISD
515	AEPSCT	\$35,744,507	AEP/Columbus area	11/2029
662	AEPSCT	\$14,816,619	AEP/Columbus area	01/2029
298	AEPSCT	\$7,814,003	AEP/Columbus area	08/2029
996	AEPSCT	\$70,644,239	AEP/Columbus area	04/2030
341	AEPSCT	\$37,375,449	AEP/Columbus area	04/2030
672	CNTLTM	\$105,924,602	AEP/Columbus area	06/2030
626	AEPSCT	\$7,366,906	AEP/Columbus area	05/2030
980	AEPSCT	\$7,274,968	AEP/Columbus area	03/2029
377	AEPSCT	\$29,625,065	AEP/Columbus area	09/2029
757	AEPSCT	\$63,200,332	AEP/Columbus area	04/2030
873	AEPSCT	\$58,565,111	AEP/Columbus area	05/2030
459	AEPSCT	\$27,284,855	AEP/Columbus area	05/2030
354	AEPSCT	\$15,786,044	AEP/Columbus area	04/2030
439	AEPSCT	\$15,174,096	AEP/Columbus area	01/2030

Results comparison for proposals with components with projected IS date in 2030

- 2030 Gen Deliv
- 2030 N-1-1 voltage

Proposal ID #	Proposing Entity	Cost (\$M)	Target area	Projected ISD
543+749+AEP Local Proposals*	CNTLTM+AEP	906.46	Melissa area/Columbus area	2030
543+981+ AEP Local Proposals*	CNTLTM+AEP	1,293.06	Melissa area/Columbus area	2030
239	TRNSRC/FE	1,492.41	Melissa area/Columbus area	2030
334	TRNSRC/FE	1,690.26	Melissa area/Columbus area	2030
907(2030 Components)	PSEGRT/AES Ohio/PPL	1,367.97	Melissa area/Columbus area	2030
619(2030 Components)	PSEGRT/AES Ohio/PPL	1,468.79	Melissa area/Columbus area	2030
51	TRNSRC/FE	1,051.22	Melissa area/Columbus area	2030
152 (2030 Components)	NXTMID/Exelon	1,465.75	Melissa area/Columbus area	2030
109(2030 Components)	NXTMID/Exelon	1,663.88	Melissa area/Columbus area	2030

\*AEP Local Proposals include: 515, 298, 996, 626, 873 and 439



# 2030 Gen Deliv Results

Proposal ID #	Proposing Entity	Proposal Cost (\$M)	# of Remaining overloads (14 total)	Approximate cost to resolve remaining Violations (\$M)	# of New overloads	Projected Cost (\$M)	Projected ISD
<b>543+749+AEP Local Proposals*</b>	CNTLTM+AEP	906.46	1	134.60	5 (3 138KV & 2 345KV)	1,041.06+	2030
<b>543+981+AEP Local Proposals*</b>	CNTLTM+AEP	1,293.06	1	134.60	5 (3 138KV & 2 345KV)	1,427.66+	2030
<b>51</b>	TRNSRC/FE	1,097.75	4	290.46	0	1,341.68	2030
<b>239</b>	TRNSRC/FE	1,492.41	2	106.38	0	1,598.79	2030
<b>334</b>	TRNSRC/FE	1,690.26	1	70.64	4 (138kV)	1,760.90+	2030
<b>907 (2030 Comp only)</b>	PSEGRT/AES Ohio/PPL	1,367.97	3	114.18	0	1,482.15	2030
<b>619 (2030 Comp only)</b>	PSEGRT/AES Ohio/PPL	1,468.79	3	114.18	0	1,582.97	2030
<b>152 (2030 Comp only)</b>	NXTMID/Exelon	1,465.75	1	70.64	1 (765KV terminal)	1,536.39+	2030
<b>109 (2030 Comp only)</b>	NXTMID/Exelon	1,663.88	1	70.64	1 (765KV terminal)	1,734.52+	2030

+ Unsolved overloads (related solution cost is not available)



# 2030 N-1-1 Voltage Results

## 2030 N-1-1 Voltage Performance in PJM West (AEP, ATSI, Dayton, DEOK)

Proposal ID	Submitter	Solve existing voltage issue?	Create new voltage issue?	Note
239	TRNSRC/FE	Yes	No	
51	TRNSRC/FE	Yes	No	
334	TRNSRC/FE	Yes	No	
543	CNTLTM	No	Yes	Not solve existing voltage issues in Columbus area and Melissa wide area, new voltage drop at 345 kV South Bird sub
543+749+AEP Local Proposals*	CNTLTM+AEPSCT	No	No	Not solve existing voltage issue at 138 kV Melissa wide areas
543+981+AEP Local Proposals*	CNTLTM+AEPSCT	No	No	Not solve existing voltage issue at 138 kV Melissa wide areas
152 (2030)	NXTMID/Exelon	No	Yes	Not solve existing voltage drop issue at Sorenson, Marysville, Vassell, etc. New voltage drop issue at proposed 765 kV substations Mateville, Buckeye Lake, etc
109 (2030)	NXTMID/Exelon	No	Yes	Not solve existing voltage drop issue at Sorenson, Marysville, Vassell, etc. New voltage drop issue at proposed 765 kV substations Mateville, Buckeye Lake, etc
907 (2030) +241	PSEGRT/AES Ohio/PPL	No	Yes	Not solve existing voltage issue in Columbus (Marysville, Vassell, Maliszewski, etc.) area and Melissa 138 kV wide areas, and created lots of new 345 kV and 138 kV voltage drop issues in Columbus and Melissa areas
619 (2030) +241	PSEGRT/AES Ohio/PPL	No	Yes	Not solve existing voltage issue in Columbus (Marysville, Vassell, Maliszewski, etc.) and Melissa 138 kV wide areas, and created lots of new 345 kV and 138 kV voltage drop issues in Columbus and Melissa areas

The best performing proposal for 2030 needs: Proposal #51 (part of 570) and Proposal #239

- Proposal #51 (part of 570) has the least submitted cost; it is the best performing solution for 2030.
- Both 239 and 334 perform well in the 2030 N-1-1 voltage test. However, 334 causes additional overloads in 2030 Gen Deliv test and it has higher cost than 239.

Results comparison for proposals with components with projected IS date in 2030

- 2032 Gen Deliv
- 2032 N-1 voltage

Proposal ID #	Proposing Entity	Cost (\$M)	Target area	Projected ISD
543+749+AEP Local Proposals*	CNTLTM+AEP	906.46	Melissa area/Columbus area	2030
543+981+AEP Local Proposals*	CNTLTM+AEP	1,293.06	Melissa area/Columbus area	2030
239	TRNSRC/FE	1,492.41	Melissa area/Columbus area	2030
334	TRNSRC/FE	1,690.26	Melissa area/Columbus area	2030
907+241	PSEGRT	1,984.54	Melissa area/Columbus area	2032
619+241	PSEGRT	2,086.54	Melissa area/Columbus area	2032
570	TRNSRC/FE	2,775.19	Melissa area/Columbus area	2031
152	NXTMID/Exelon	2,921.12	Melissa area/Columbus area	2031
109	NXTMID/Exelon	3,322.00	Melissa area/Columbus area	2031

## 2032 Generator Deliverability Performance in PJM West (AEP, ATSI, Dayton, DEOK)

Proposal ID	Submitter	Unsolved issues		Create new issues		Performance
		765 kV	345 kV	765 kV	345 kV	
109	NXTMID/Exelon	0	13	0	1	high
152	NXTMID/Exelon	0	17	0	0	high
570	TRNSRC/FE	0	17	0	0	high
334	TRNSRC/FE	0	28	0	2	Mid-high
239	TRNSRC/FE	0	33	0	1	Mid-high
619+241	PSEGRT/AES Ohio/PPL	1	32	0	3	Mid-low
907+241	PSEGRT/AES Ohio/PPL	1	35	0	3	Mid-low
543+749+AEP Local Proposals*	CNTLTM+AEP	1	40	0	0	Mid-low
543+981+AEP Local Proposals*	CNTLTM+AEP	0	32	1	3	Mid-low

## 2032 N-1 Voltage Performance in PJM West (AEP, ATSI, Dayton, DEOK)

Proposal ID	Submitter	Solve existing voltage issue?	Create new voltage issue?	Note
109	NXTMID/Exelon	Yes	No	
152	NXTMID/Exelon	Yes	No	
570	TRNSRC/FE	Yes	No	
334	TRNSRC/FE	Yes	No	
239	TRNSRC/FE	Yes	No	
619+241	PSEGRT/AES Ohio/PPL	No	Yes	Not solve existing voltage (Mag. & Drop) issues at Vassell, Maliszewski, Marysville, and Melissa area. New voltage (Mag. & drop) issues at 138 kV Melissa wide area and 345 kV Madison Ext substation
907+241	PSEGRT/AES Ohio/PPL	No	Yes	Not solve existing voltage (Mag. & Drop) issues at Vassell, Maliszewski, Marysville, and Melissa area. New voltage (Mag. & drop) issues at 138 kV Melissa wide area and 345 kV Madison Ext substation
543+749+AEP Local Proposals*	CNTLTM+AEP	No	Yes	Not solve existing voltage drop issues at 138 kV Melissa wide area, new voltage (Mag. & Drop) issues at proposed 345 kV South Bird sub
543+981+AEP Local Proposals*	CNTLTM+AEP	No	Yes	Not solve existing voltage drop issues at 138 kV Melissa wide area, new voltage (Mag. & Drop) issues at proposed 345 kV South Bird sub

- Proposals: 570,152,109 show better performance
- Proposals: 239 and 334 are next
- Proposal 109 has the highest submitted cost and longest mileage of greenfield transmission lines. But without performance edge compared to proposals 570 or 152.

**Shortlist:** Considering both 2030 and 2032 performance, current proposal performance ranking (pending further evaluation) is as follows;

1. Proposal #570
2. Proposal #152
3. Proposal #239

- Finalize Transfer studies/sensitivity studies
- Finalize Construction/Risk/Cost review
- 1<sup>st</sup> Read targeted for December TEAC



# 2025 RTEP Window 1

## Preliminary Constructability and Cost Risk Assessment

## PJM Risk Assessment Criteria

Risk Assessment	Cost Estimate Risks	Cost Containment Risk	Schedule Risks	Constructability Risks	ROW/Land Acquisition Risk	Outage Coordination Risk	Proposing Entity Experience & Capability Risks
Low	Proposal is within 0-20% of Independent Estimate	Hard Cost Cap (Project cost capped with no cost recovery above binding cost cap) with minimal exclusions.	Ratings assessed based on independent assessment of proposed in-service dates, and assessment of significant schedule risks such as such as permitting and constraint mitigation, long-lead material procurement, land/ROW acquisition, construction complexity.	Ratings assessed based on independent assessment of the number and severity of constructability risks assessed for the proposed project scope, such as permitting and constraint mitigation, land/ROW acquisition, construction complexity.	Pure Brownfield Rebuild/Reconductor/New Build within existing ROW (or property already owned by entity)	Ratings assessed based on PJM's assessment of complexity, impact and duration of outages required for development, including consideration of outage coordination plans proposed.	Entity has demonstrated significant experience & capability of developing and operating proposed facilities
Low-Medium	Proposal is within 21-30% of Independent Estimate	Mix of Hard/Soft caps on Project components			Mostly brownfield with some greenfield (i.e. Uses/Overlaps existing ROW but requires expansion or some new greenfield)		Entity has demonstrated limited experience & capability of developing and operating proposed facilities
Medium	Proposal is within 31-40% of Independent Estimate	Soft Caps (No direct cap on Project costs, but indirect caps via reductions to ROE, and/or incentives for cost overruns).			Moderate Mix of Green and Brownfield (i.e. Uses/Overlaps existing ROW but requires expansion or some new greenfield)		Entity has no experience operating proposed facilities, but has demonstrated some experience with developing proposed facilities.
Medium-High	Proposal is within 41-50% of Independent Estimate	Minimal cost caps and/or excessive exclusions			Mostly Greenfield with some Brownfield (i.e. Uses/Overlaps existing ROW but requires expansion or some new greenfield) OR Parallels existing ROW for entire alignment with no overlaps.		Entity has no experience developing and operating proposed facilities, but has provided a detailed & effective plan
High	Proposal is greater than 50% of Independent Estimate	No cost containment			Pure Greenfield		Entity has no experience developing and operating proposed facilities and has not provided a detailed & effective plan



# South Regional Cluster Projects

## South Regional Projects - Preliminary Constructability Risk Assessment

Proposal ID	Proposing Entity	Proposal Description	Proposal Cost Estimates	Independent Cost Estimates	Cost Estimate Risks	Cost Containment Risks	Schedule Risks	Constructability Risks	ROW/Land Acquisition Risks	Outage Coordination Risks	Proposing Entity Experience & Capability Risk	Proposed ISD	New HVDC (Miles)	New 765 kV (Miles)	New 500 kV (Miles)	New EHV Total (Miles)	New EHV Greenfield (Miles)
275	VEPCO	HVDC backbone - Portfolio 1A	\$ 4,819,506,867.00	\$5,013,610,621.06	Low	Medium-High	Low-Medium	Low-Medium	Low	Medium	Medium-High	6/1/2032	185	0	32.05	217.05	0
705	VEPCO	765kV backbone - Portfolio 2A	\$ 2,864,733,308.00	\$2,532,935,577.59	Low	Medium-High	Medium-High	Medium-High	High	Medium	Medium	6/1/2032	0	152.3	95.01	247.31	210.8
616	VEPCO	500kV backbone - Portfolio 3	\$ 2,349,256,319.00	\$2,169,827,586.97	Low	Medium-High	Medium	Medium	Medium	Low-Medium	Low	6/1/2032	0	0	266.58	266.58	135.21
260	LS Power	Virginia Transmission Project	\$ 3,515,948,928.00	\$3,180,564,543.79	Low	Medium	High	High	High	Low	Low	6/1/2030	0	0	468.8	468.8	468.8
331	Transource/FE	Virginia Area Seven Year Solution 1	\$ 2,895,324,611.26	\$3,156,930,795.42	Low	Medium	Medium-High	Medium-High	Medium-High	Medium	Low	6/1/2031	0	211.2	100.5	311.7	311.7
781	Transource/FE	Virginia Area Seven Year Solution 2	\$ 1,986,446,707.70	\$2,128,125,256.29	Low	Medium	Medium-High	Medium-High	Medium-High	Low-Medium	Low	10/1/2032	0	137.6	100.5	238.1	238.1
938	Transource/FE	Dominion Regional Solution	\$ 3,426,930,565.00	\$3,600,488,746.56	Low	Medium	High	Medium-High	High	Low	Low	6/1/2030	0	374	36	410	410



## MAAC - PPL Cluster Projects - Preliminary Constructability Risk Assessment

Proposal ID	Proposing Entity	Proposal Description	Proposal Cost Estimates	Independent Cost Estimates	Cost Estimate Risks	Cost Containment Risks	Schedule Risks	Constructability Risks	ROW/Land Acquisition Risks	Outage Coordination Risks	Proposing Entity Experience & Capability Risk	Proposed ISD	New HVDC Ckt. Miles	New 765 kV Ckt. Miles	New 500 kV Ckt. Miles	New EHV Ckt. (Total Miles)	New EHV Ckt. (Greenfield Miles)
853	PPL	Portfolio Proposal 3: Year 2032 + 4 GW Area 229 Essential Reliability Solution	\$ 797,944,850.73	\$ 917,204,057.00	Low-Medium	Low	Low	Low	Low-Medium	Low-Medium	Low	6/1/2030	0	0	93	93	42
290	PPL	Siegfried - Drakestown 500 kV line (PA segment)	\$ 88,163,848.17	\$ 32,437,177.00	Low	Low	Low	Low	Low	Low	Low	5/1/2030	0	0	24	24	0
552	PPL Translink	Siegfried - Drakestown 500 kV line (brownfield NJ segment route)	\$ 194,253,314.23	\$ 185,174,055.00	Low	High	Medium	Medium	Medium-High	Low	Low	5/1/2030	0	0	20	20	20
771	NextEra	Montour to Slykerville Reinforcement	\$ 539,254,404.00	\$ 637,670,232.00	Low-Medium	Medium	Medium	Medium	Medium-High	Low	Low	12/1/2030	0	0	26	26	26
871	NextEra	Blockhouse Creek to Susquehanna and Montour to Stoney Creek	\$ 1,136,379,661.00	\$1,408,256,348.08	Low-Medium	Medium	Medium	Medium	High	Low	Low	12/1/2030	0	0	65	65	65
20	LS Power	Tri-Segment 500kV Transmission Project	\$ 494,286,189.00	\$ 691,715,465.00	Medium	Medium	Medium	Medium	Medium-High	Low	Low	6/1/2030	0	0	46.3	46.3	46.3



## MAAC Regional Projects - Preliminary Constructability Risk Assessment

Proposal ID	Proposing Entity	Proposal Description	Proposal Cost Estimate	Independent Cost Estimates	Cost Estimate Risks	Cost Containment Risks	Schedule Risks	Constructability Risks	ROW/Land Acquisition Risks	Outage Coordination Risks	Proposing Entity Experience & Capability Risk	Proposed ISD	New HVDC (Miles)	New 765 kV (Miles)	New 500 kV (Miles)	New EHV Total (Miles)	New EHV Greenfield (Miles)
237	NextEra/Exelon	Kammer to Juniata	\$ 1,738,591,455.00	\$2,005,587,077.59	Low-Medium	Medium	Medium	Medium	Medium-High	Low	Low-Medium	6/1/2031	0	222	1.2	223.2	223.2
687	NextEra/Exelon	Kammer to Juniata to Spicewood 765 kV	\$ 3,238,741,727.00	\$3,861,778,316.00	Low-Medium	Medium	Medium-High	Medium-High	Medium-High	Low	Low-Medium	12/1/2031	0	322	27.2	349.2	349.2
578	MAITLIT	PPL Load Addition Proposal - Keystone - Susquehanna Dual 500 kV Single Circuits with Jack's Mt.	\$ 2,418,261,233.00	\$2,594,335,957.31	Low	Medium-High	Medium-High	Medium-High	Medium-High	Medium	Low	6/1/2030	0	0	408	408	408



## West Regional Projects - Preliminary Constructability Risk Assessment

Proposal ID	Proposing Entity	Proposal Description	Proposal Cost Estimate	Independent Cost Estimate	Cost Estimate Risks	Cost Containment Risks	Schedule Risks	Constructability Risks	ROW/Land Acquisition Risks	Outage Coordination Risks	Proposing Entity Experience & Capability Risk	Proposed ISD	New HVDC (Miles)	New 765 kV (Miles)	New 345 kV (Miles)	New EHV Total (Miles)	New EHV Greenfield (Miles)
239	Transource/FE	345 kV Solution Phase 1 and Phase 2	\$ 1,492,405,528.34	\$2,002,917,563.00	Medium	Medium	Medium	Medium	Medium-High	Low	Low	6/1/2030	0	119	69.6	188.6	132.5
334	Transource/FE	West Glade Run 765/345 kV Solution	\$ 1,690,256,560.00	\$2,359,183,232.00	Medium	Medium	Medium	Medium	Medium-High	Low	Low	6/1/2030	0	119	97.3	216.3	177.2
570	Transource/FE	Ohio Seven Year Solution	\$ 2,775,191,200.08	\$4,025,991,290.00	Medium-High	Medium	Medium	Medium	Medium-High	Low	Low	10/1/2031	0	291.5	35	326.5	277.4
109	NextEra/Exelon	Muckshaw - Johnstown 765kV	\$ 3,321,996,359.00	\$4,704,550,478.00	Medium	Medium	Medium-High	Medium-High	High	Low	Low-Medium	6/1/2031	0	290	61.5	351.5	351.5
152	NextEra/Exelon	Gwynneville - Johnstown 765kV	\$ 2,921,116,446.00	\$4,539,278,605.00	Medium-High	Medium	Medium-High	Medium-High	High	Low	Low-Medium	12/1/2031	0	216	65	281	281
619 & 241	PSEGRT/AES Ohio/PPL	345kV Solution + 765kV Solution (Alternative) + STATCOM Solution (Add-on)	\$ 2,086,010,642.45	\$2,377,558,024.00	Low-Medium	Low-Medium	Medium	Medium-High	High	Low-Medium	Medium	6/1/2032	0	145.8	28.7	174.5	174.5

# TPL-001.5 P5: Submitted CAPs First Read

- As previously presented during the August 2024 TEAC, PJM has determined that the P5 CAPs will be exempted as reliability violations on transmission substation equipment (OA, Schedule 6, section 1.5.8(p)). The construction responsibility for and ownership of each project shall be designated to the respective incumbent Transmission Owner.
- The solution to the violations resulting from lack of redundancy, lack of alarming, or DC supply issues including monitoring and alarming, is to incorporate local redundancy or implement needed alarms/protection/DC supply enhancements within existing substation equipment.
- PJM is presenting here a summary of P5 CAPs which were identified by TOs to mitigate violations from the 2024 Series RTEP (2029 SUM/WIN/LL cases).
  - PJM does not intend to post detailed contingency and substation information regarding the violations and CAPs due to CEII considerations.
- All expected P5 CAPs have been submitted by PJM Transmission Owners by the July 1<sup>st</sup> deadline. PJM is presenting the second and final batch of CAPs from the 2024 Series RTEP for first read today.
- The NERC Implementation Plan involving the development of CAPs for Category P5 planning events is provided on the following slide.

Governmental Authorities approve TPL-001-5 & Implementation Plan.

## TPL-001-5 becomes effective.

- Changes to R1, R2, R4, and Table 1 enforceable.
- Requirement R2, Part 2.7 not enforceable for non-redundant components of a Protection System identified in Table 1 Category P5, footnote 13, items b, c, and d.
- R3, R5, R6, R7, R8 unchanged.
- *The first annual Planning Assessment shall be completed in accordance with TPL-001-5, but without CAPs for revised P5, by this date.*



CAPs required for all failures to meet Table 1 performance requirements, but the planned System is not required to meet the performance requirements in Table 1 for category P5 events only.

- *All Planning Assessment(s) completed after this date shall include CAPs for failures to meet Table 1 performance requirements for the revised P5, when identified.*

TPL-001-5 fully enforceable.

**Process Stage:** First Read

**Criteria:** Baseline Analysis

**Assumption Reference:** 2029 RTEP assumption

**Model Used for Analysis:** 2029 Summer, Winter & LL RTEP case

**Proposal Window Exclusion:** Substation Exclusion

**Problem Statement:** In 2029 RTEP Summer, Winter & LL cases, multiple thermal and voltage violations are observed due to multiple P5 contingencies.

**Proposed Solution:**

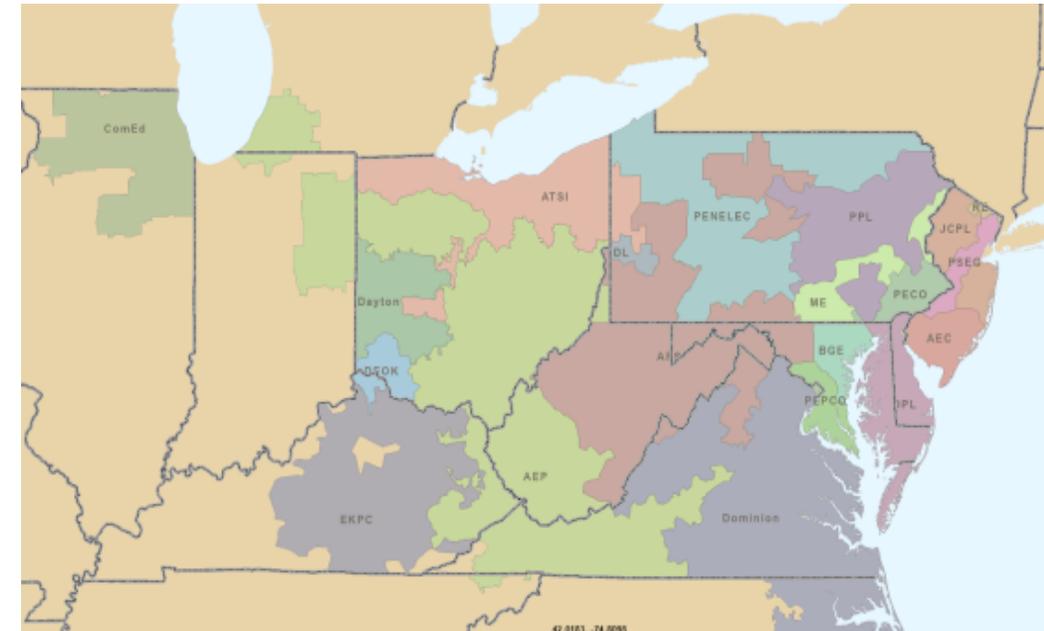
- TOs have submitted P5 mitigation projects that include upgrades listed below designed to eliminate the P5 contingency:
  - Battery Monitoring
  - Relay Upgrades
  - Trip Coil Monitoring

**Transmission Estimated Cost:** \$35.759M

**Ancillary Benefits:** Installation of redundant equipment will prevent outage scenarios and improve reliability of the transmission system.

**Required in-service date:** 6/1/2029

**Projected in-service date:** 7/1/2029





# ACE/APS/ATSI/BGE/DPL/JCPL/ME/PECO/PENELEC/ComEd P5 CAPs: Baseline

TO	Total Cost (\$)	# of Substations By kV level				
		115	138	230	345	500
AEC	\$ 120,000.00		5	2		1
APS	\$ 12,789,217.06		6			7
ATSI	\$ 2,345,681.00				3	
BGE	\$ 340,000.00	3		2		2
DPL	\$ 150,000.00		3	6		1
JCPL	\$ 5,035,000.00			7		
ME	\$ 4,450,500.00	1		4		2
PECO	\$ 525,000.00		3	13		3
PENELEC	\$ 9,303,672.04	2		4	2	1
ComEd	\$ 700,000.00				6	



# 2025 RTEP Window 1

## Scenario 5 & 6 Update

- At the May 2025 TEAC, PJM Agreed to analyze the following 7 Year (2032) Scenarios
  - Scenario 3 (2032 Base case): Existing generation, GIA/ISA generation, Suspended ISA generation, Fast Lane Queue, TC1 queue, TC2 queue (with RRI), 7500MW NJ OSW, Q1 deactivations, withdrawn queues
  - Scenario 4: 2032 Base case + Remove NJ/DE OSW (assume delays beyond 2032)
  - **Scenario 5: 2032 base case + Policy deactivations**
  - **Scenario 6: 2032 base case with Battery dispatched**
- Scenarios 5 and 6 are the focus of this update

- Scenario 5: 2032 Base case + (Federal and State) Policy deactivations
  - Over 12,000 MW of generation at risk of deactivation compared to the 2032 Base case
- Generations were modeled based on a Capacity Expansion (CapEx) study, taking into account;
  - Federal and State Policy deactivation
  - LOLE of 1 in 10
  - NJ and MD Offshore Wind will be in service by 2032
- Powerflow cases developed with installed capacity in alignment with CapEx
  - Scaled existing and future generation as necessary
- Study is in progress

- Scenario 6: 2032 base case with battery dispatched
- Developed SUM and WIN powerflow models by dispatching batteries
  - SUM: Batteries were dispatched over 8,000 MW (based on battery CIR MWs available for 8 hours)
  - WIN: Batteries were dispatched over 5,000 MW (based on battery CIR MWs available for 12 hours)
  - Remainder of PJM Generation scaled down to maintain power balance
- Study is in progress

- Complete simulations and analysis
- Compare and evaluate scenario results
- Present final results at a future TEAC (Targeting Dec 2025/Jan 2026)

Facilitator:

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Secretary:

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Wenzheng Qiu, [Wenzheng.Qiu@pjm.com](mailto:Wenzheng.Qiu@pjm.com)

## Reliability Analysis Update



Member Hotline

(610) 666 – 8980

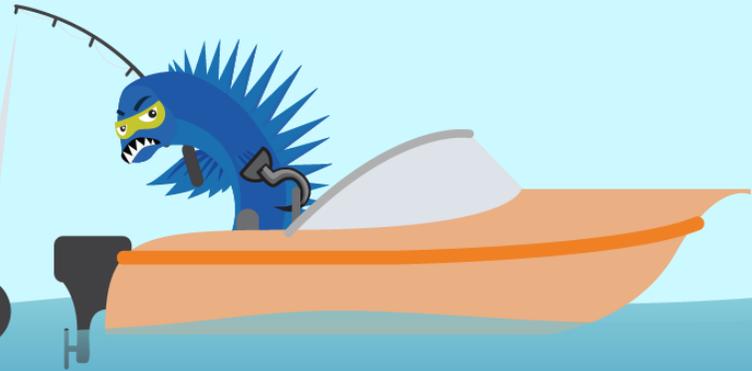
(866) 400 – 8980

[custsvc@pjm.com](mailto:custsvc@pjm.com)

Version No.	Date	Description
1	Oct. 30, 2025	<ul style="list-style-type: none"> <li>Initial slides posted</li> </ul>
2	Oct. 30, 2025	<ul style="list-style-type: none"> <li>Updated NextEra proposals to show jointly submitted with Exelon</li> </ul>
3	Nov. 3, 2025	<ul style="list-style-type: none"> <li>Slide #25, Corrected the projected ISD and cost</li> <li>Slide #94, refined the statement</li> <li>Move Slide #105 after Slide #100</li> <li>Slide #102: Add target area(s) column into the table</li> <li>Slides #97 and #98, corrected the subtitles</li> <li>Inserted Slide #118 - MAAC PPL Cluster preliminary constructability risk matrix</li> <li>Slides #128 and #129, refined the statement</li> </ul>
4	Nov. 4, 2025	<ul style="list-style-type: none"> <li>Slide #106, Corrected costs</li> <li>Slide #112, Updated proposal ID column</li> </ul>

**PROTECT THE  
POWER GRID**

**THINK BEFORE  
YOU CLICK!**



**BE ALERT TO  
MALICIOUS PHISHING  
EMAILS**



**Report suspicious email activity to PJM.  
Call (610) 666-2244 or email [it\\_ops\\_ctr\\_shift@pjm.com](mailto:it_ops_ctr_shift@pjm.com)**

# Appendix

## Proposal Maps

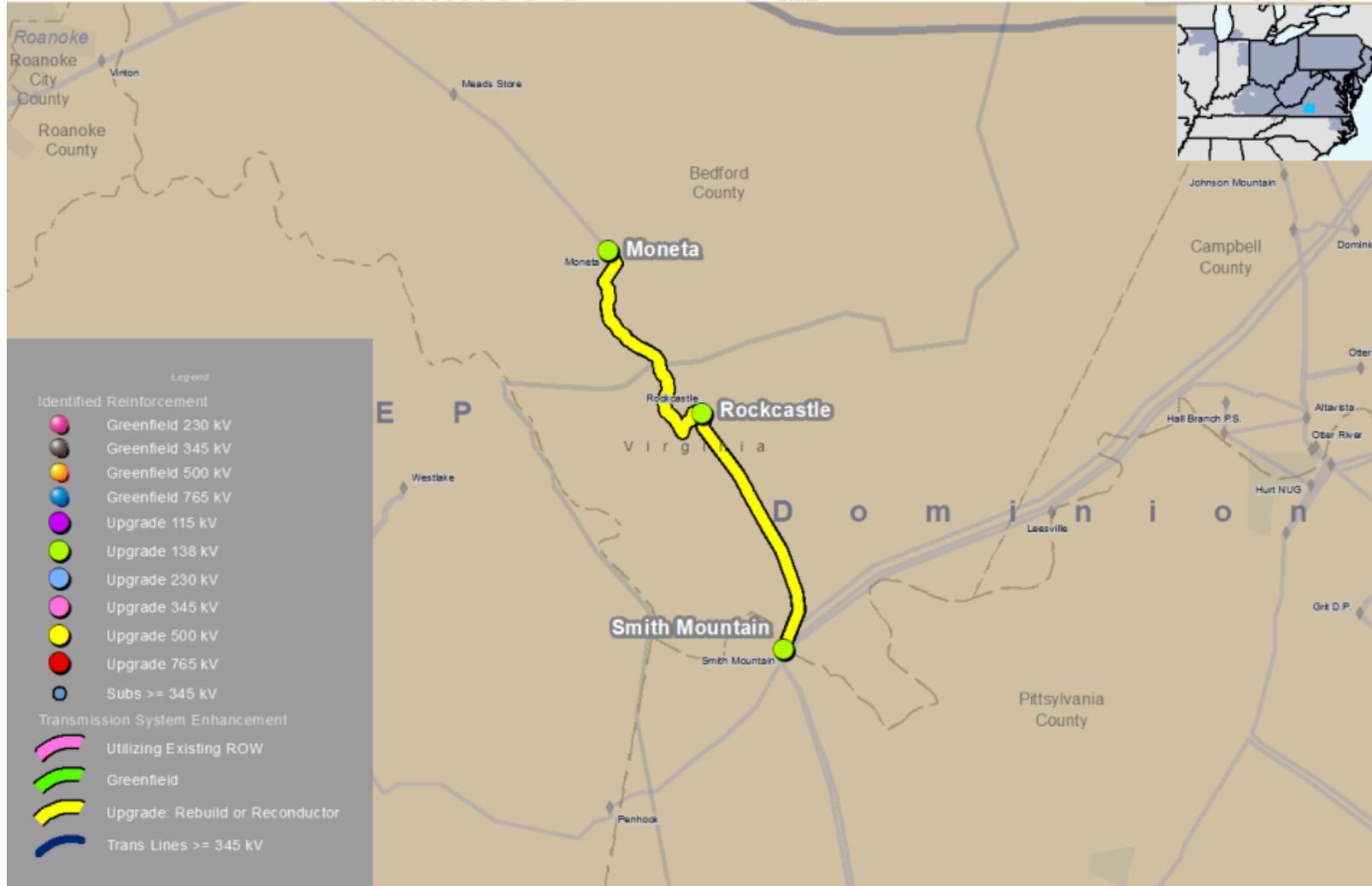
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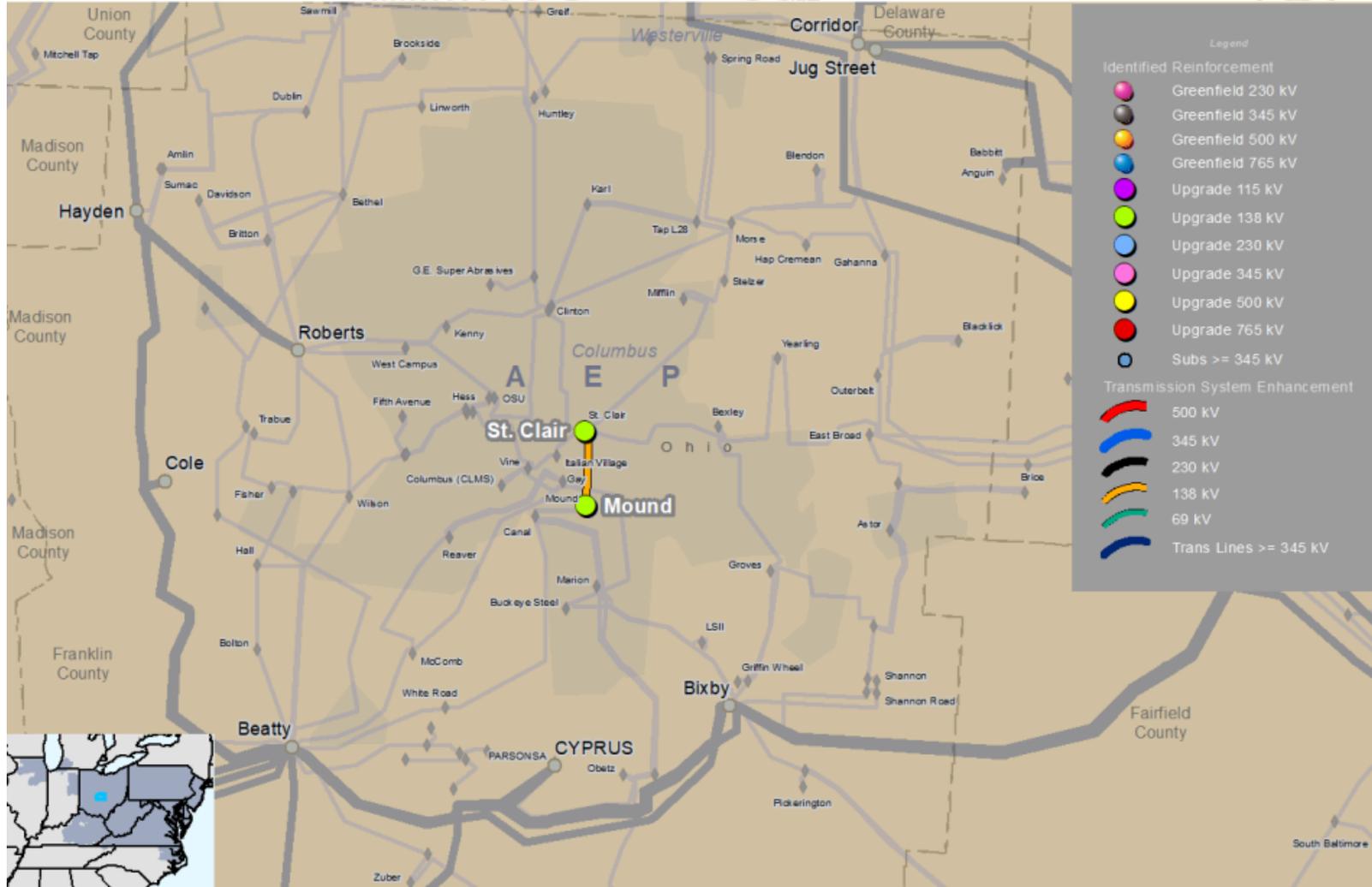
# AEPSCT (AEP)



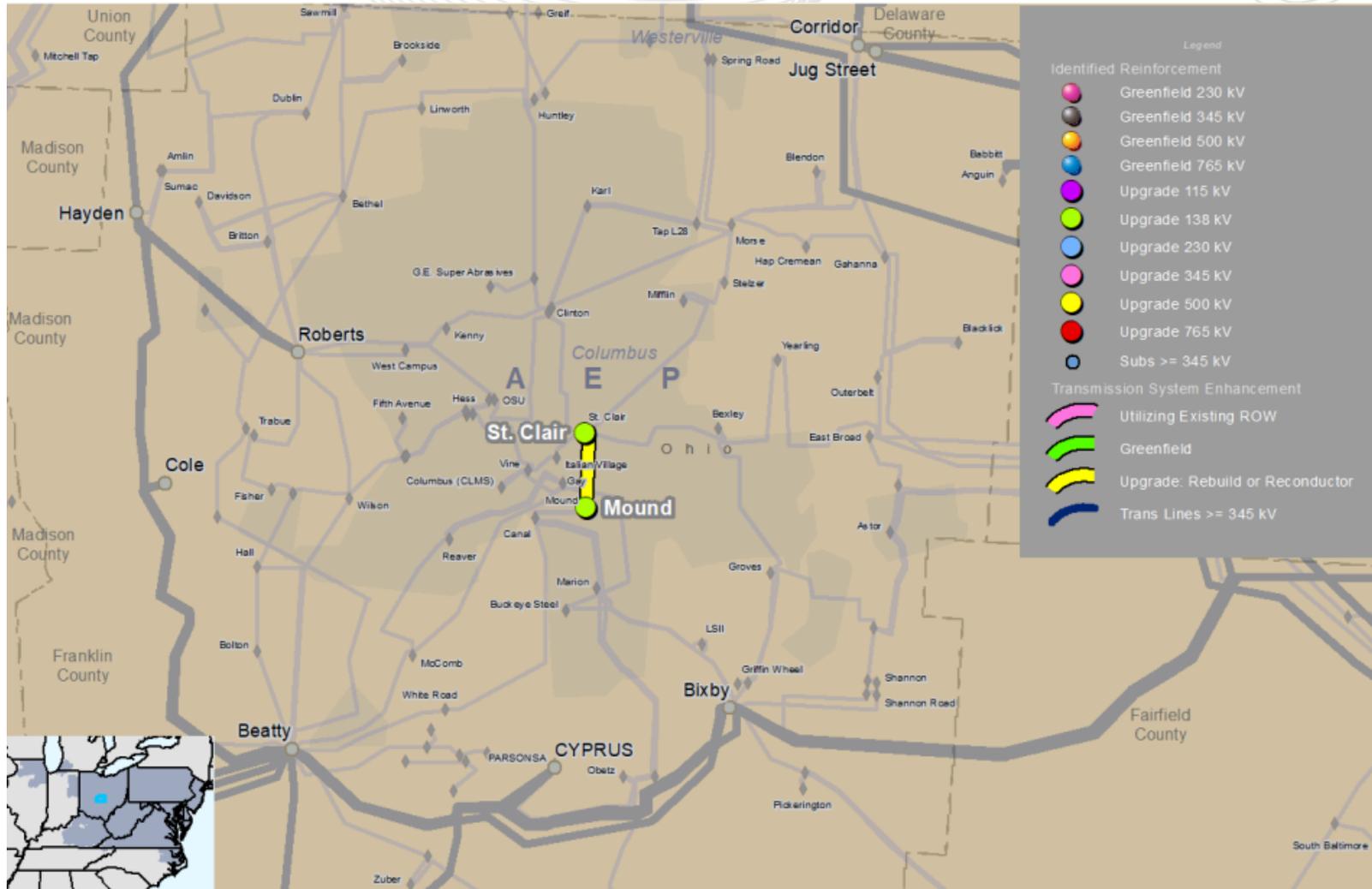
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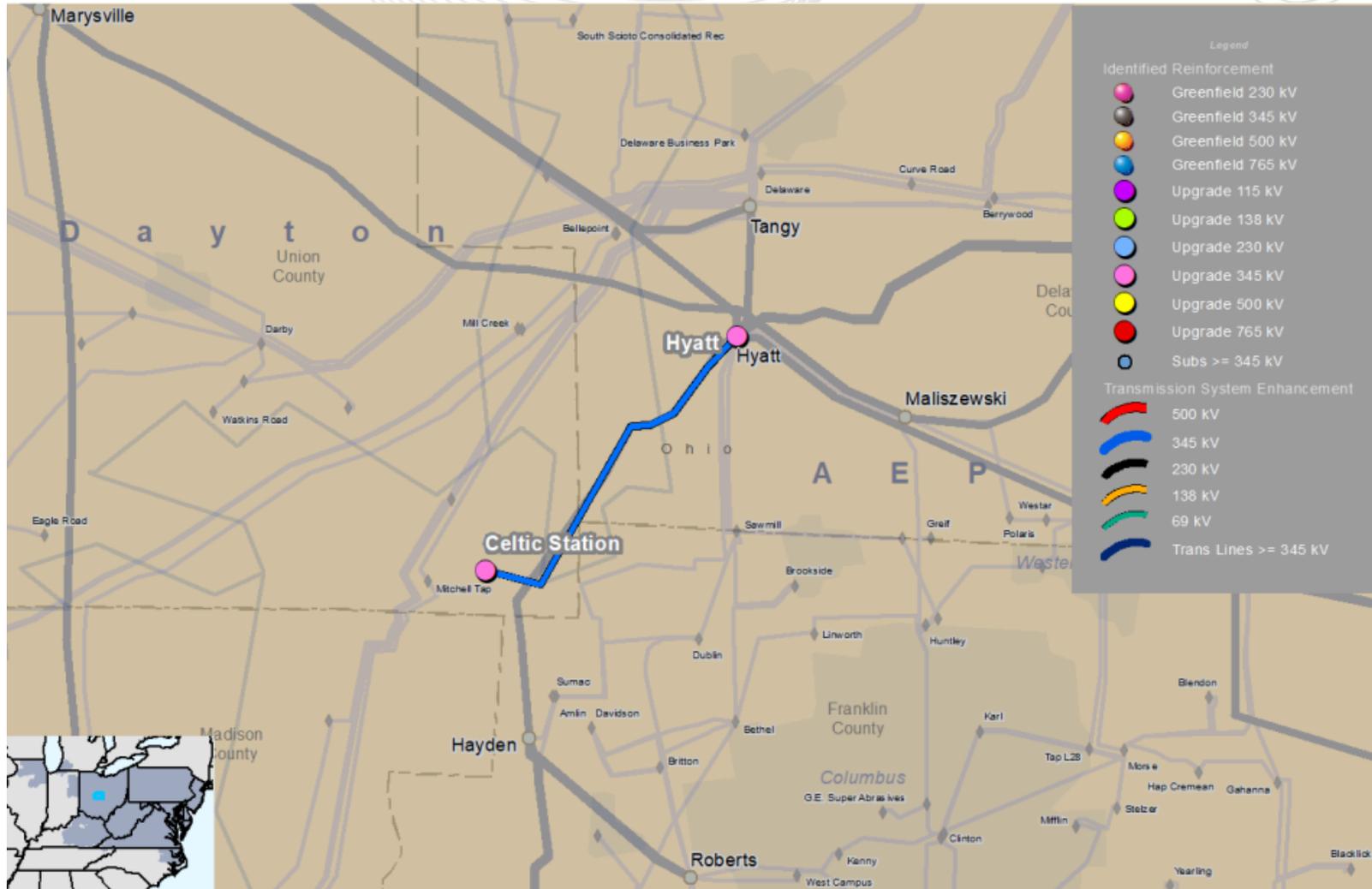
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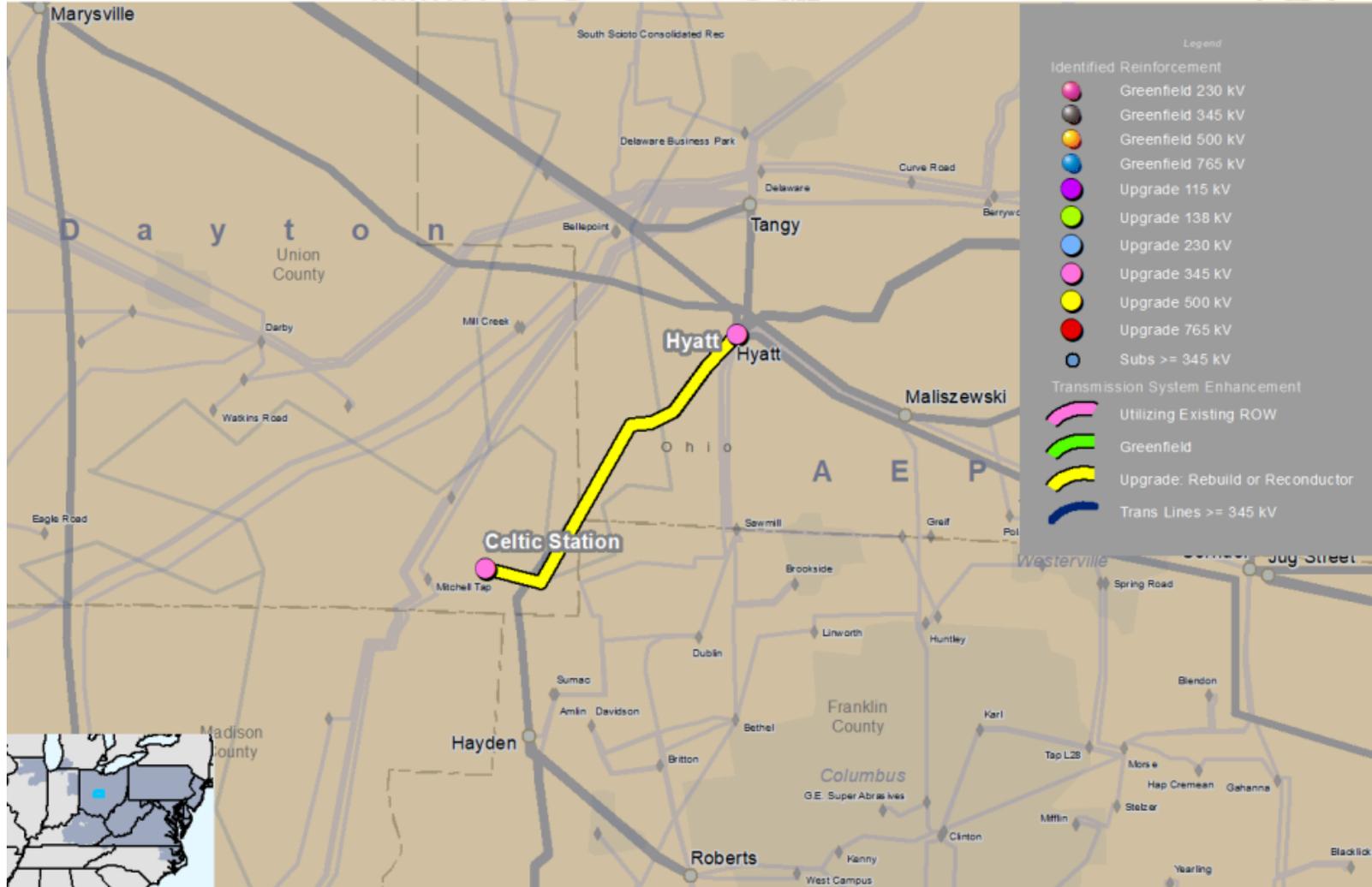
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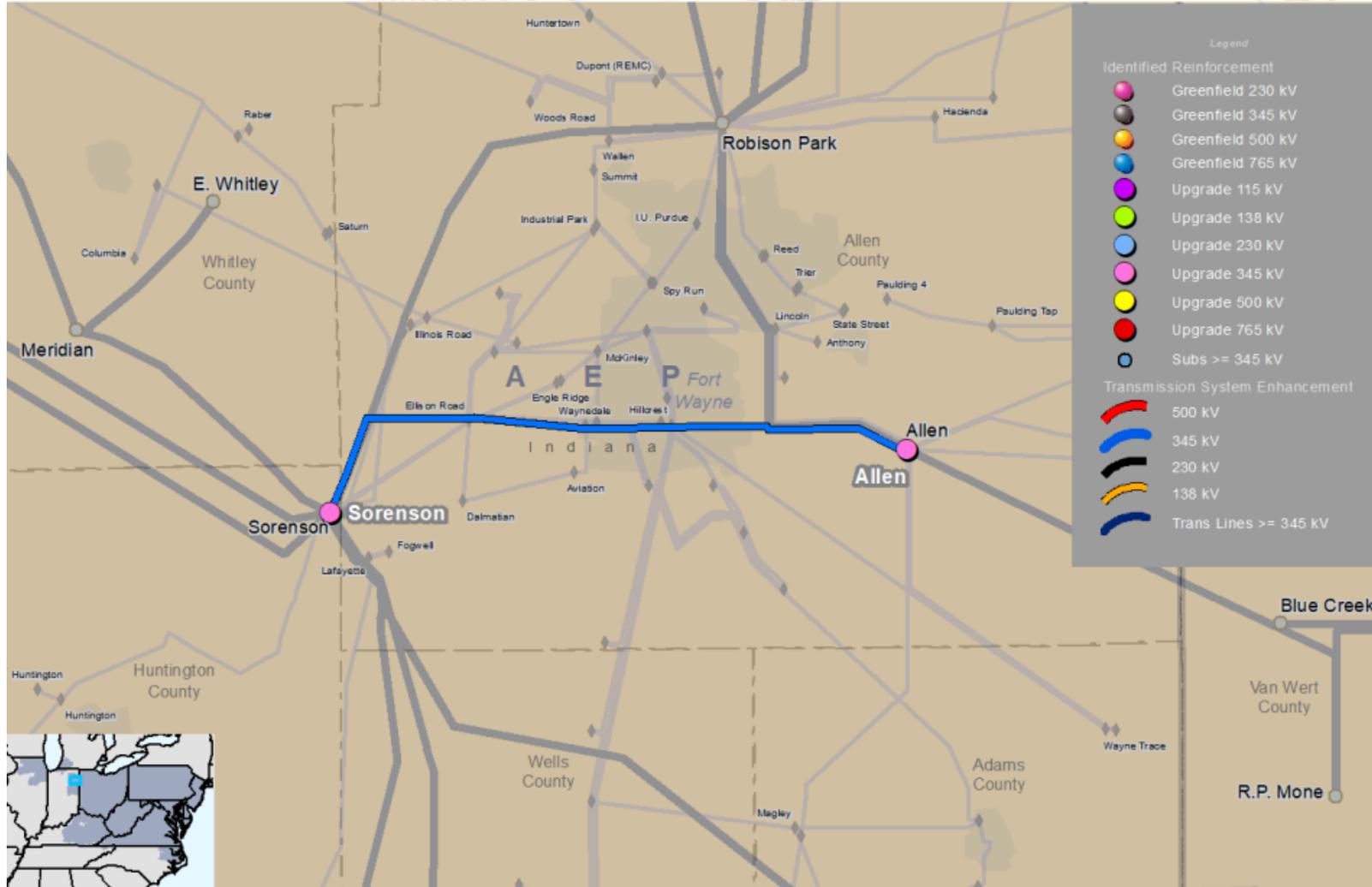
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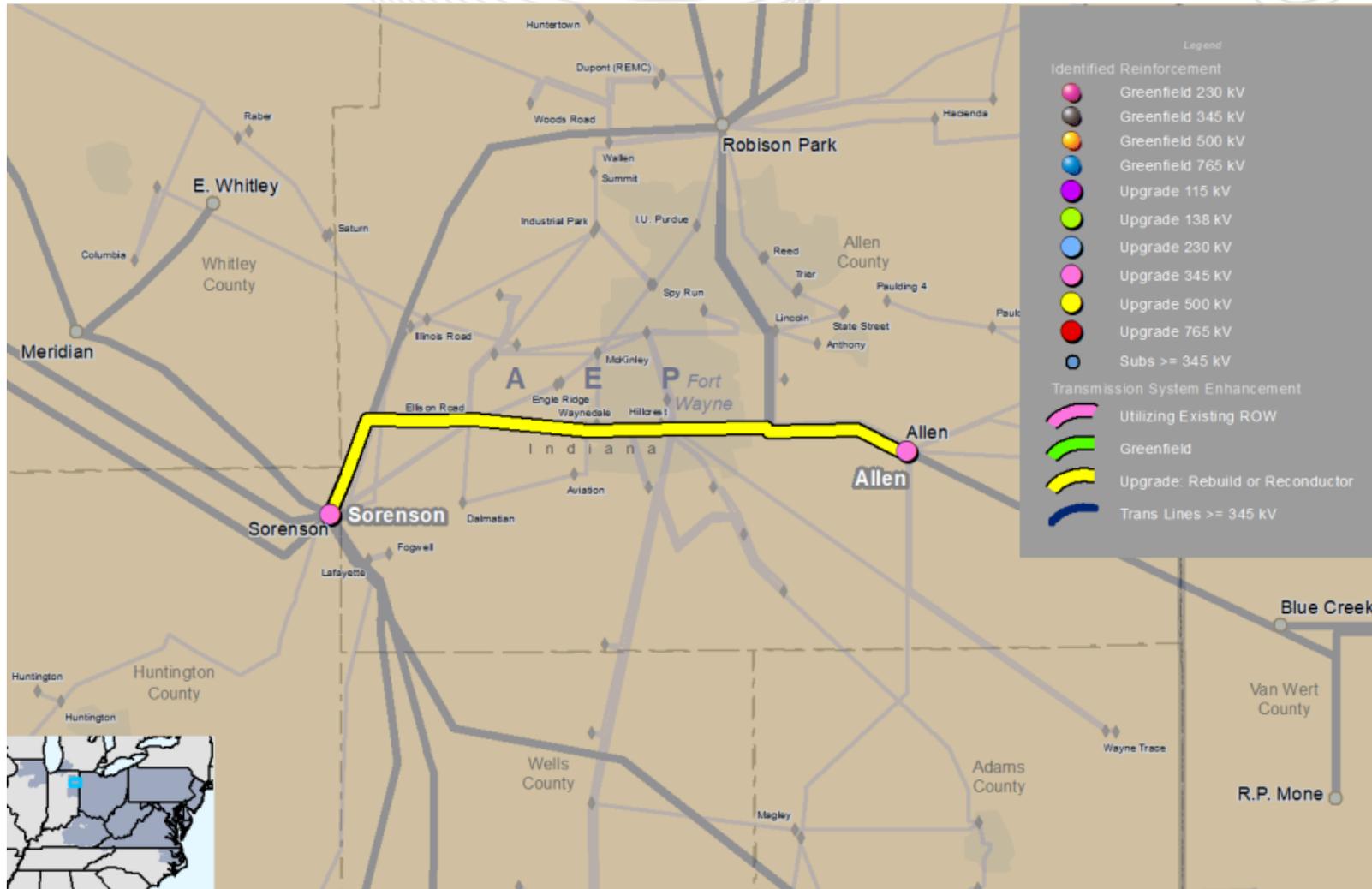
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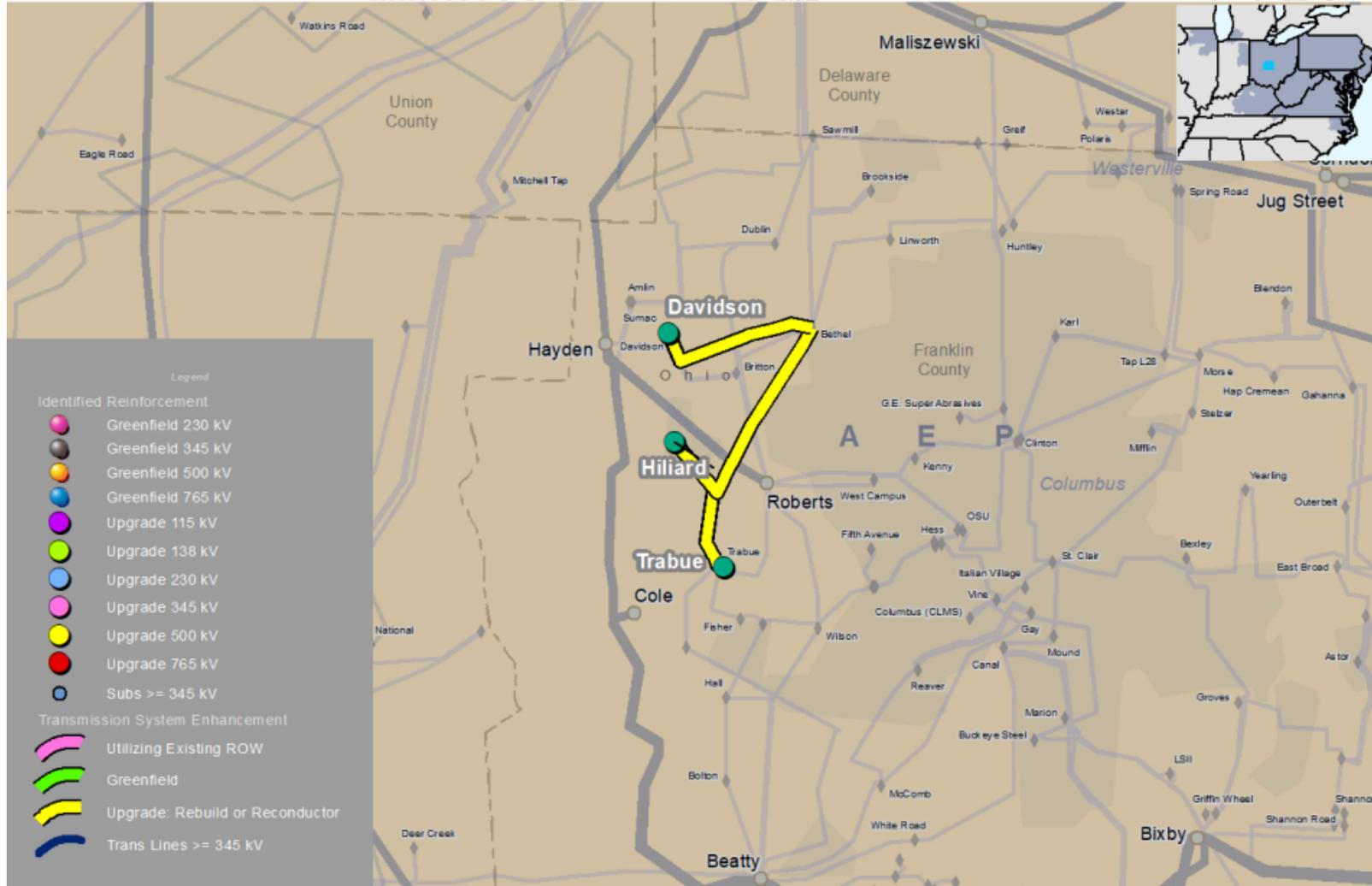
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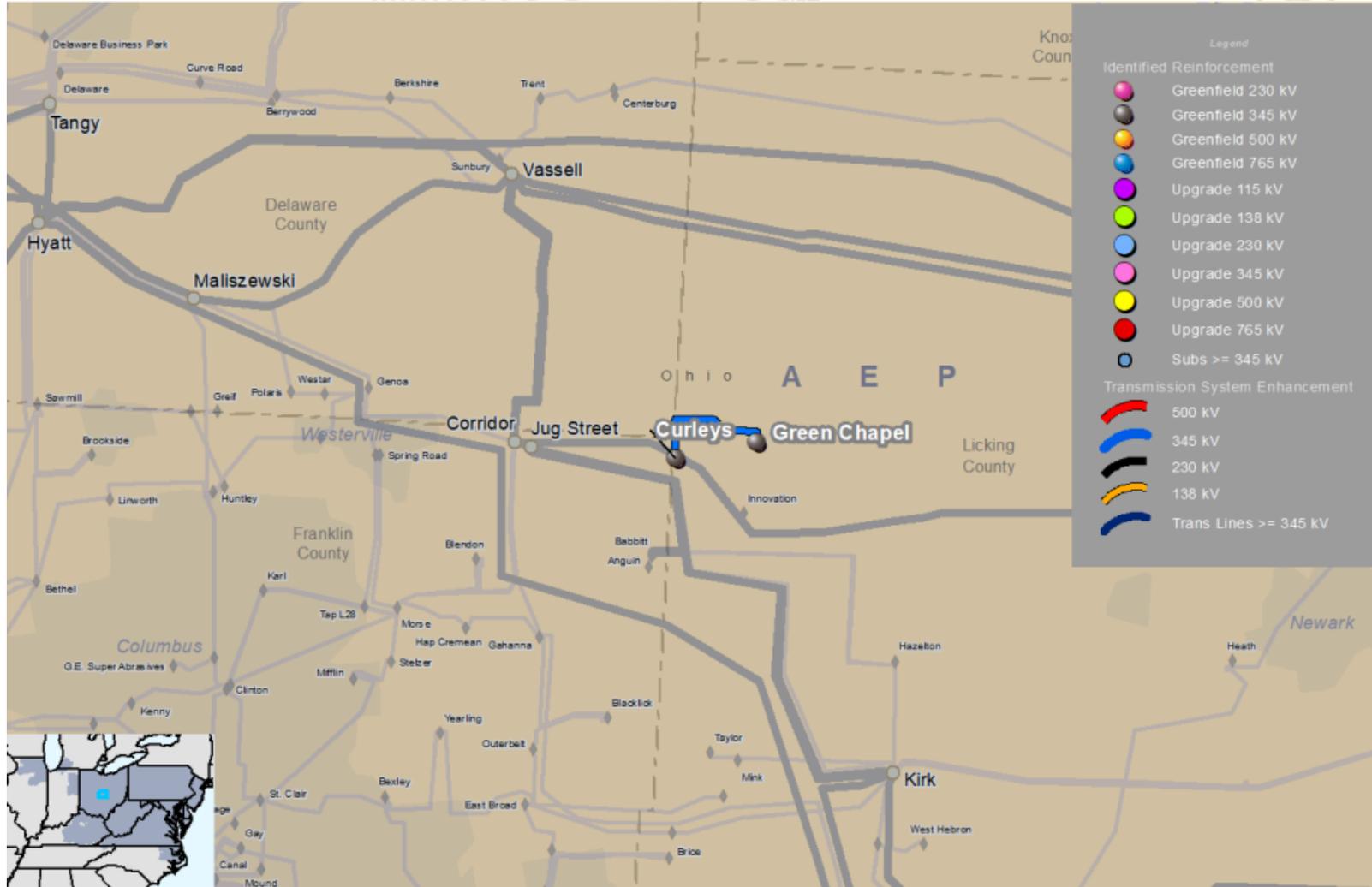
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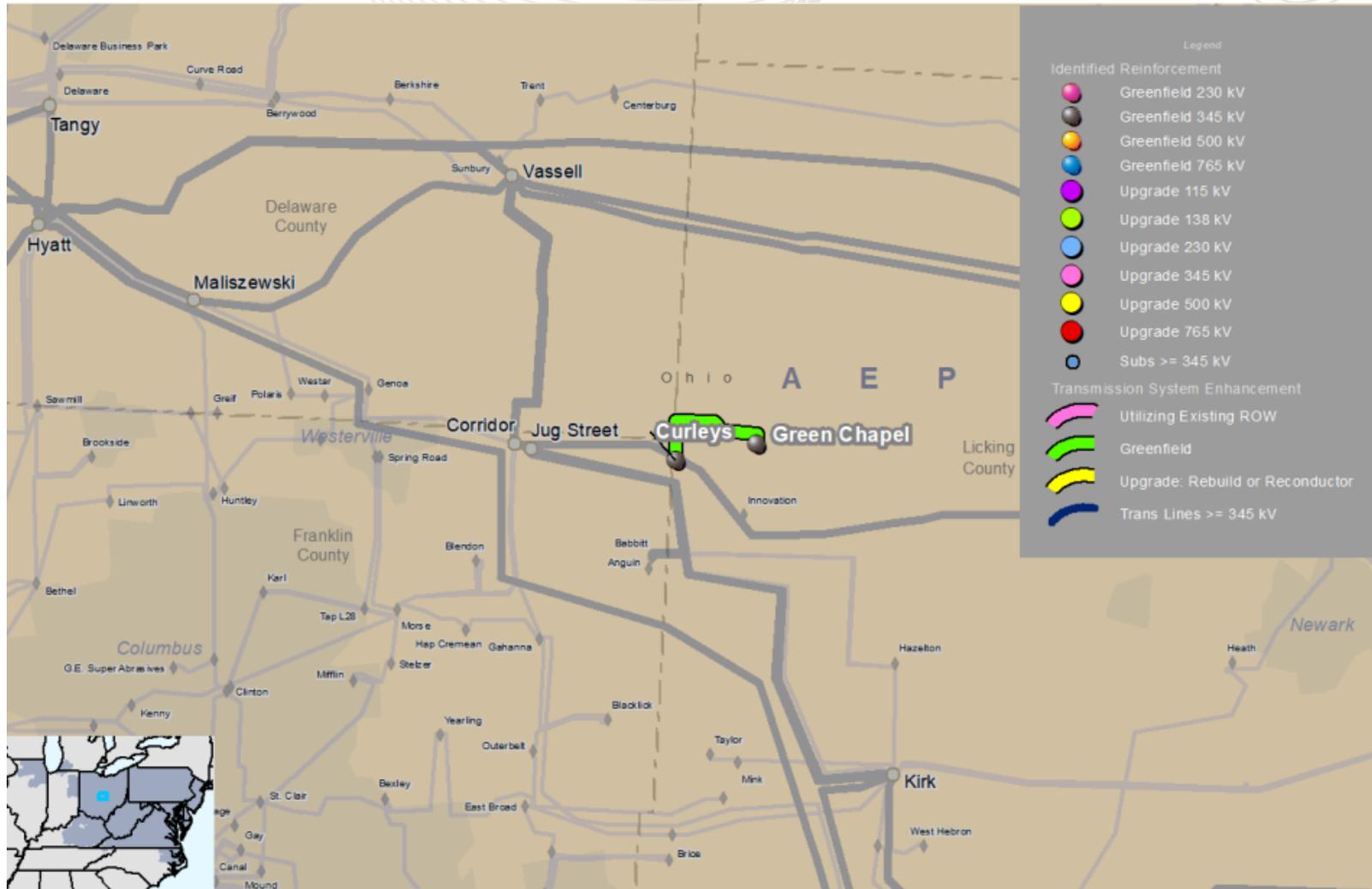
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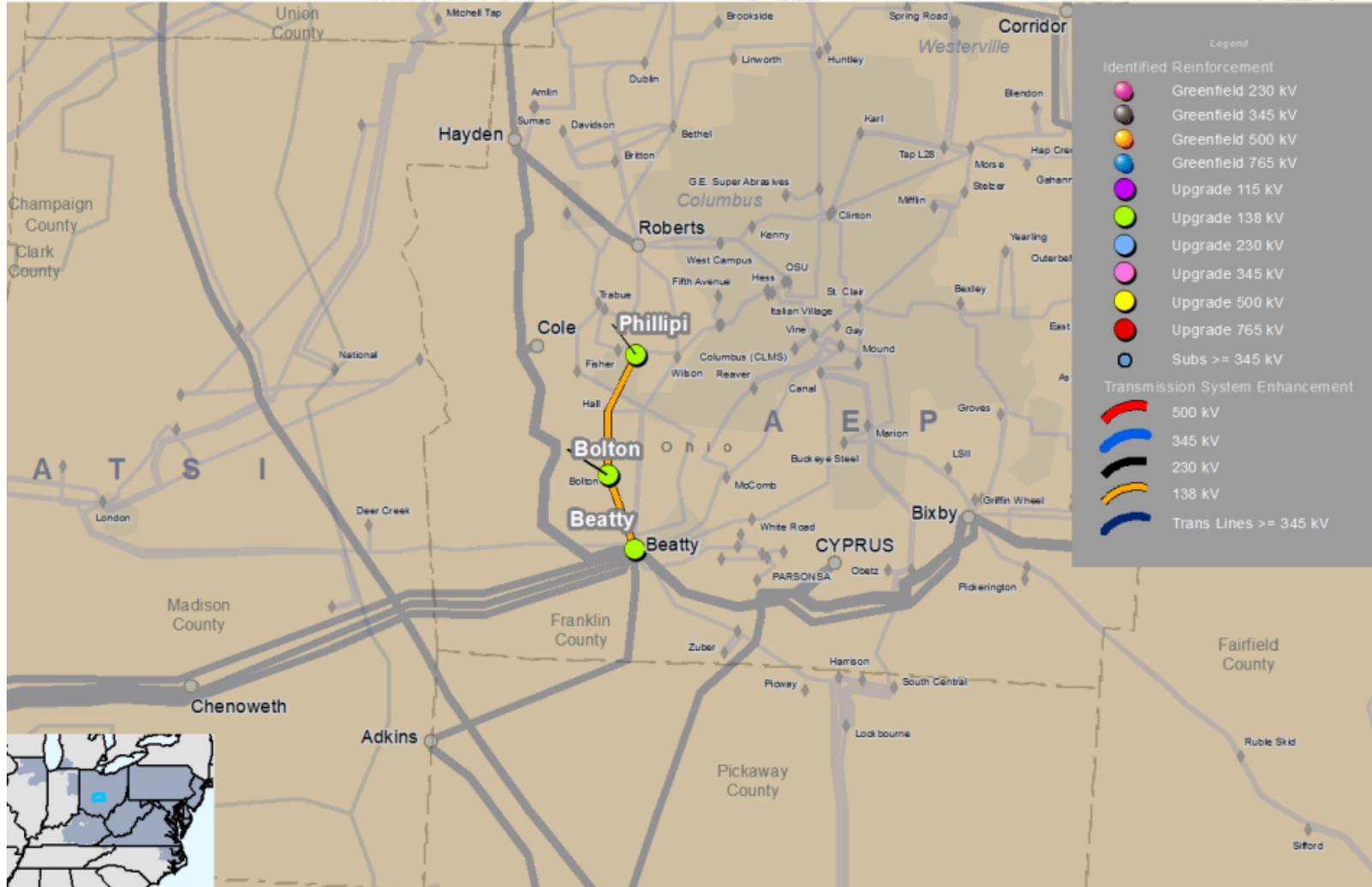
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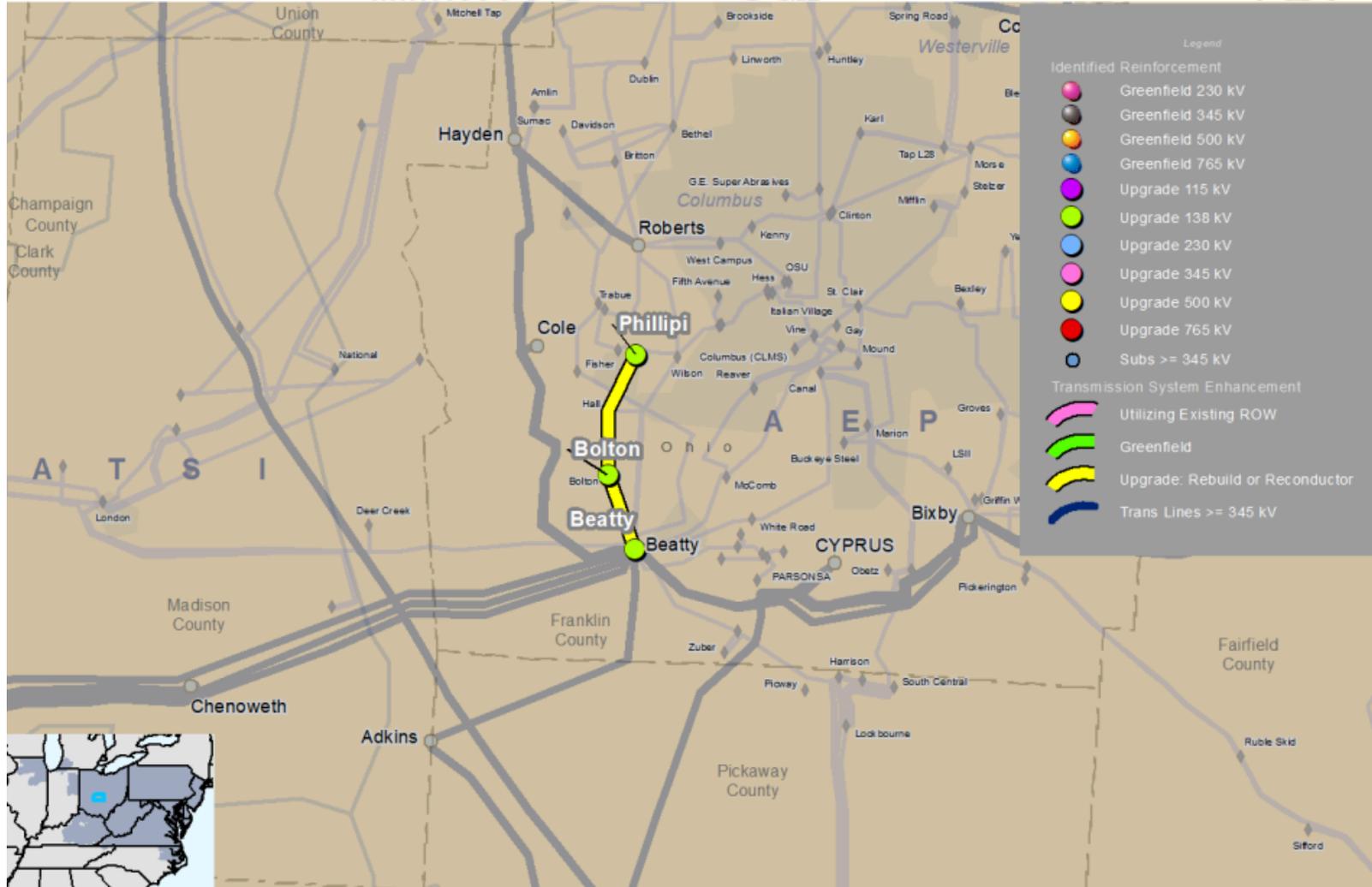
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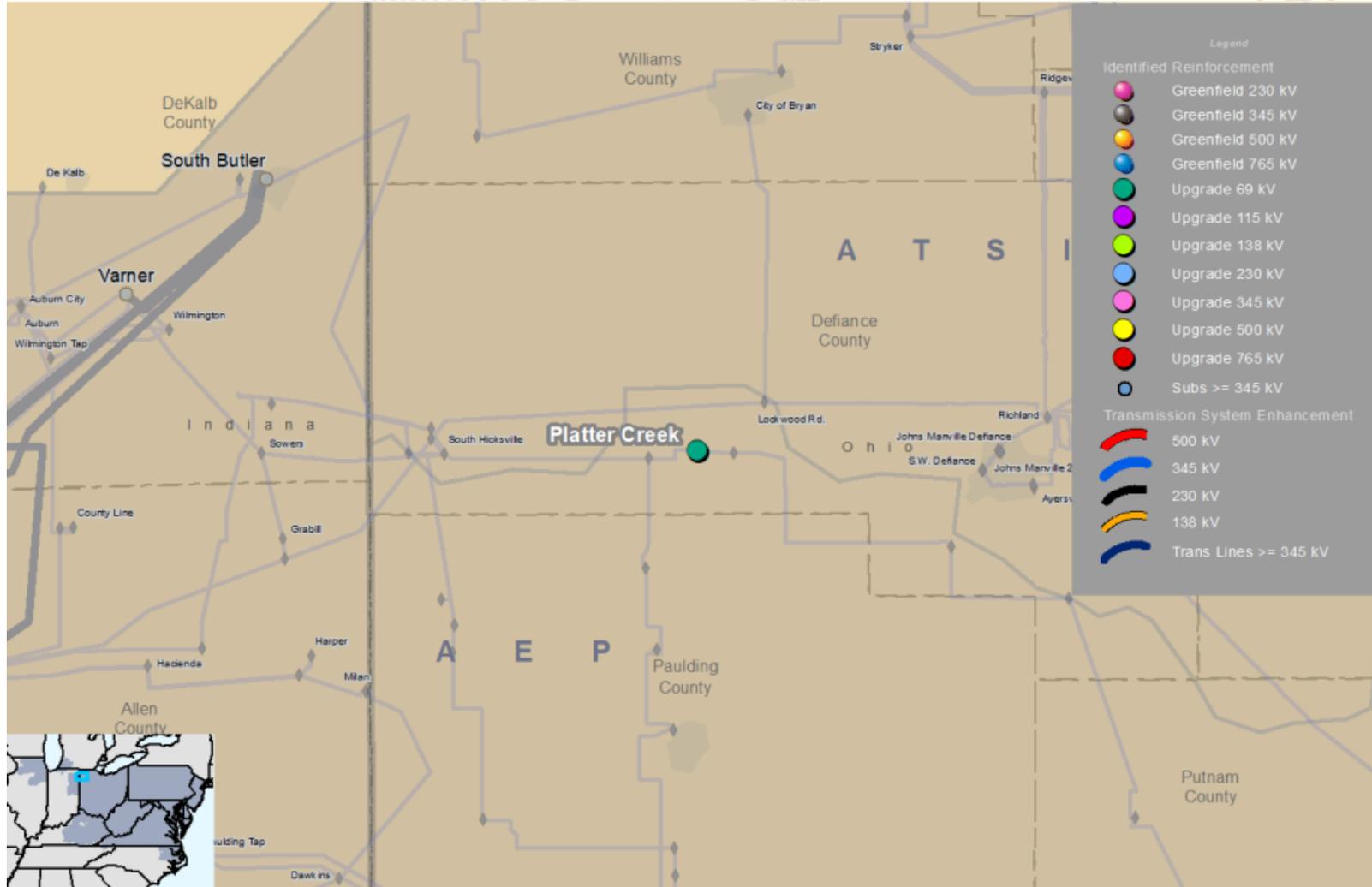
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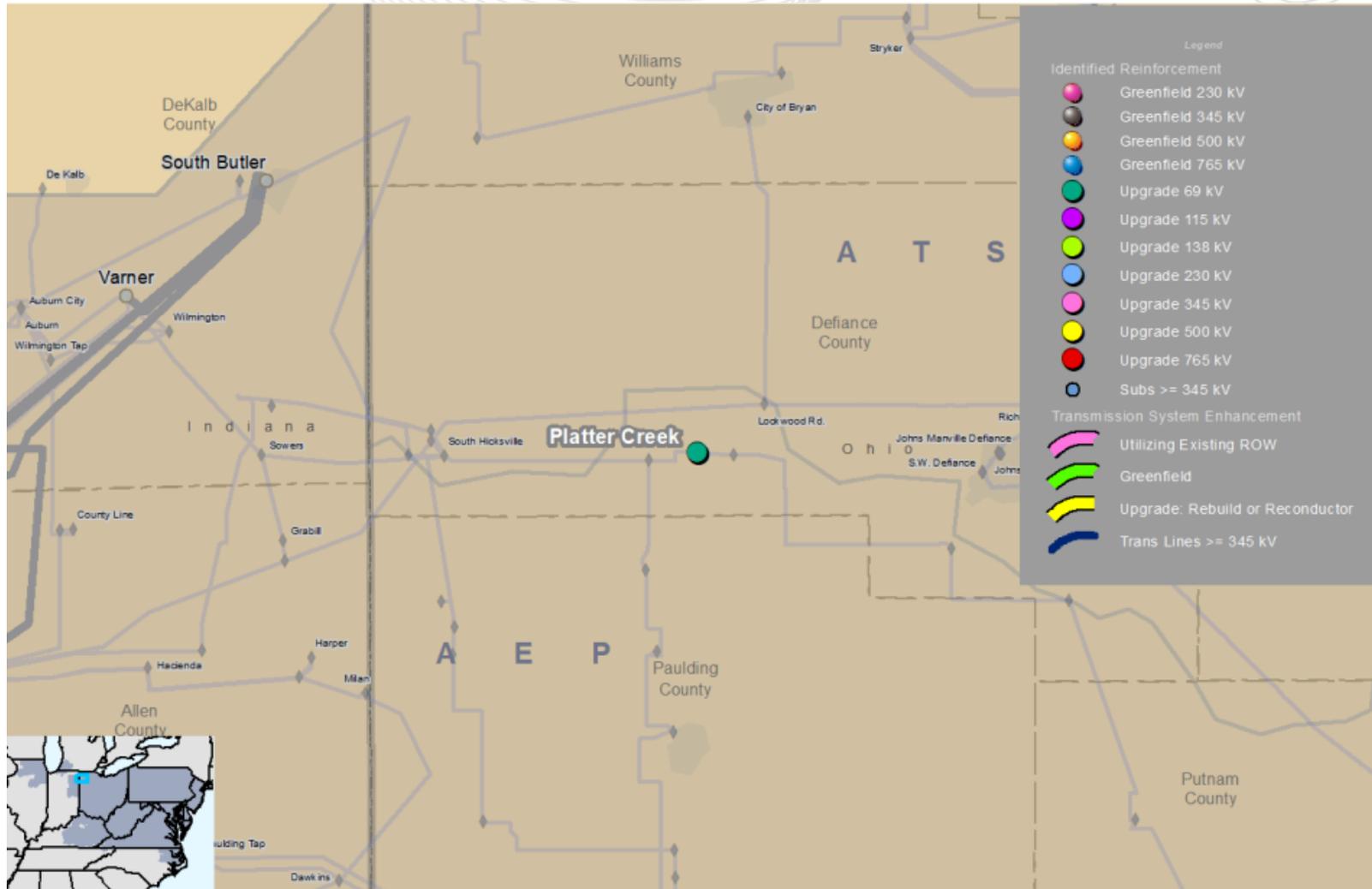
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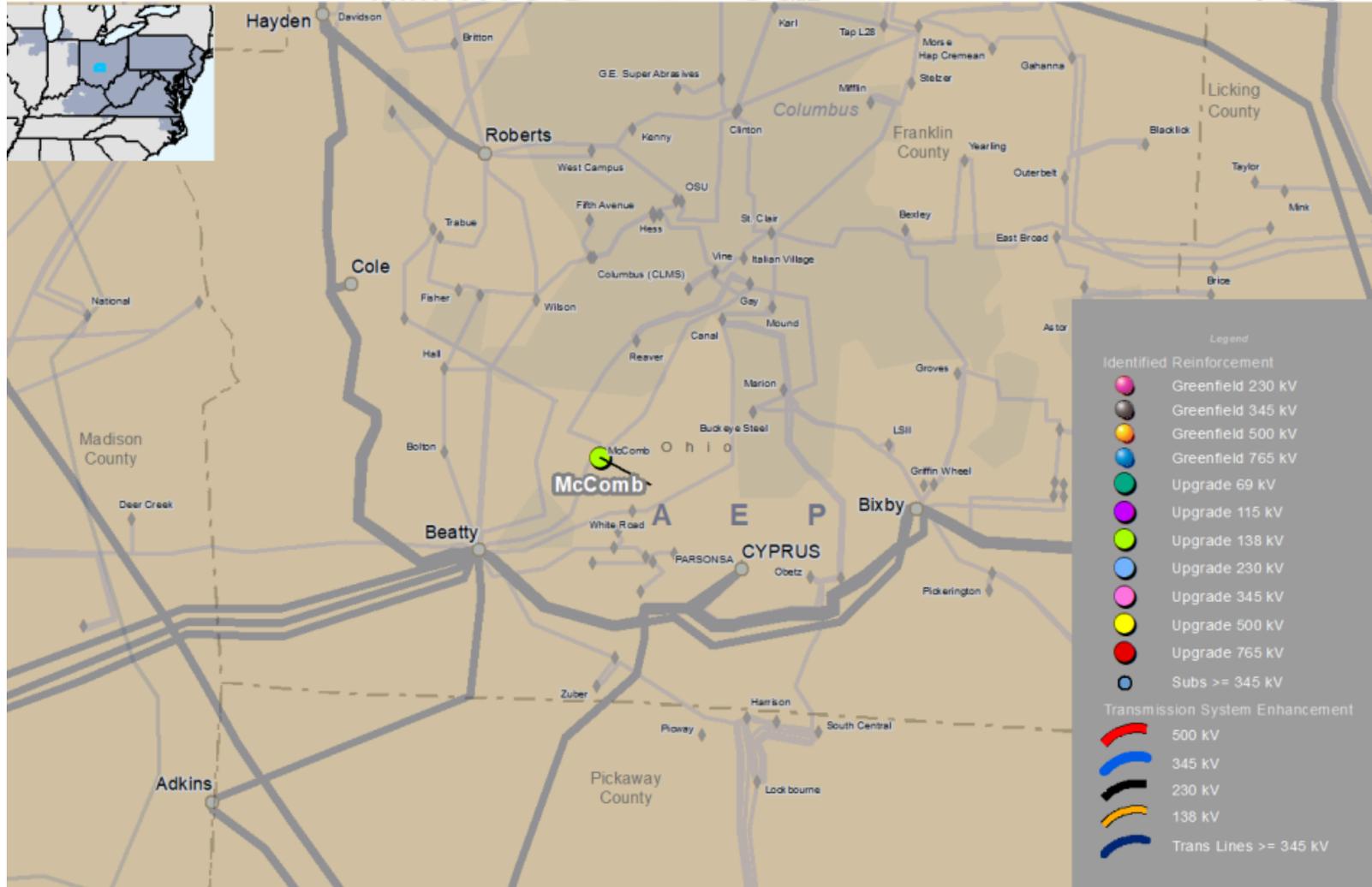
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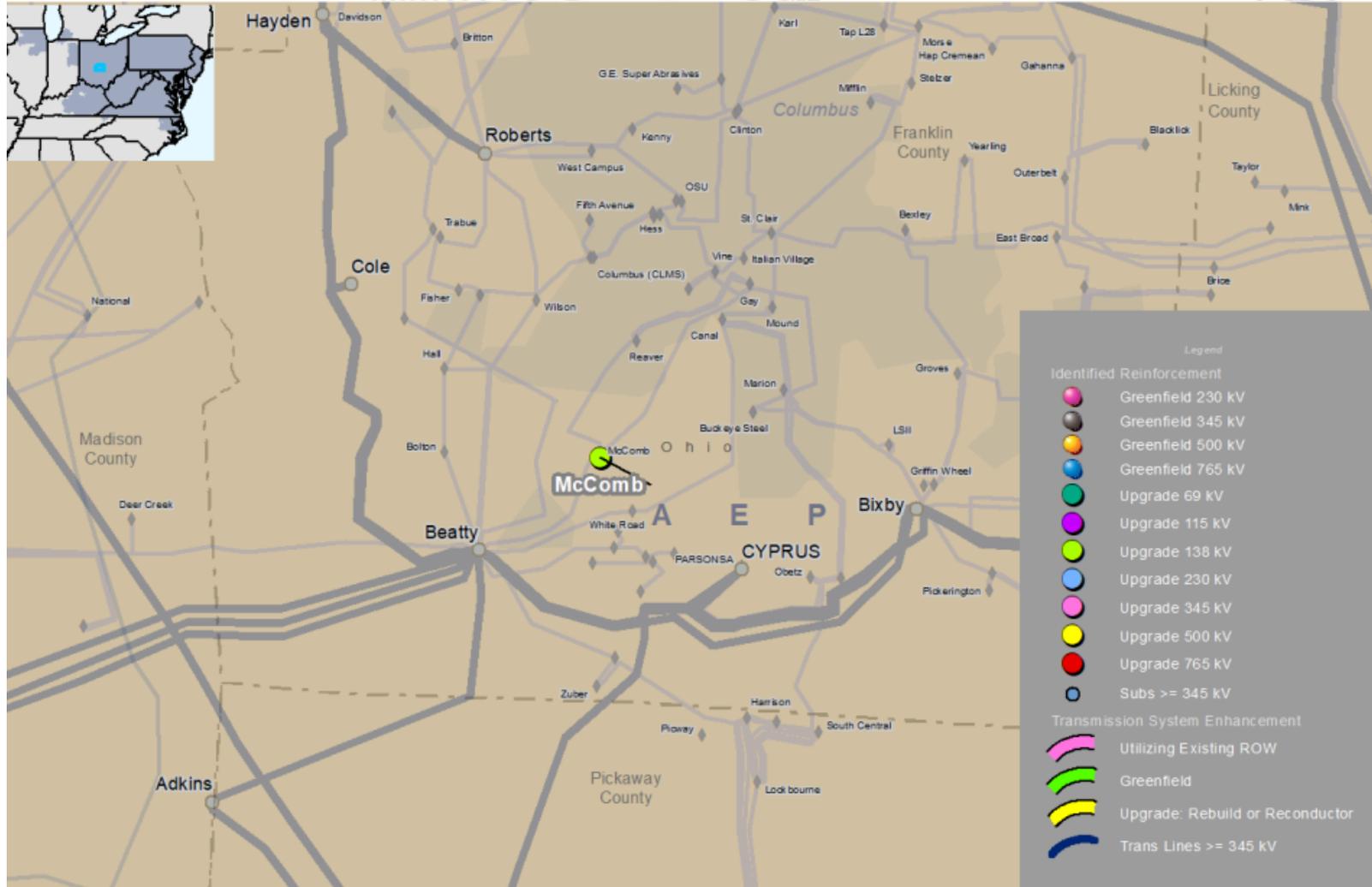
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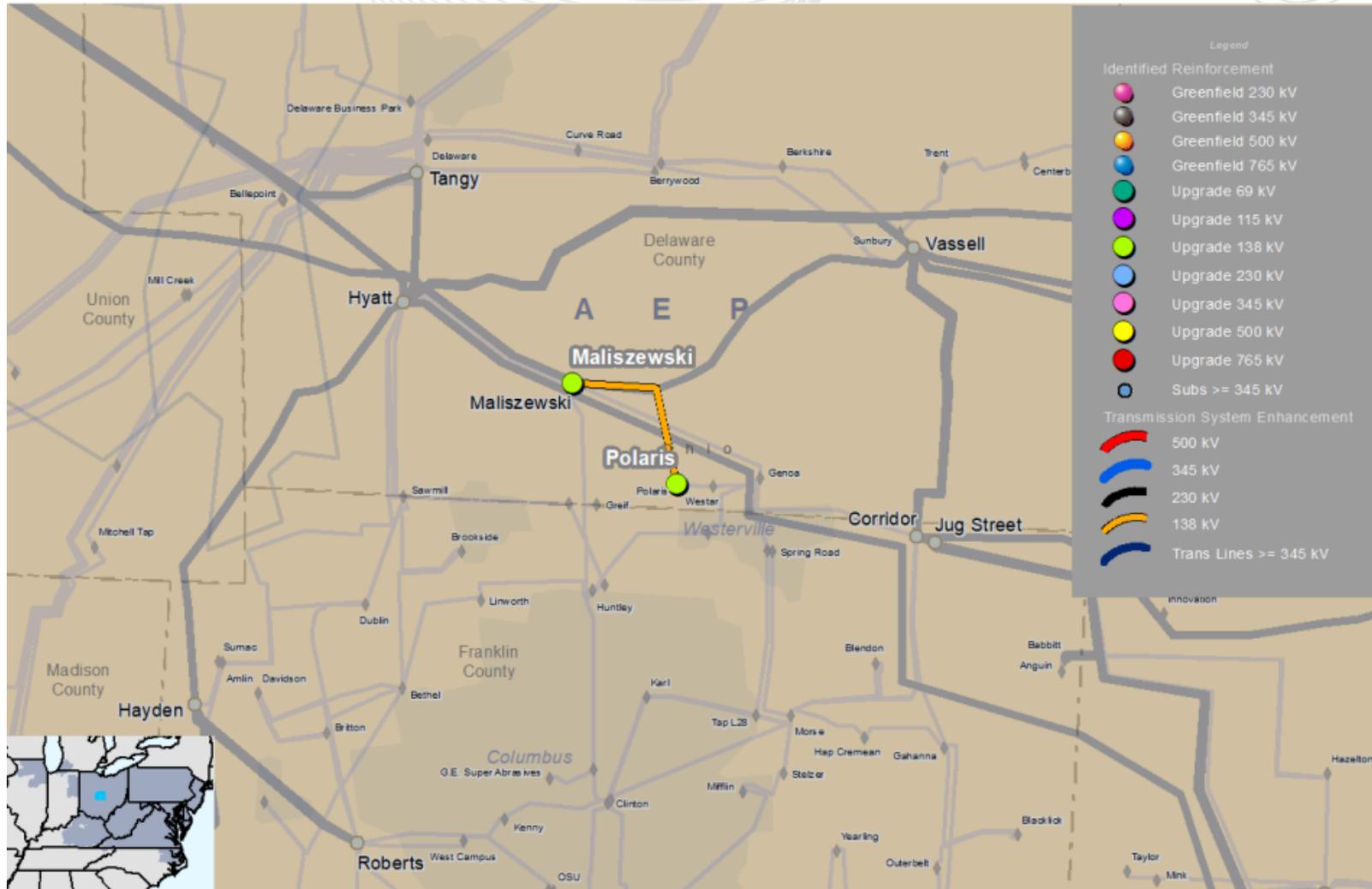
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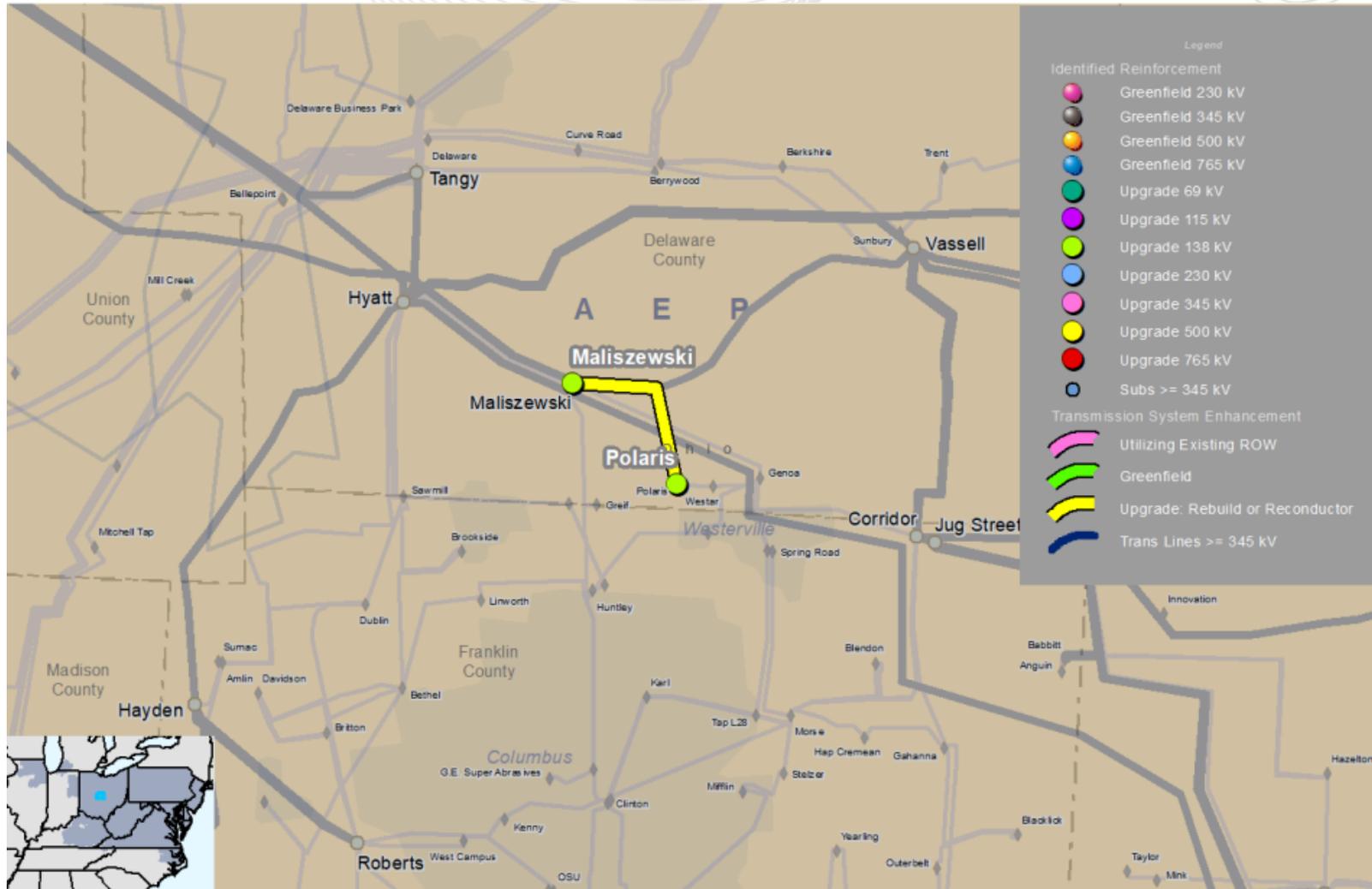
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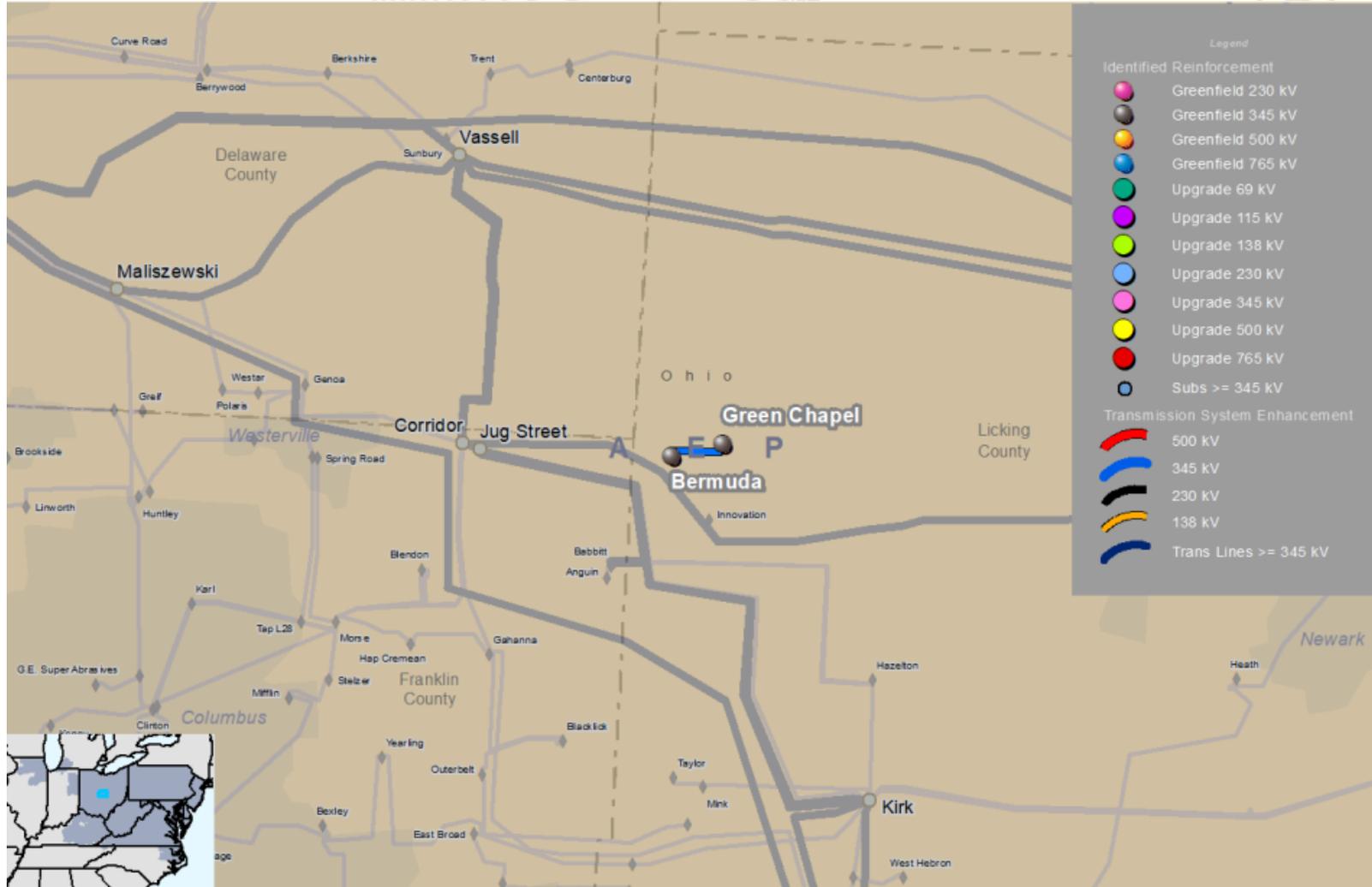
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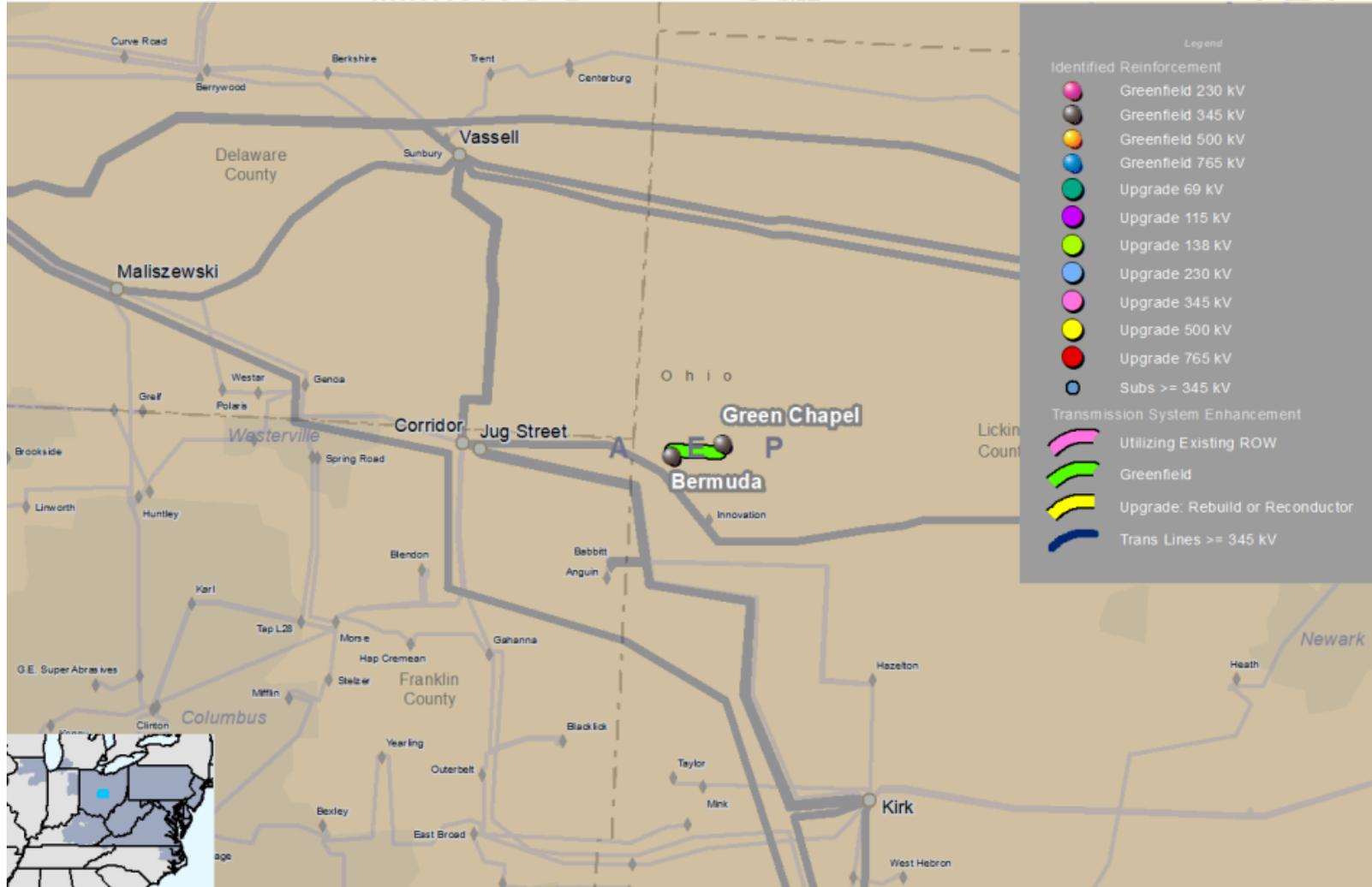
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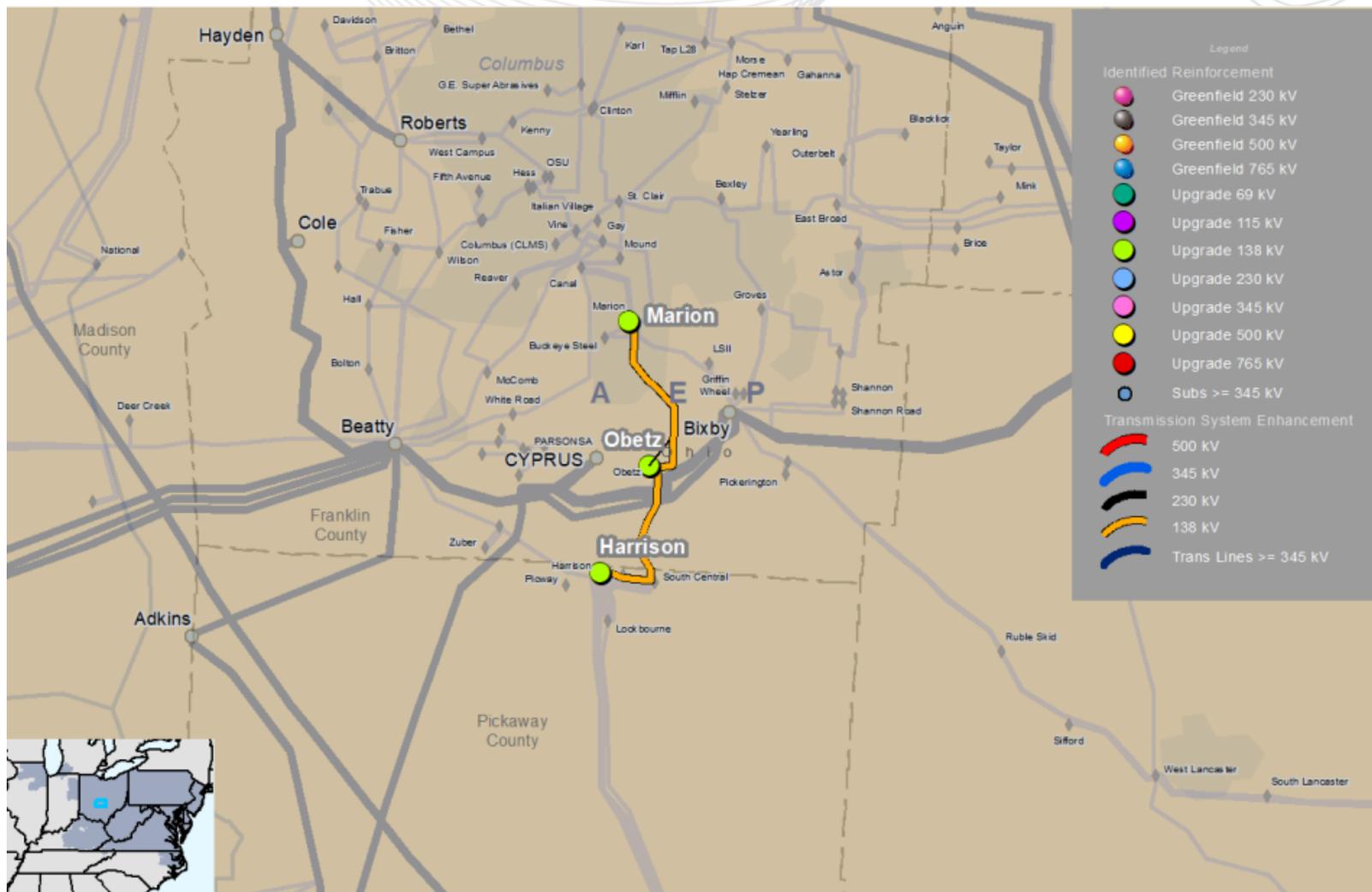
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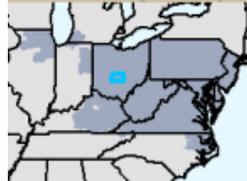
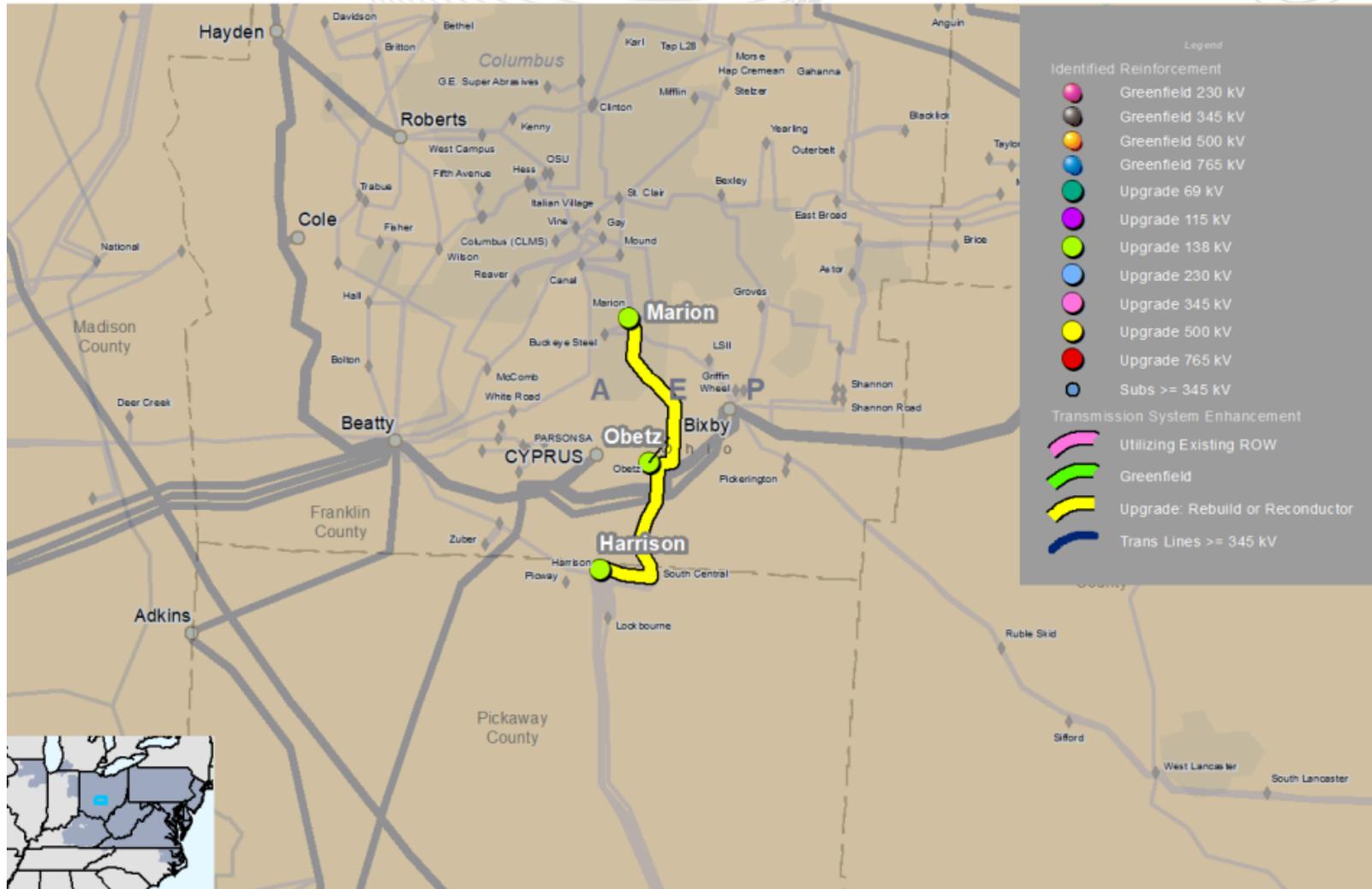
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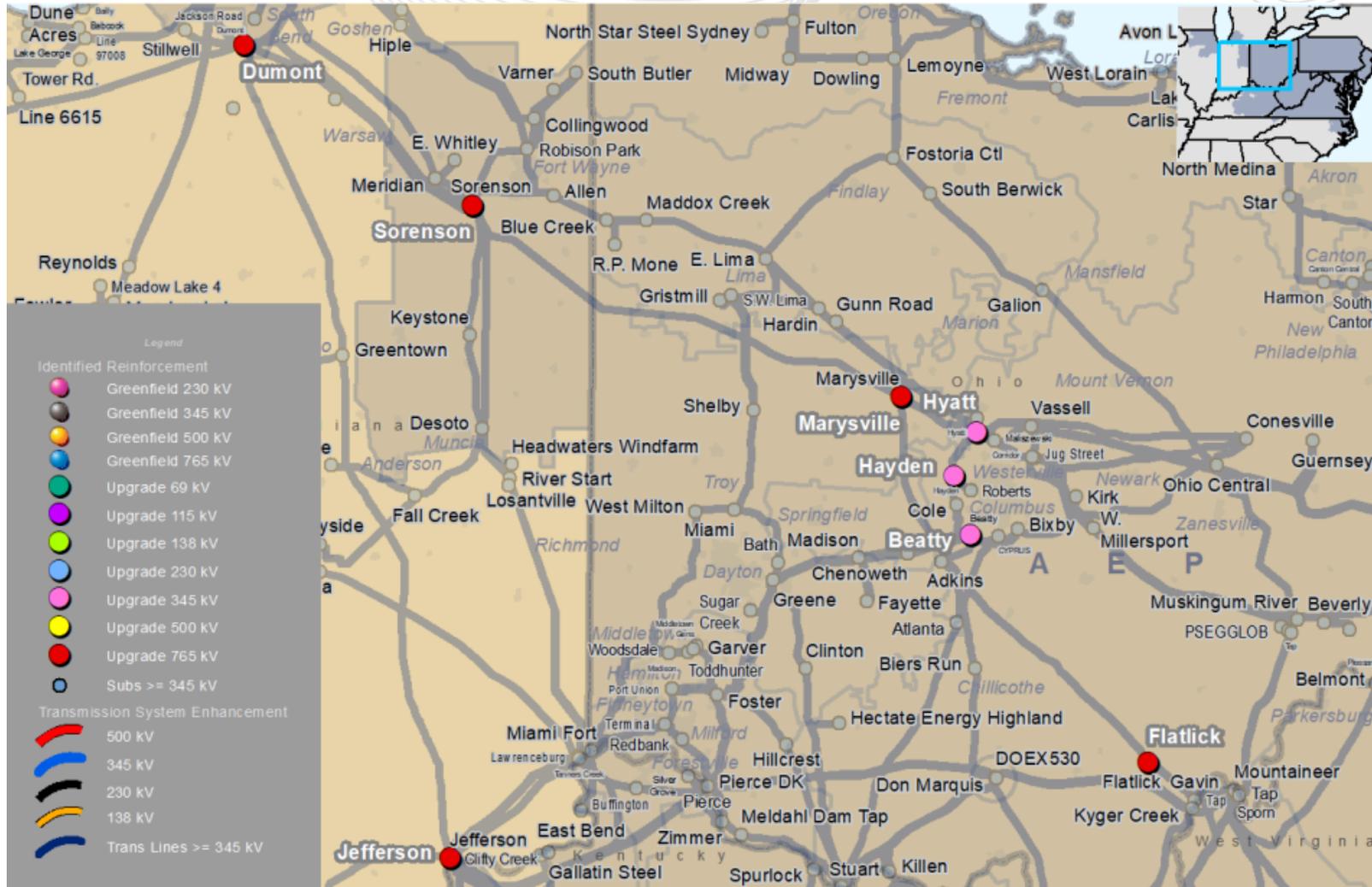
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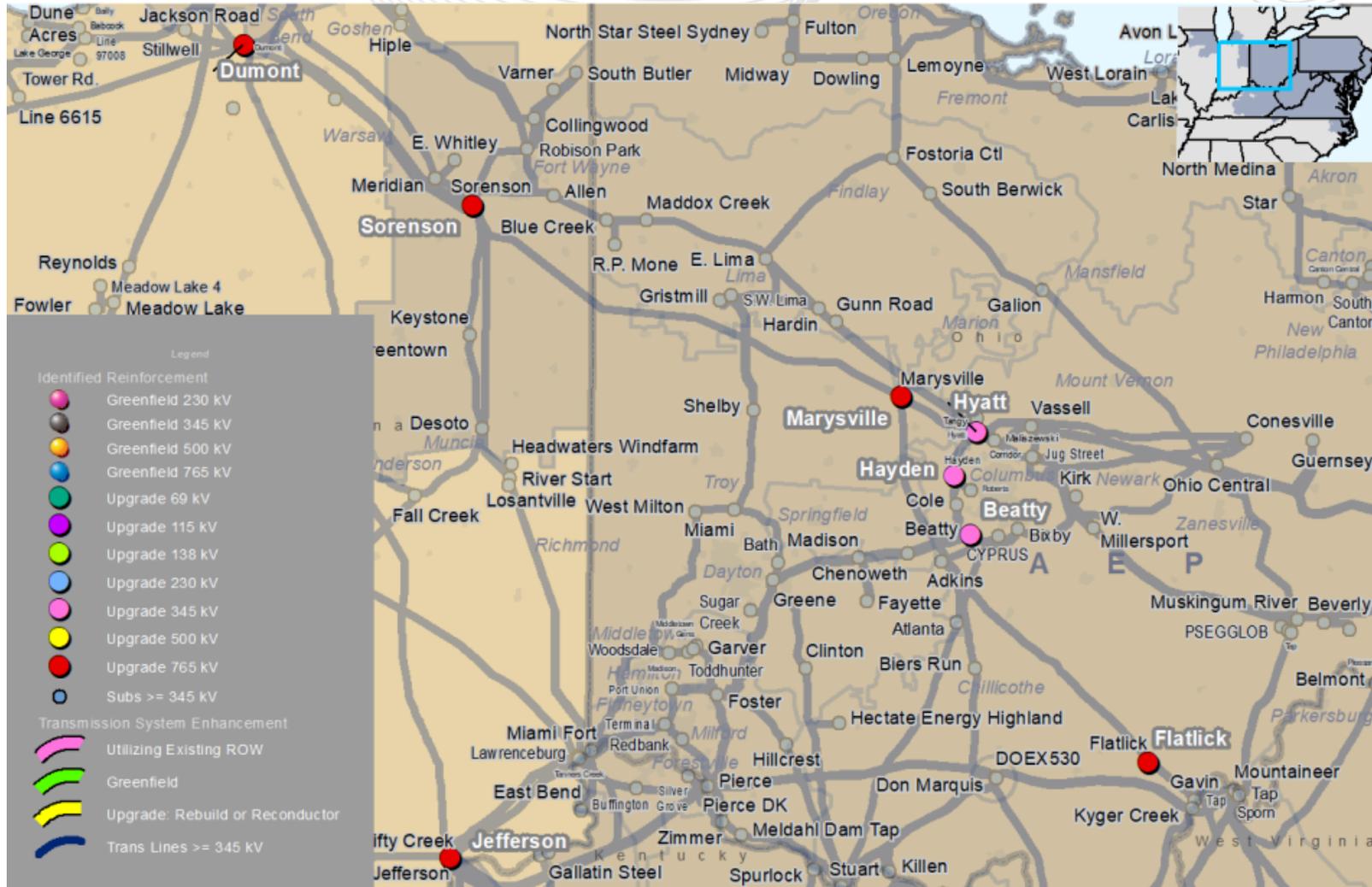
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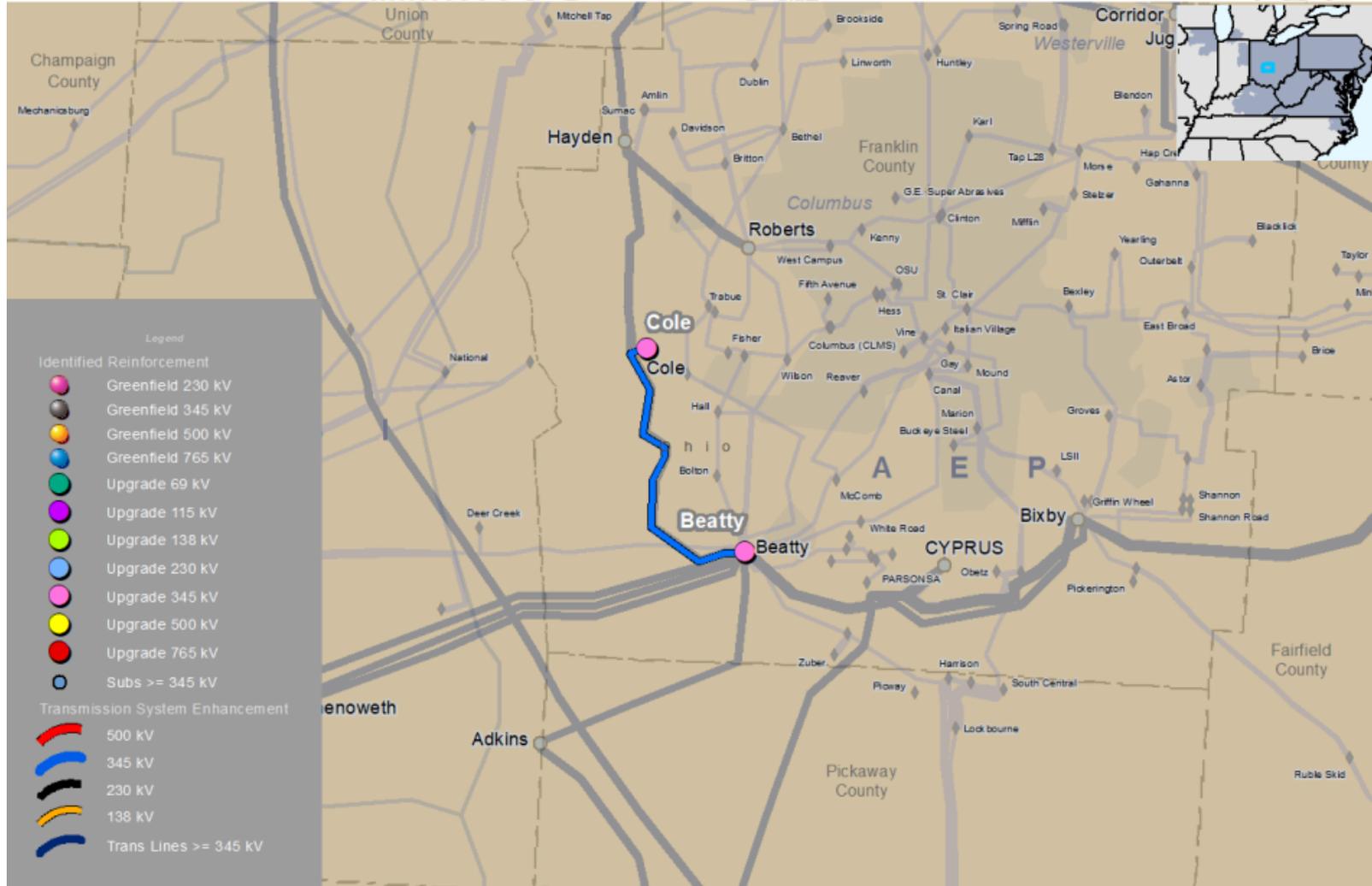
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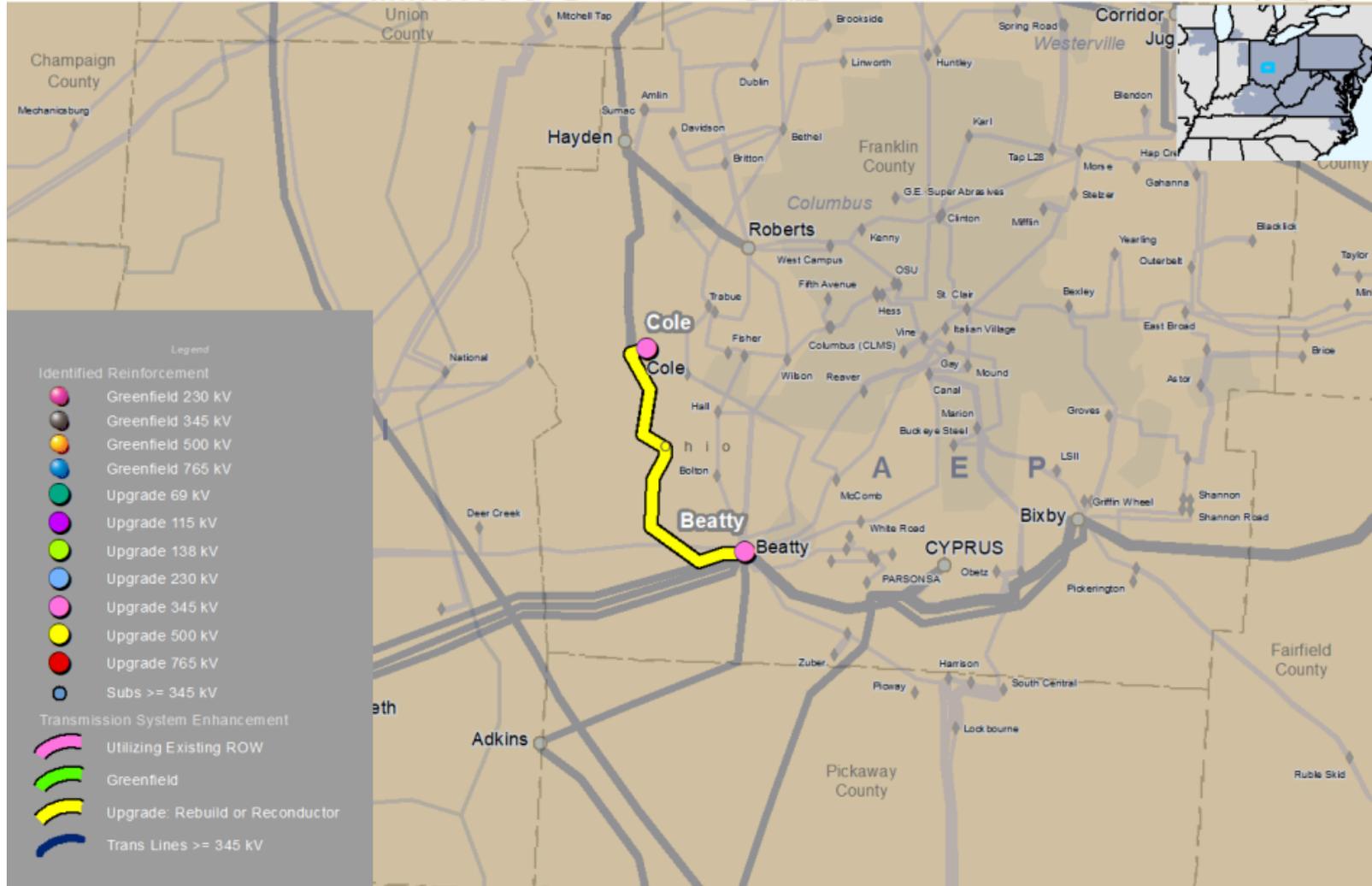
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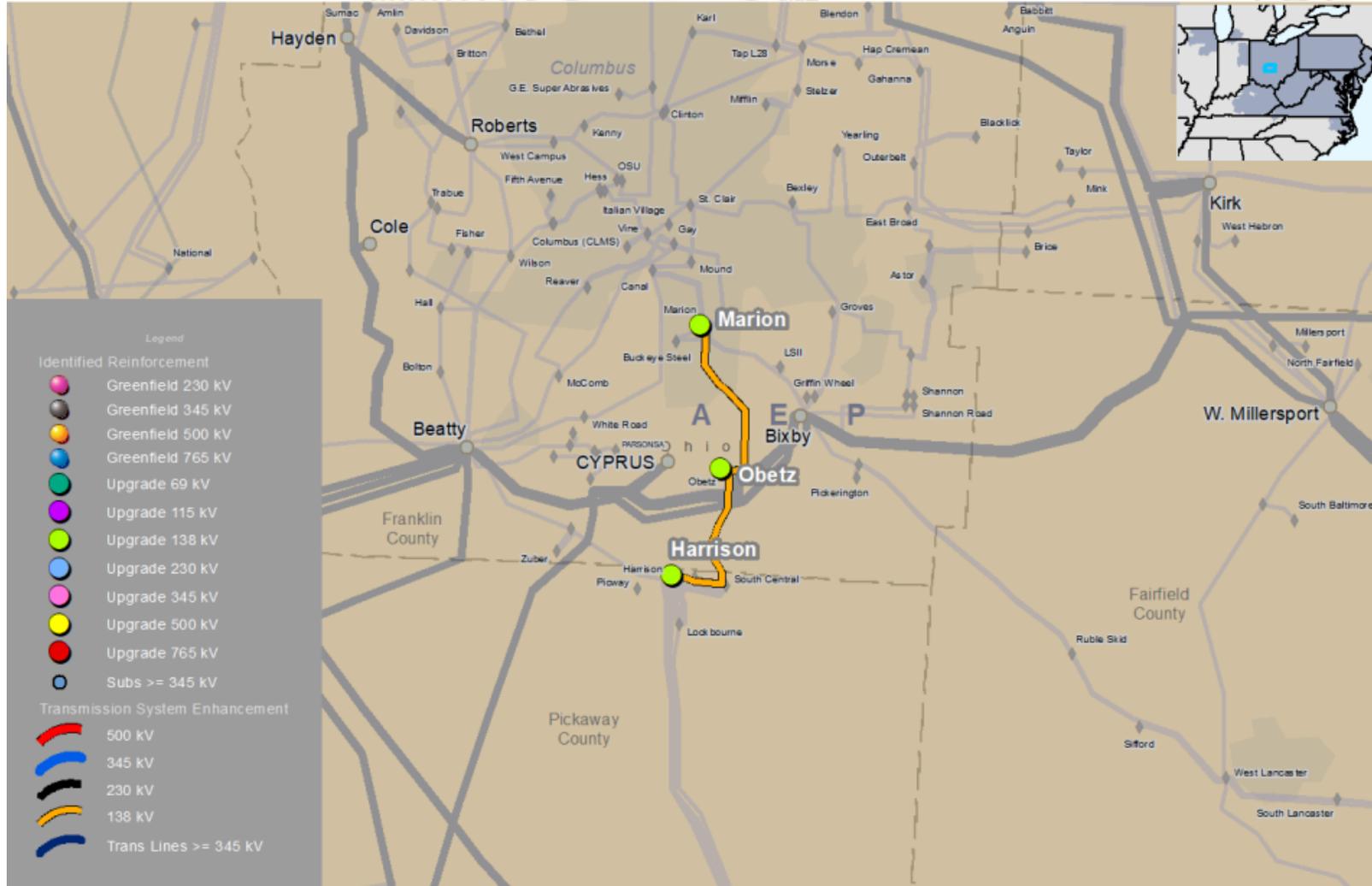
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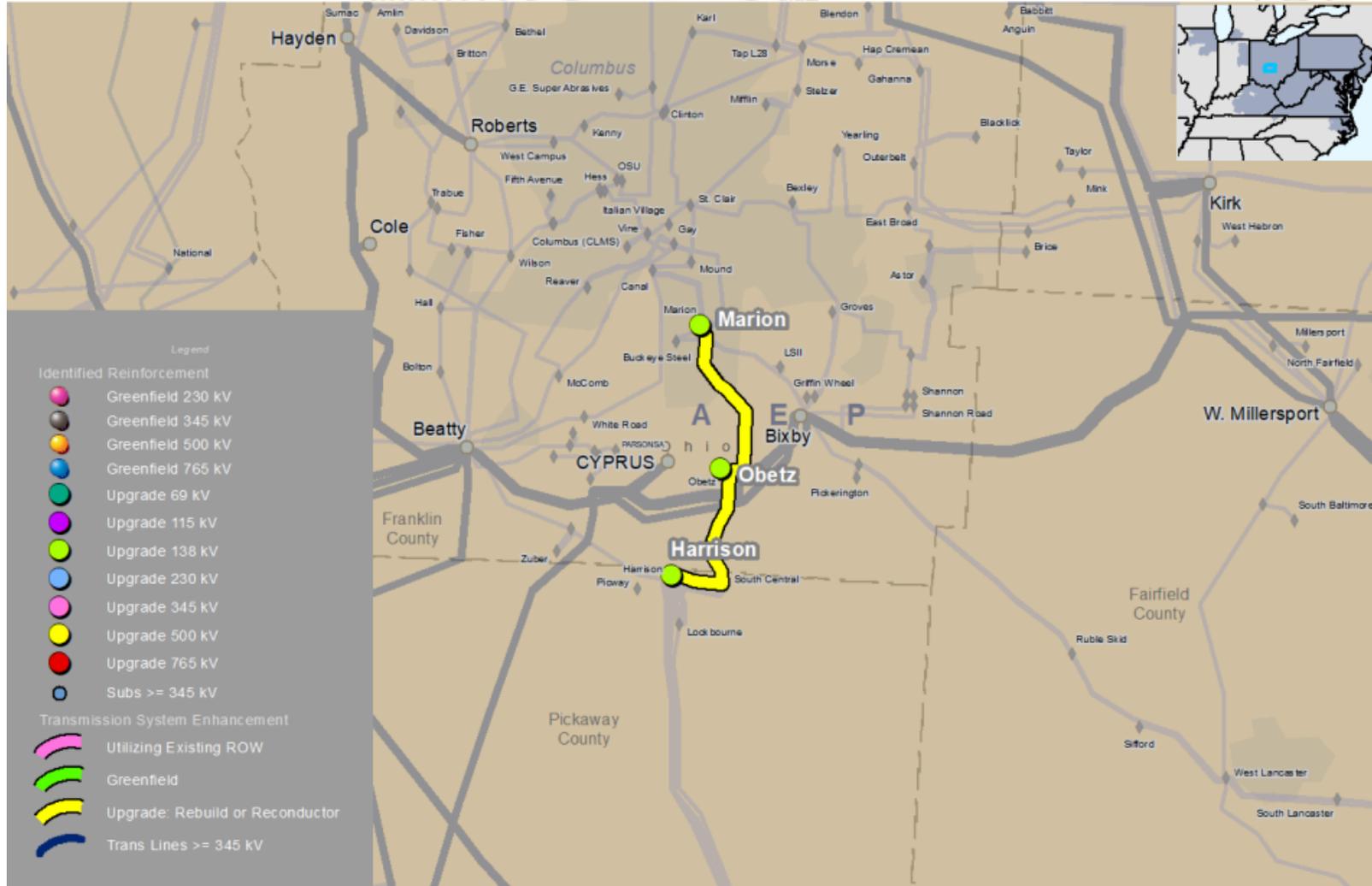
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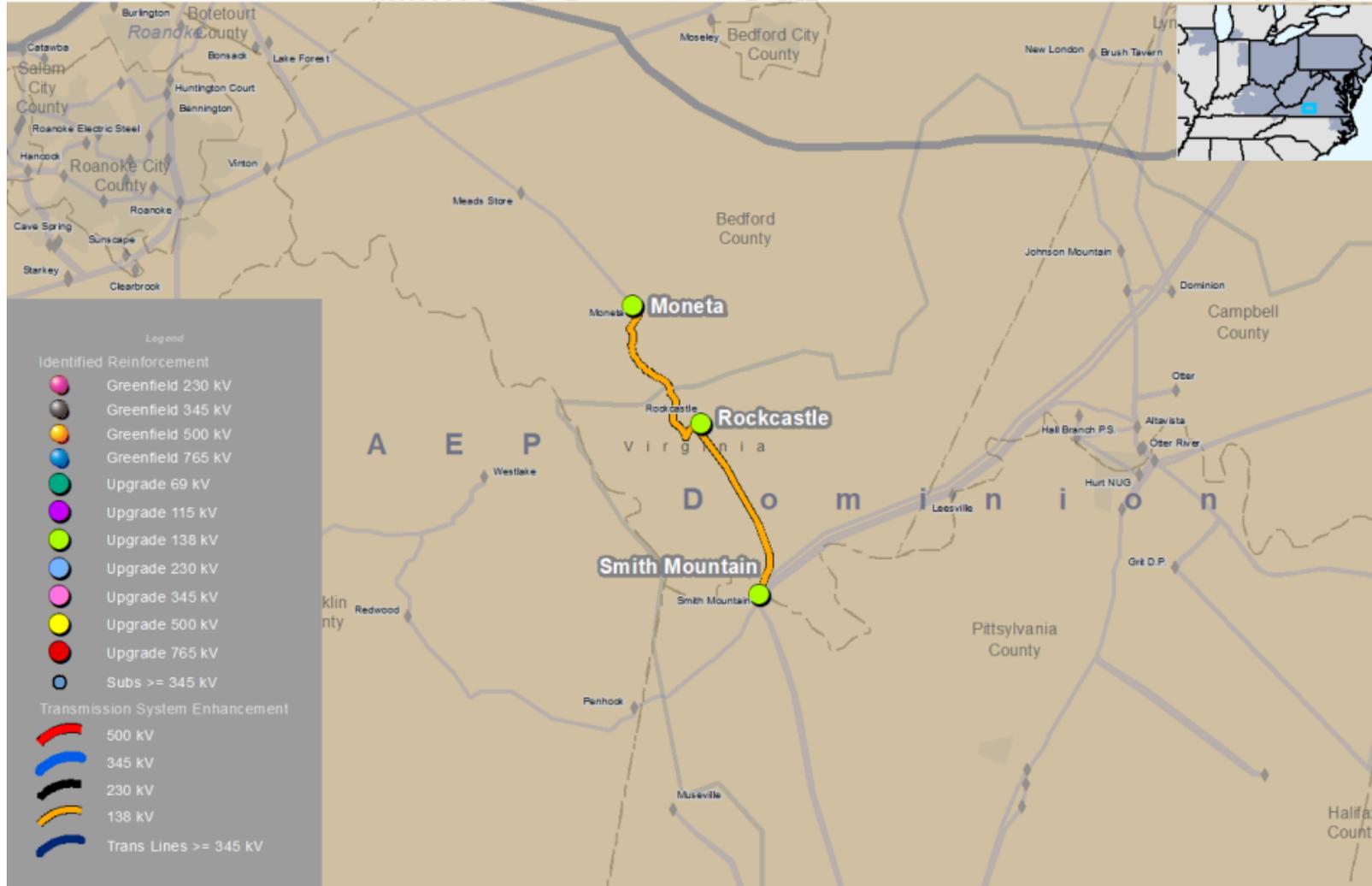
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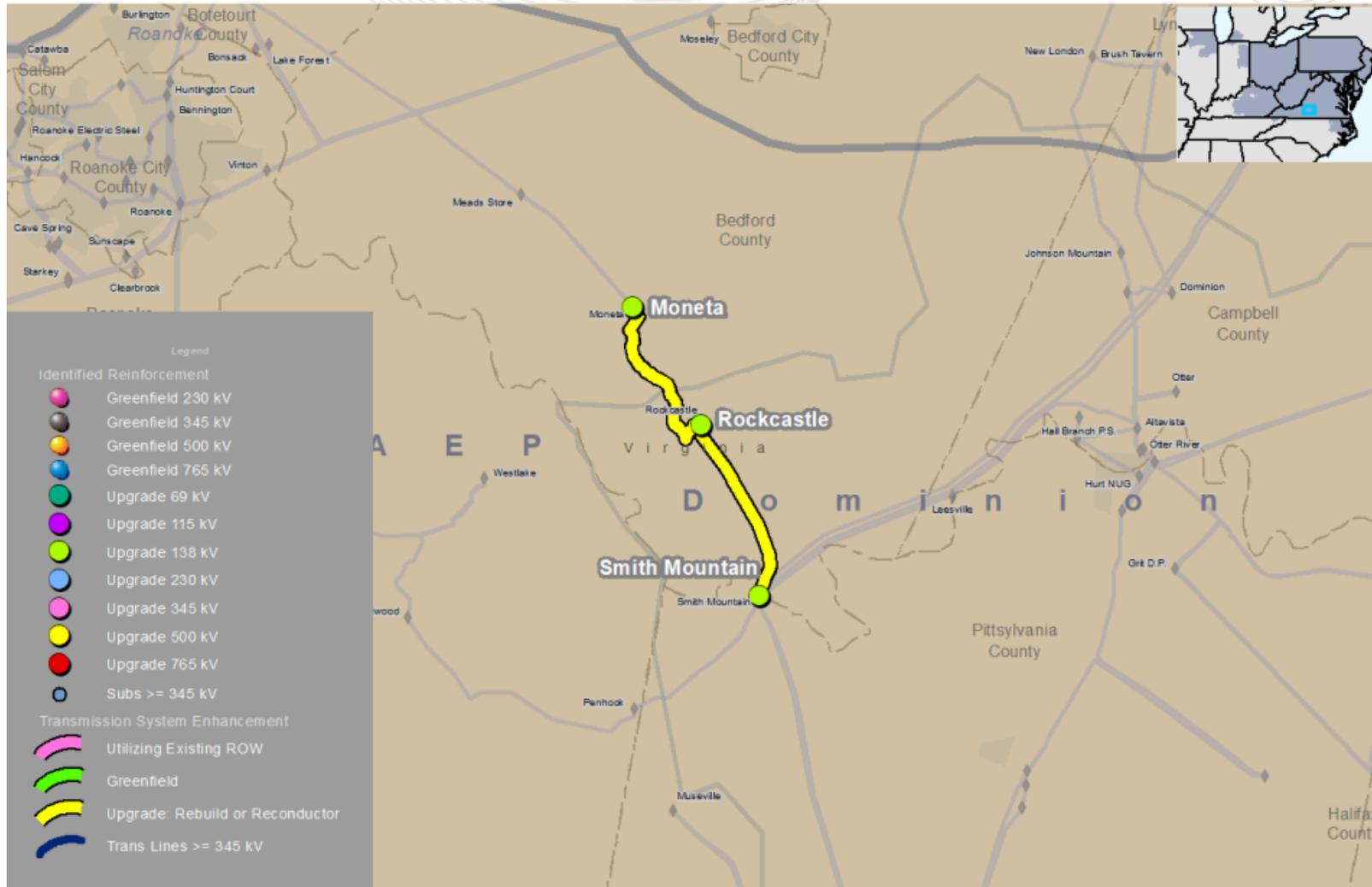
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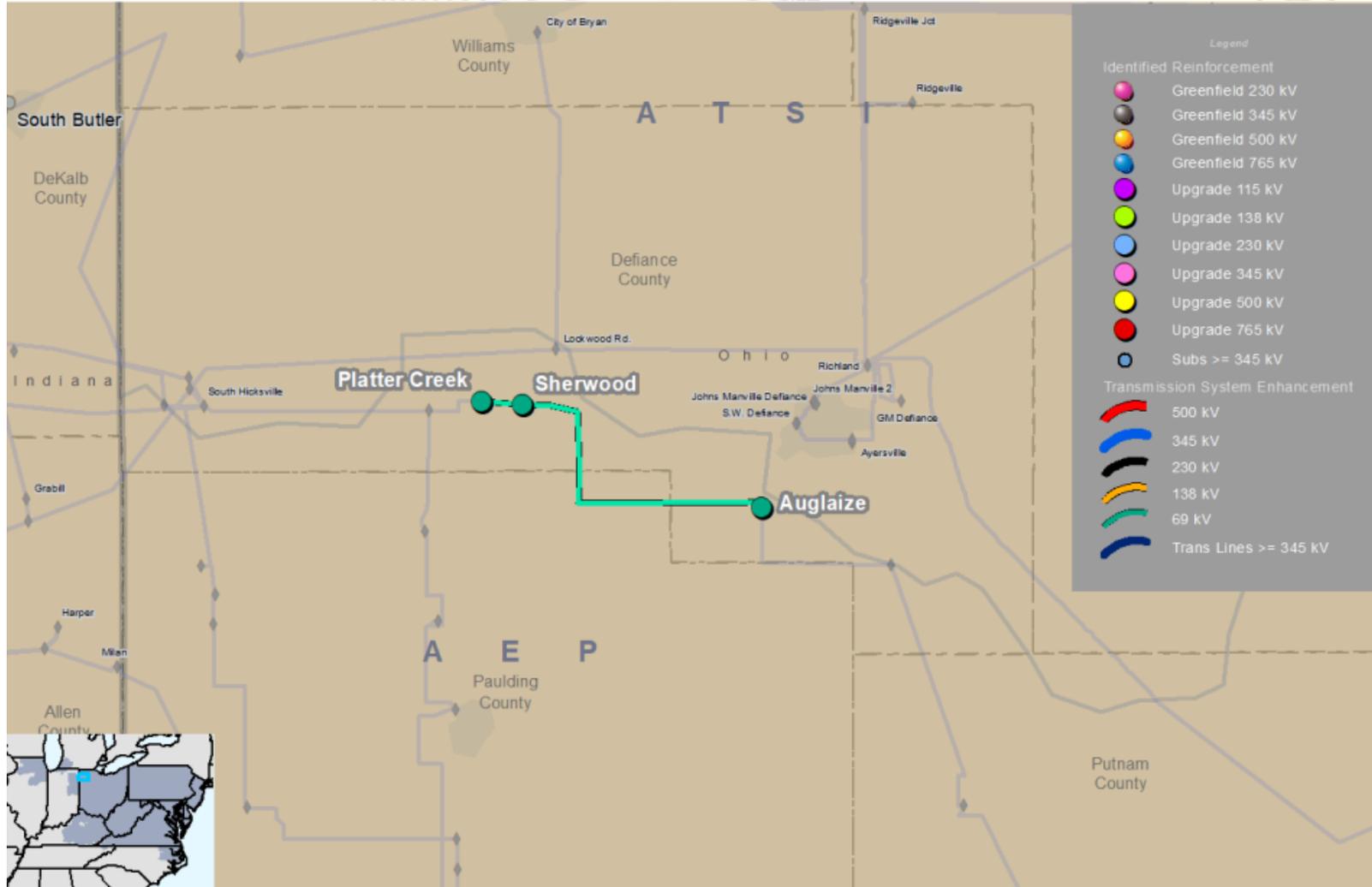
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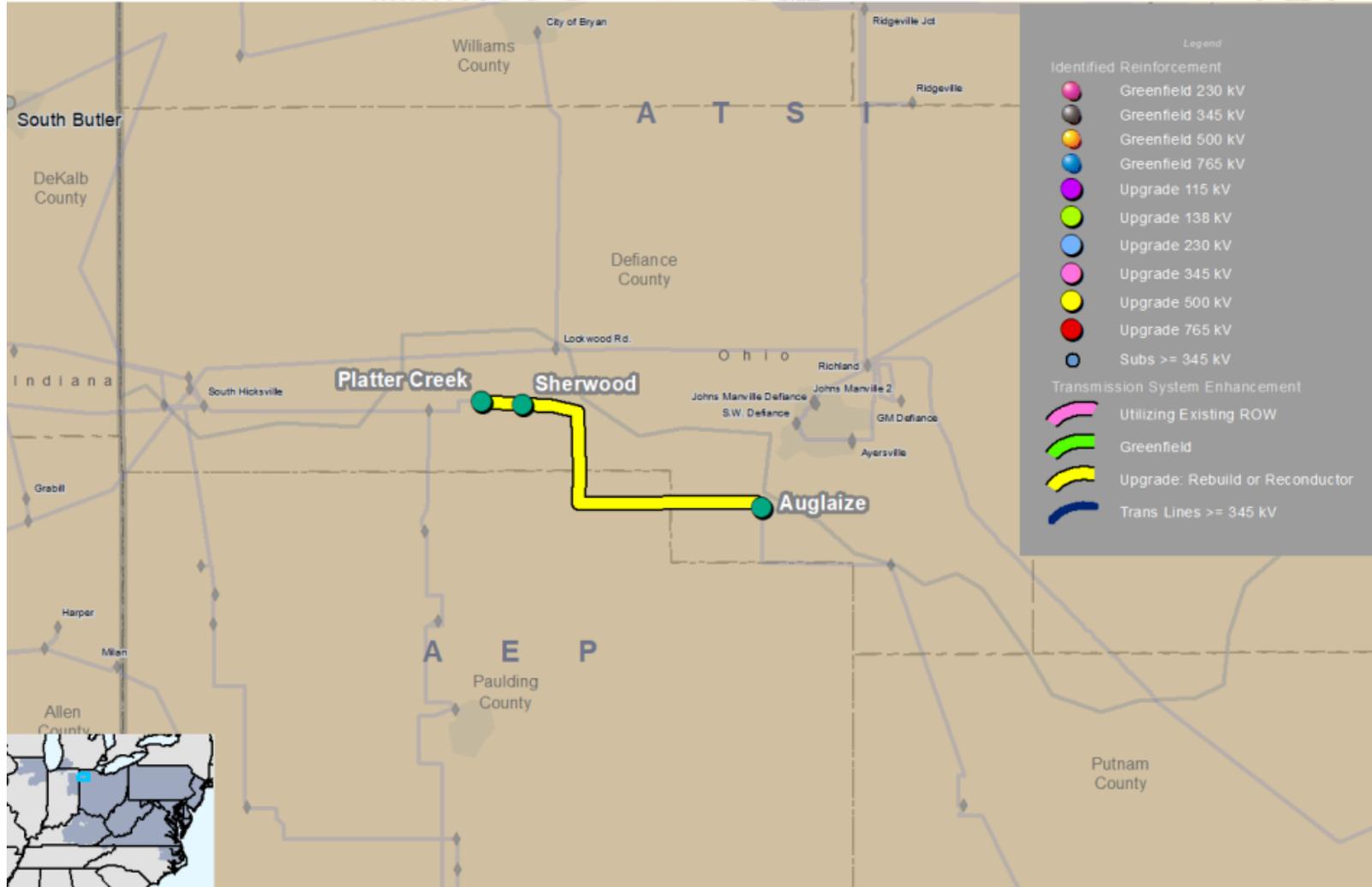
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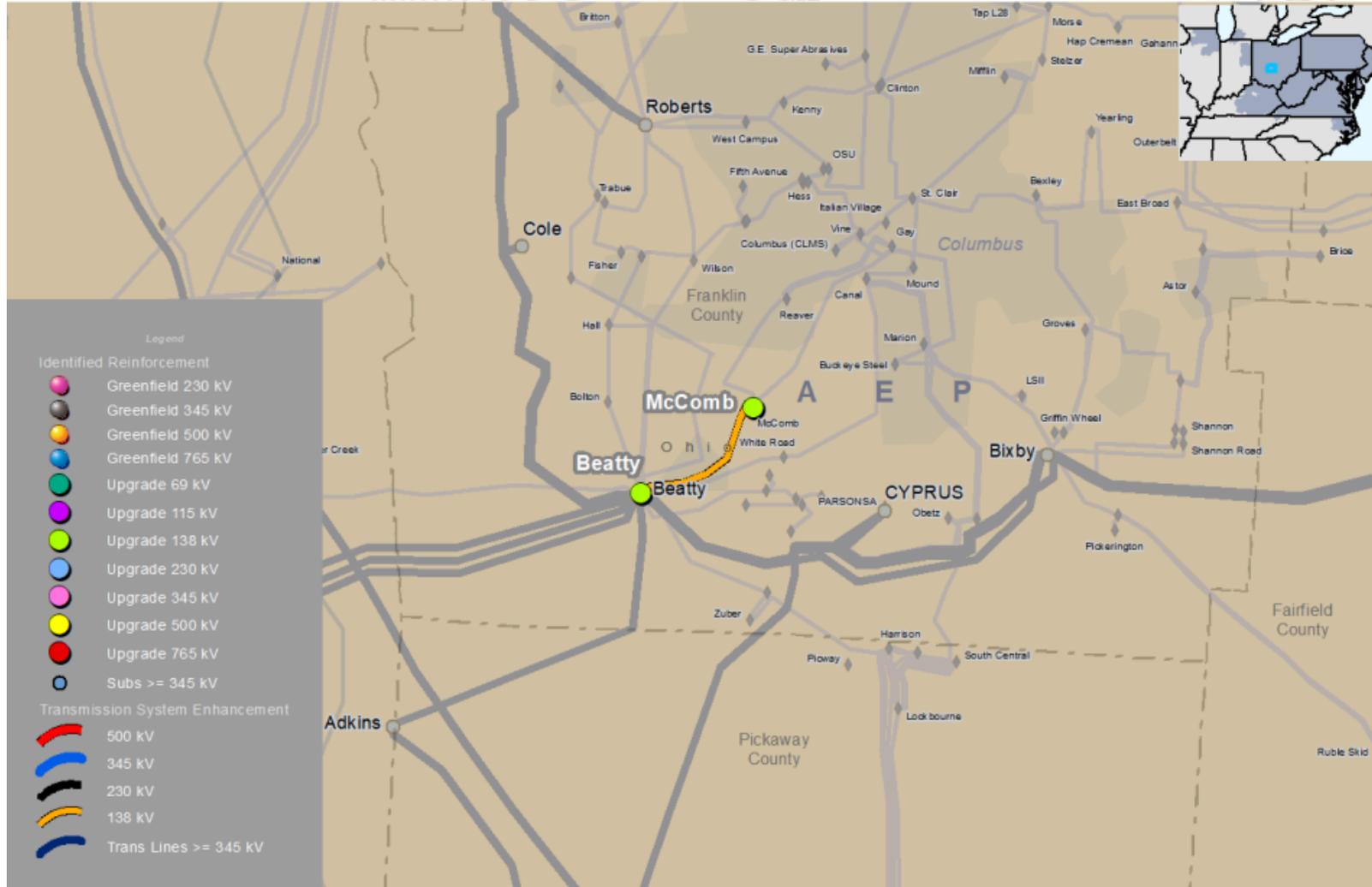
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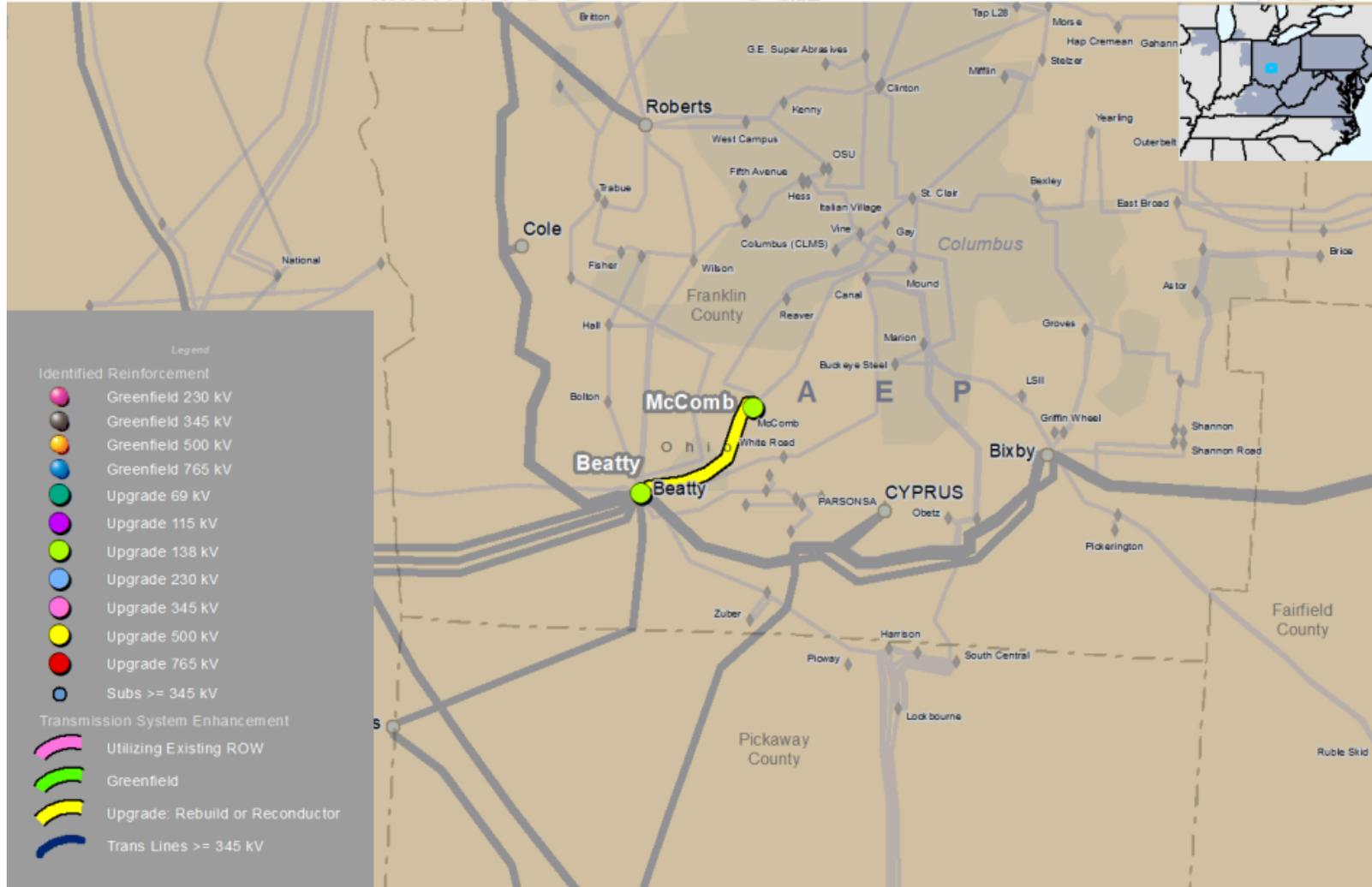
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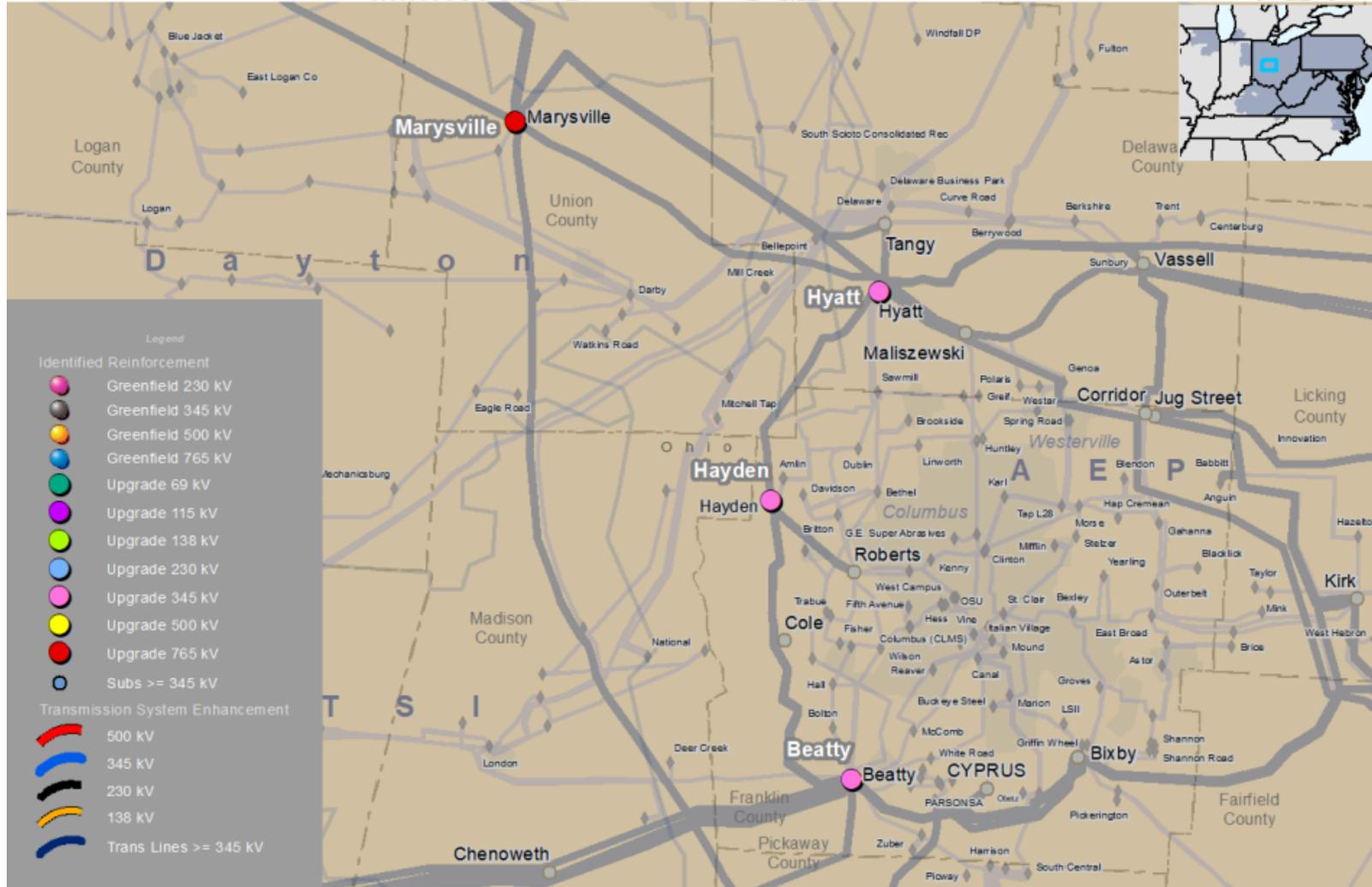
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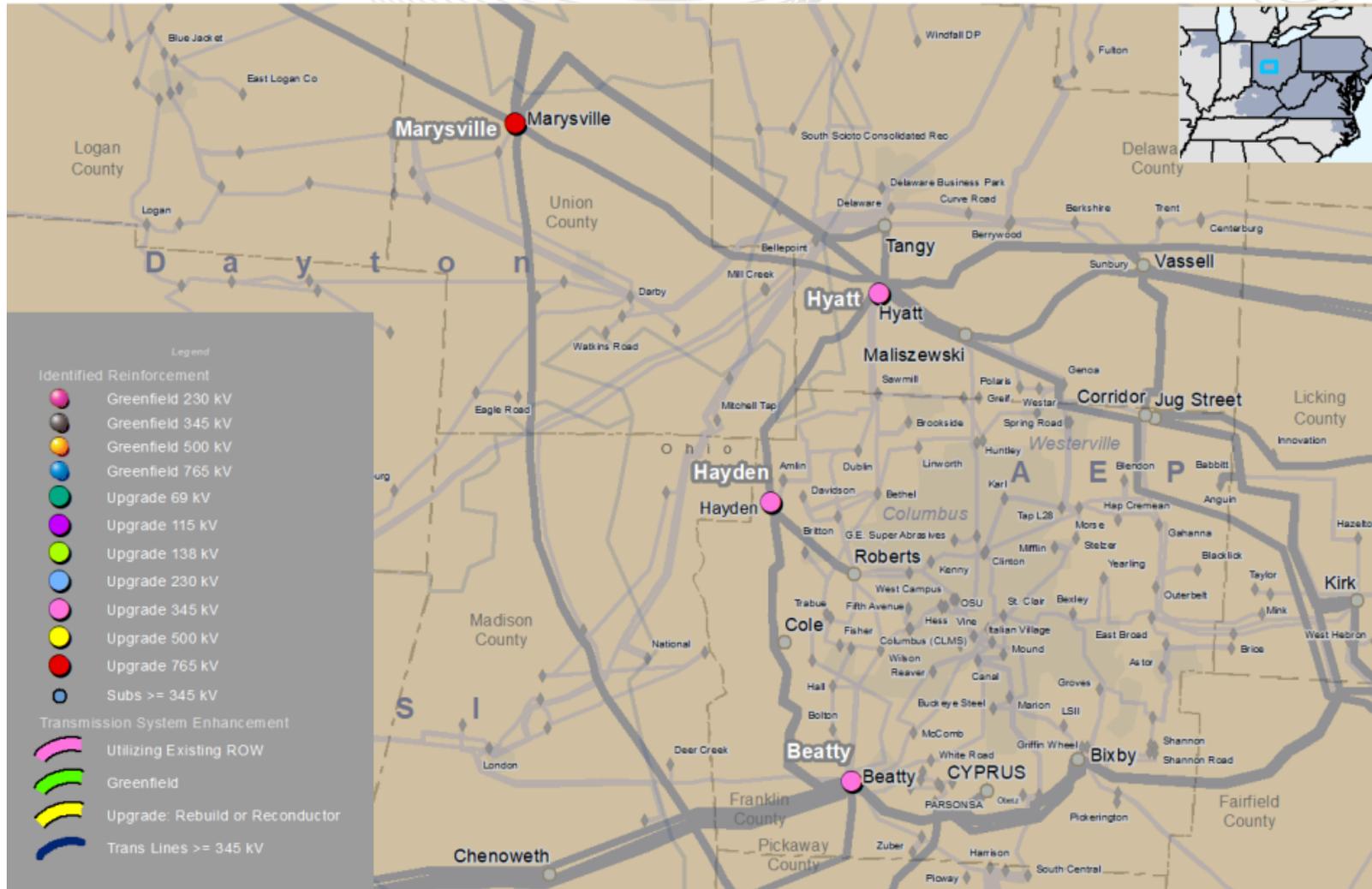
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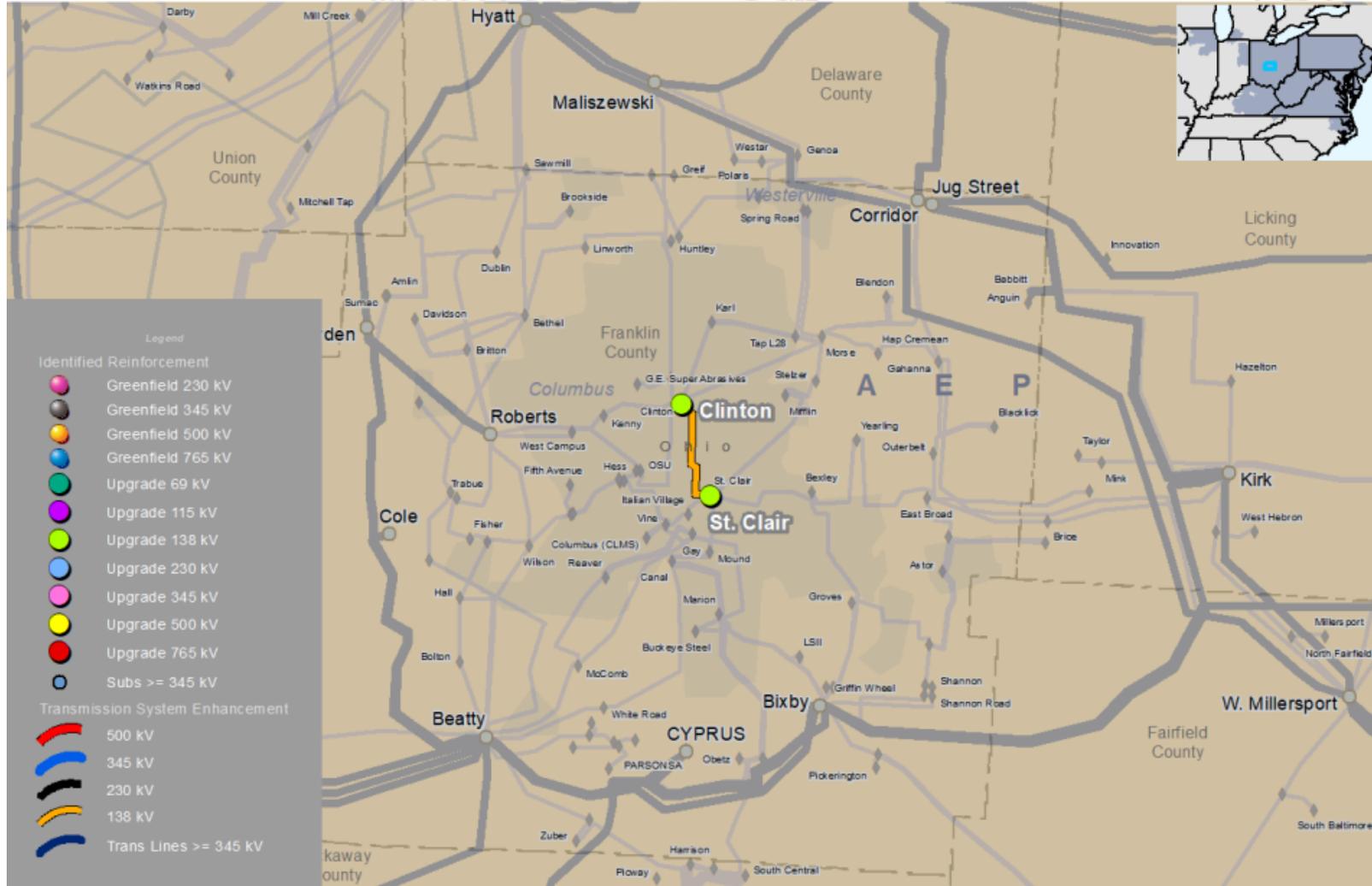
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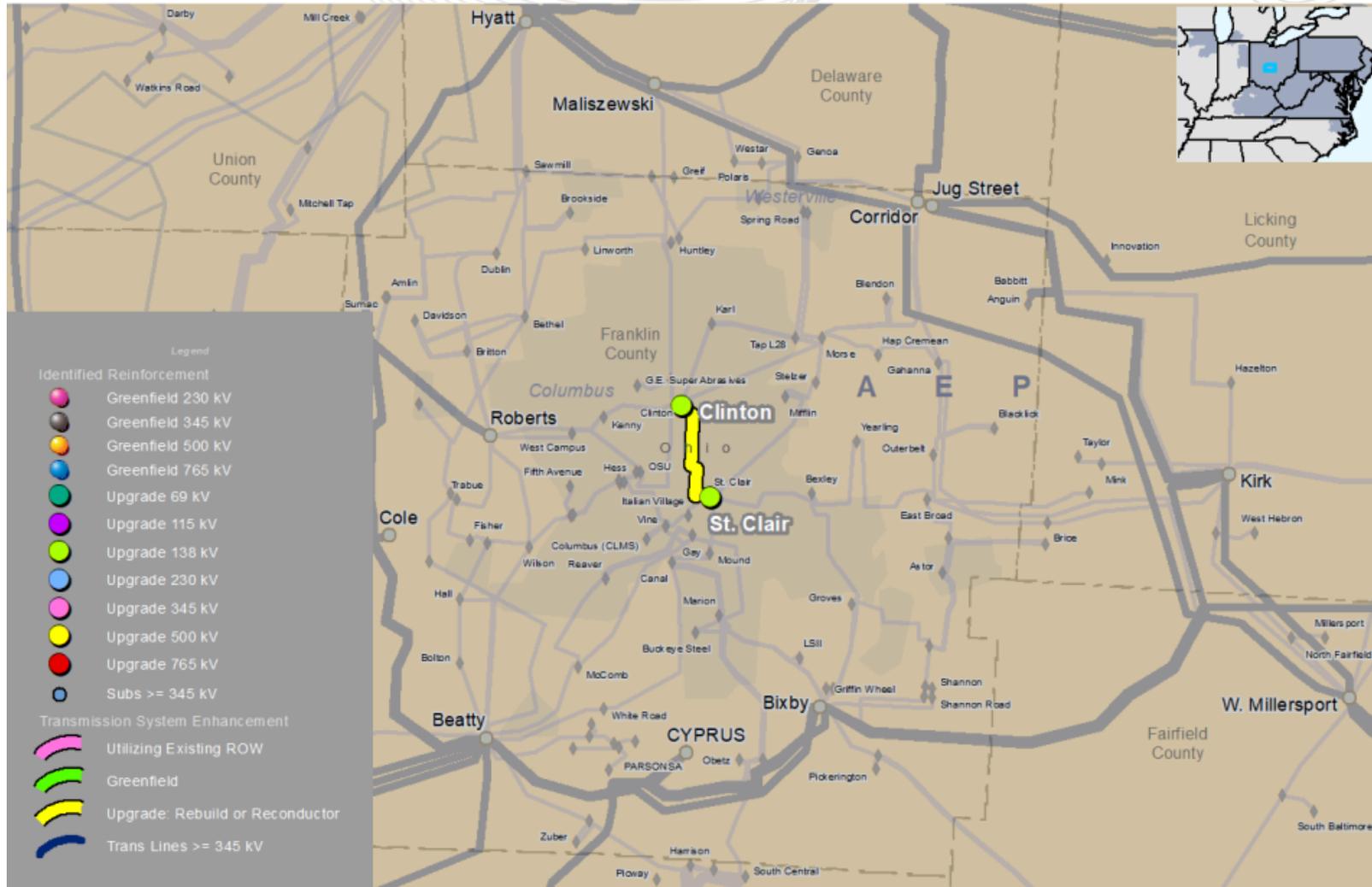
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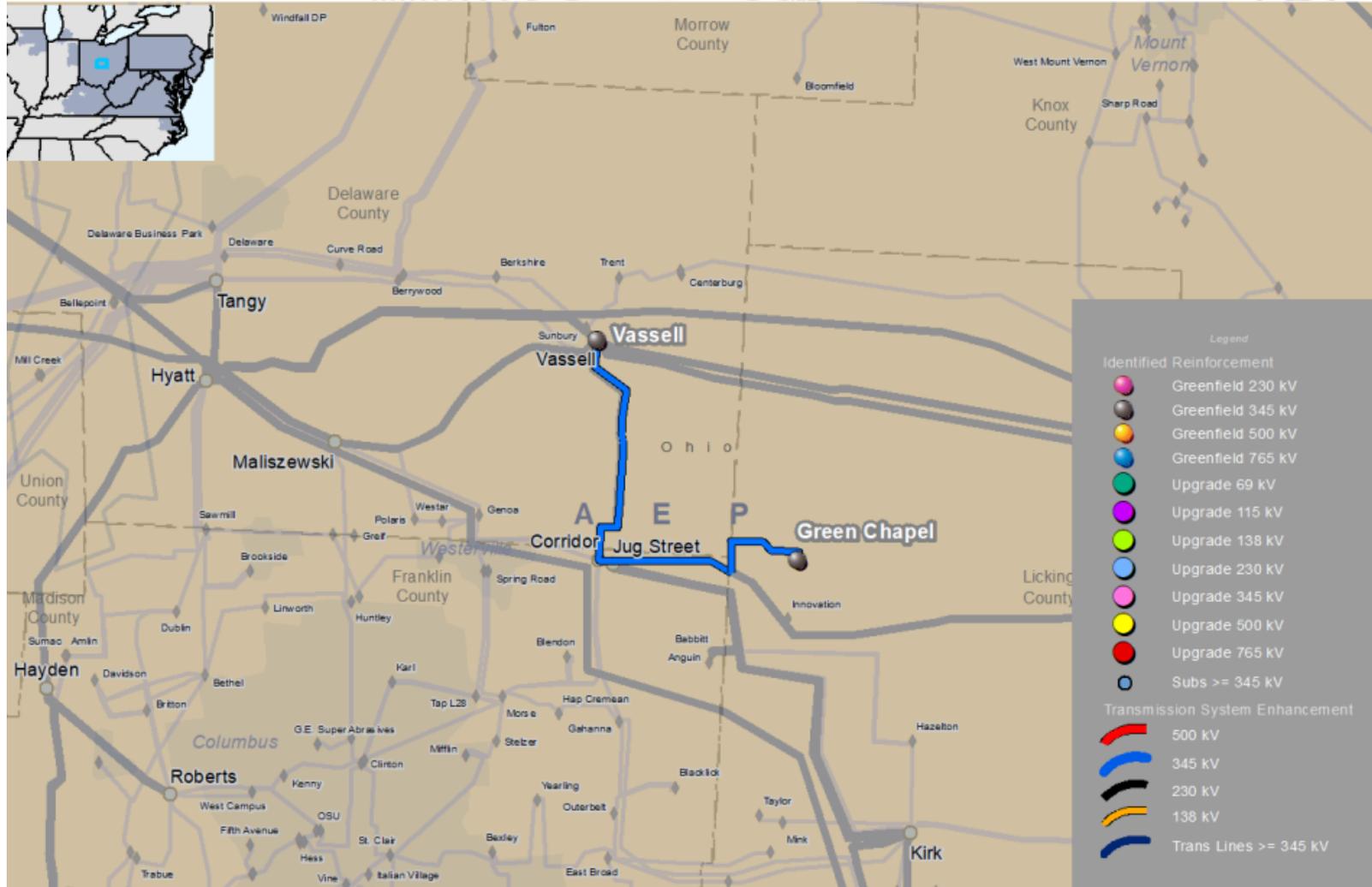
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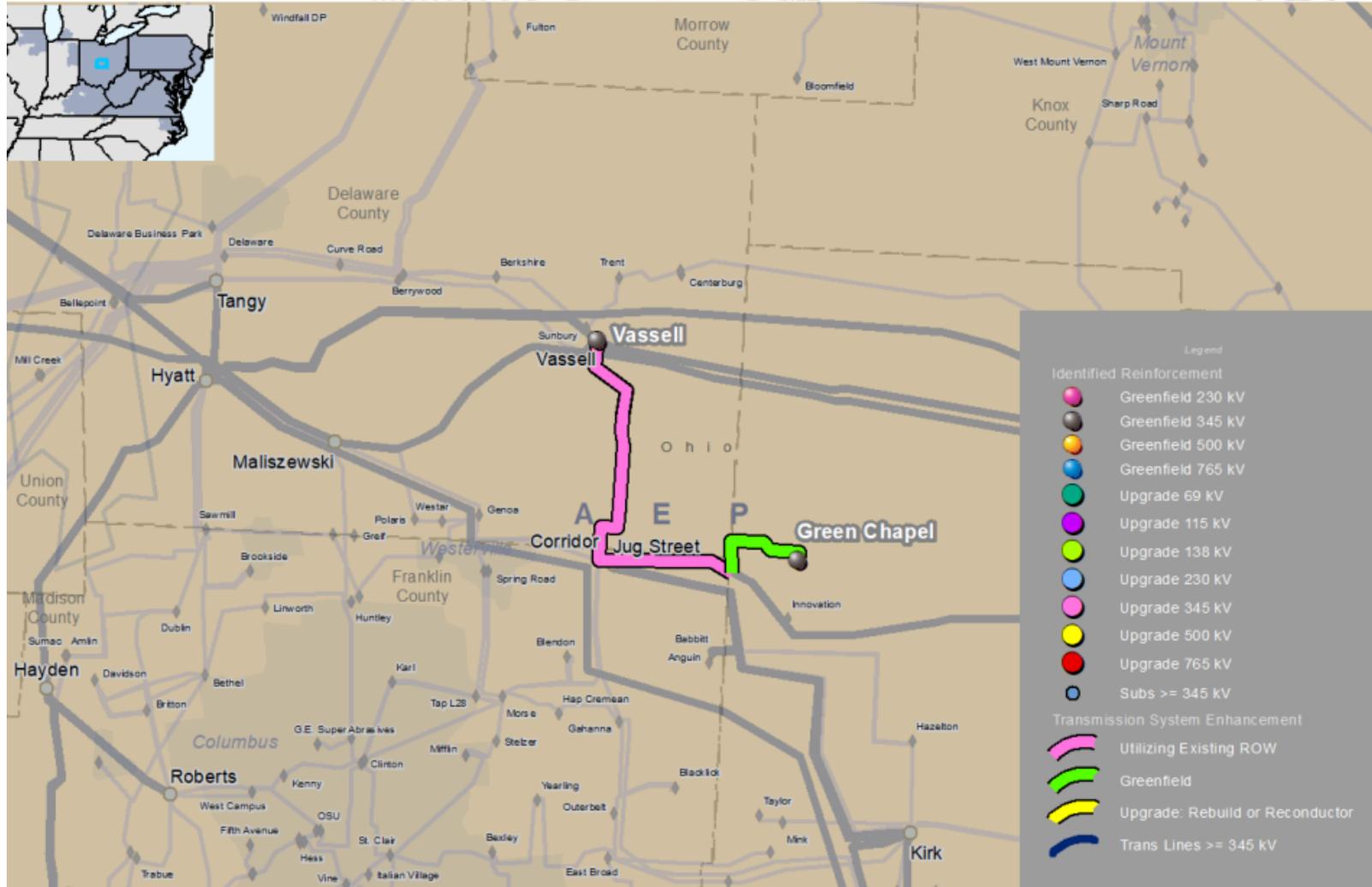
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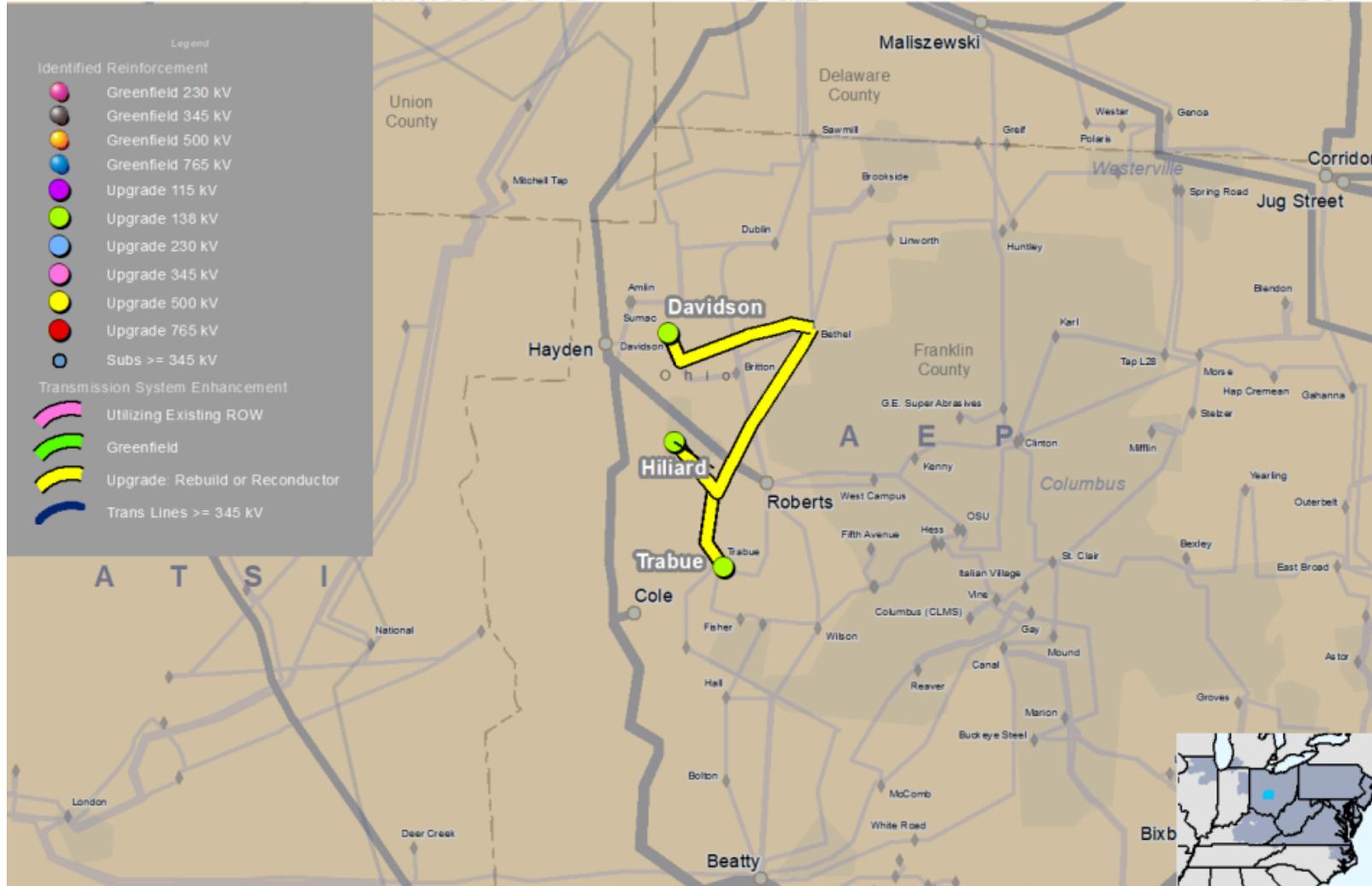
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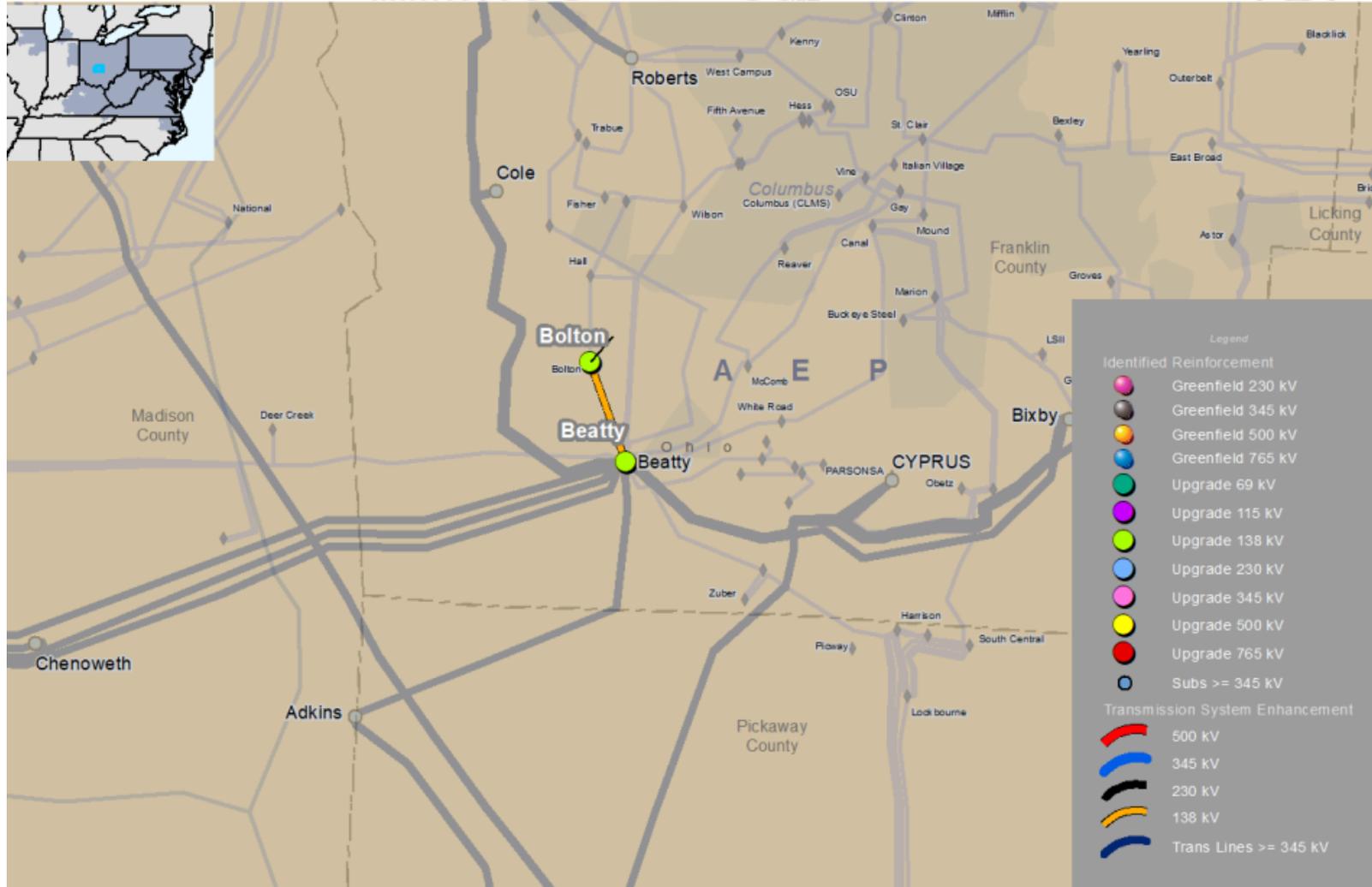
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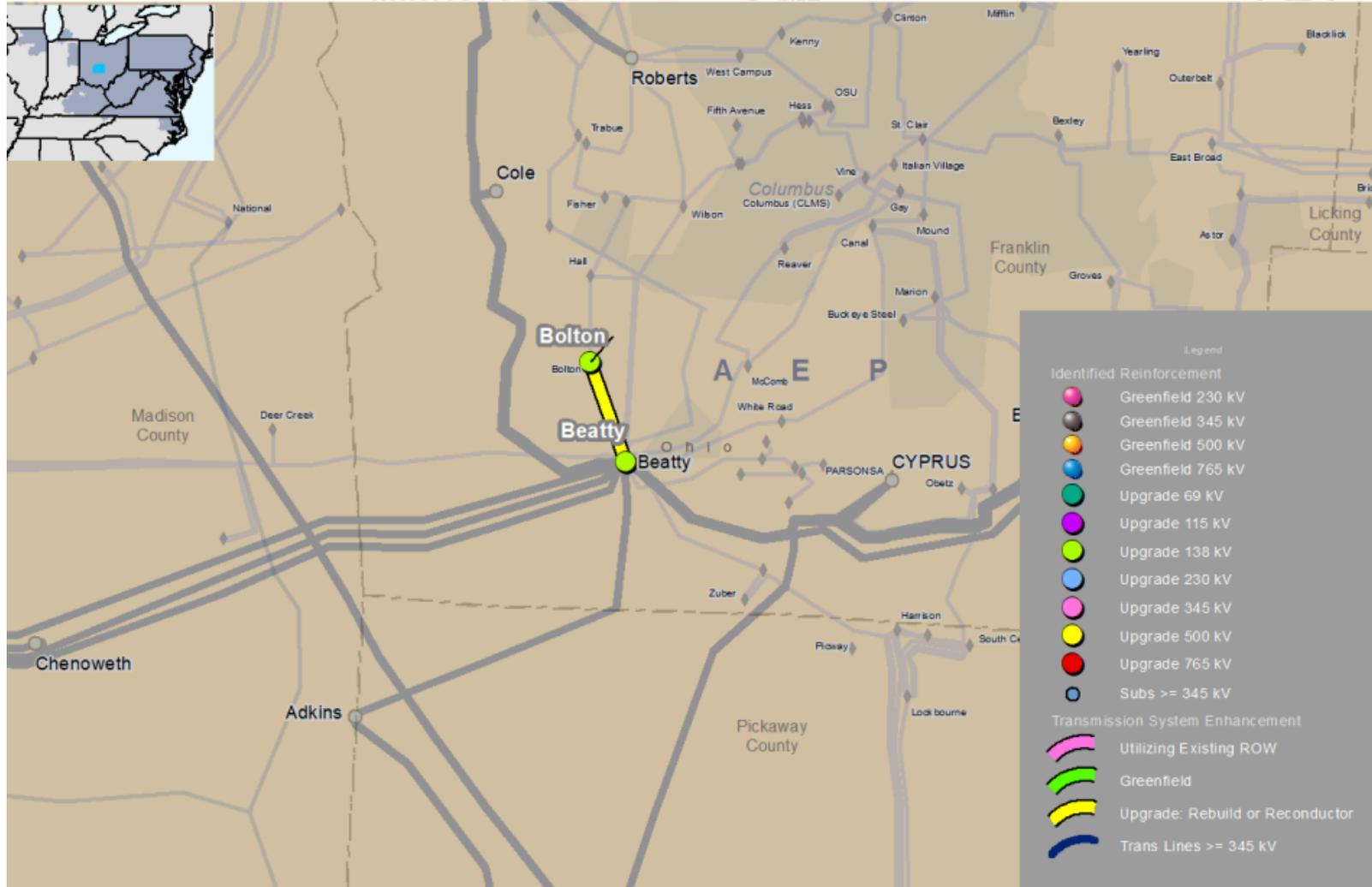
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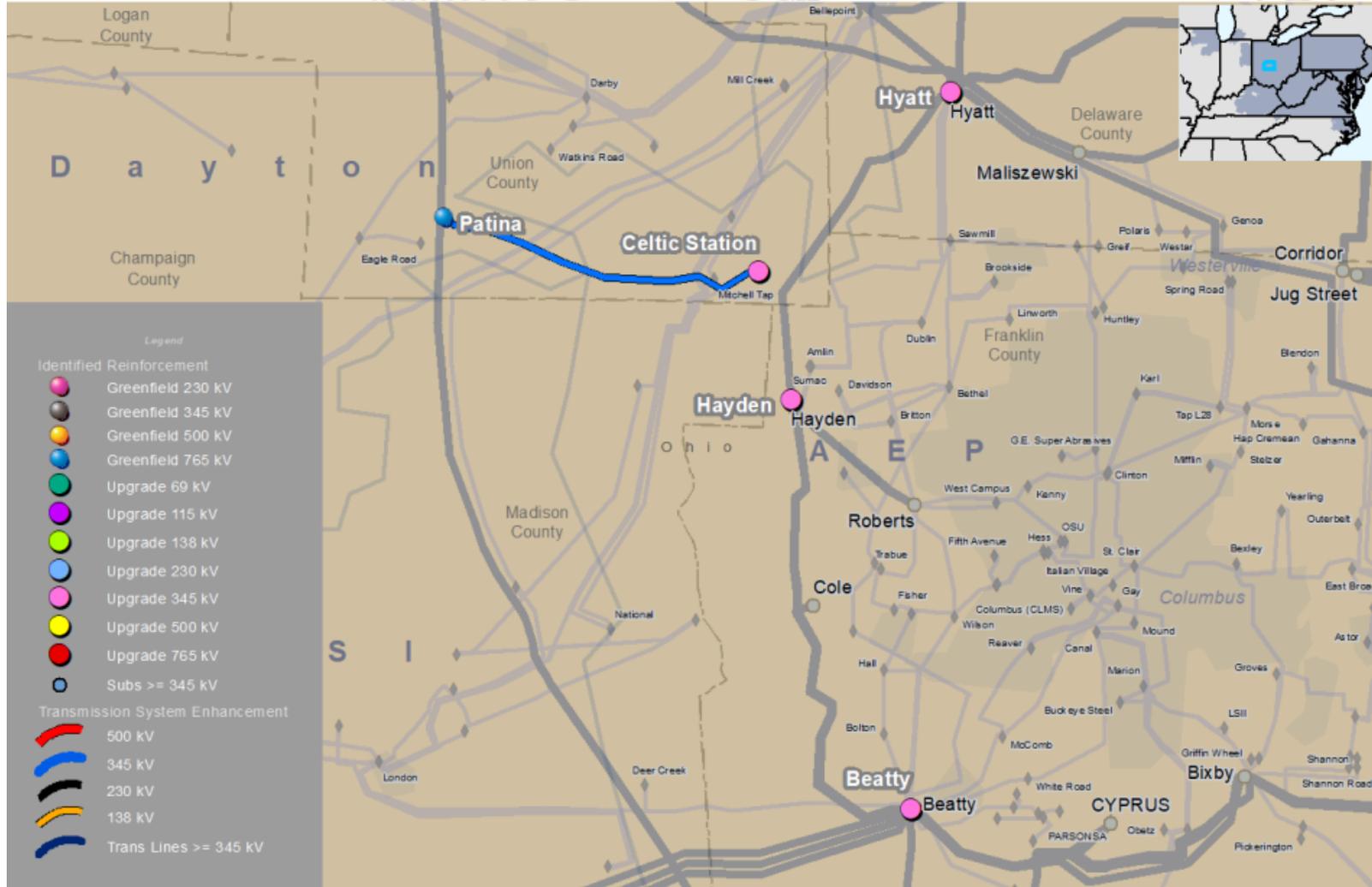
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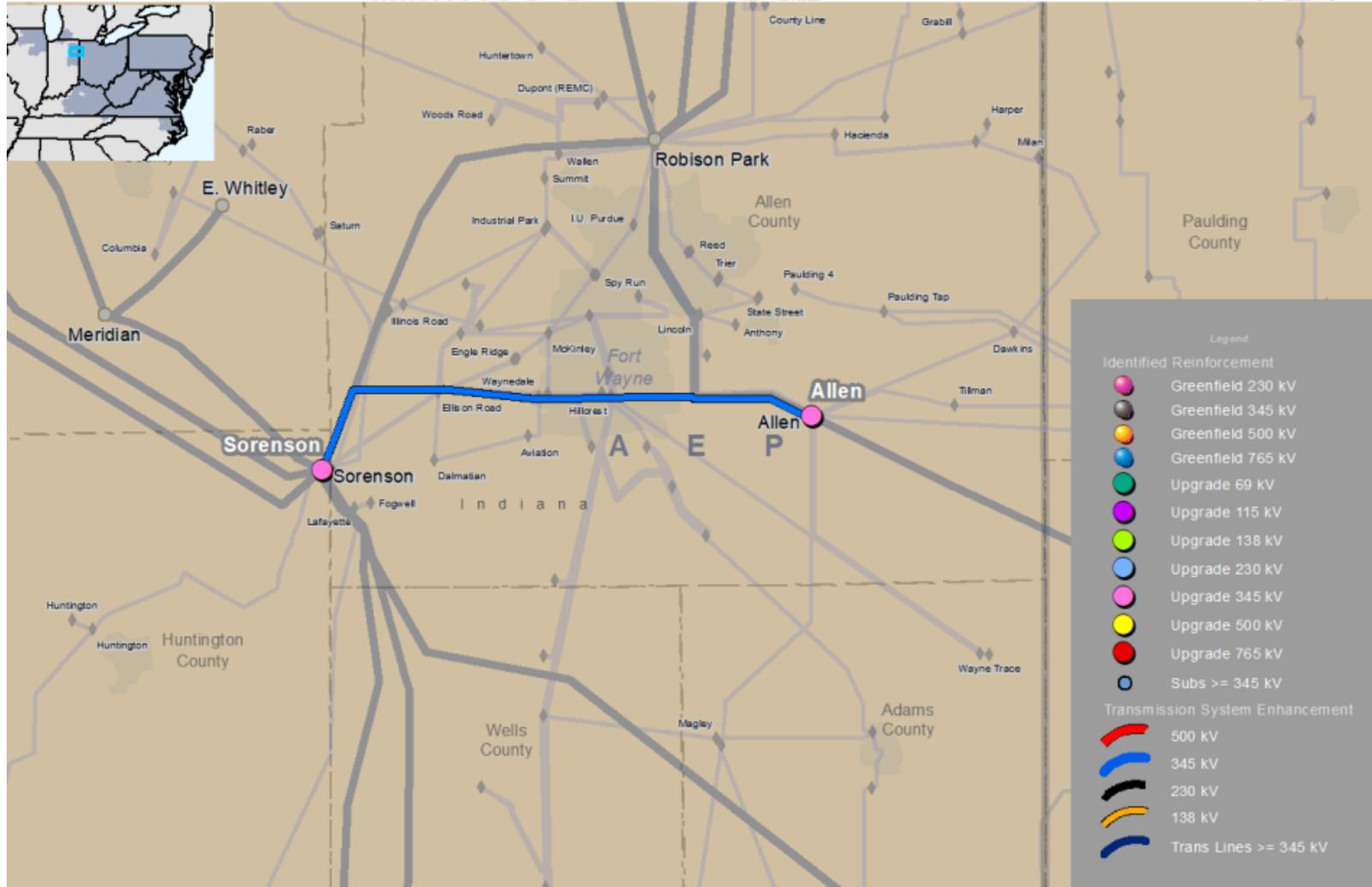
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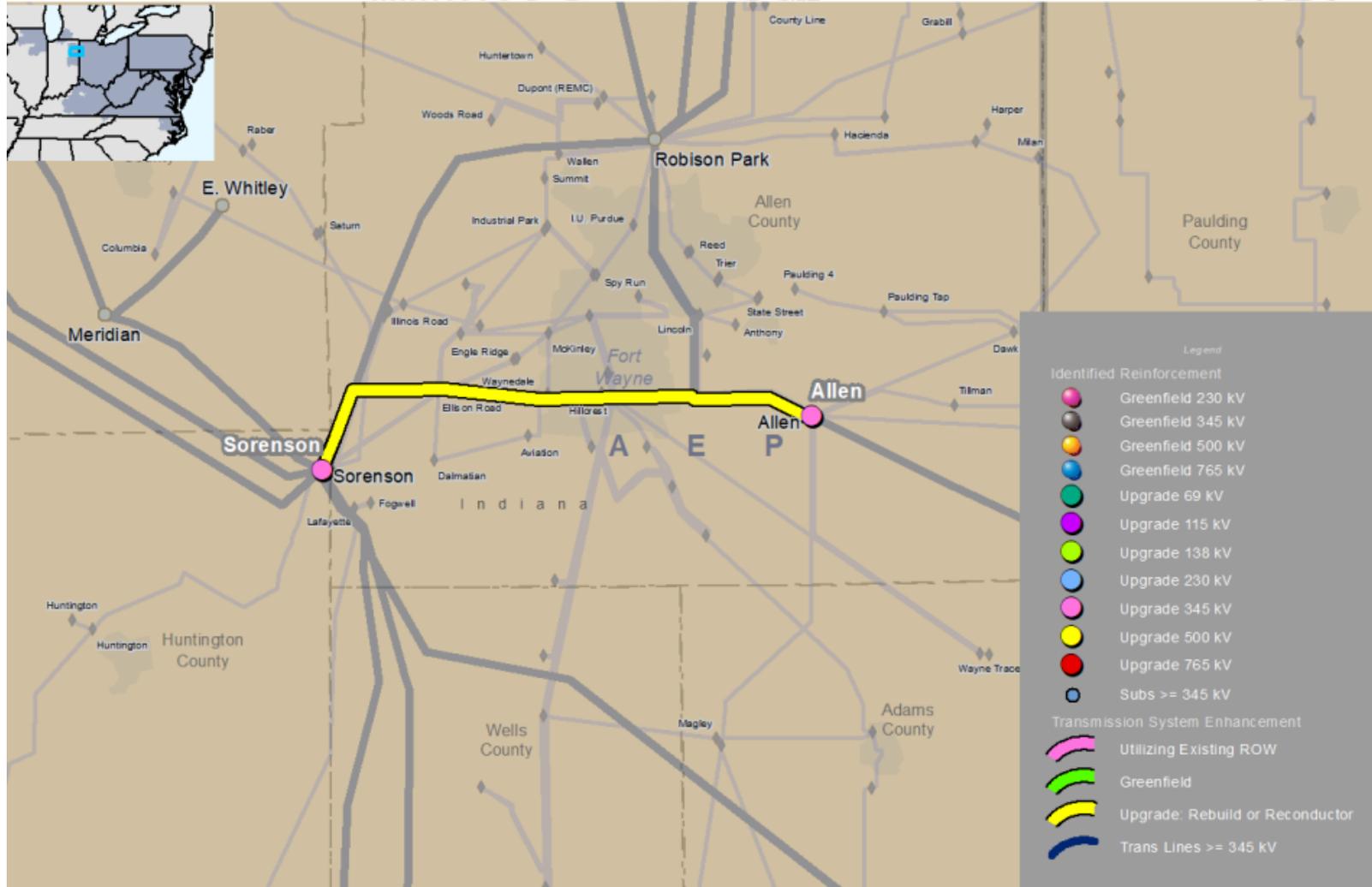
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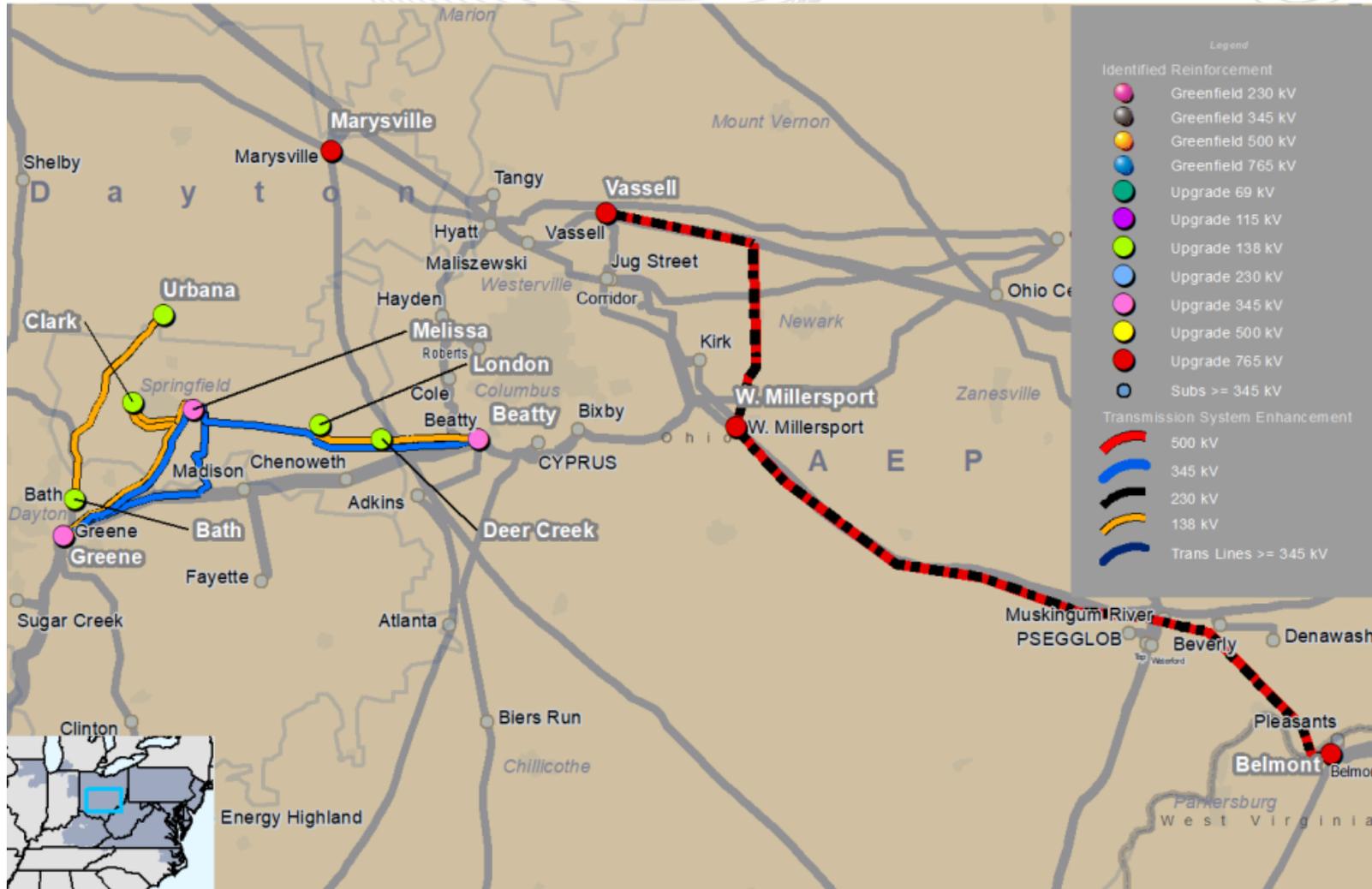


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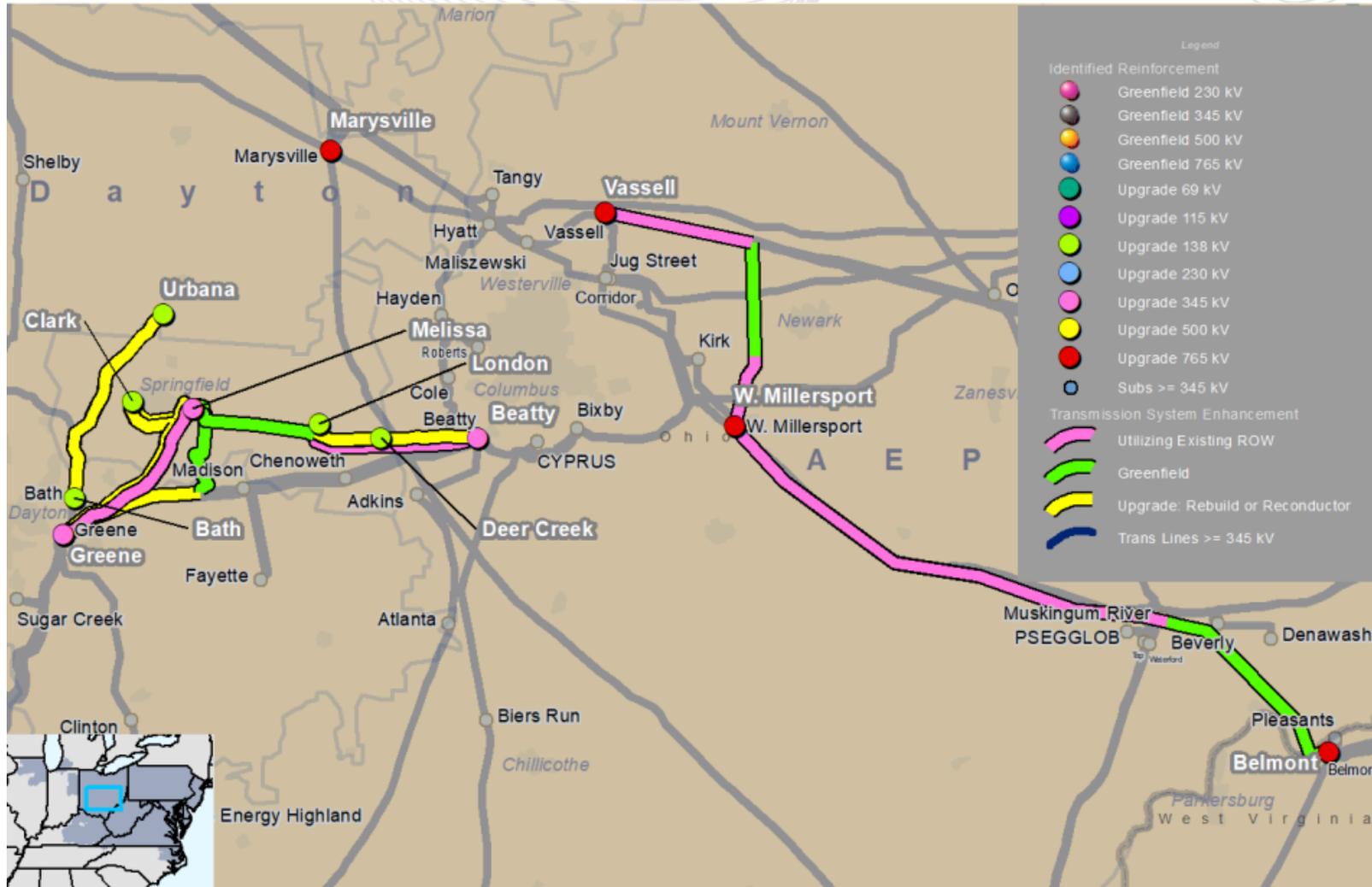


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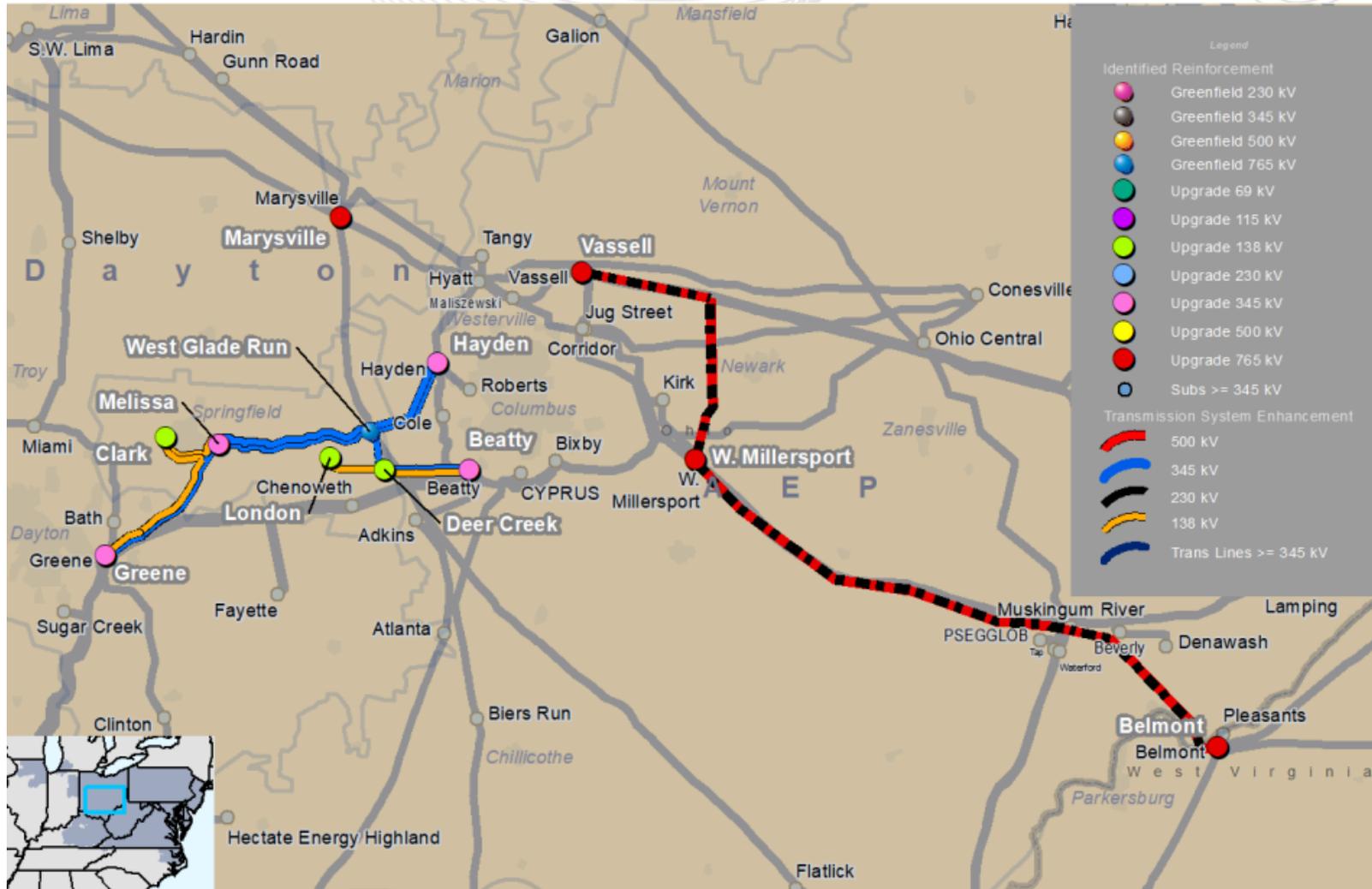
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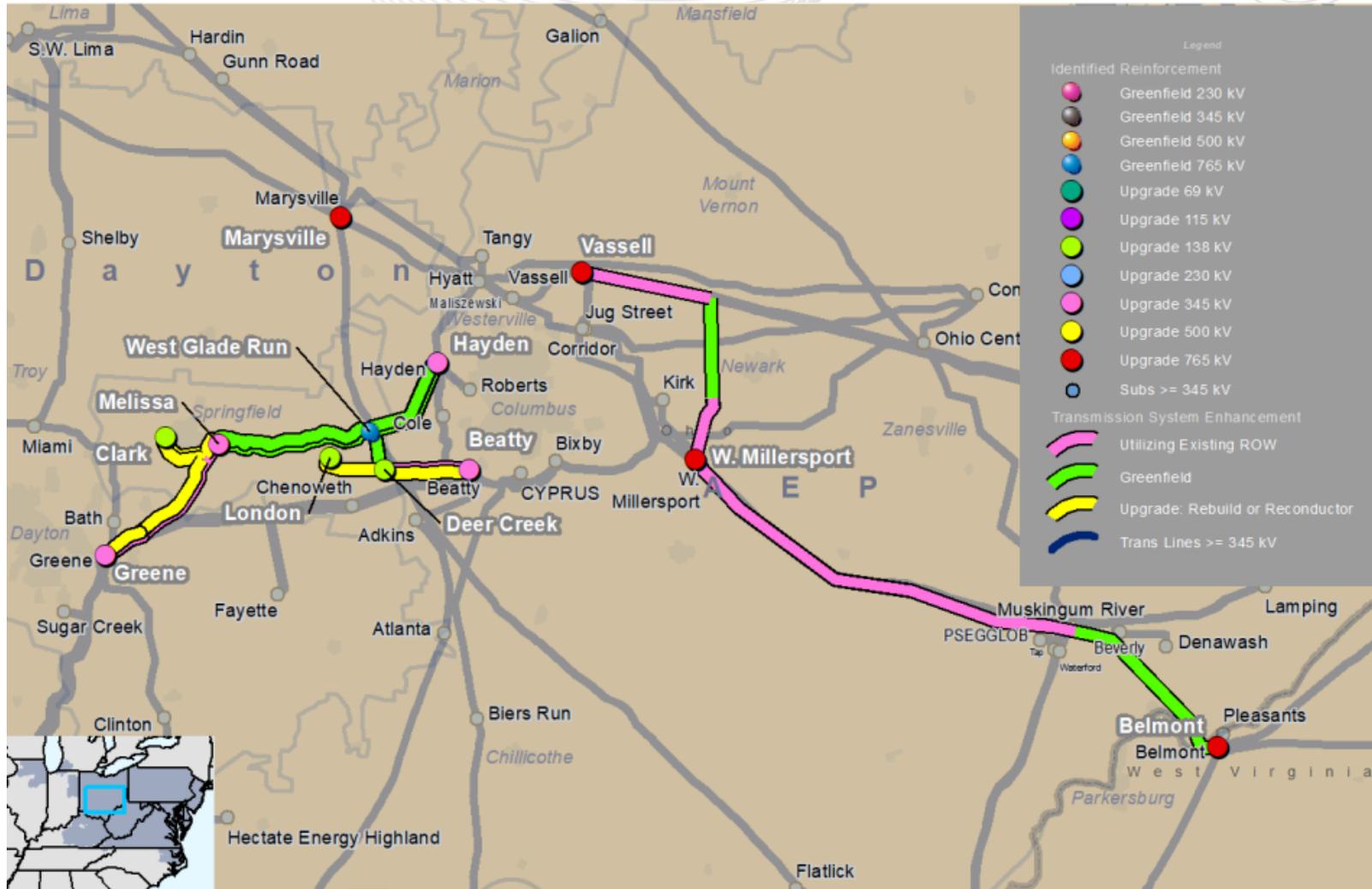
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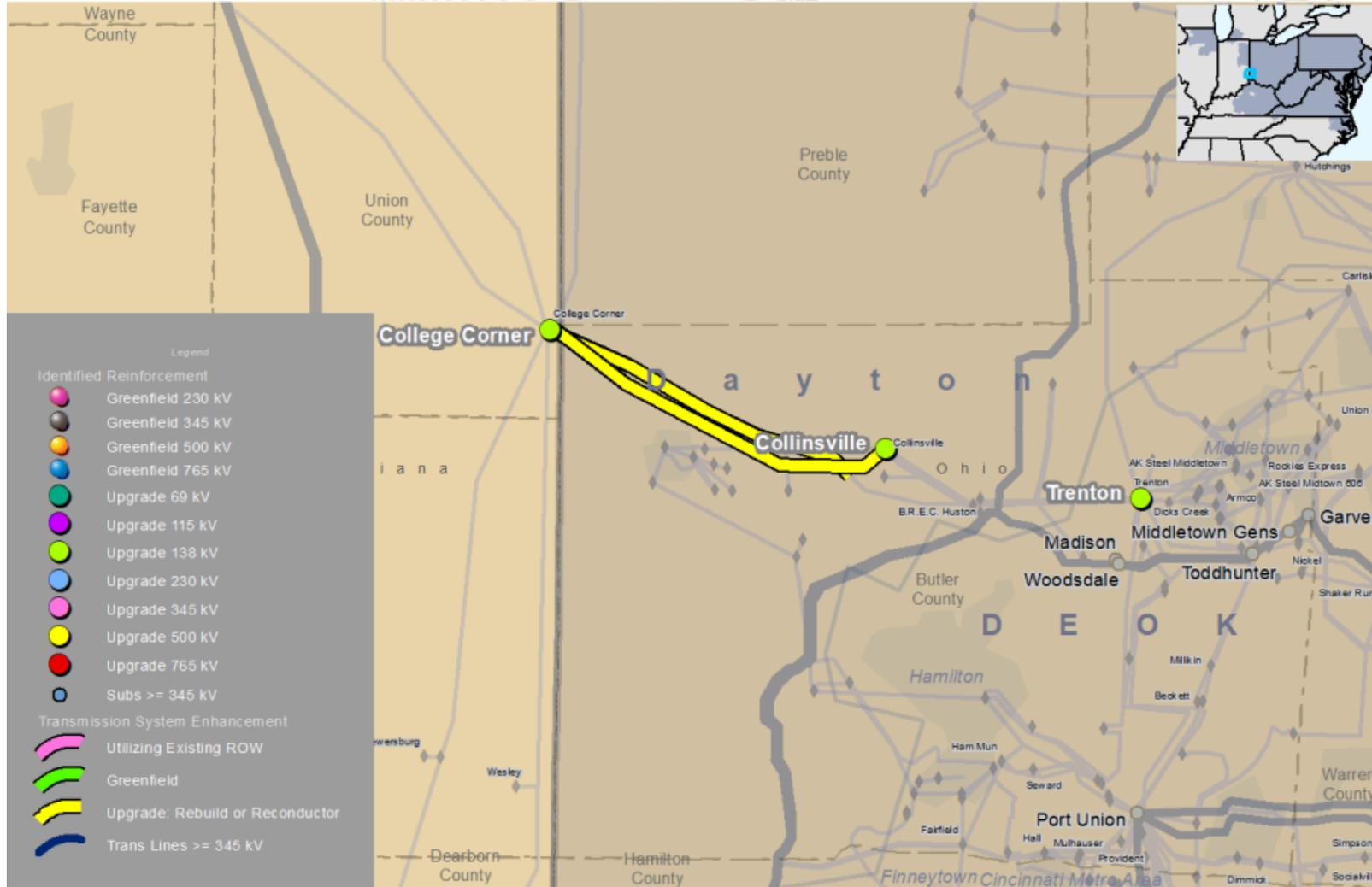


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# CINSI (DEOK)

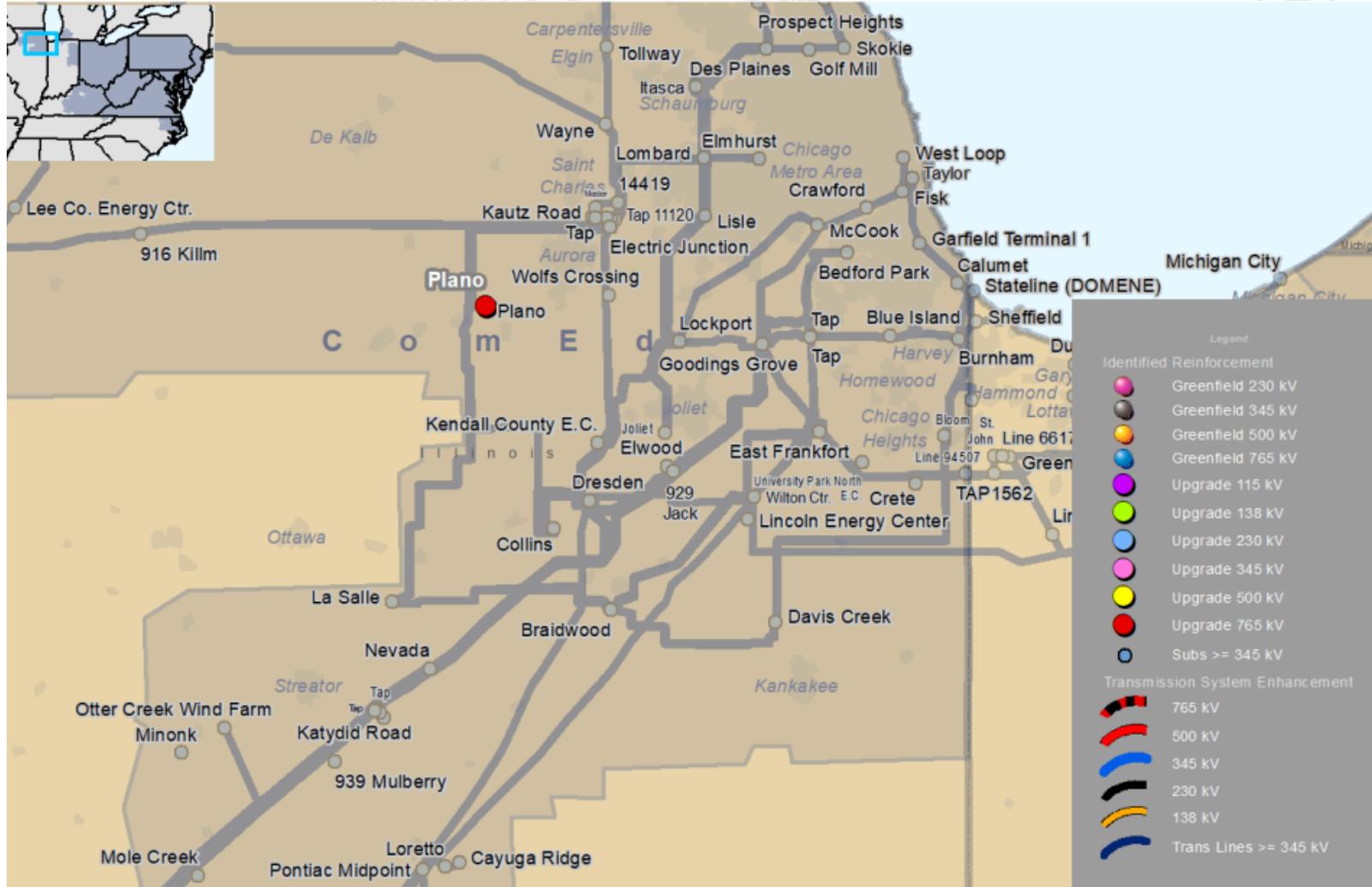


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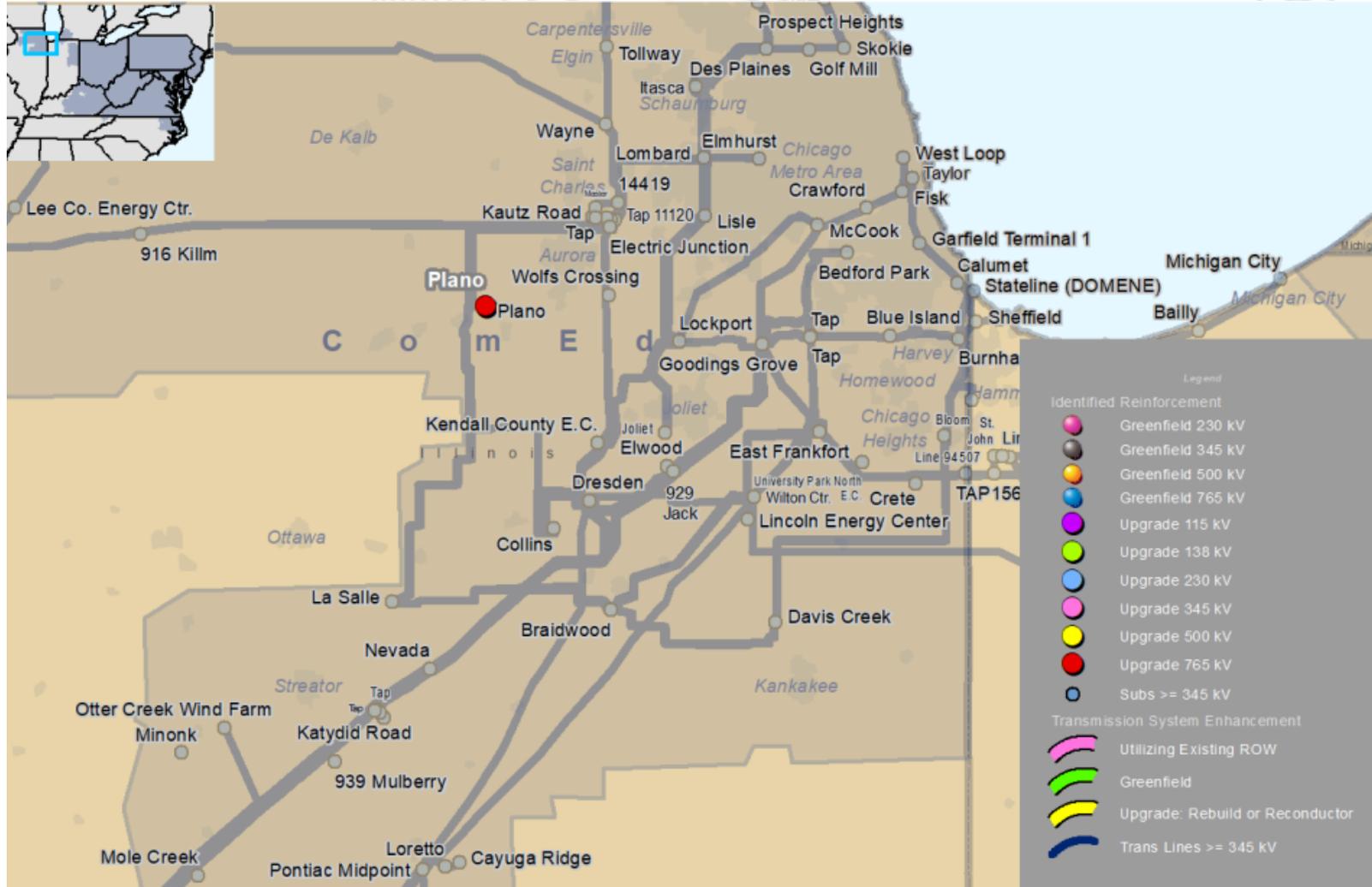


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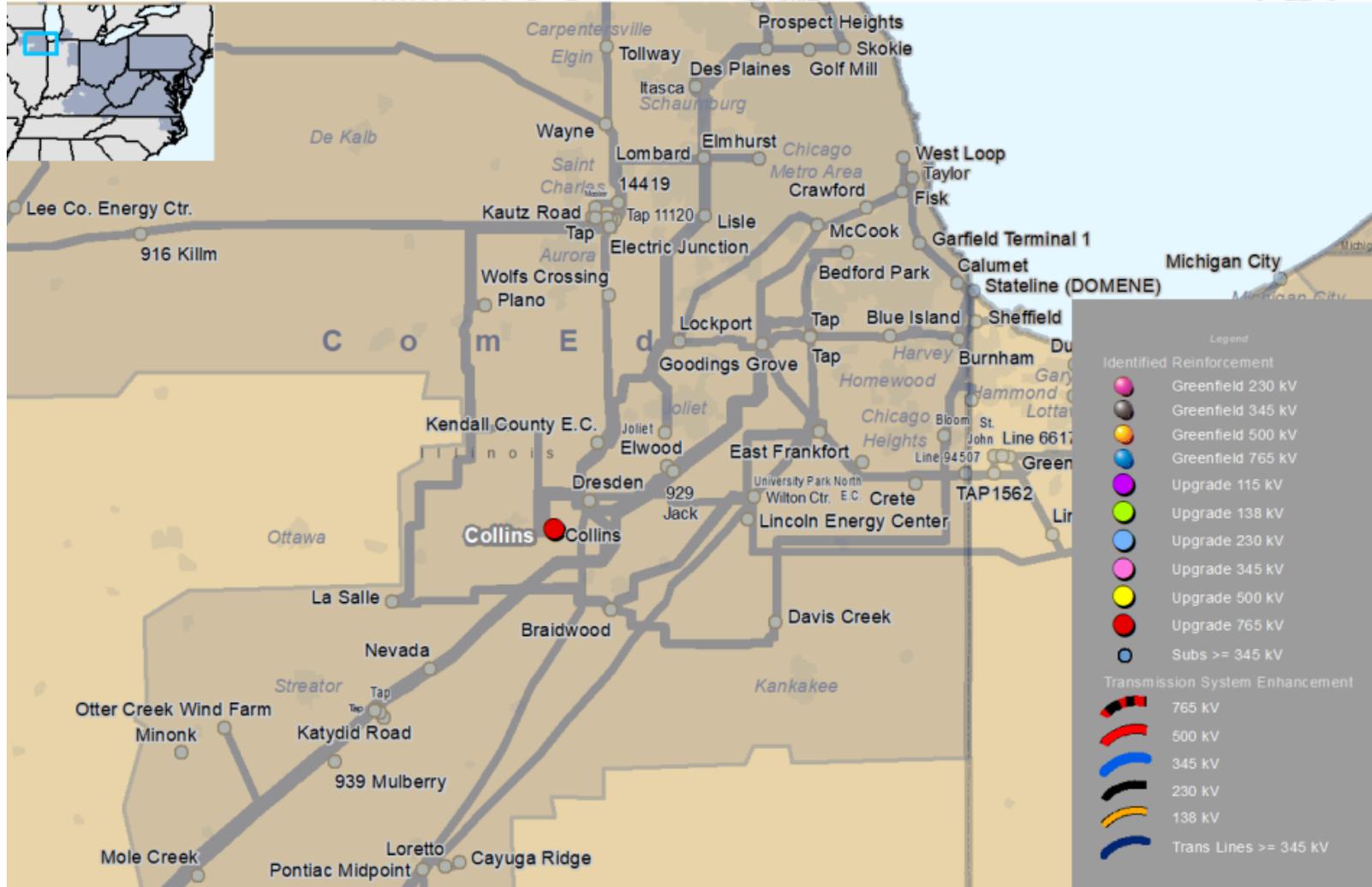
# COMED (Exelon)



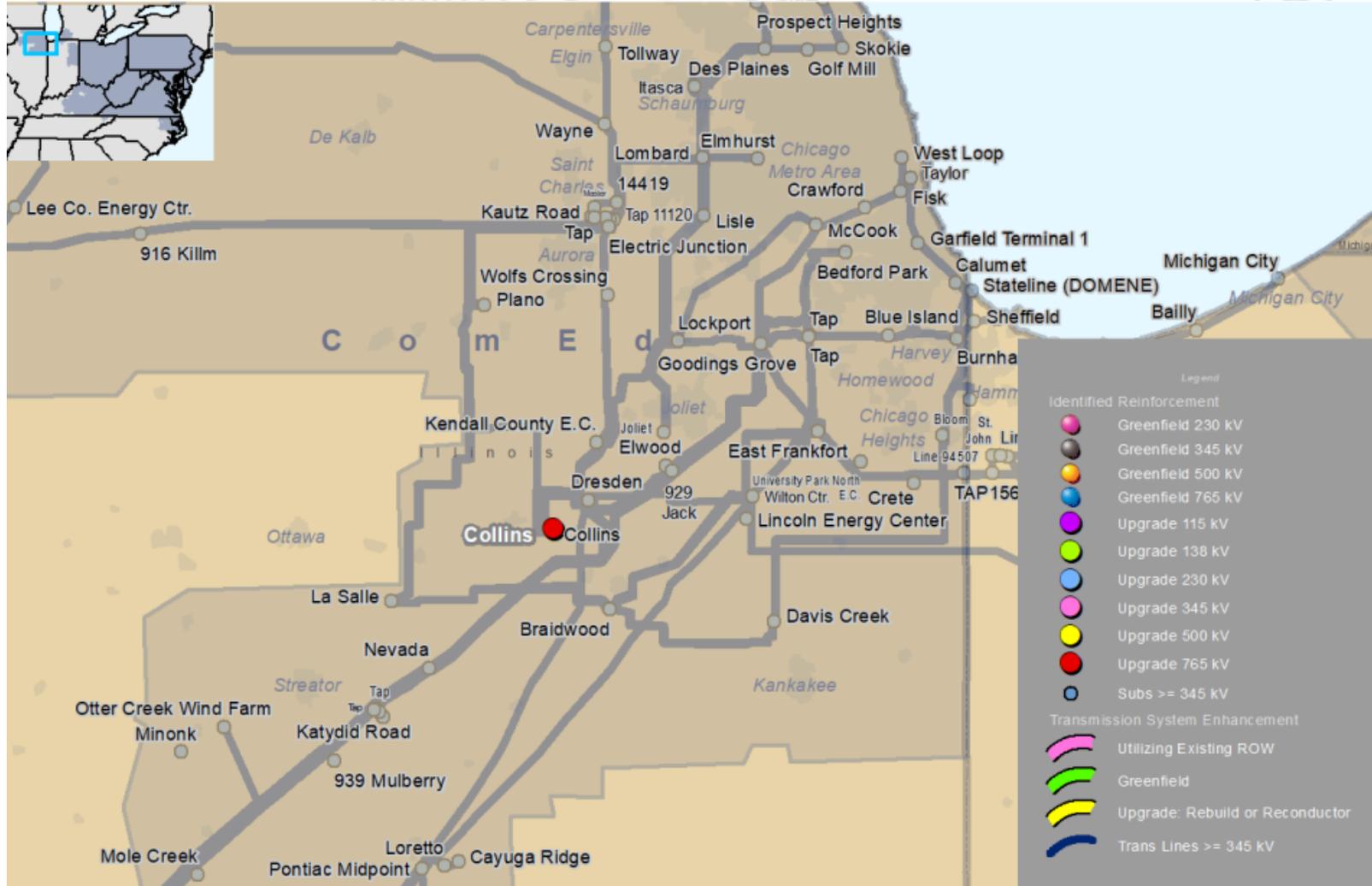
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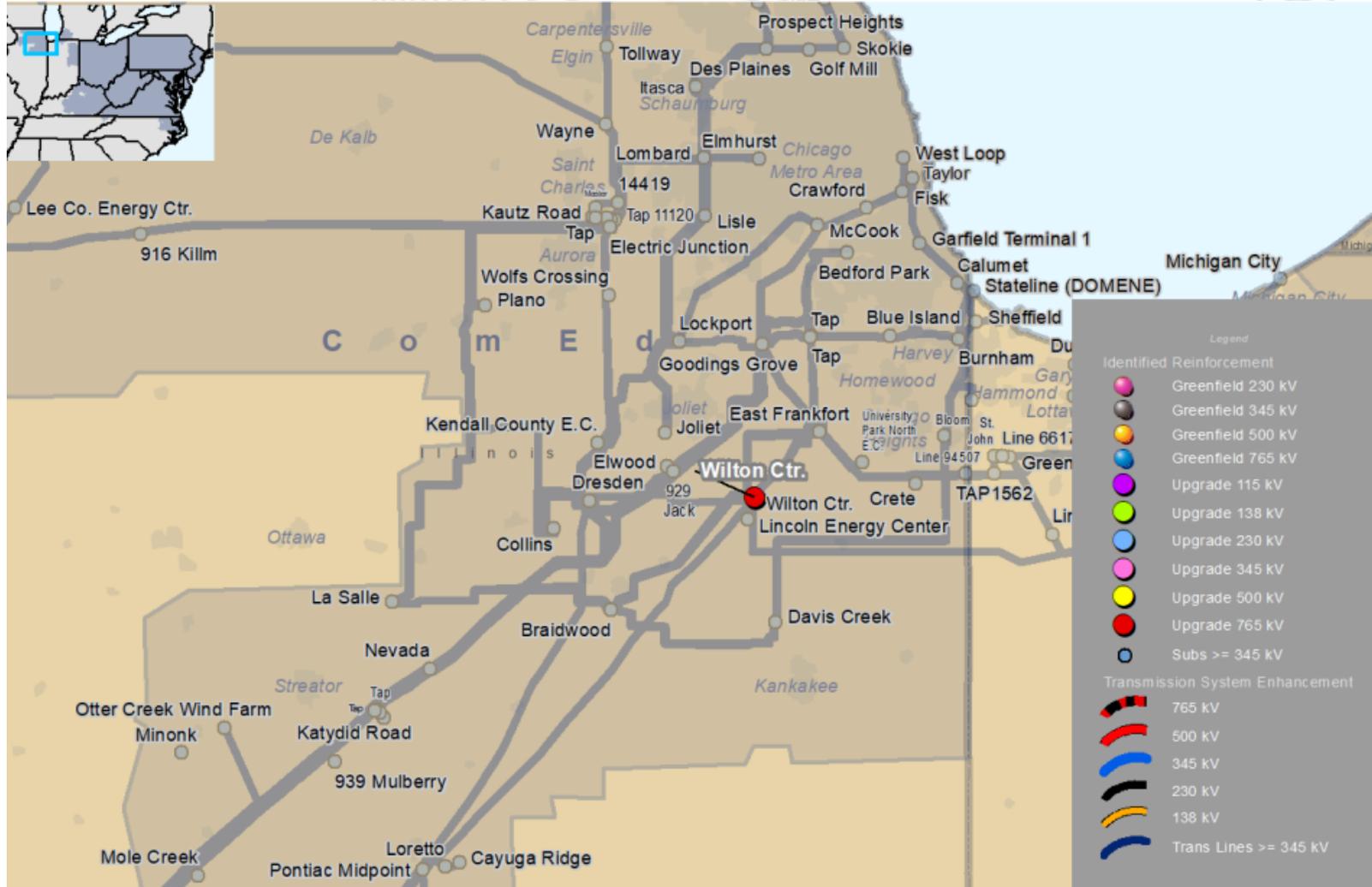
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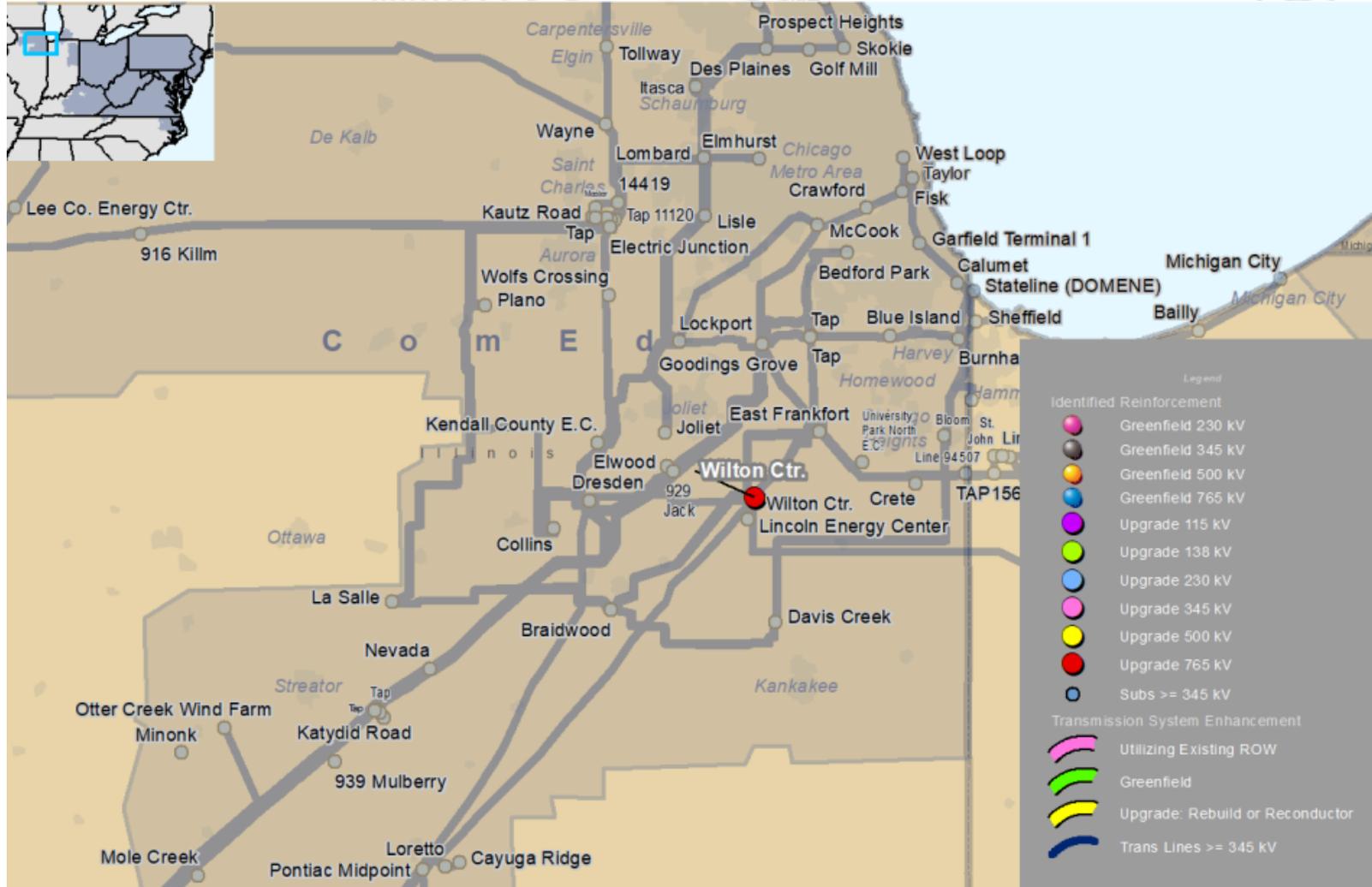
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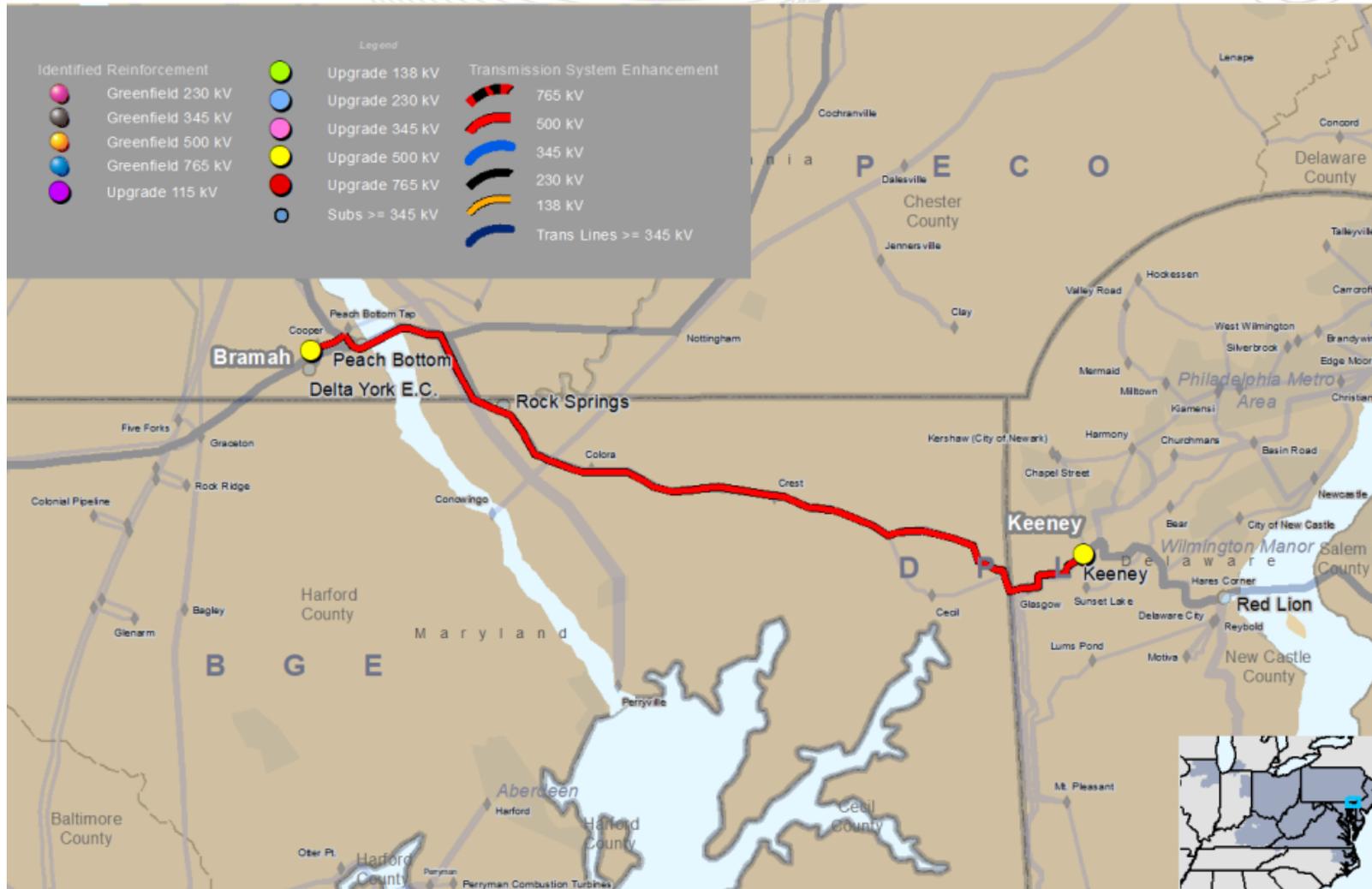


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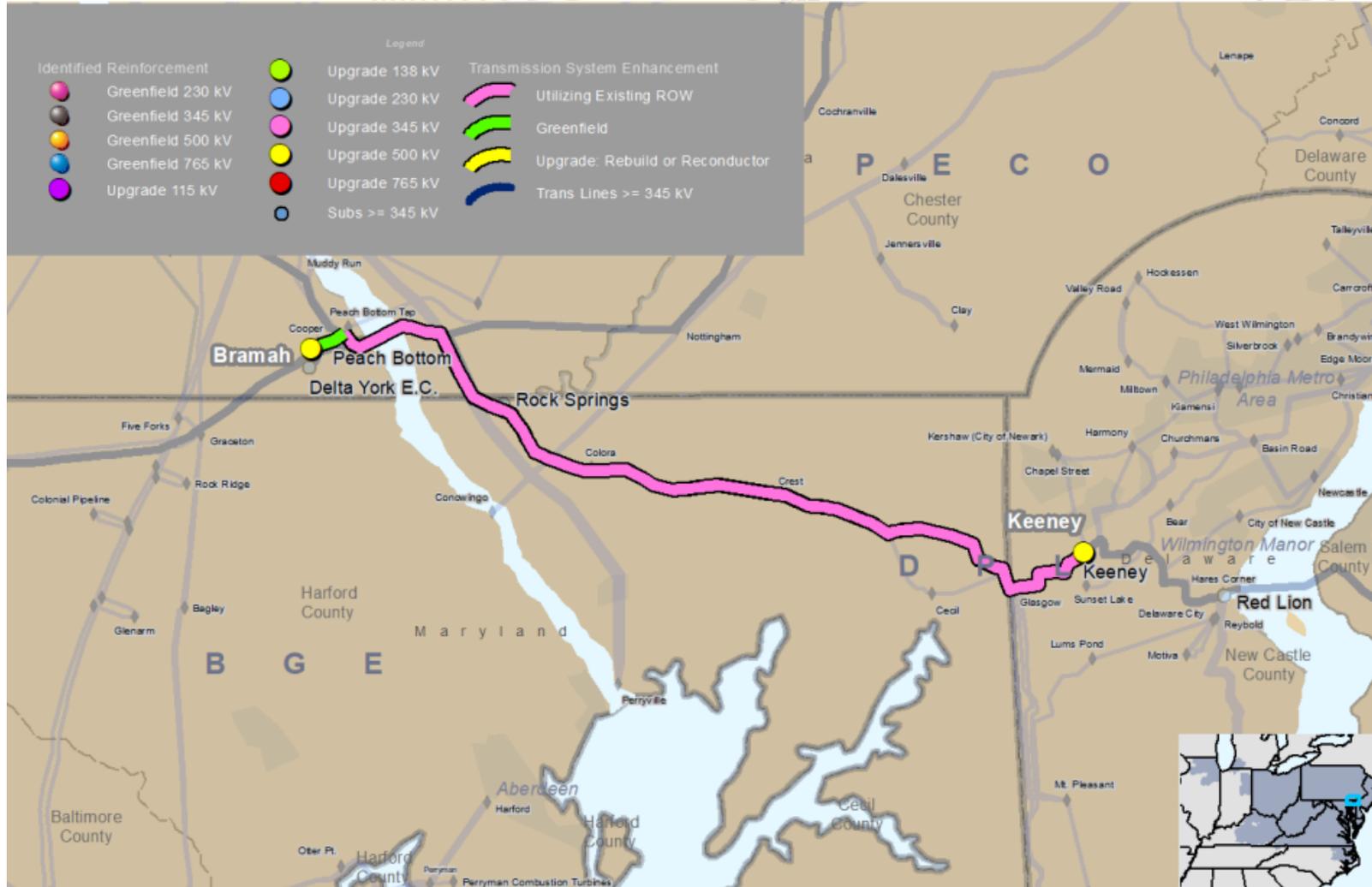


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# DPL (Exelon)



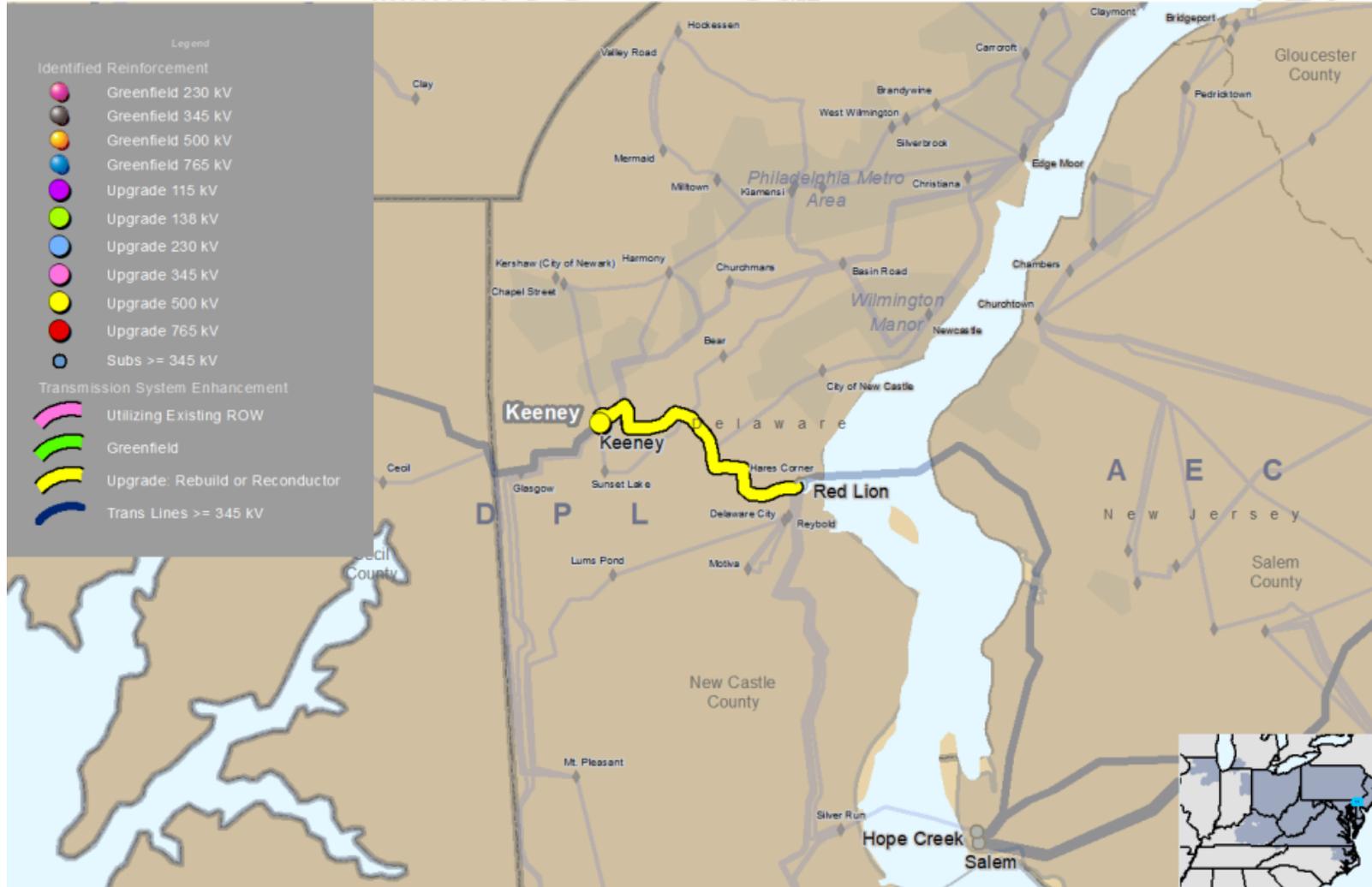
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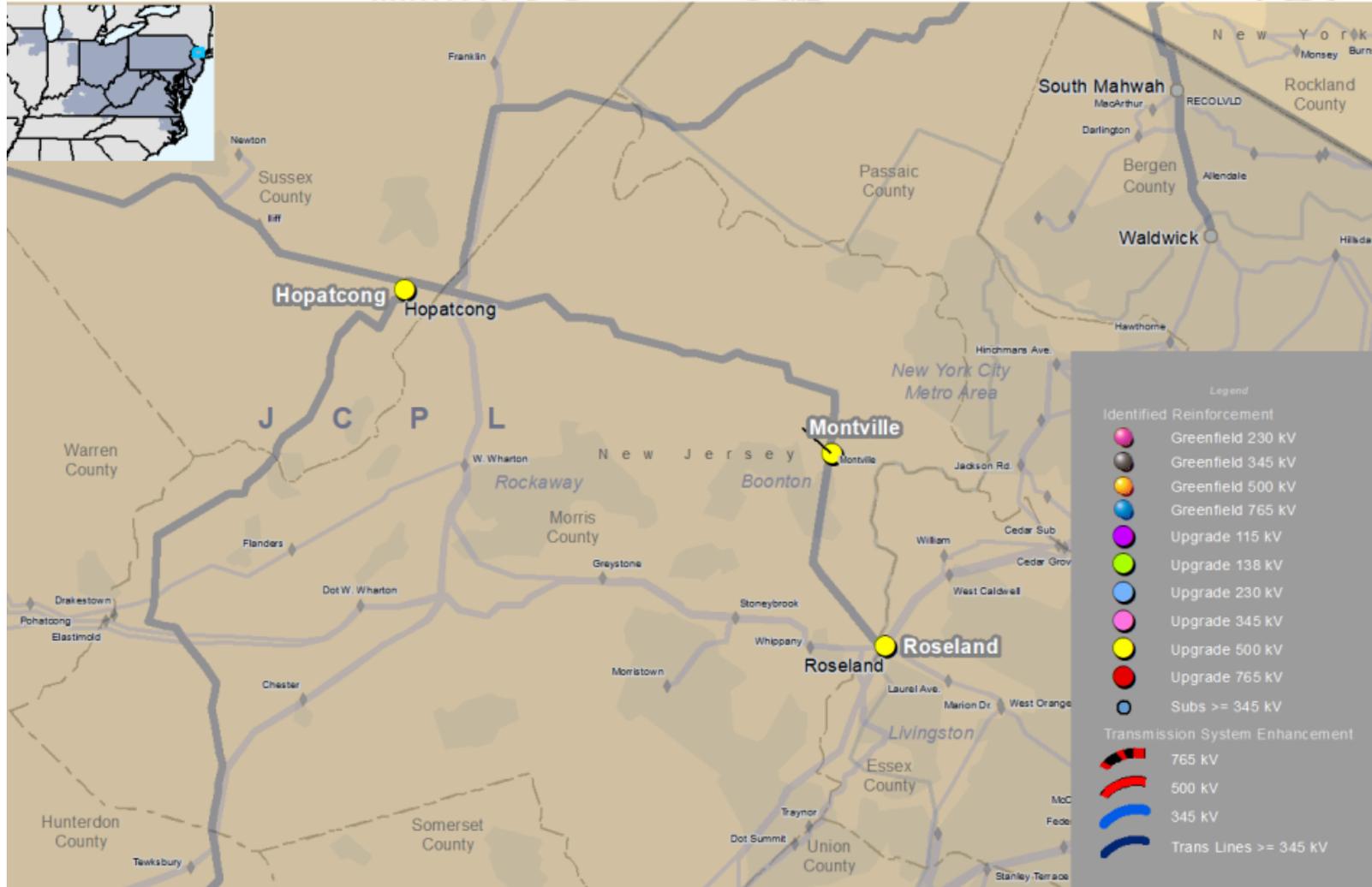


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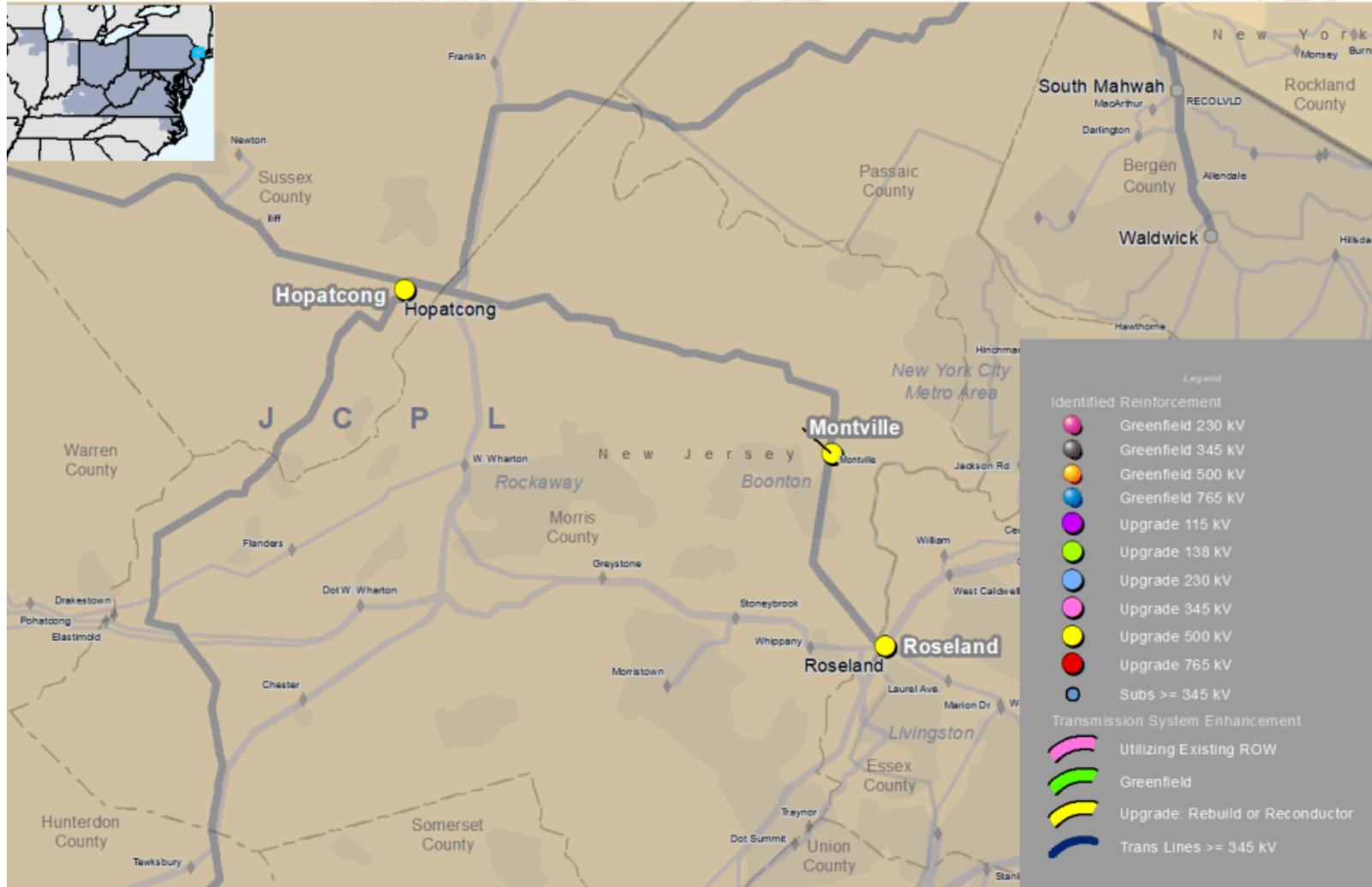


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# JCPL (FirstEnergy)



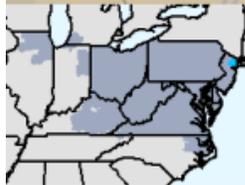
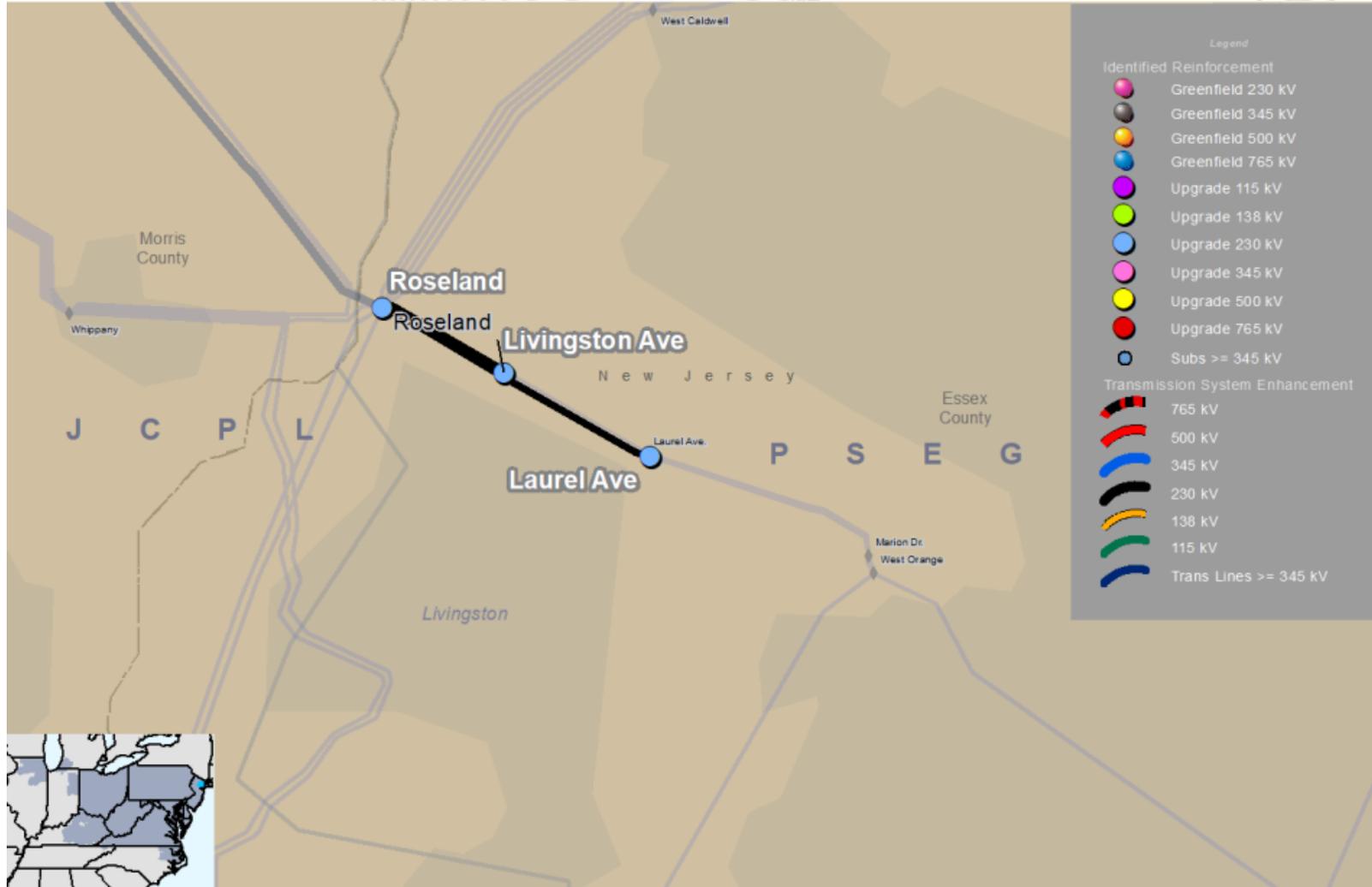
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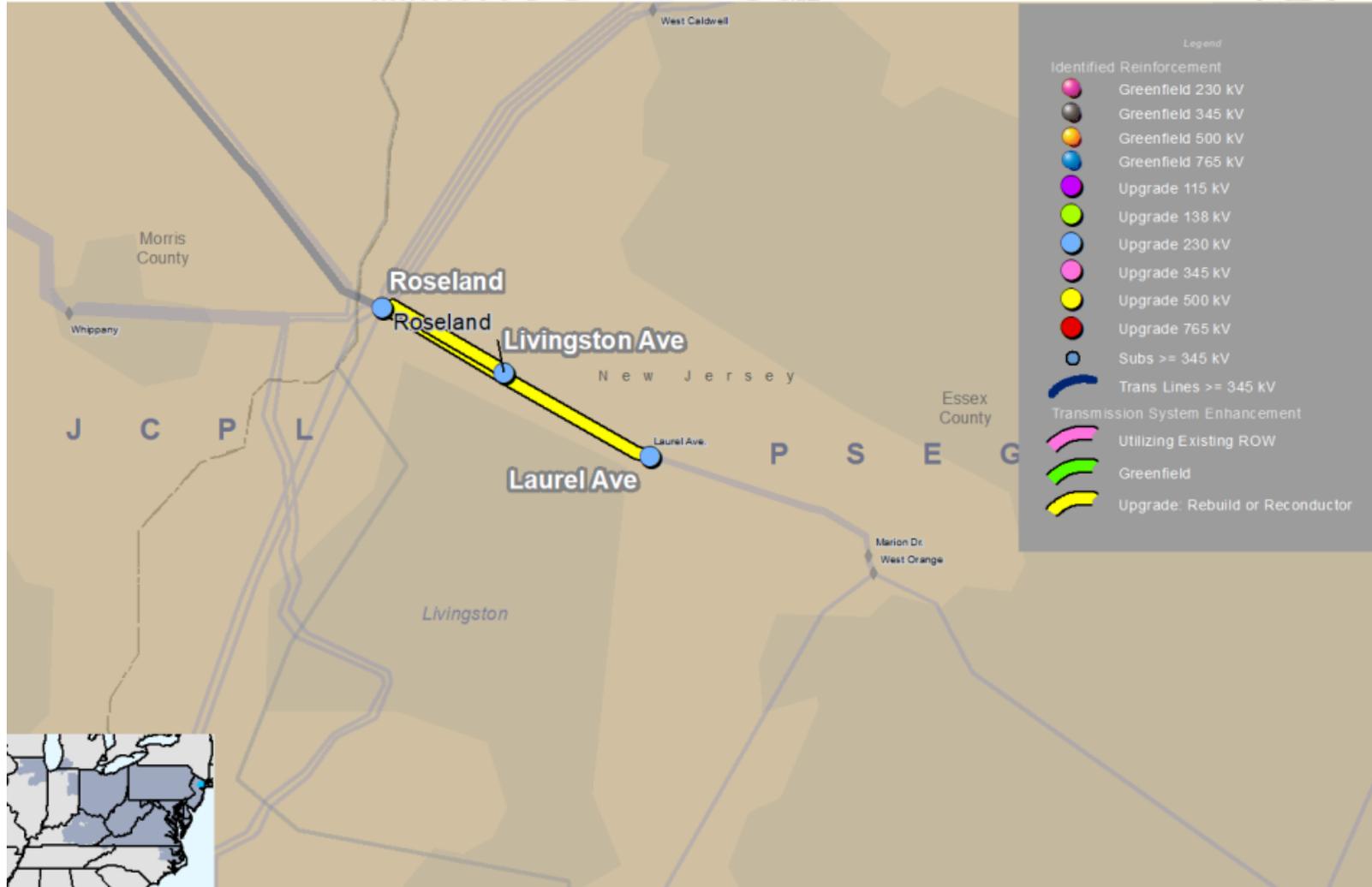
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# PSEG

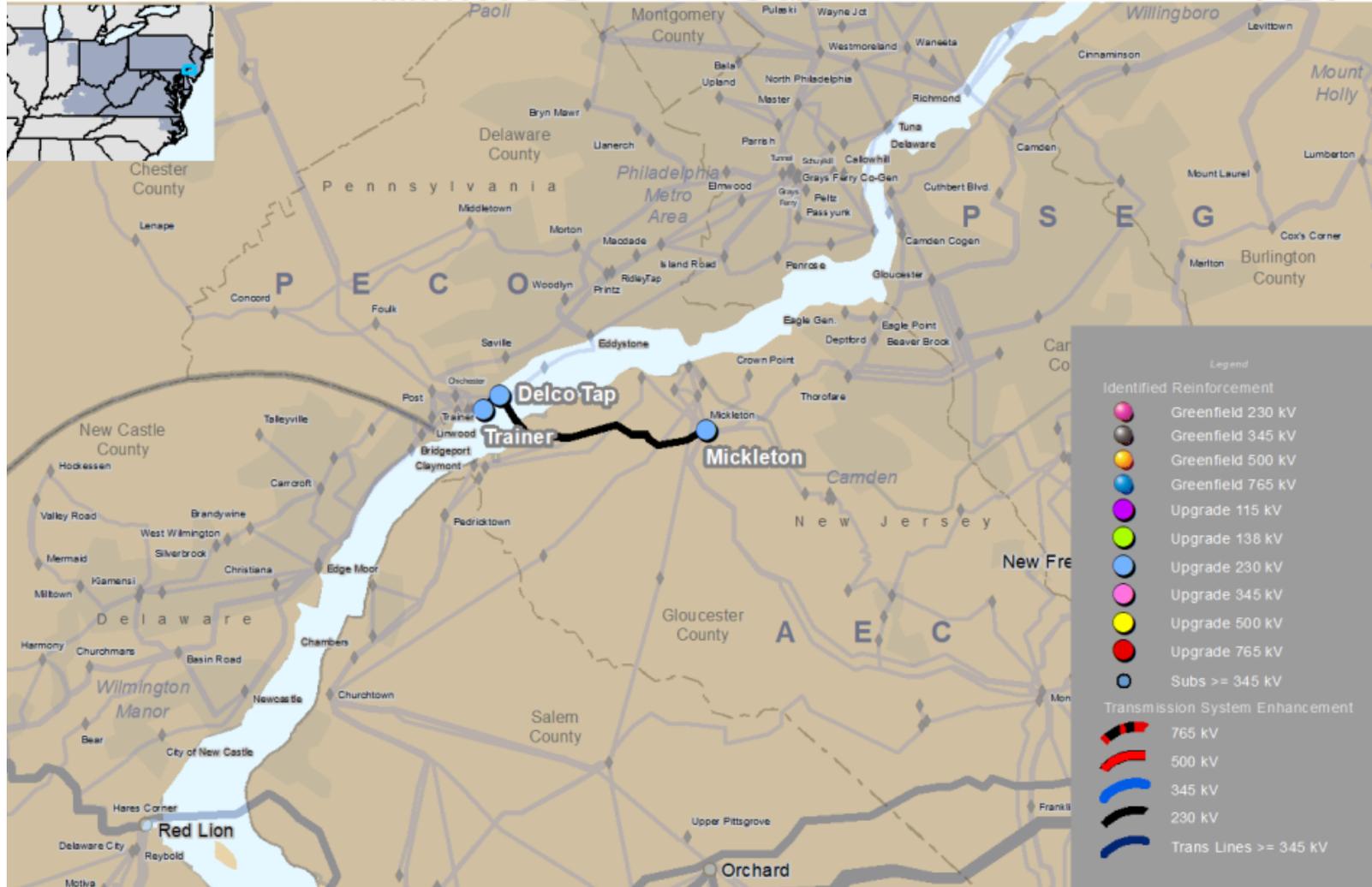


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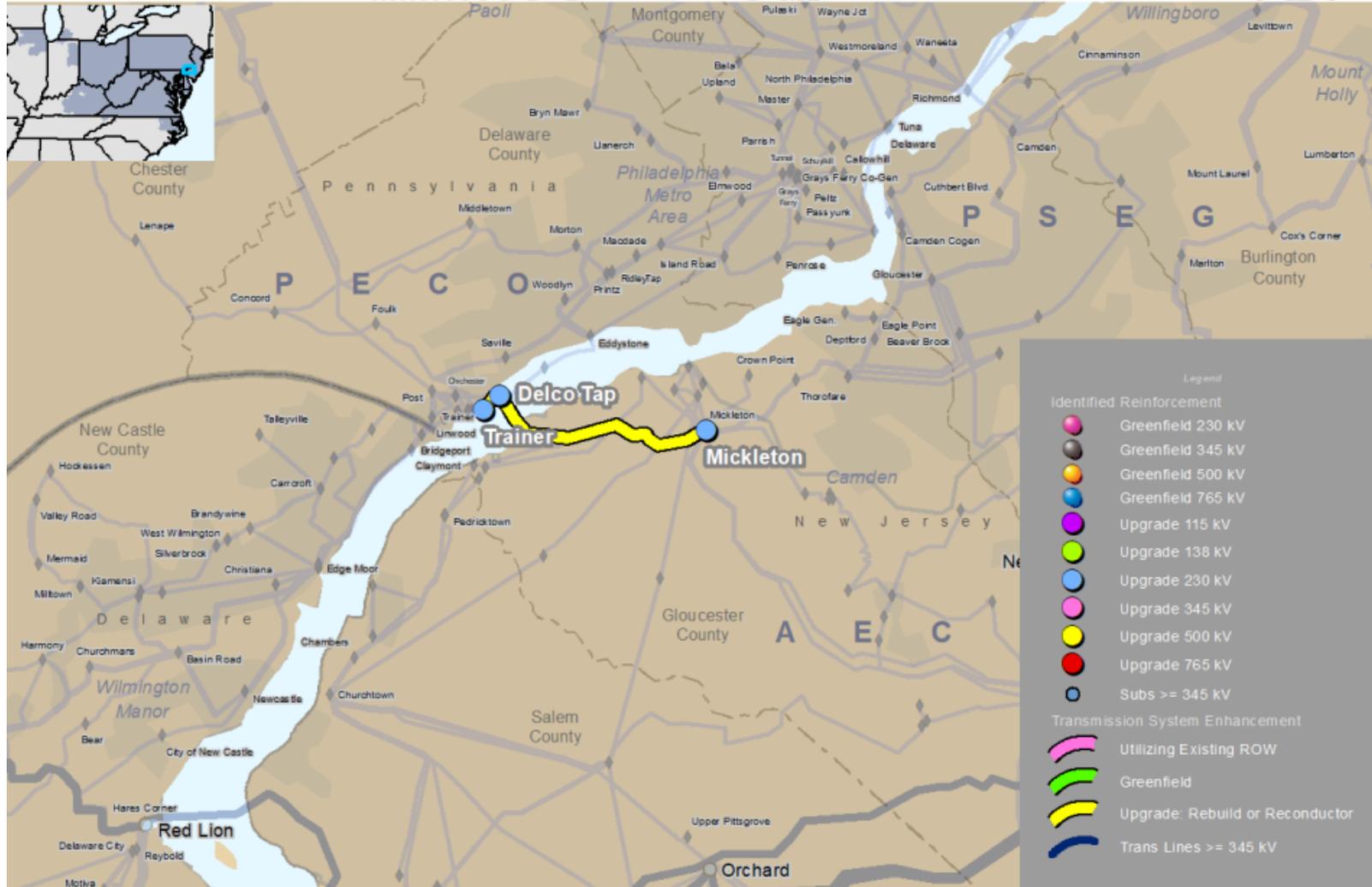


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# PECO (Exelon)



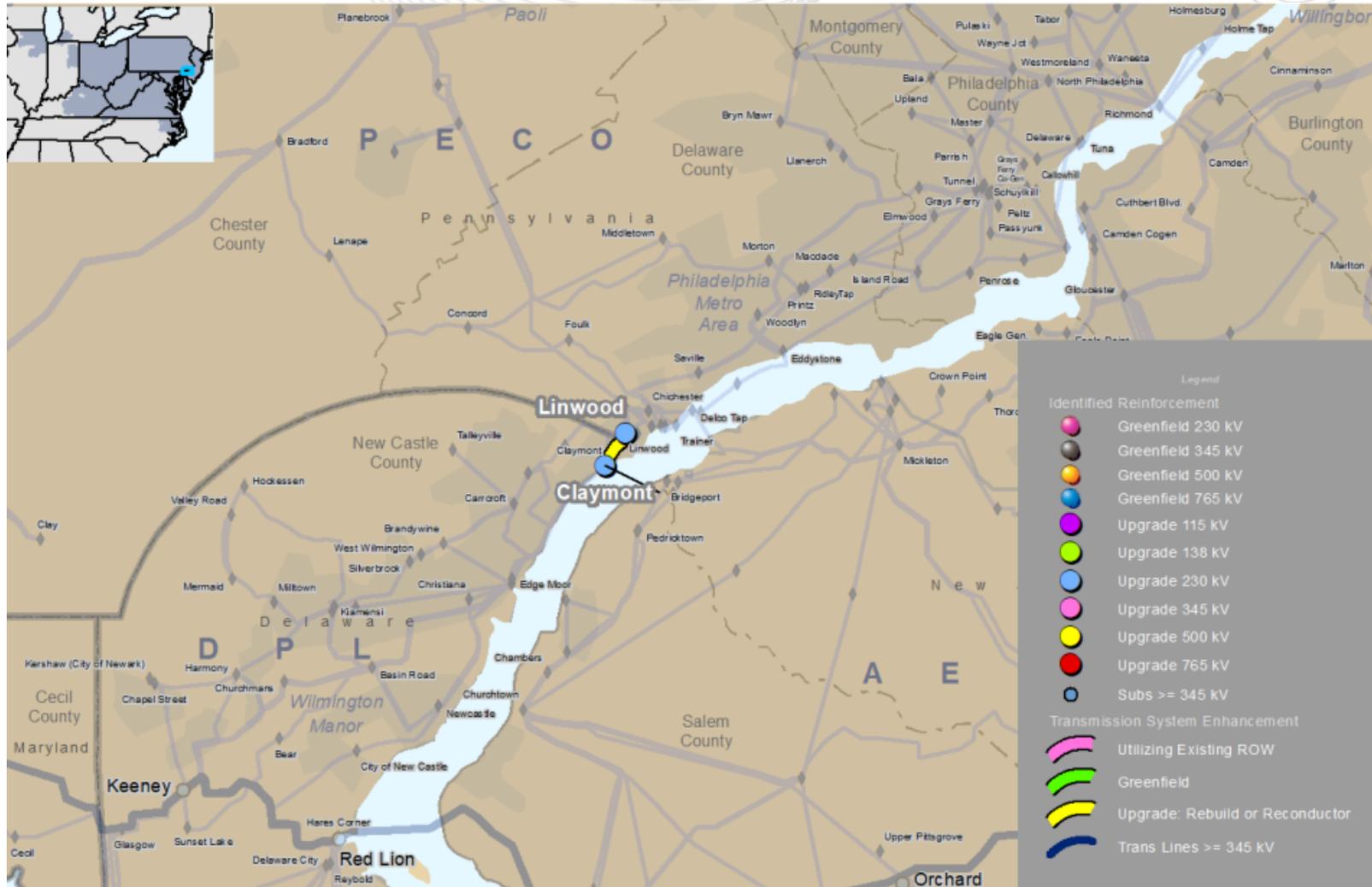
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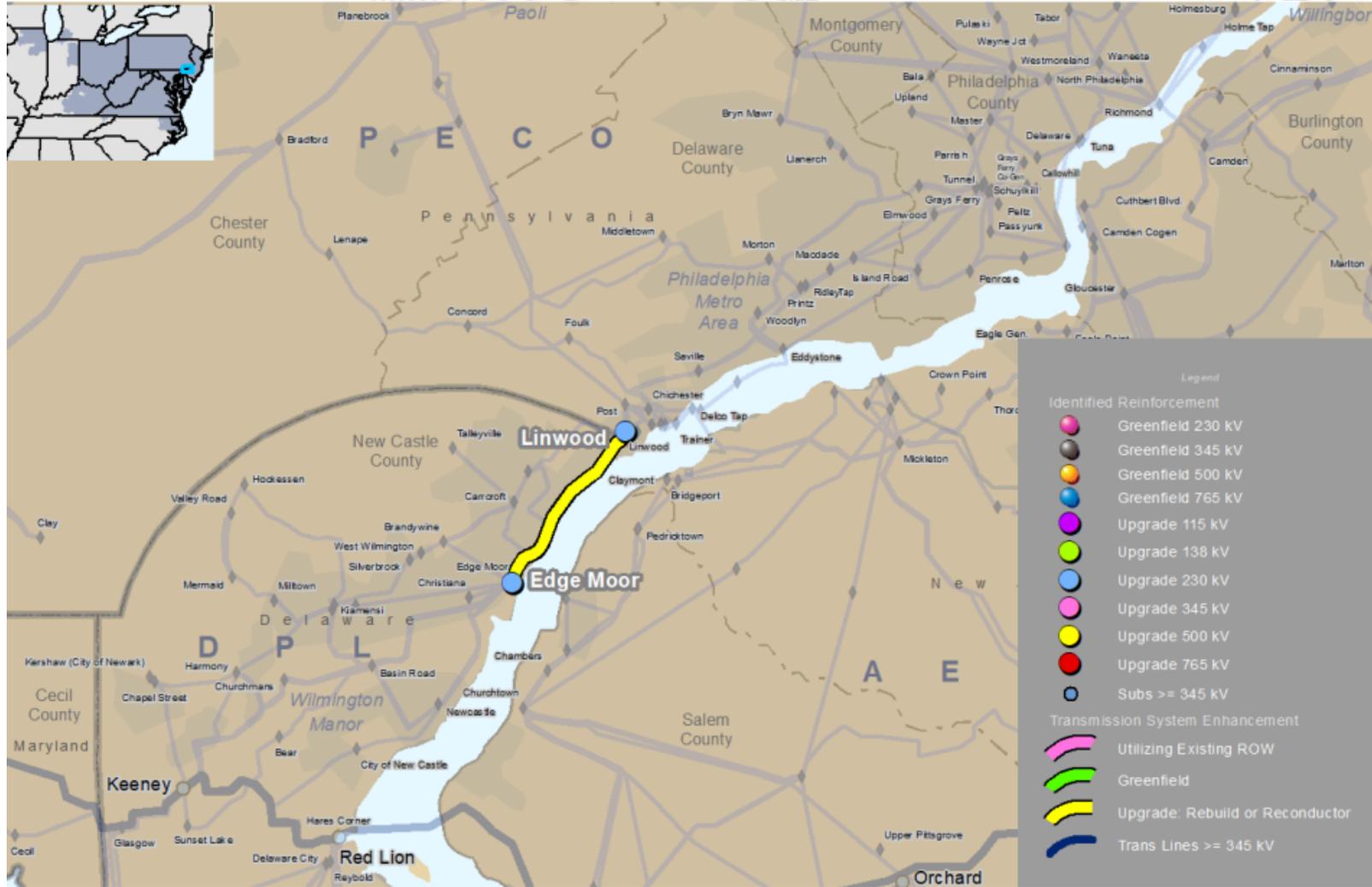
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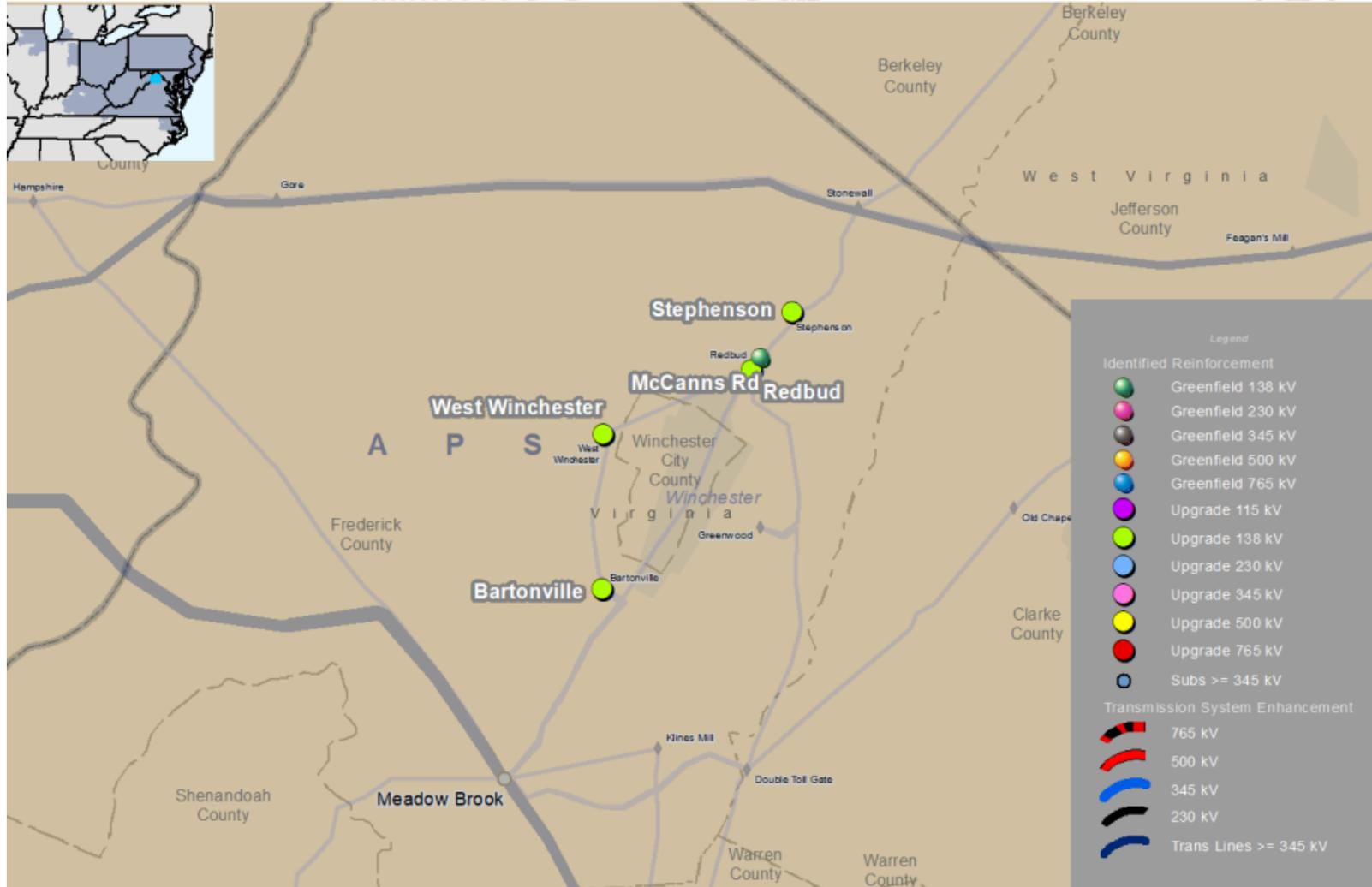


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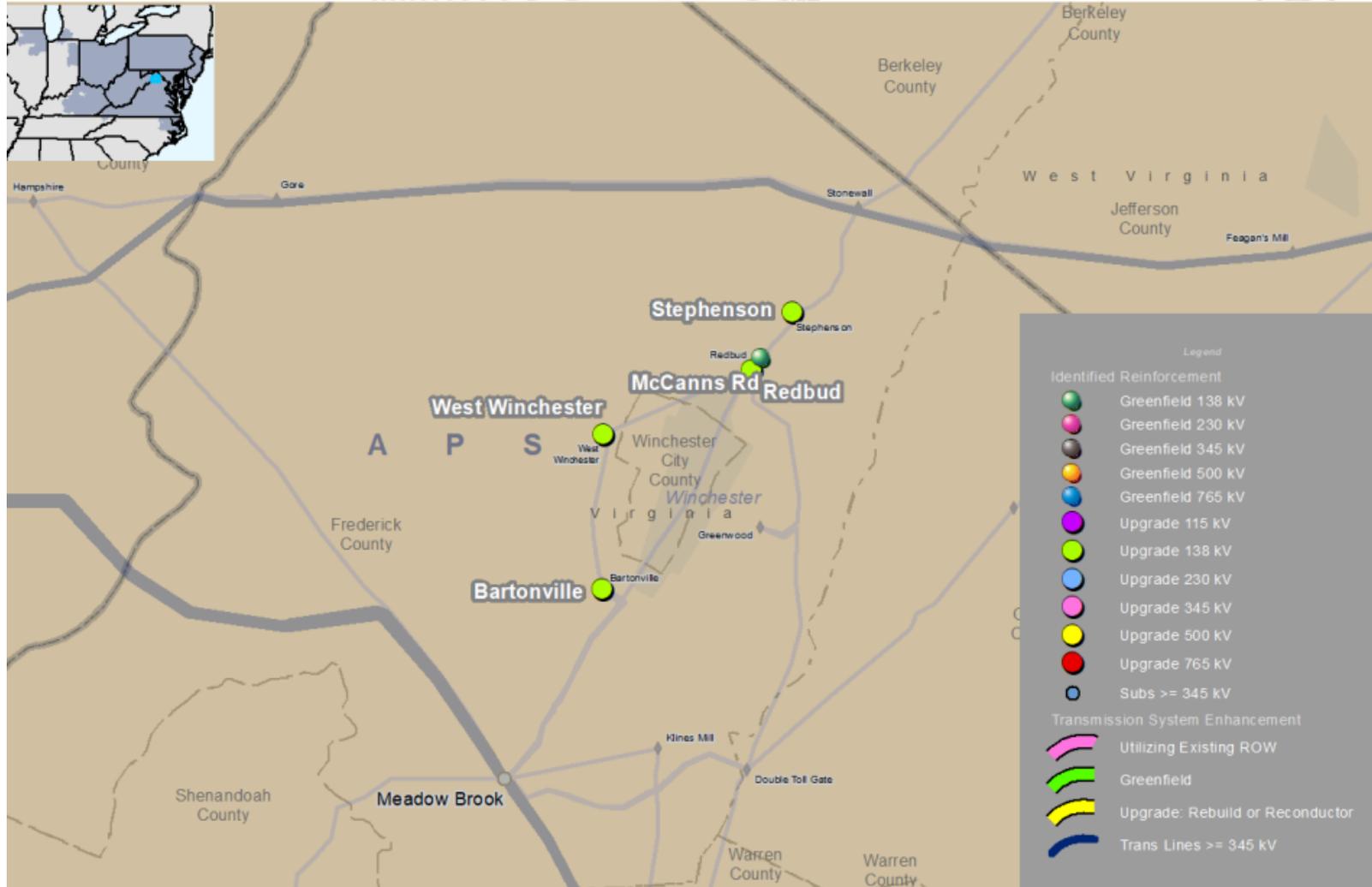


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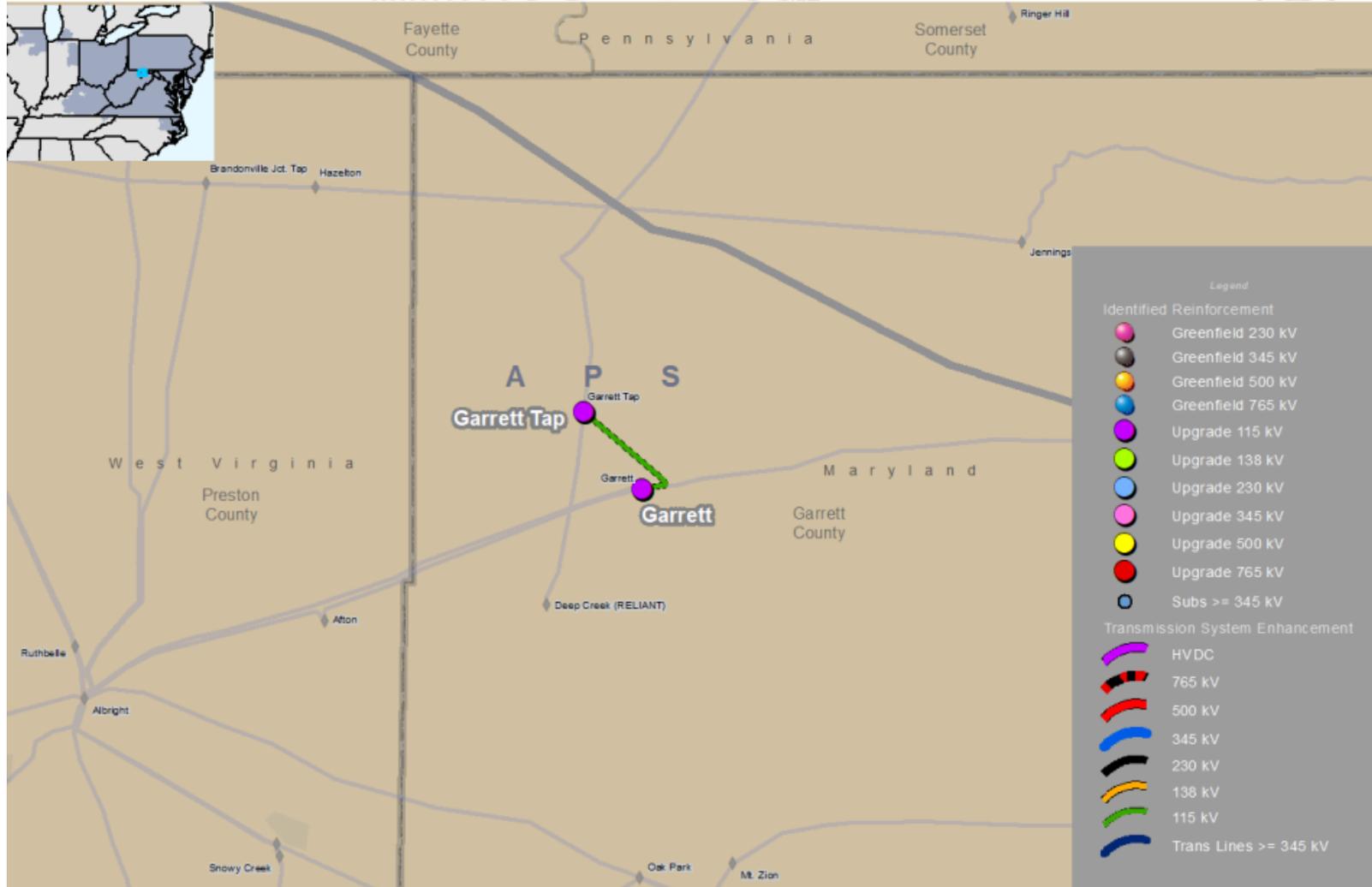
# POTOED (FirstEnergy)



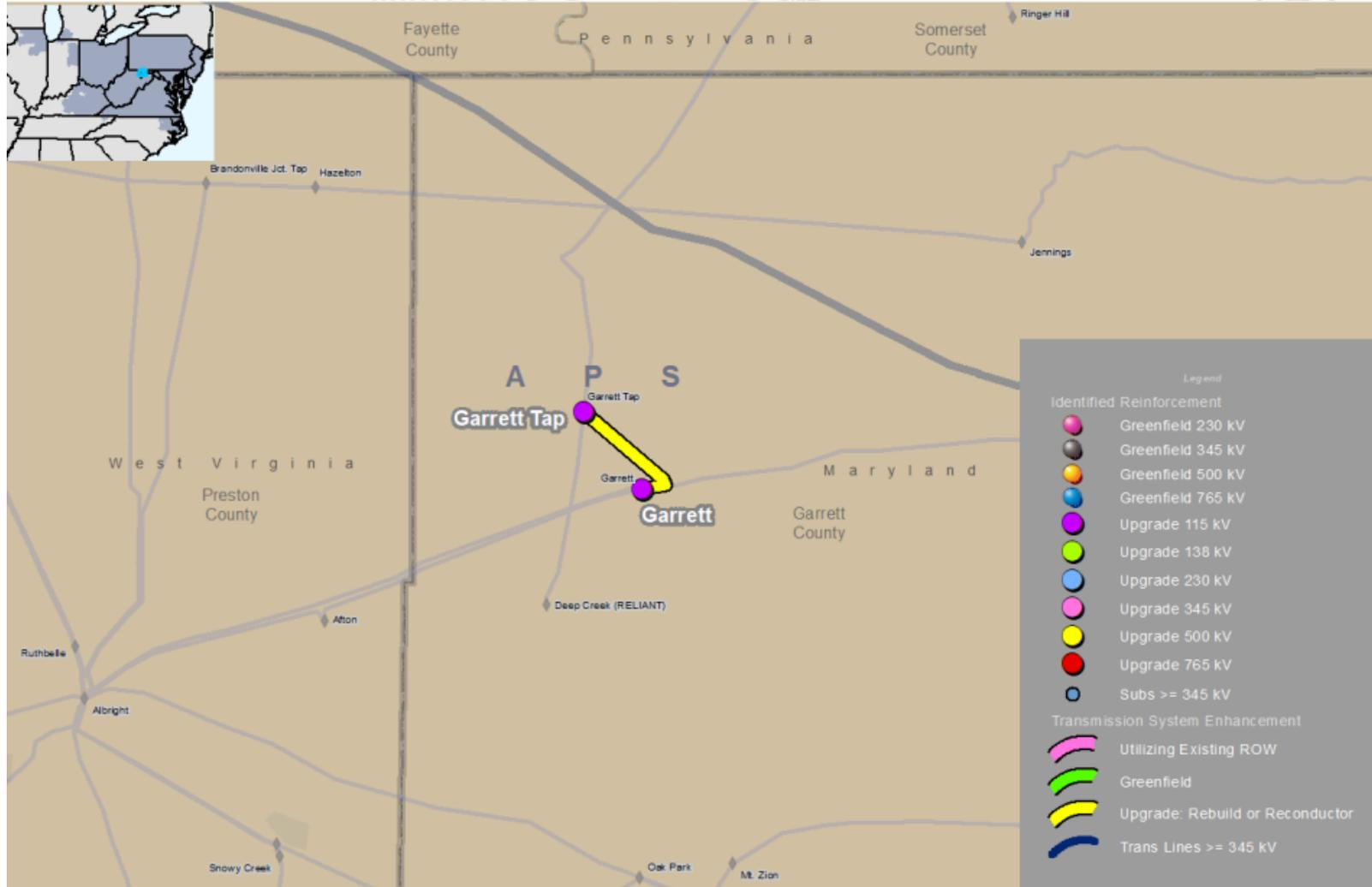
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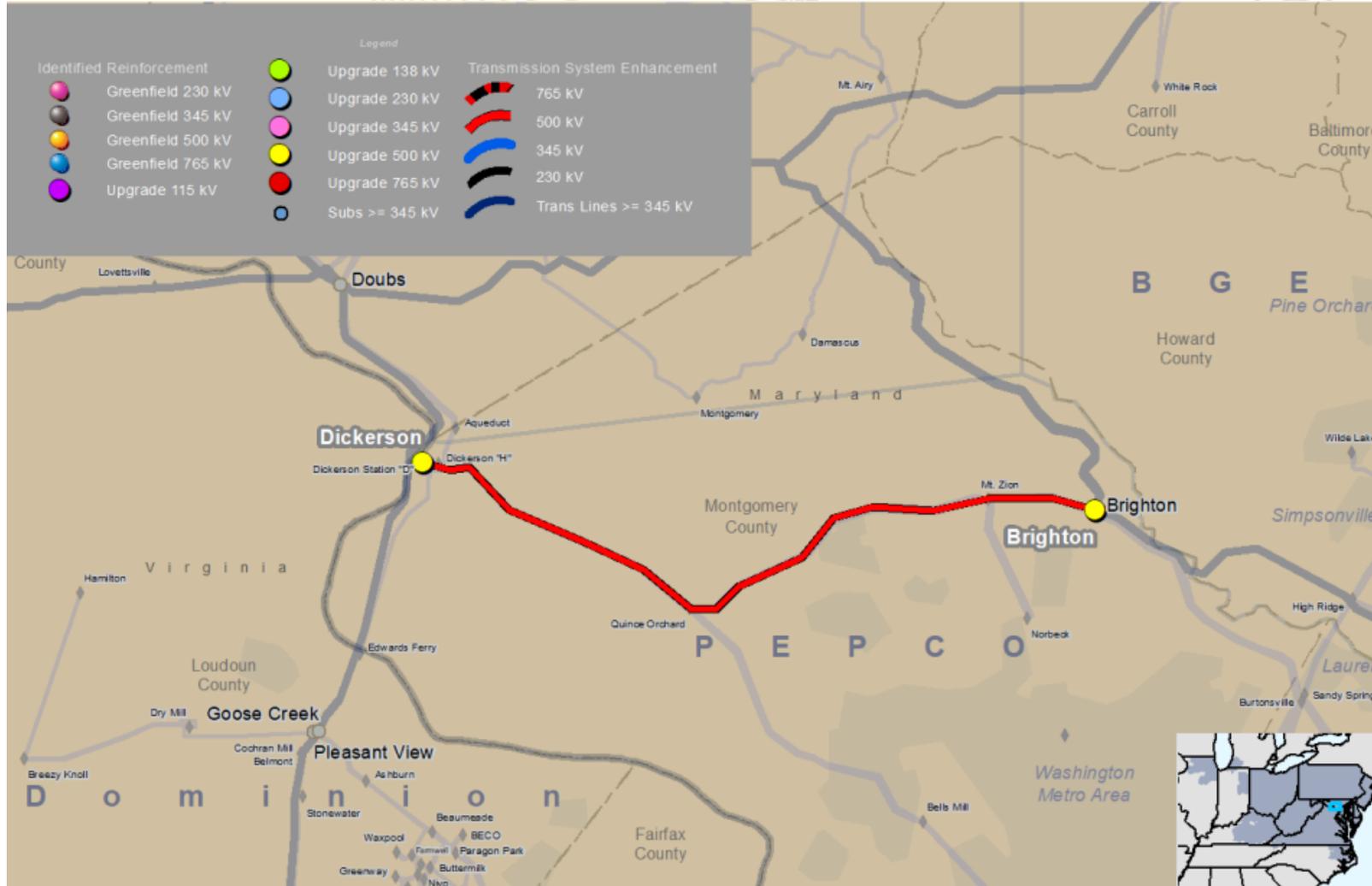


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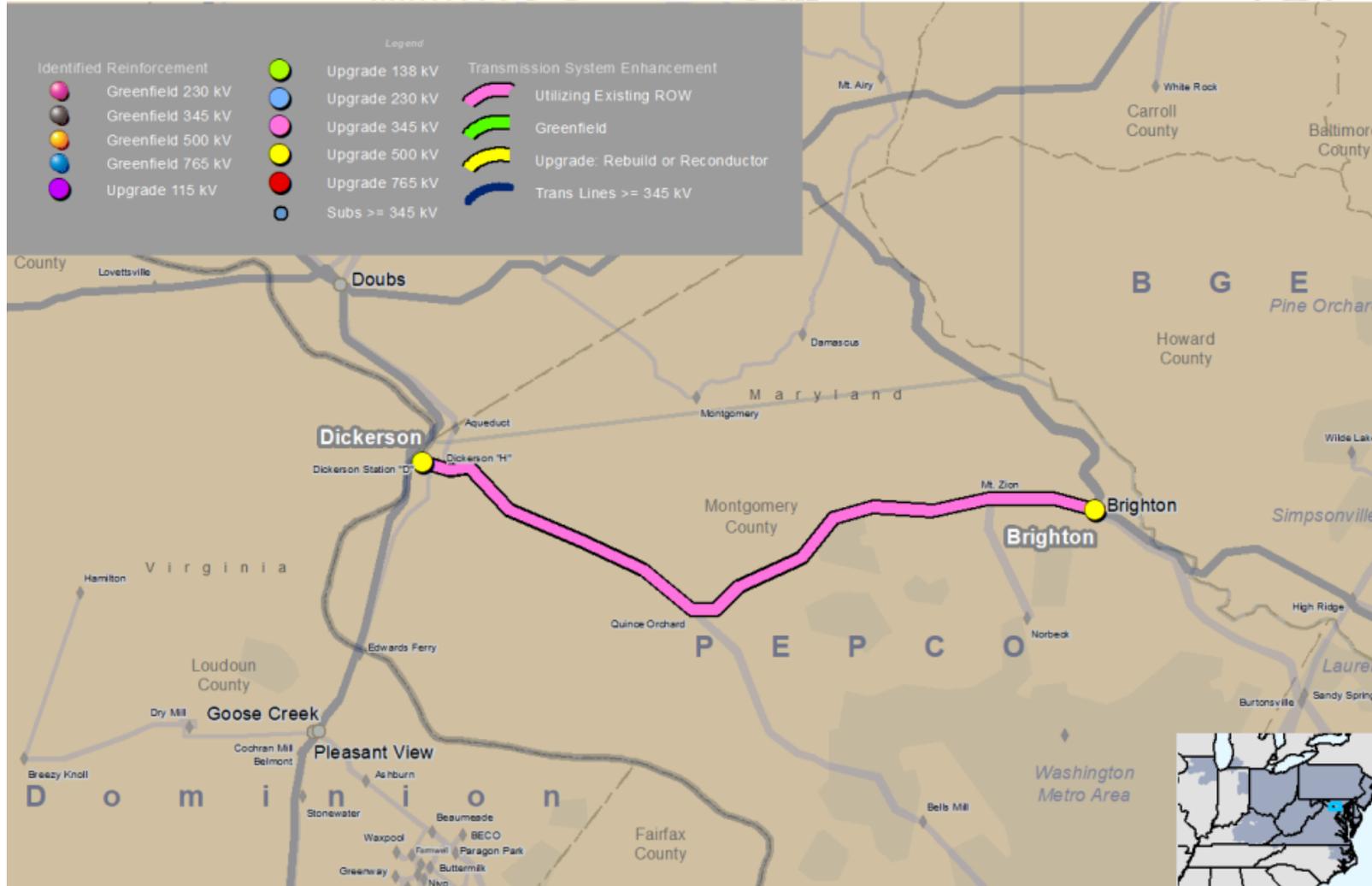


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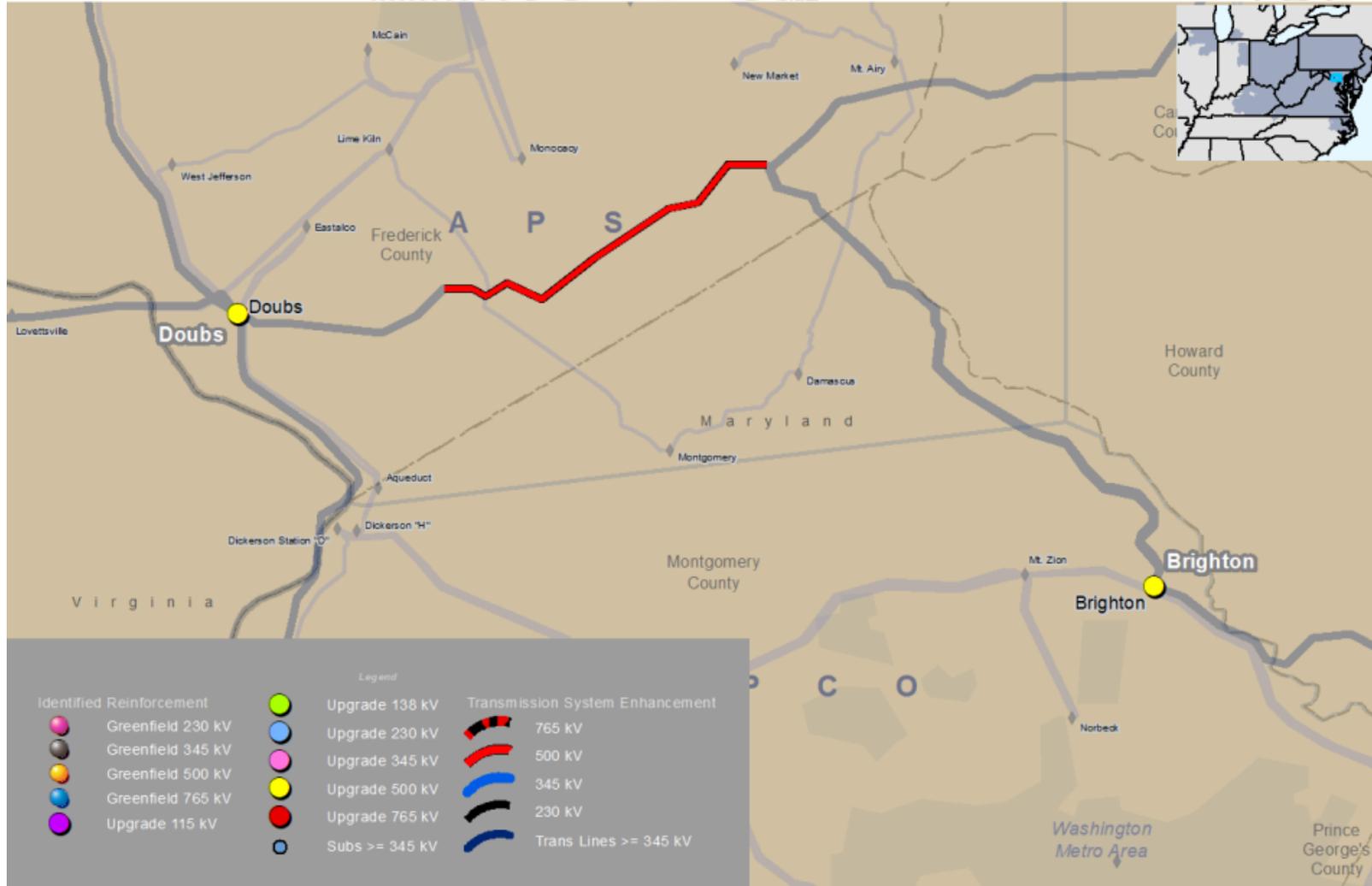
# PEPCO (Exelon)



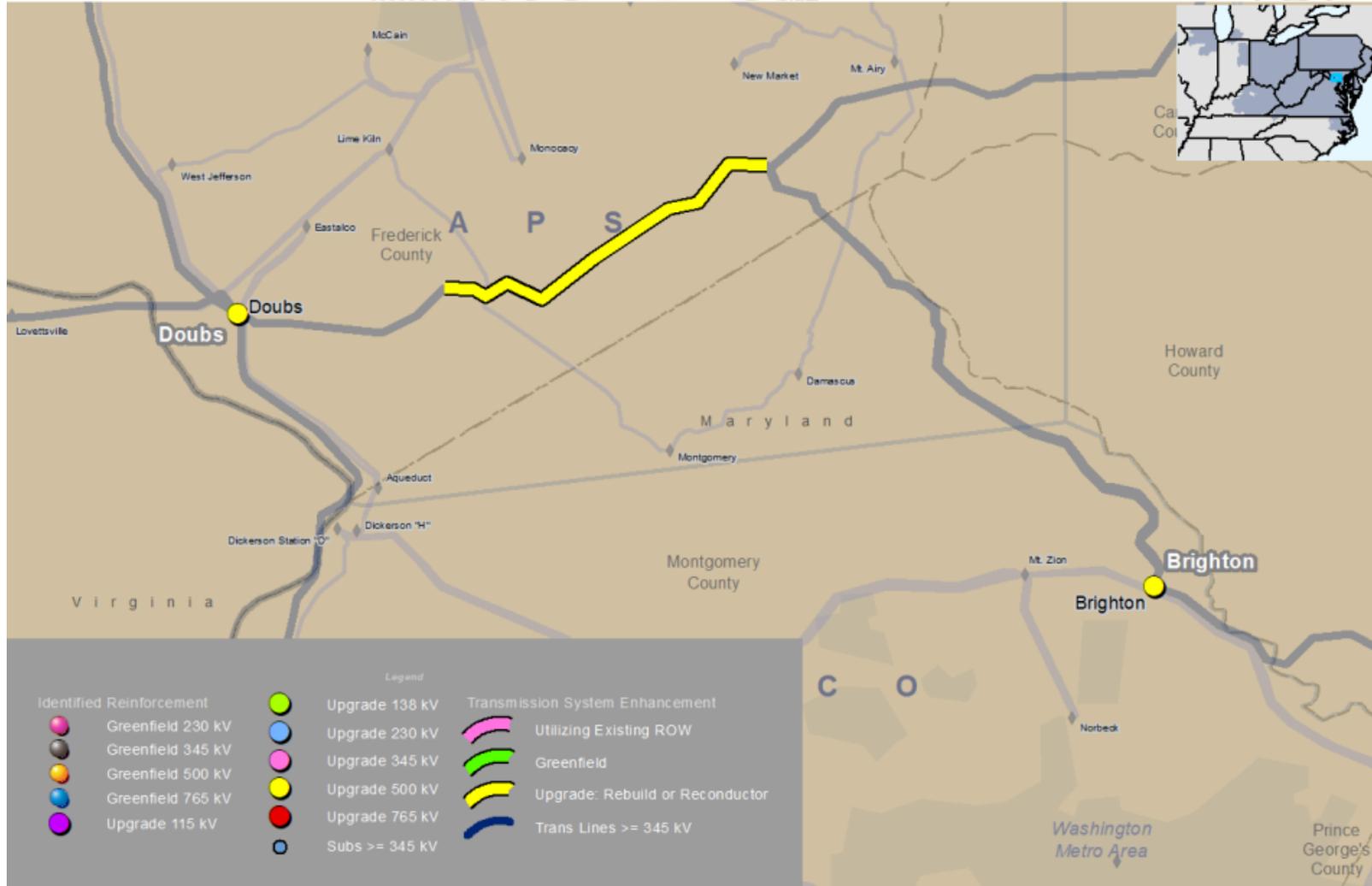
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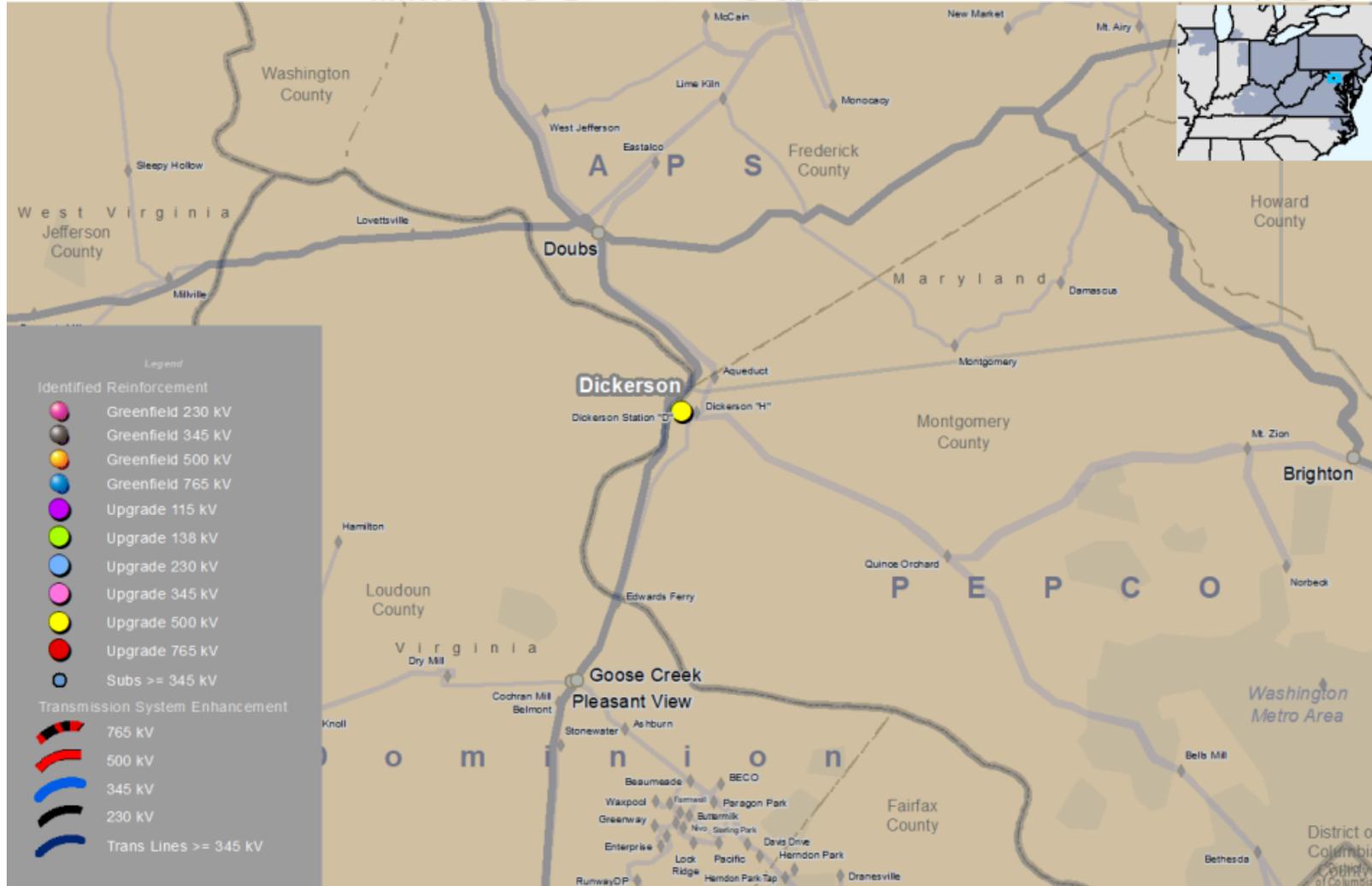
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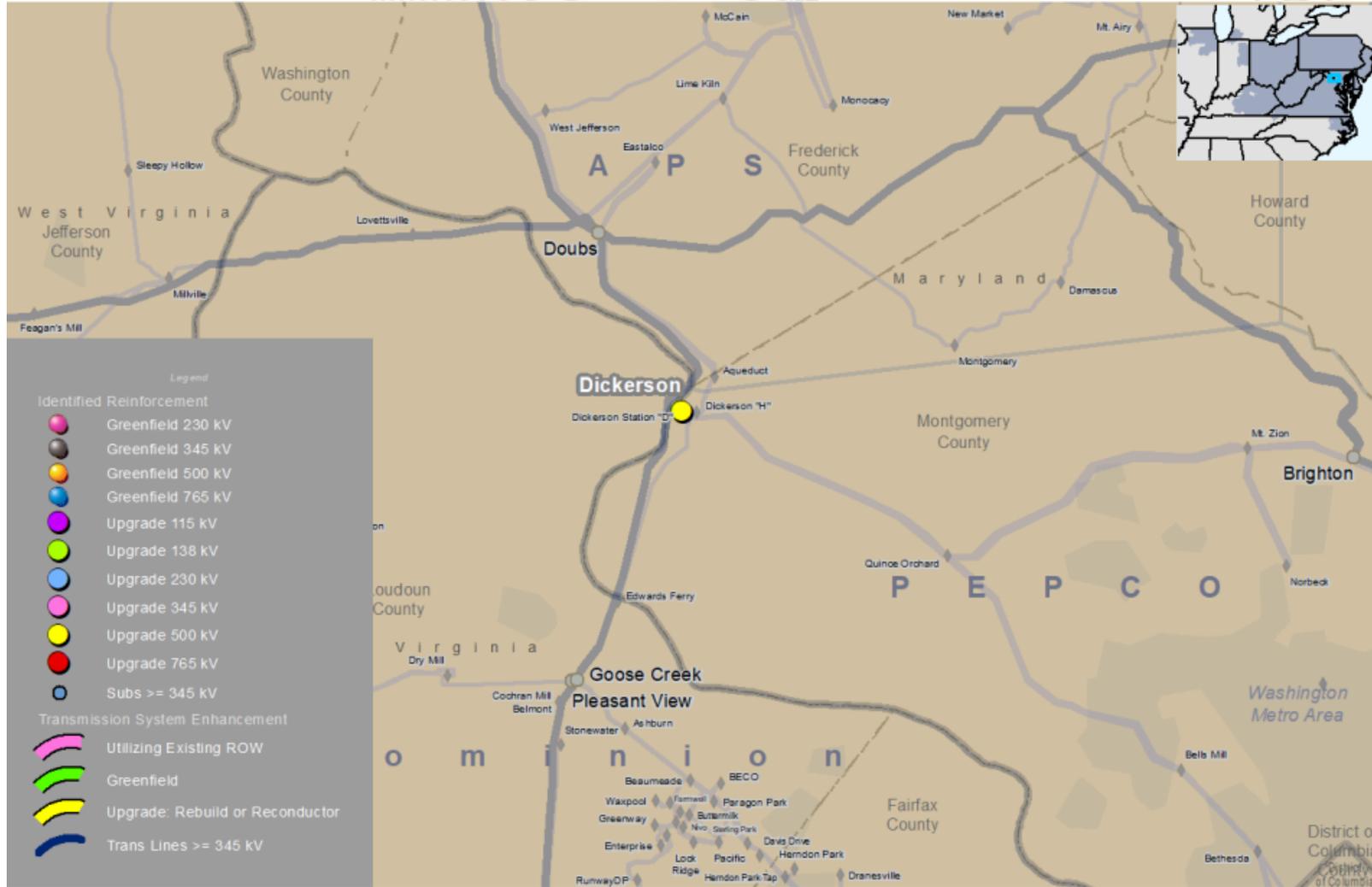
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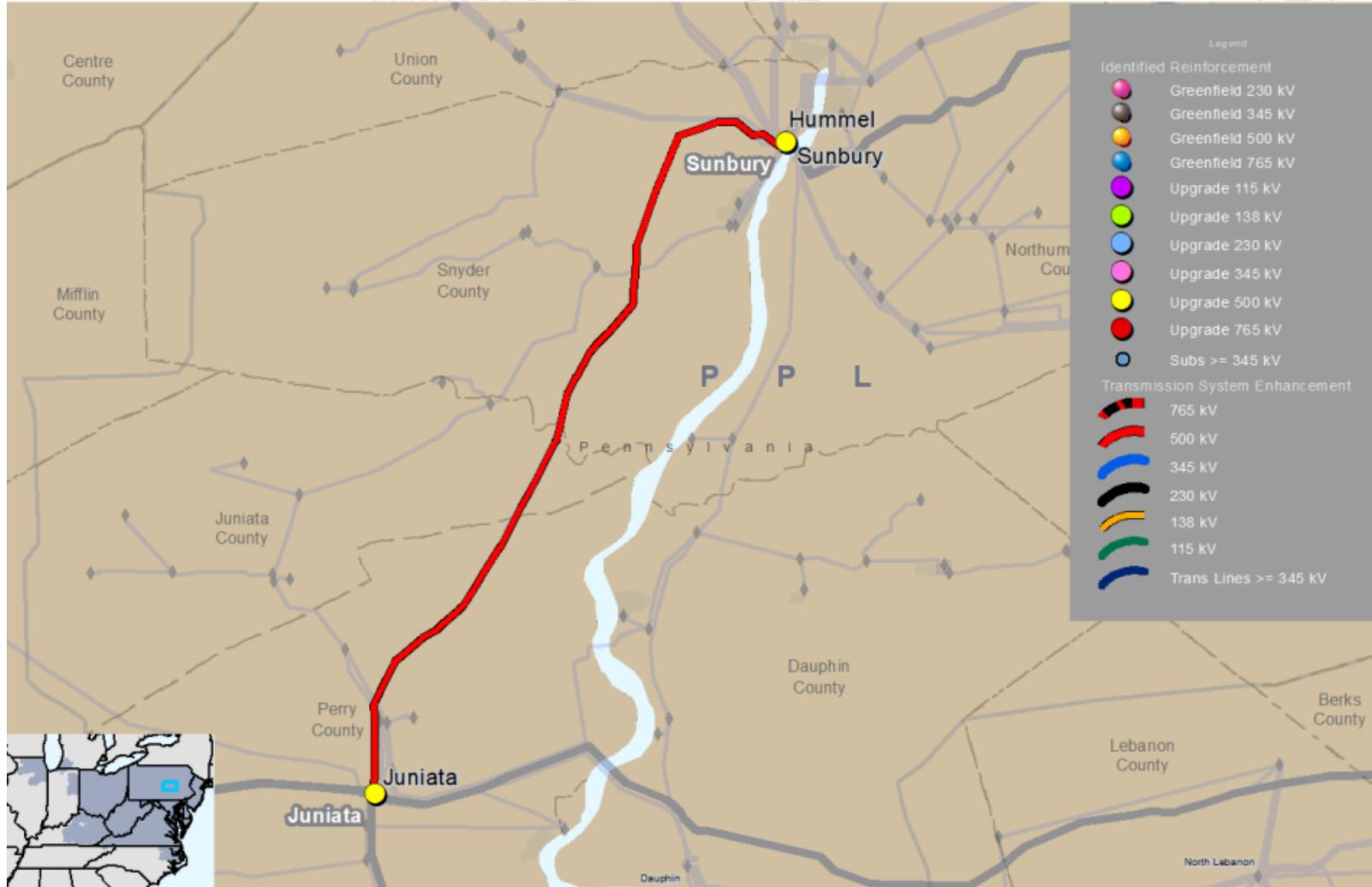


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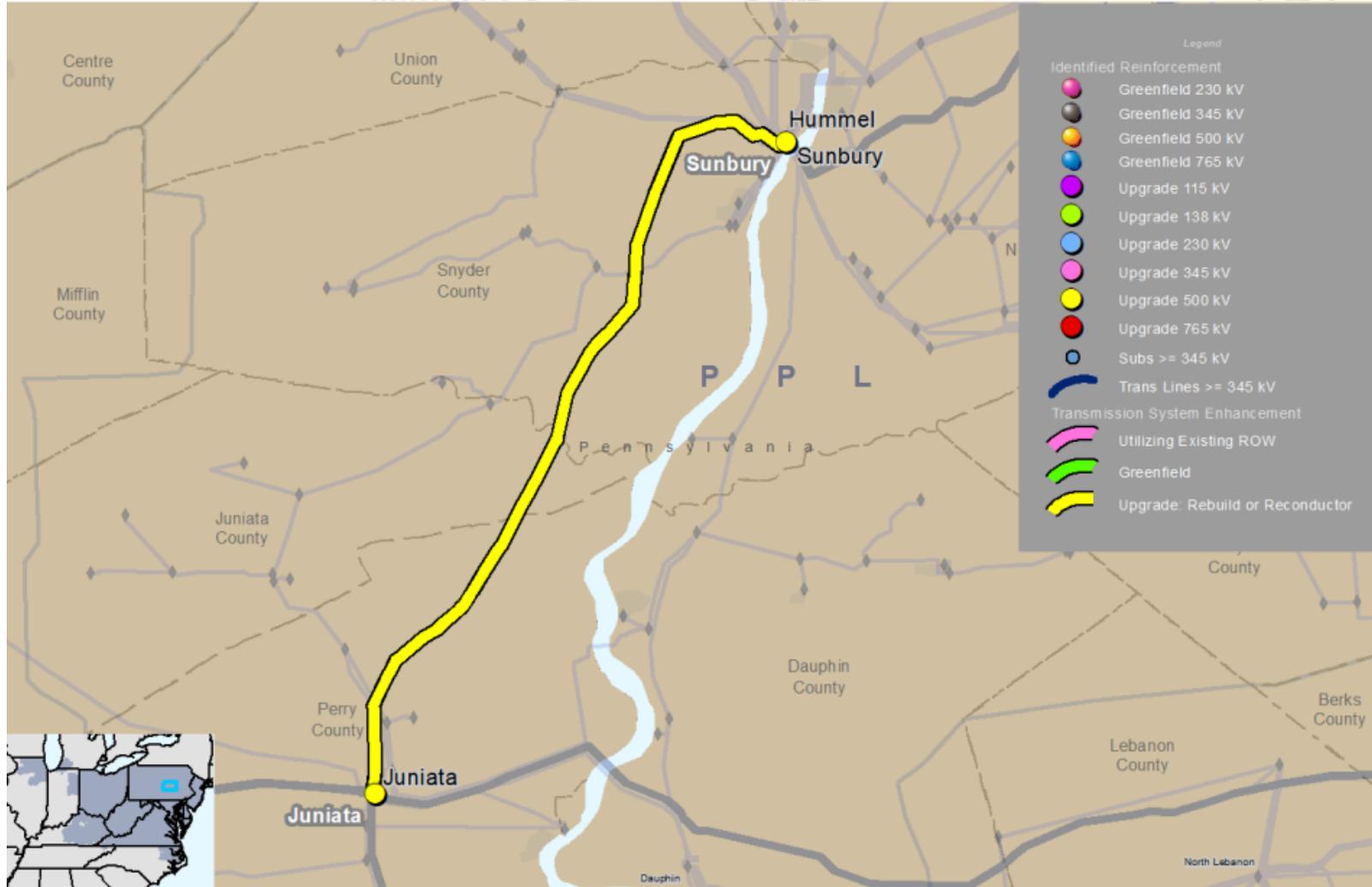


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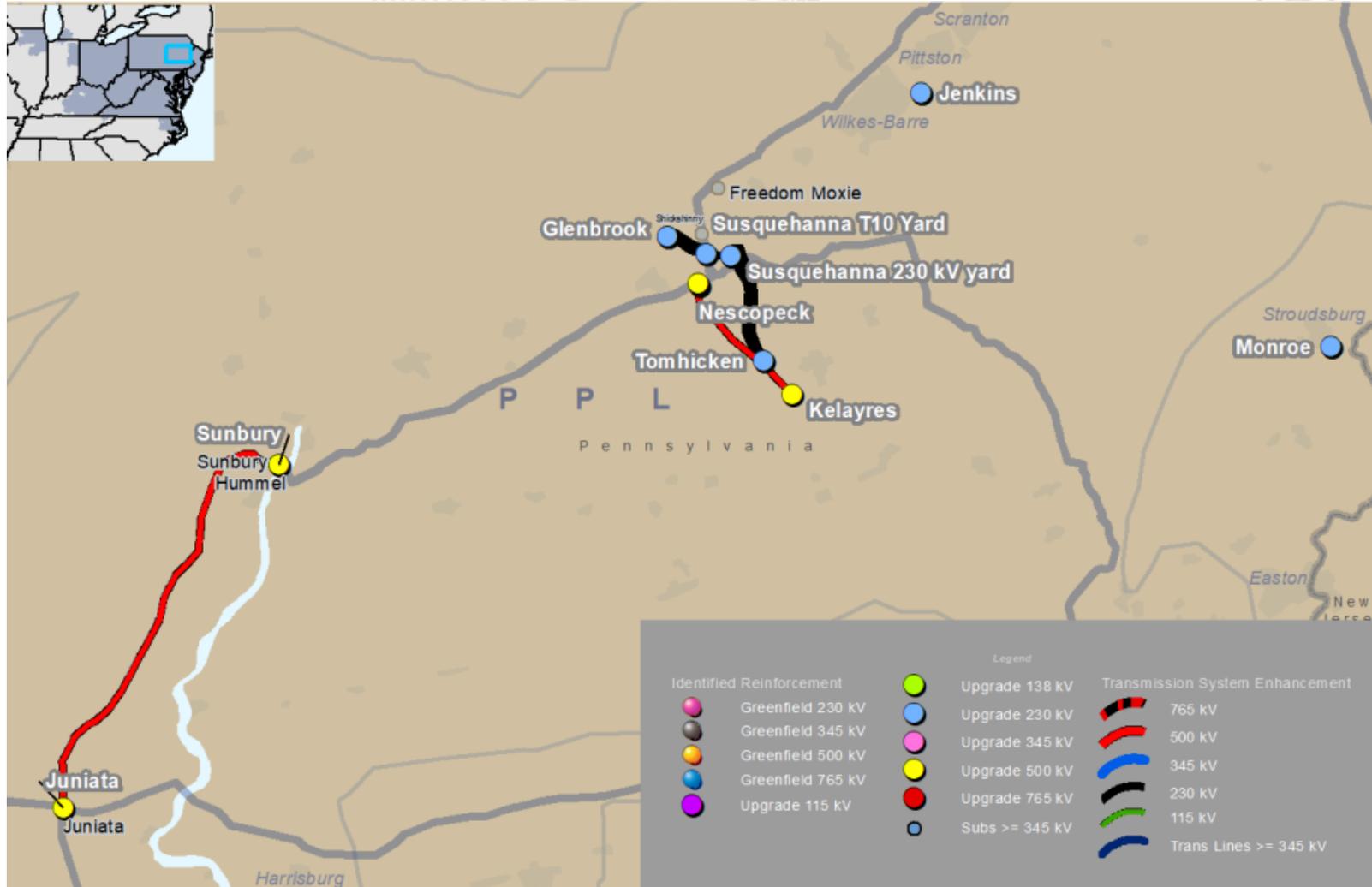
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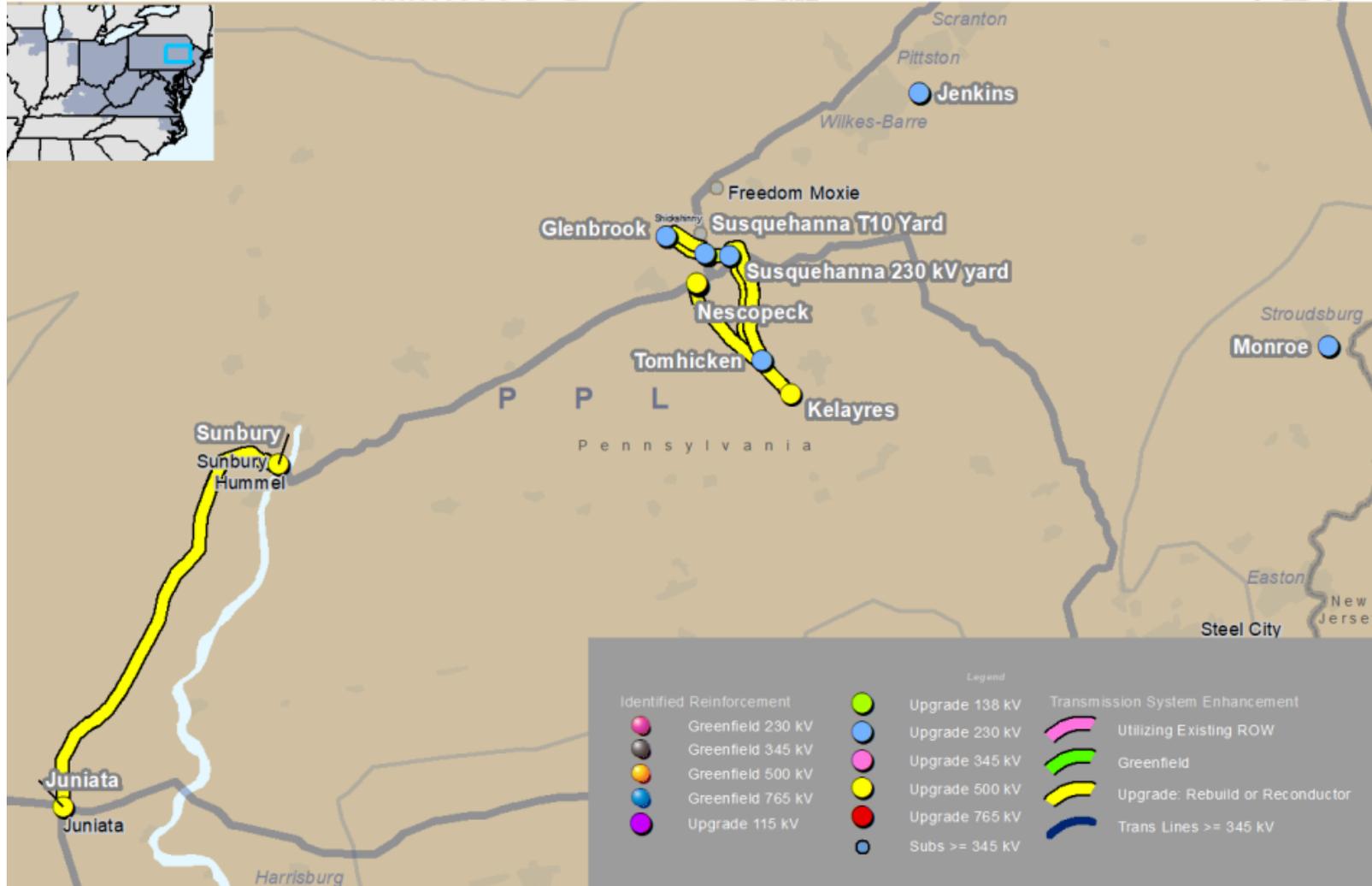
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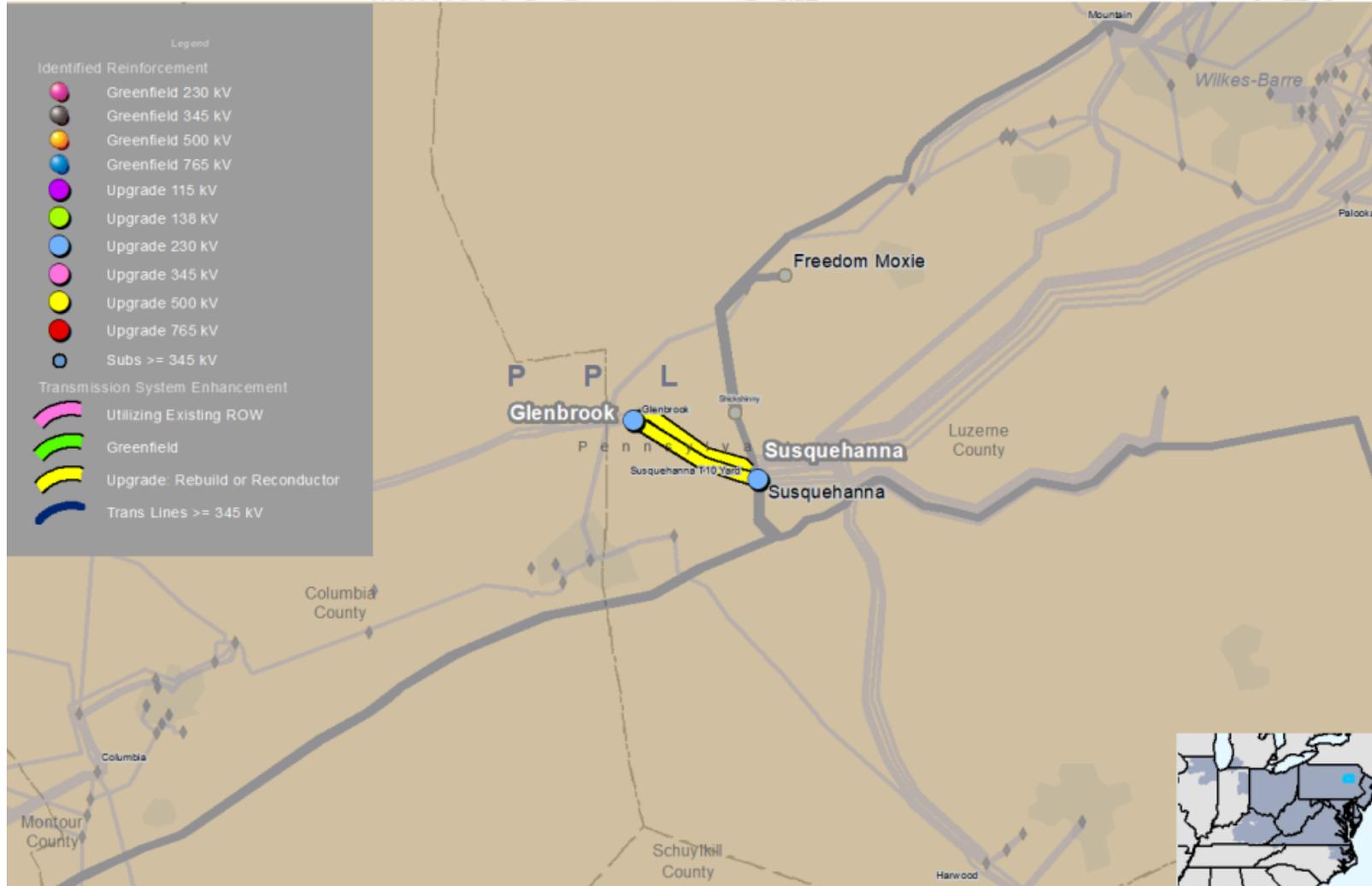
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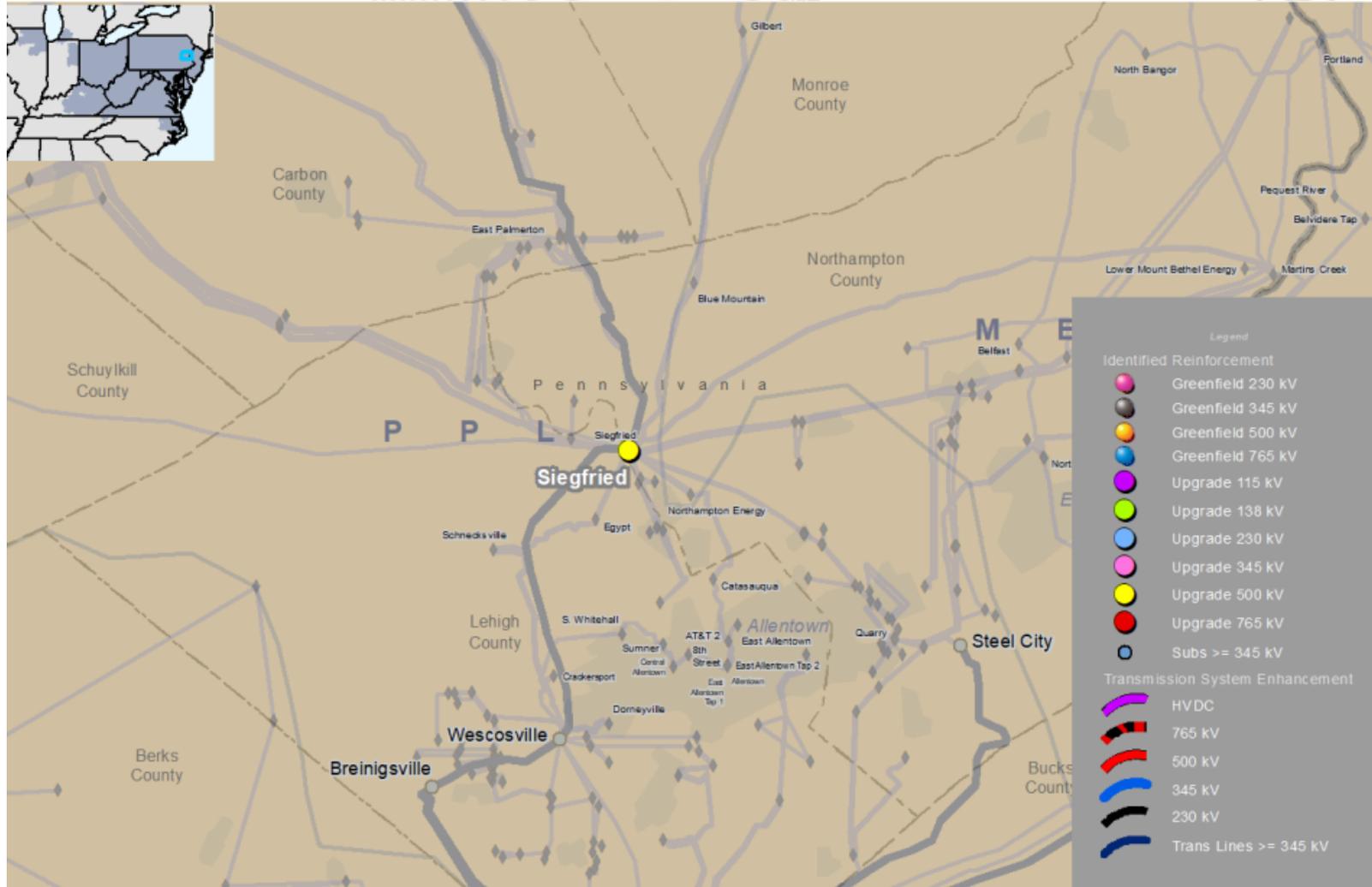
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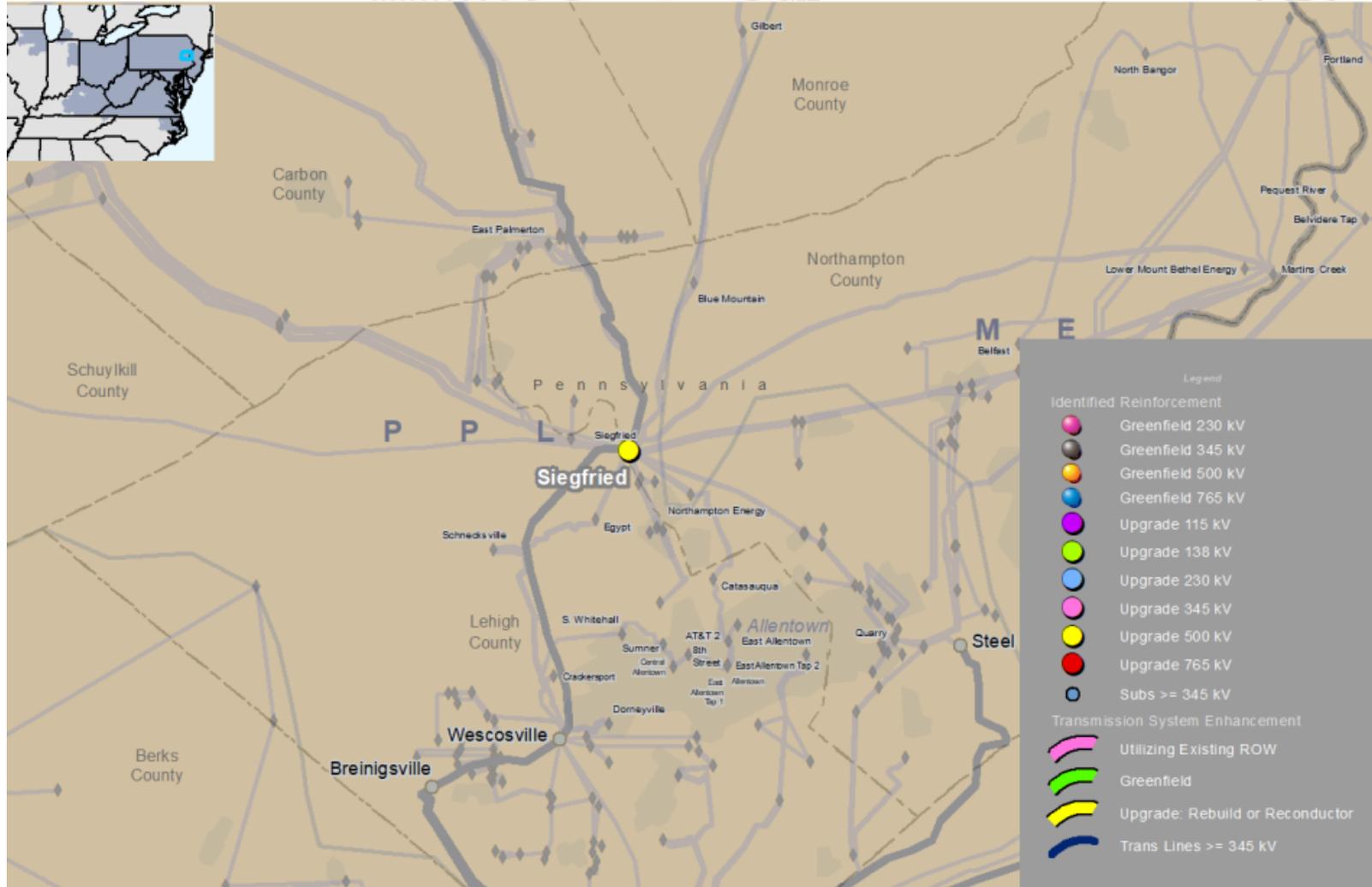
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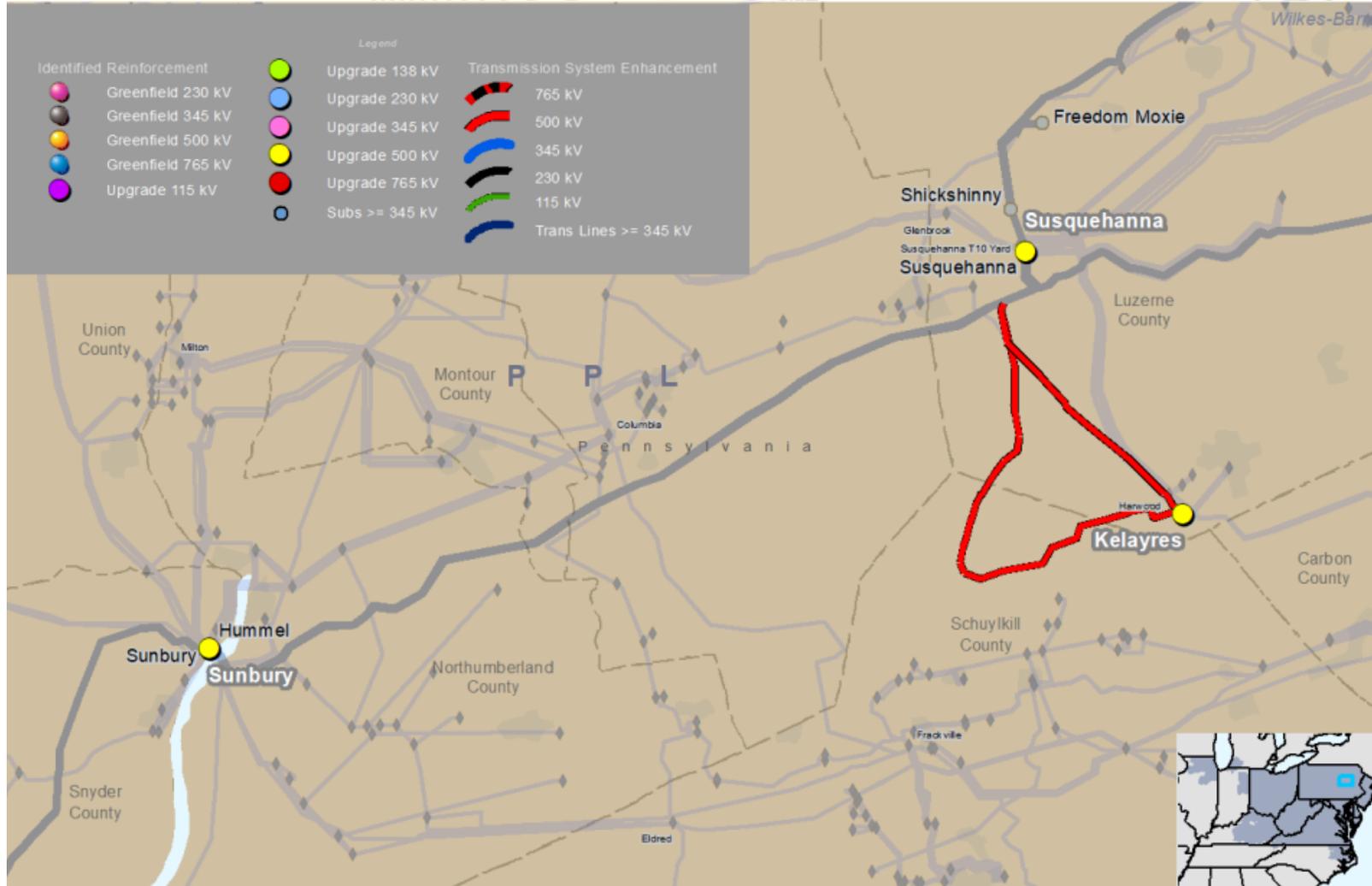
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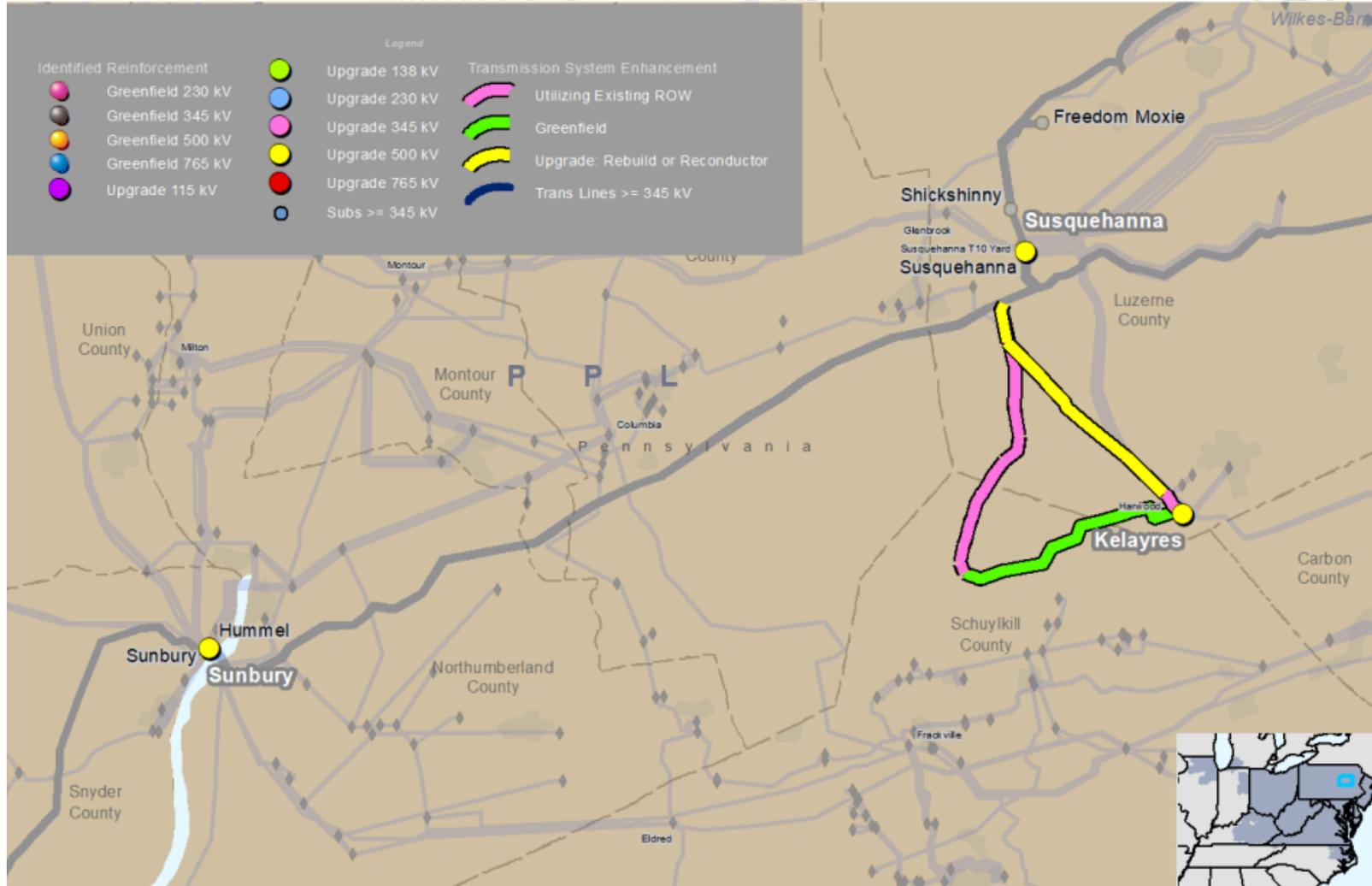
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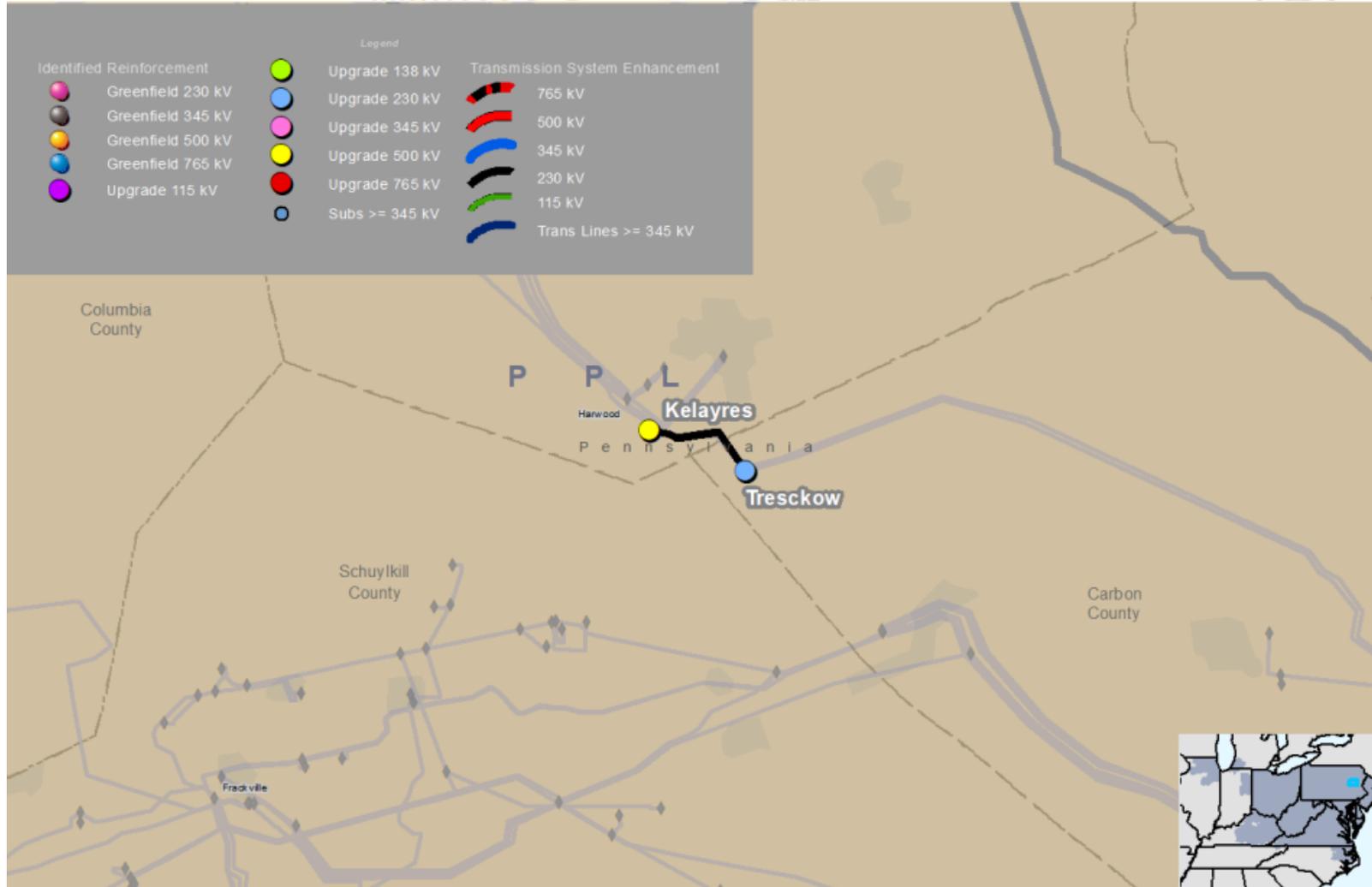
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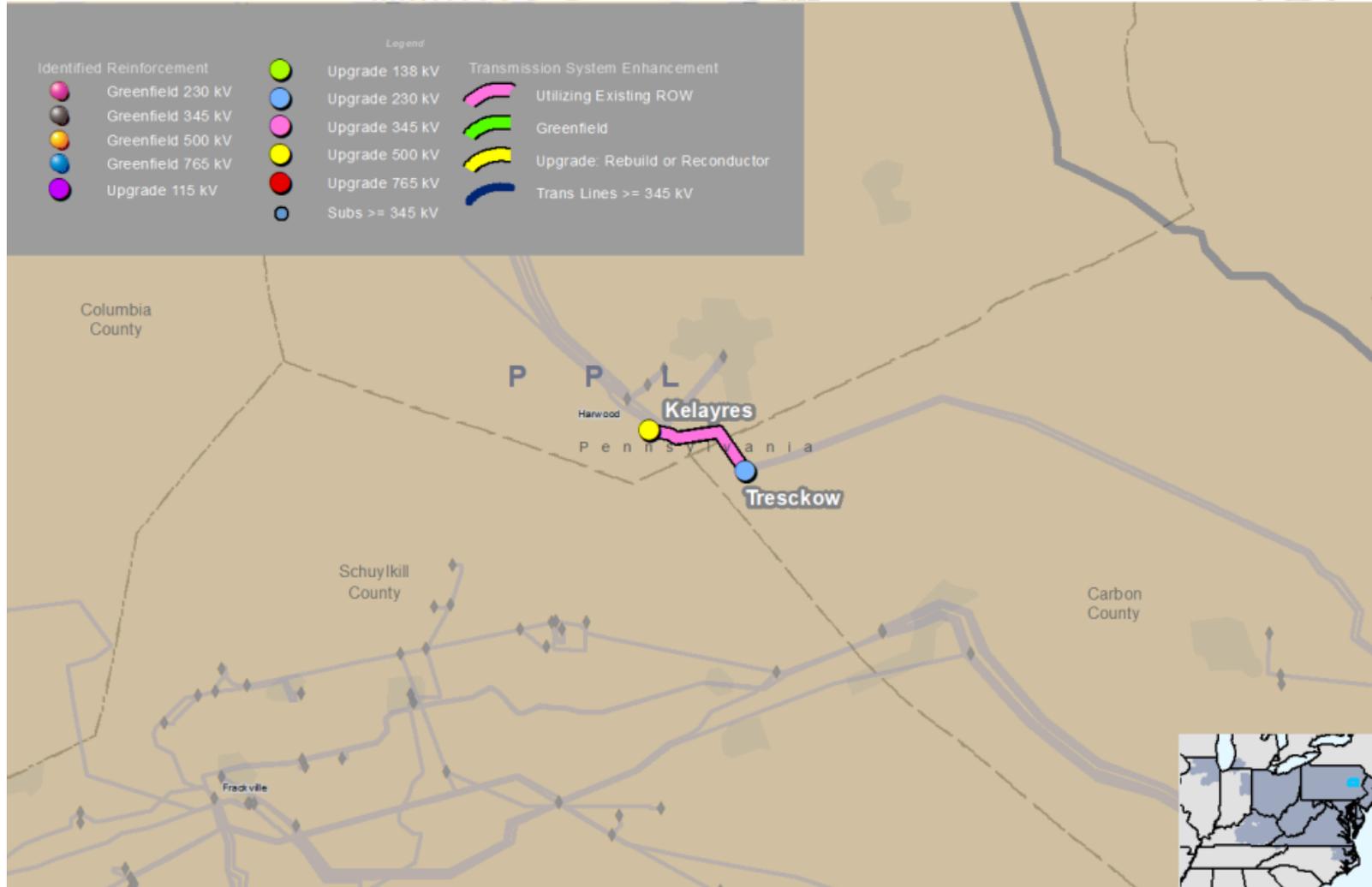
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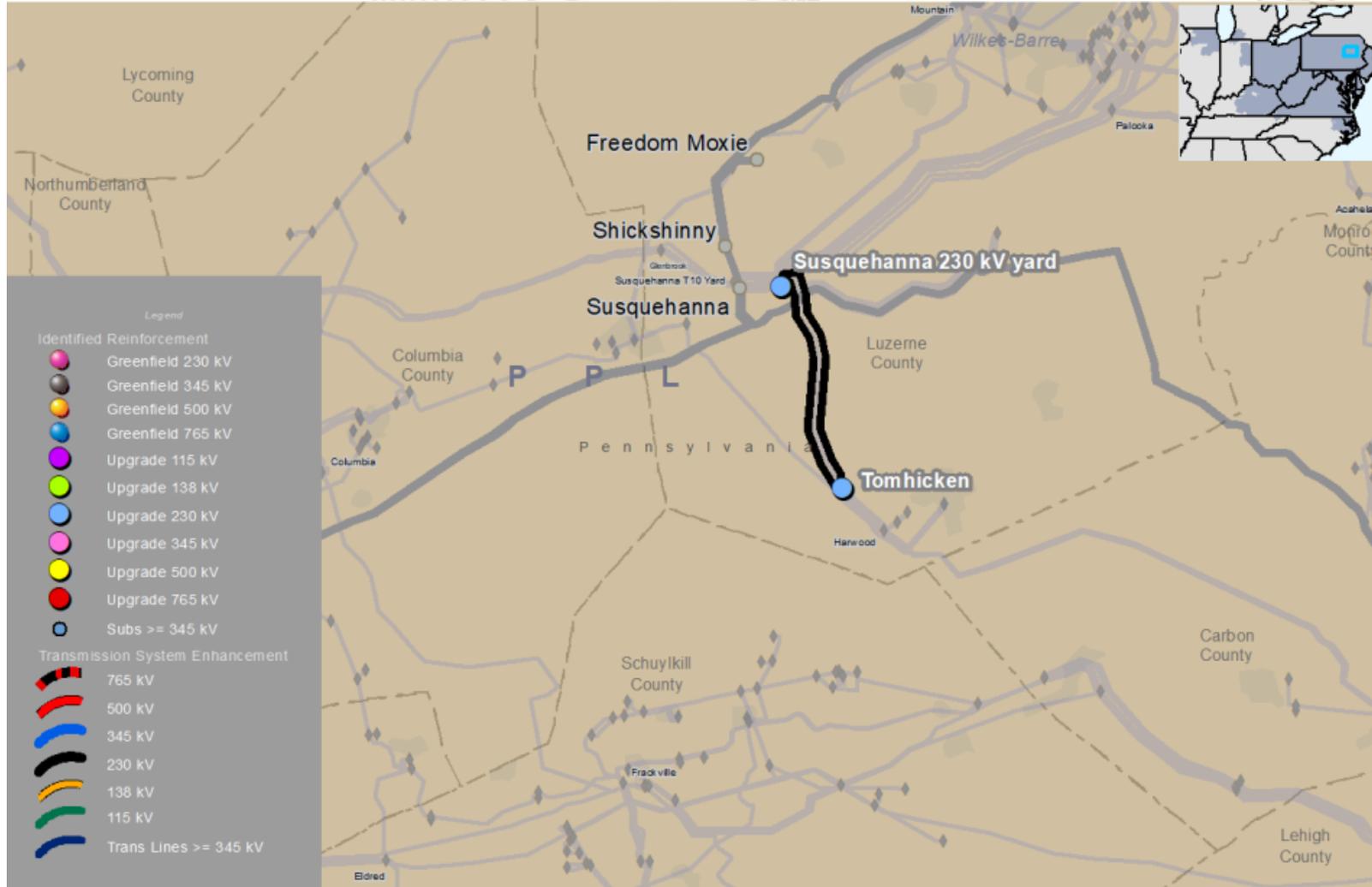
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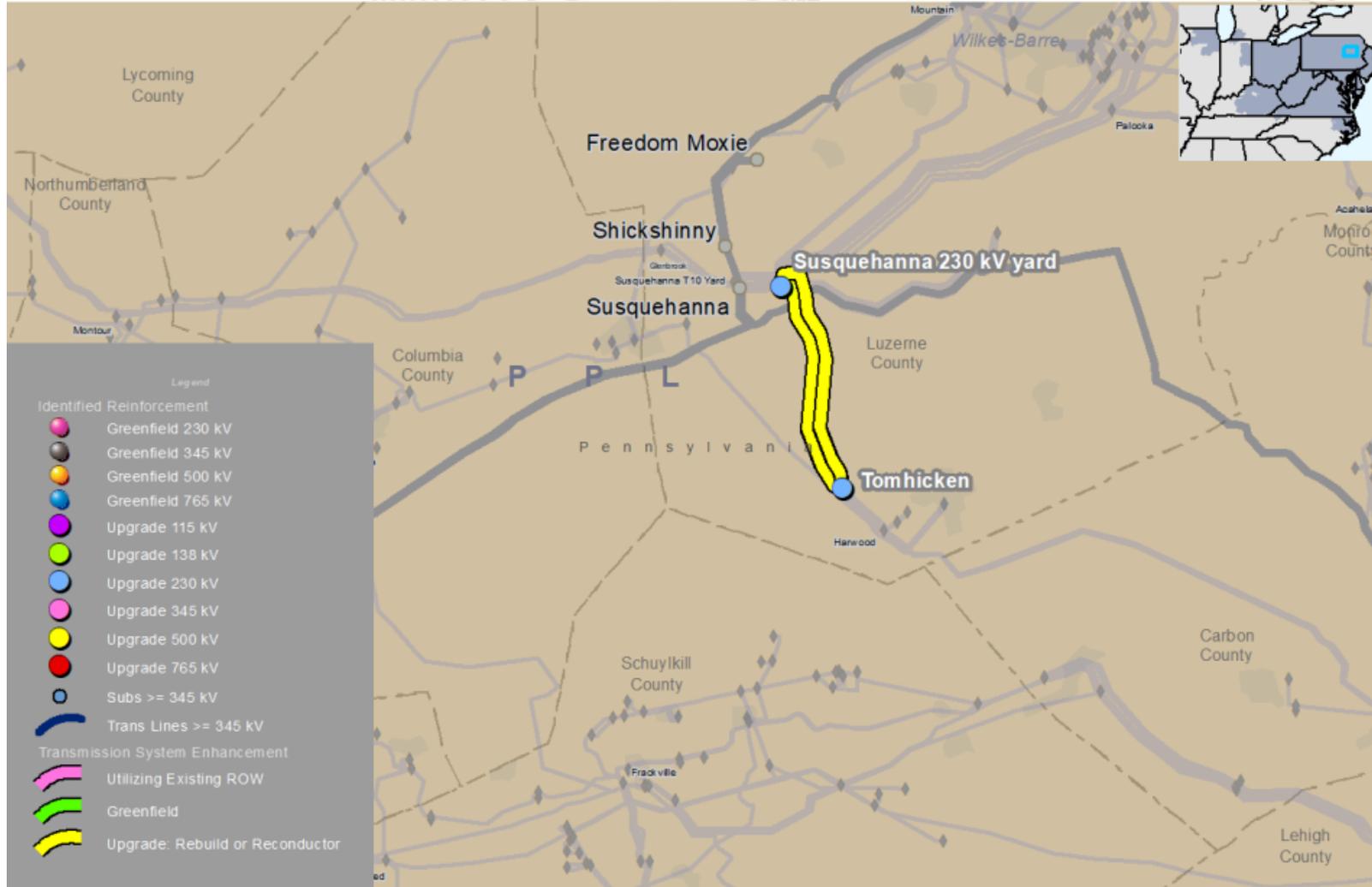
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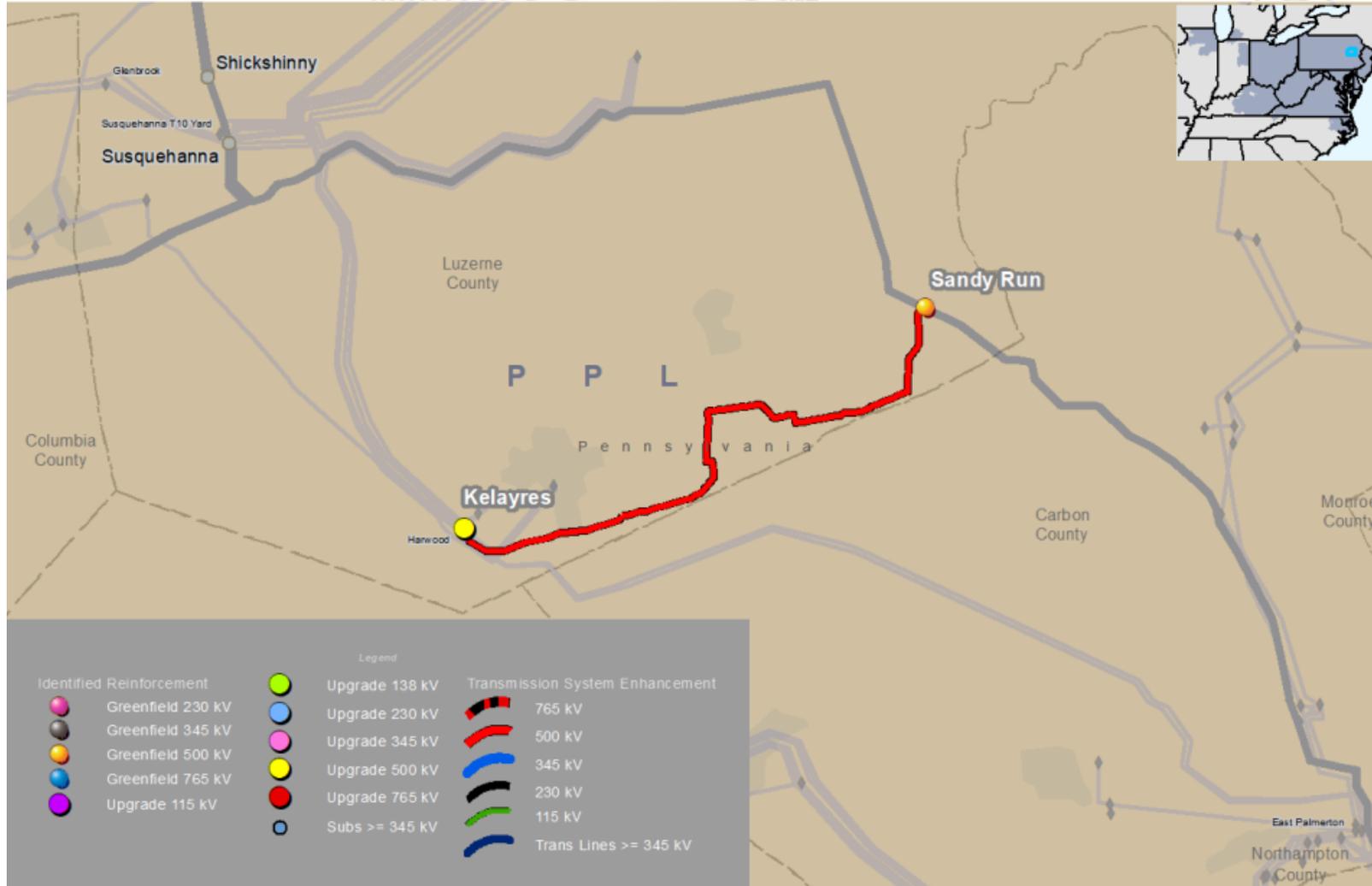
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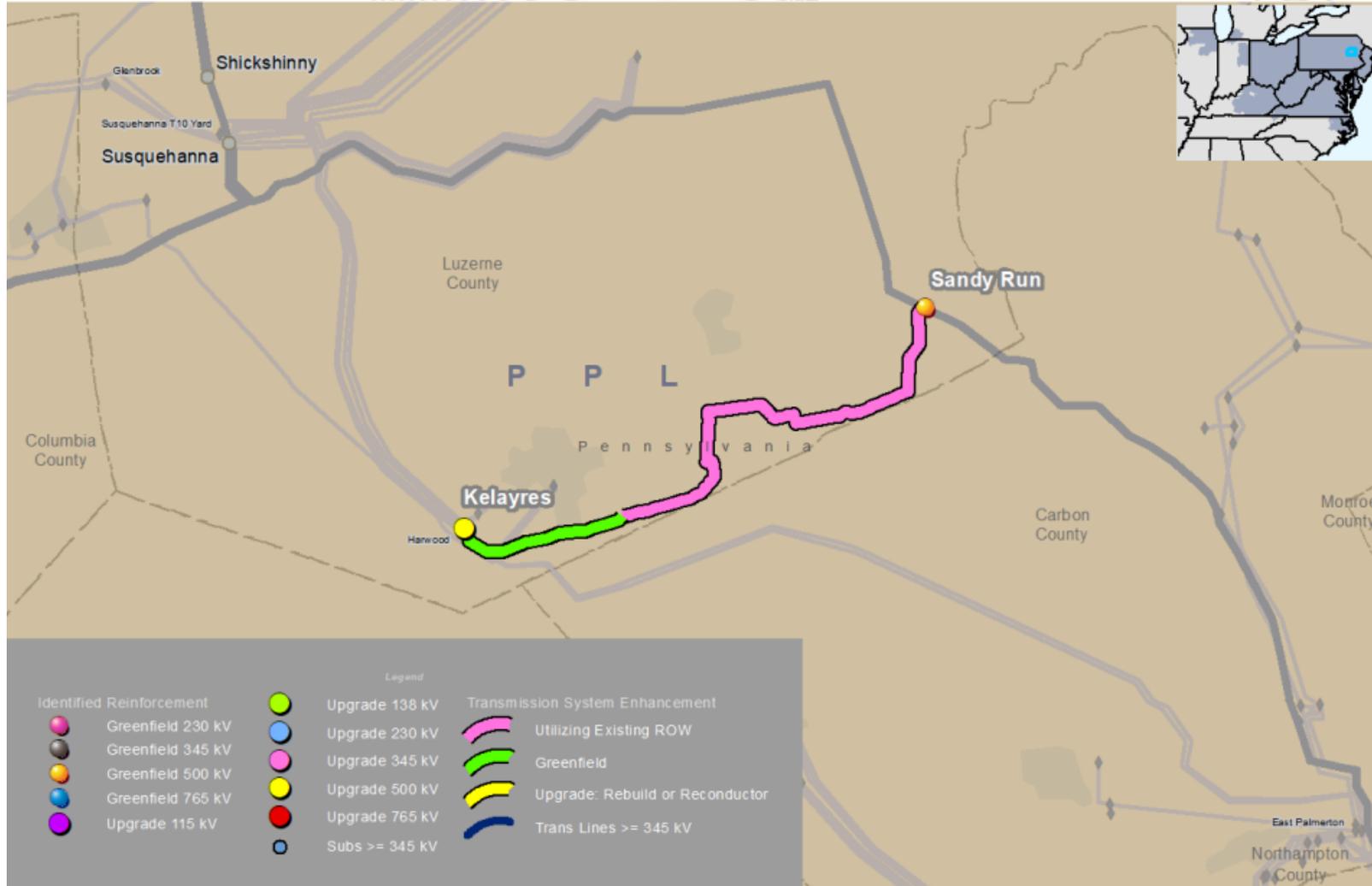
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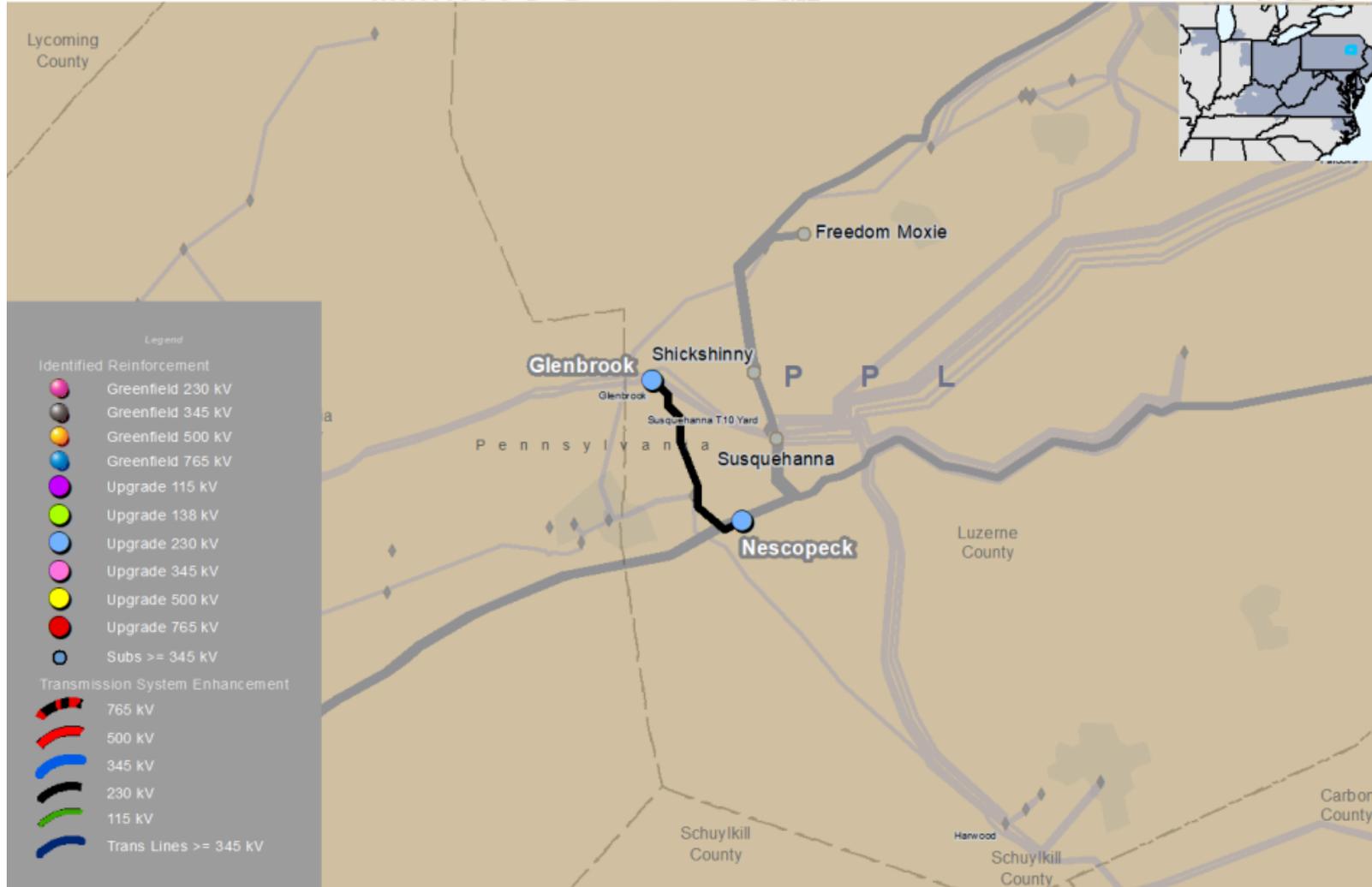
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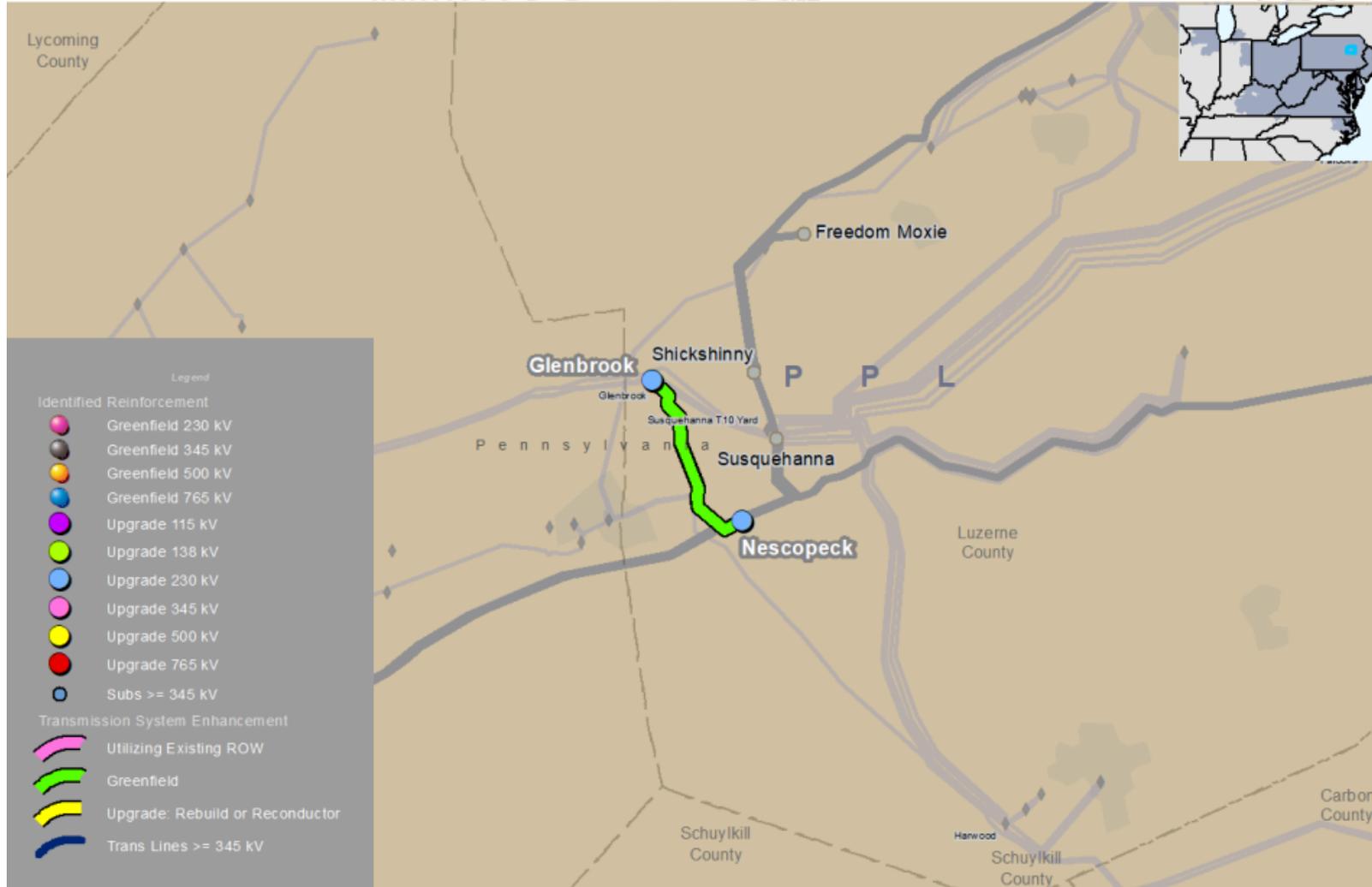
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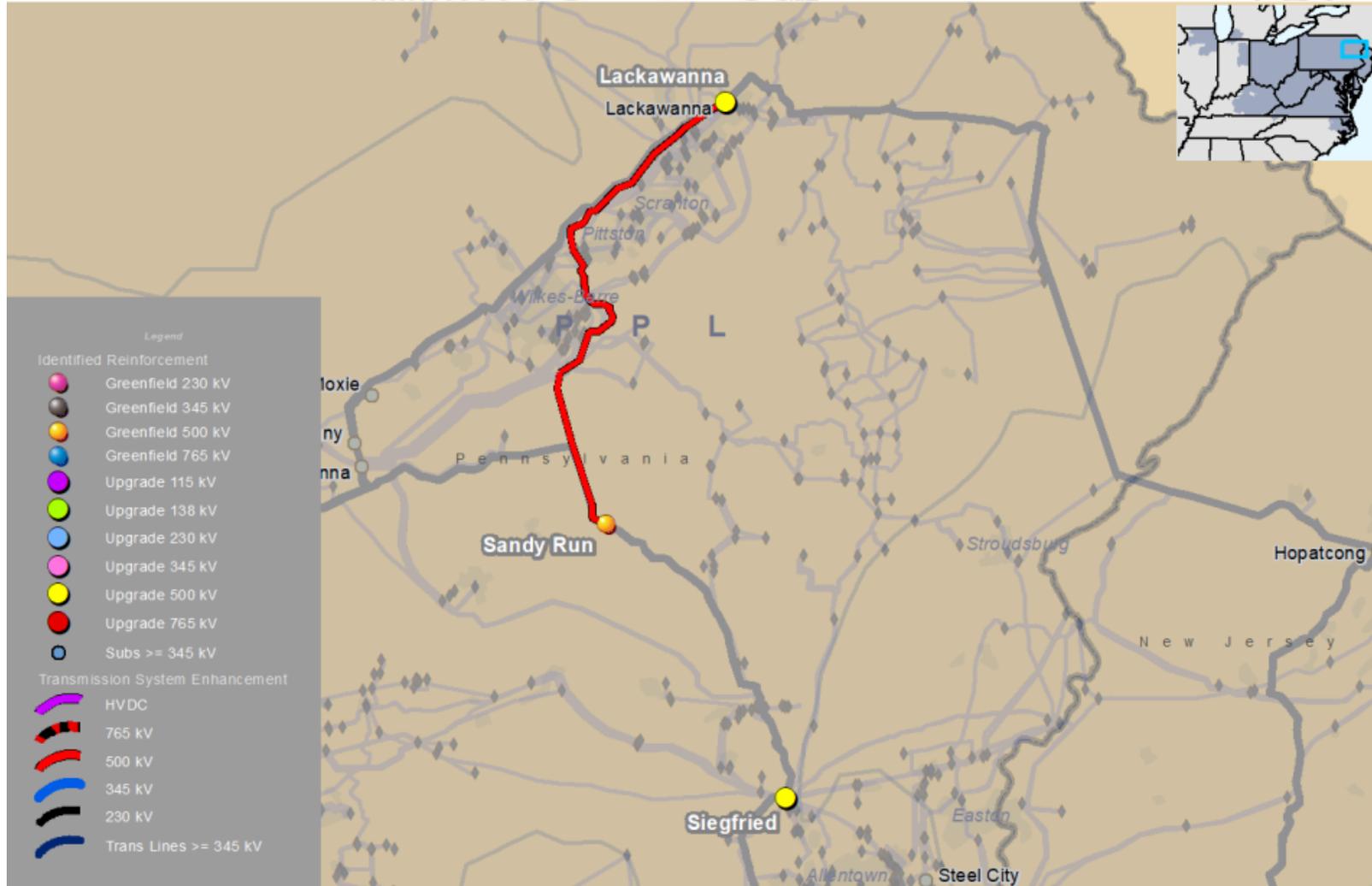
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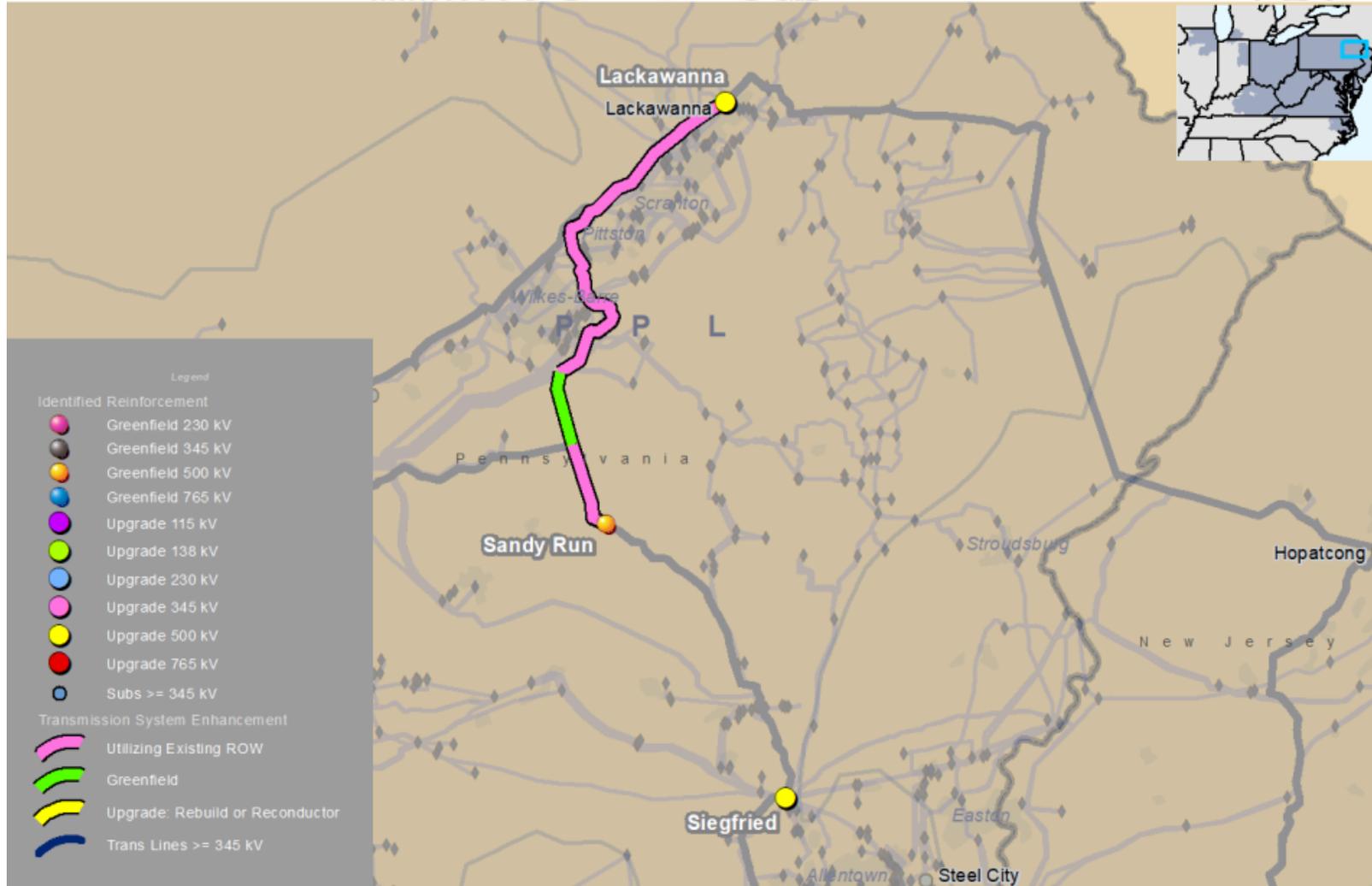
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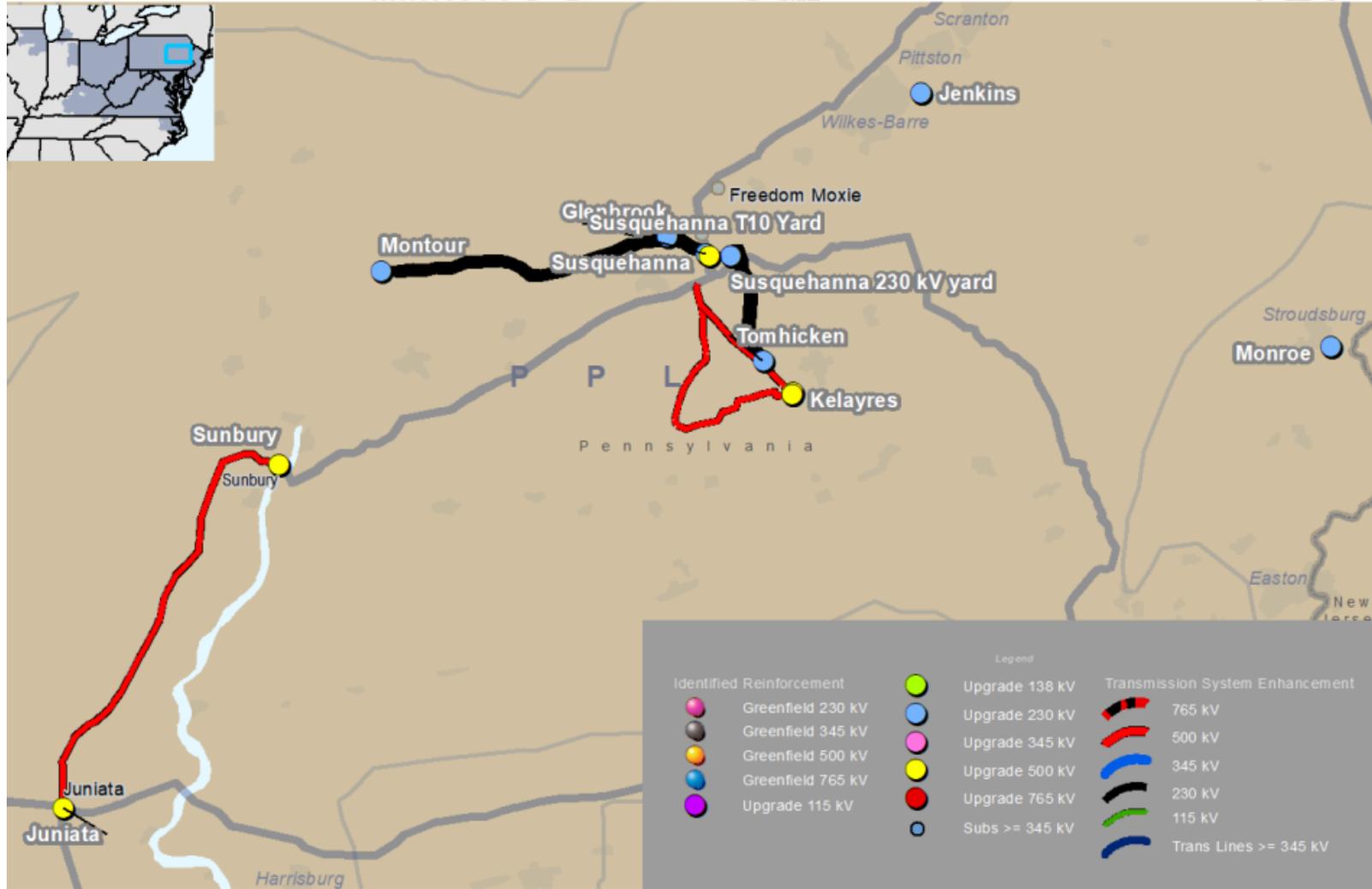
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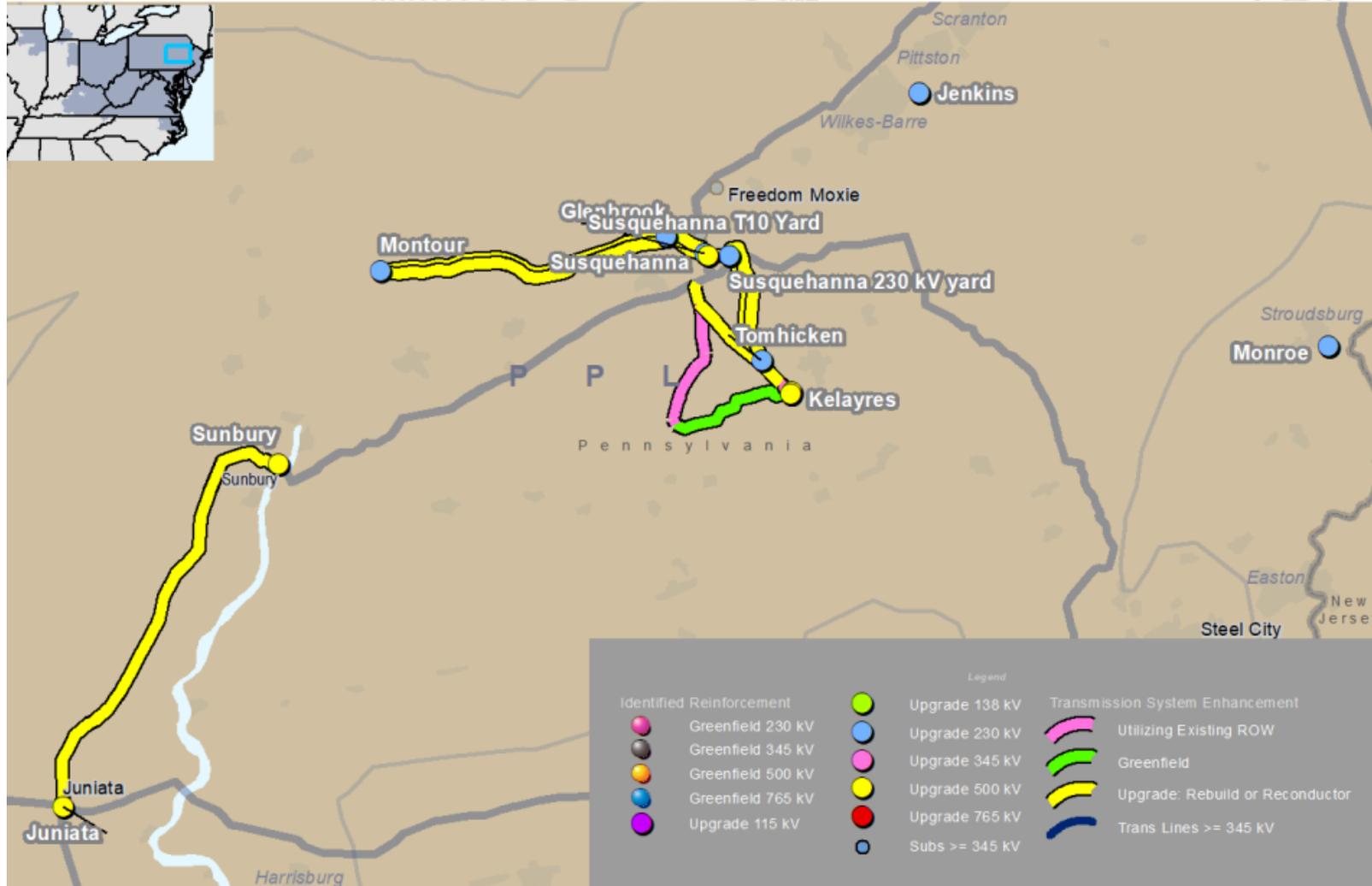
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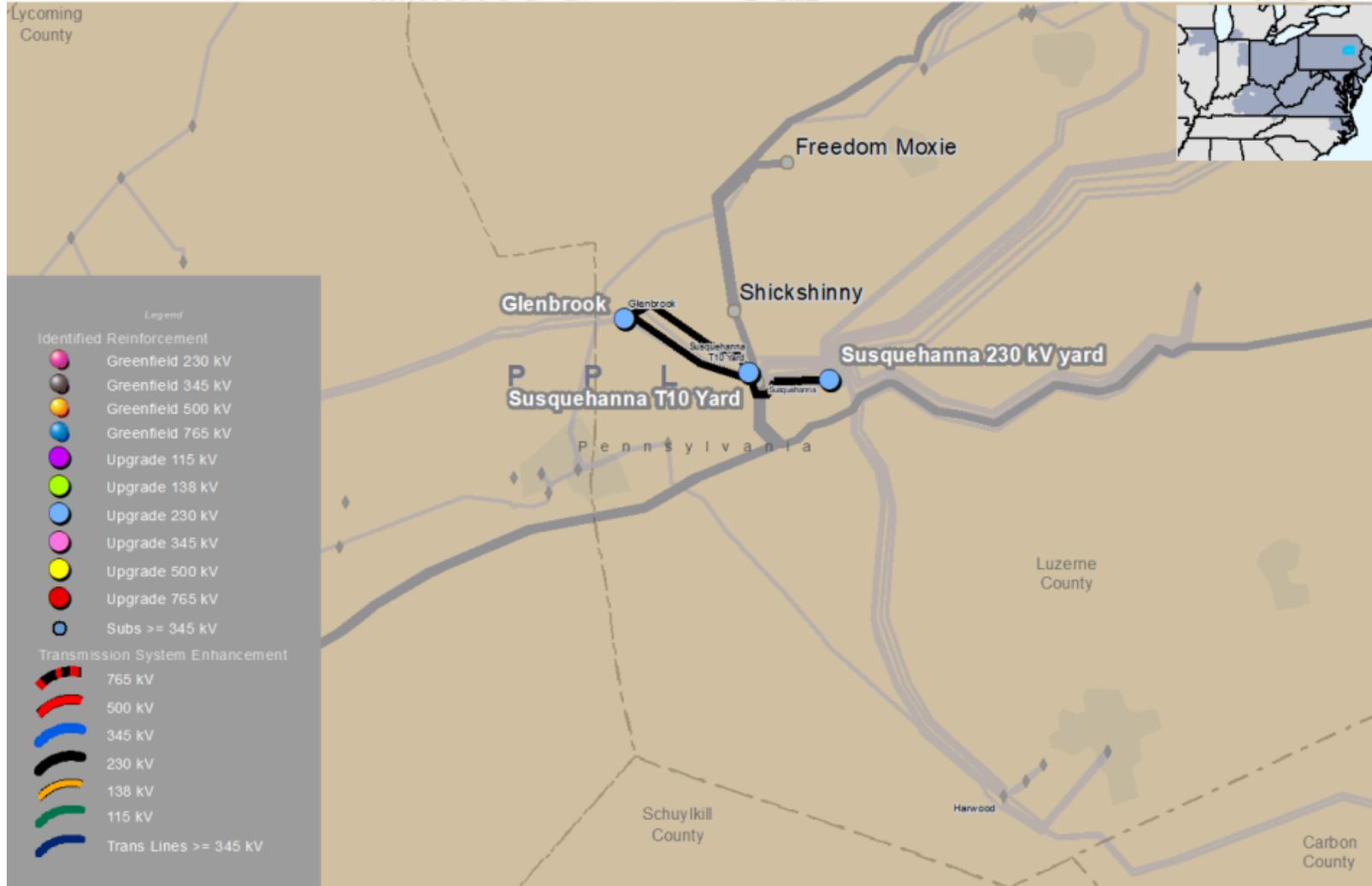
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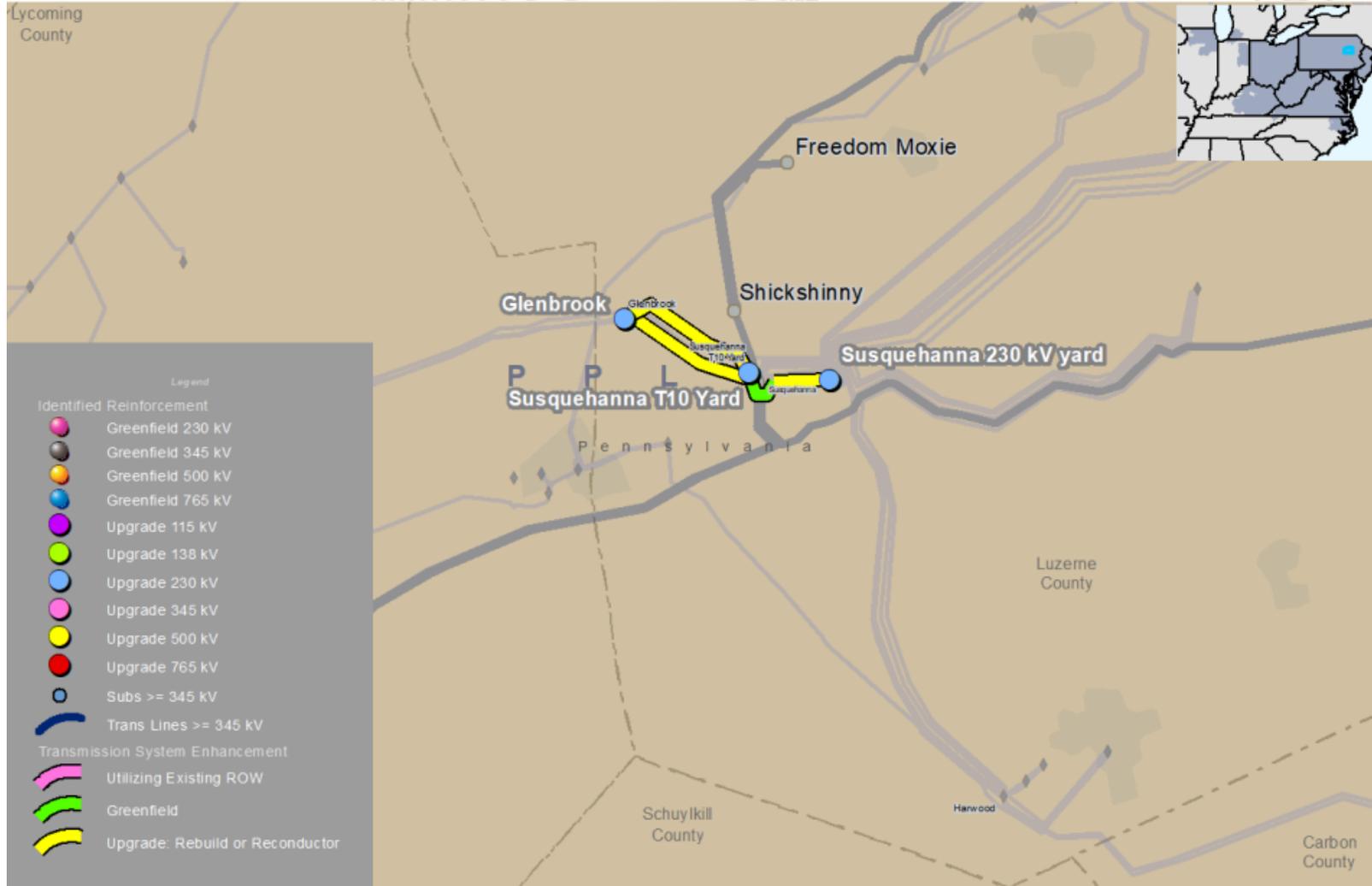
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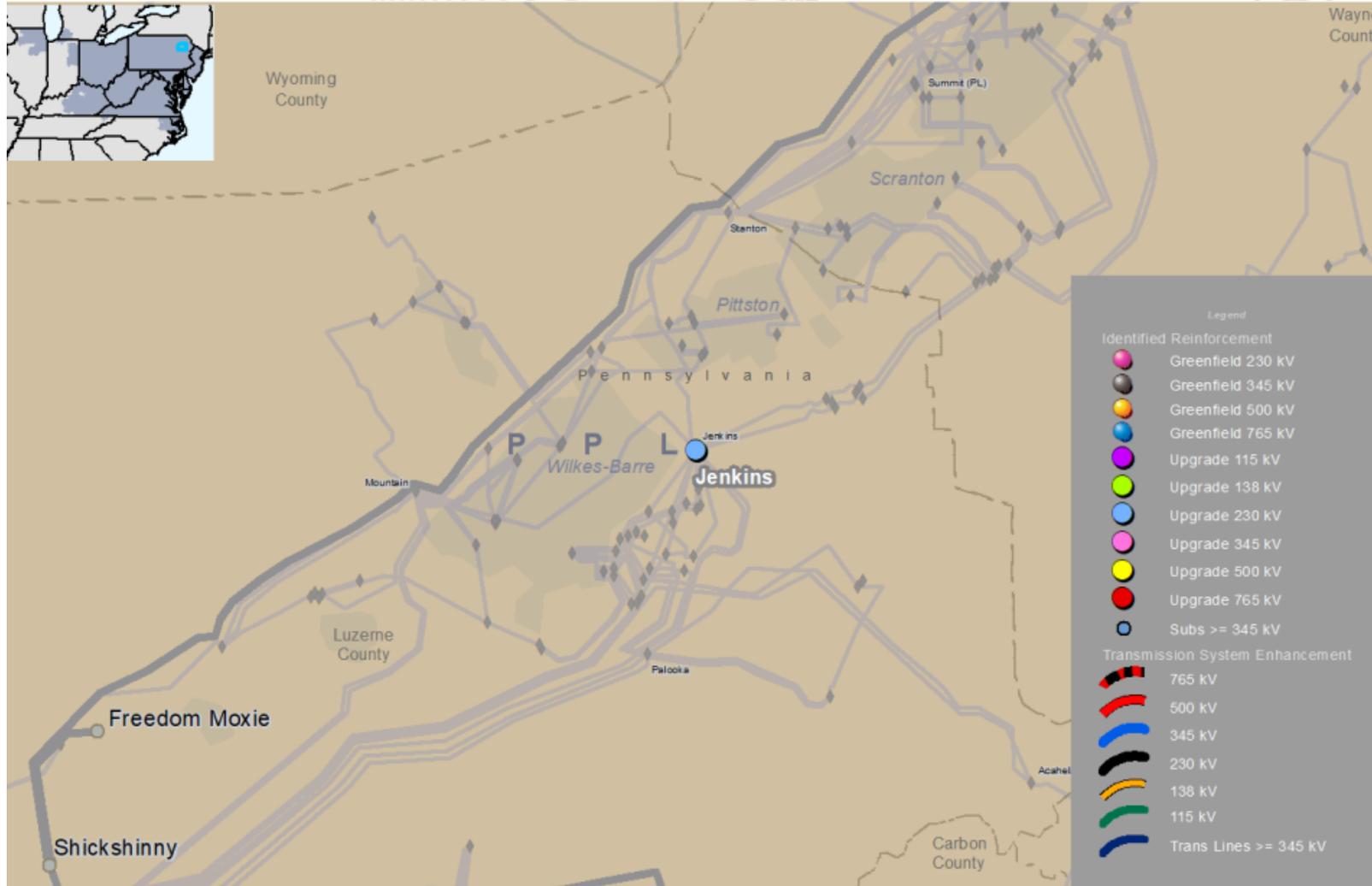
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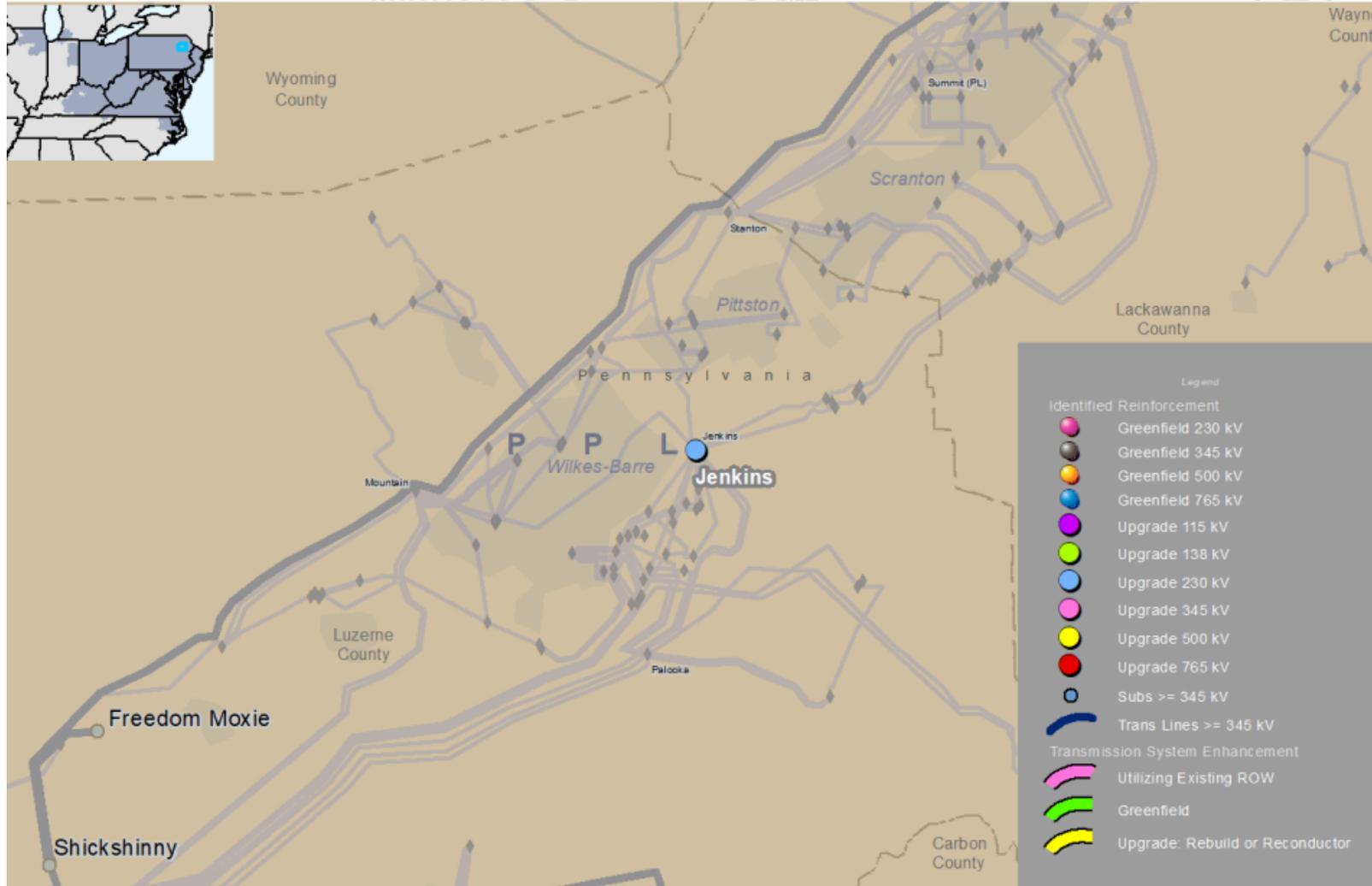
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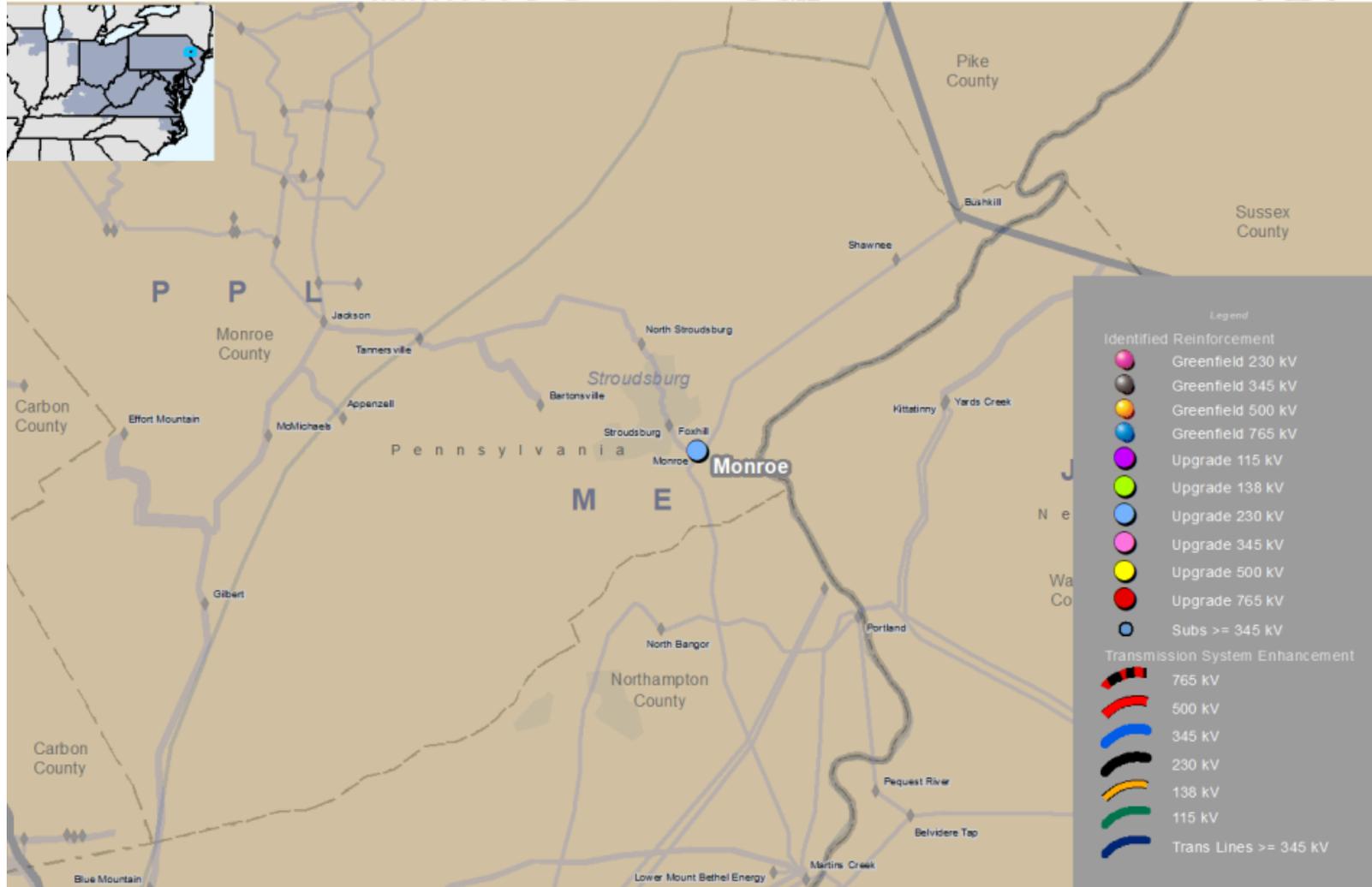
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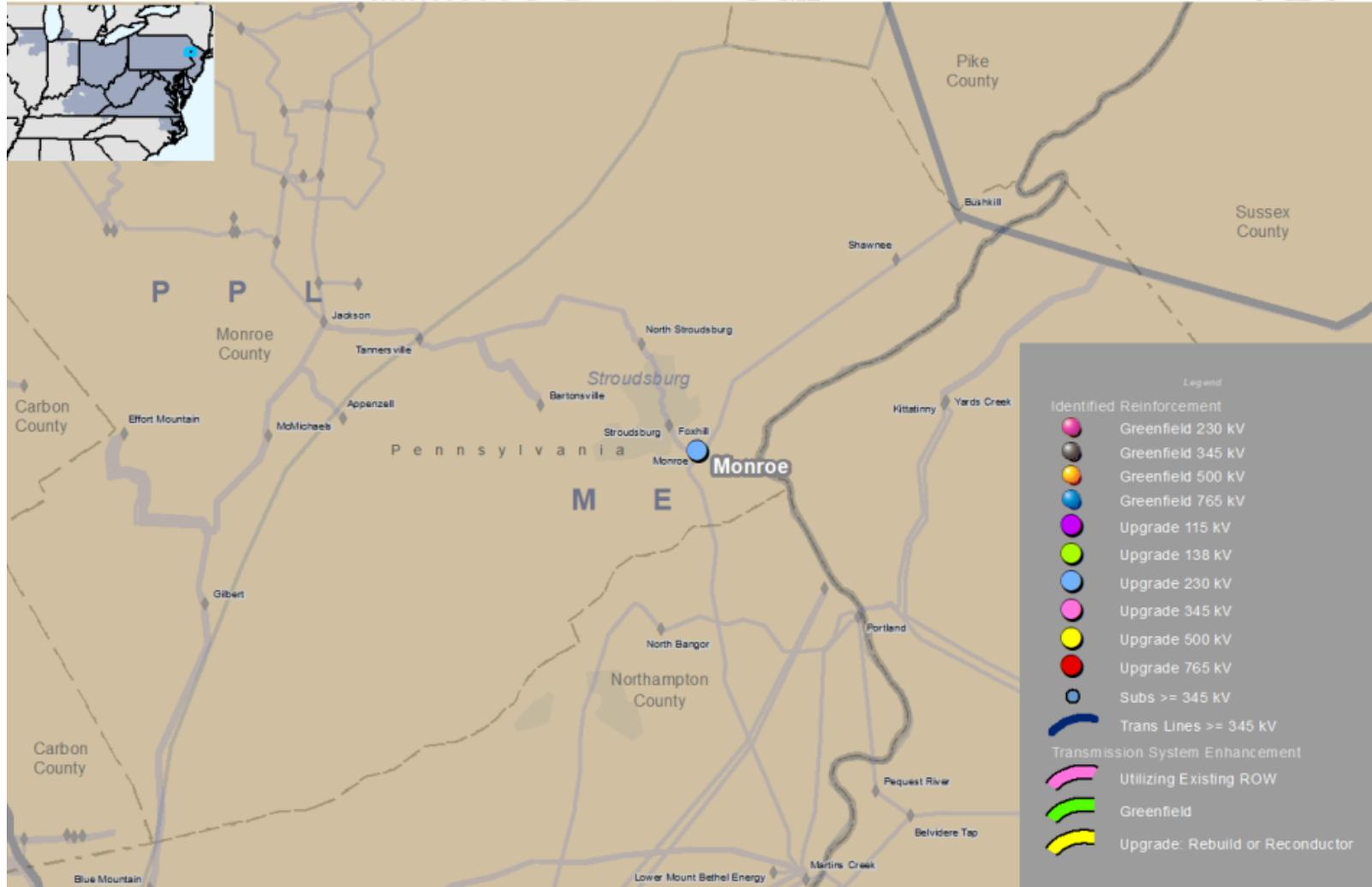
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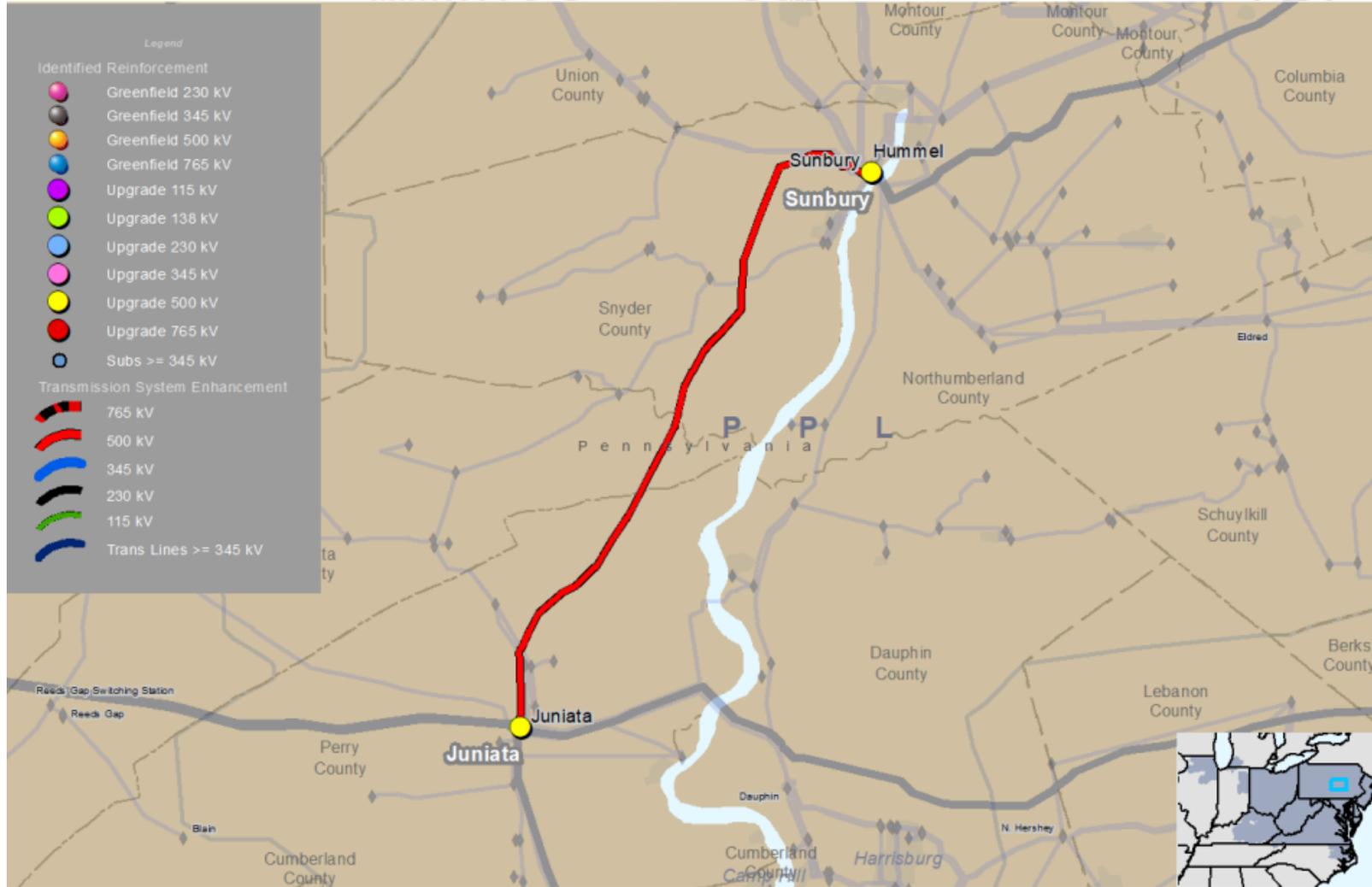
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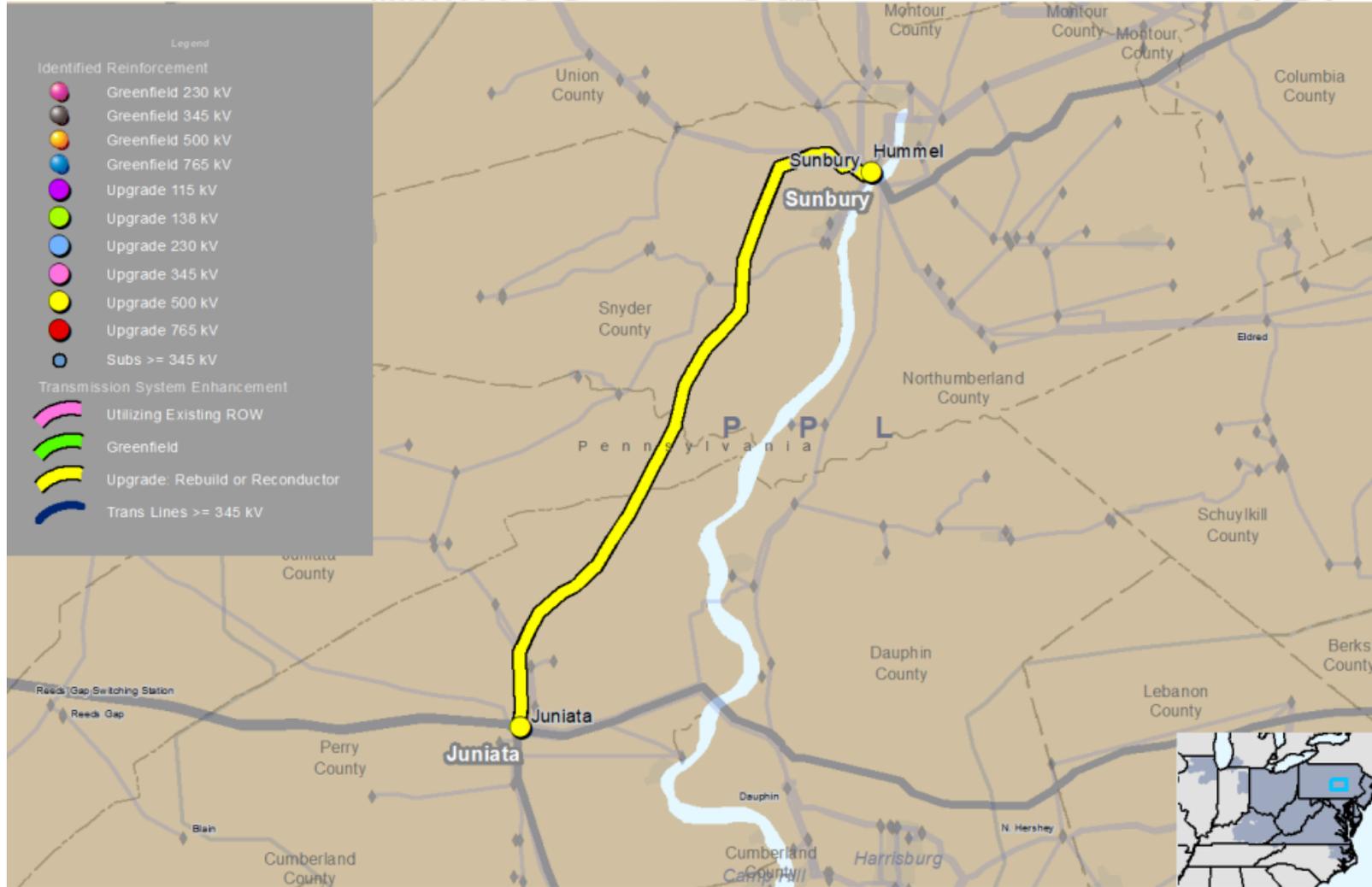
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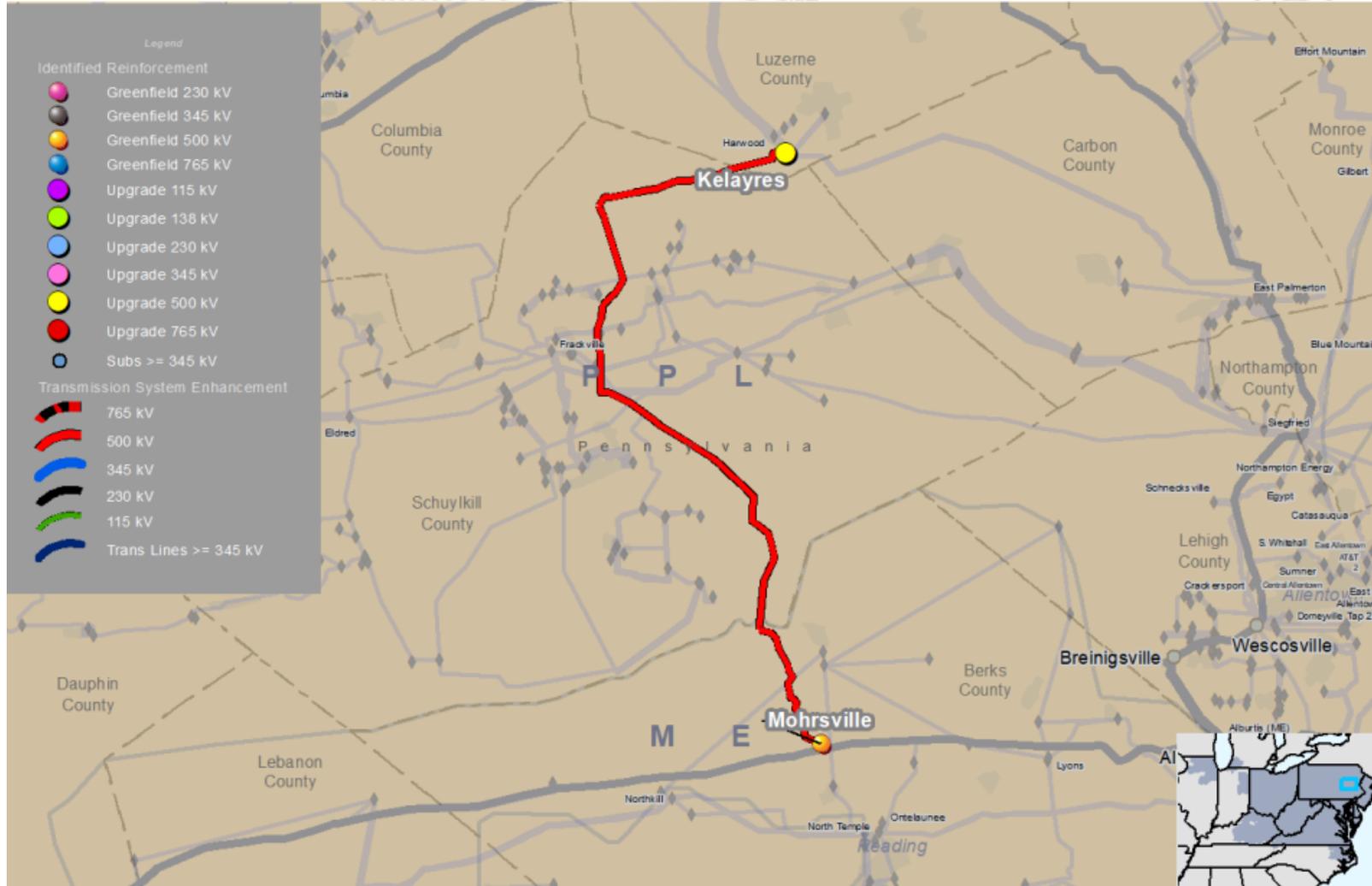
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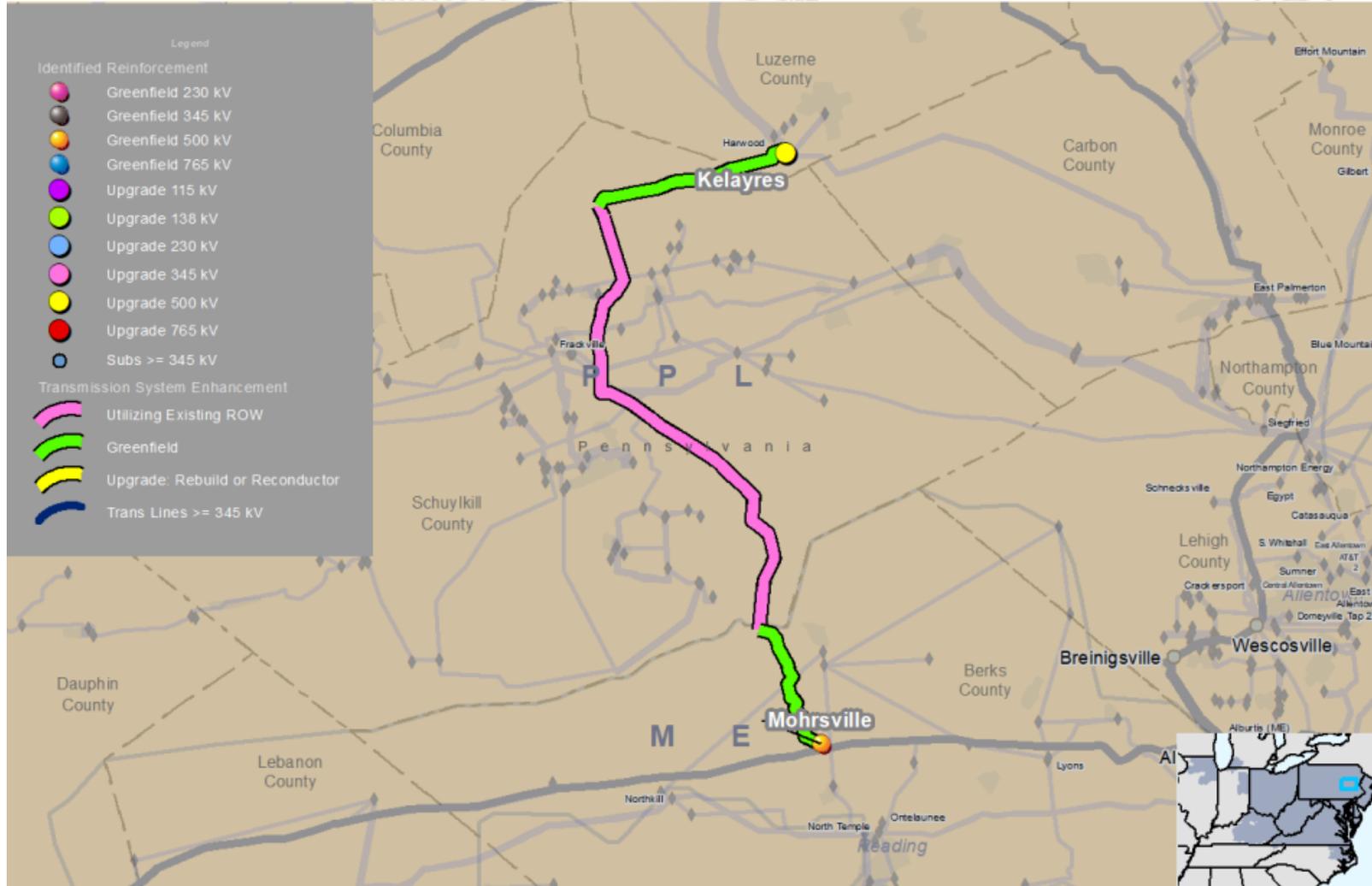
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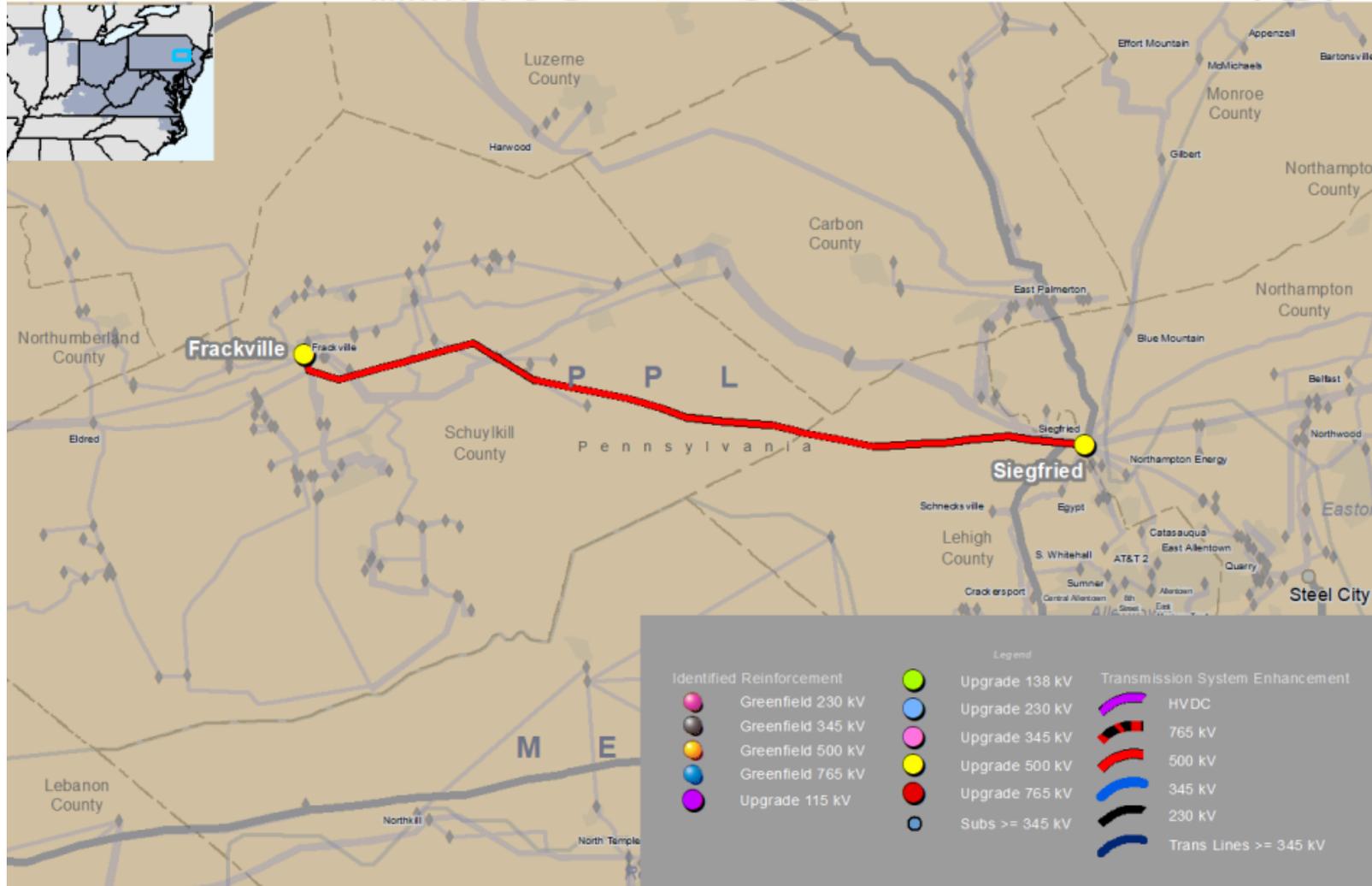
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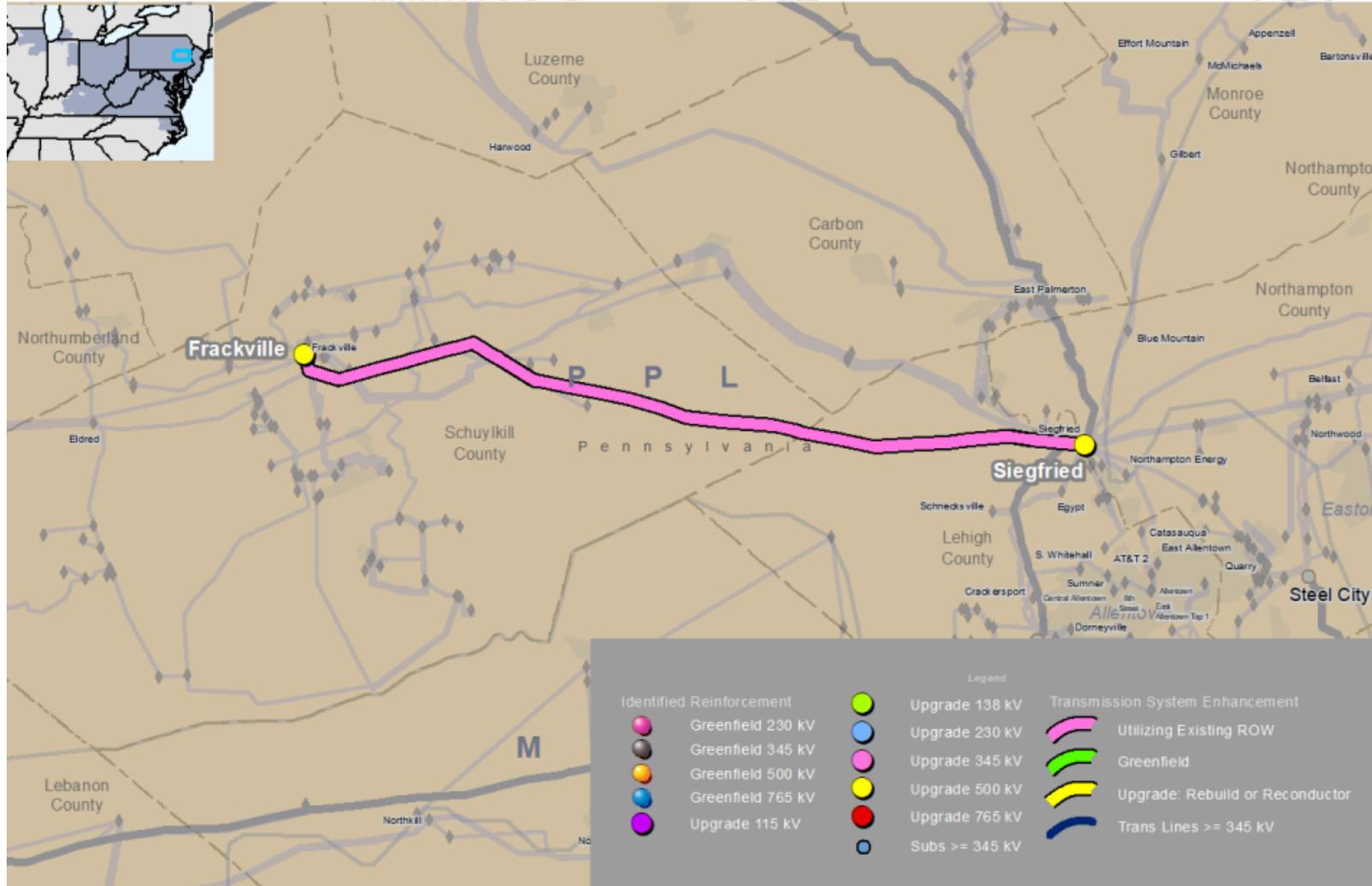
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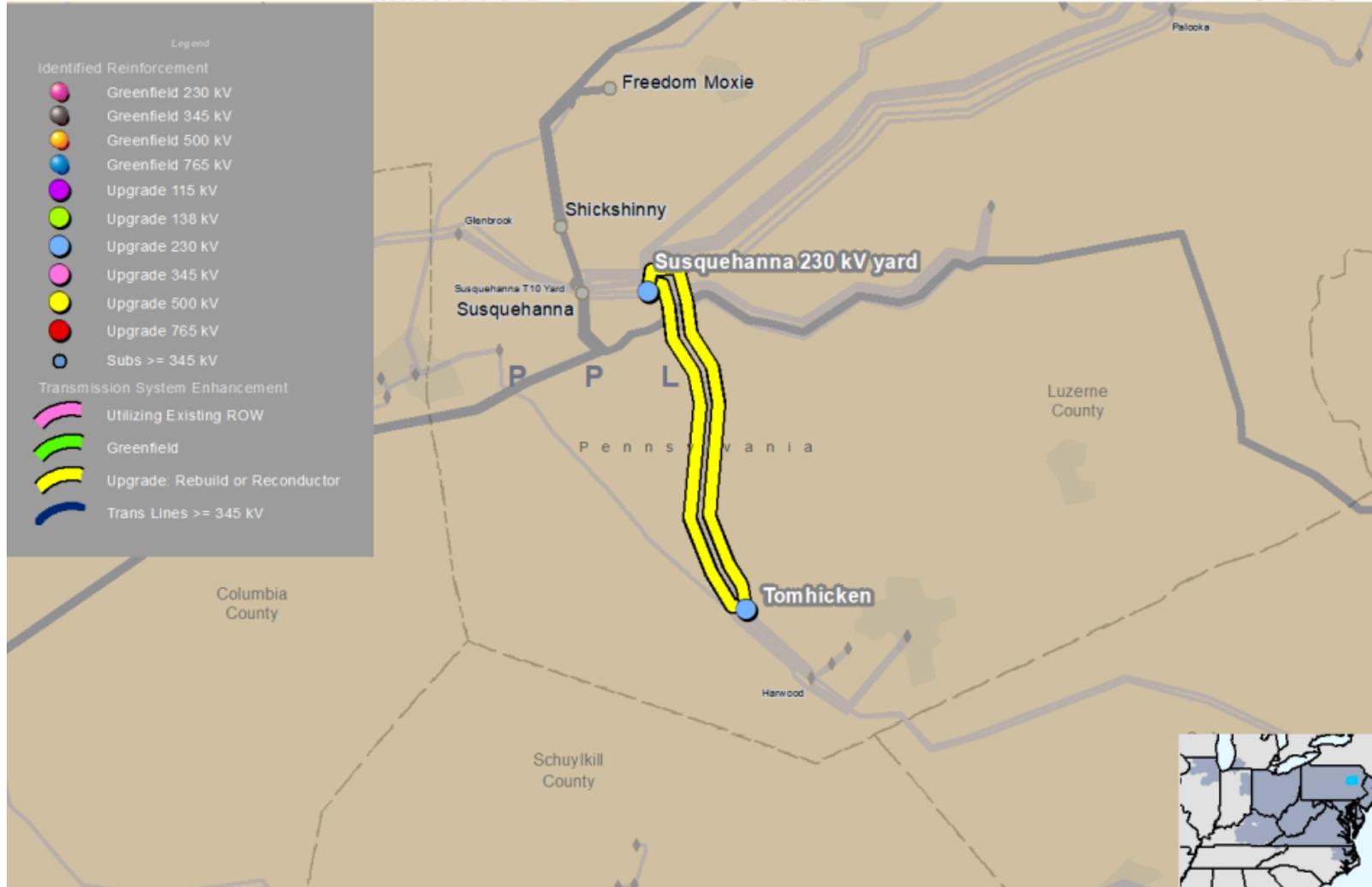
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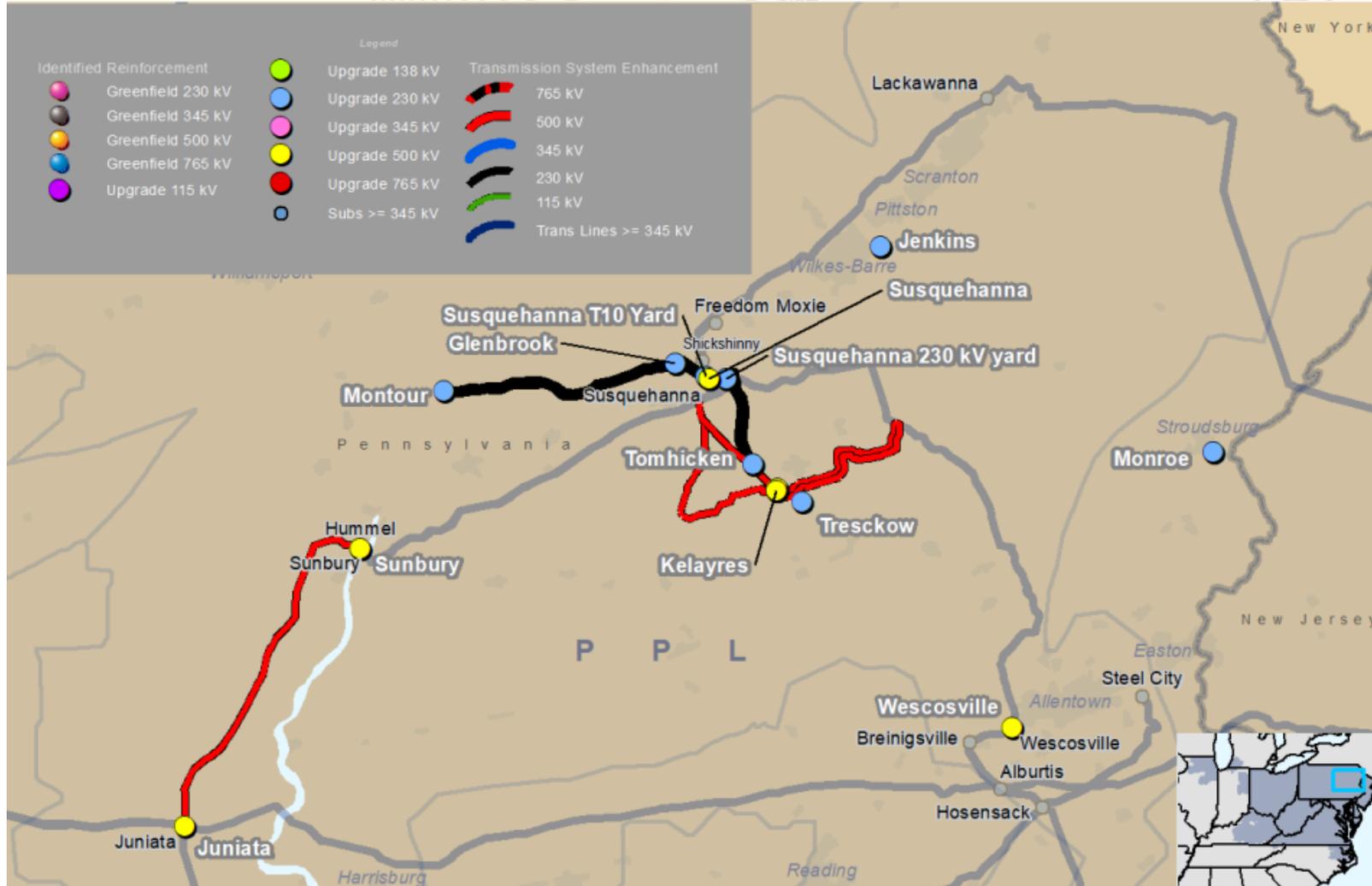
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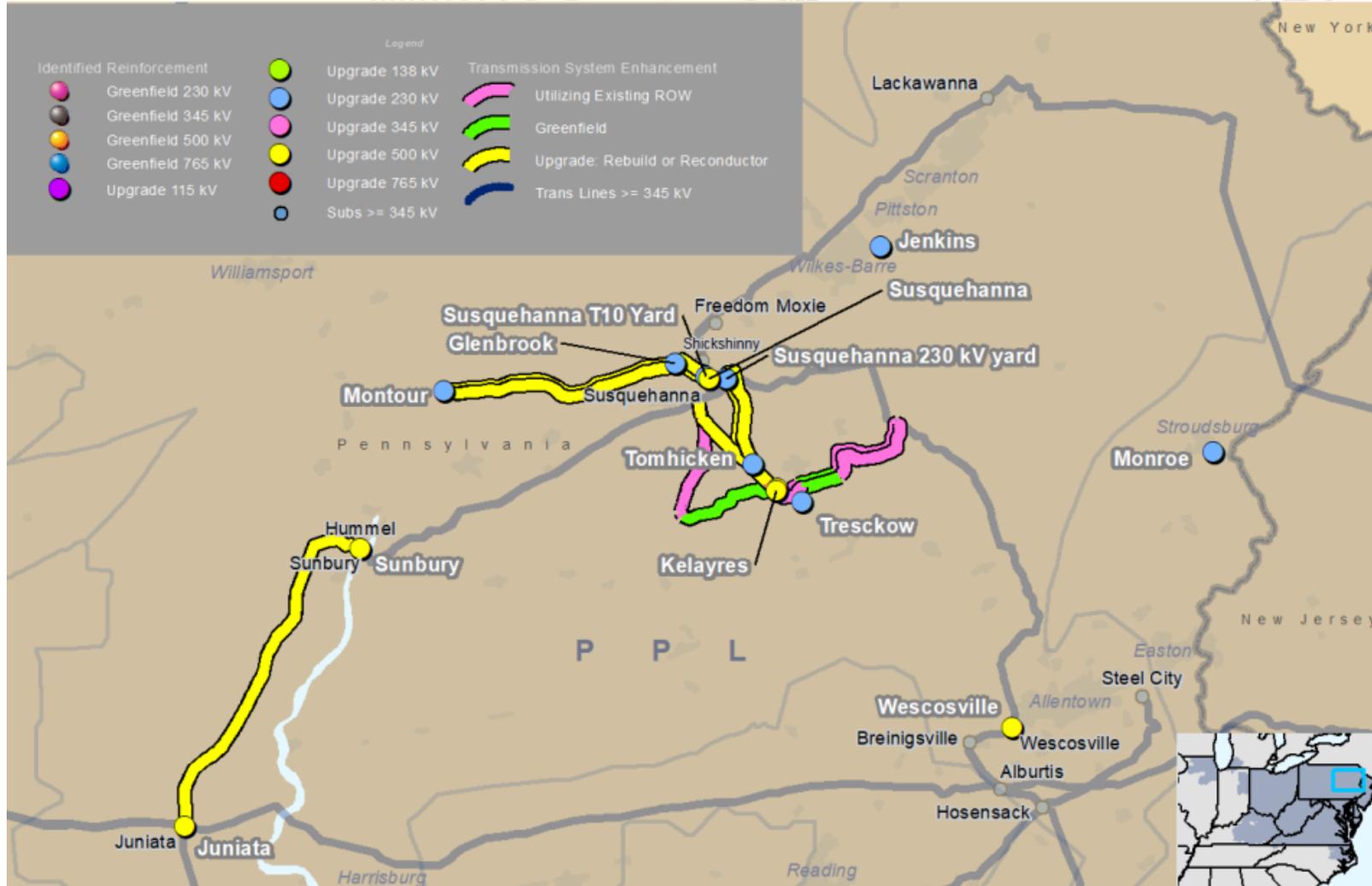
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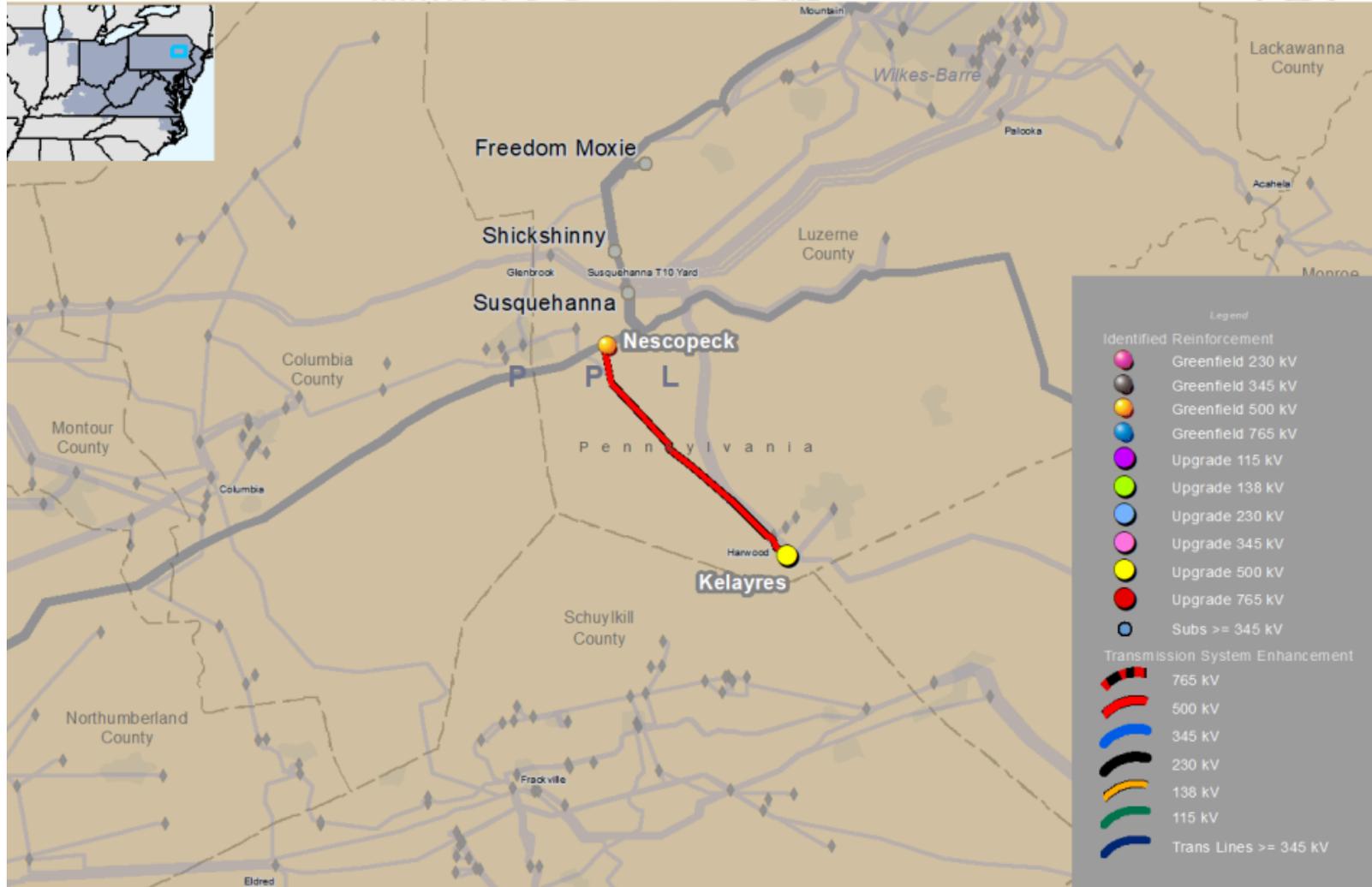
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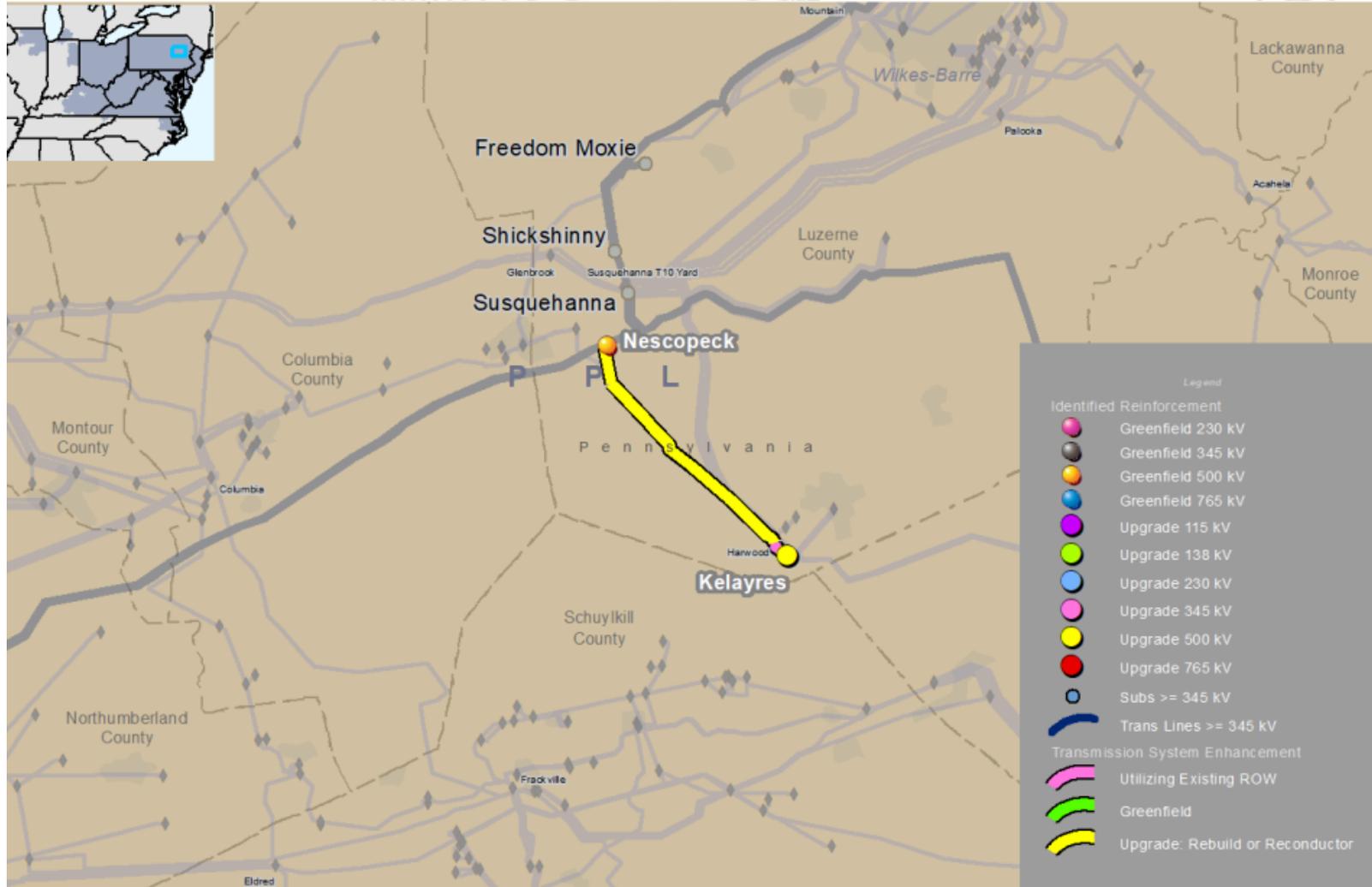
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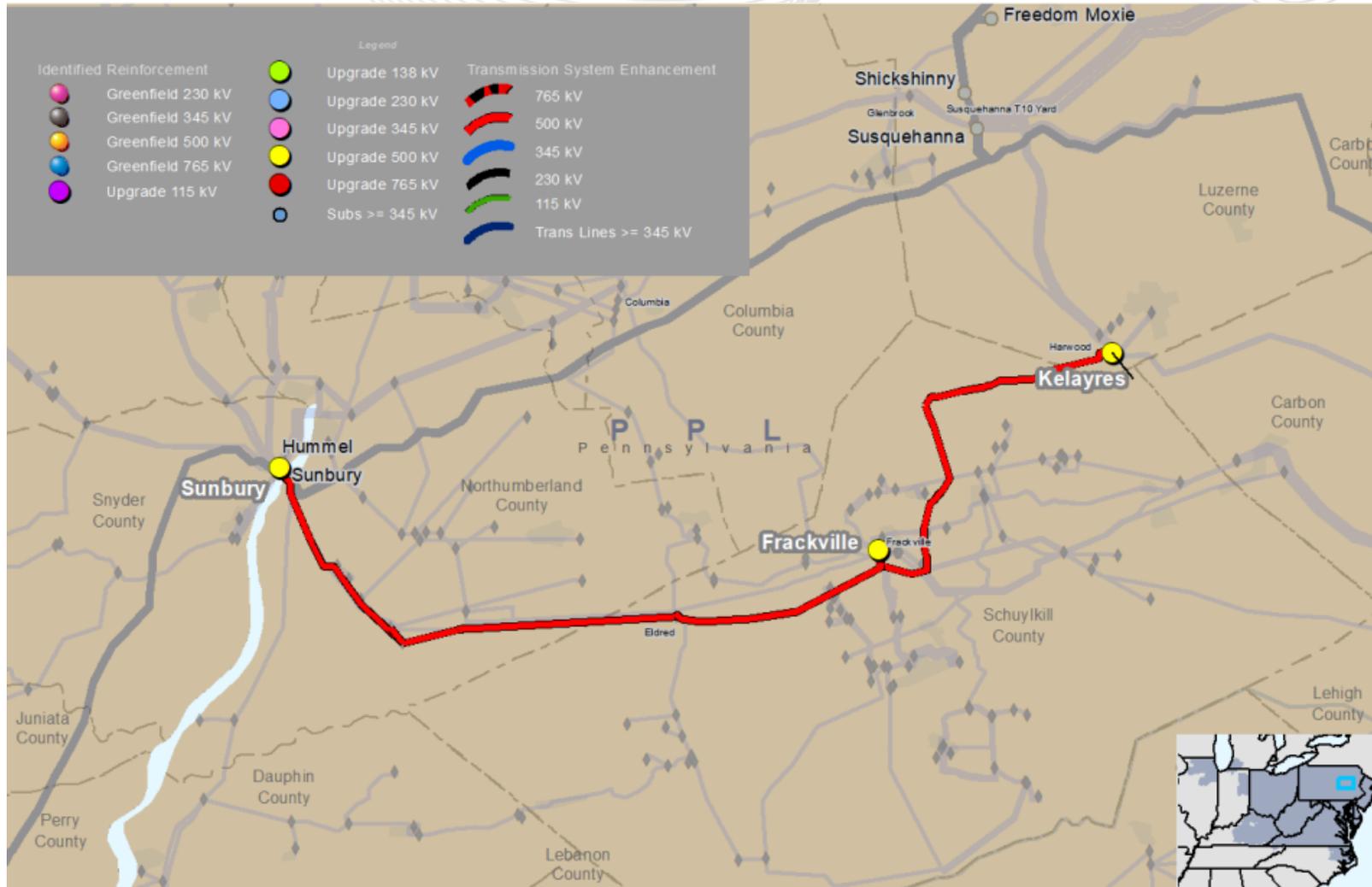
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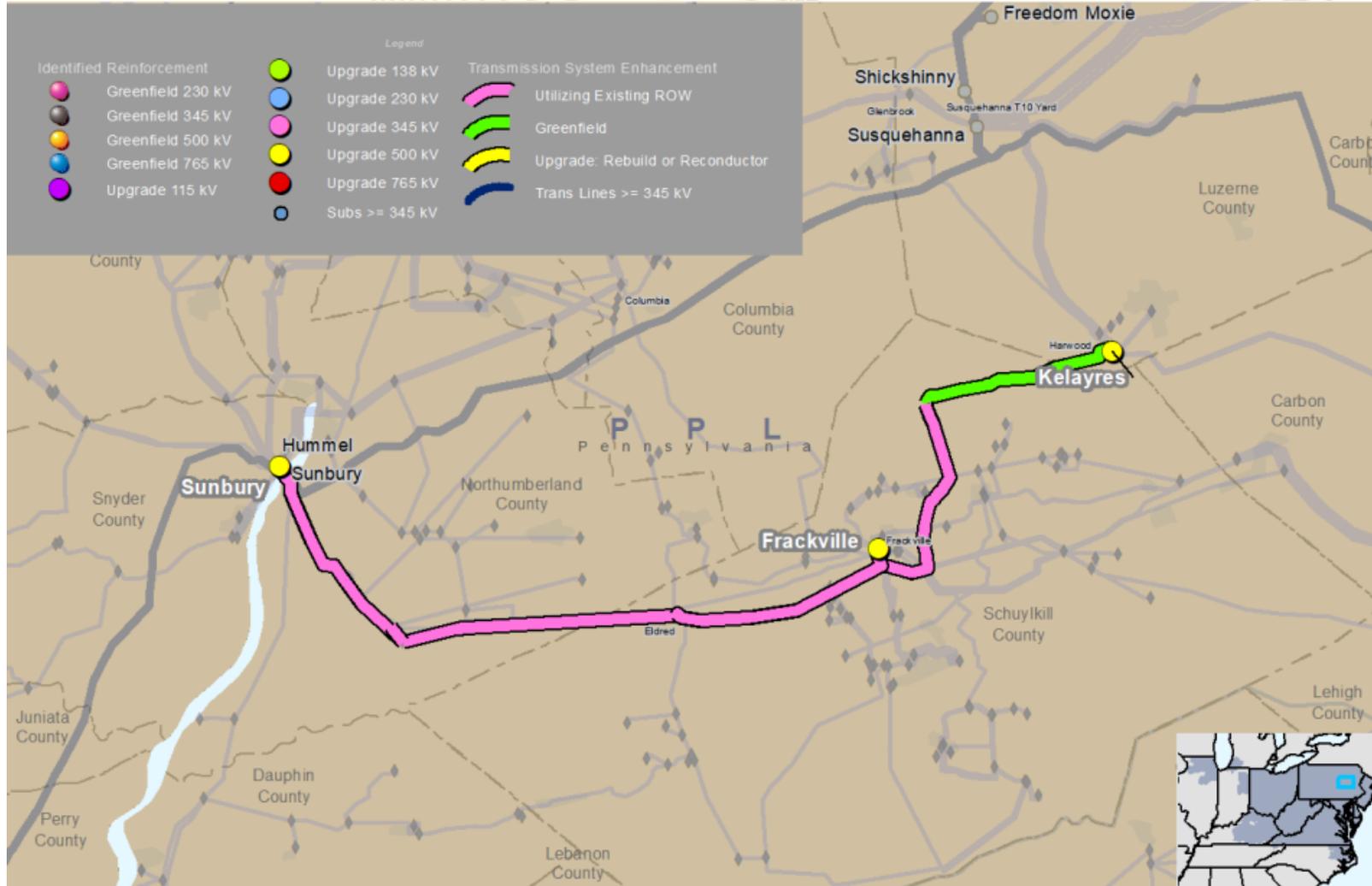
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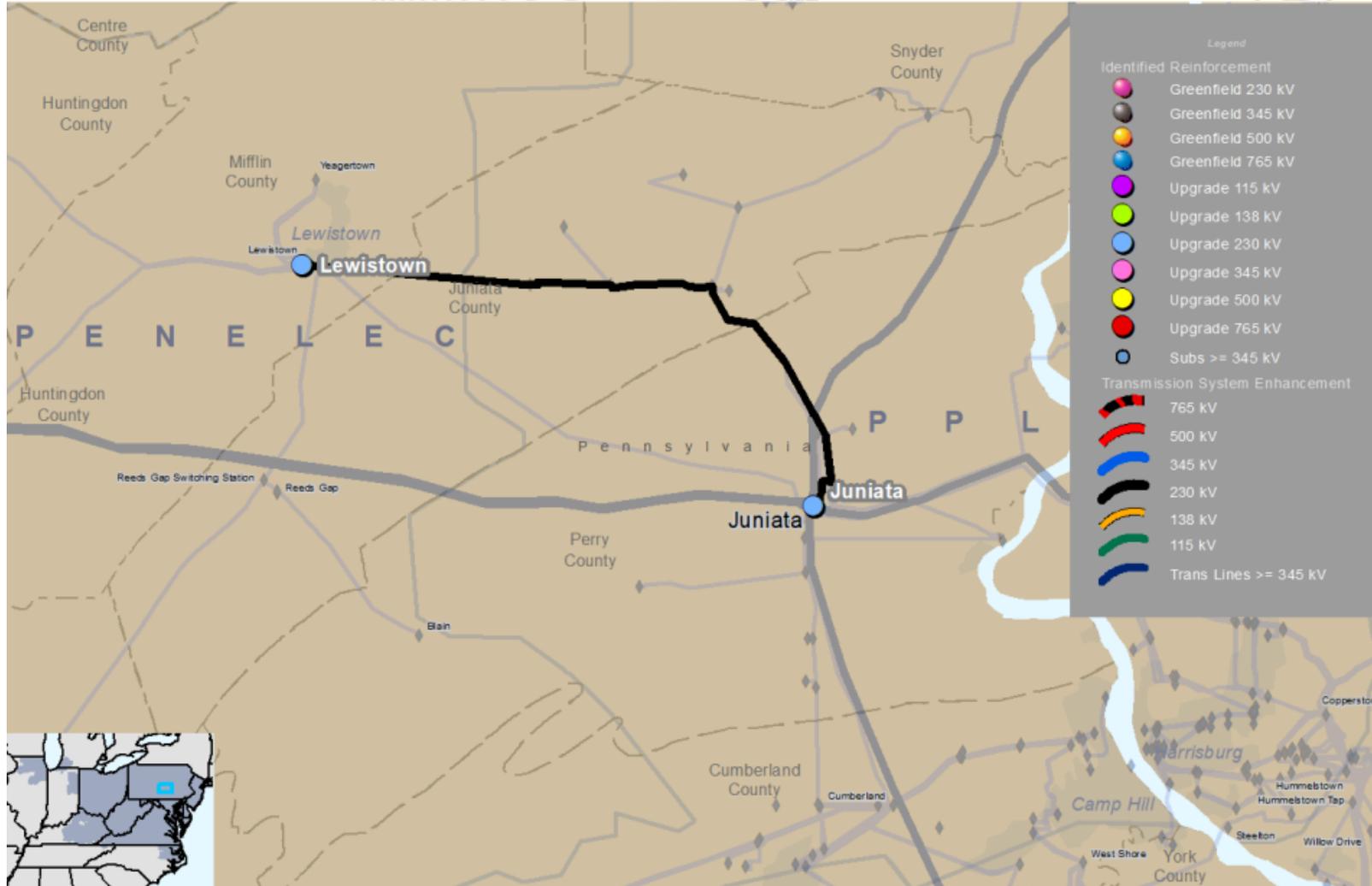
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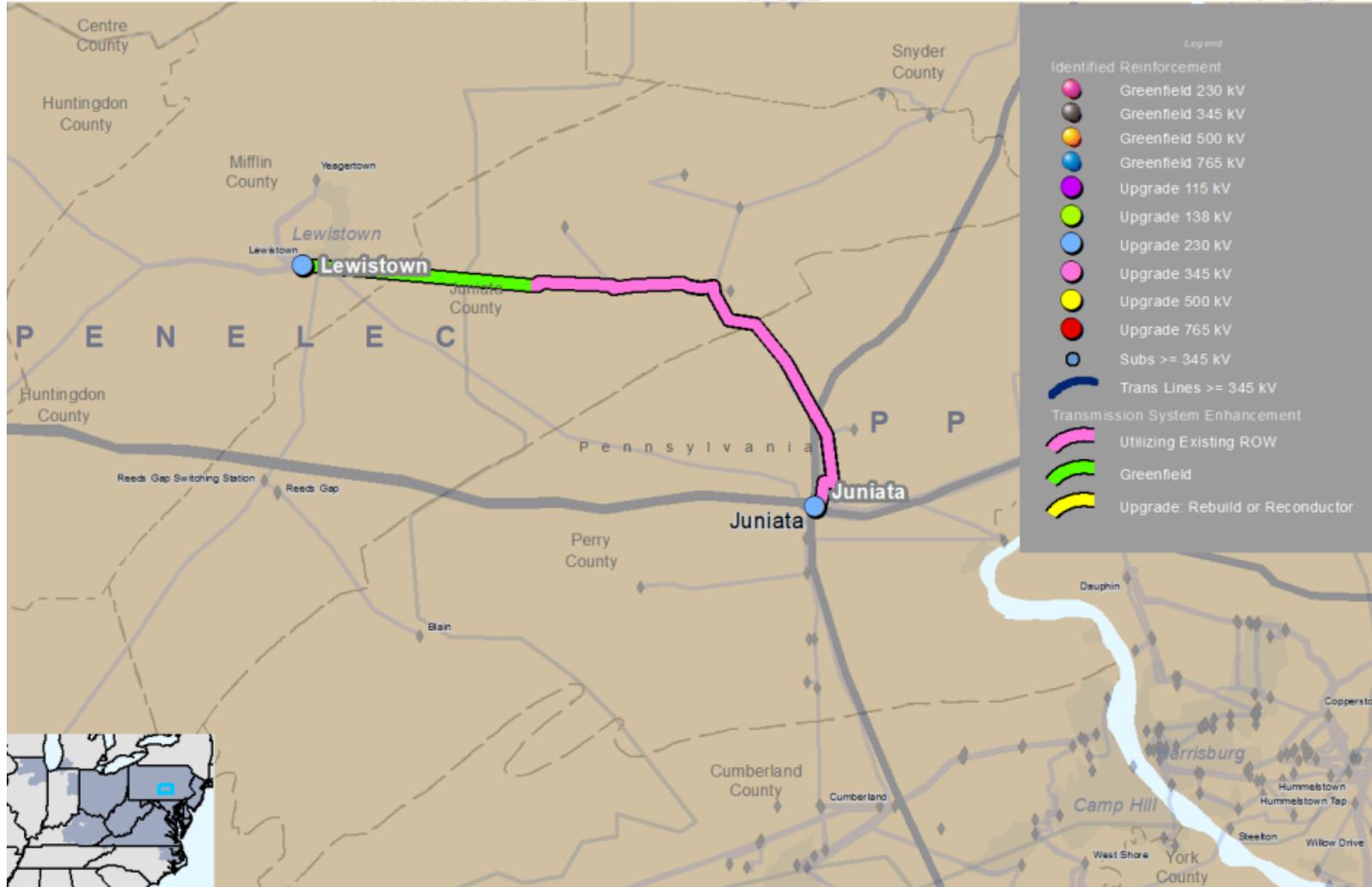
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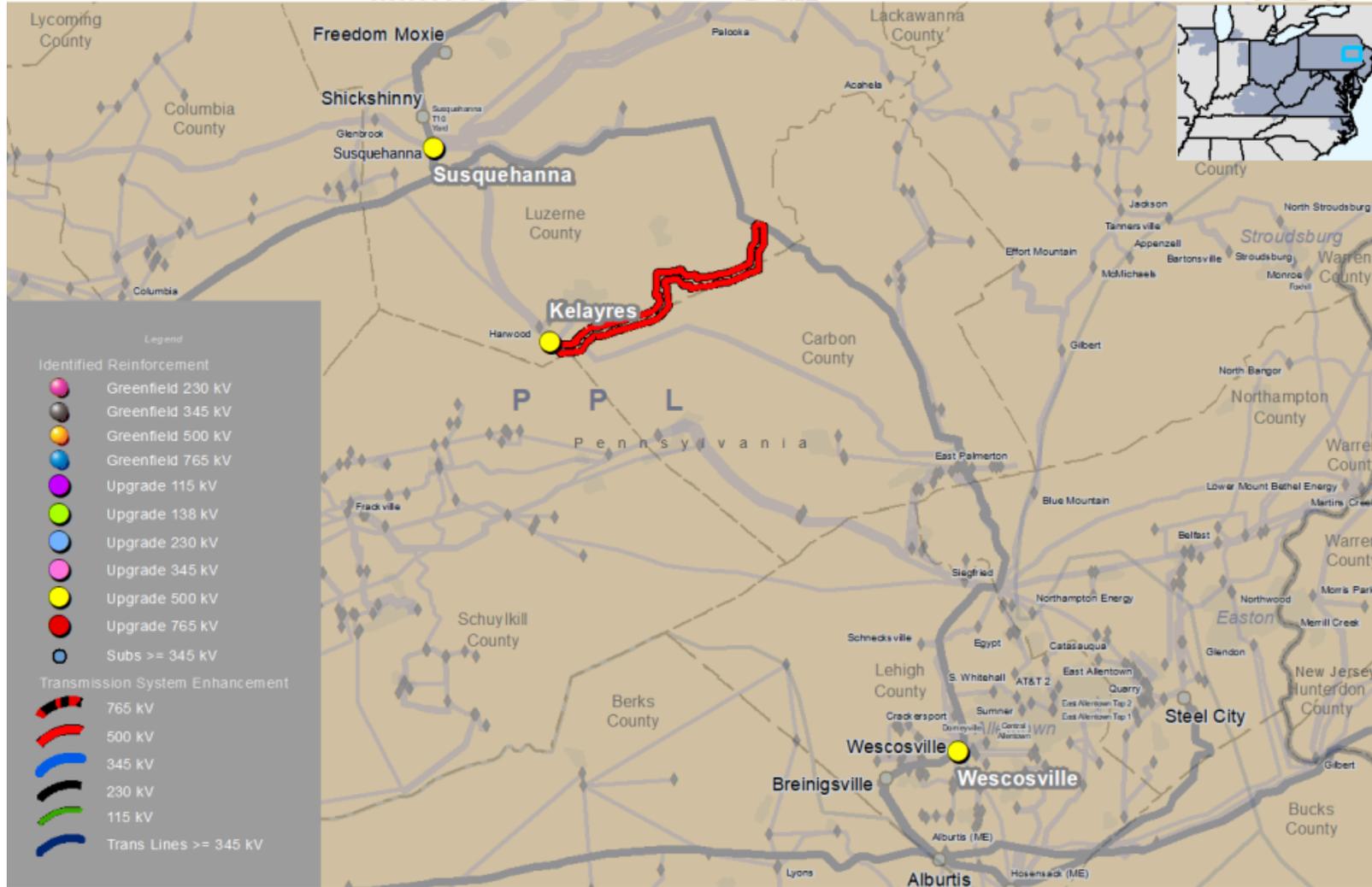
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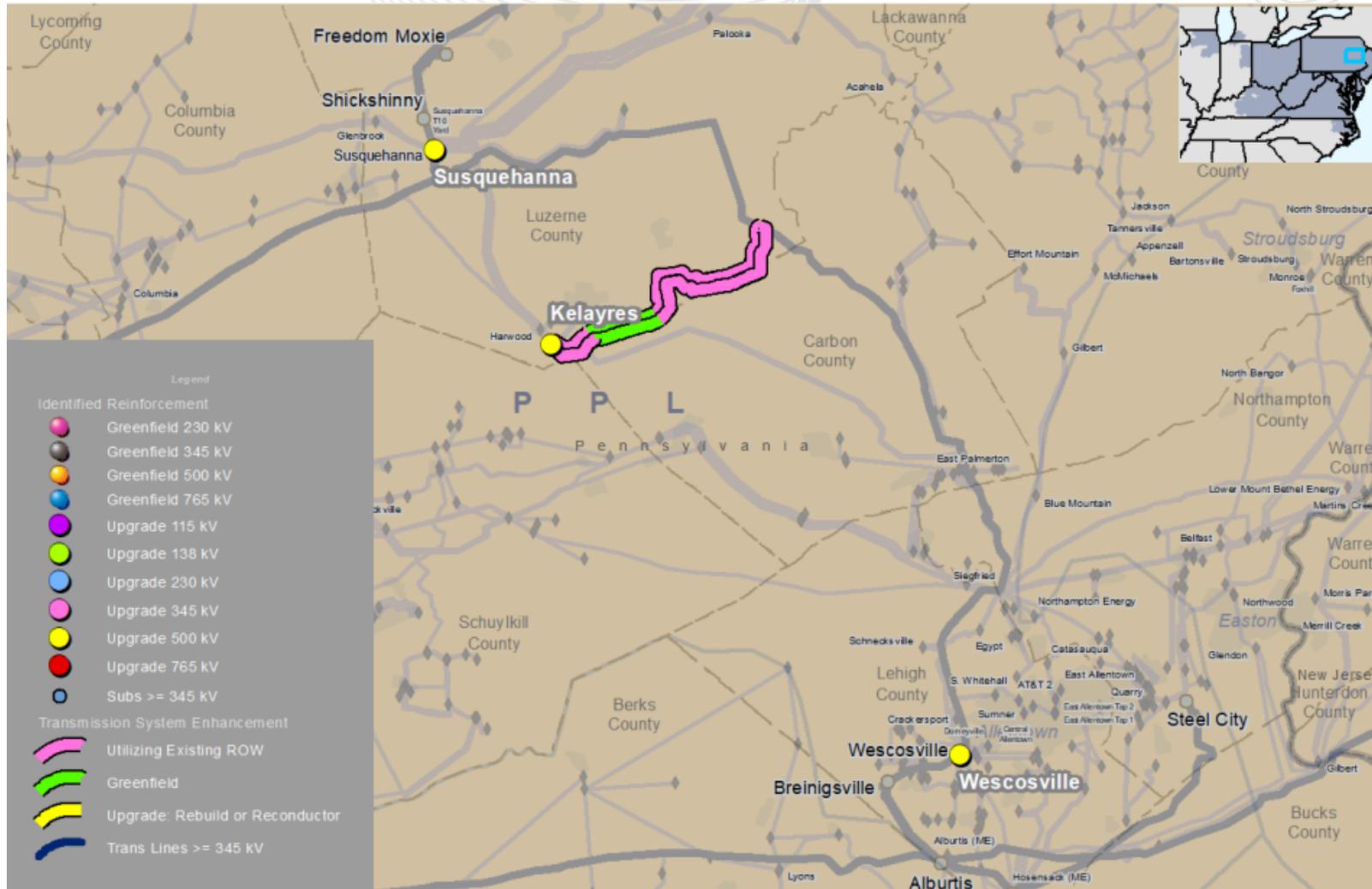
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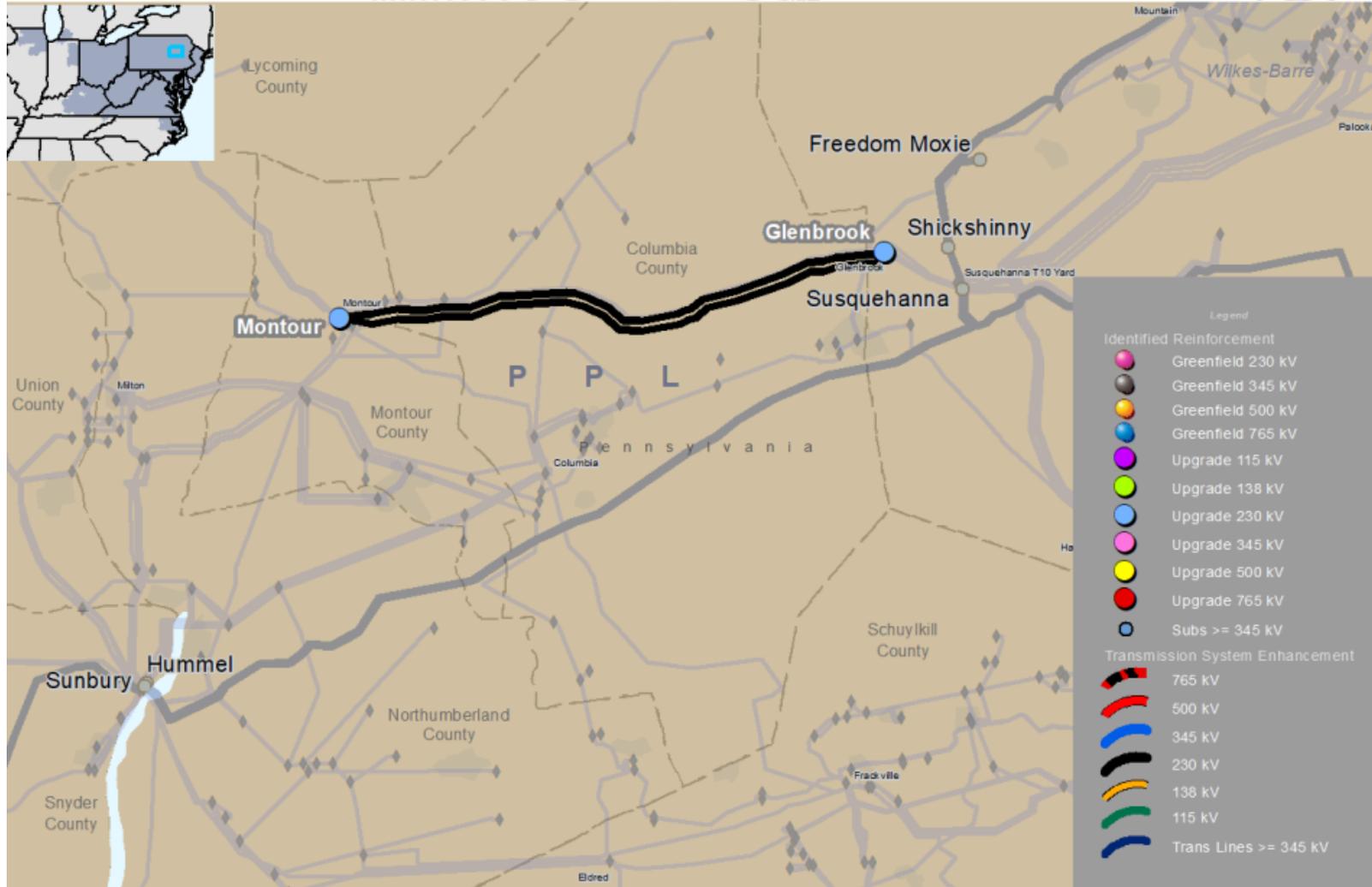
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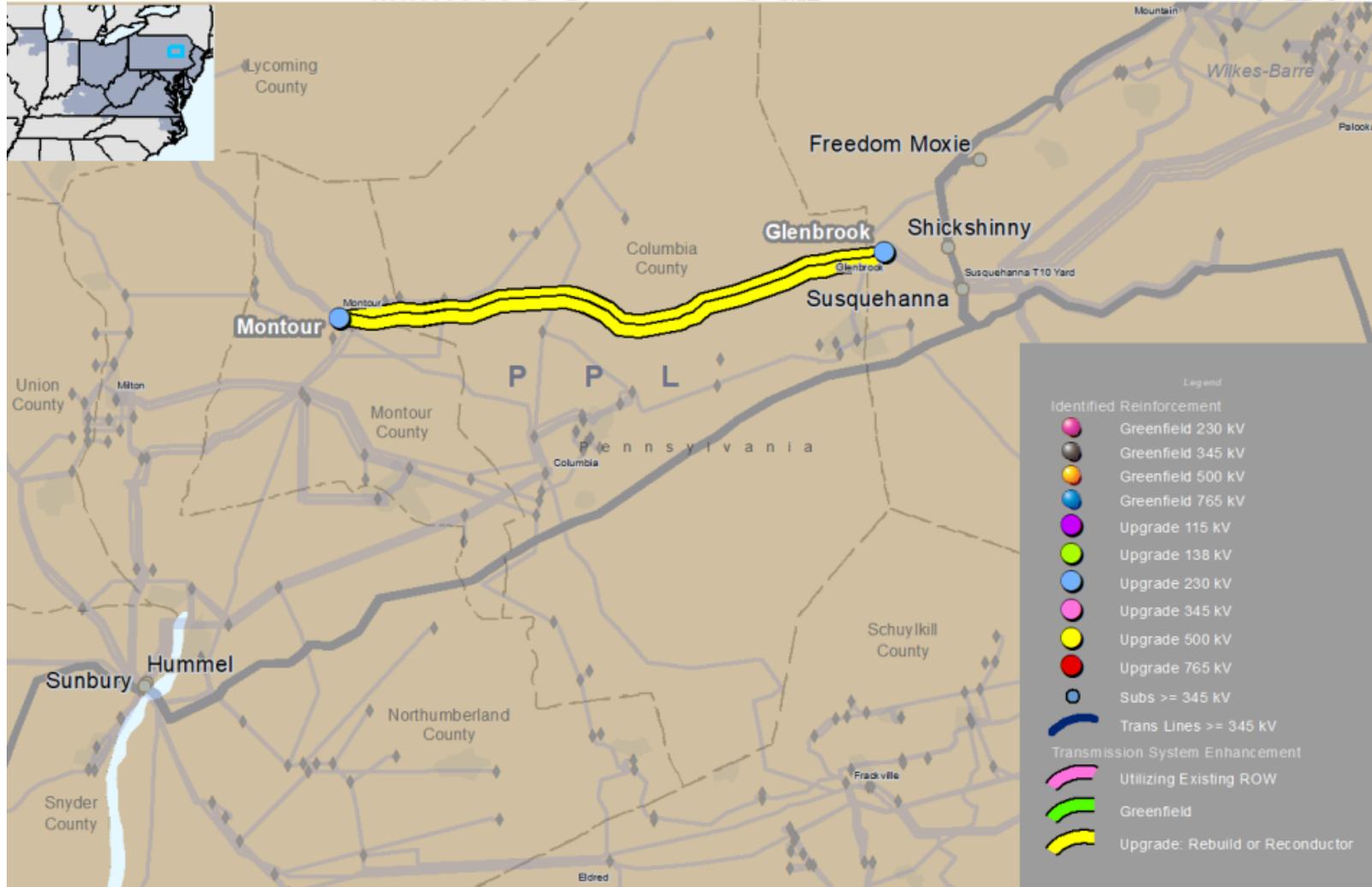
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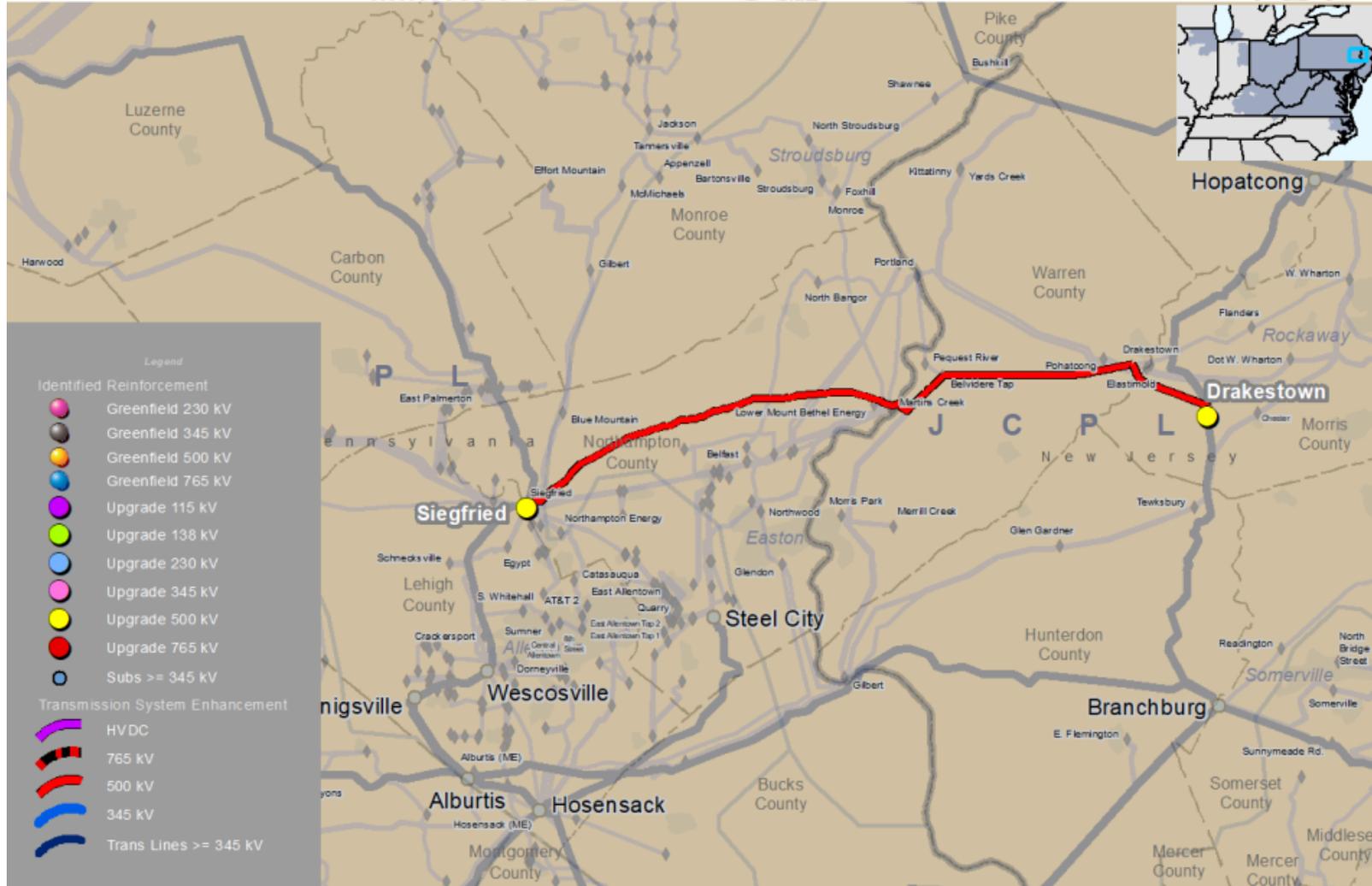
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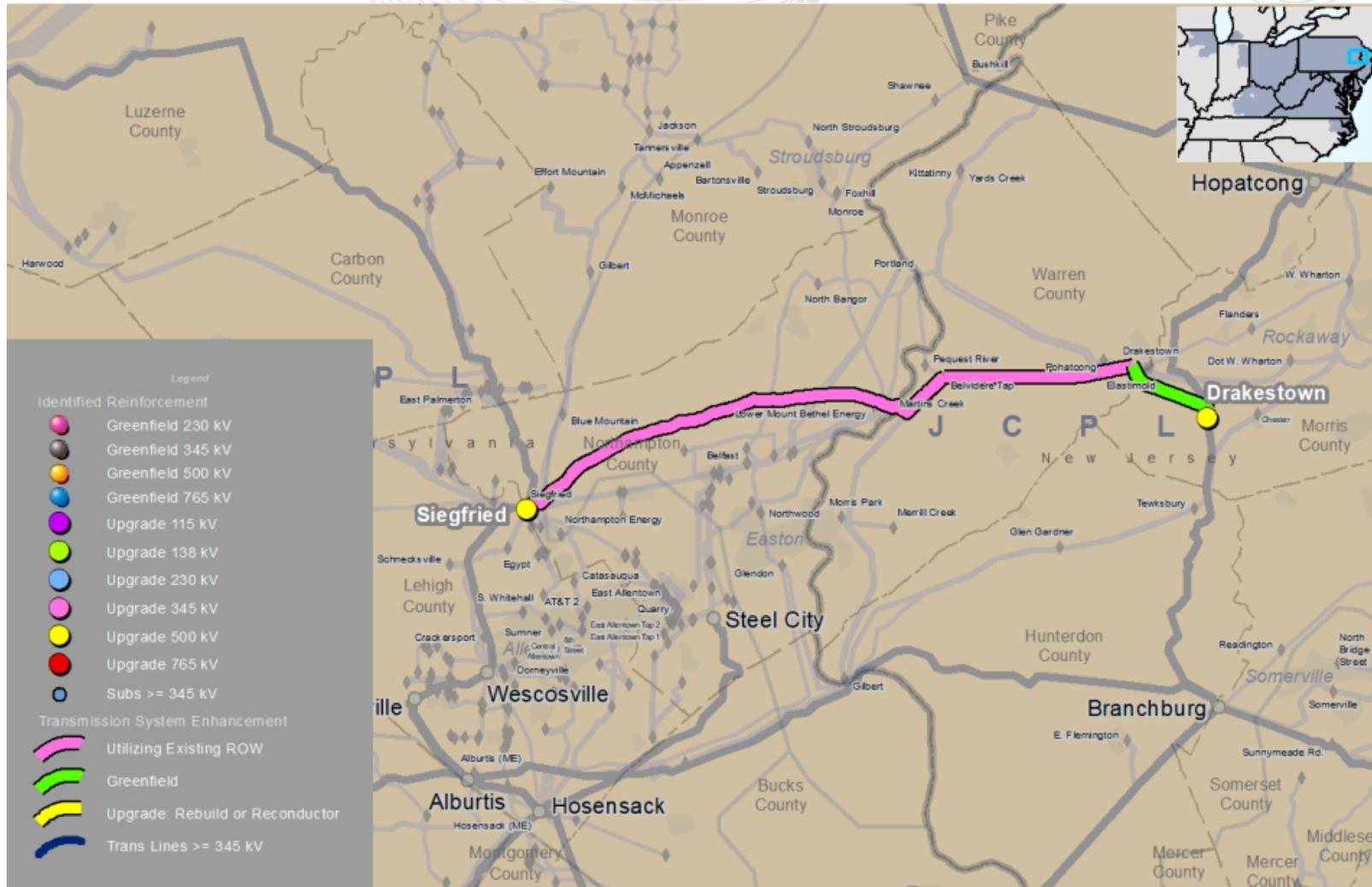
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# PPLTO & TRNSLK

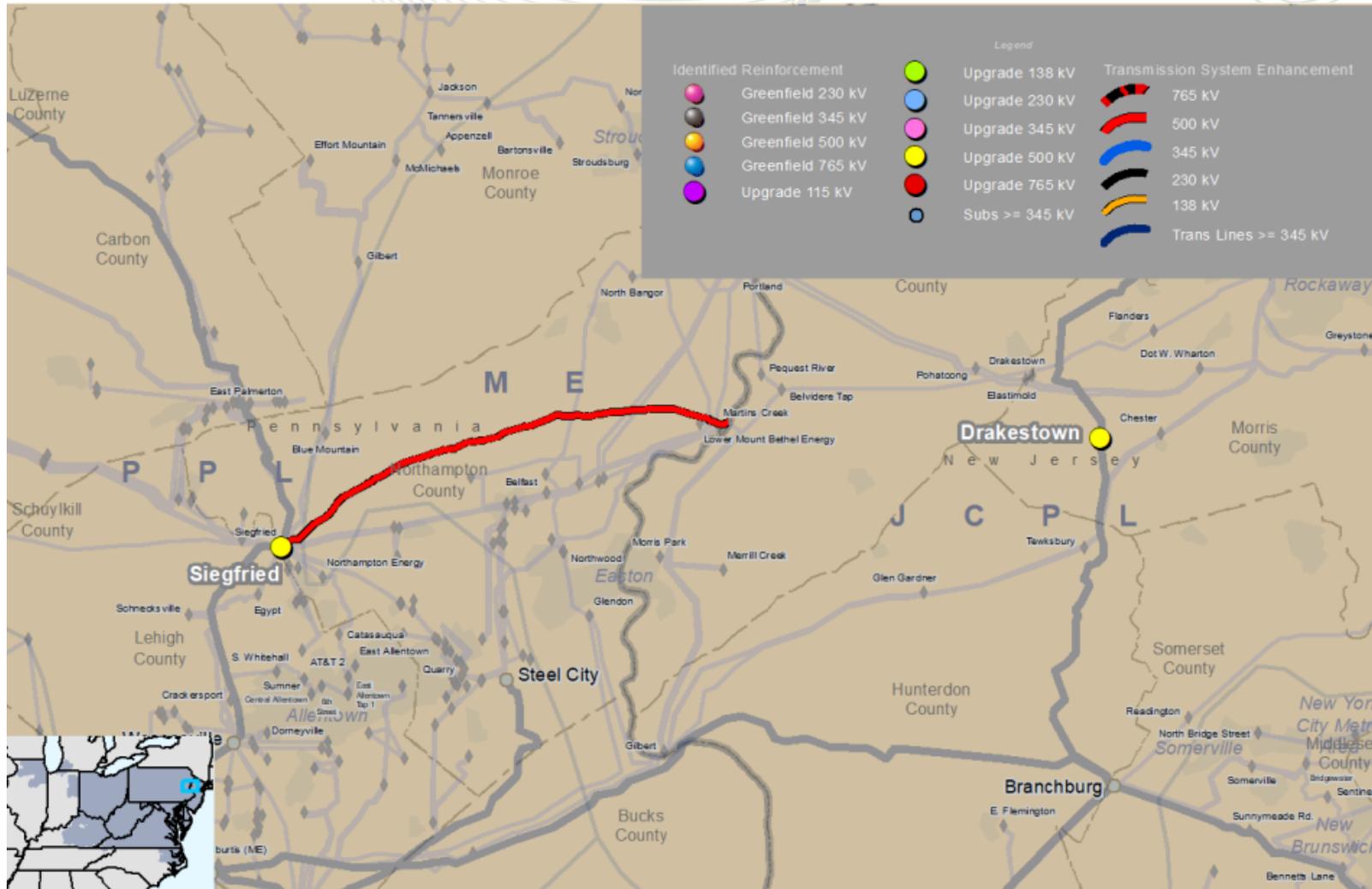
(Connected Proposals by PPL and Translink)



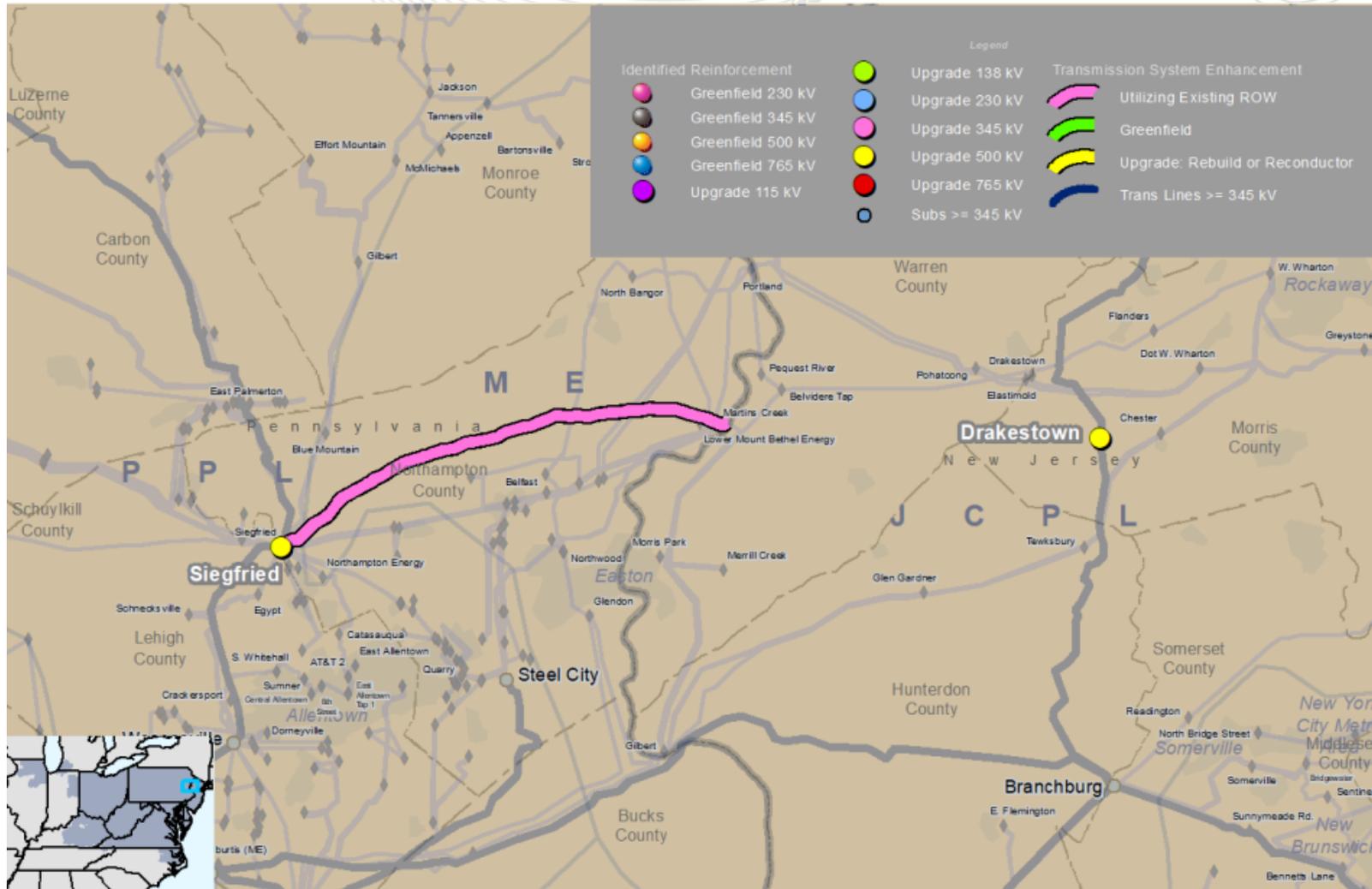
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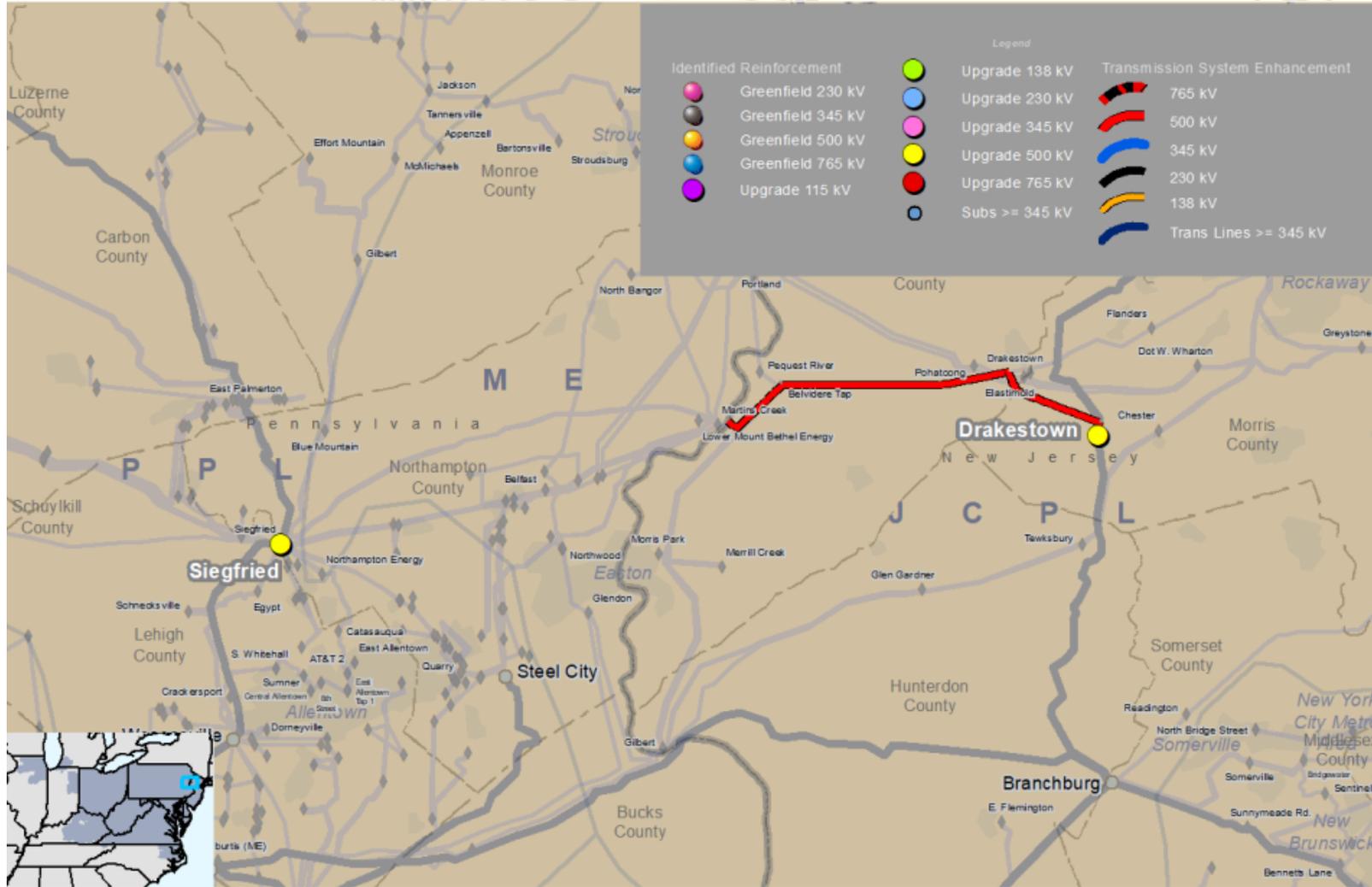
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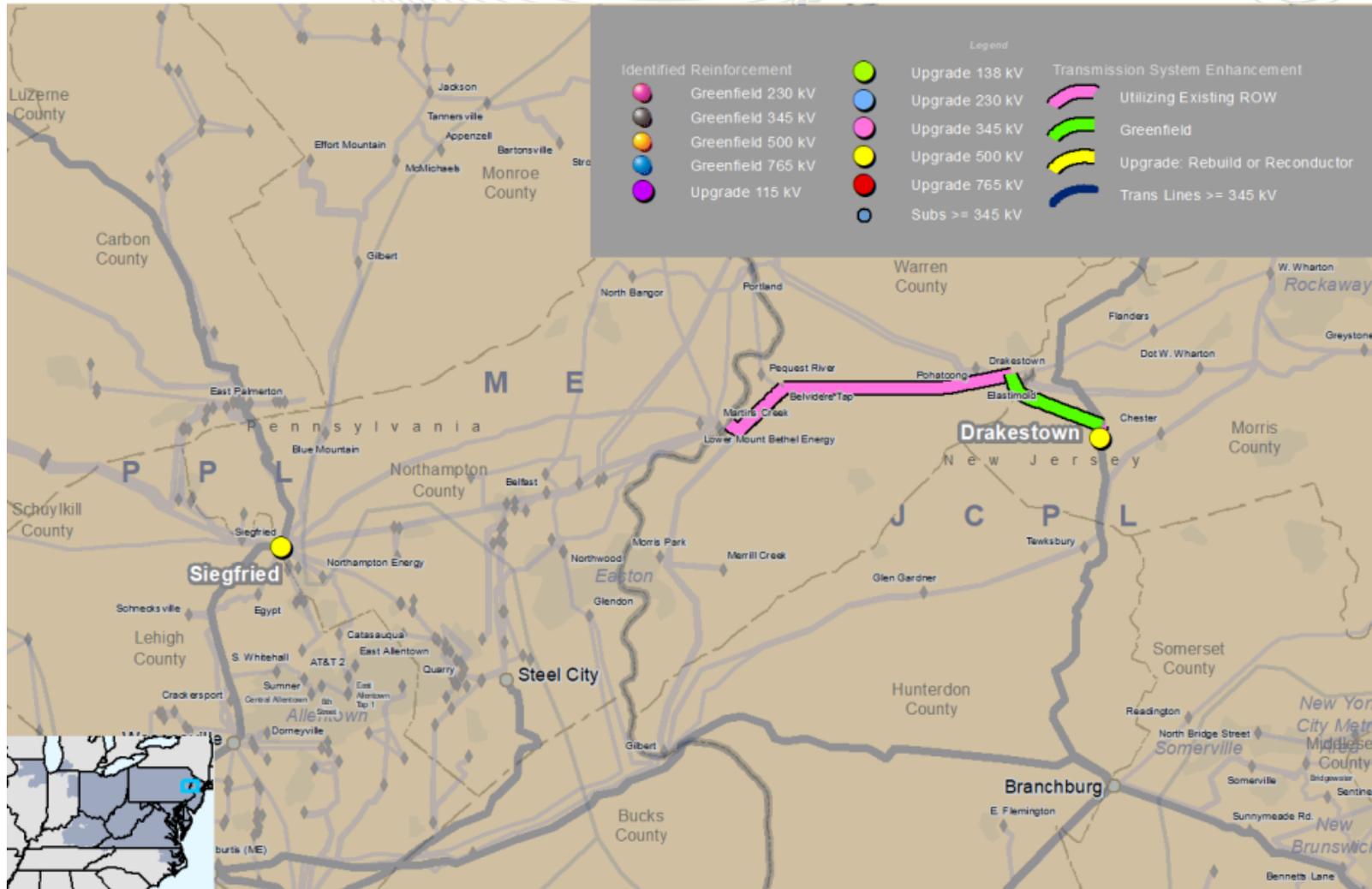
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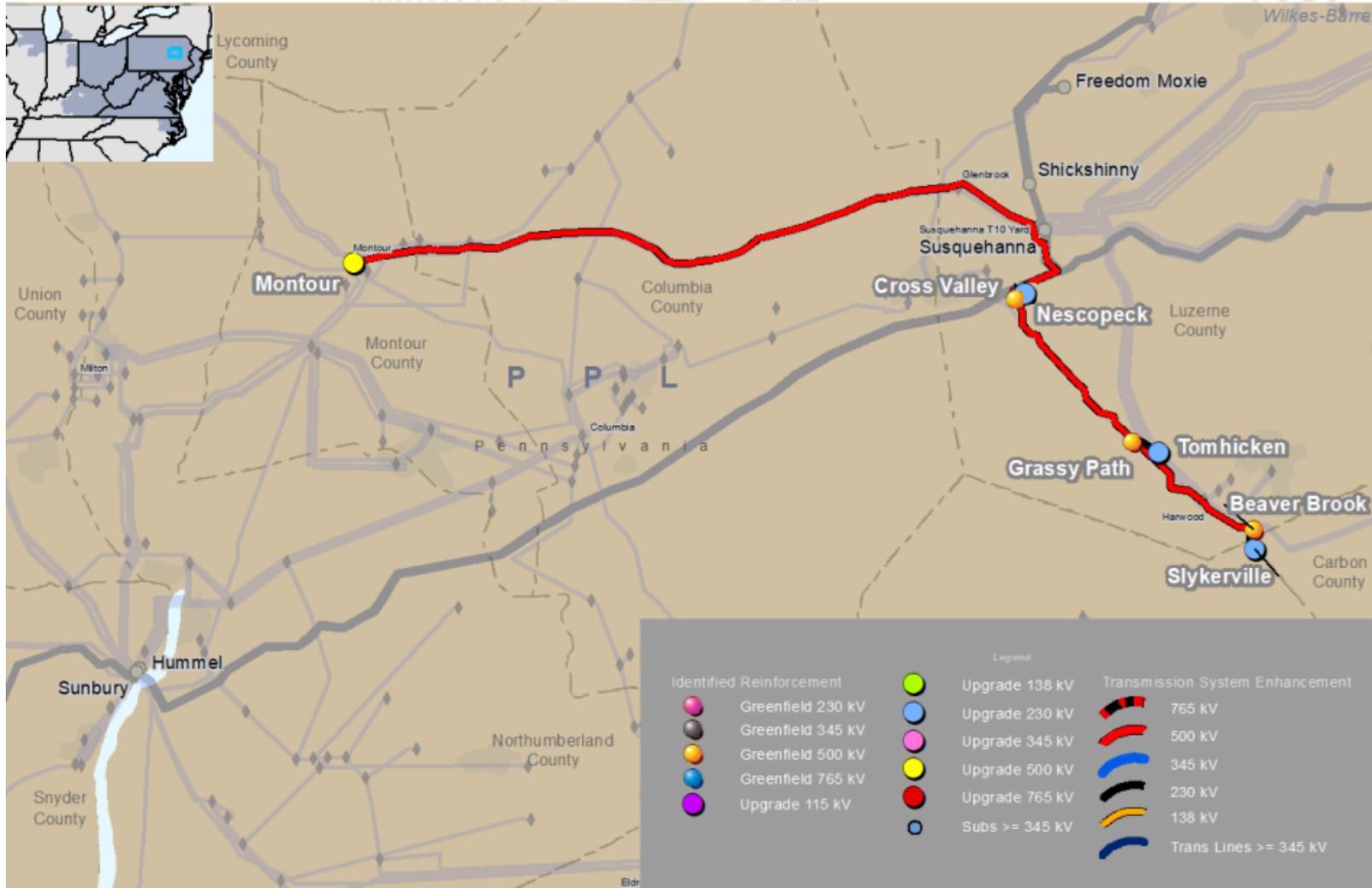


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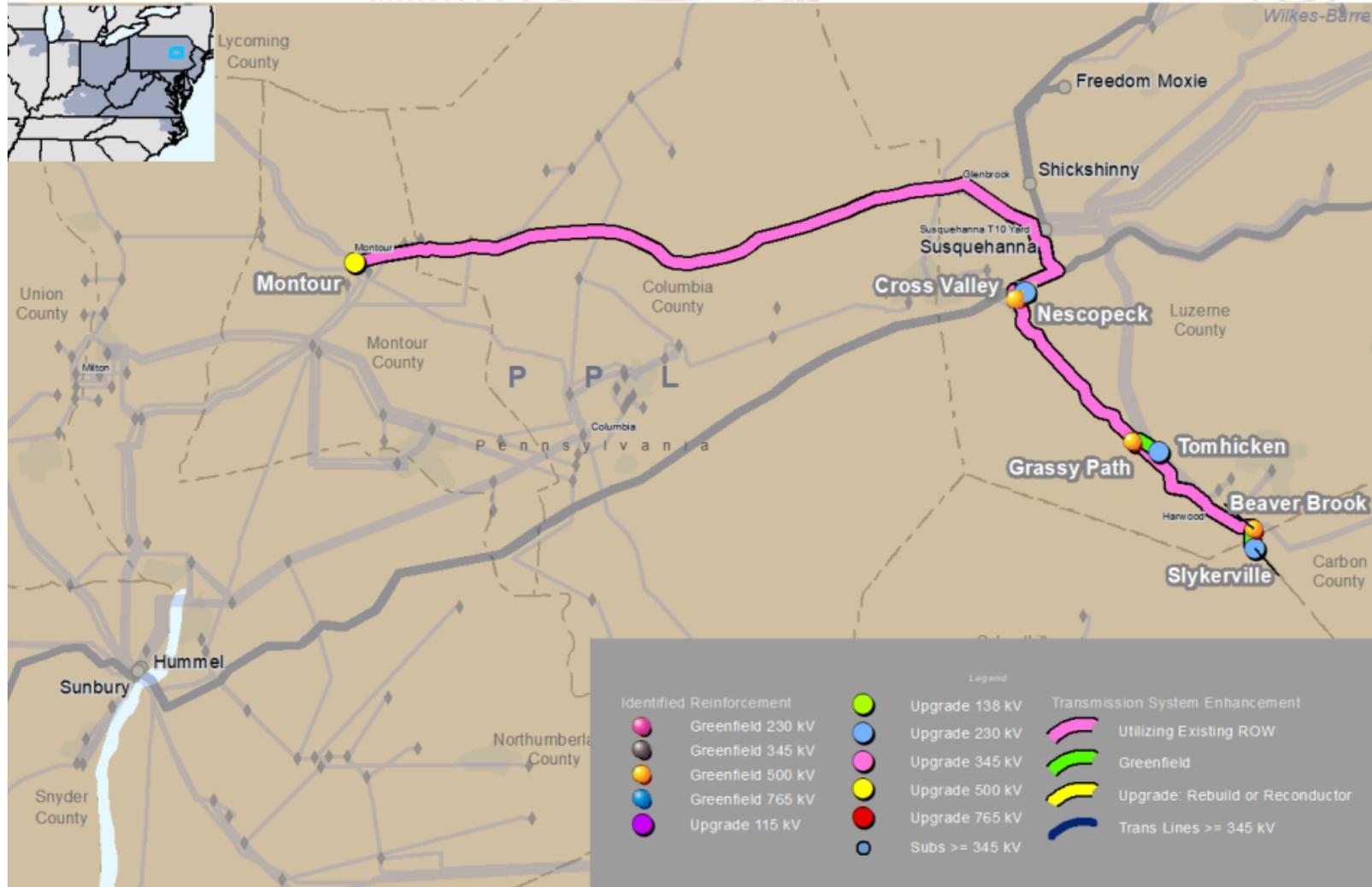


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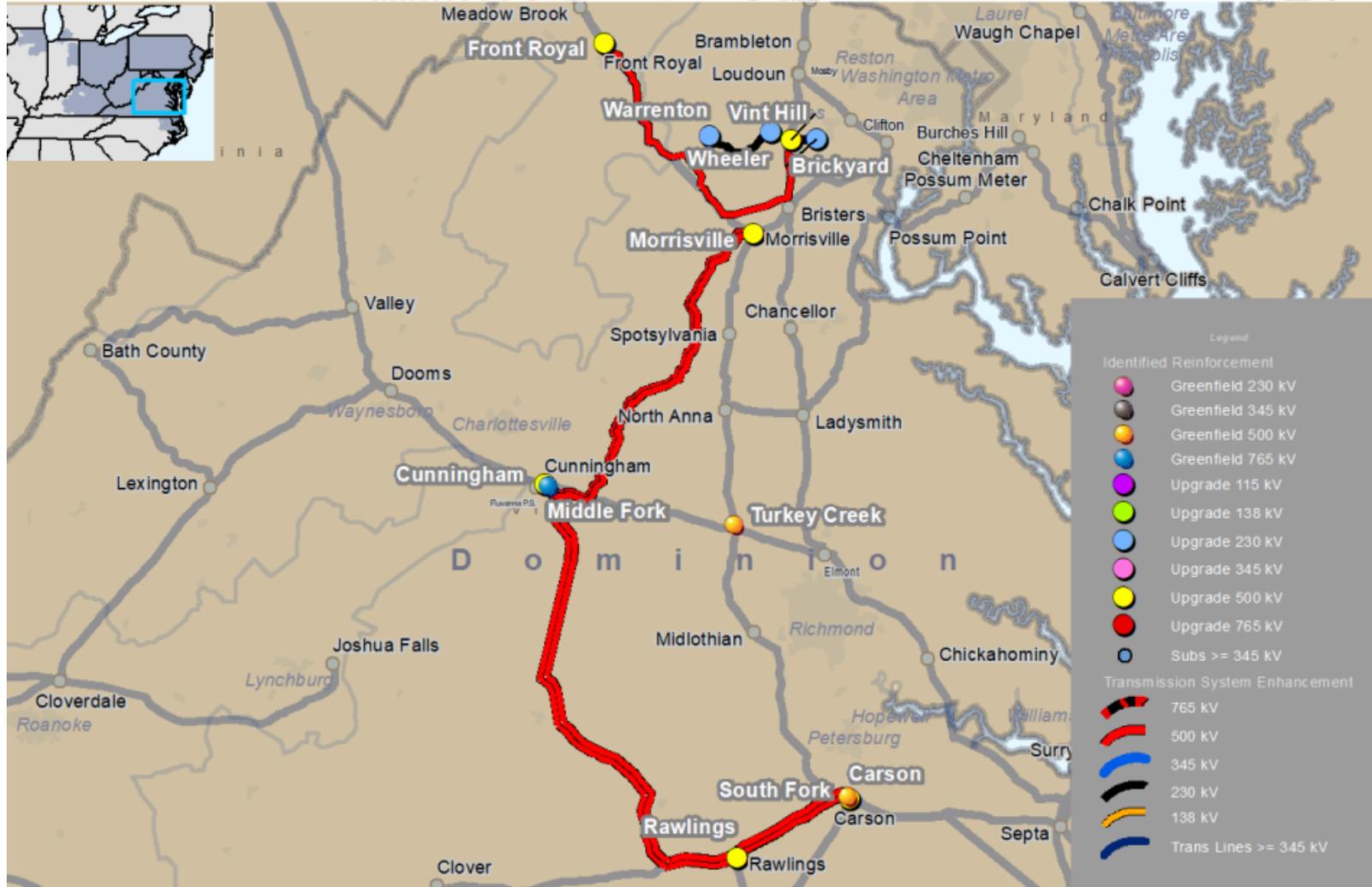
# CNTLTM (LS Power)



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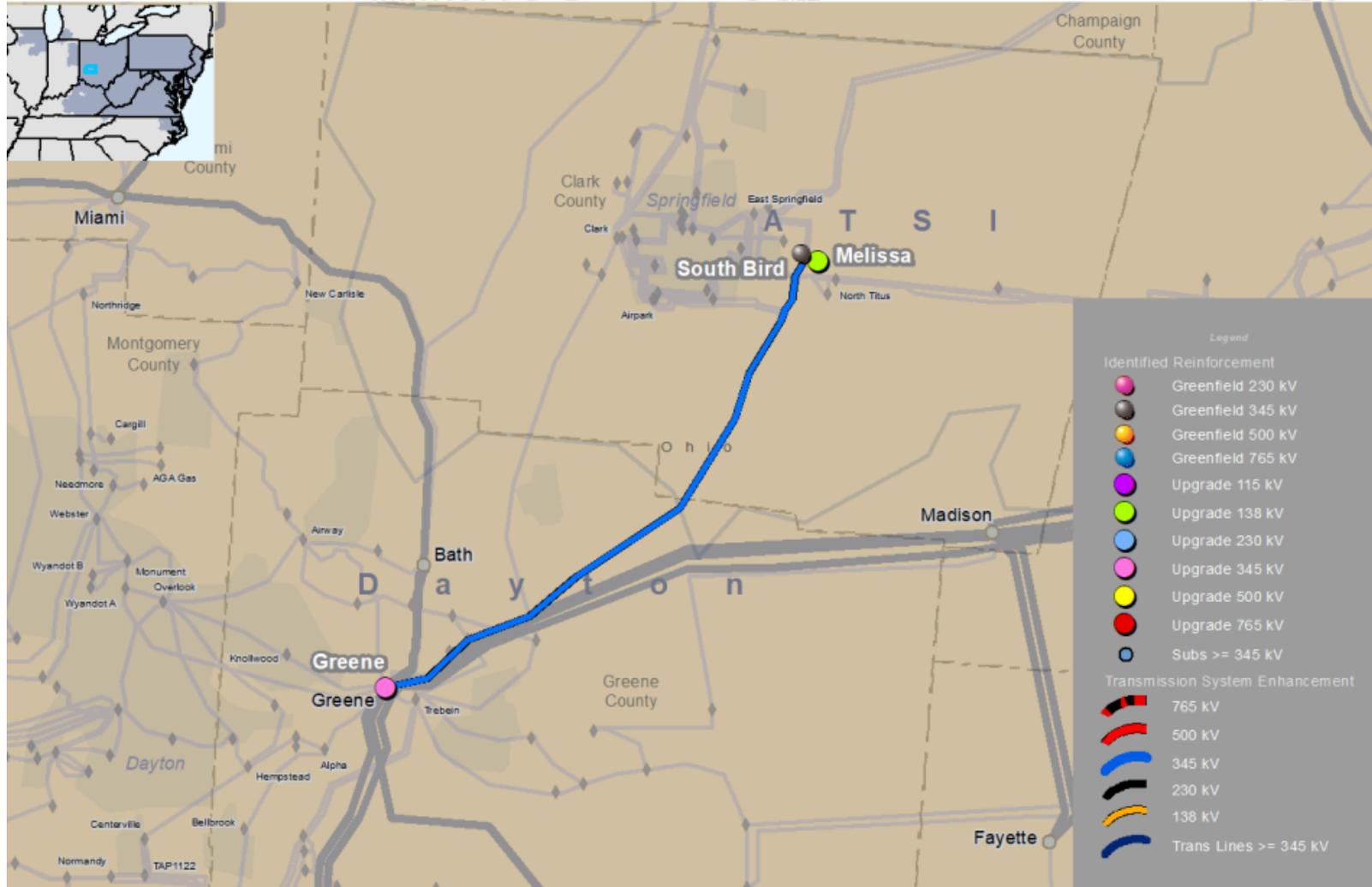
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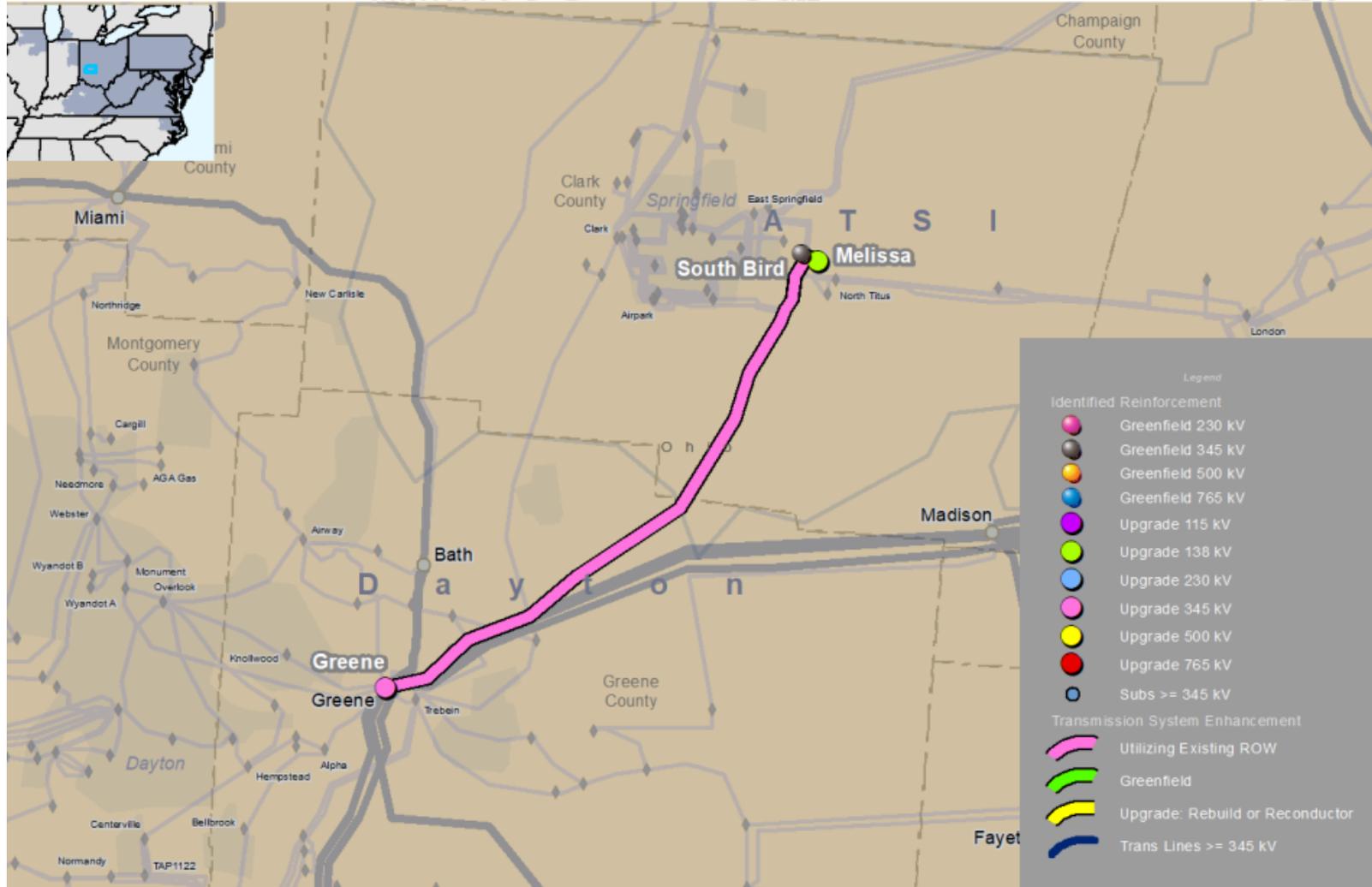
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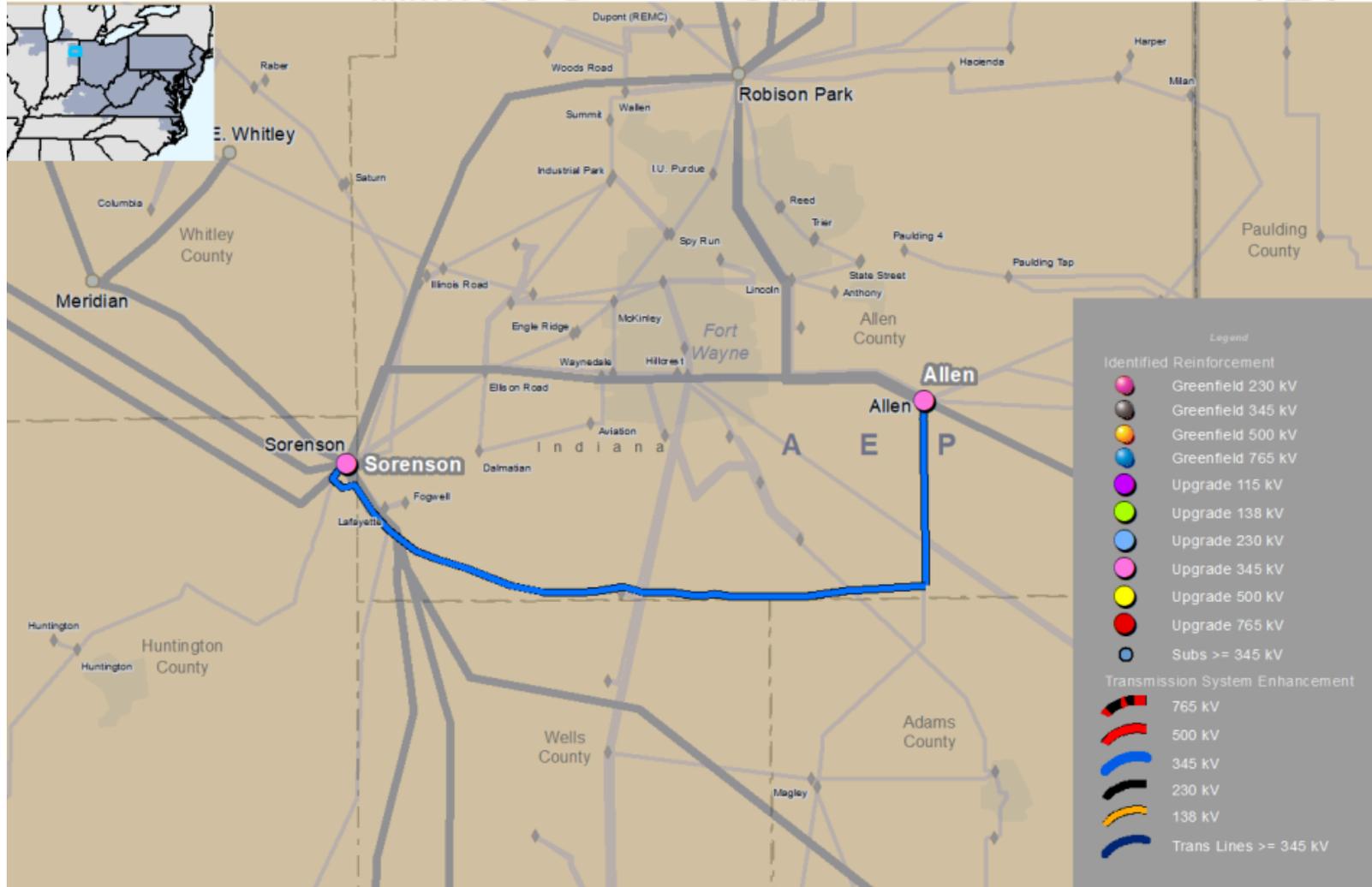
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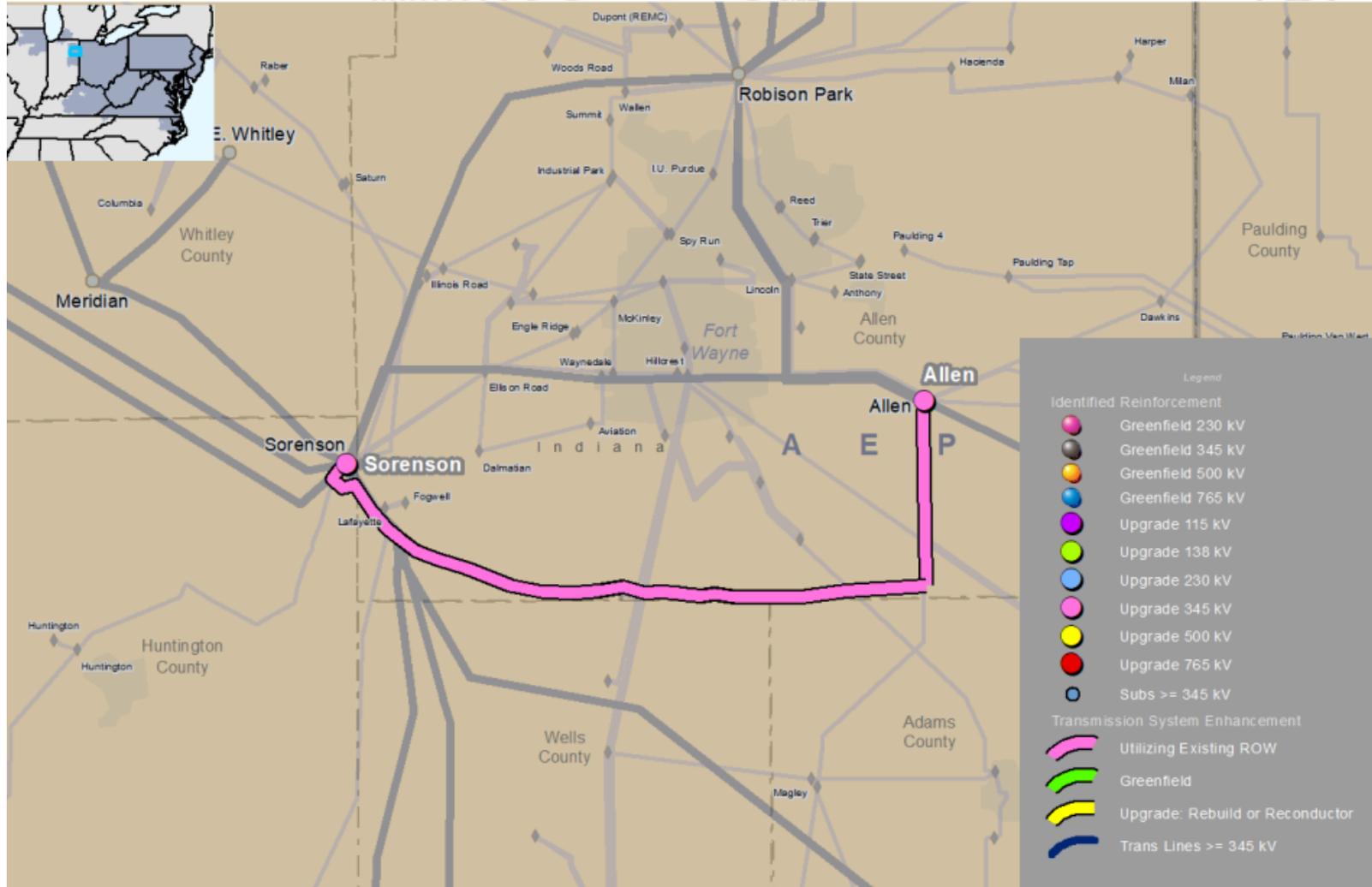
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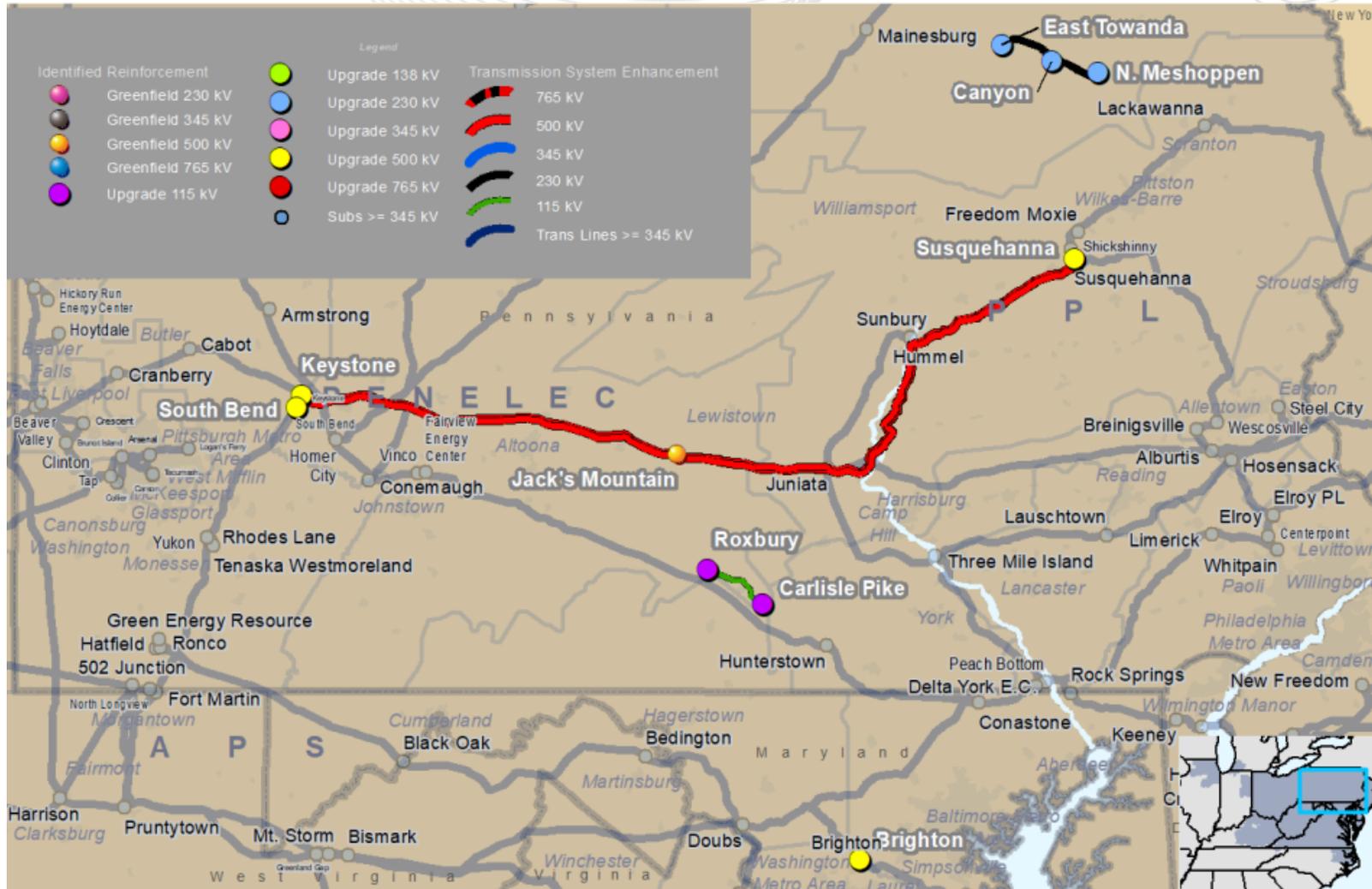


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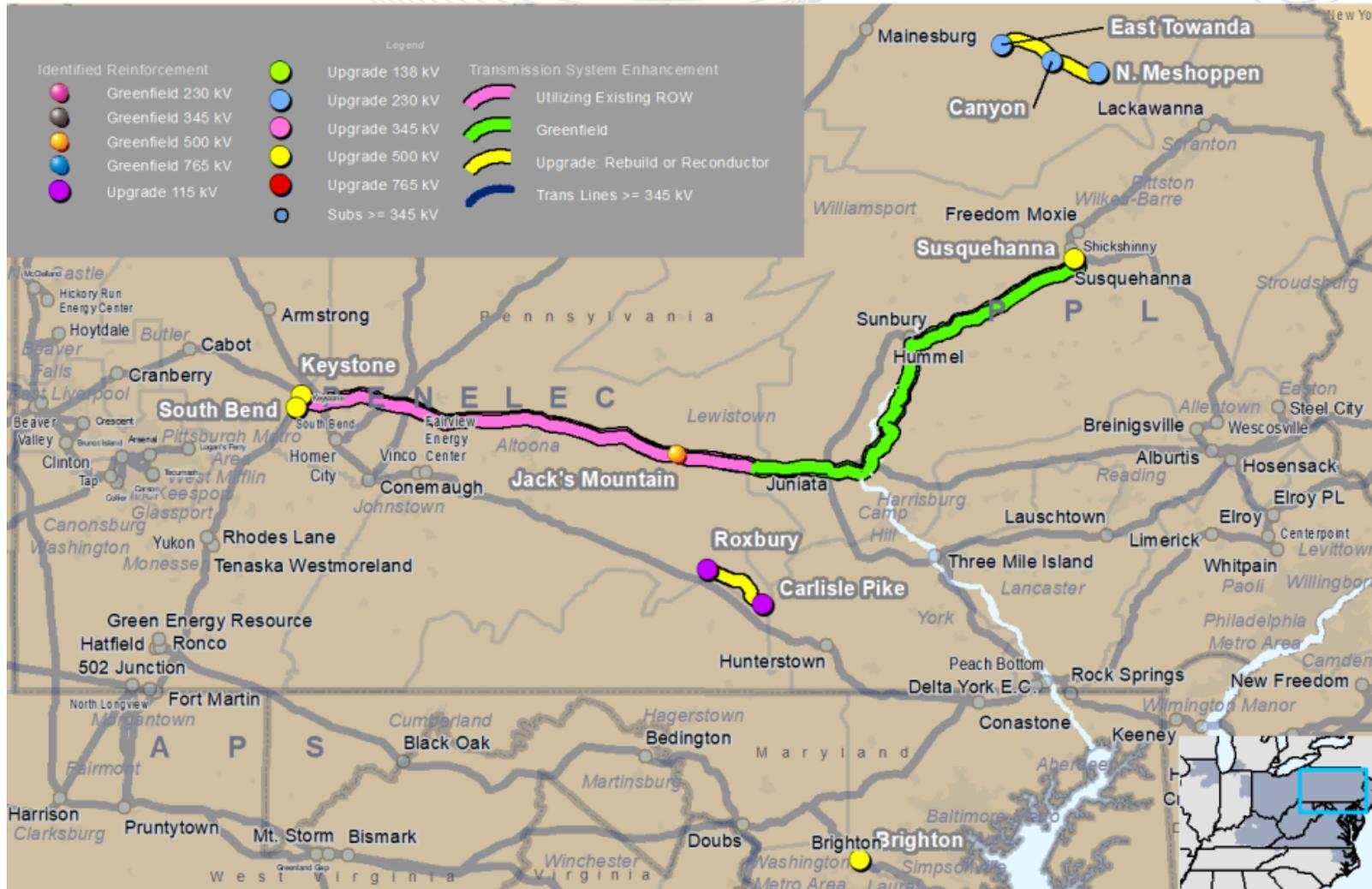


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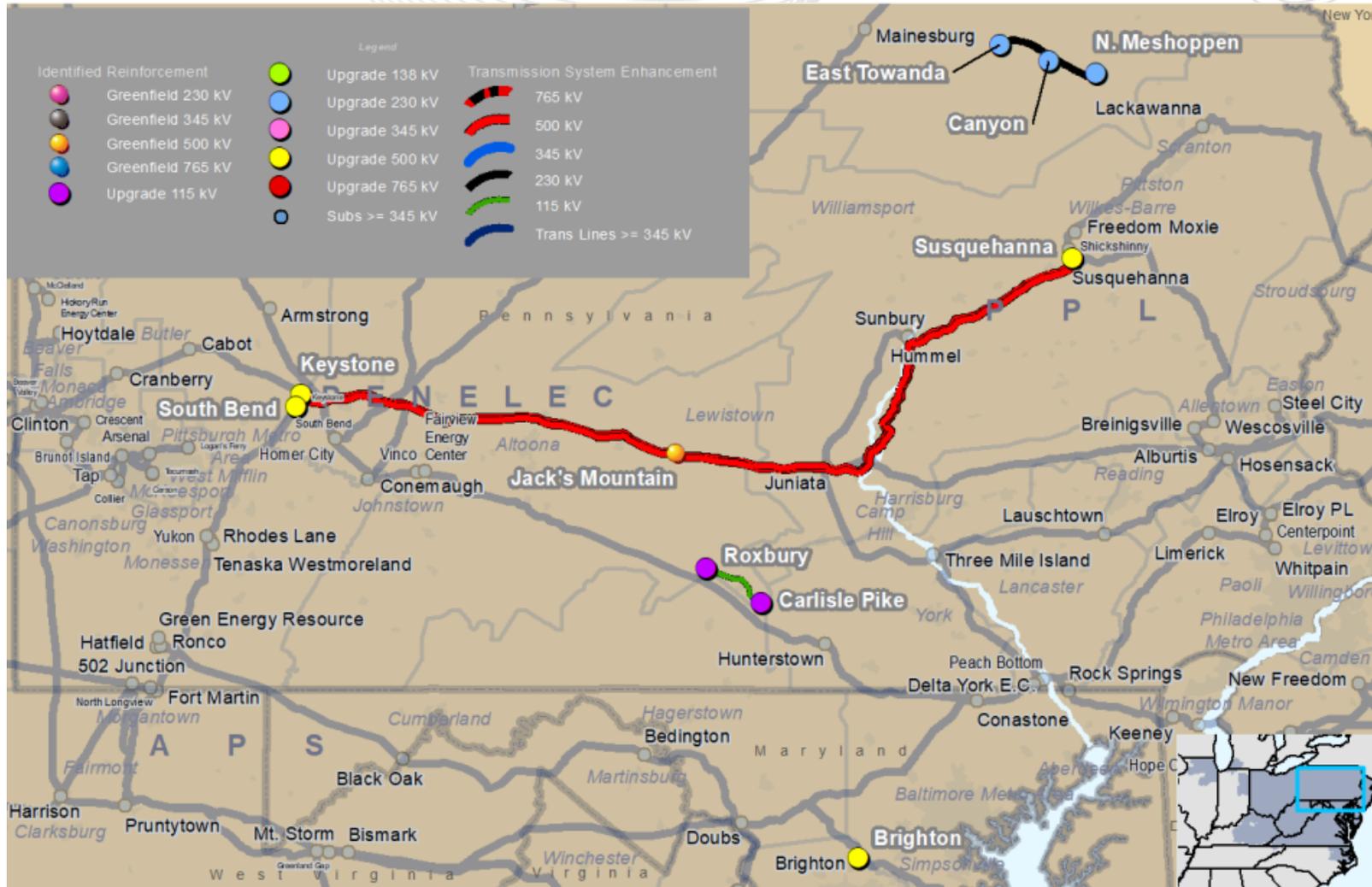
# MATLIT (FirstEnergy)



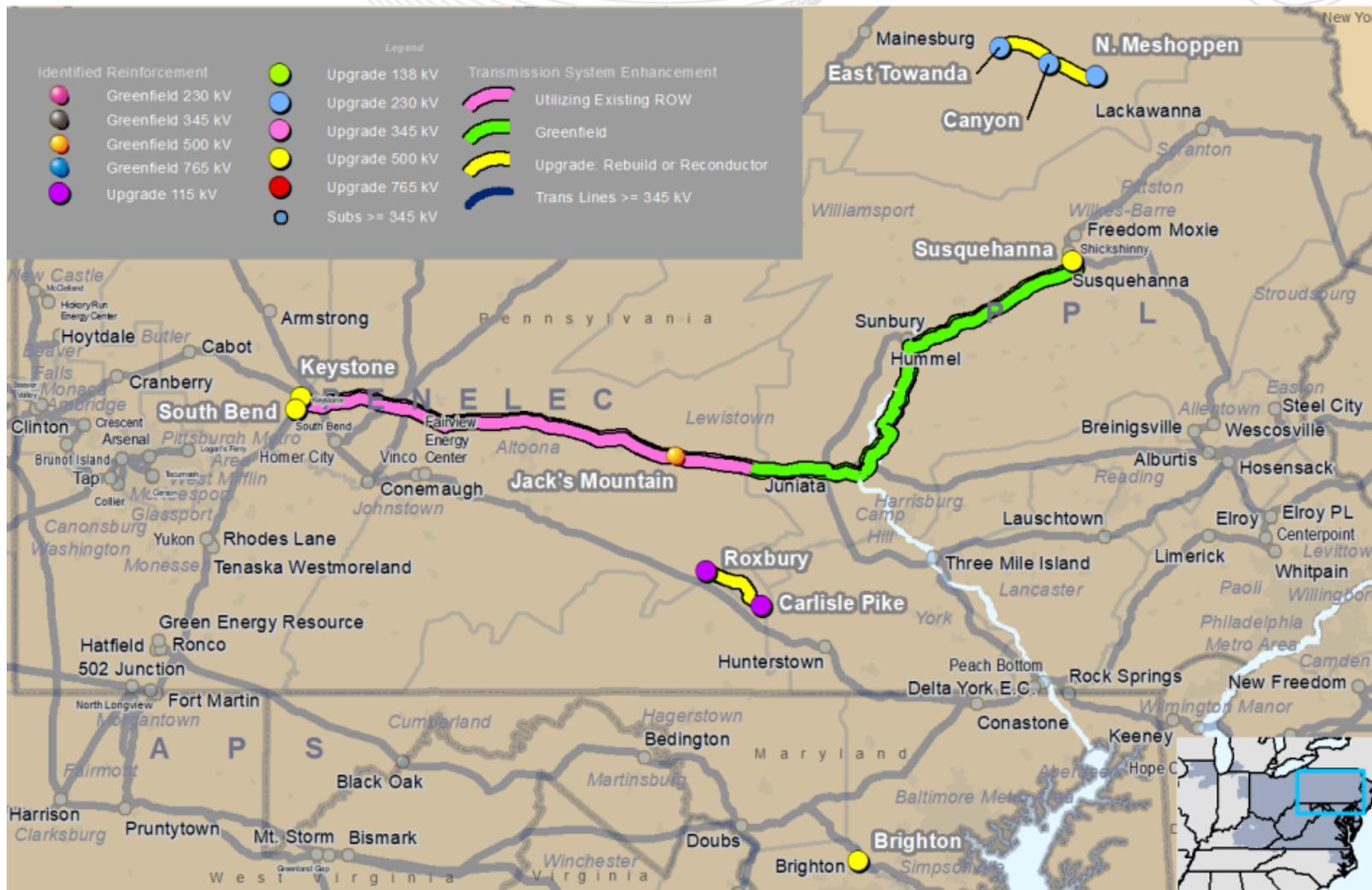
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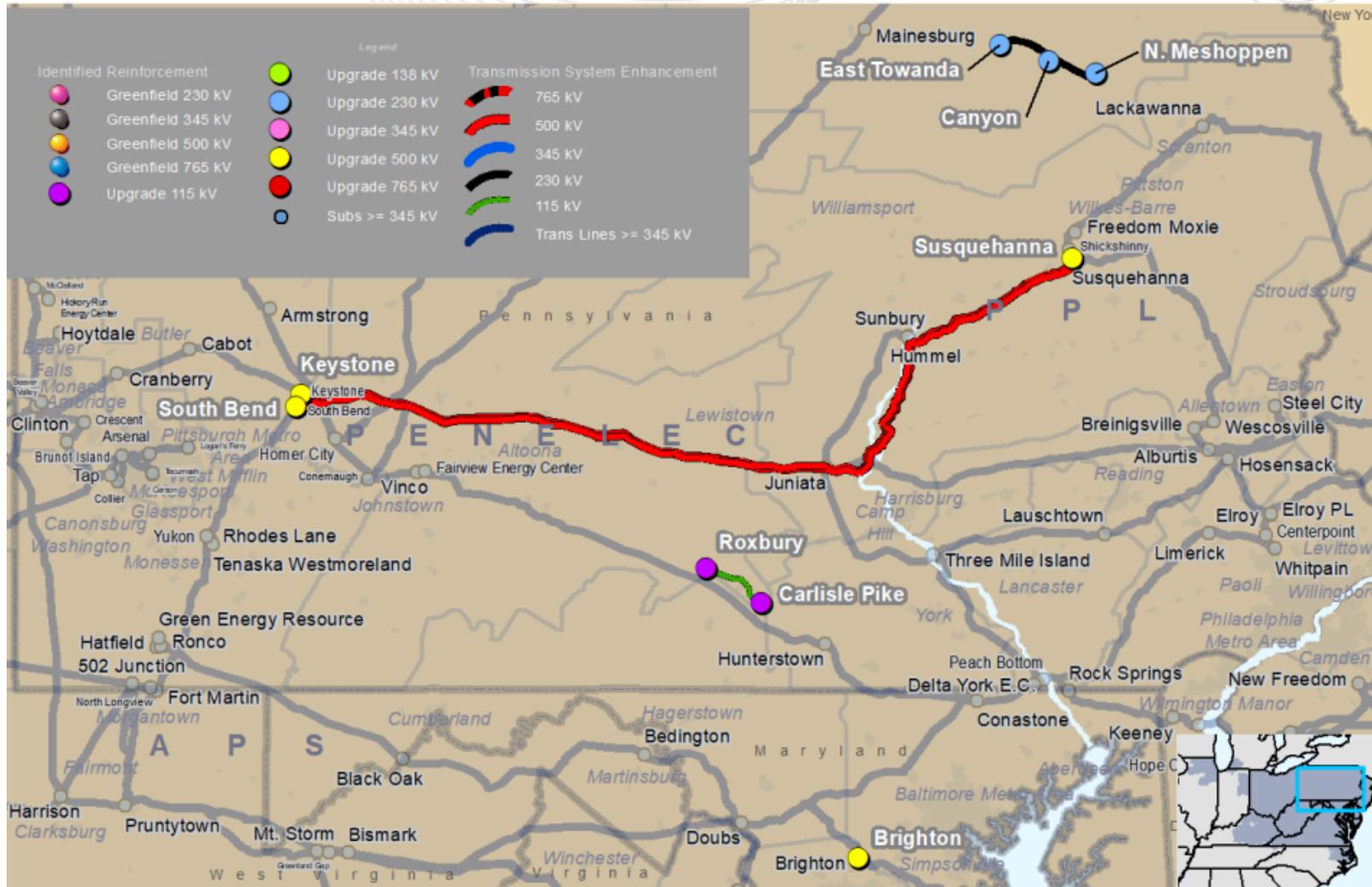
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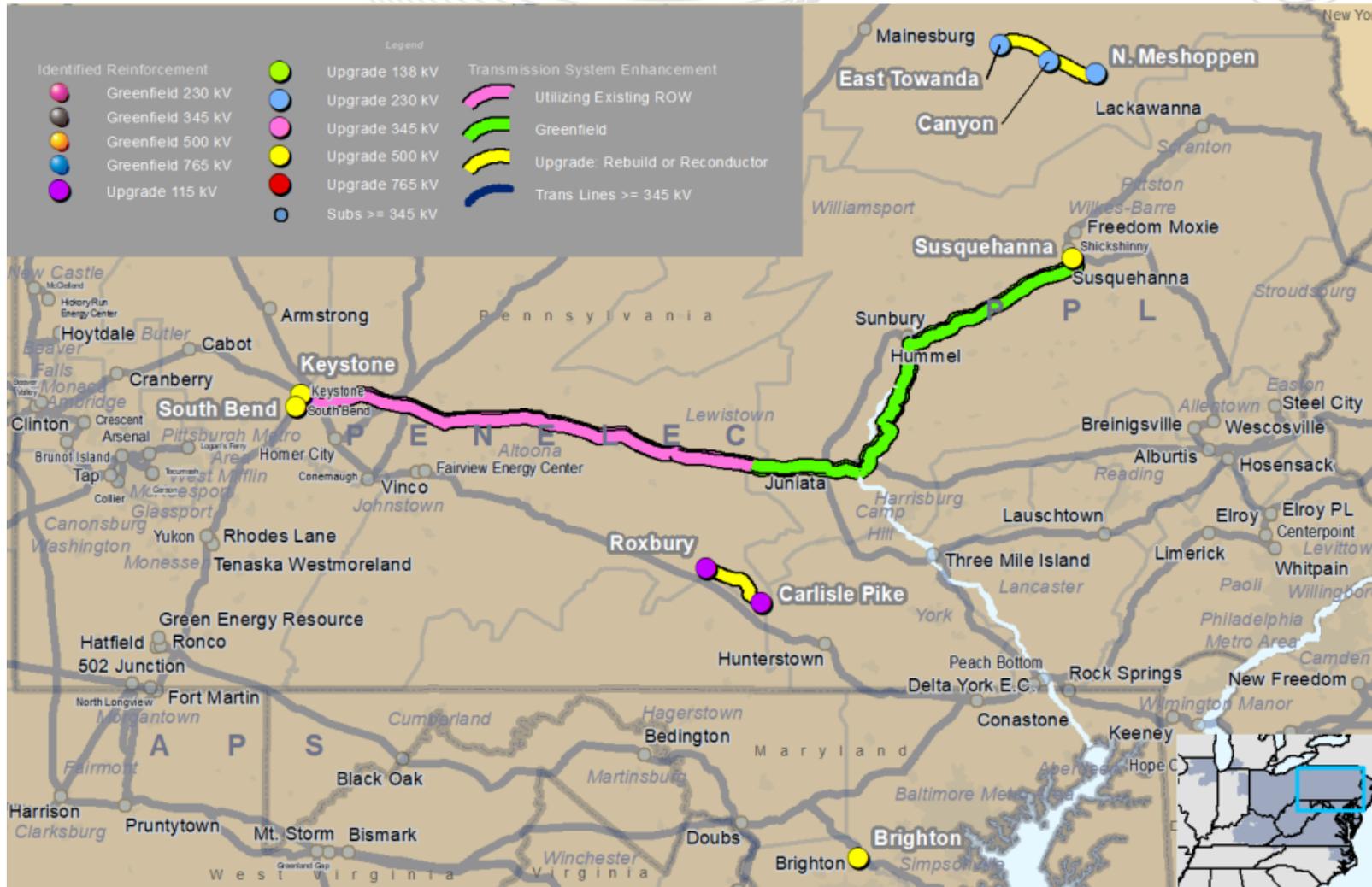
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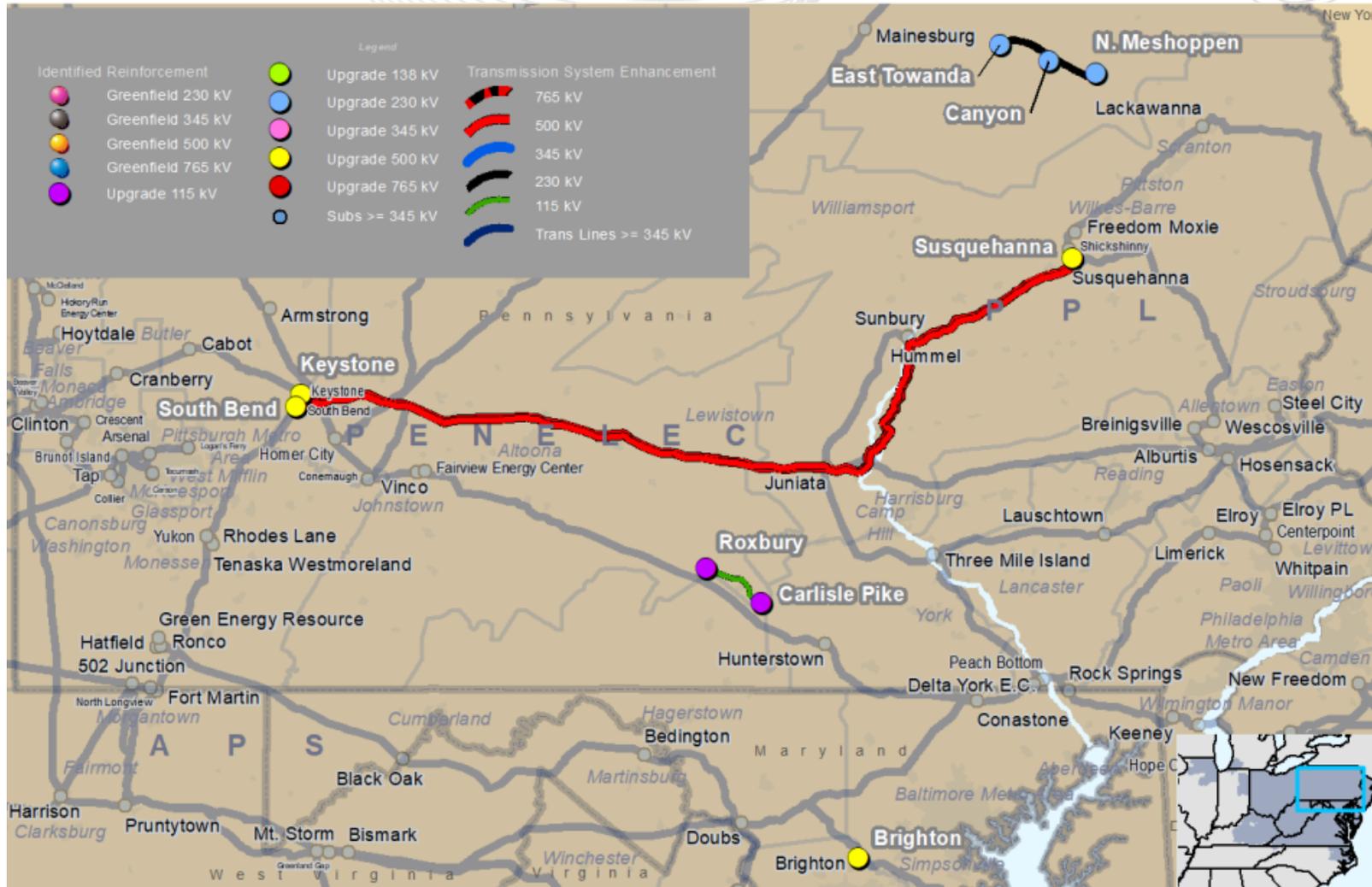
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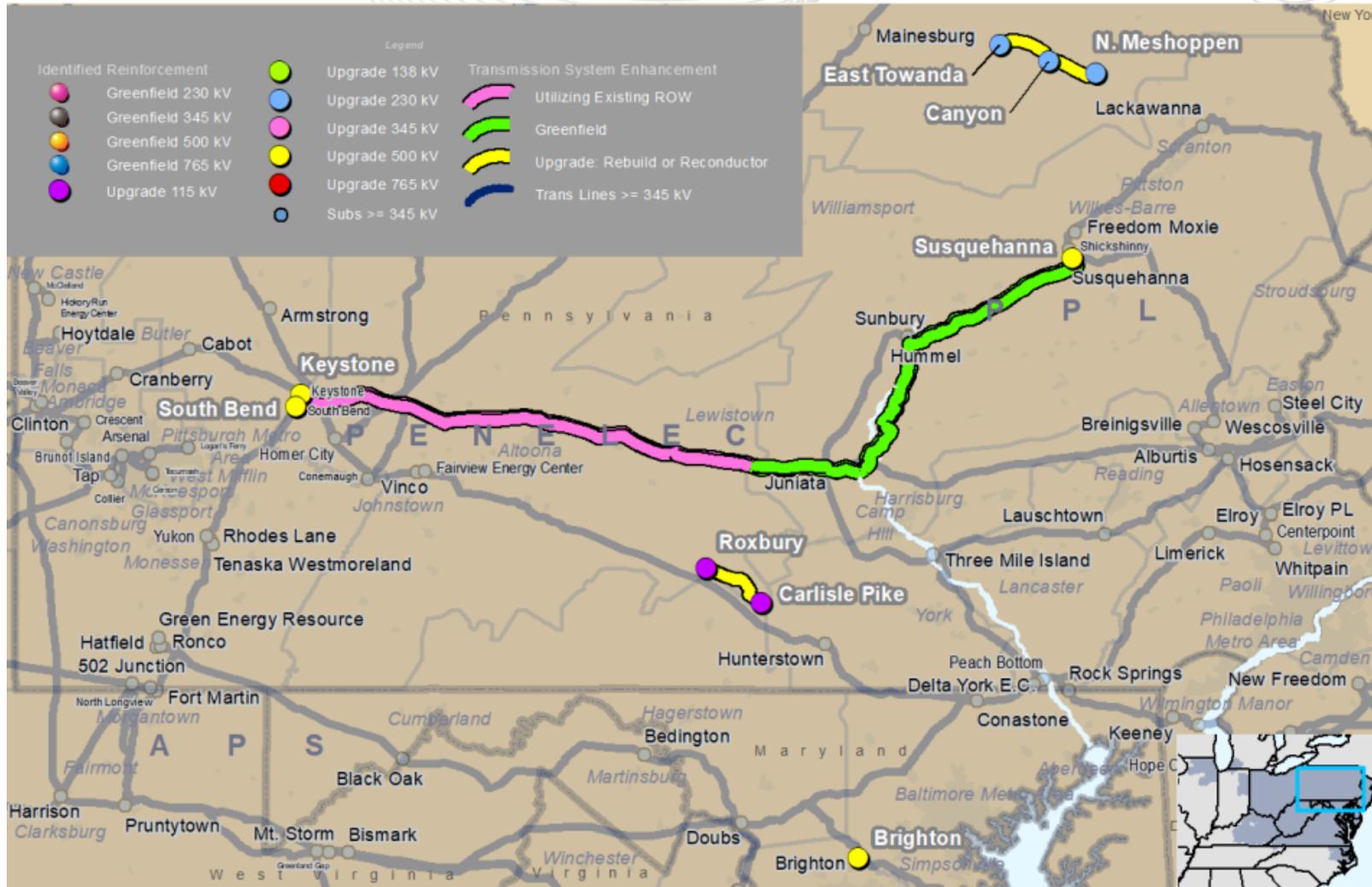
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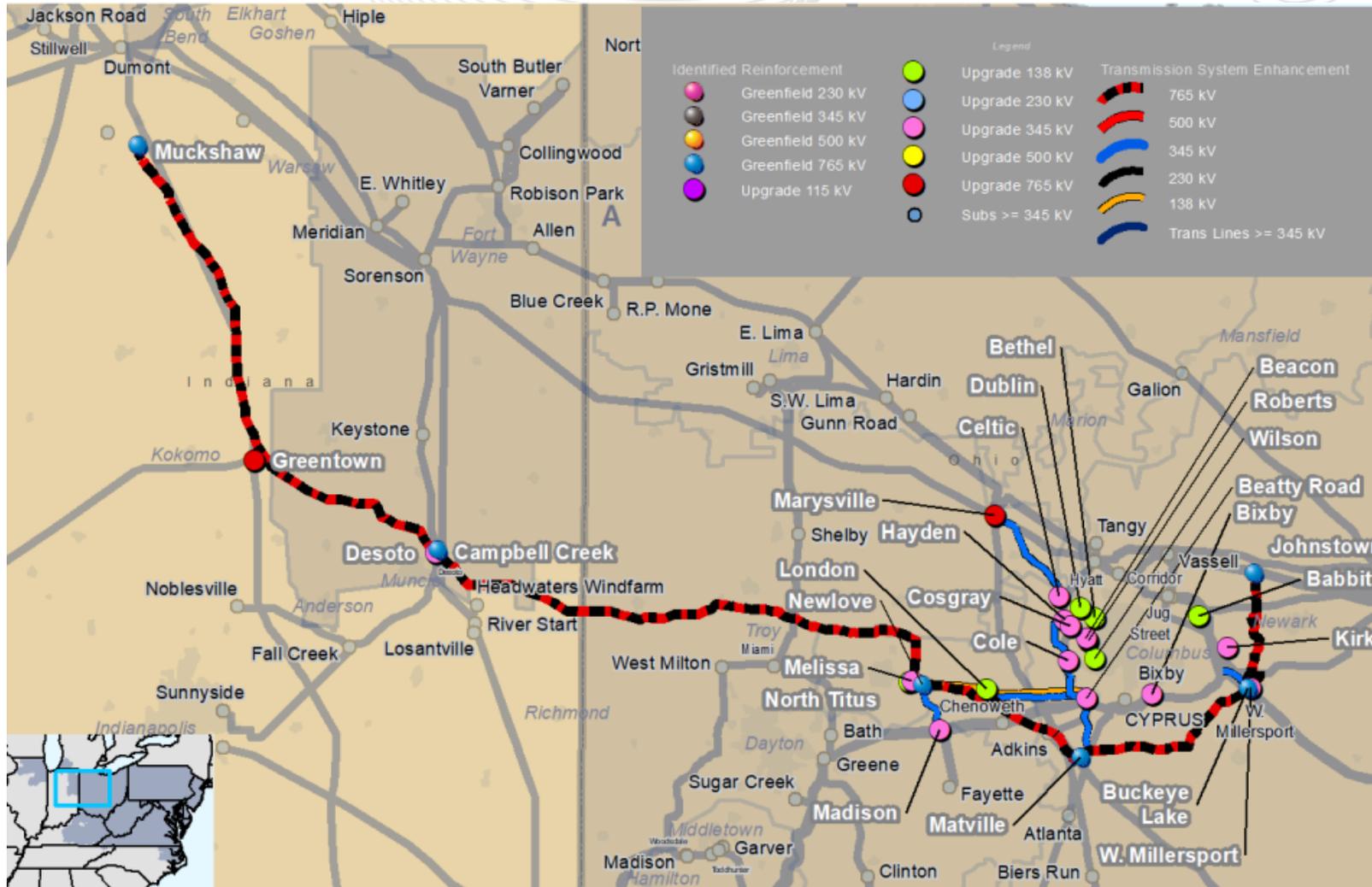
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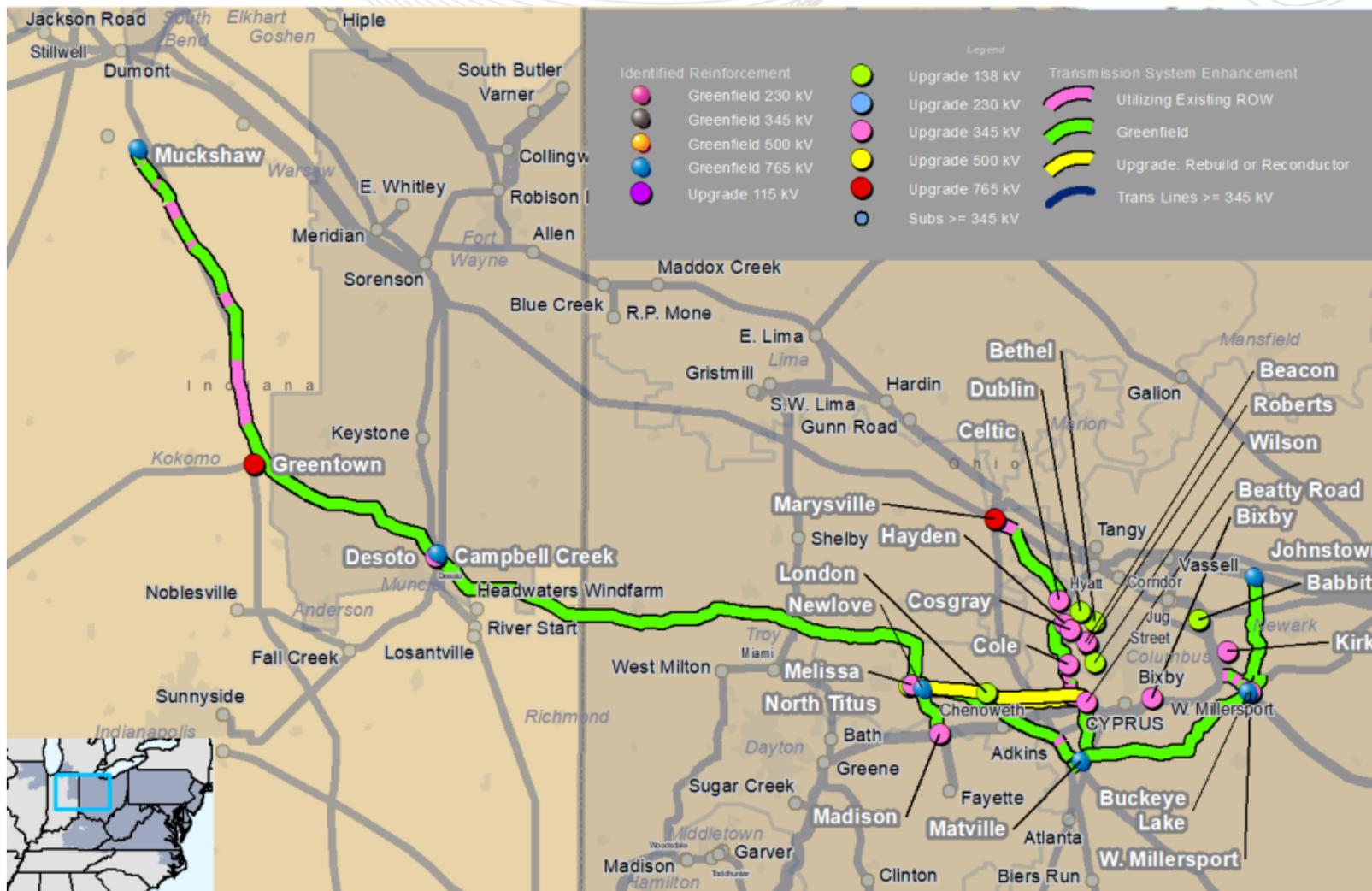
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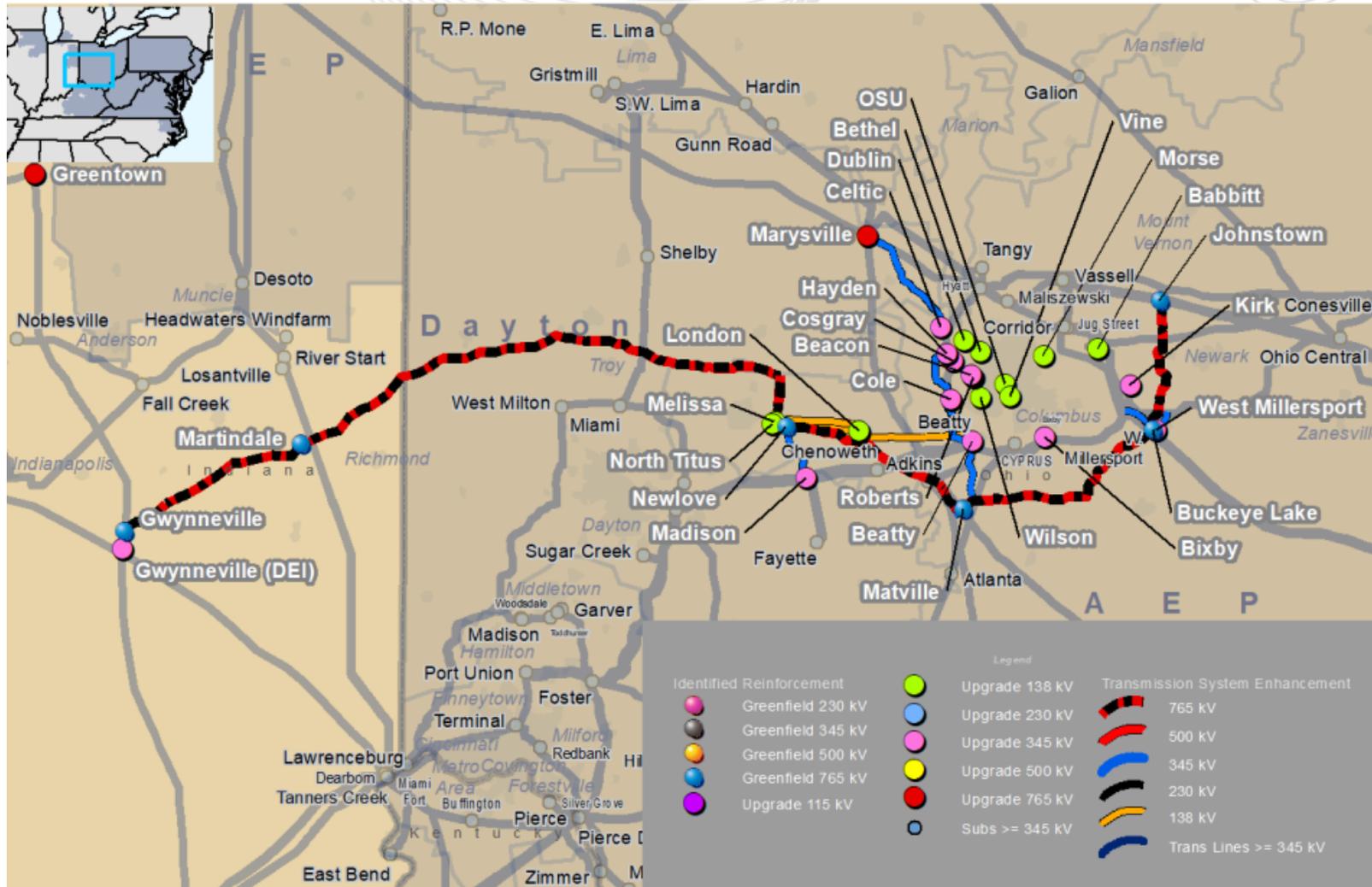
# NXTMID (NextEra)



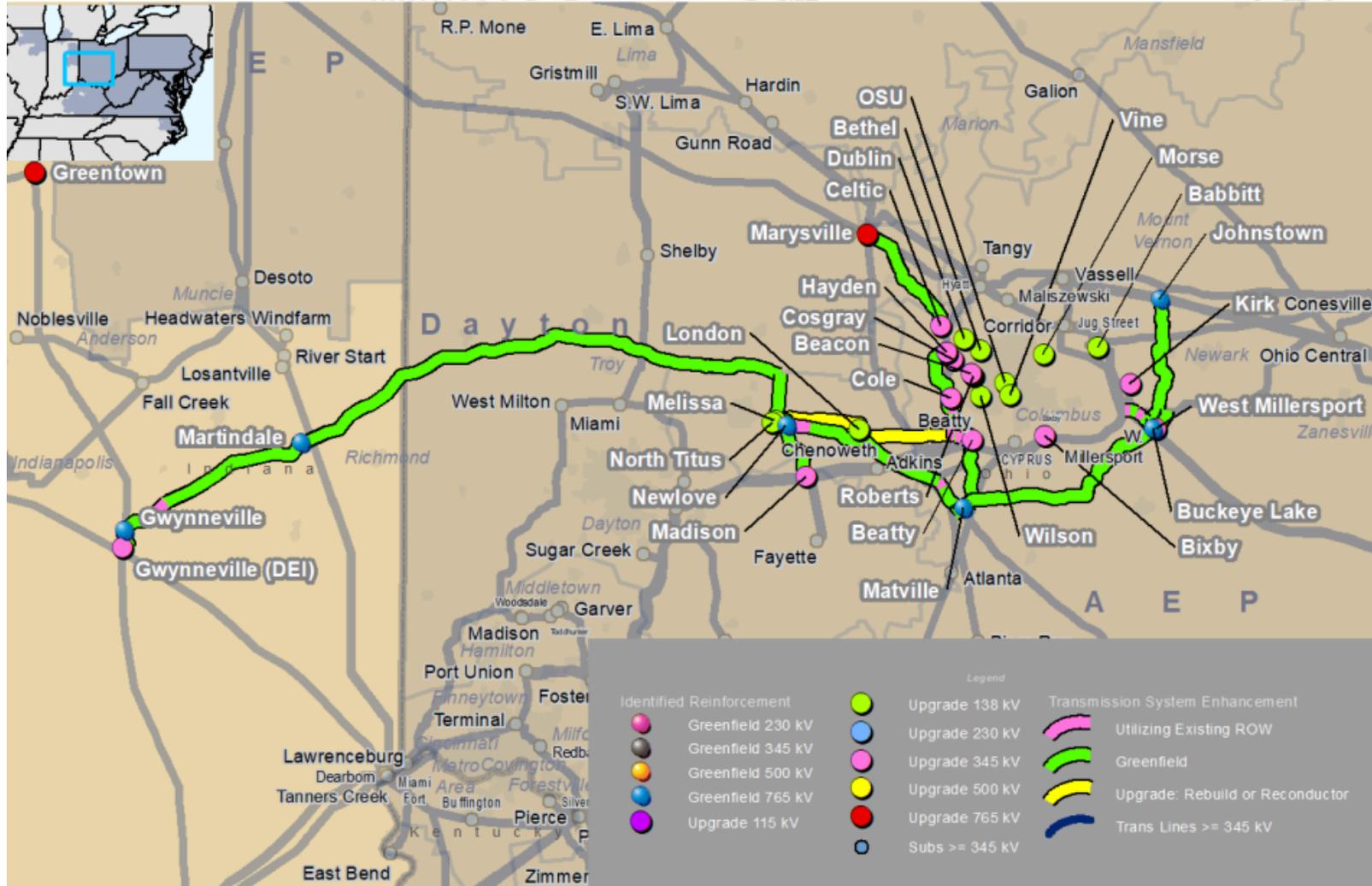
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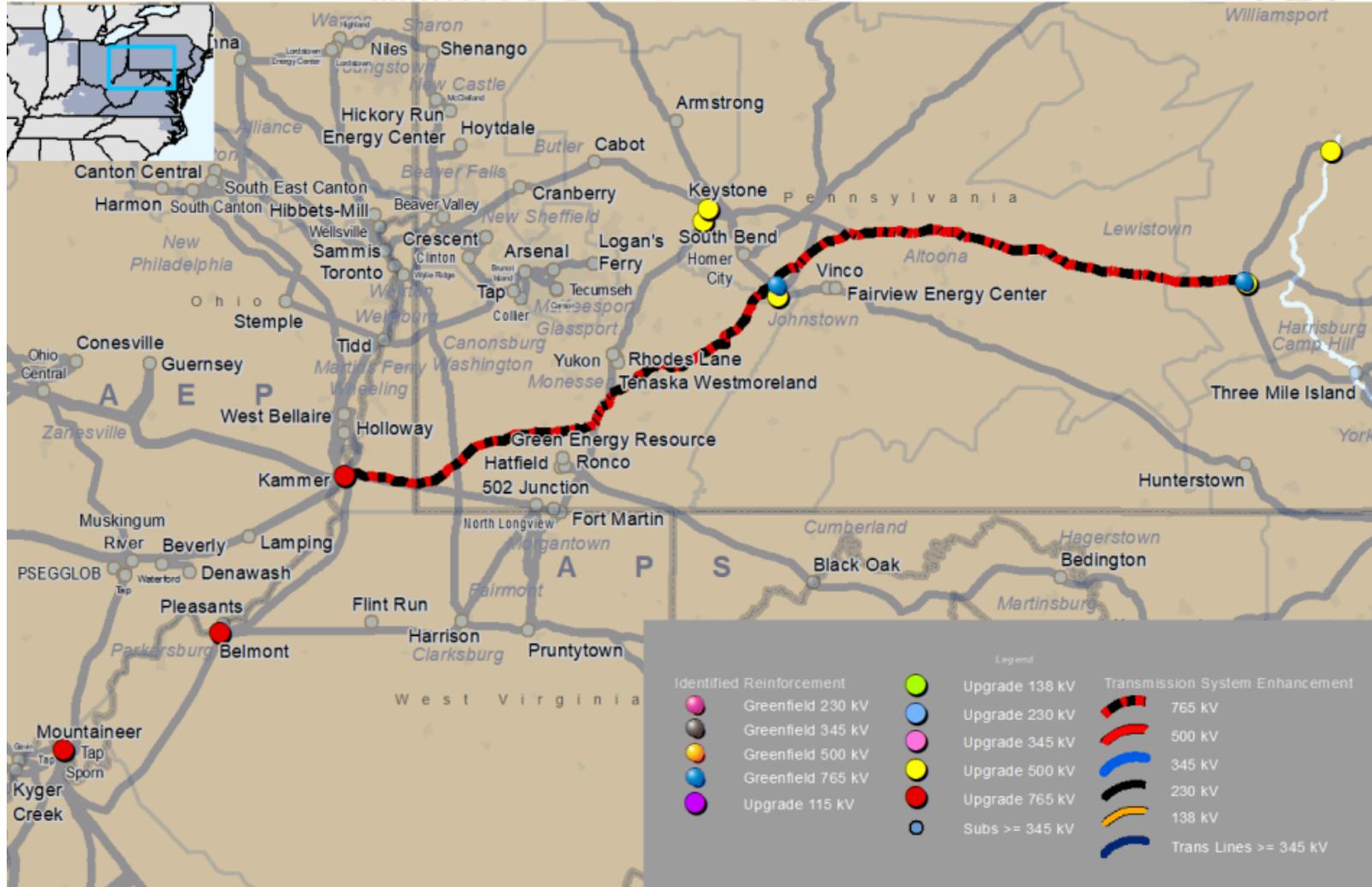
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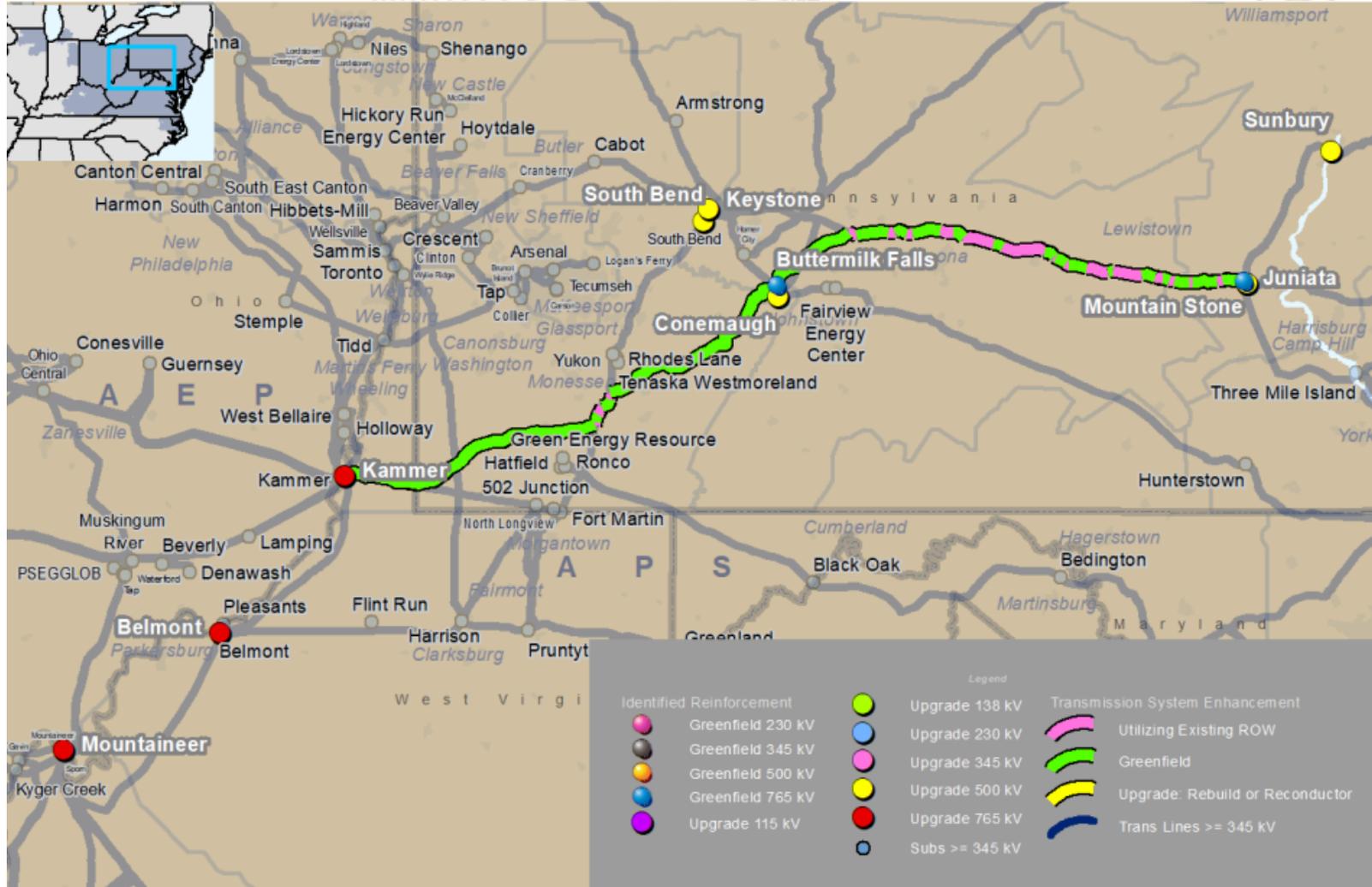
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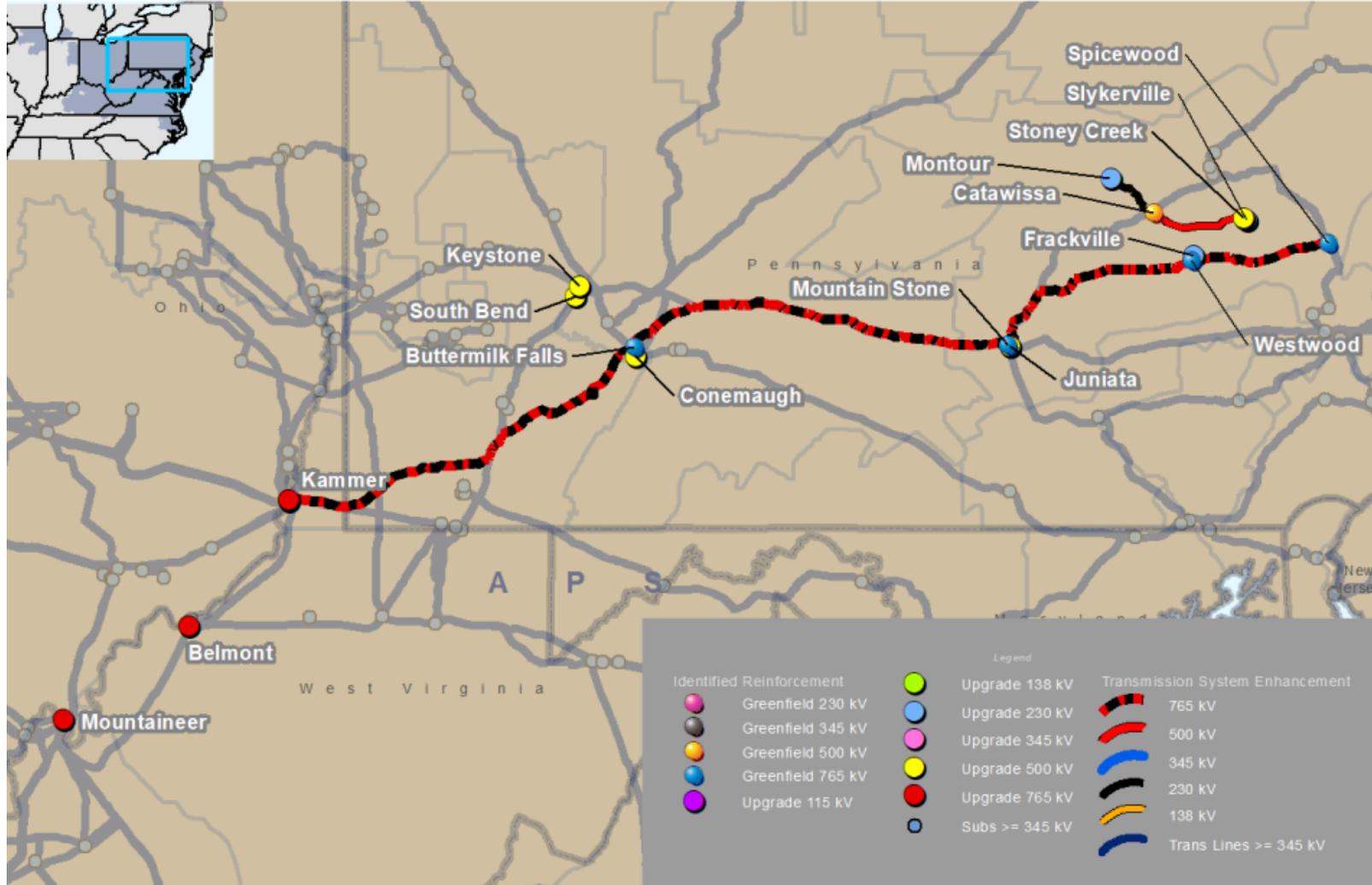
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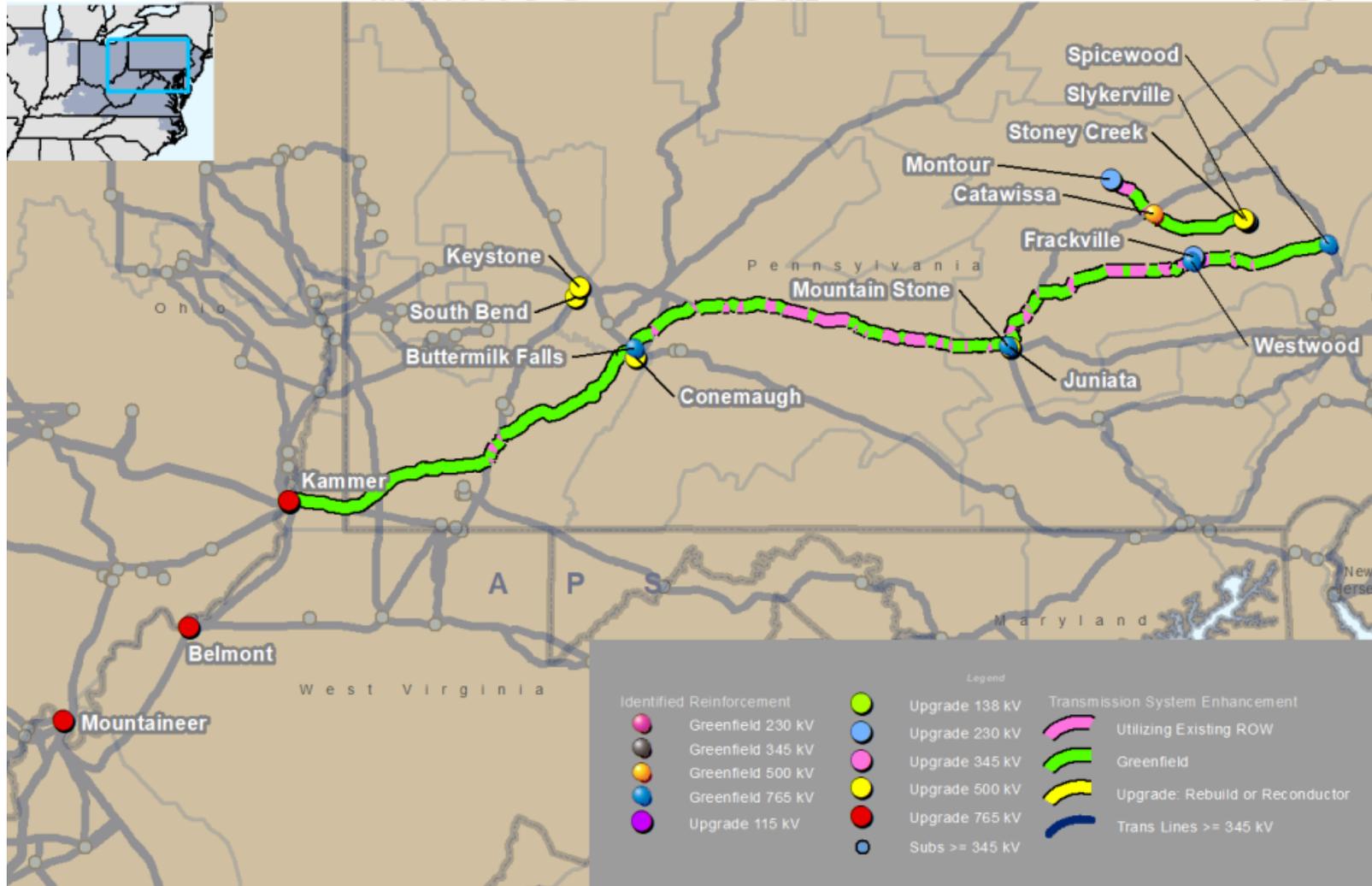
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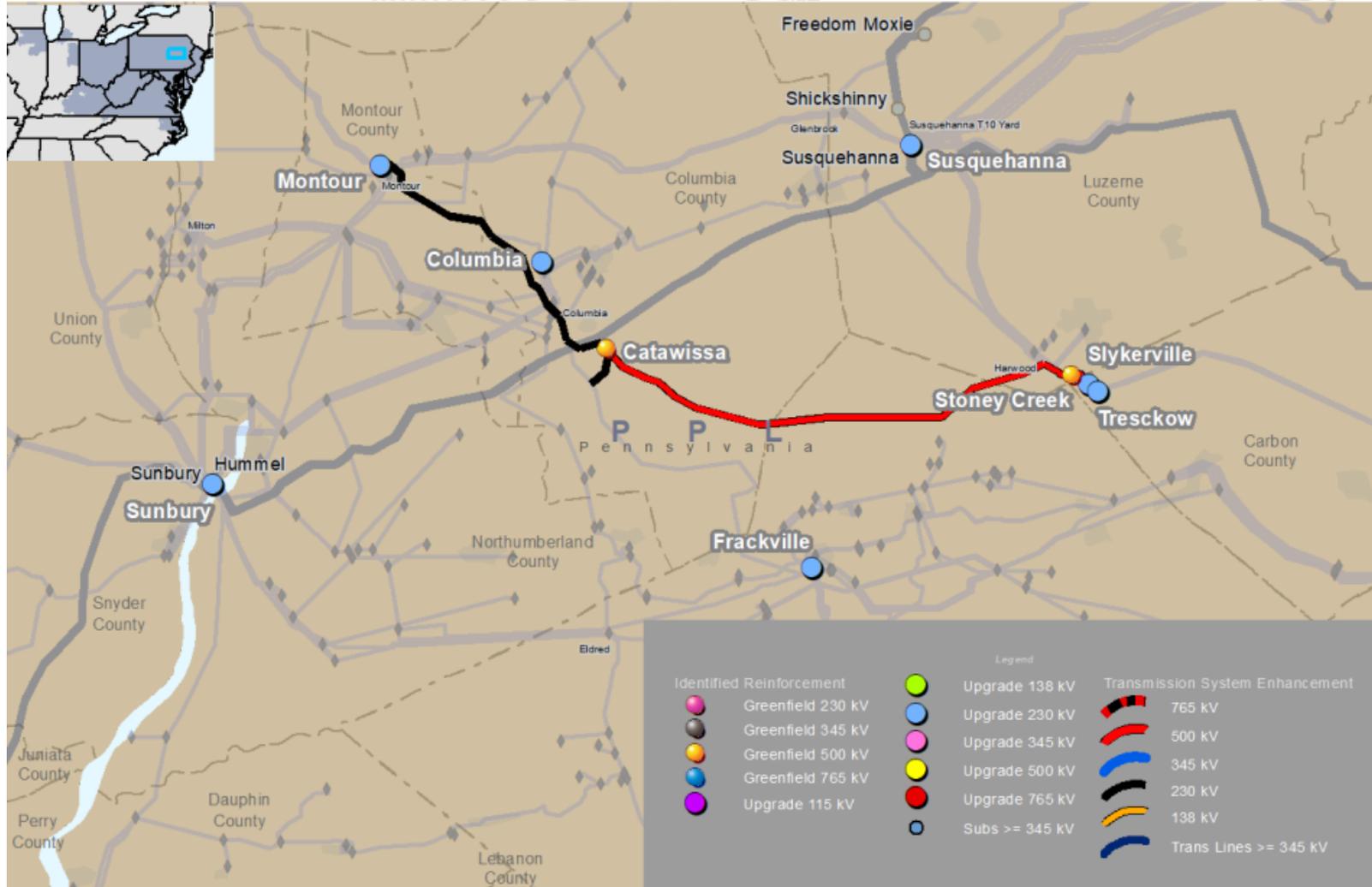
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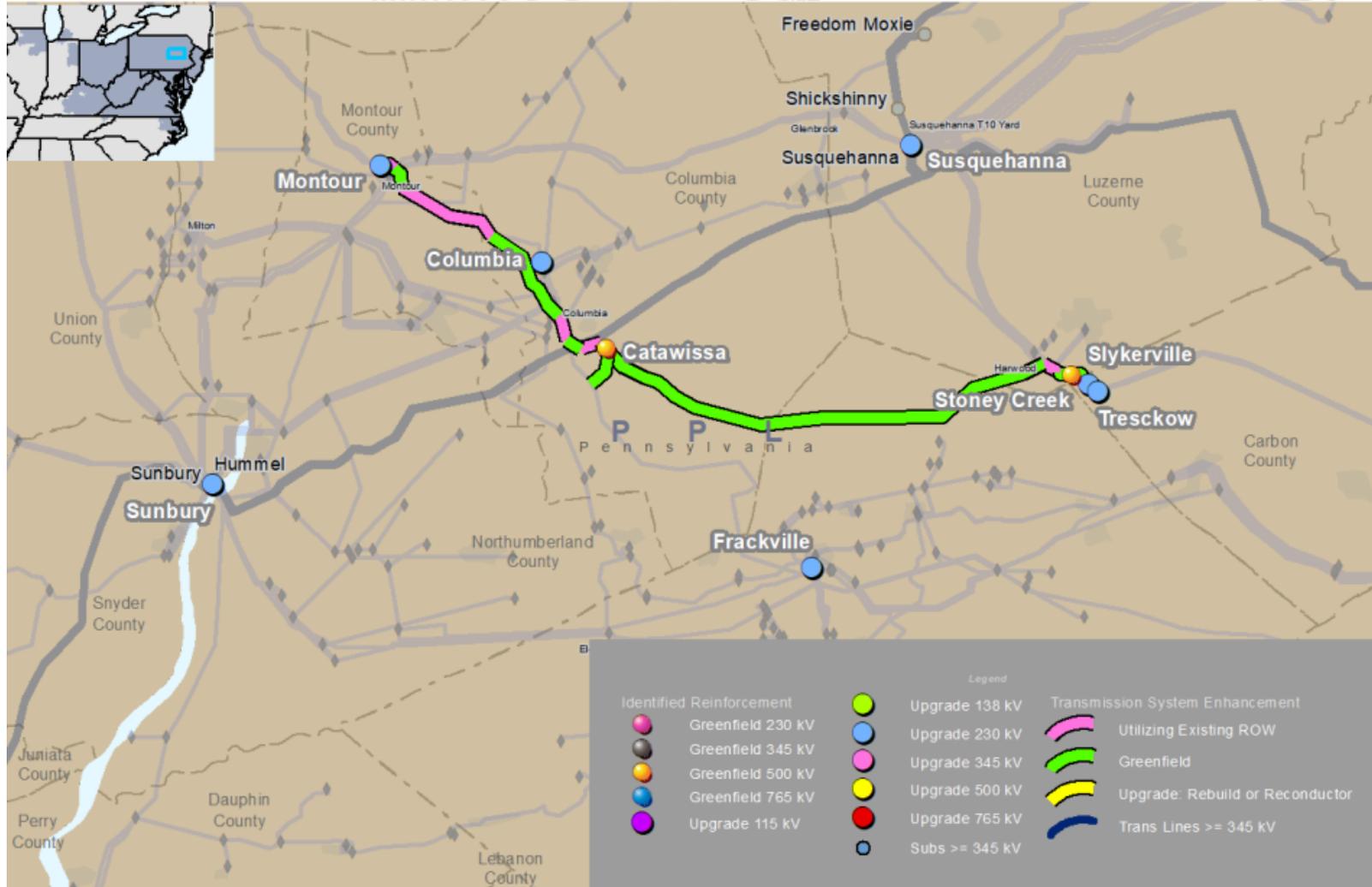
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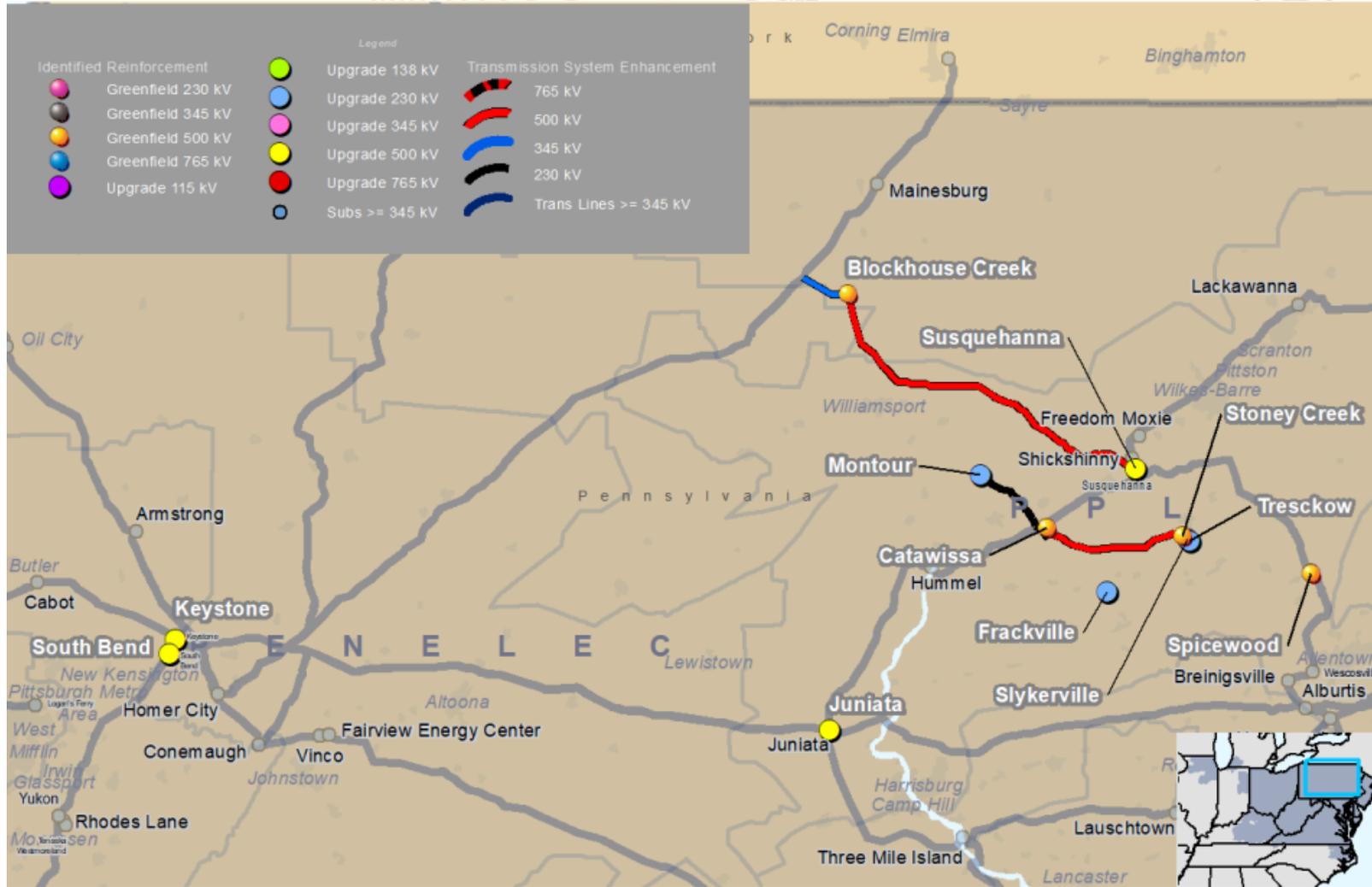
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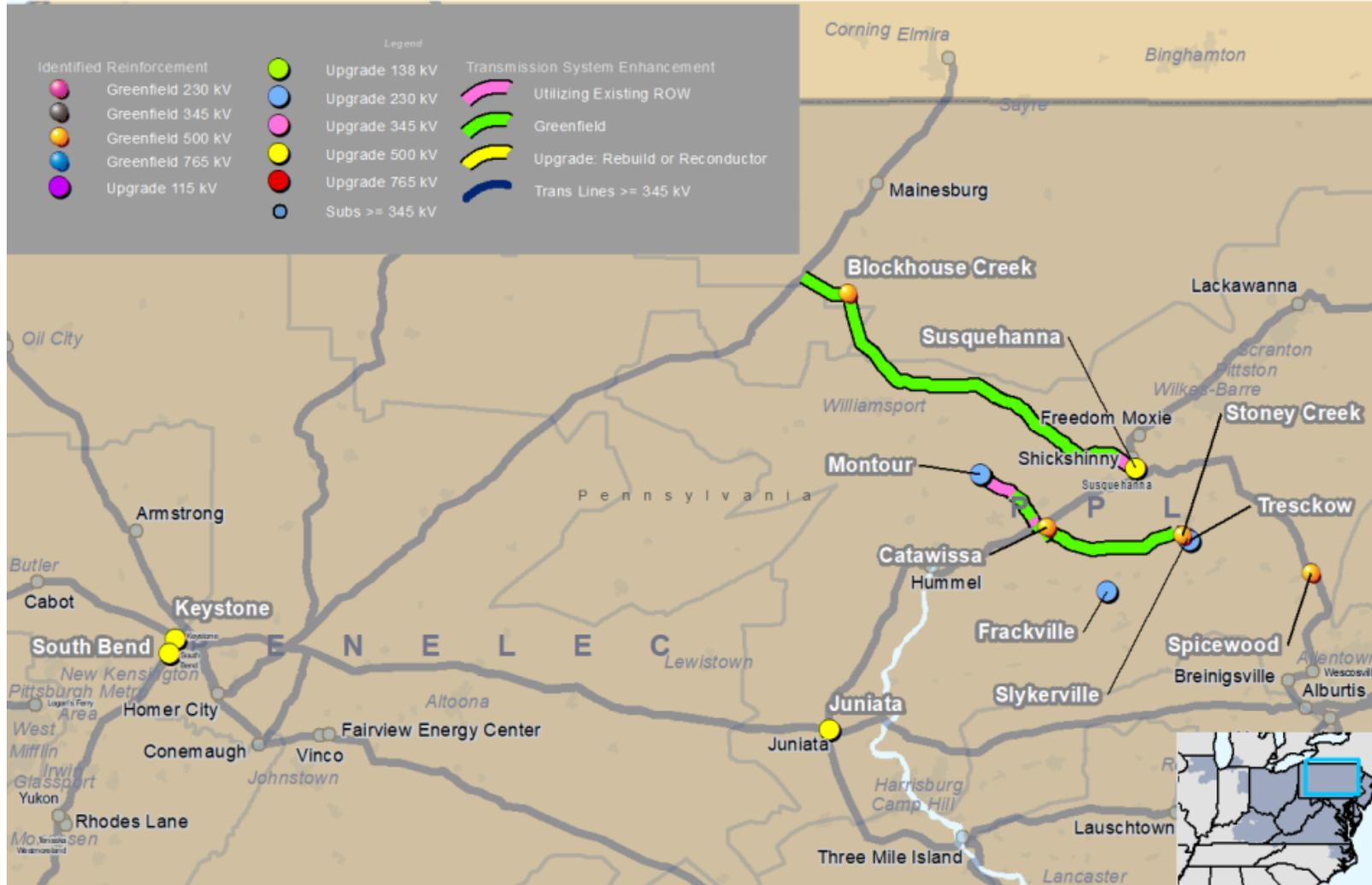
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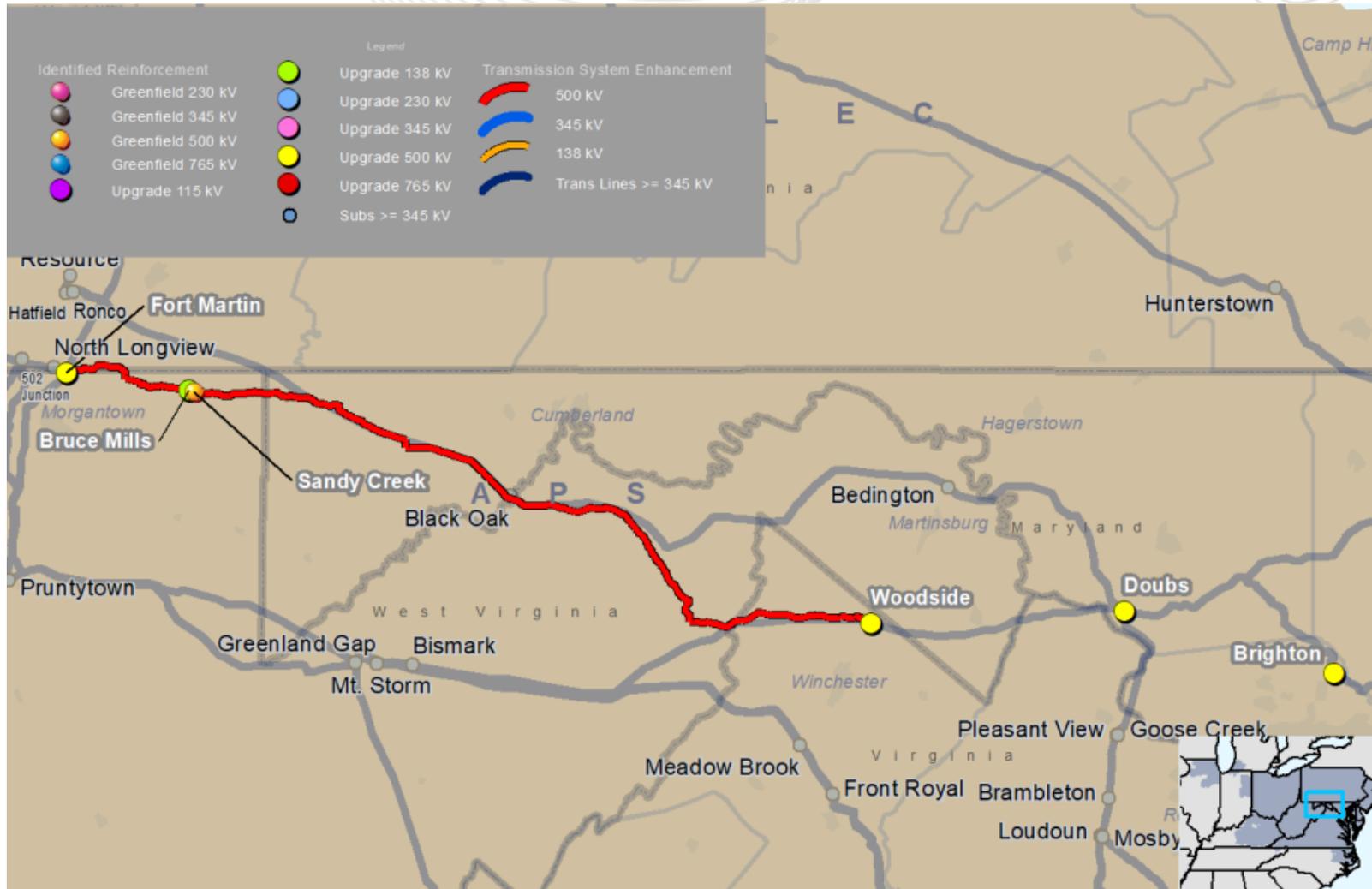
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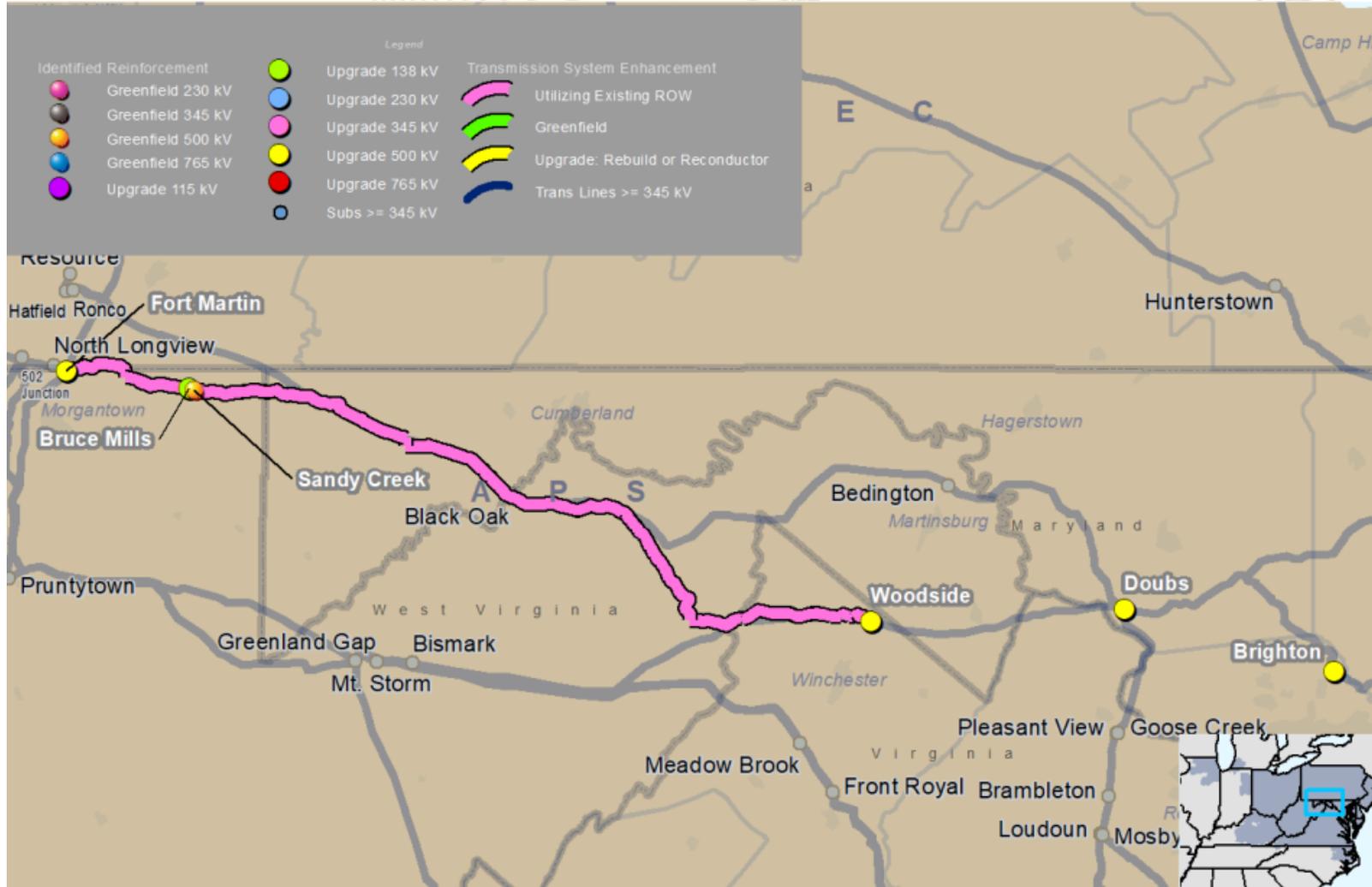
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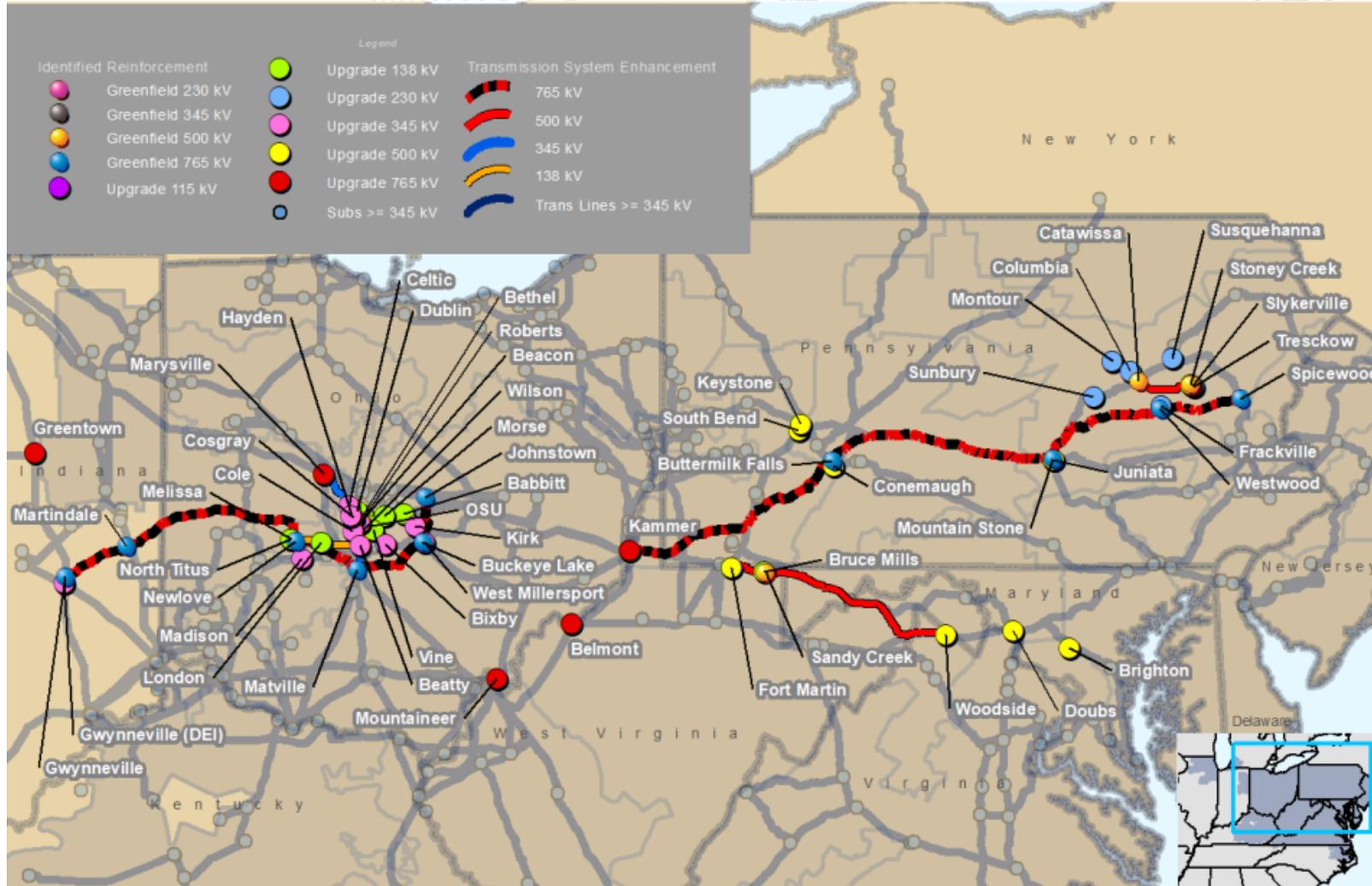
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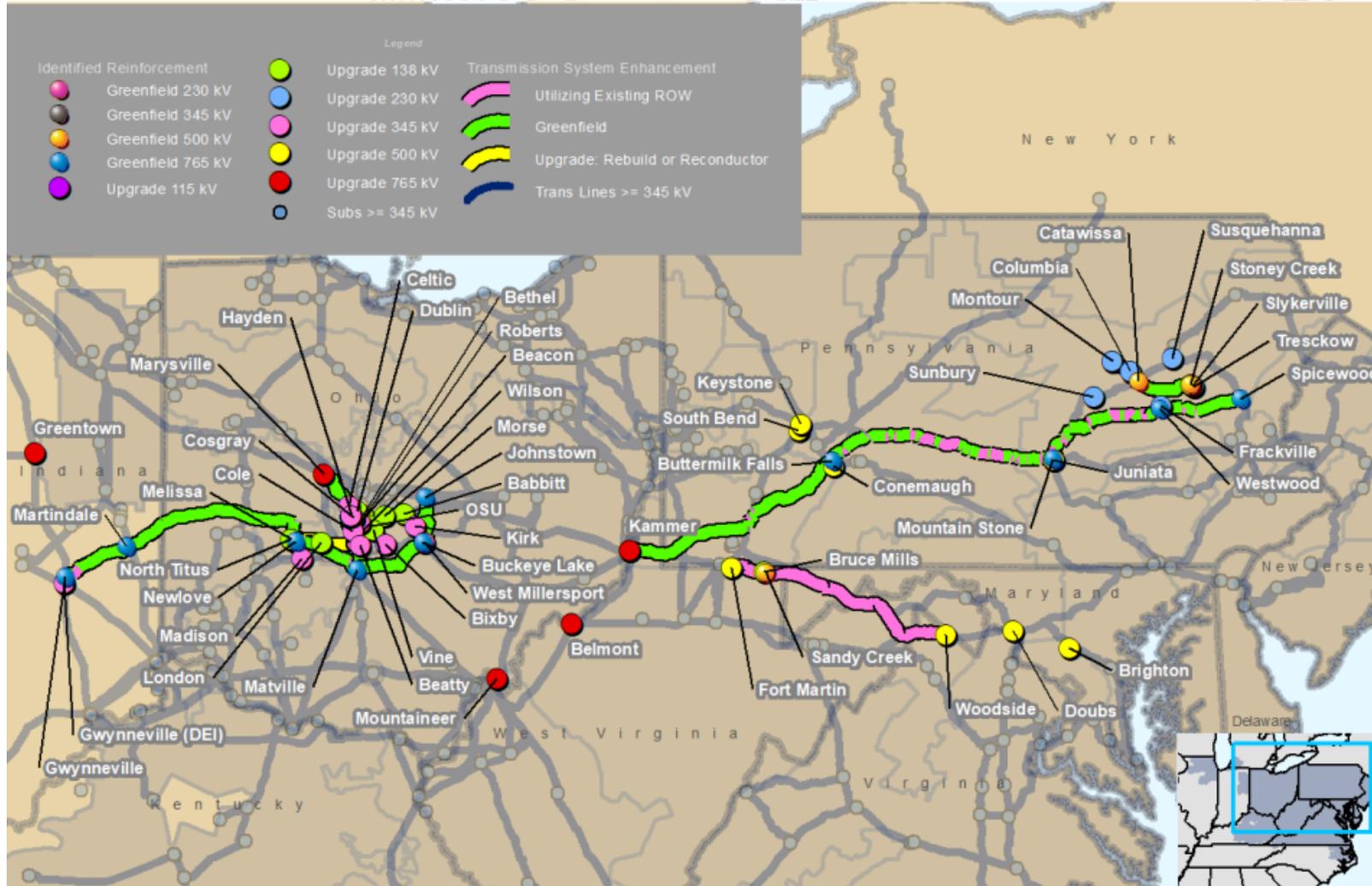
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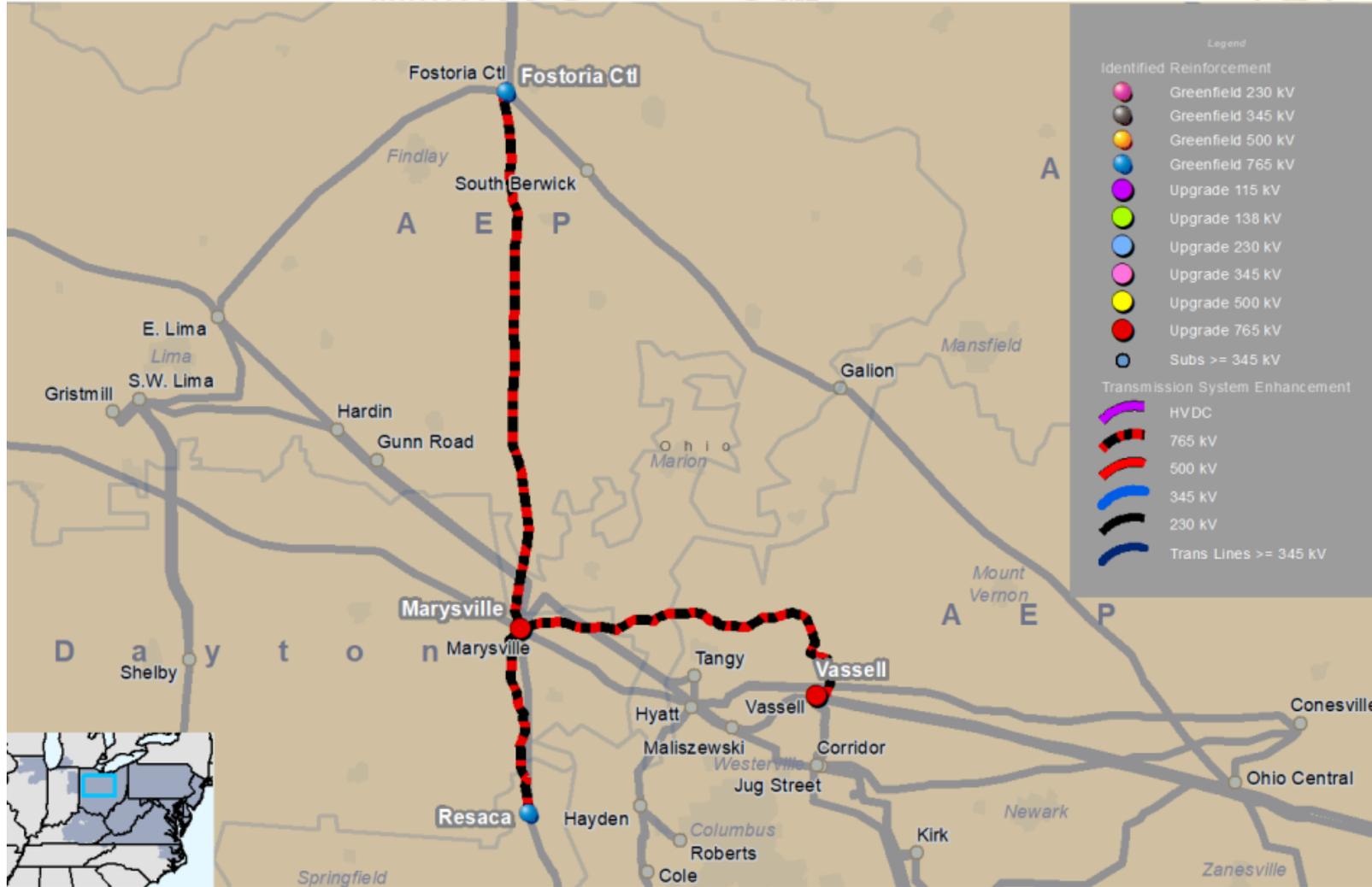


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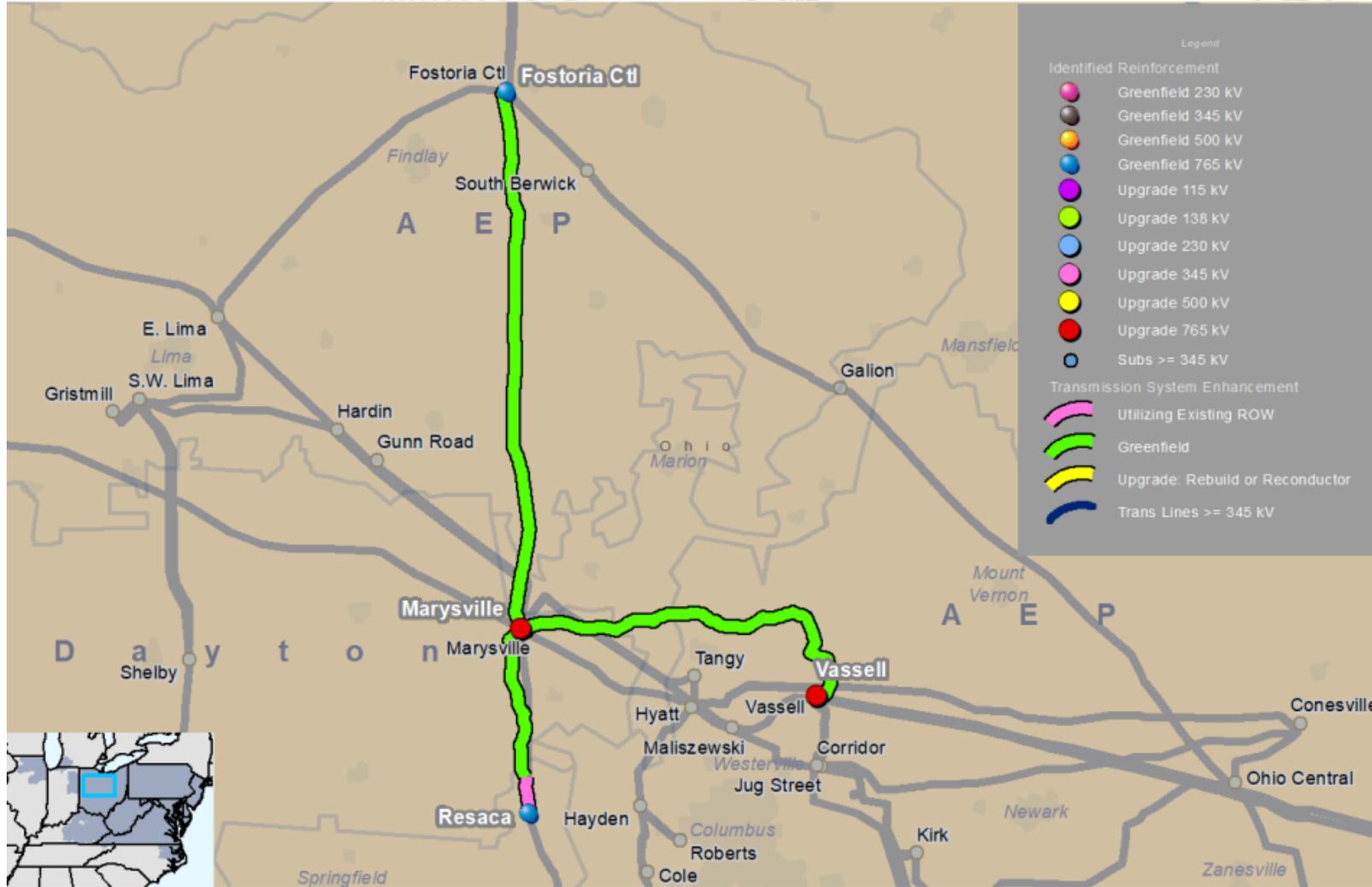


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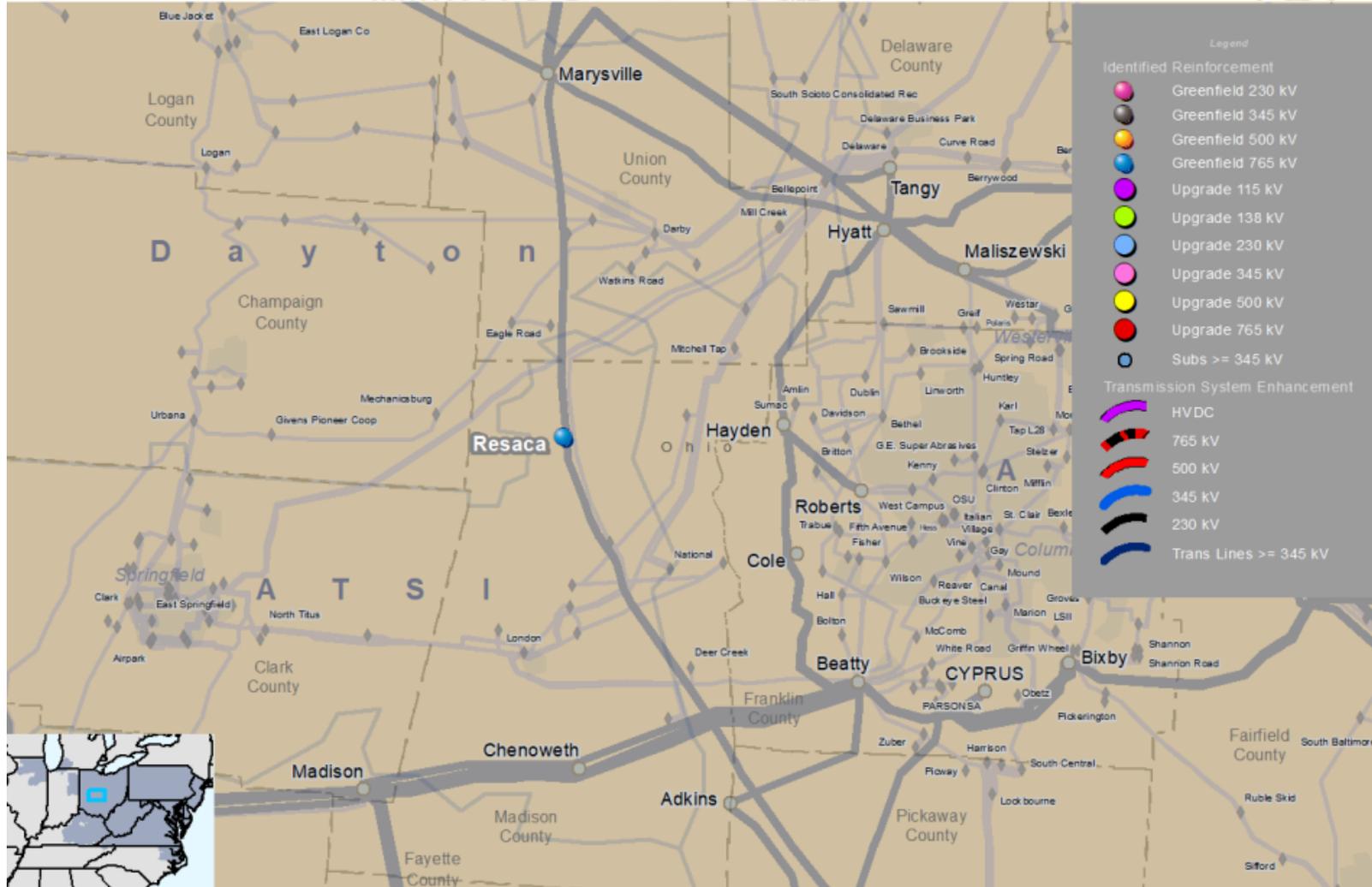
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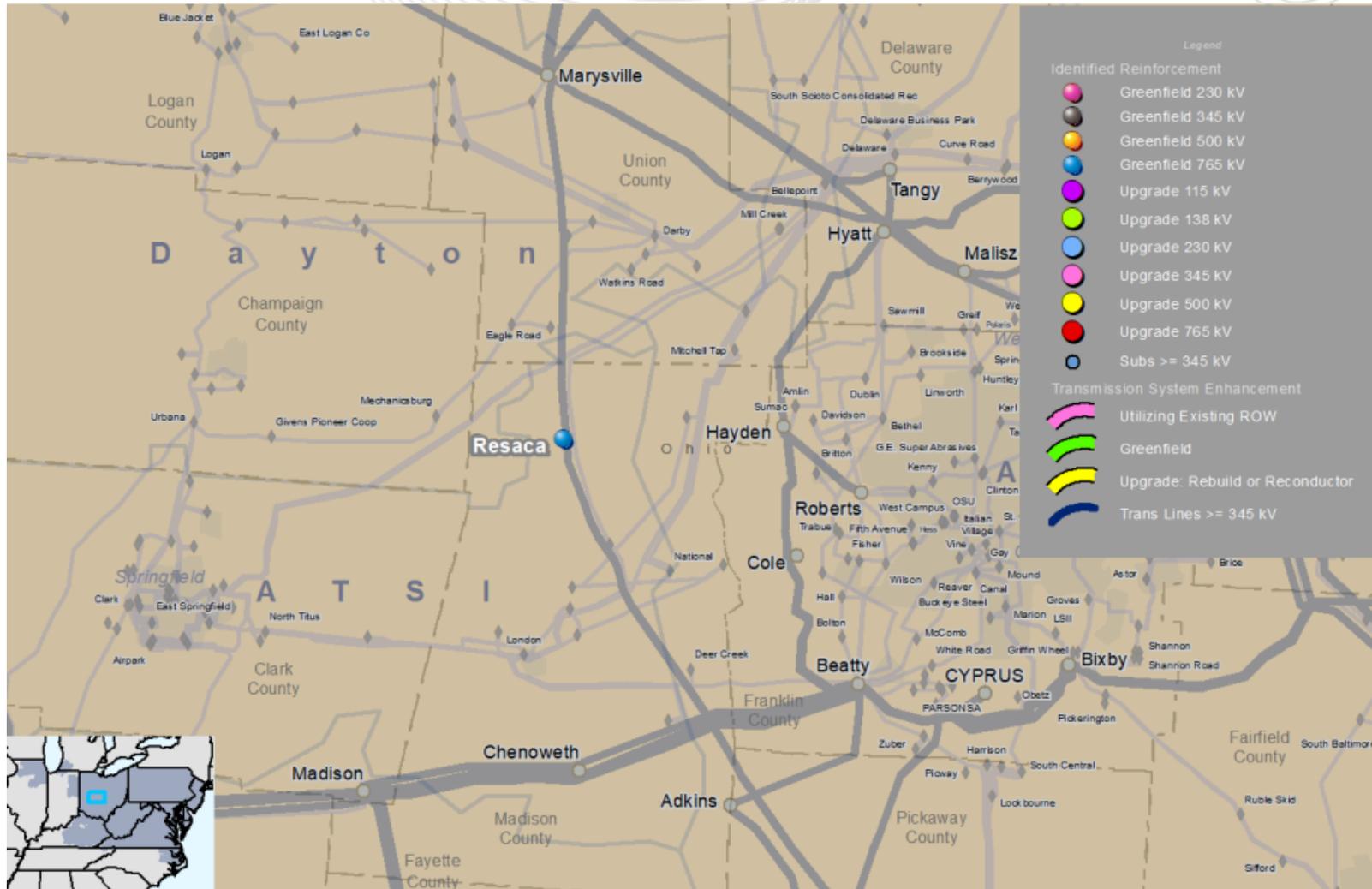
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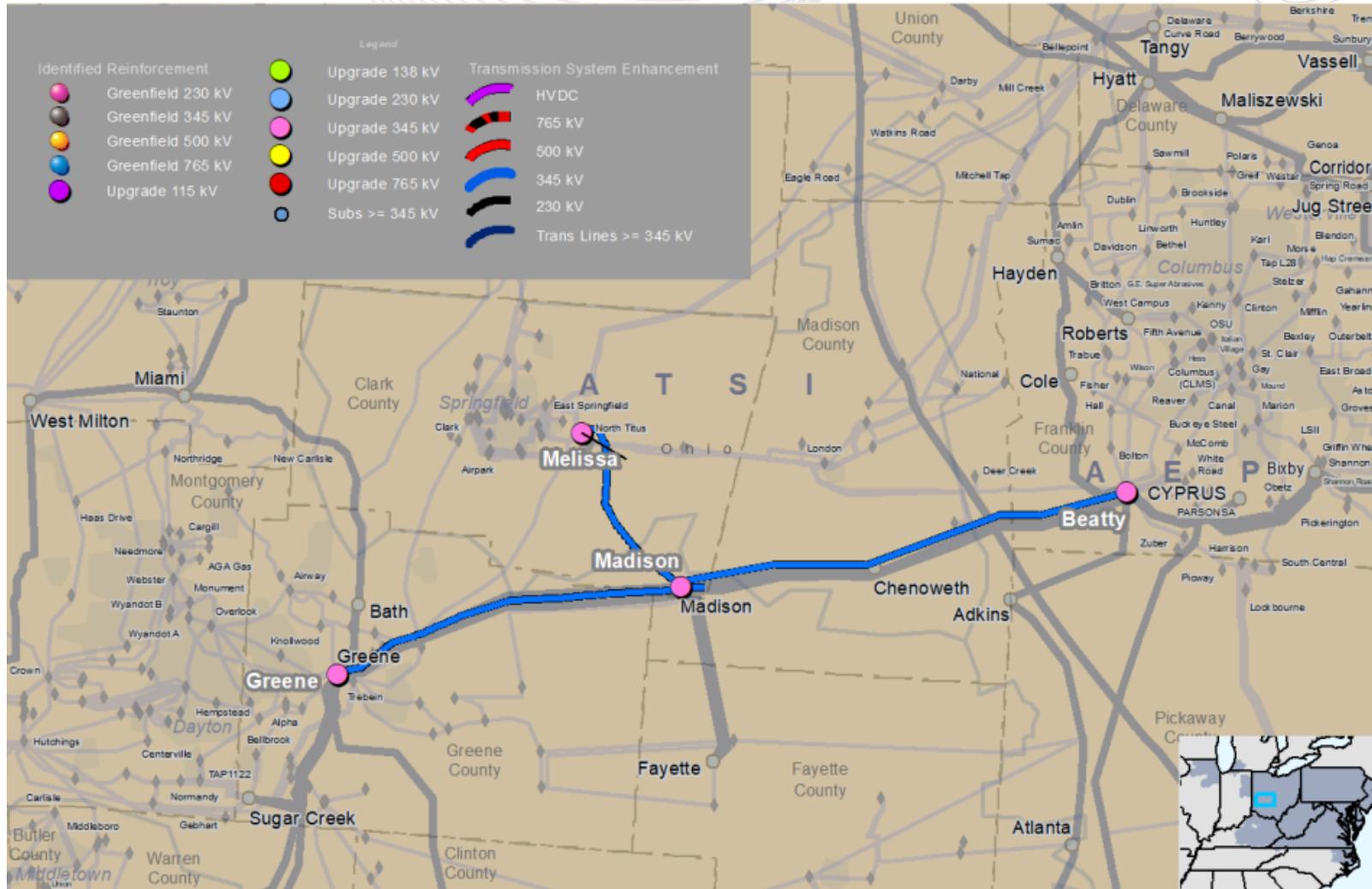
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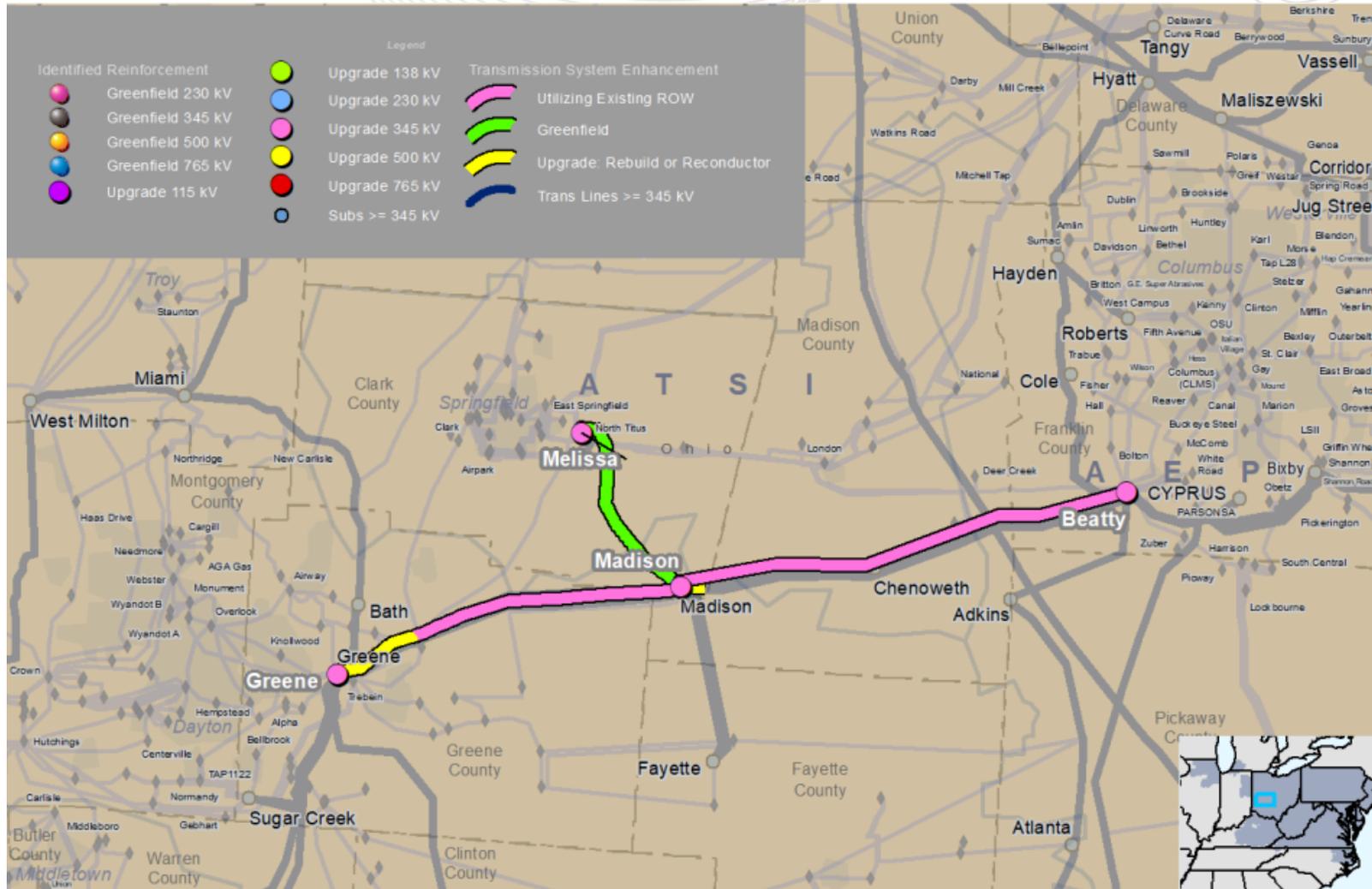
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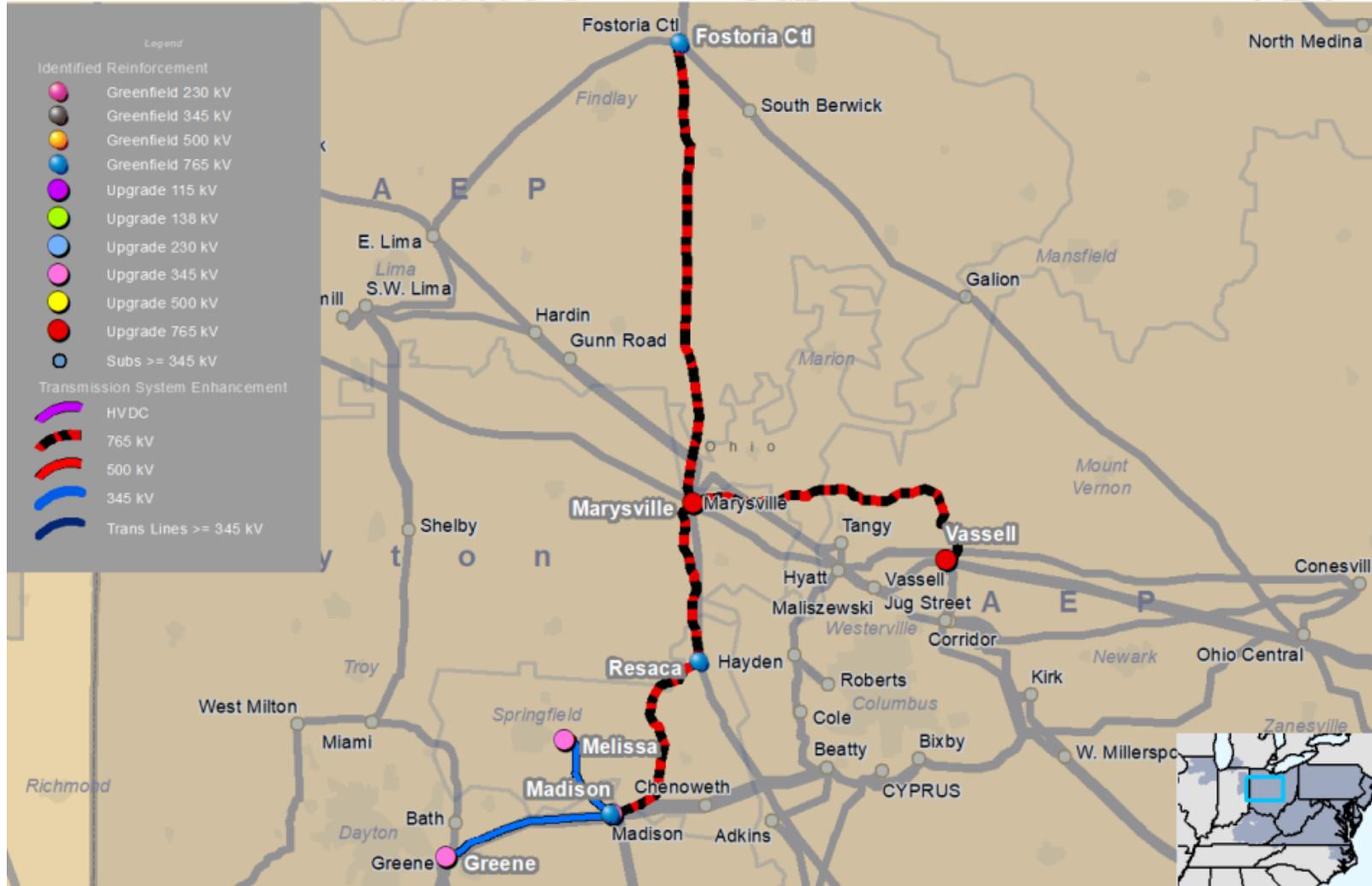
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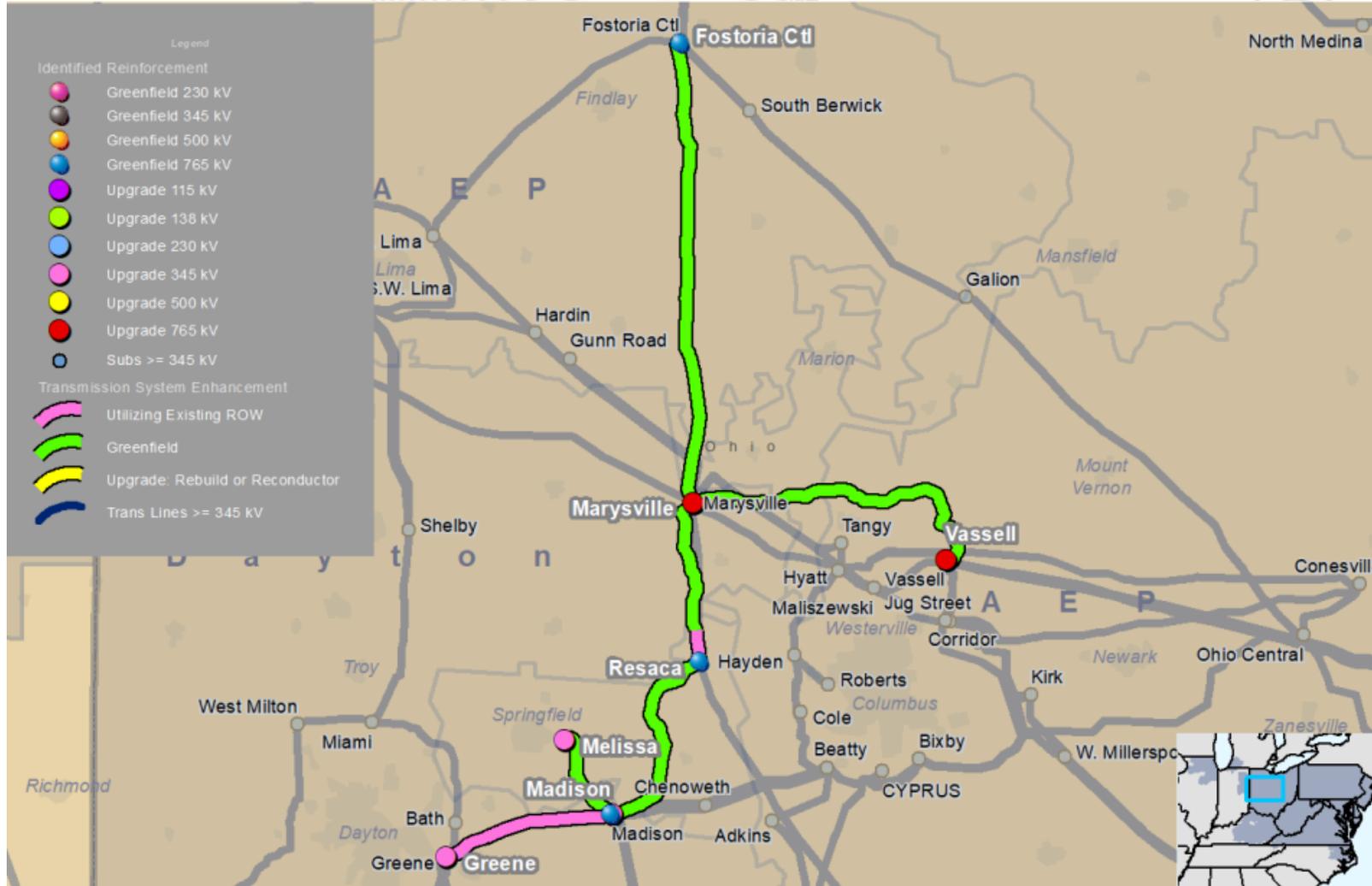
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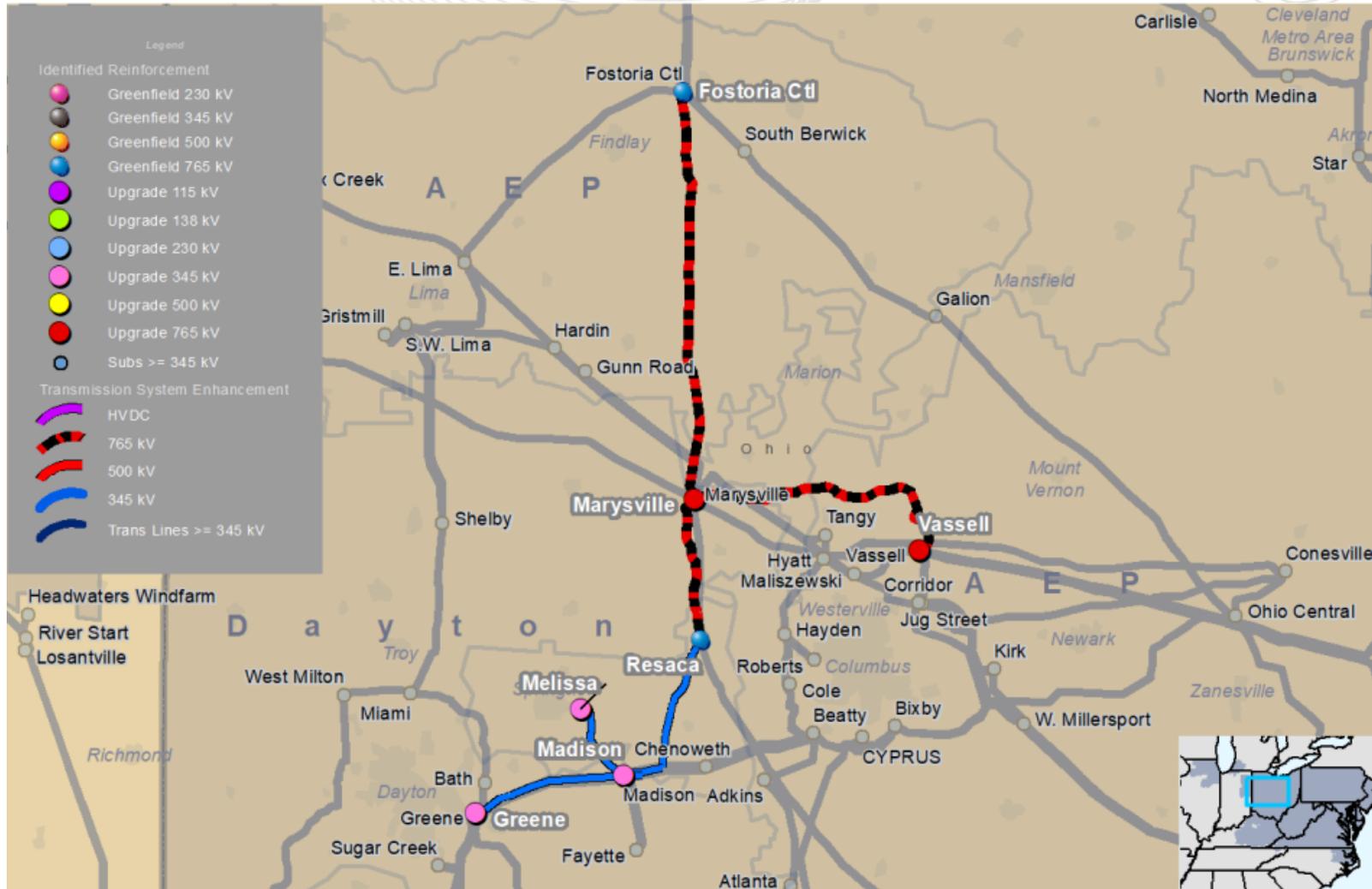
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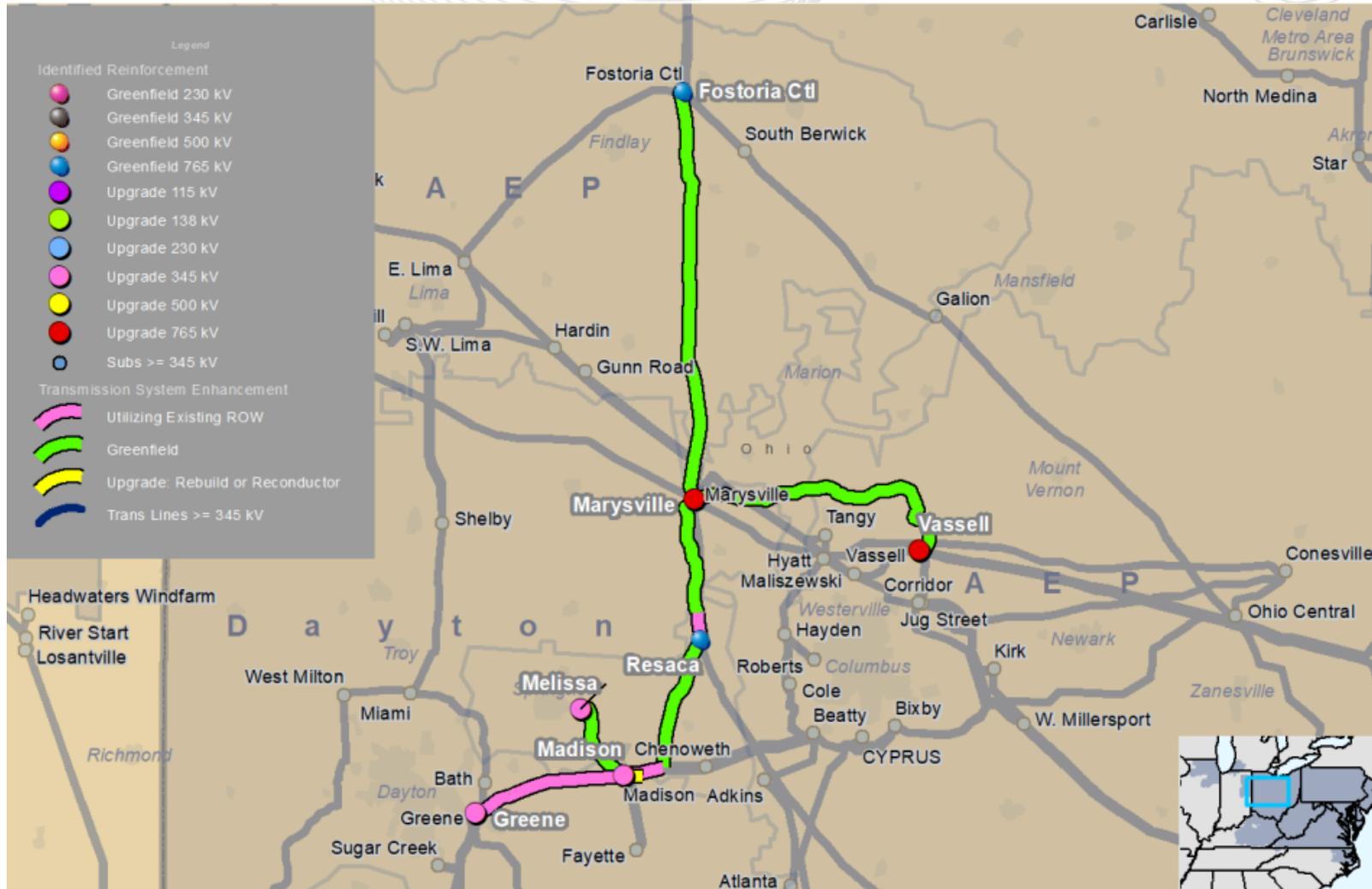
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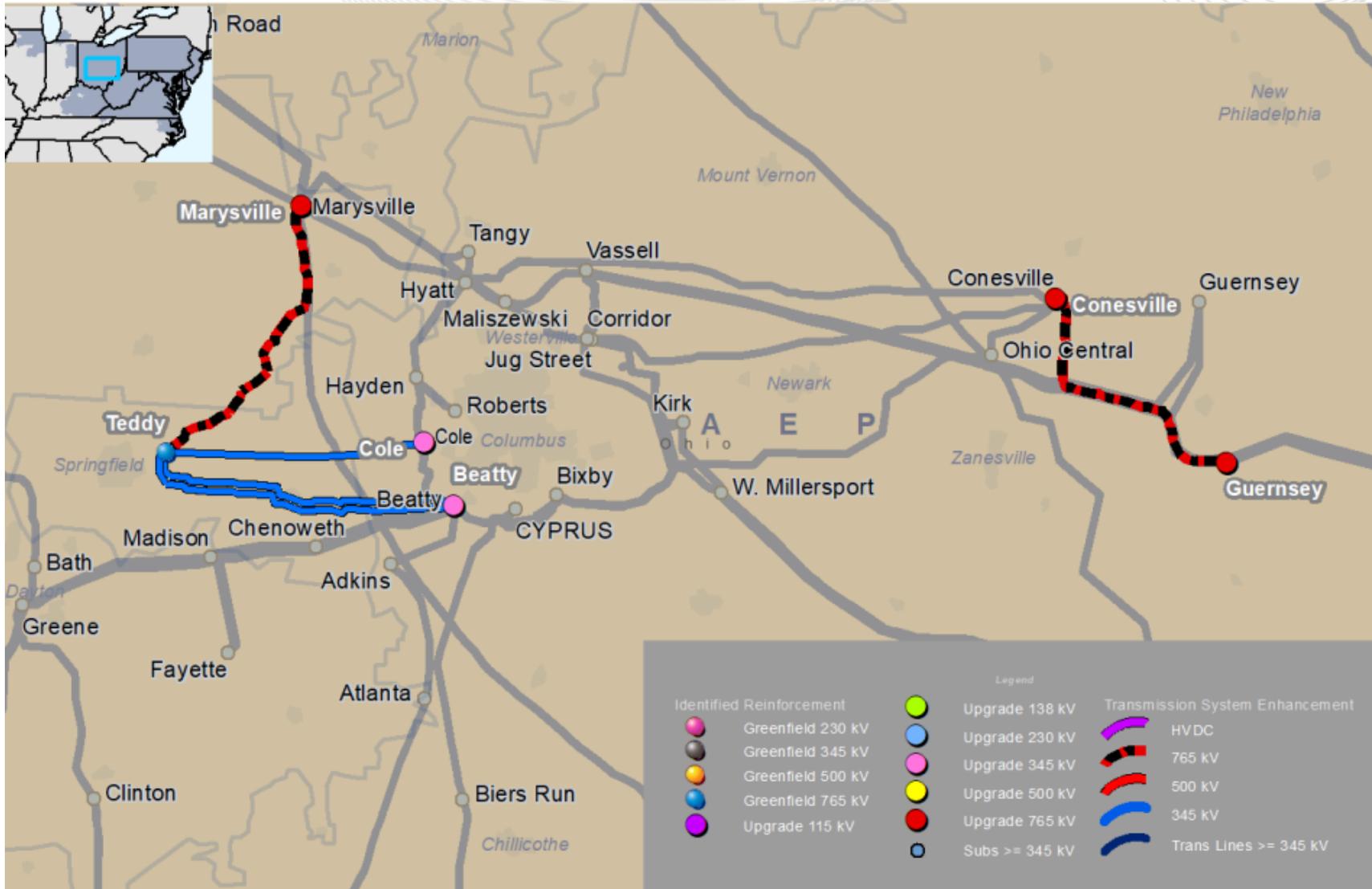


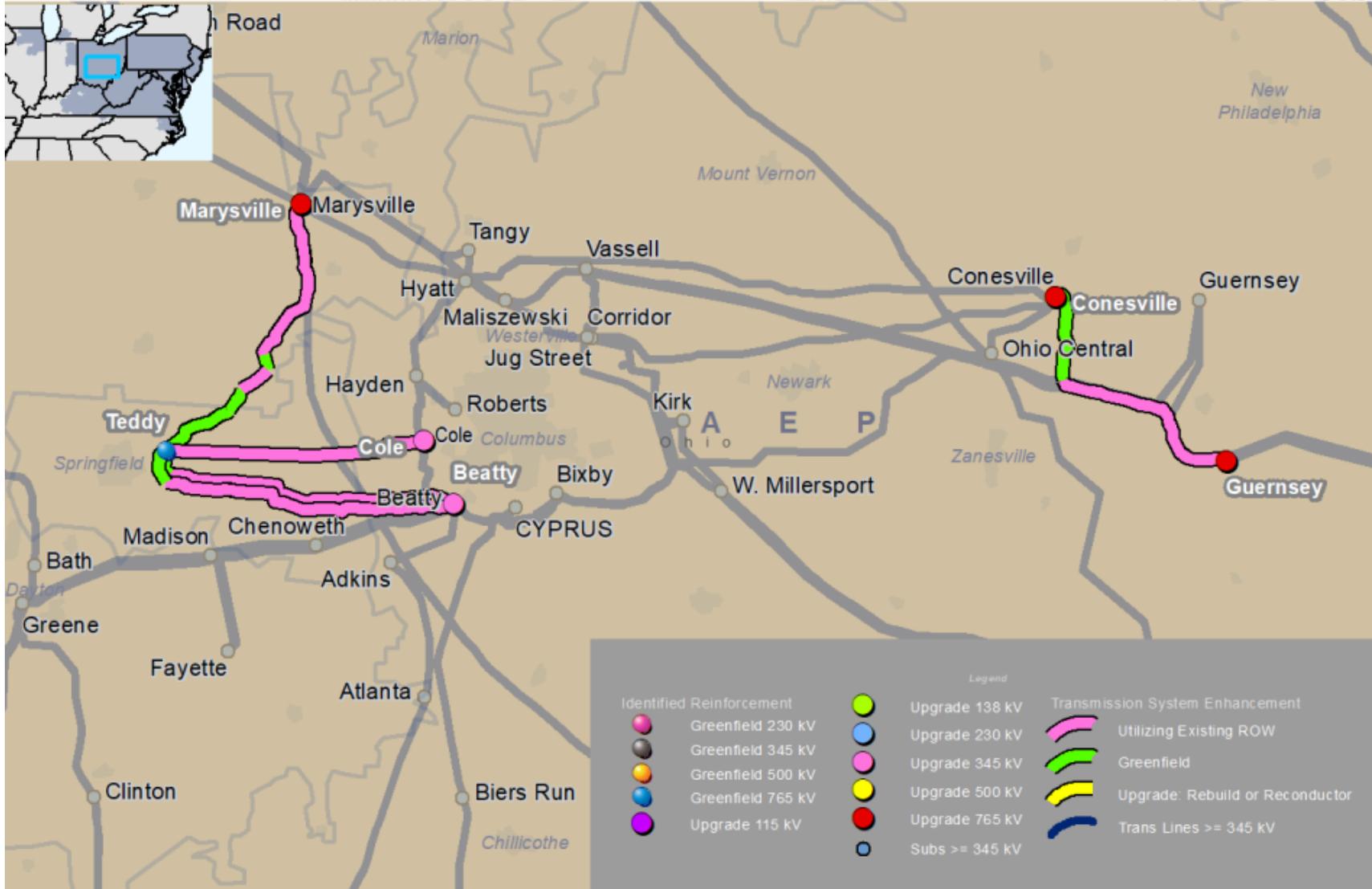
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# TRANSRC (Transource)



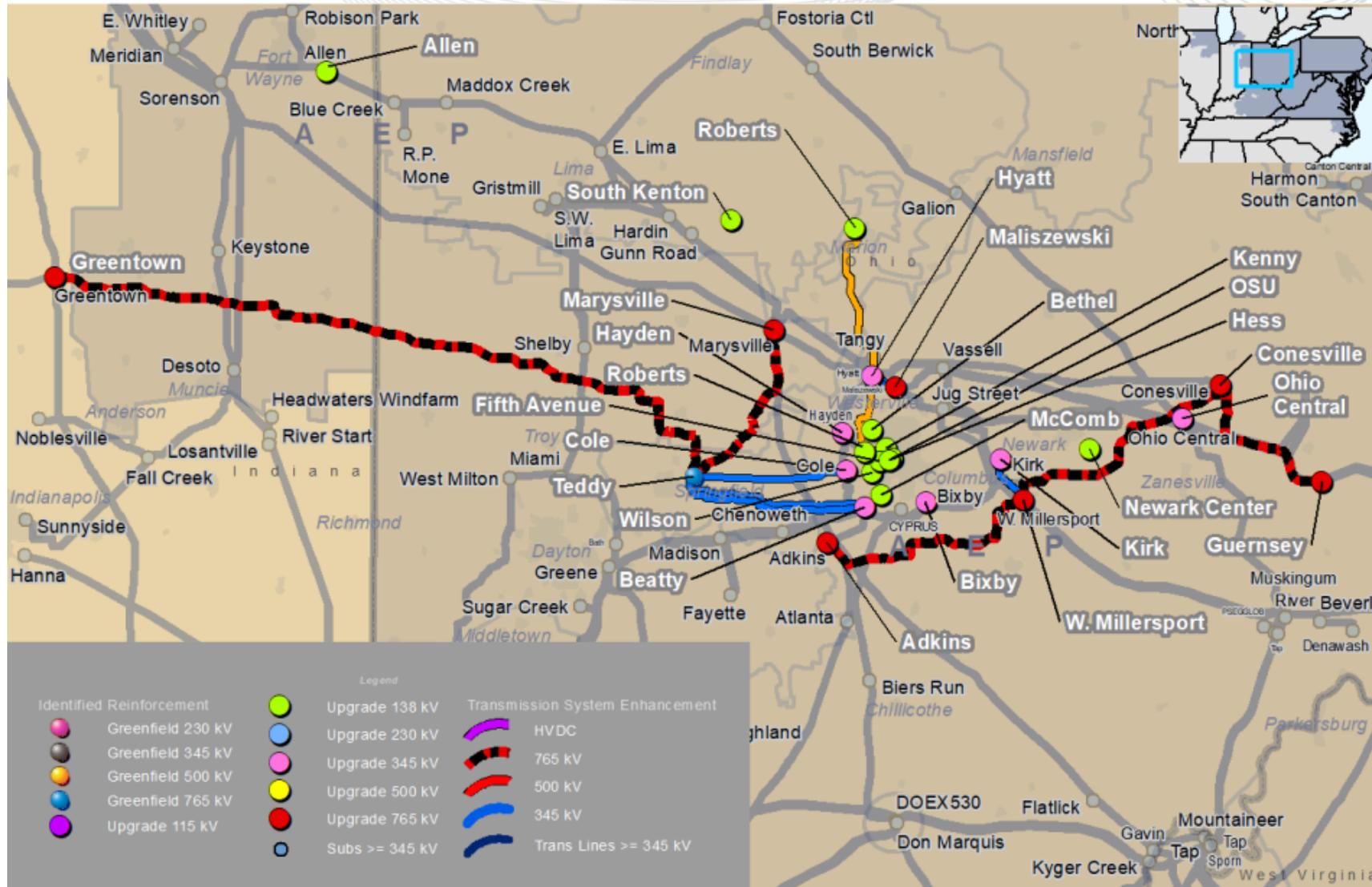


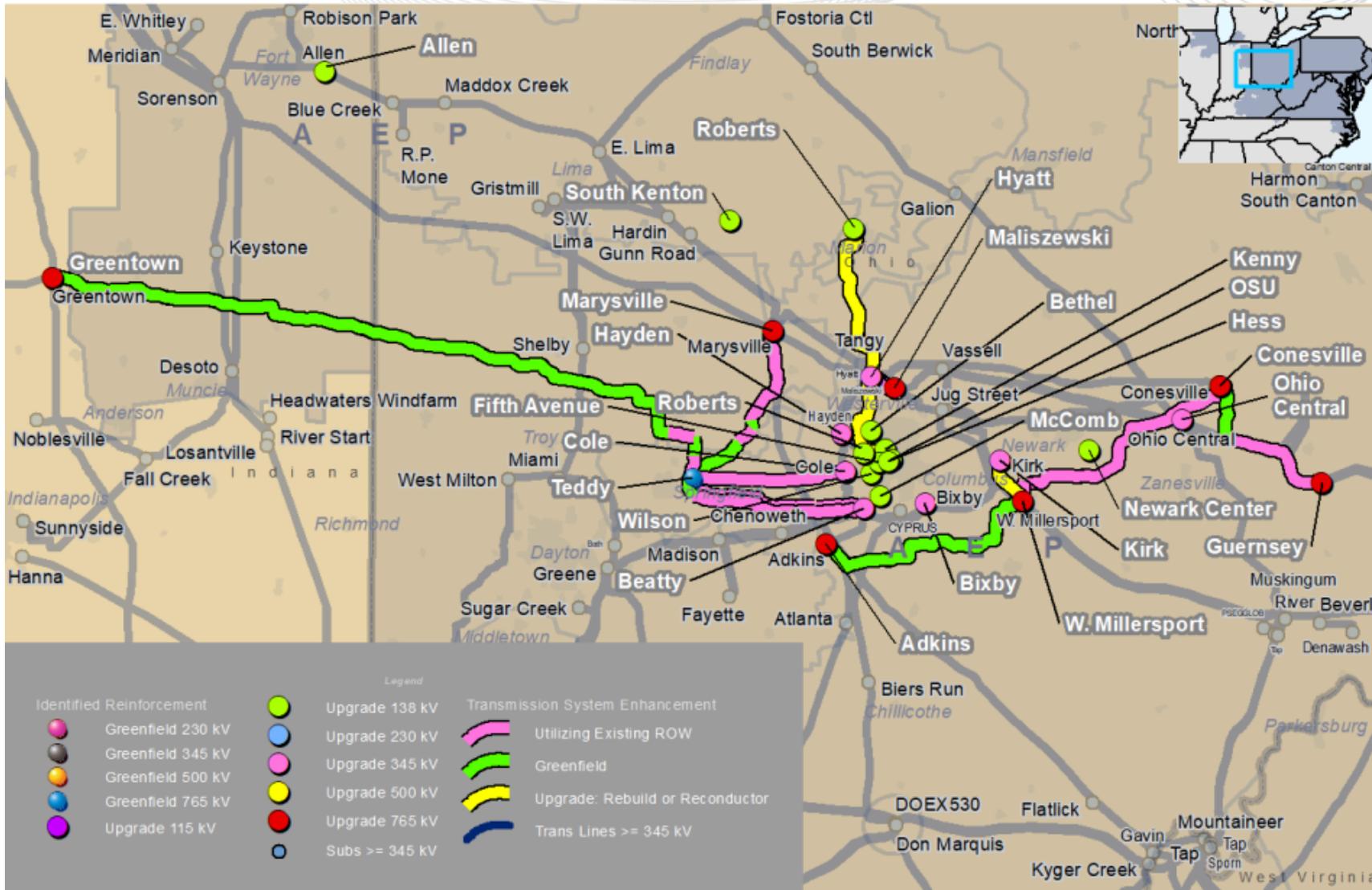


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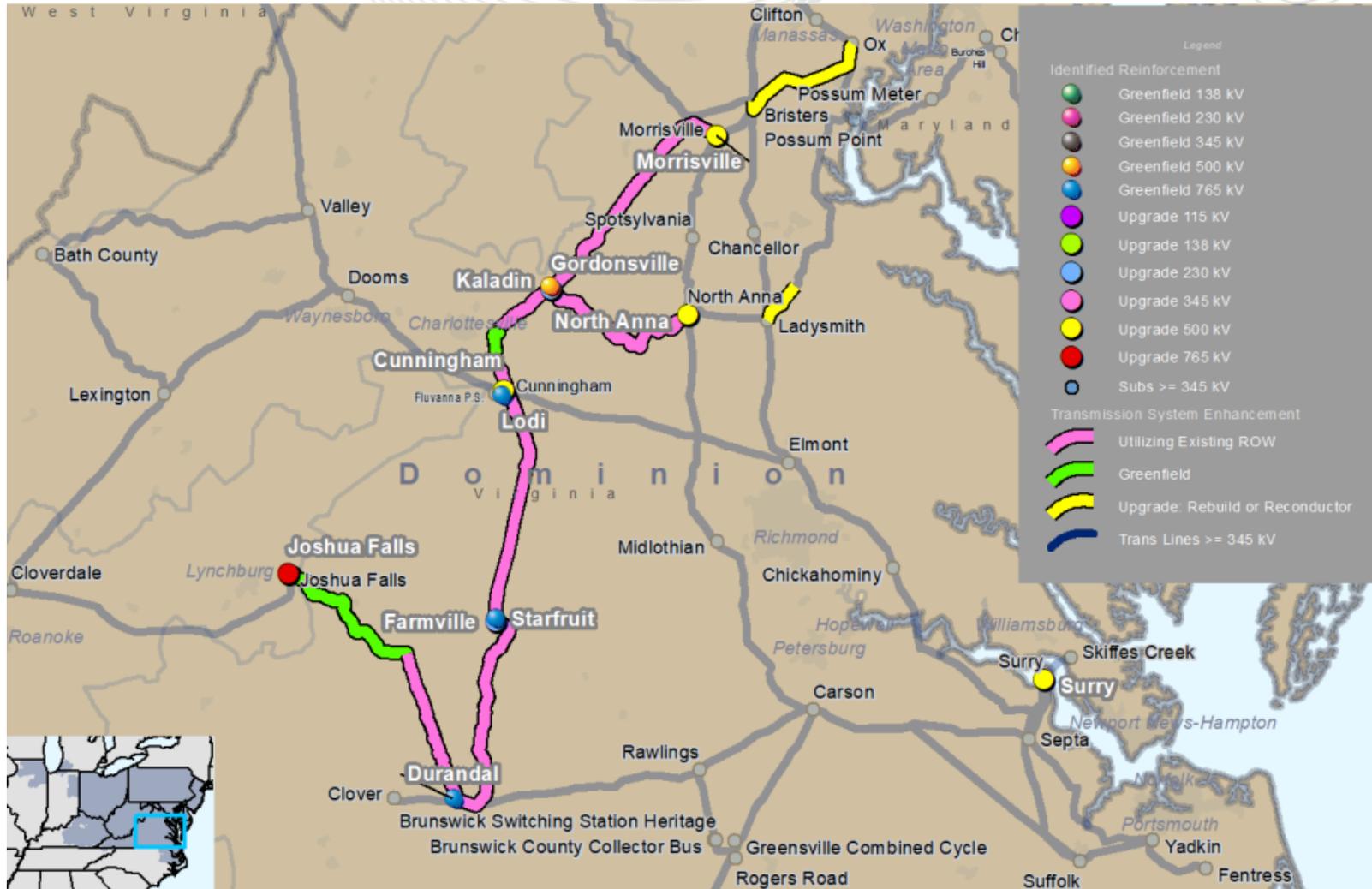
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# TRAIL (FirstEnergy)

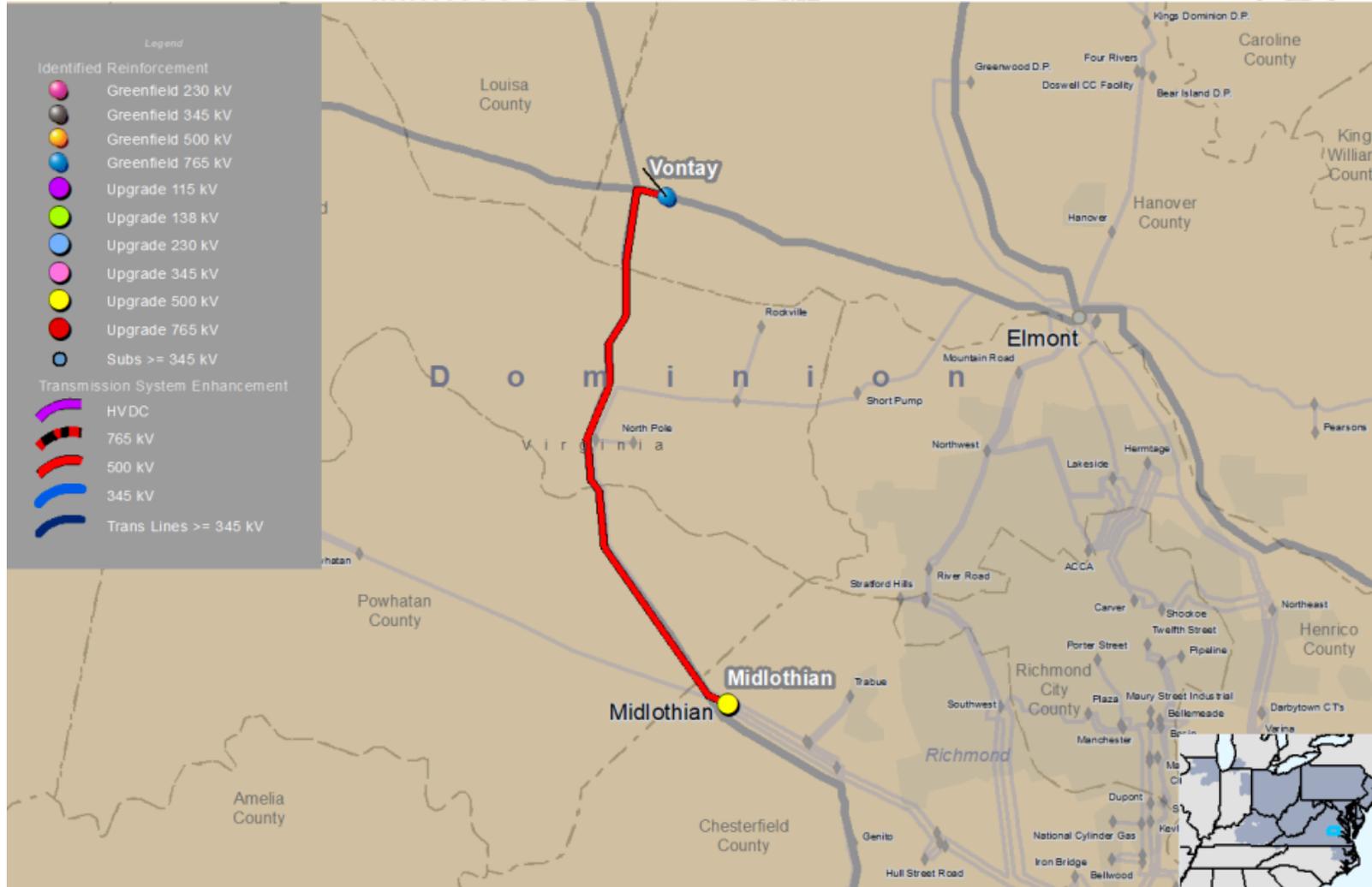


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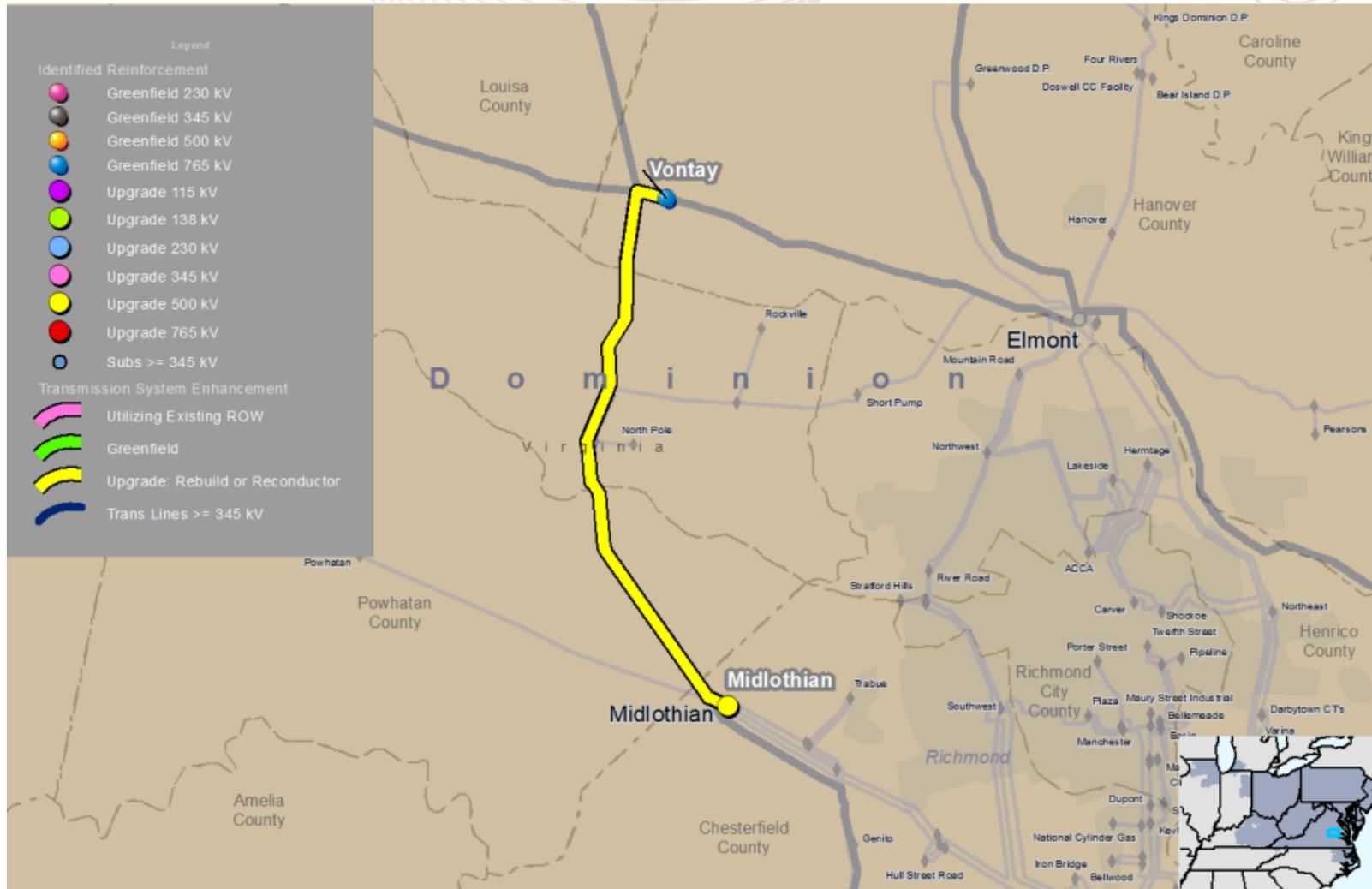


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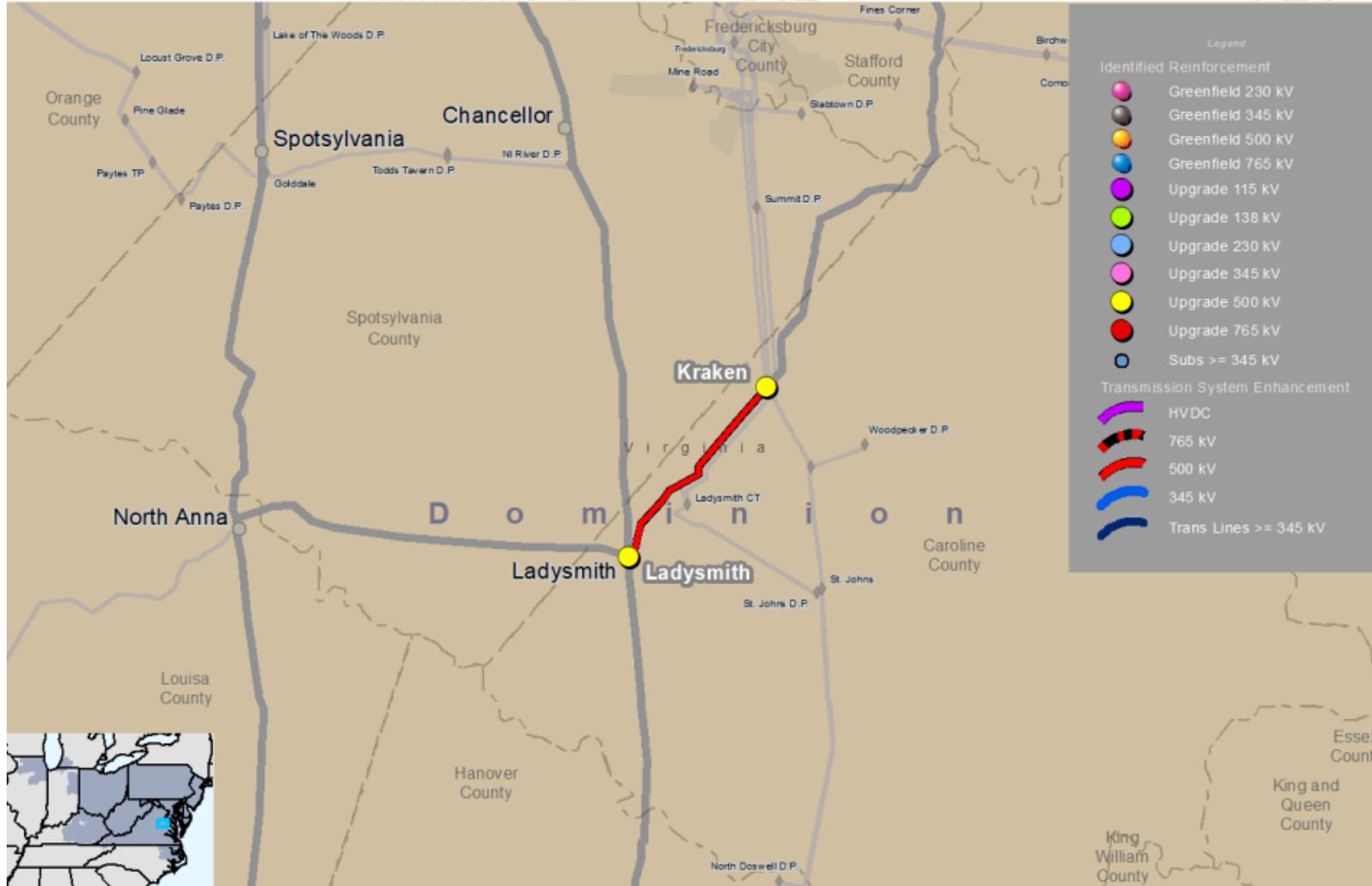
# VEPCO (Dominion)



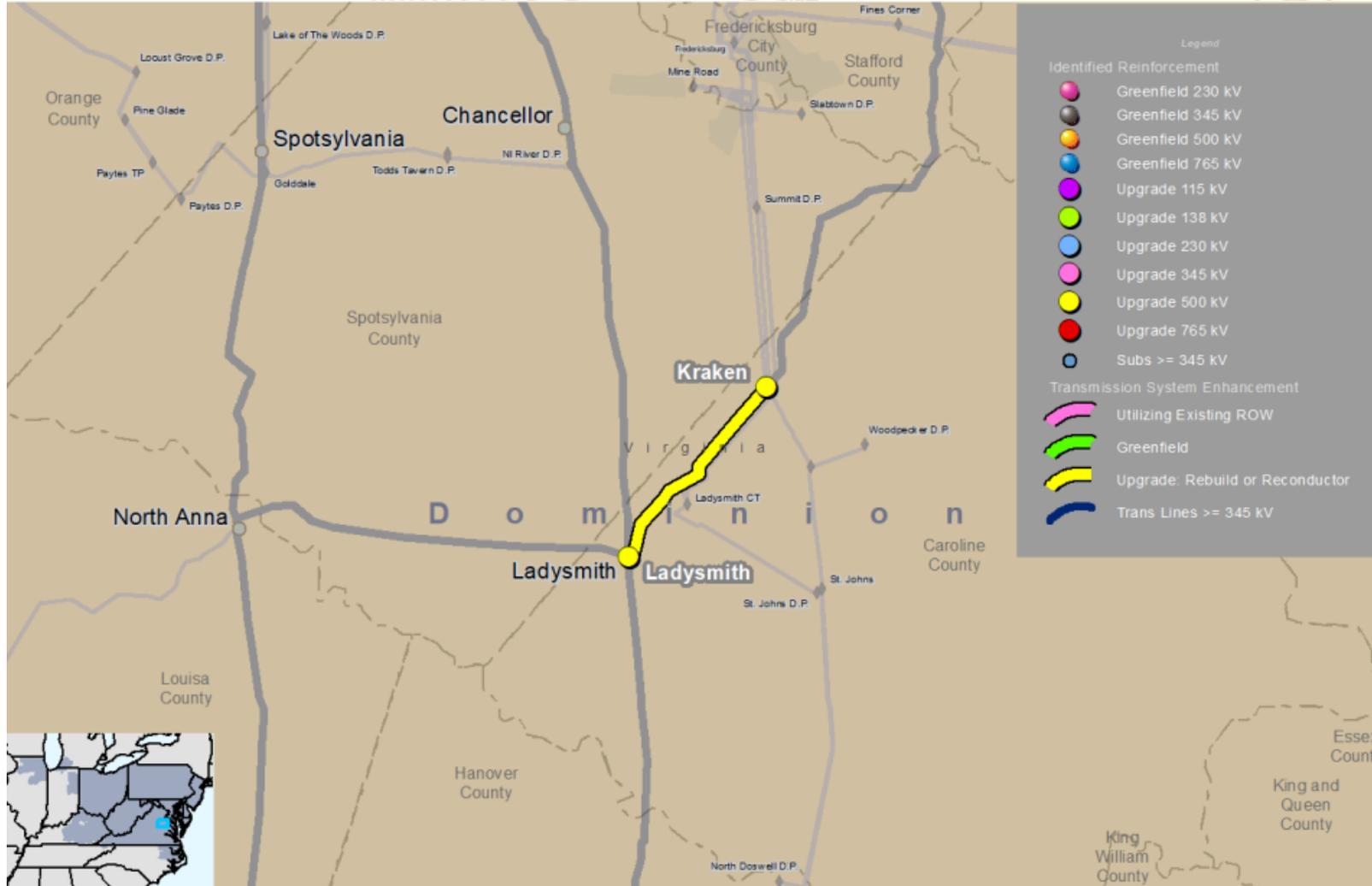
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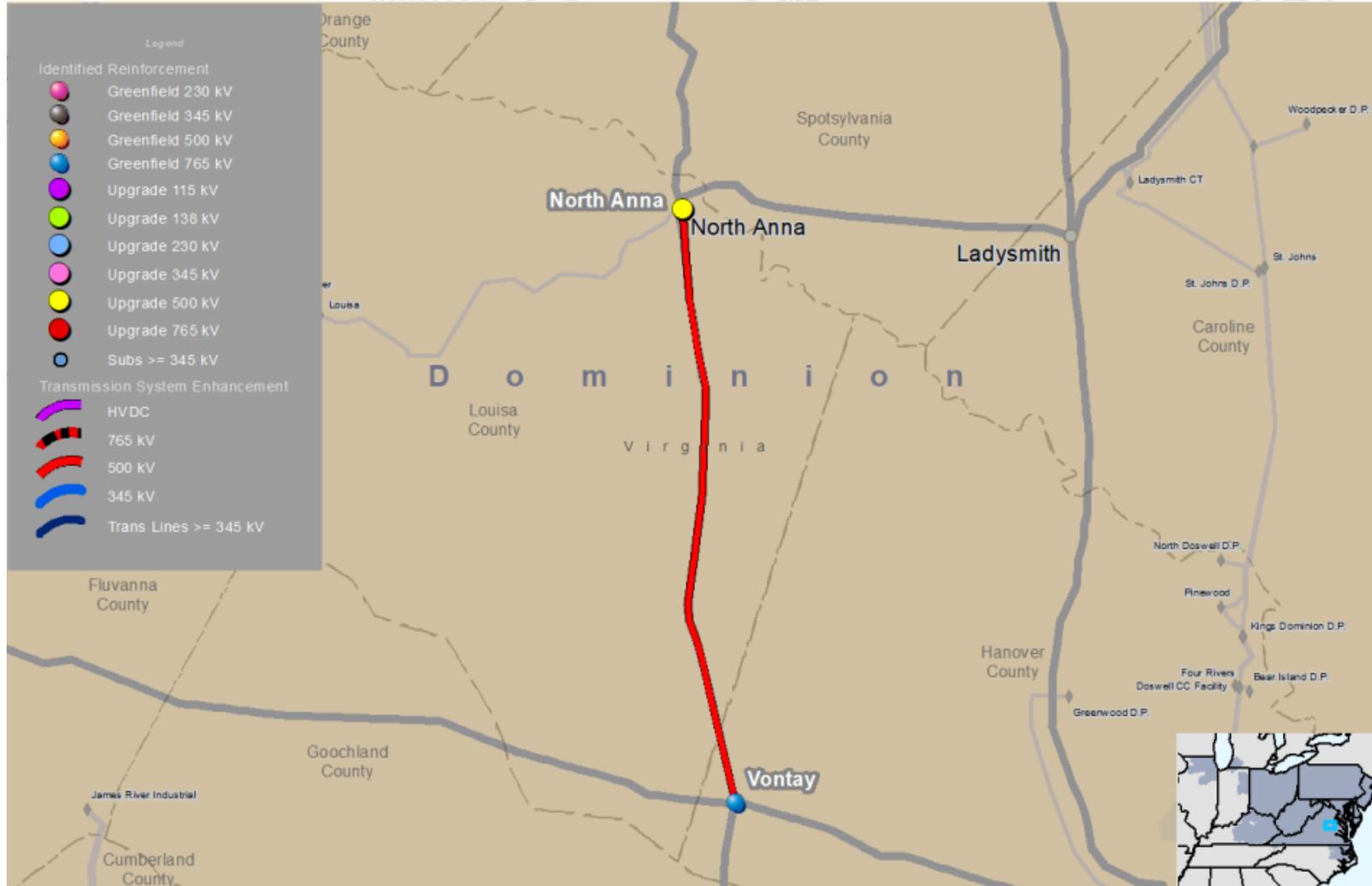
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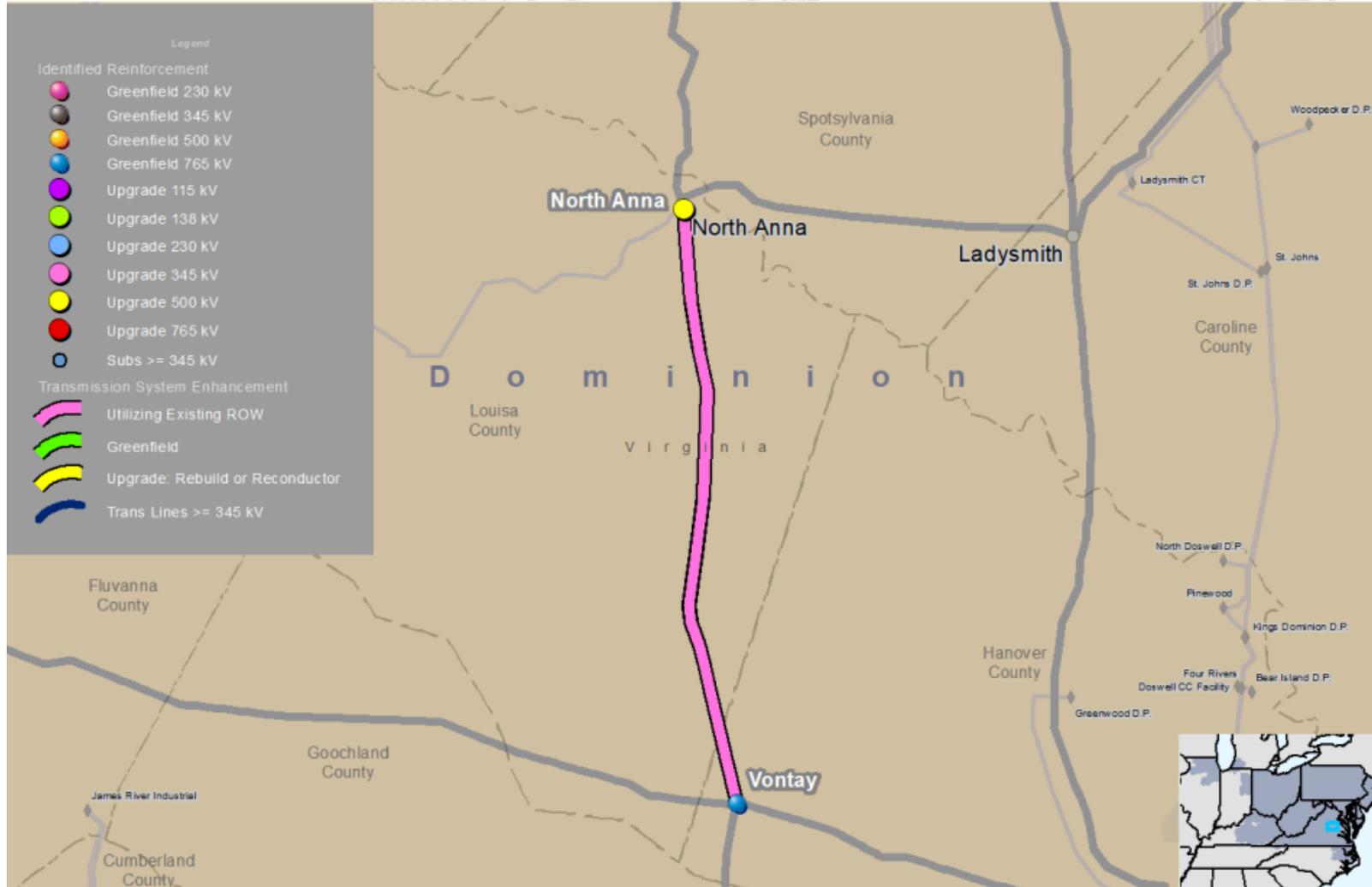
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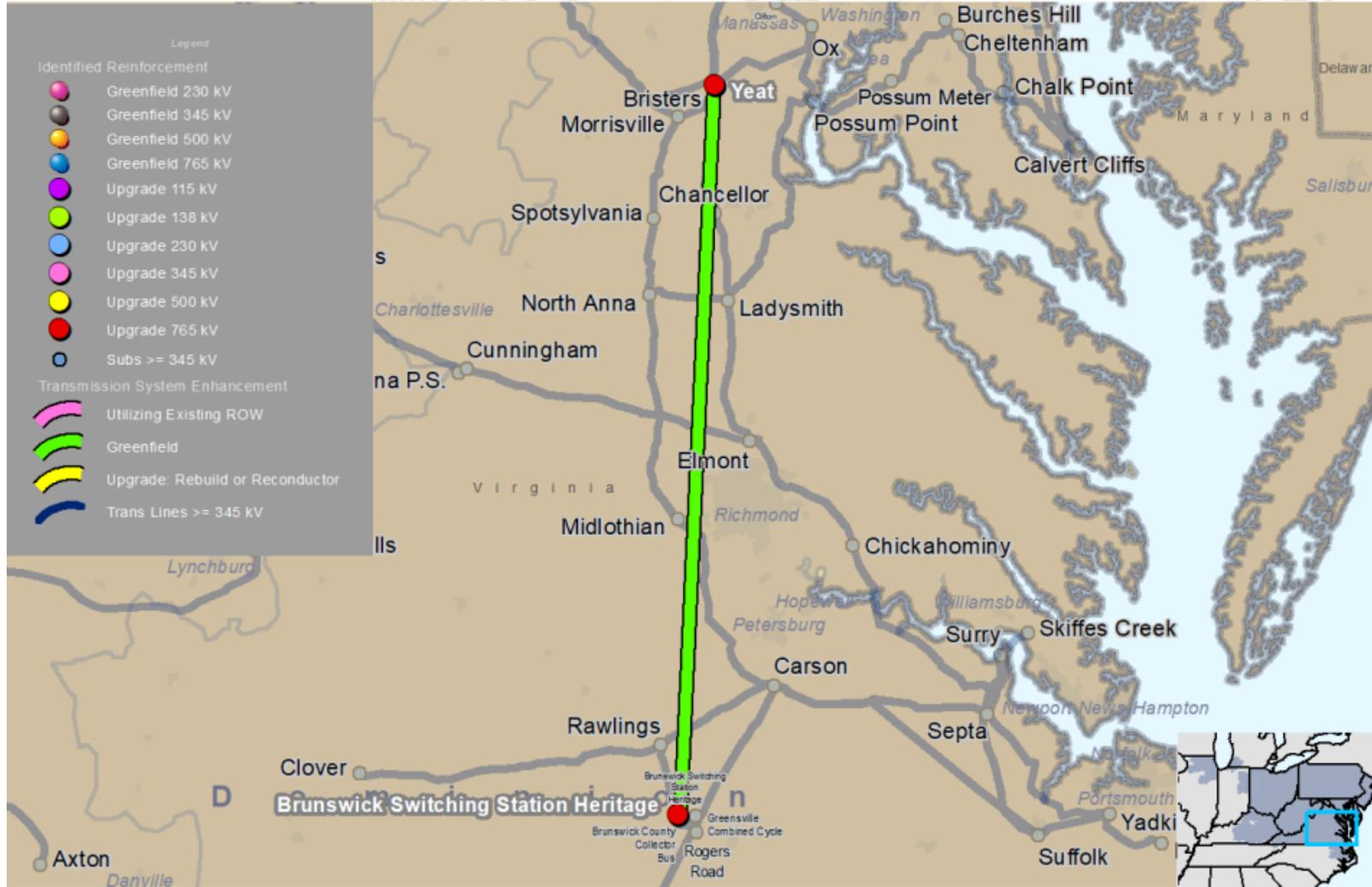
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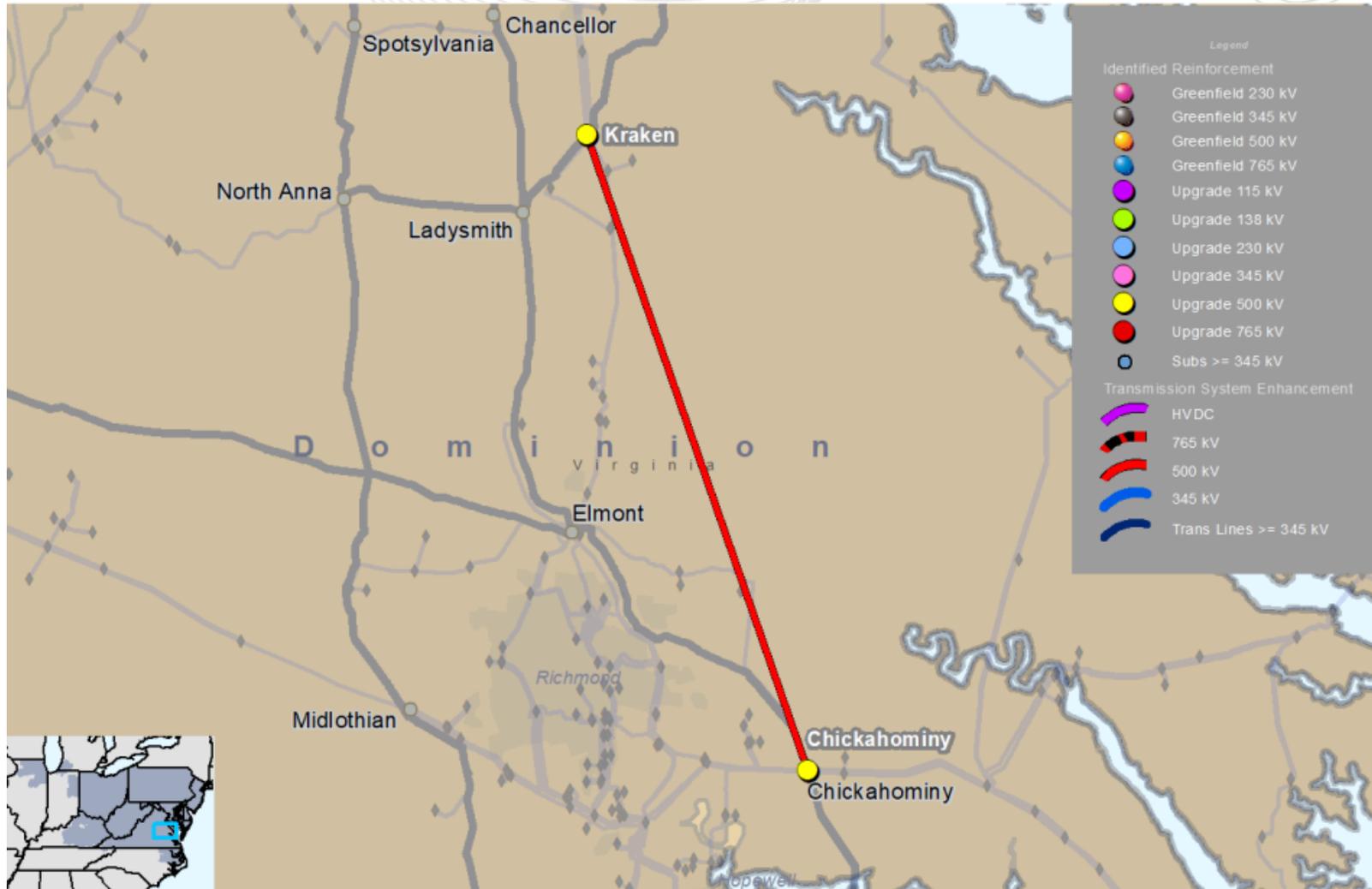
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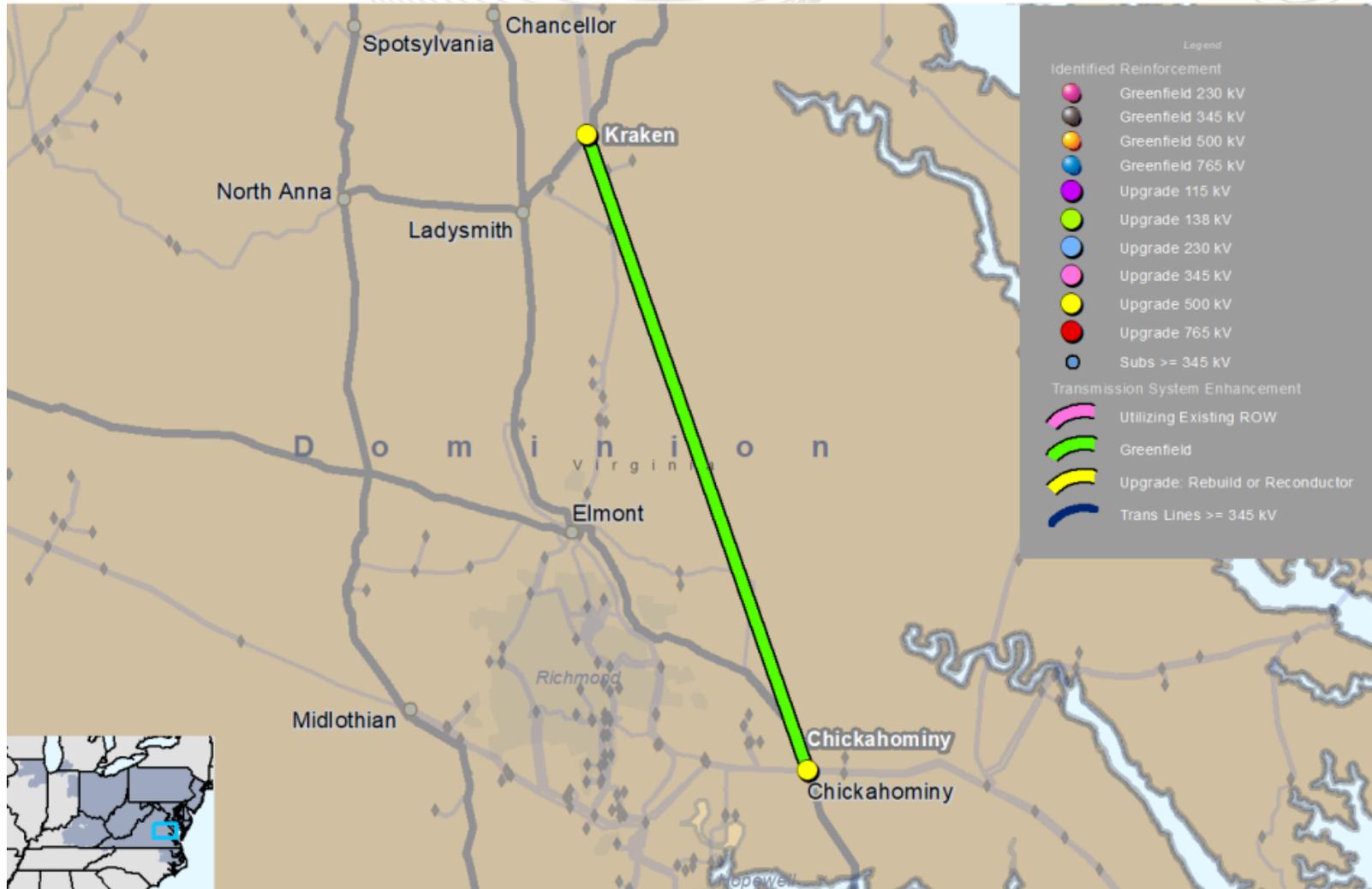
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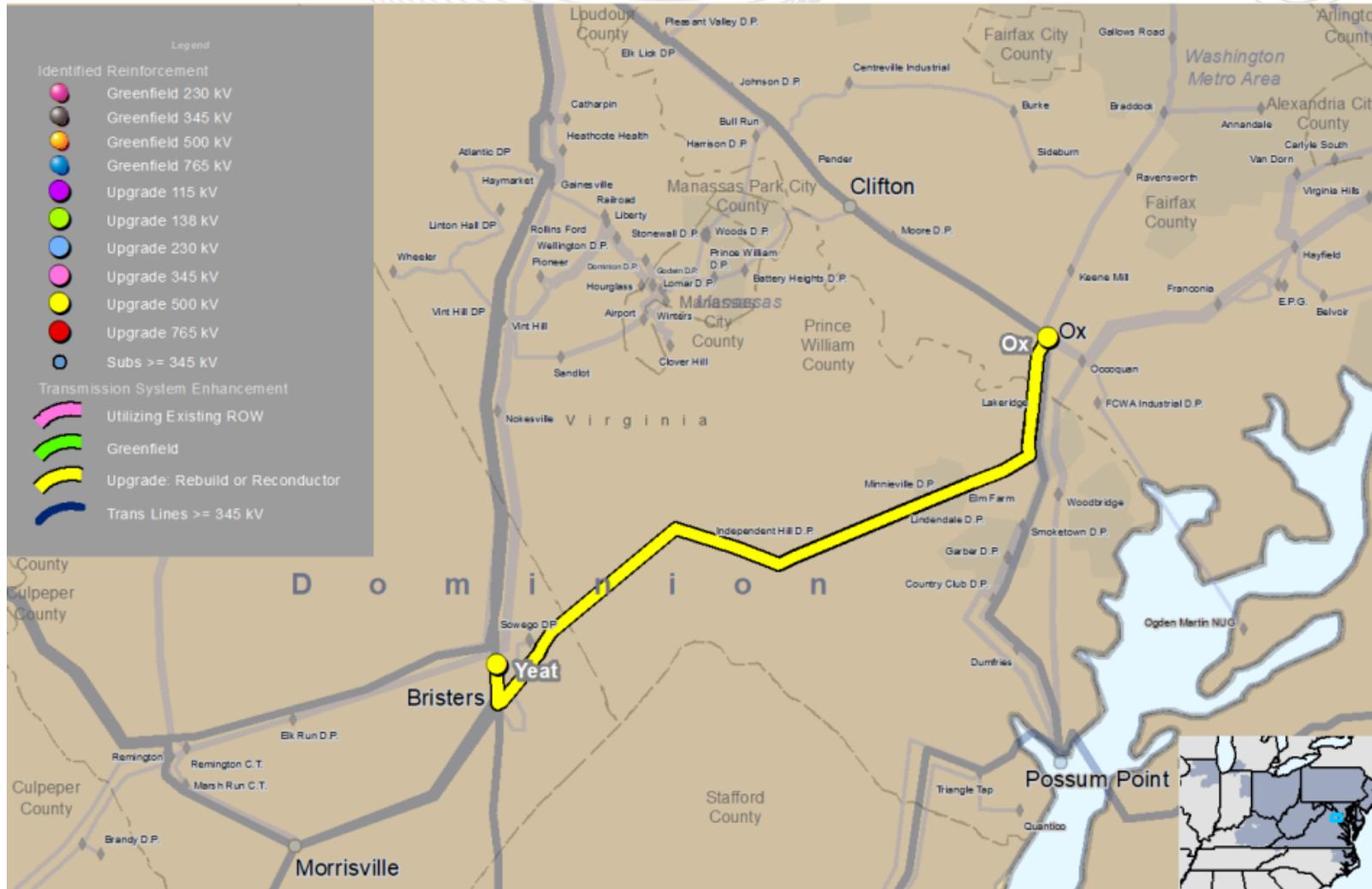
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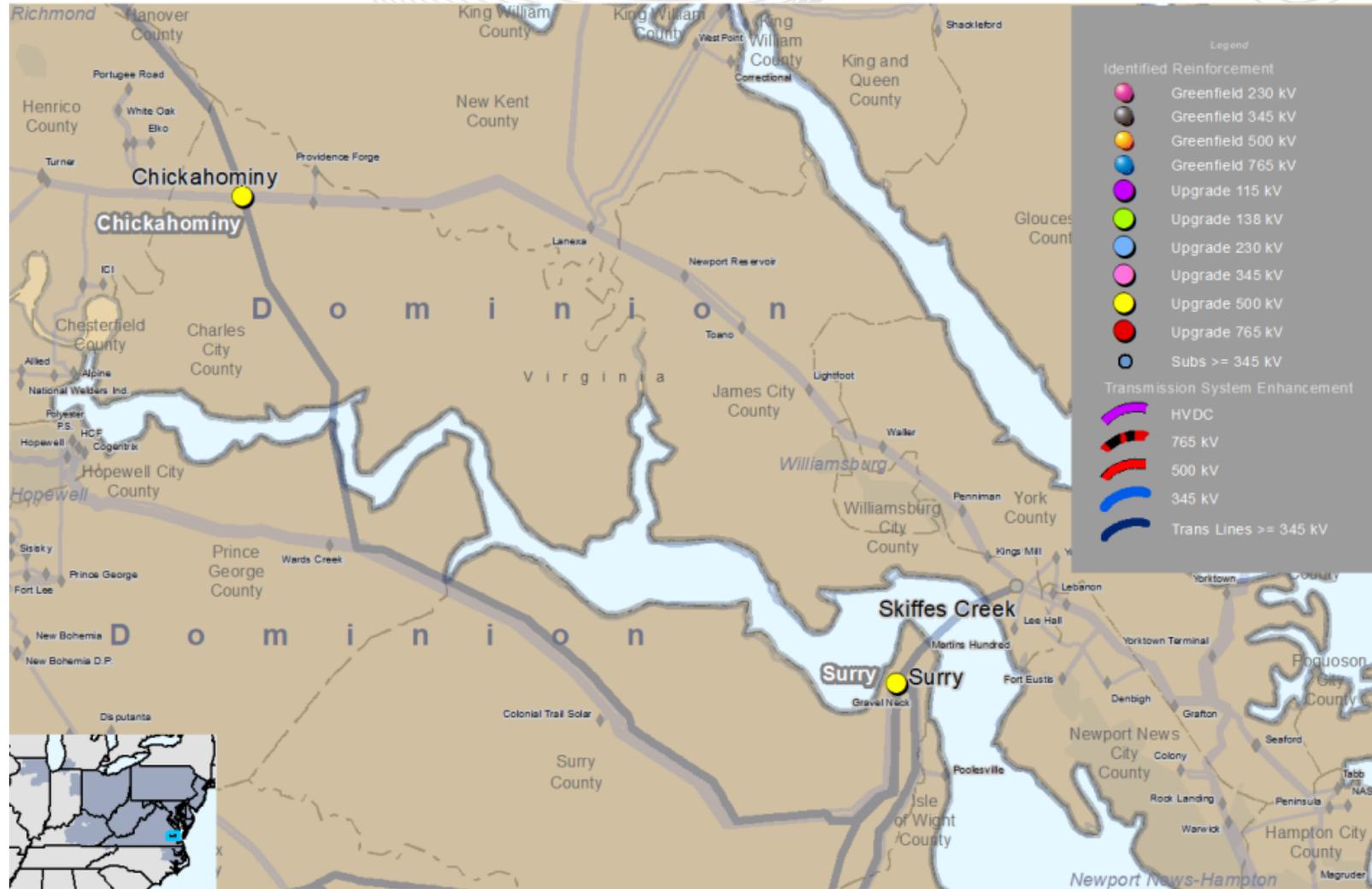
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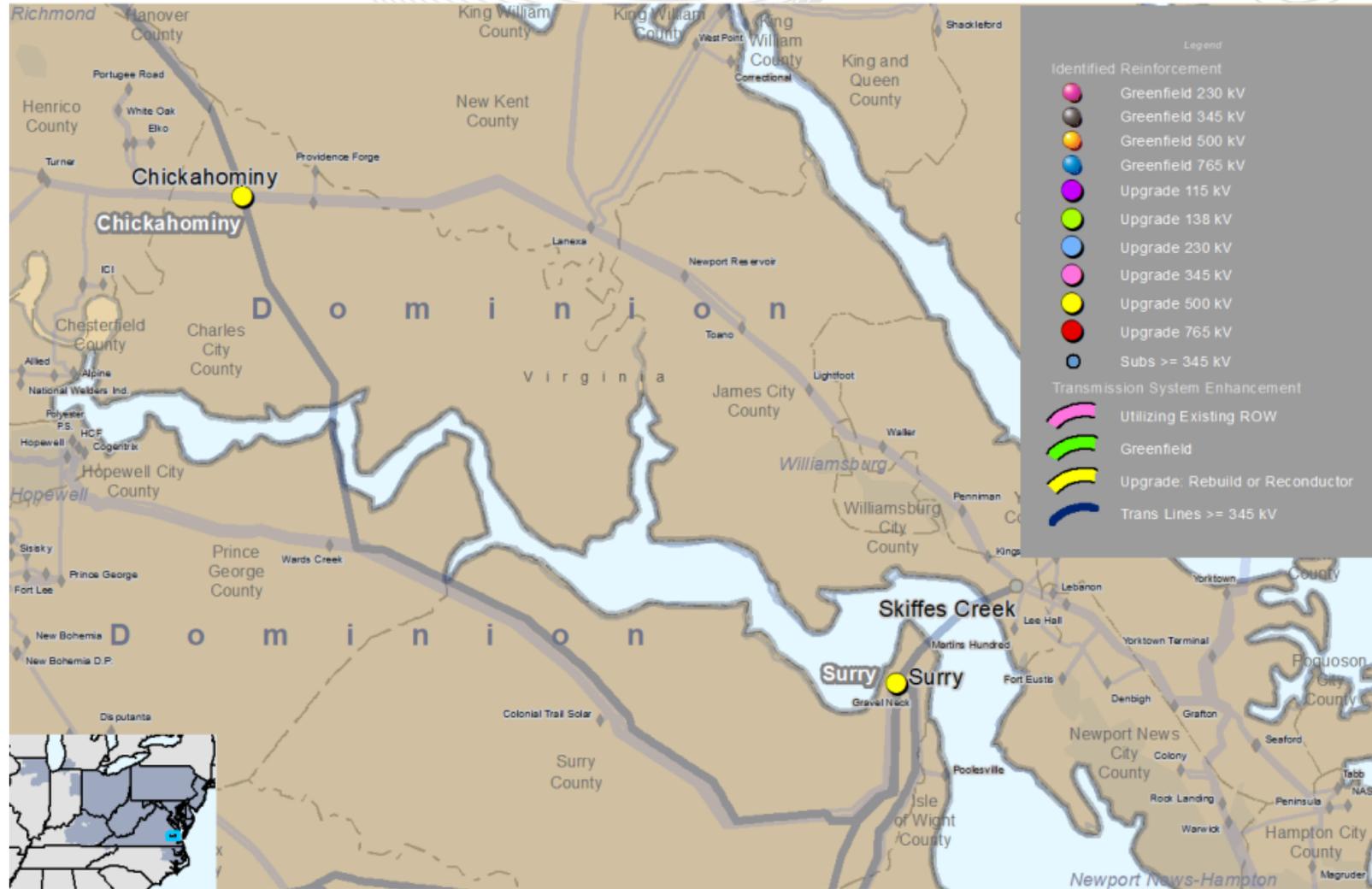
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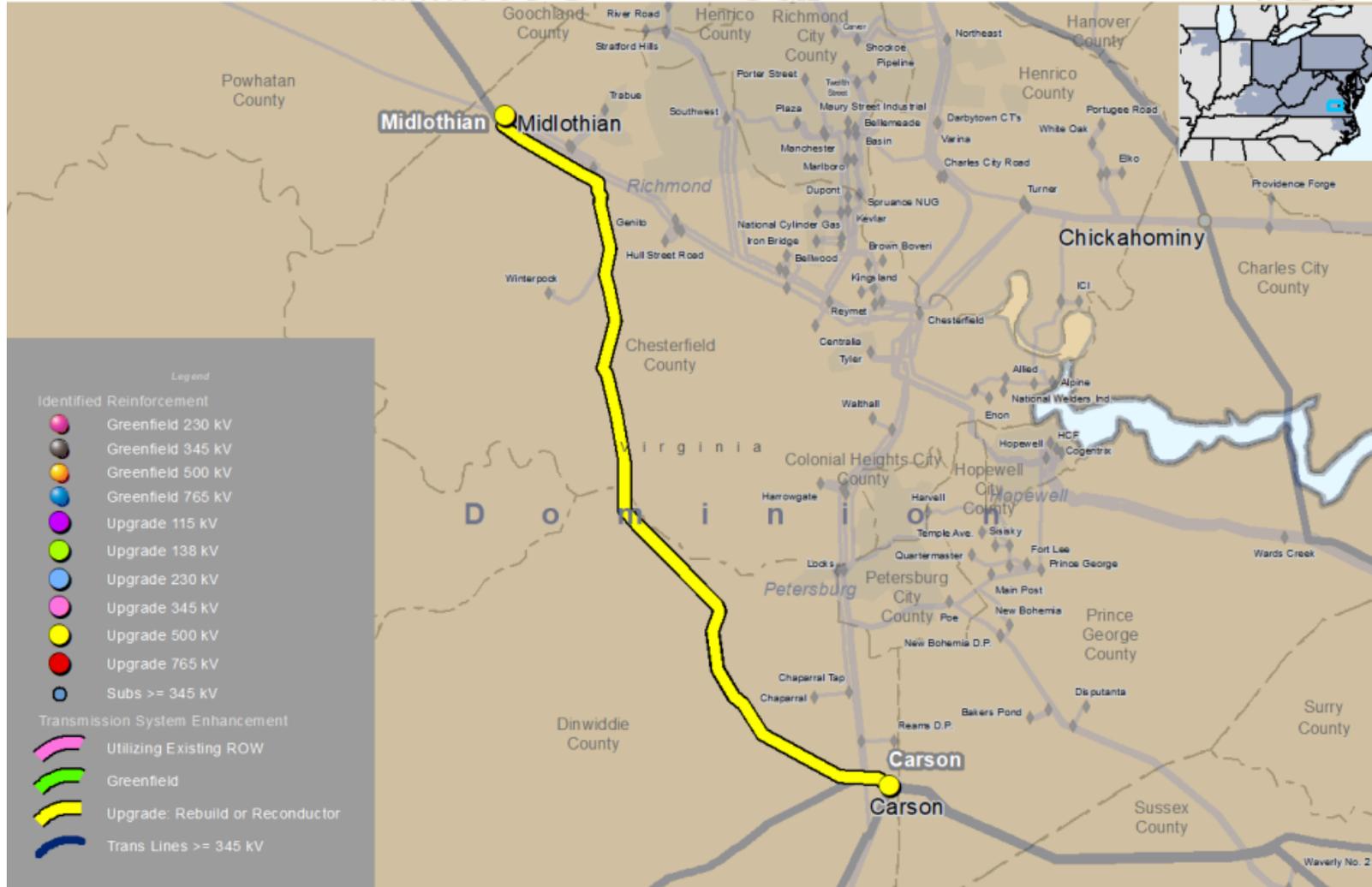
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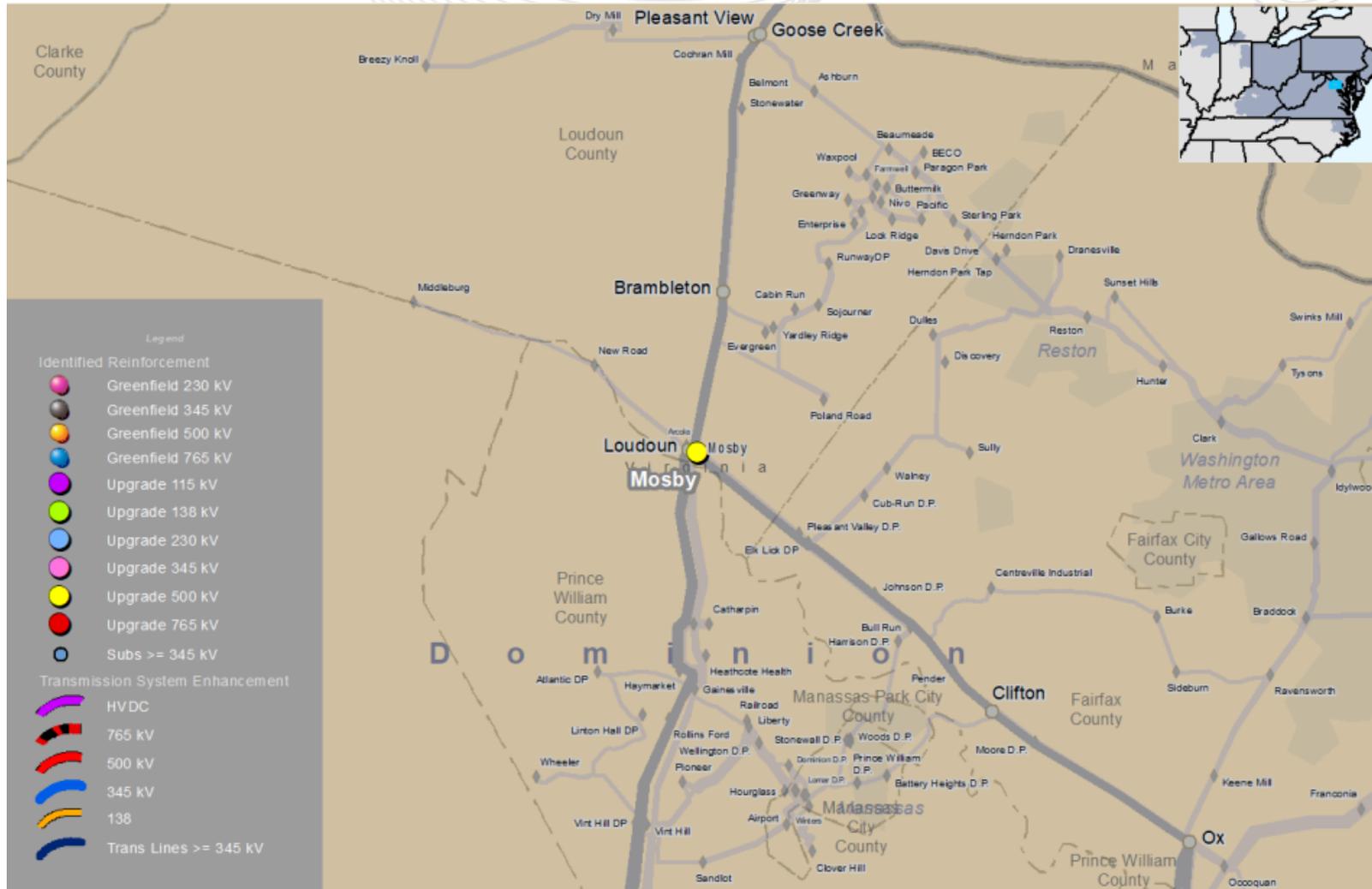
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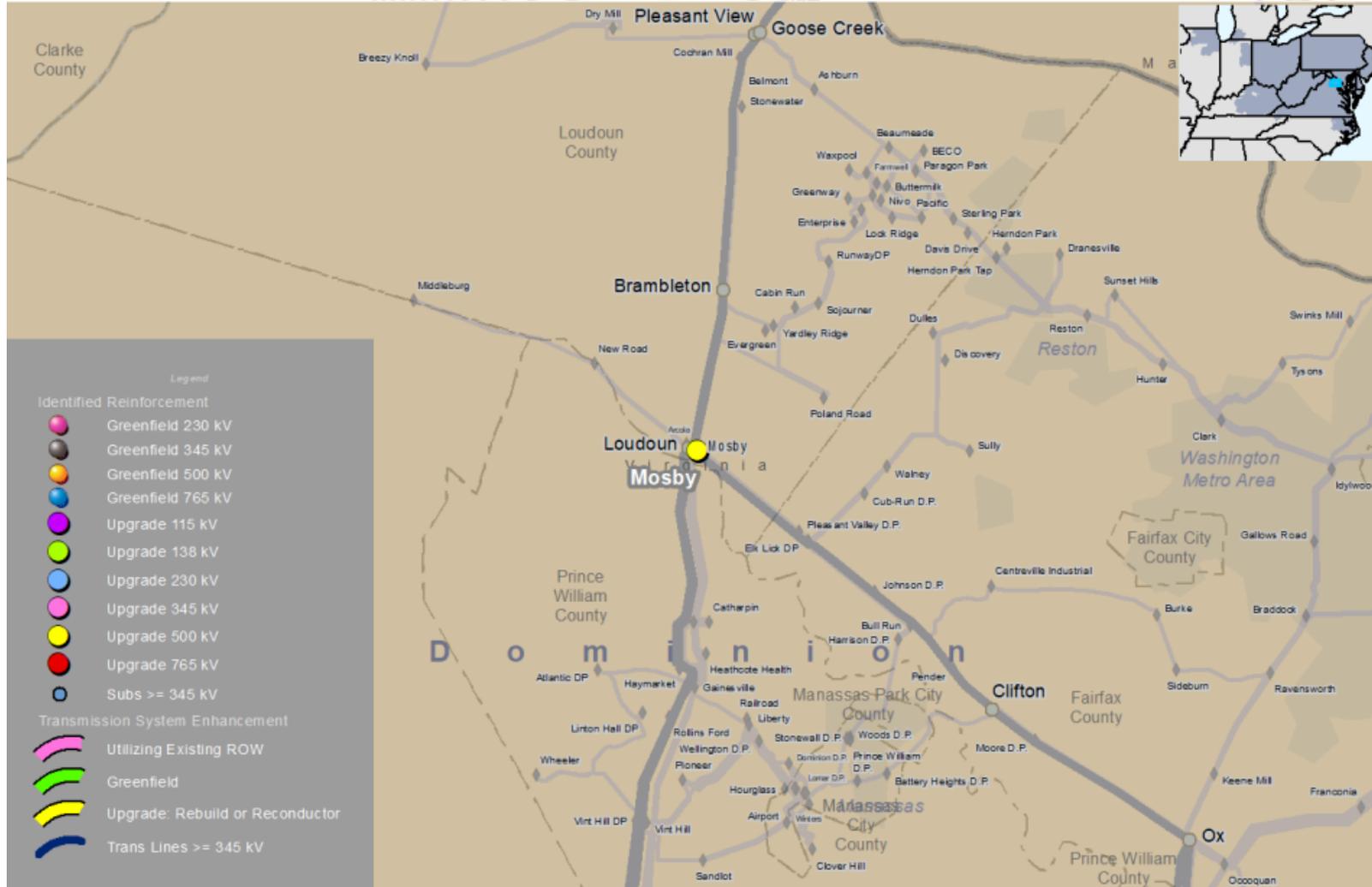
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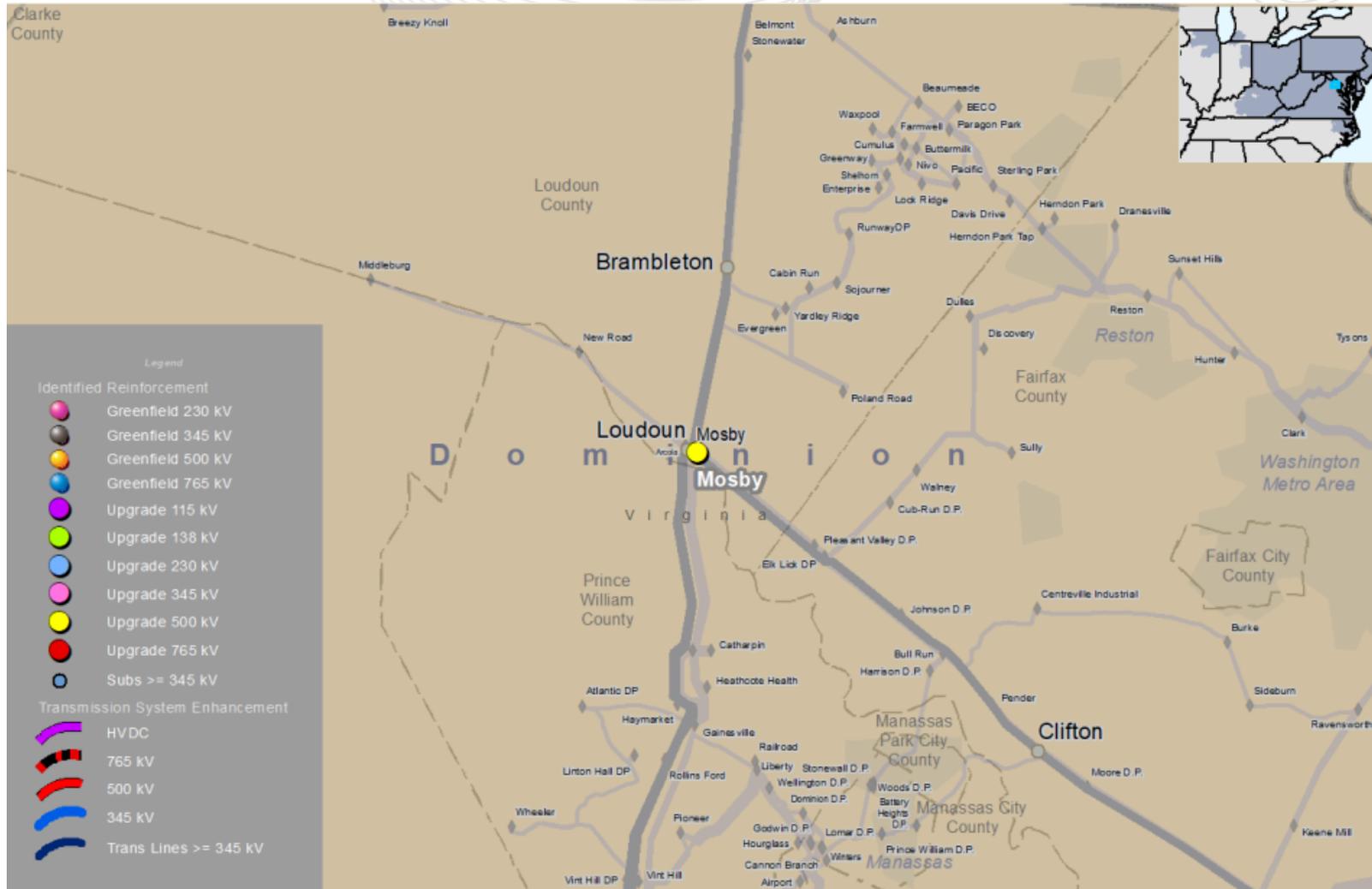
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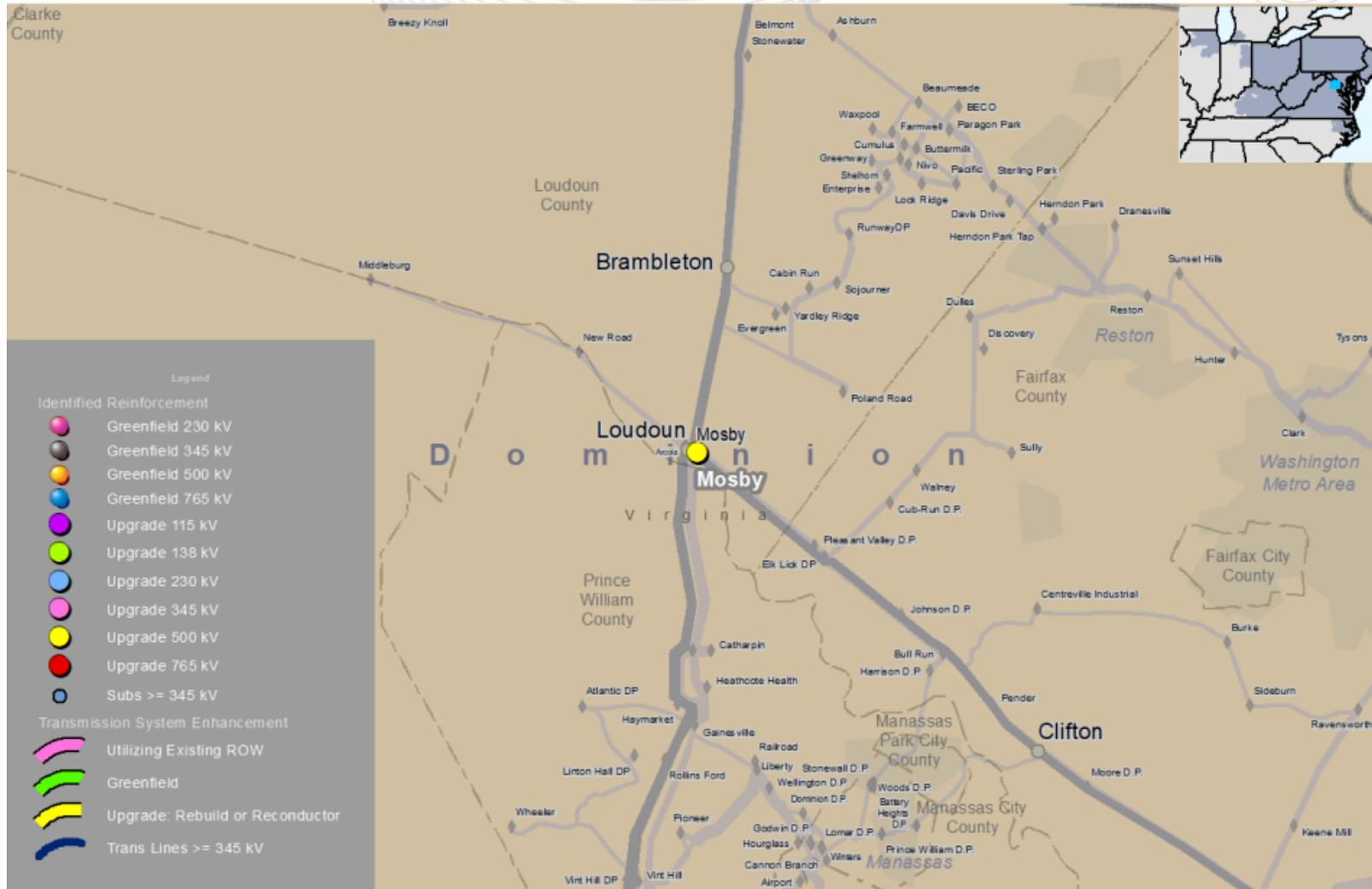
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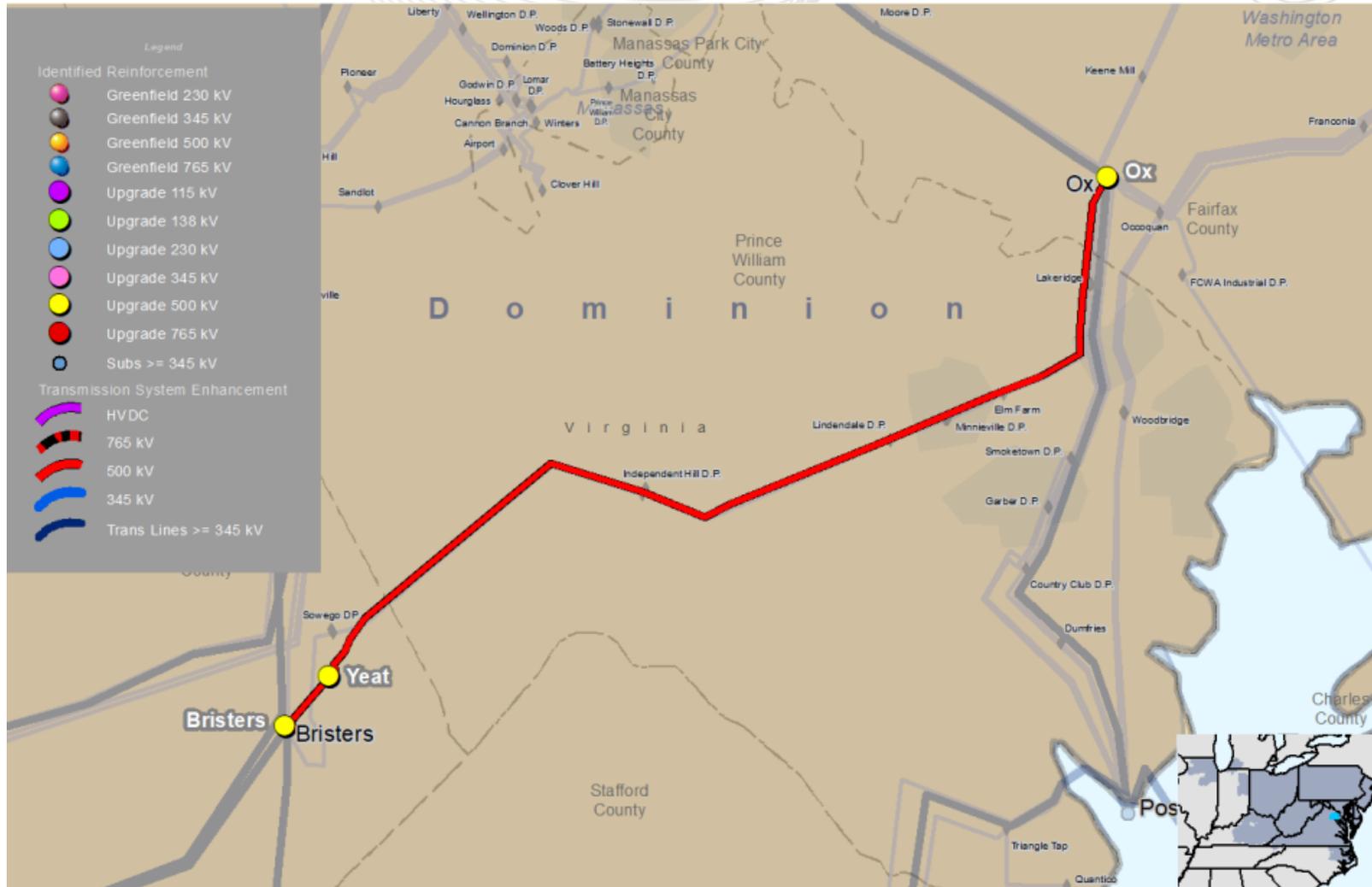
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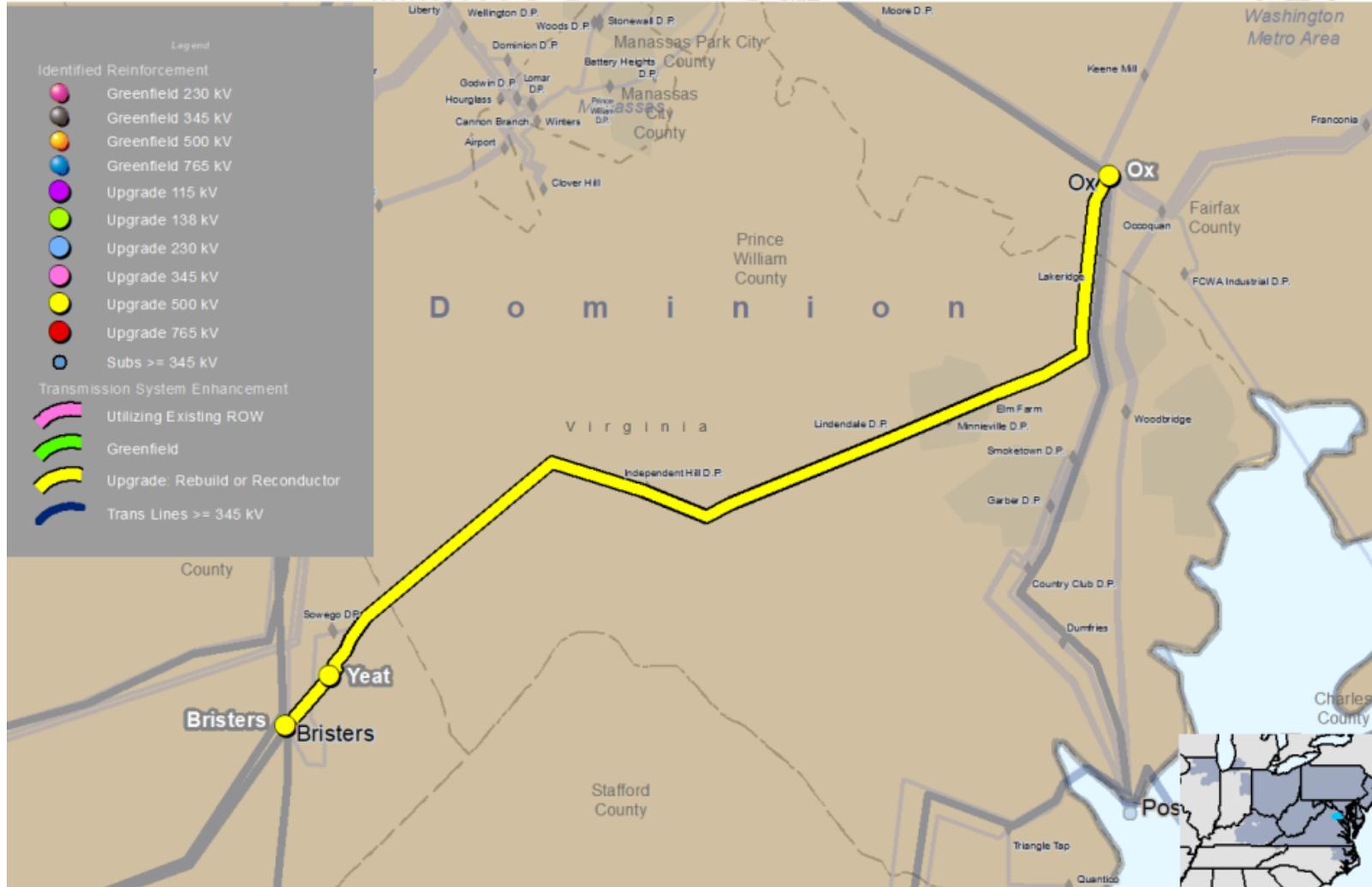
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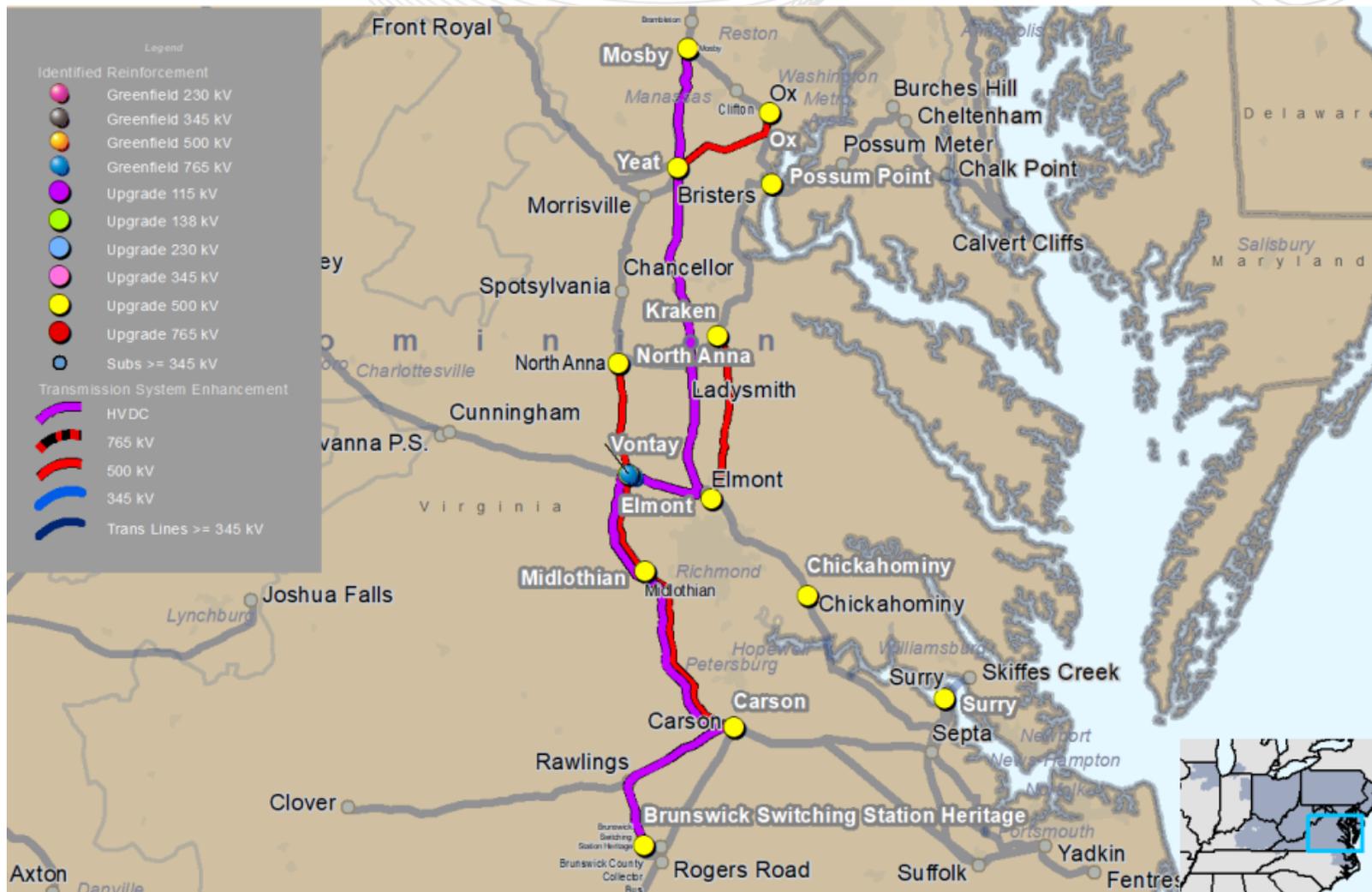
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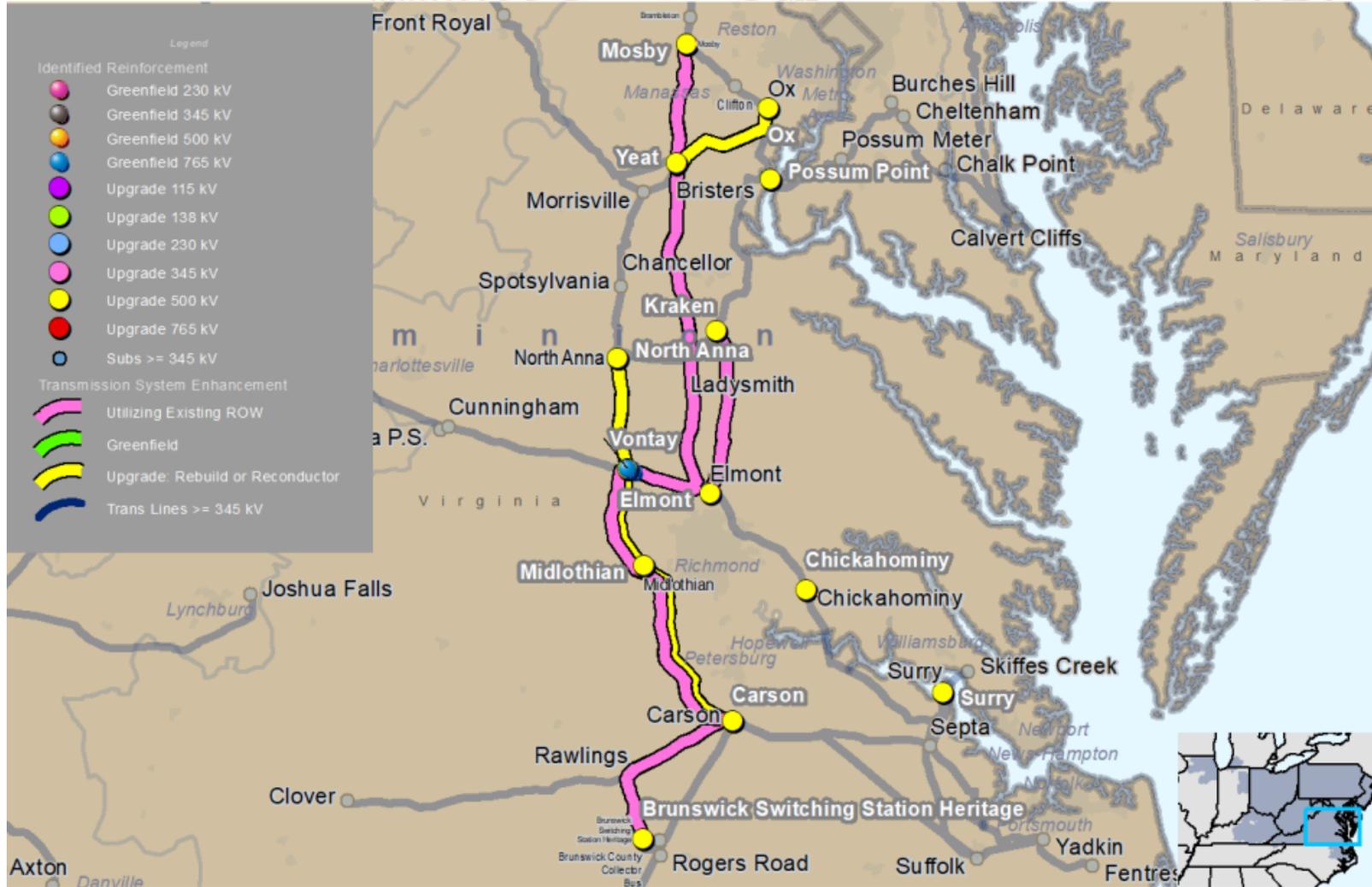
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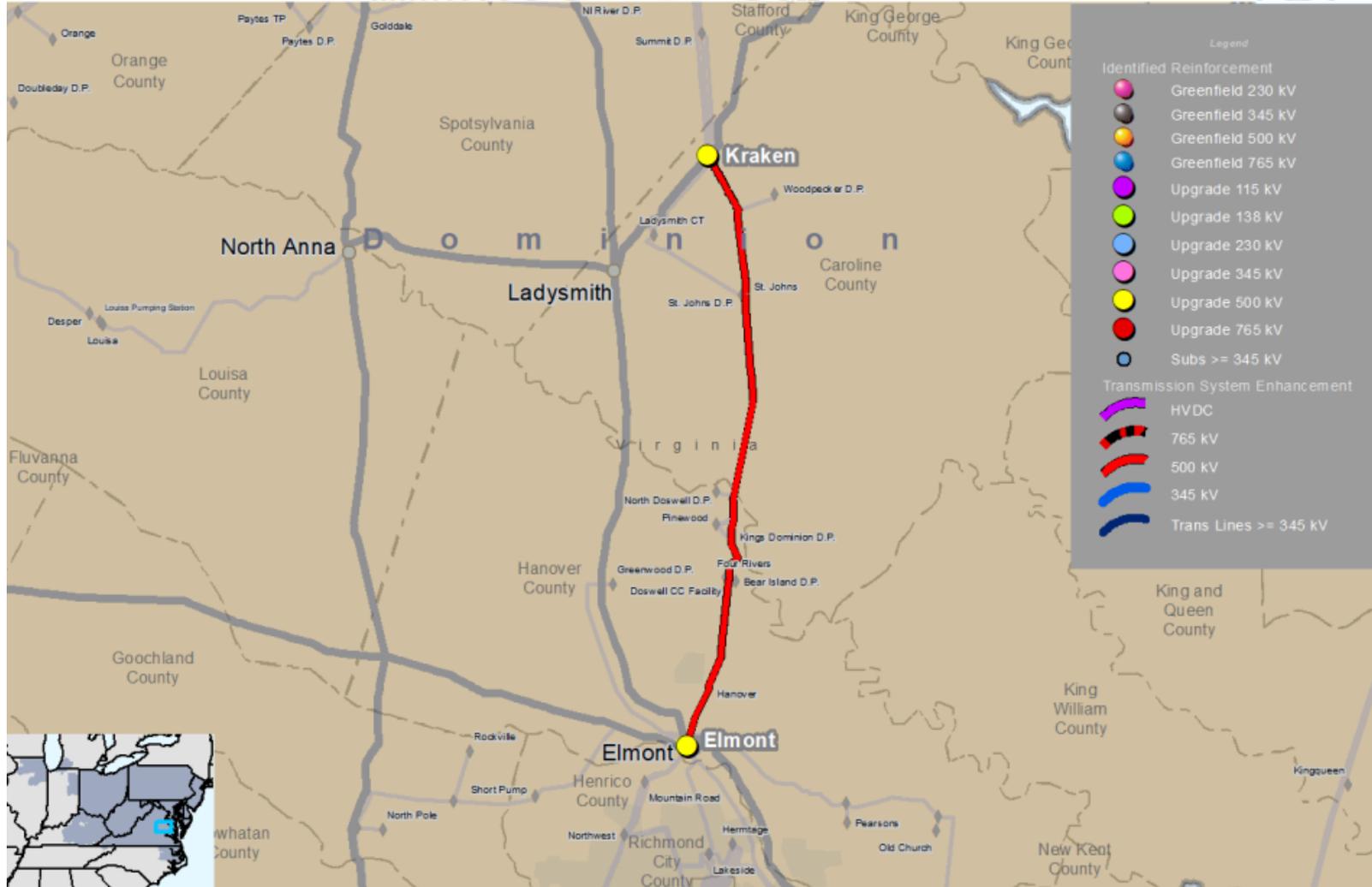
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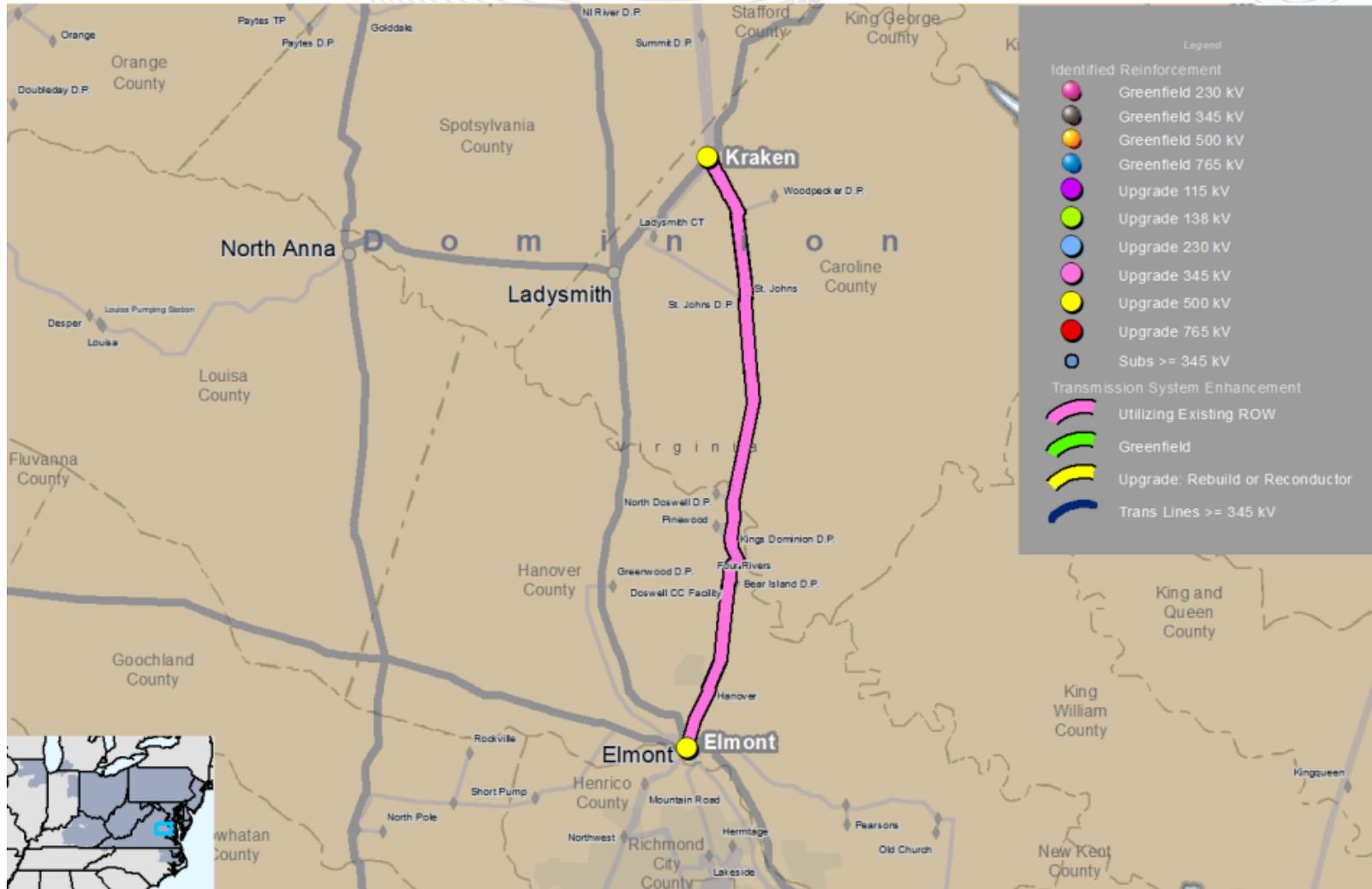
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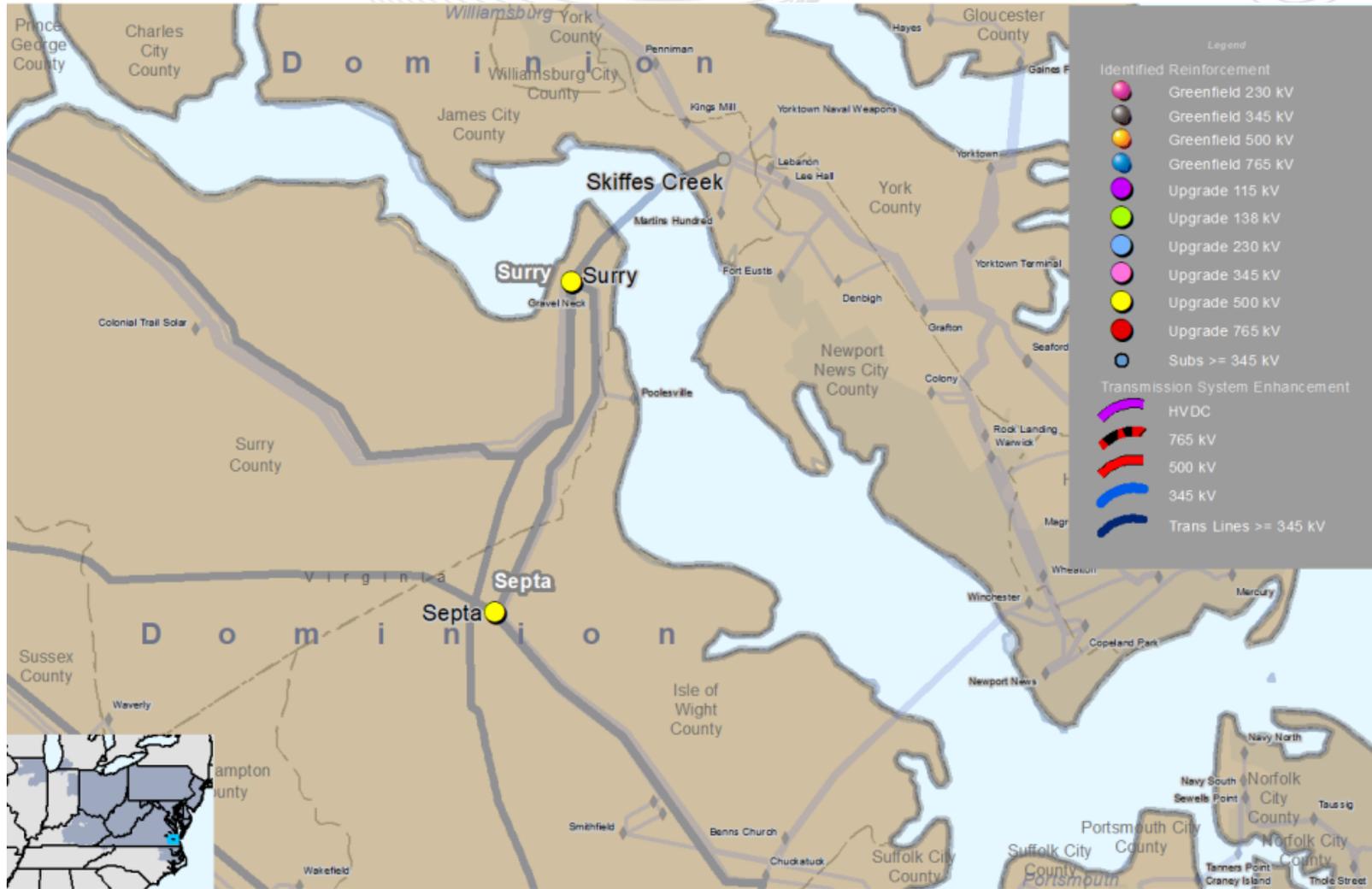
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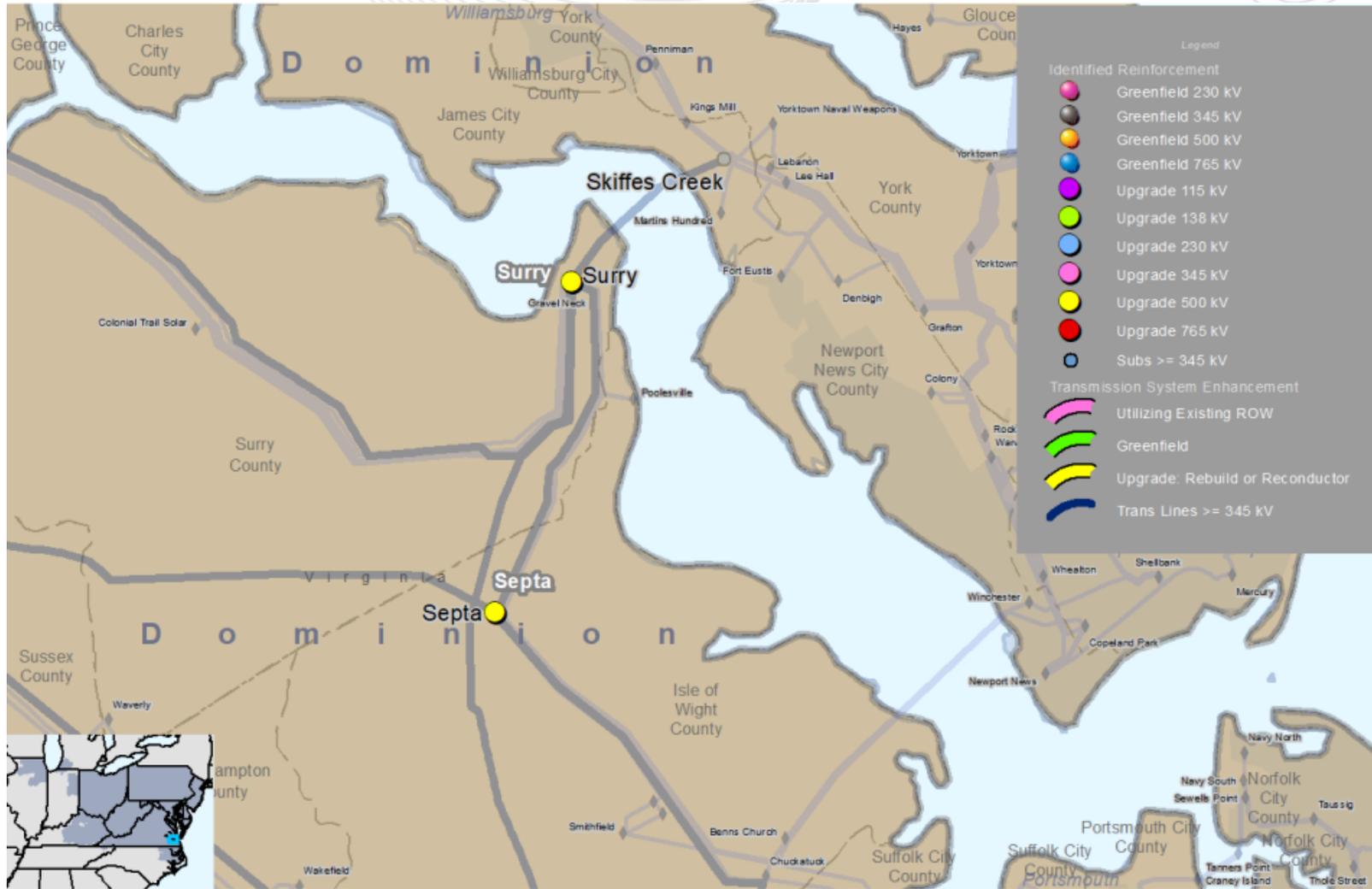
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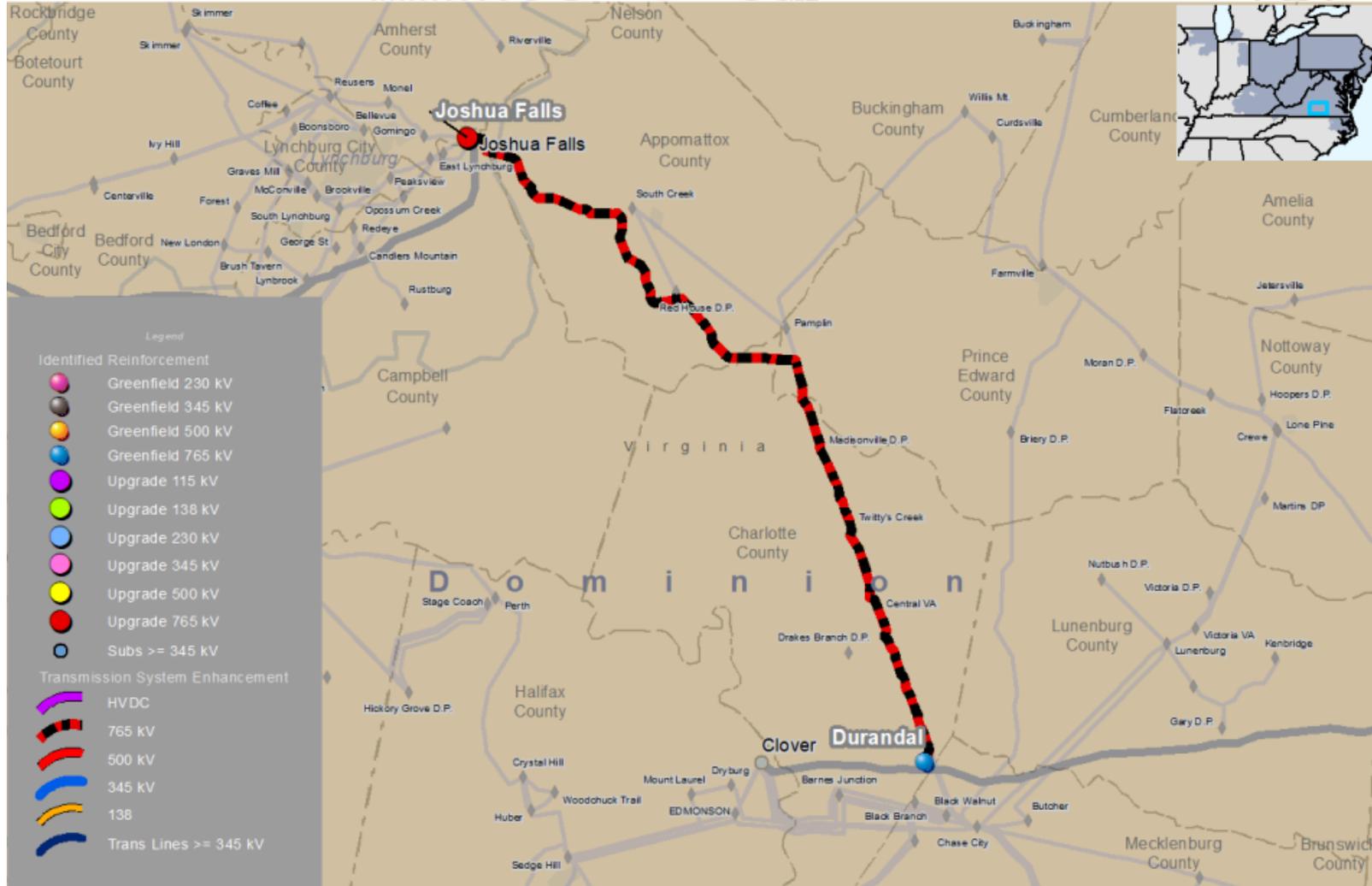
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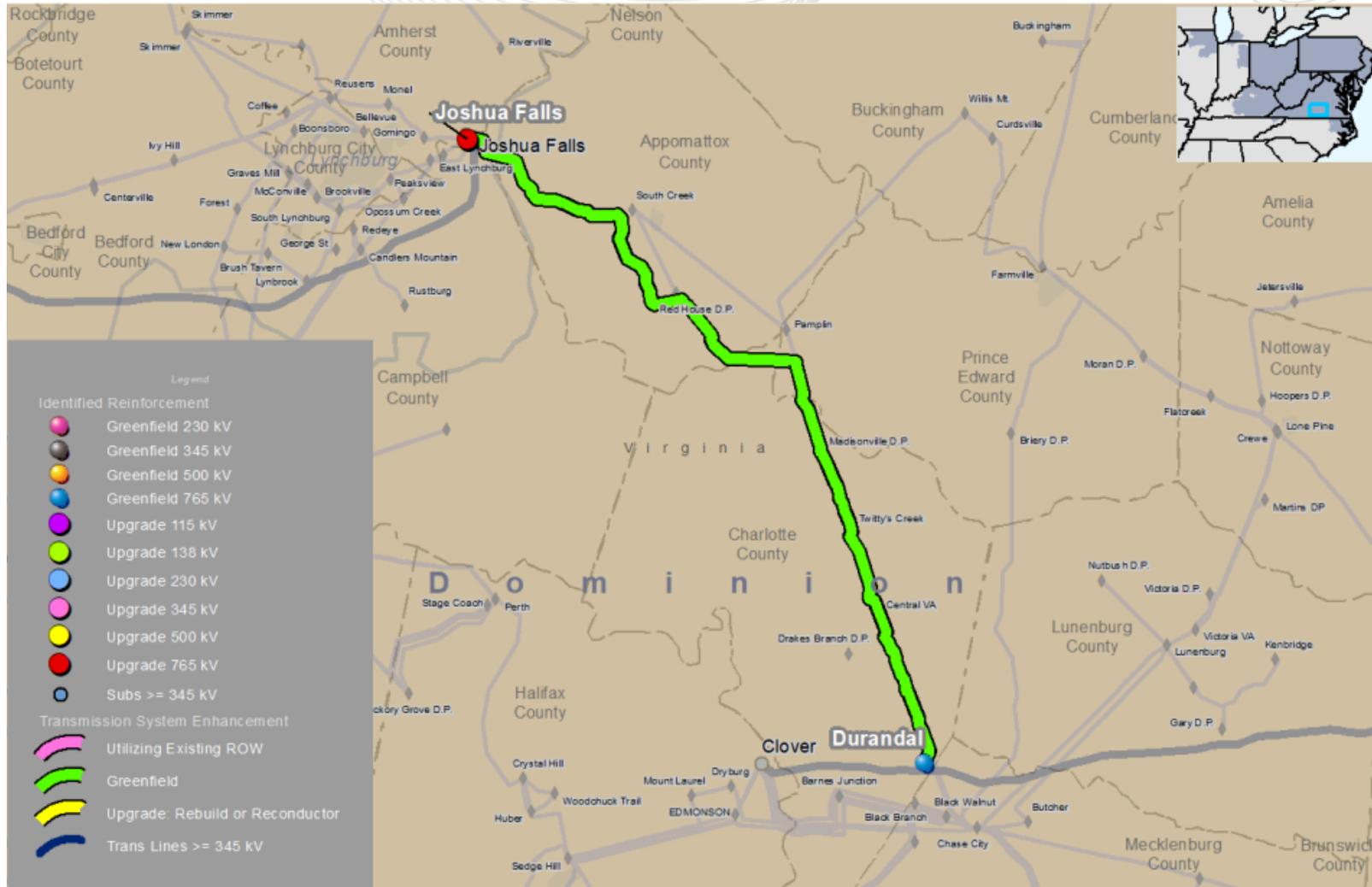
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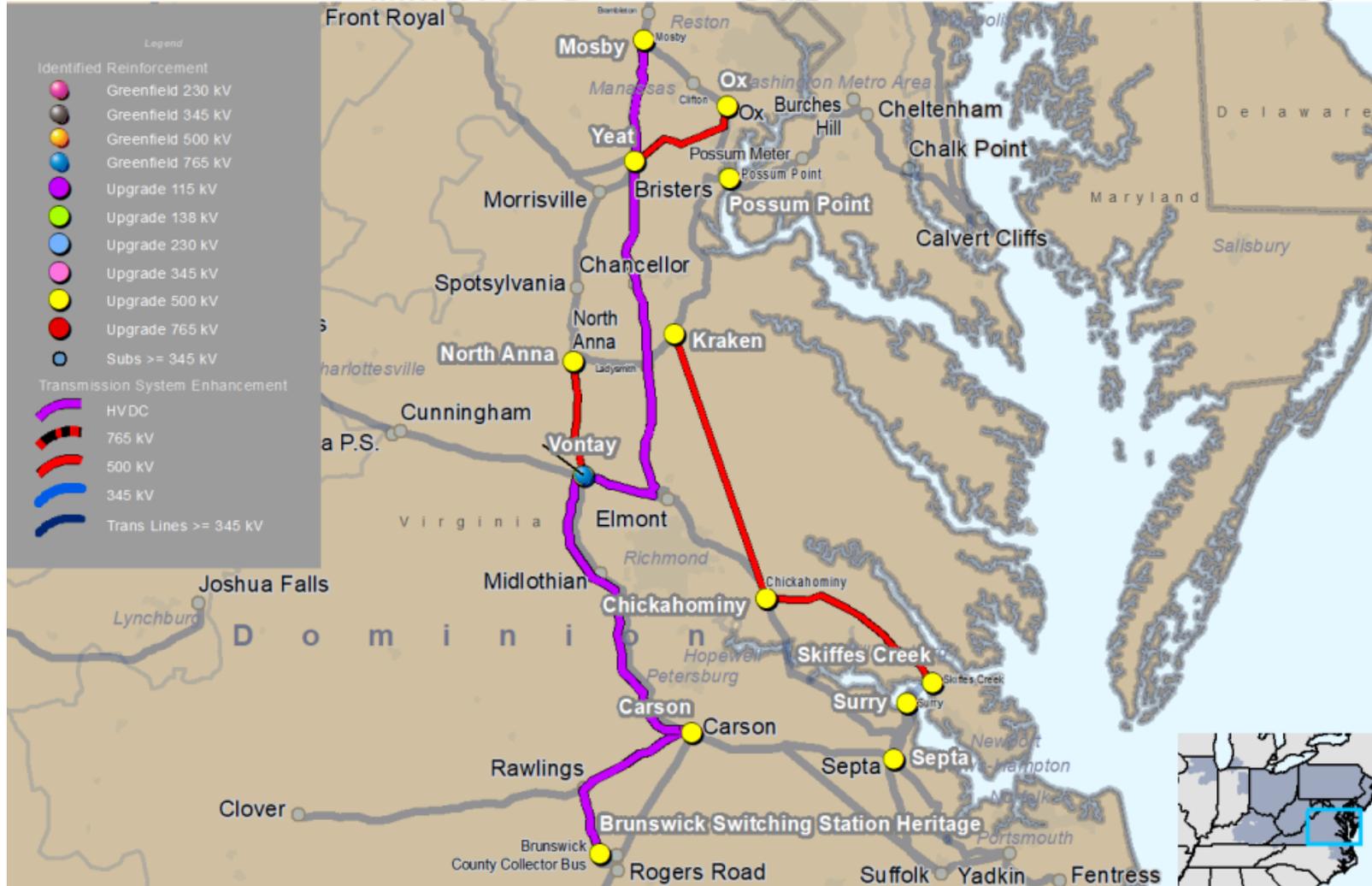
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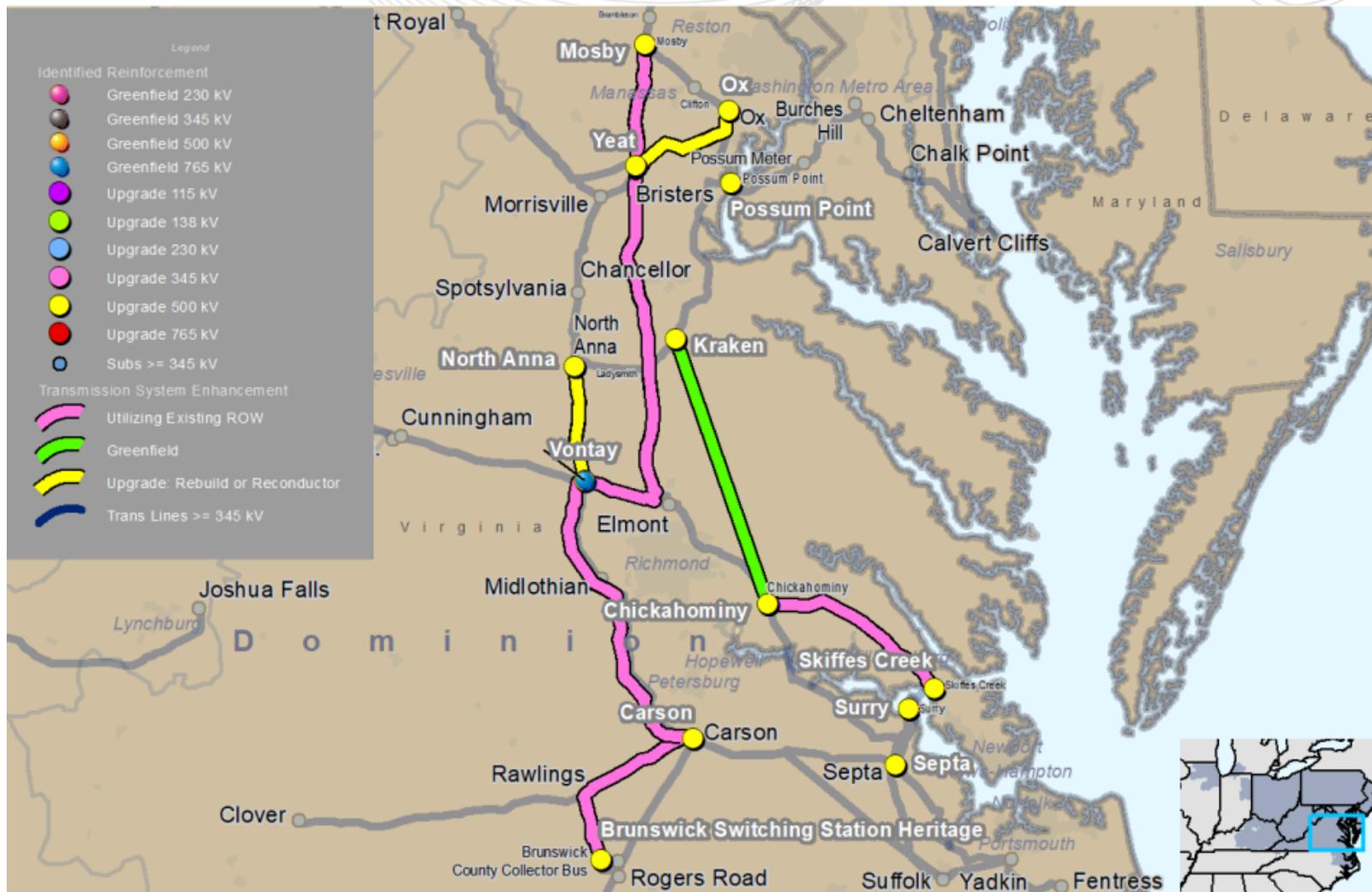
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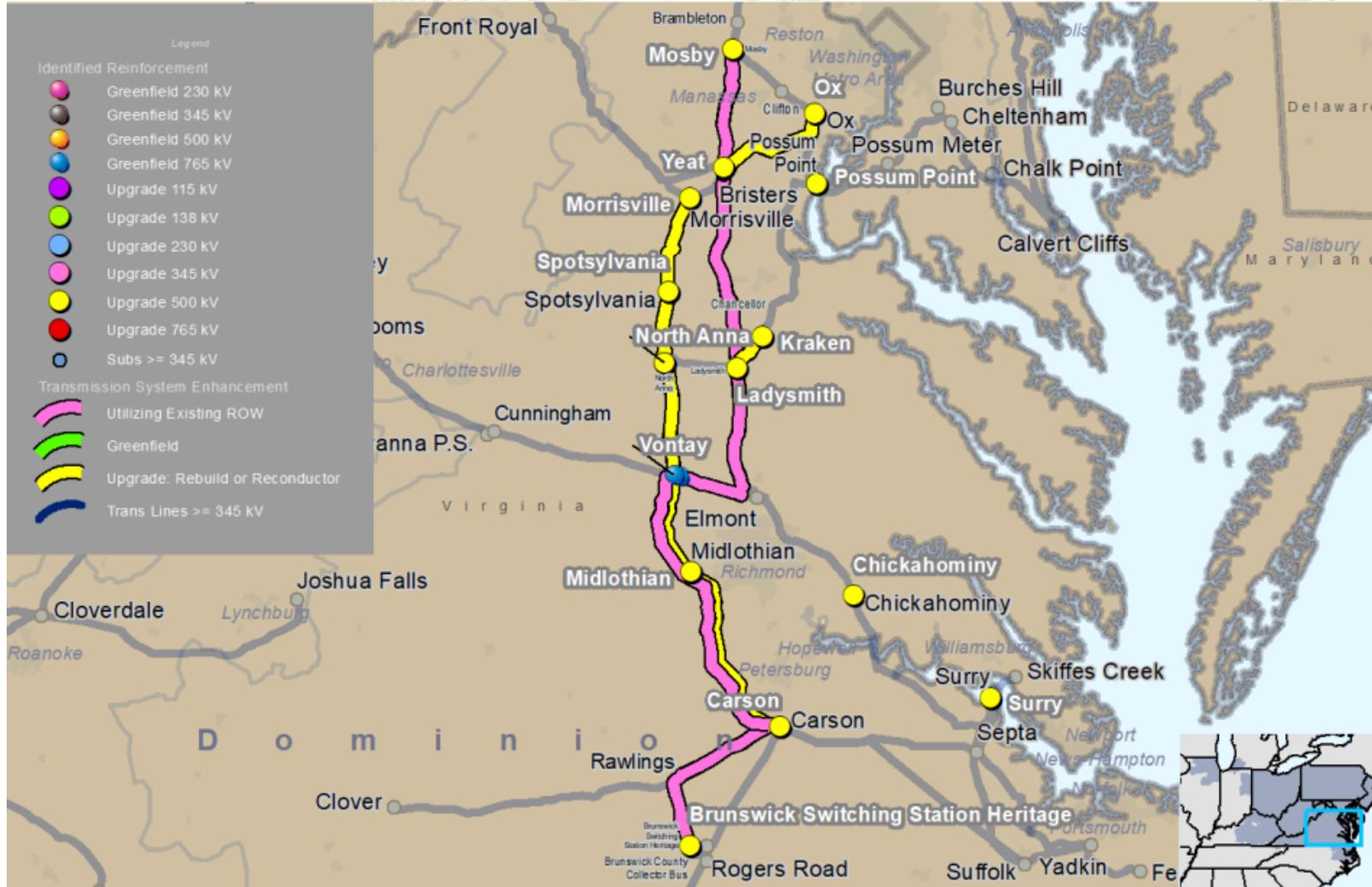


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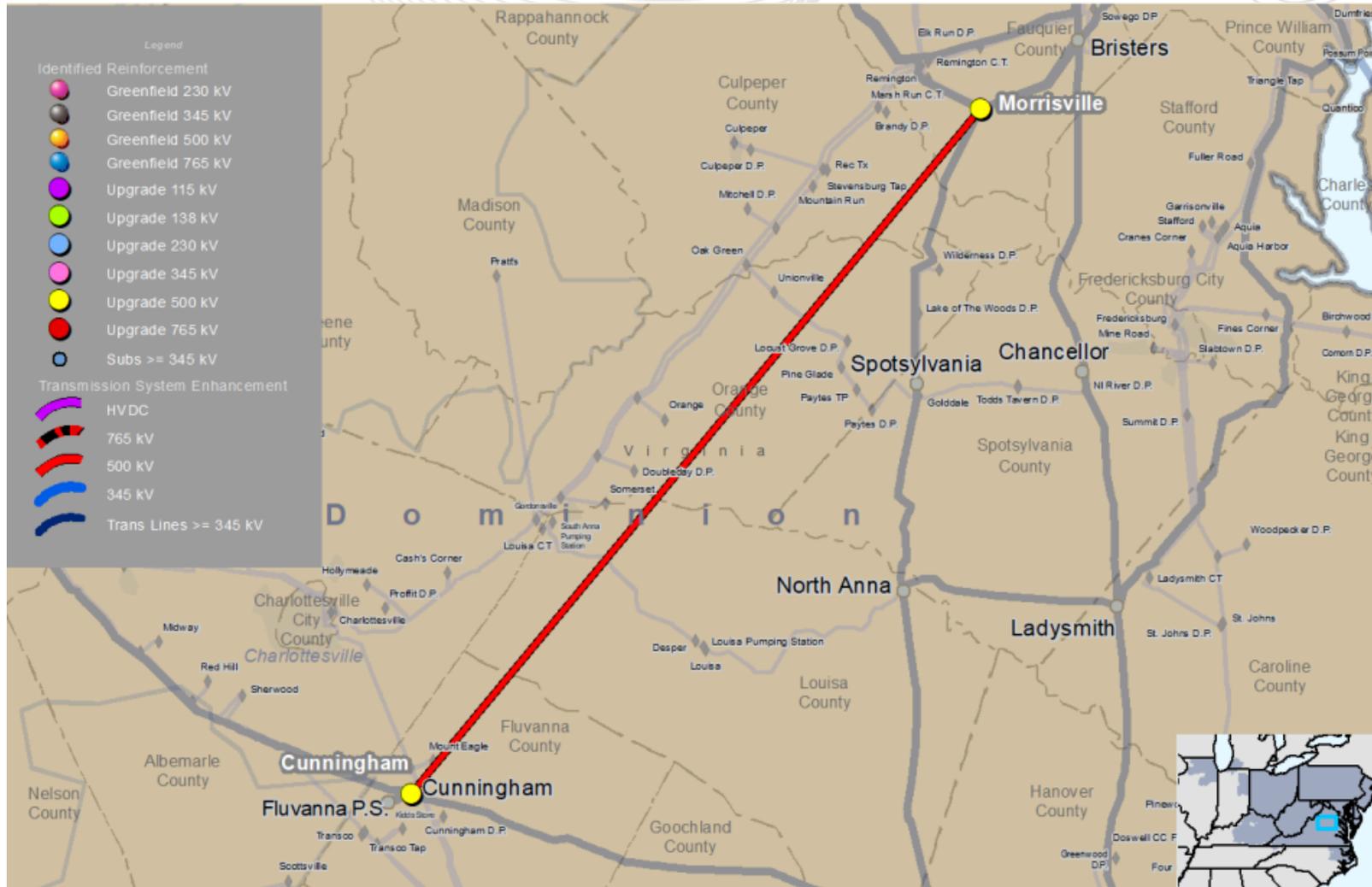




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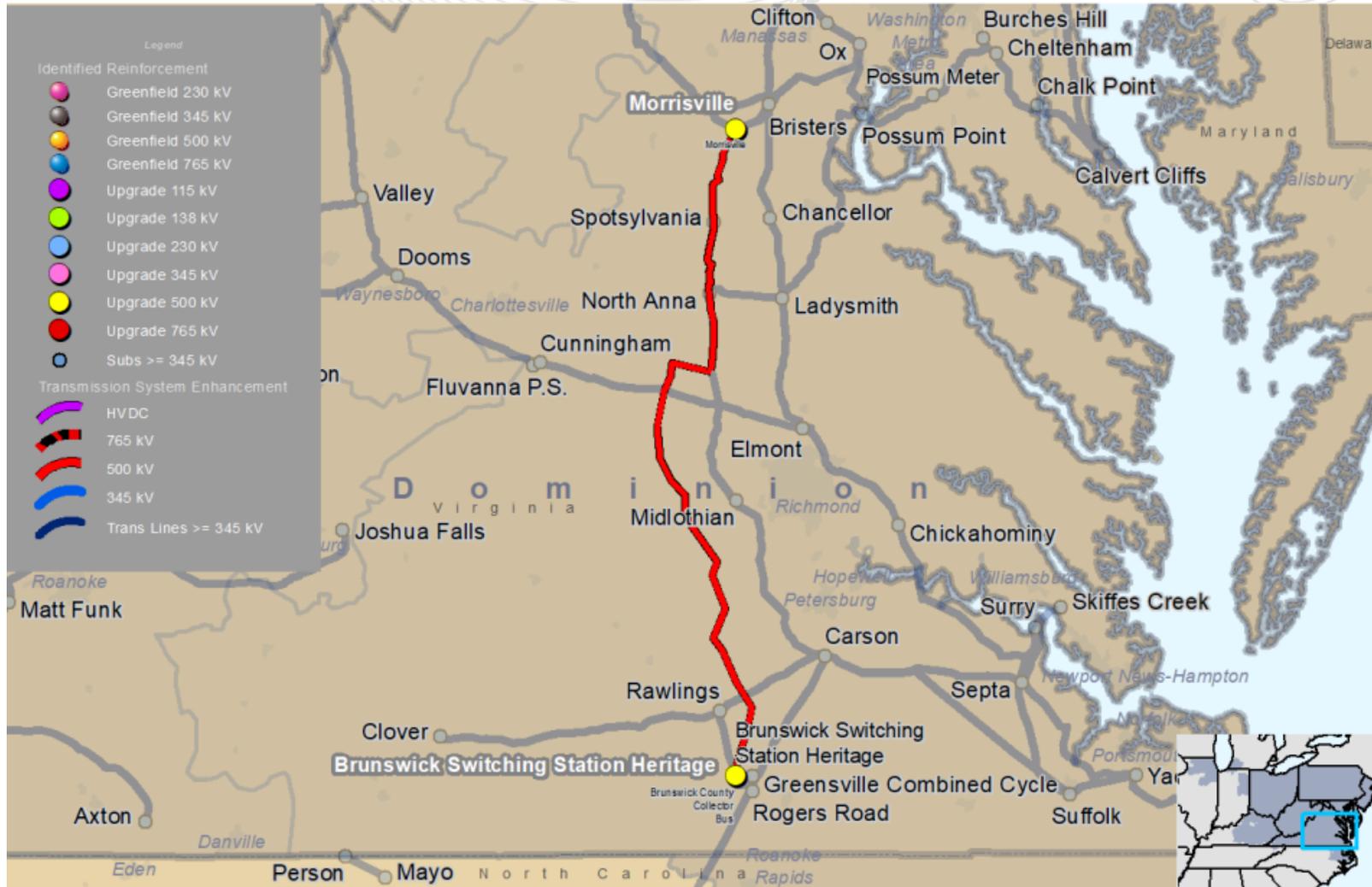
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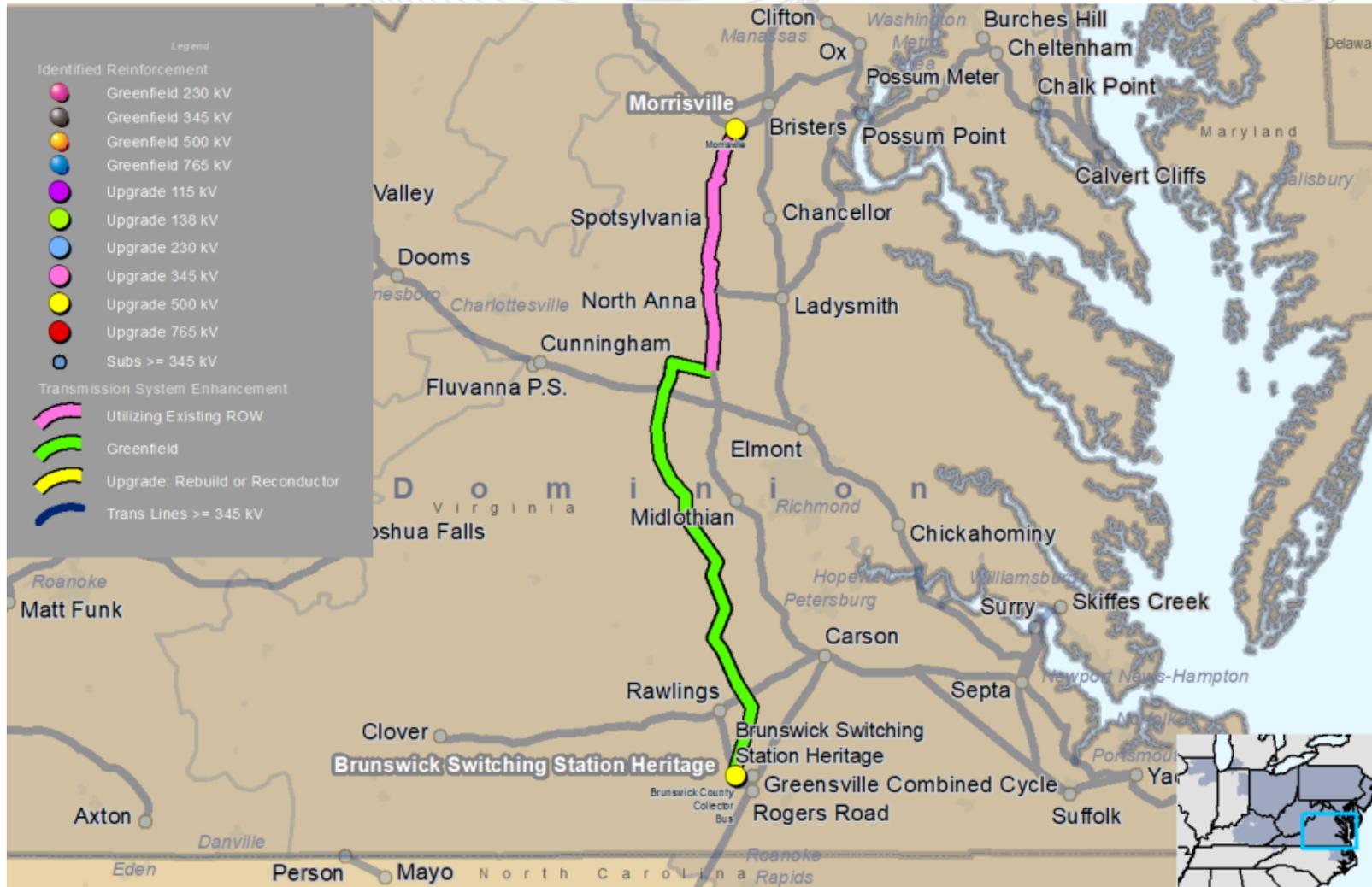
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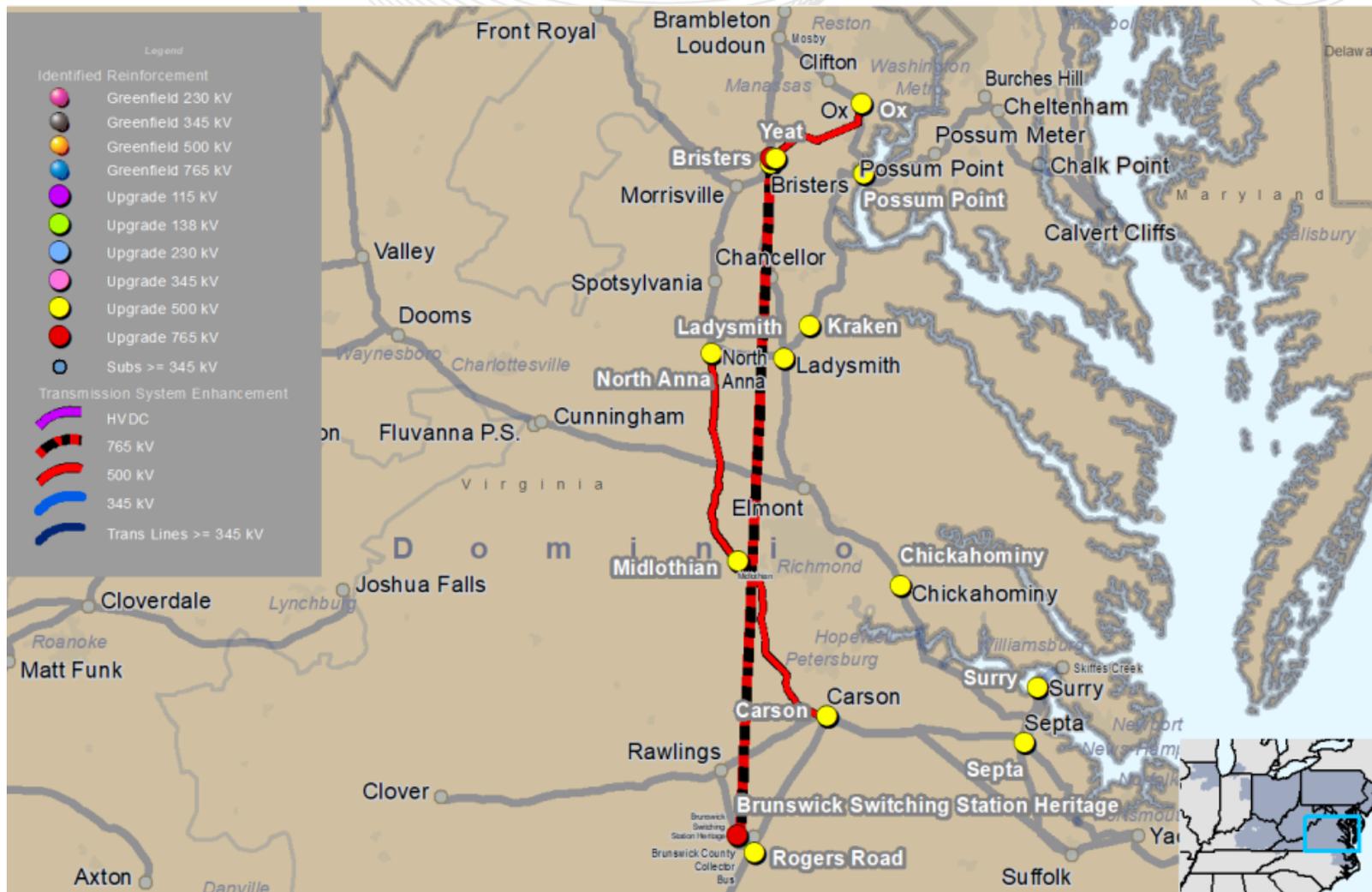
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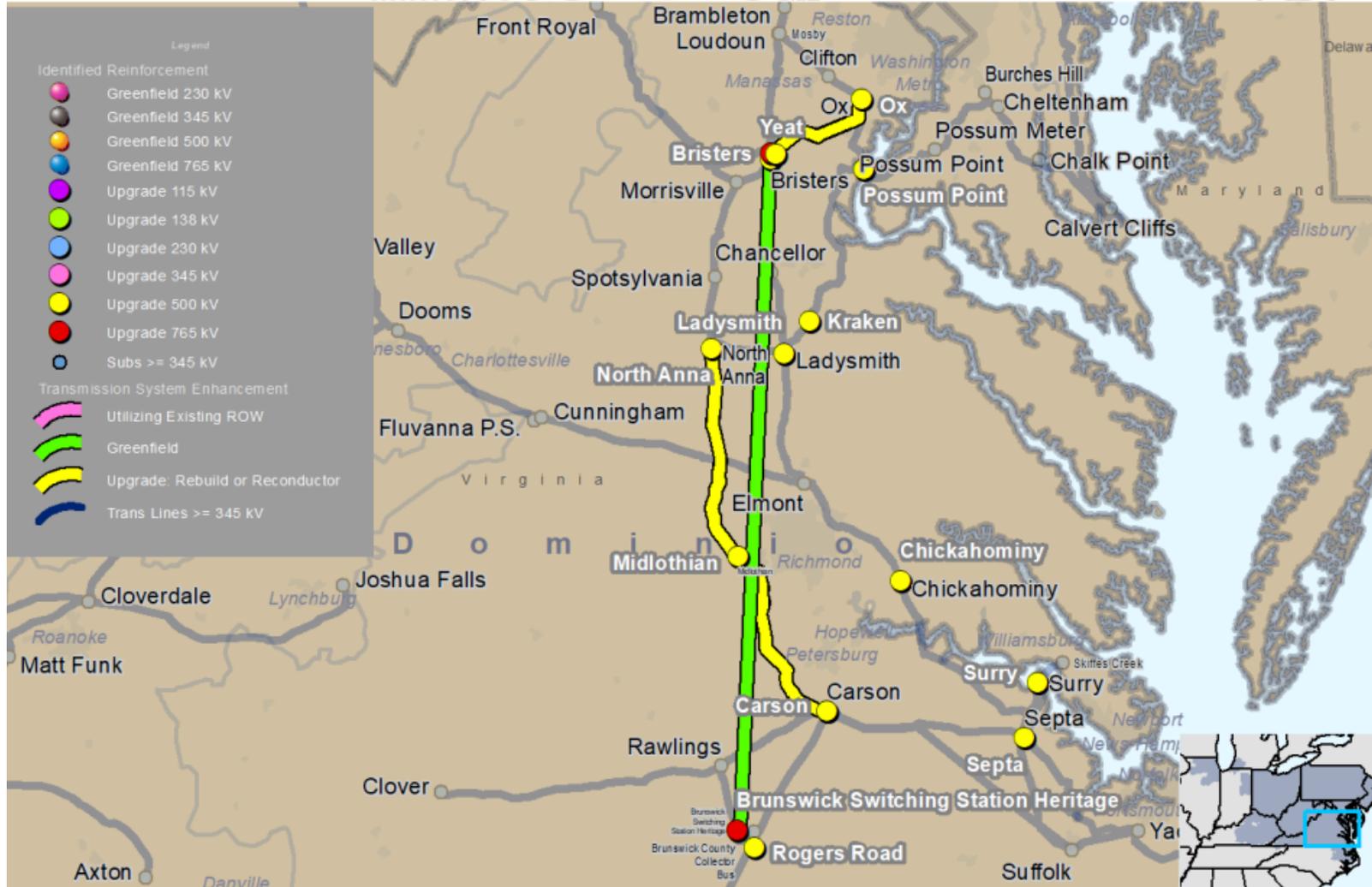
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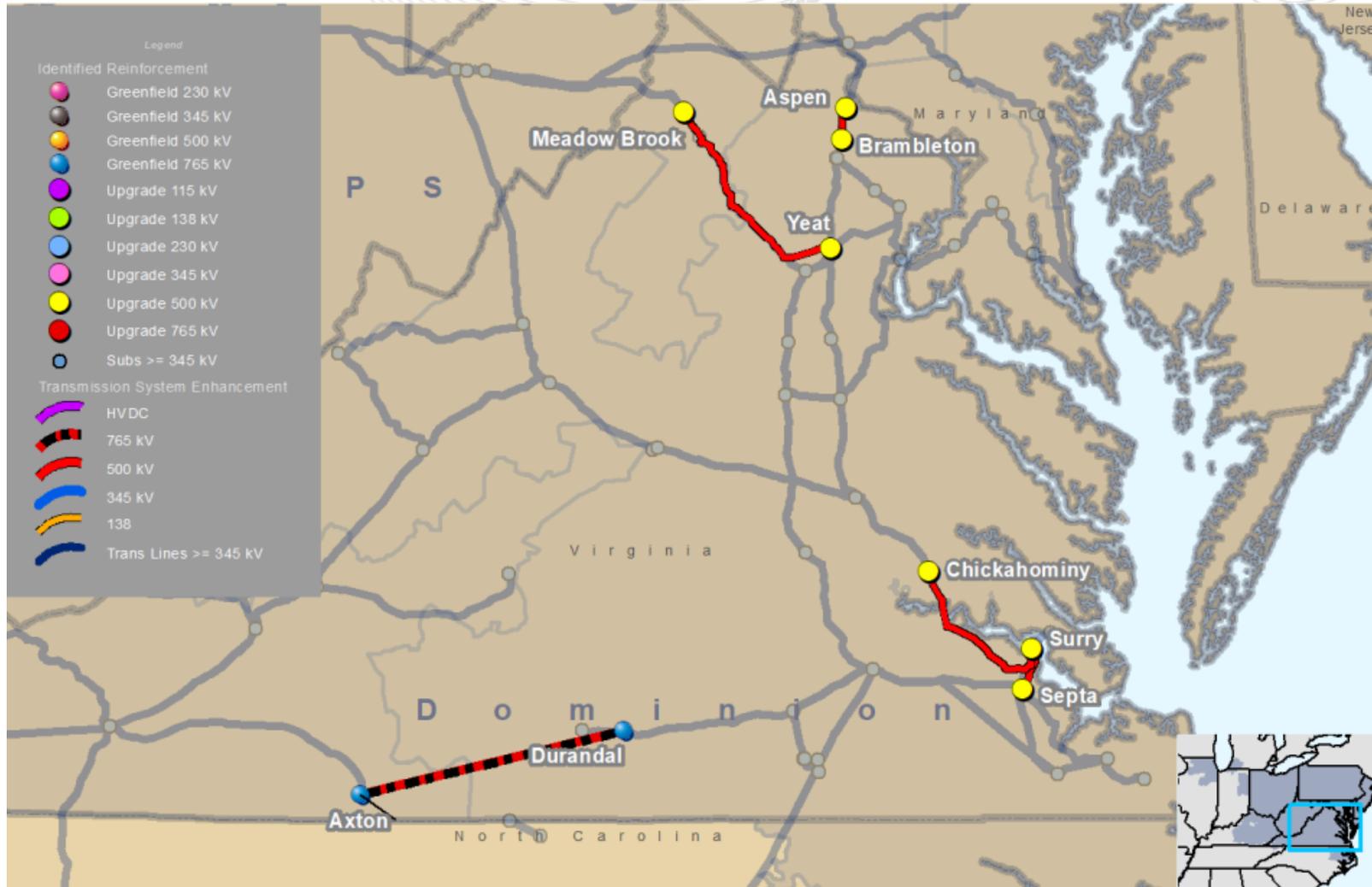
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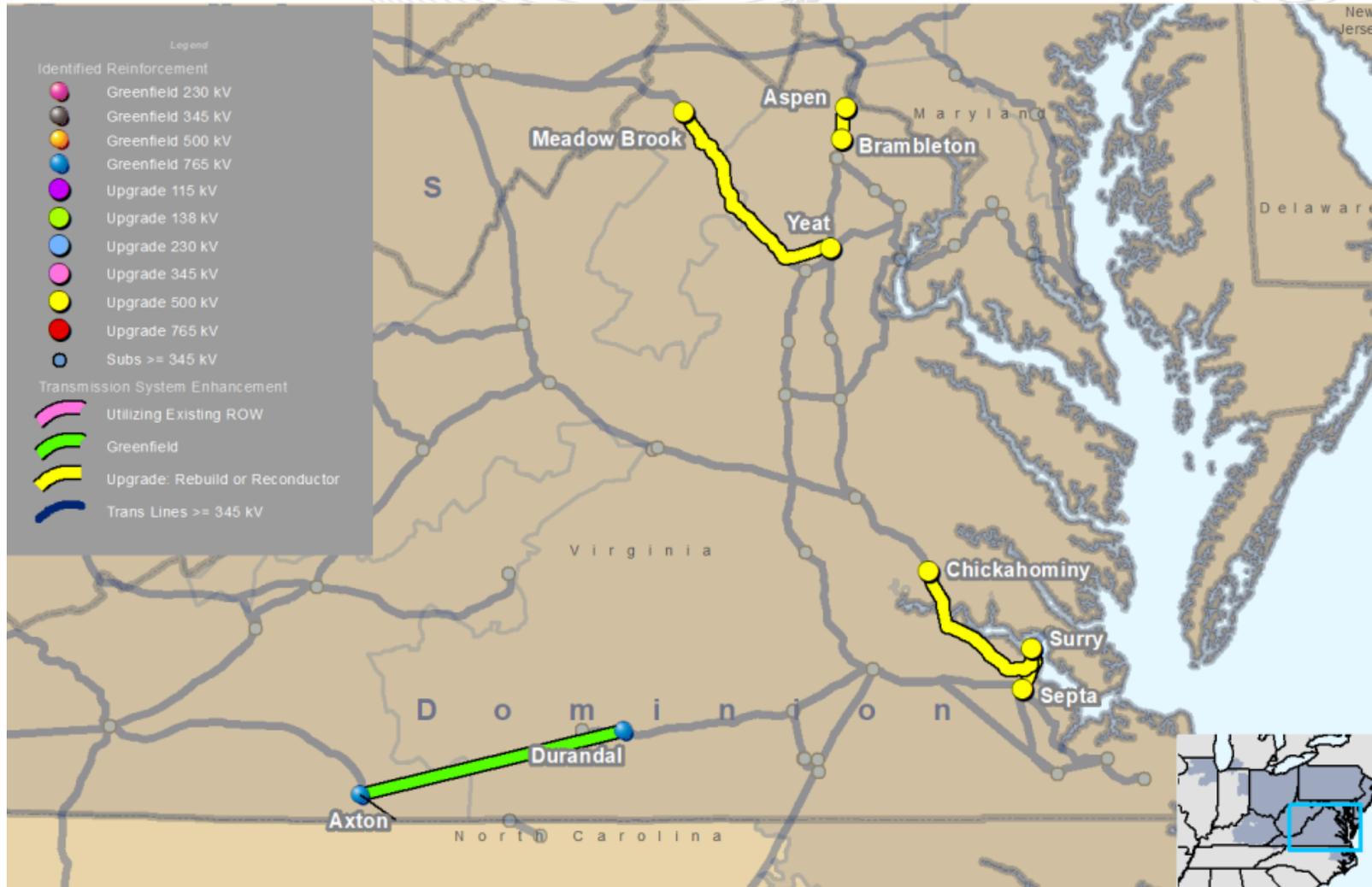
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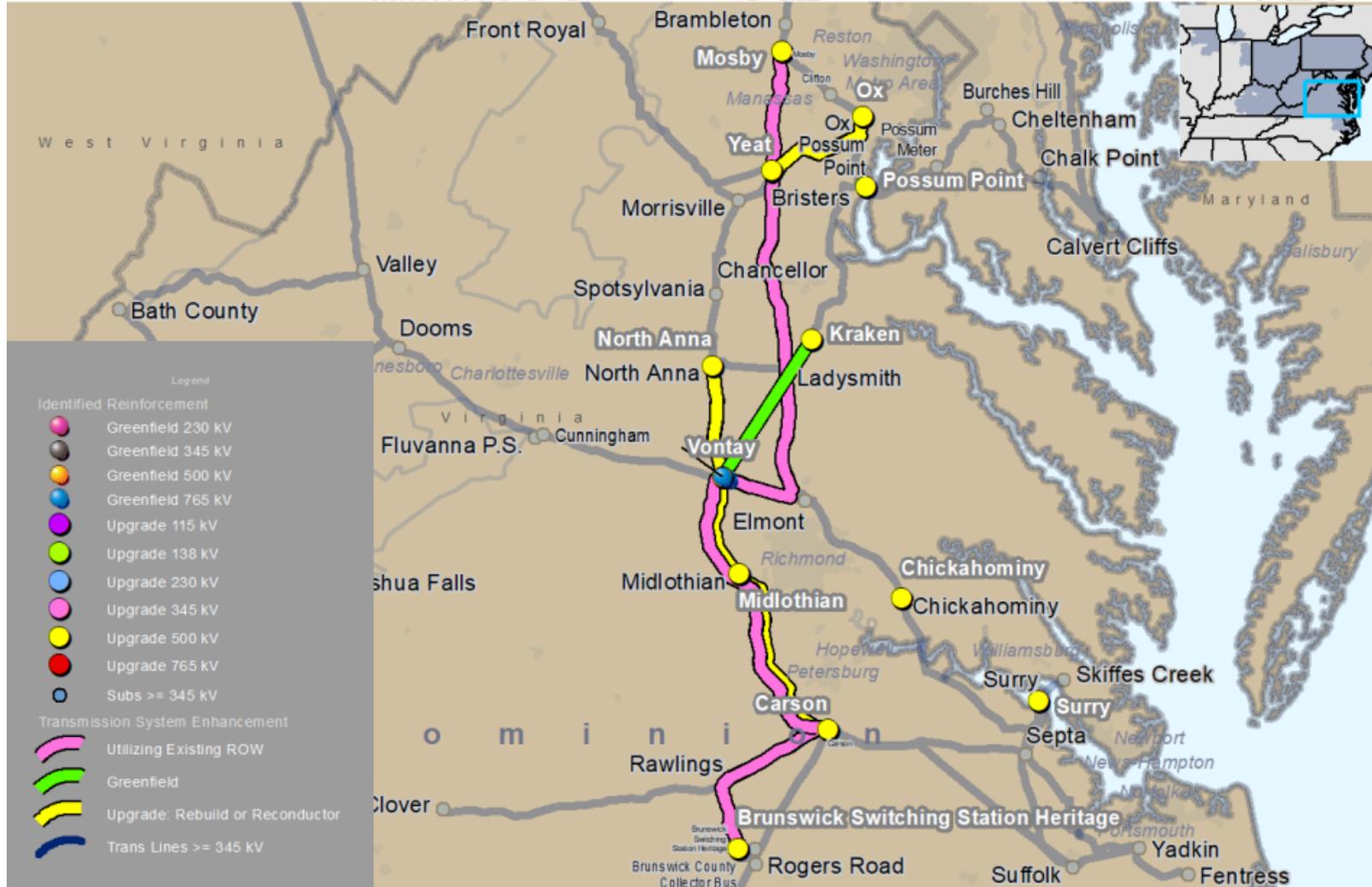
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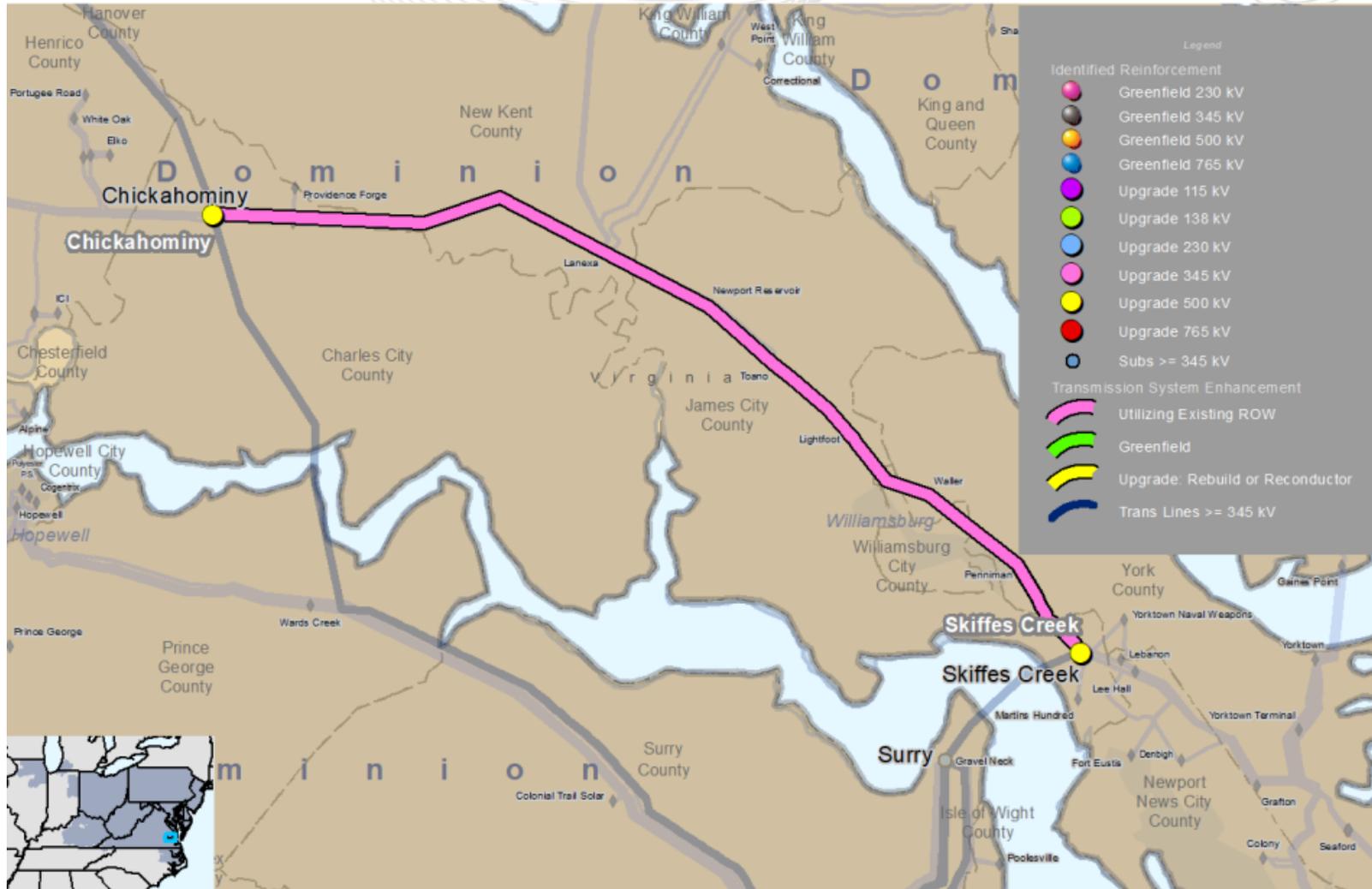
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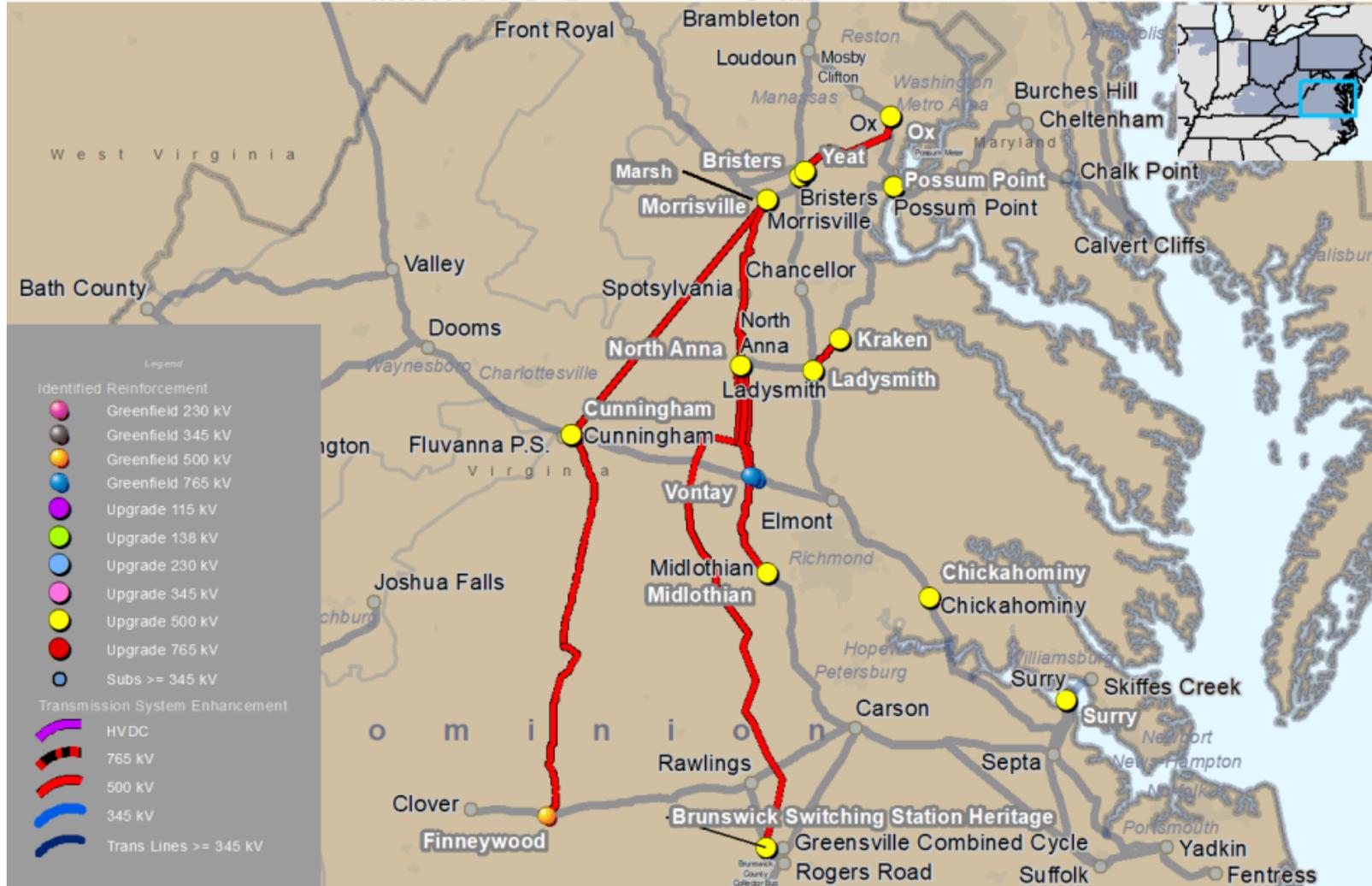
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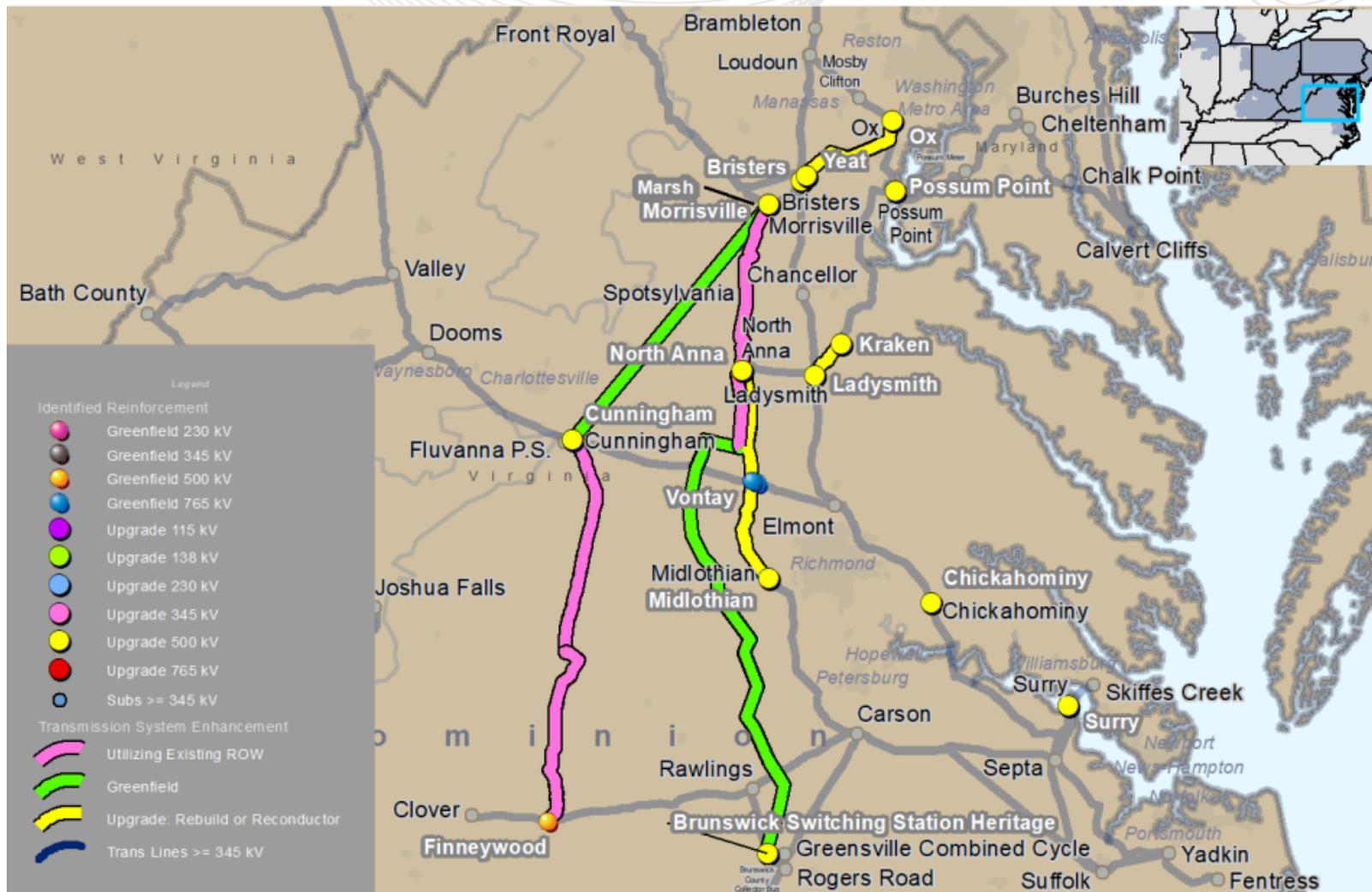
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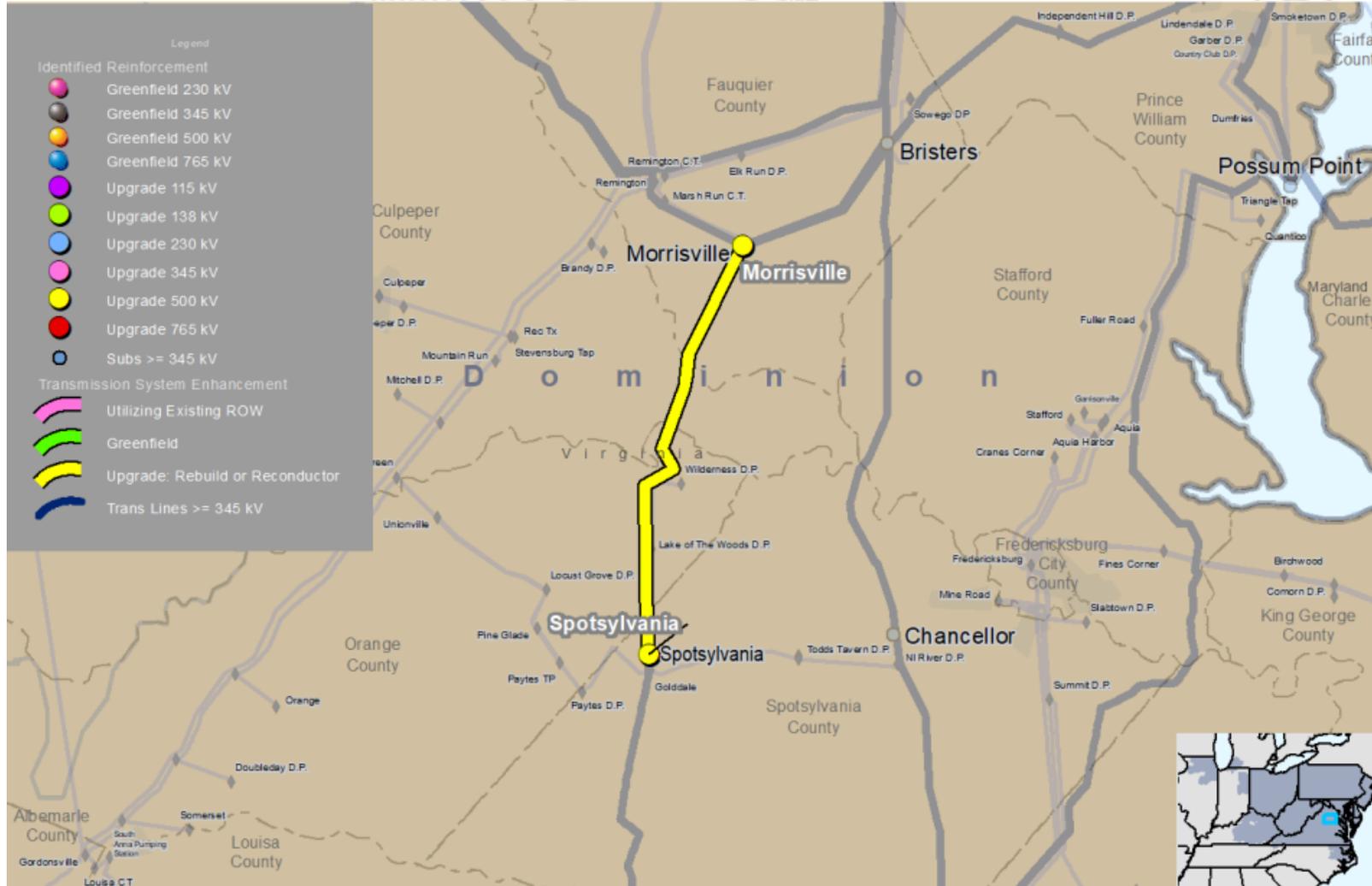
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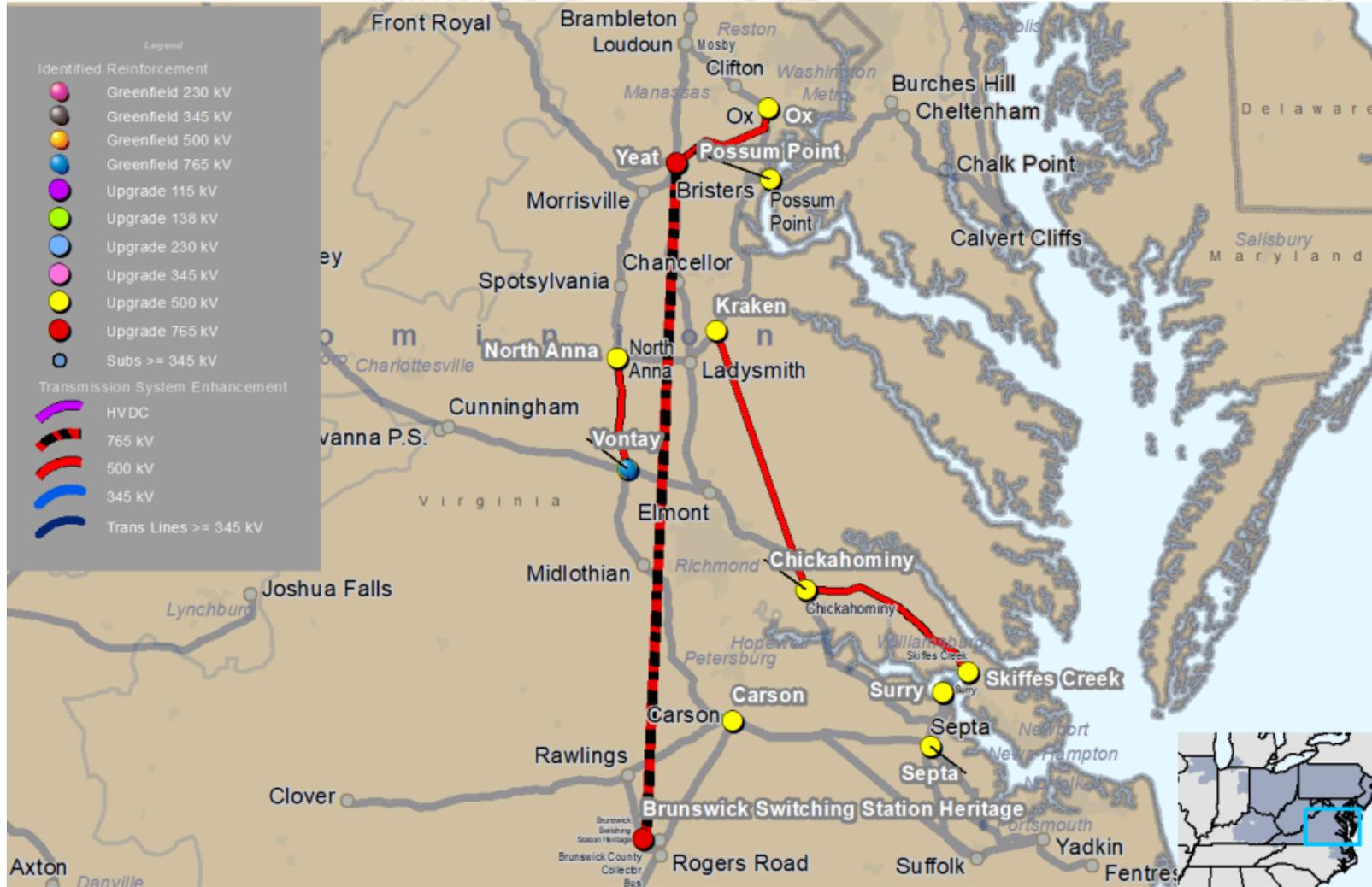
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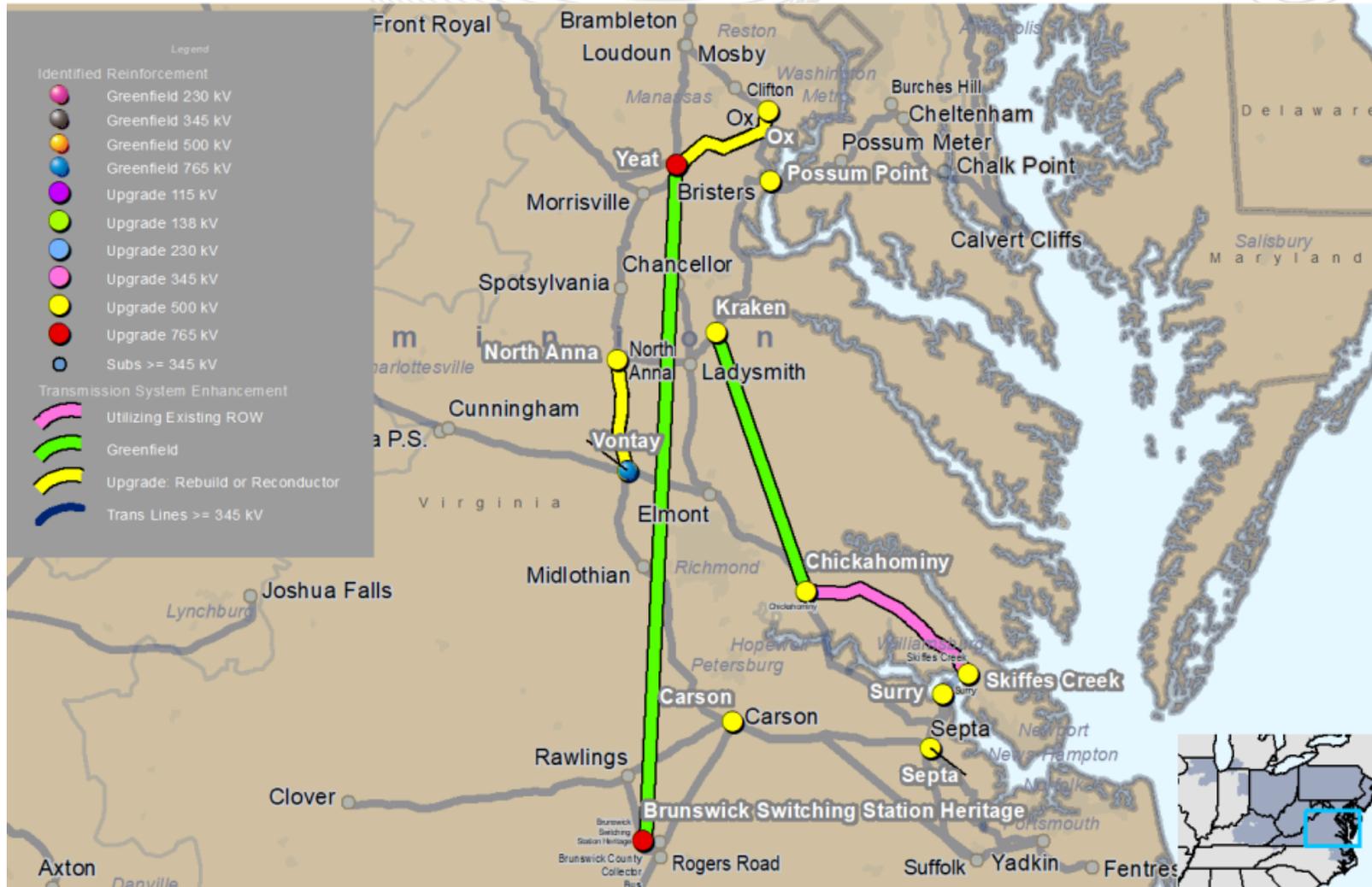
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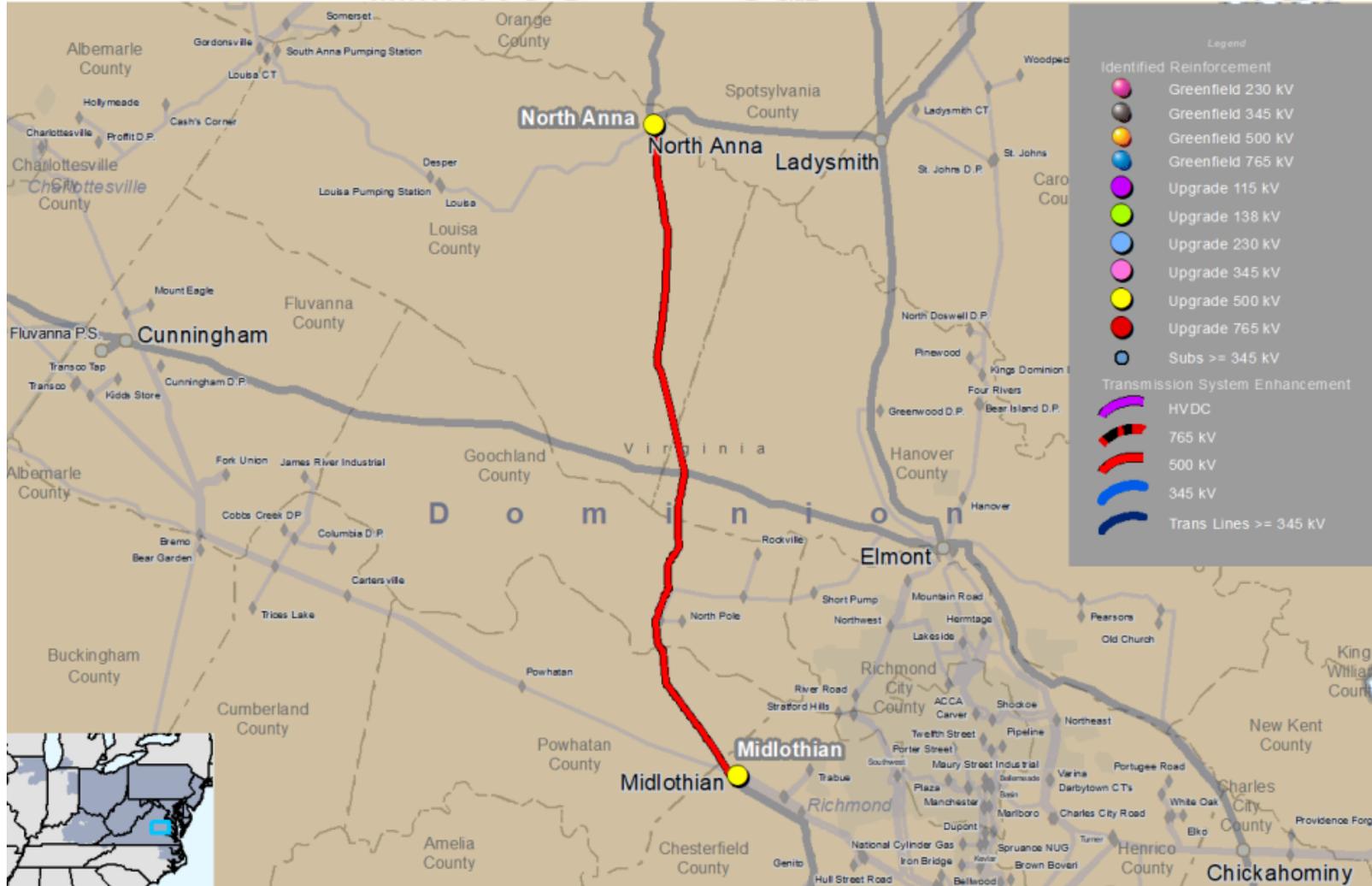
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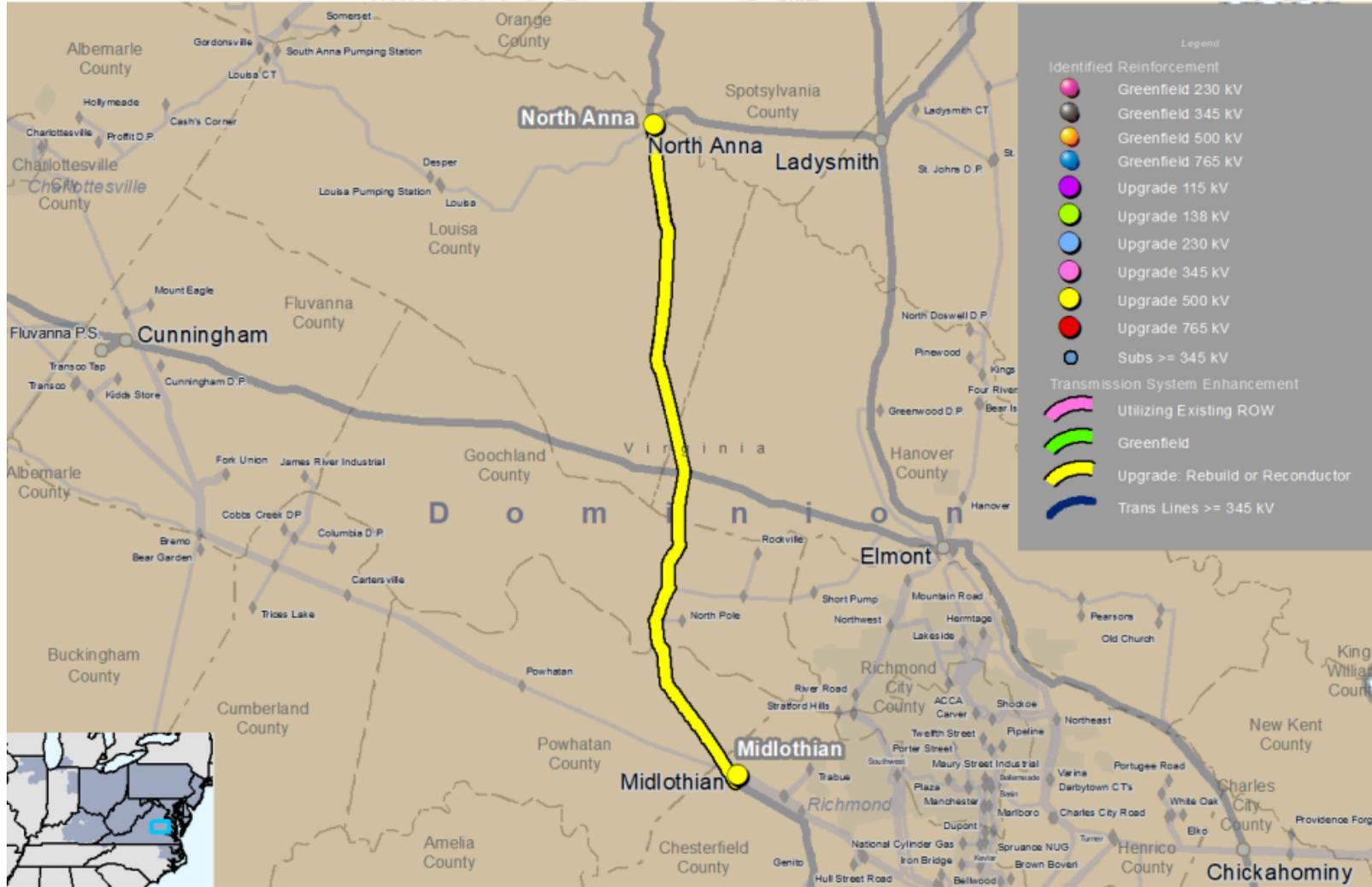
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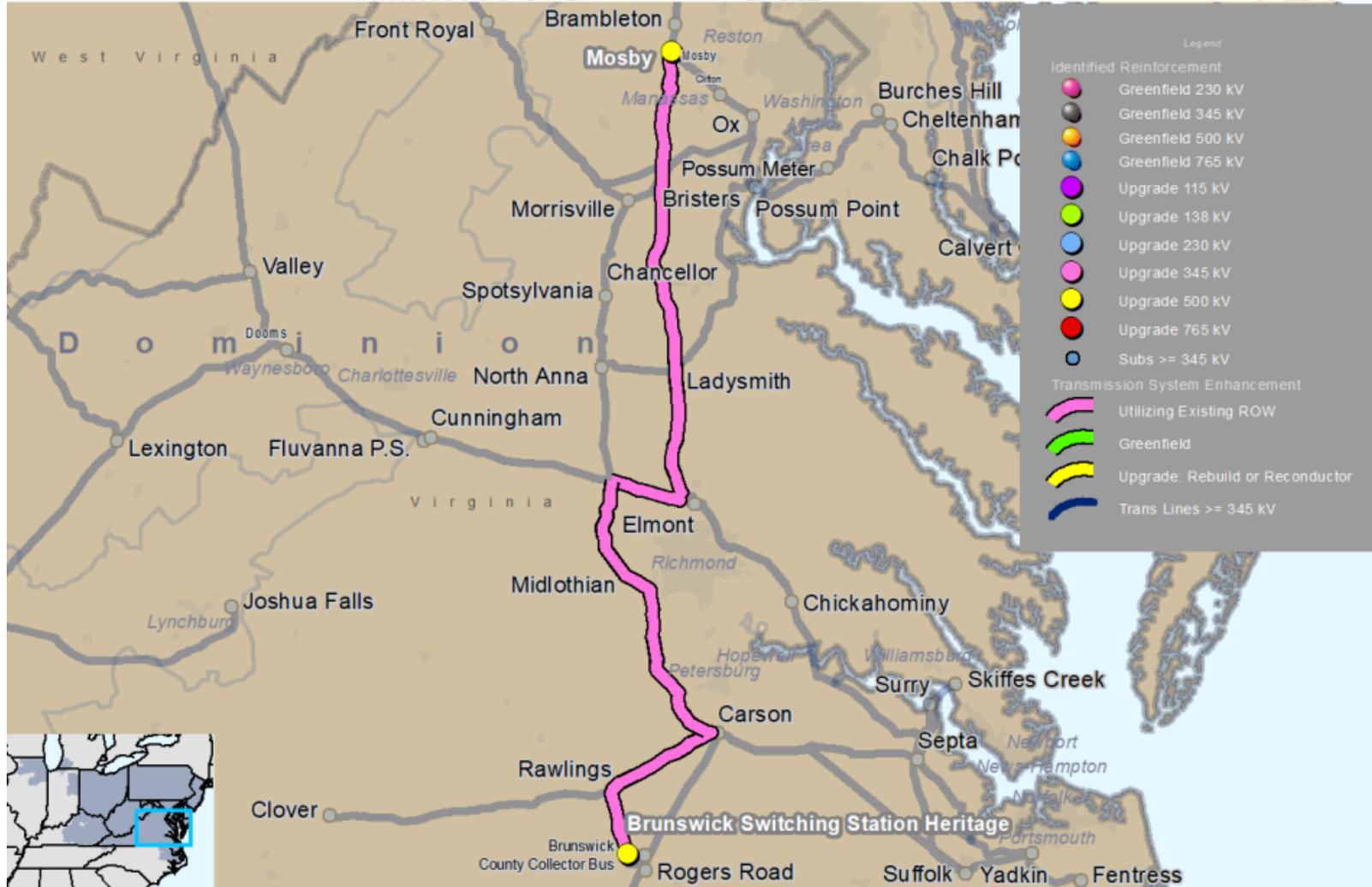
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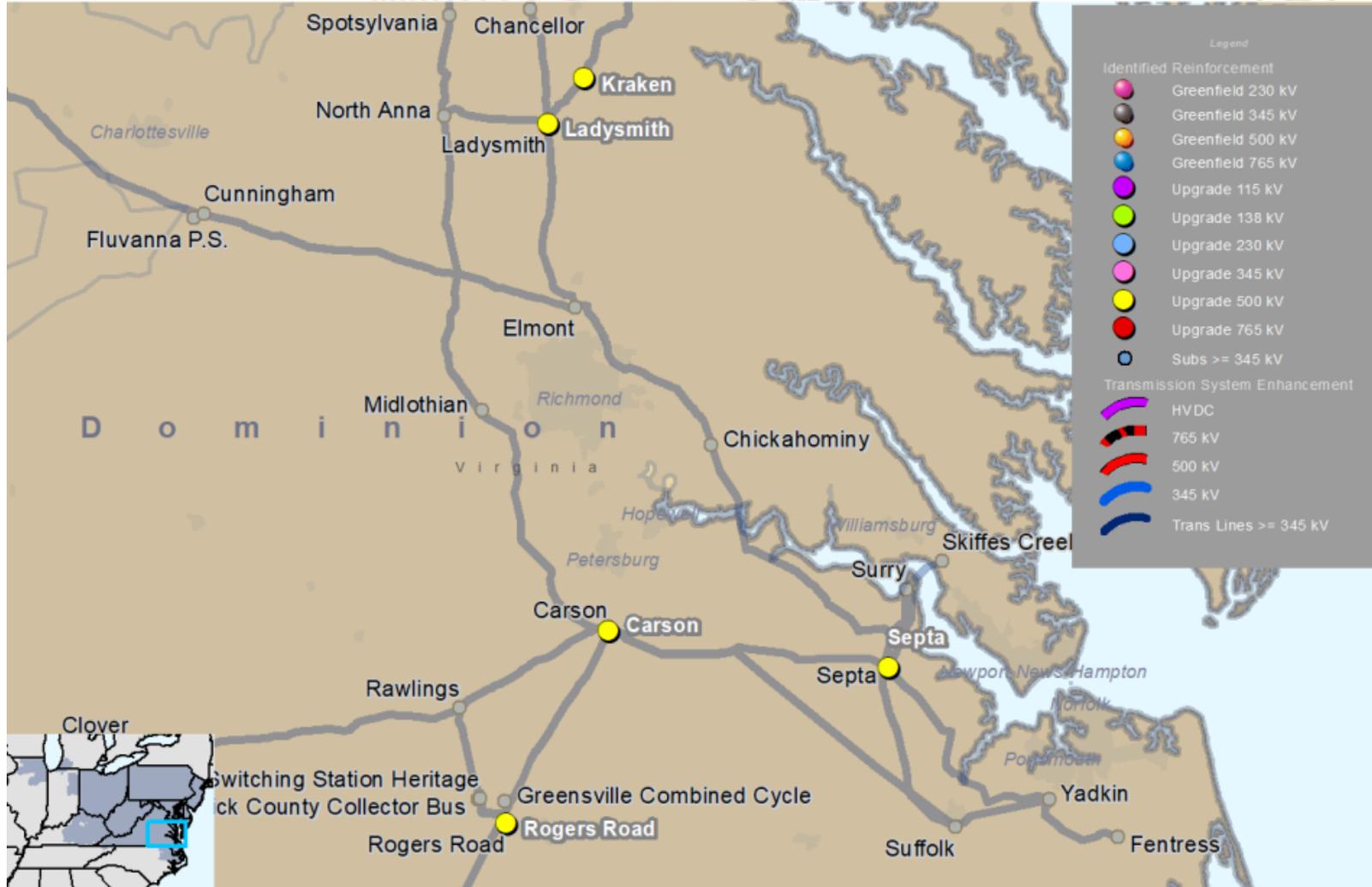
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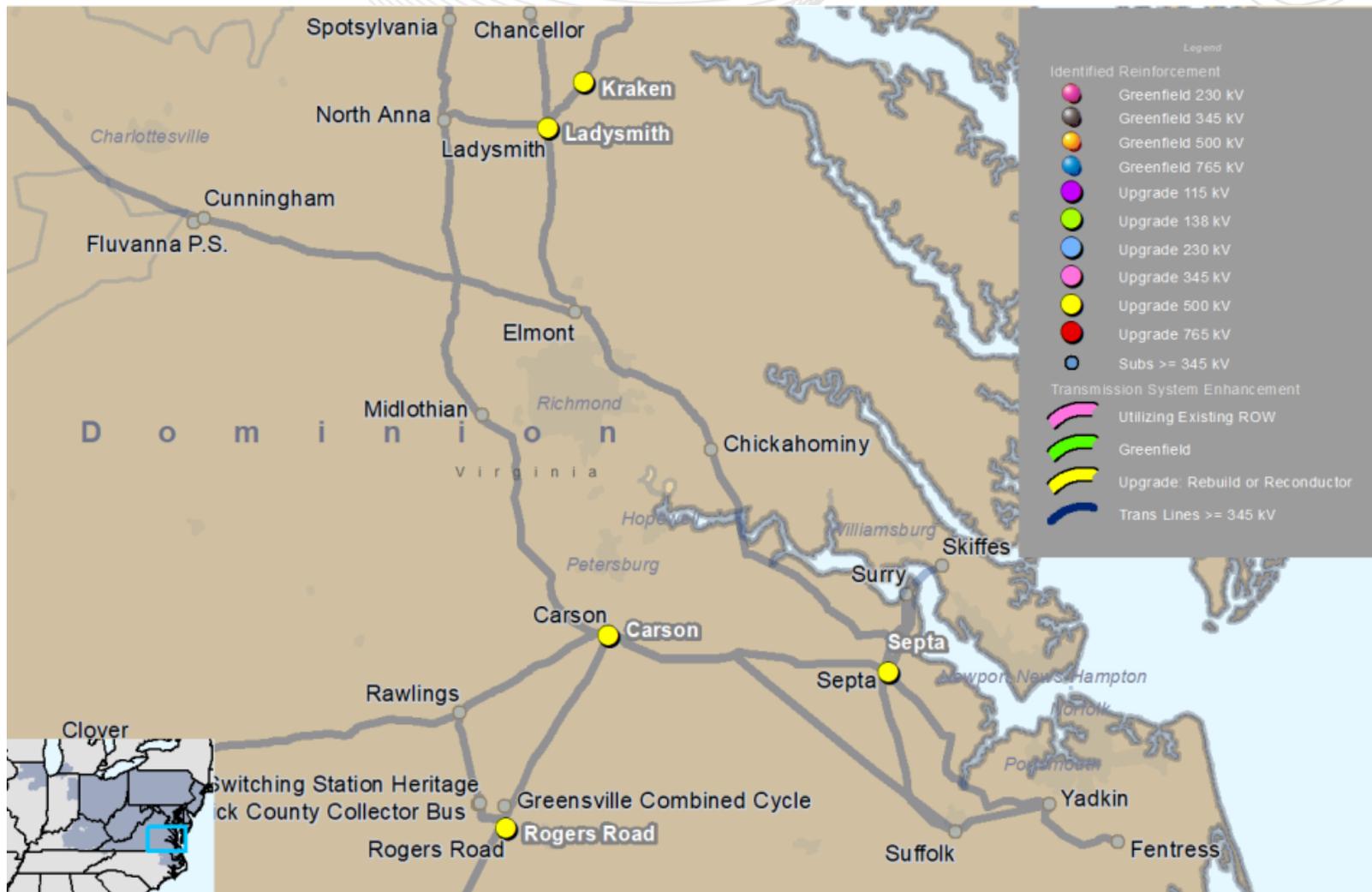
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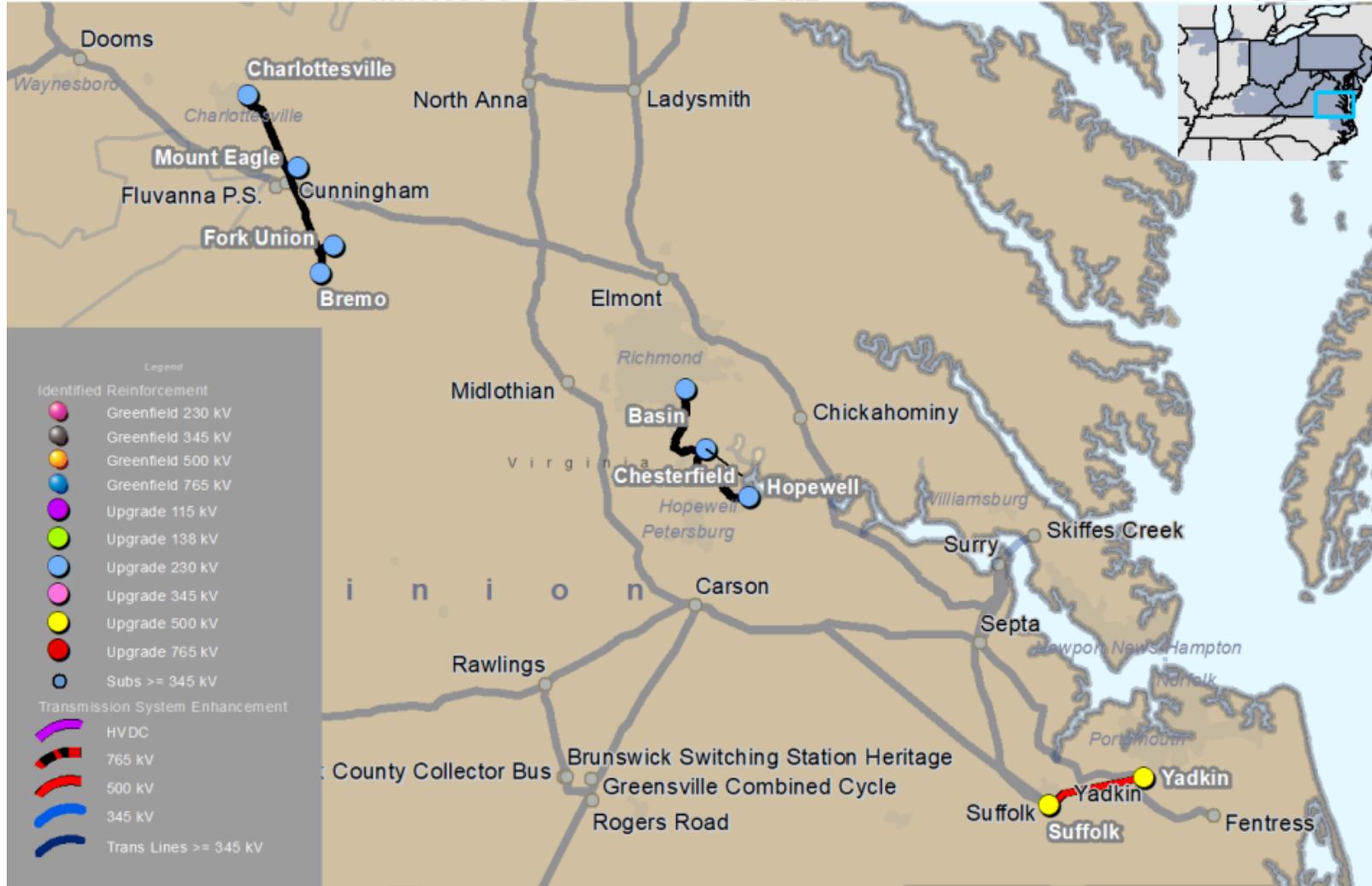
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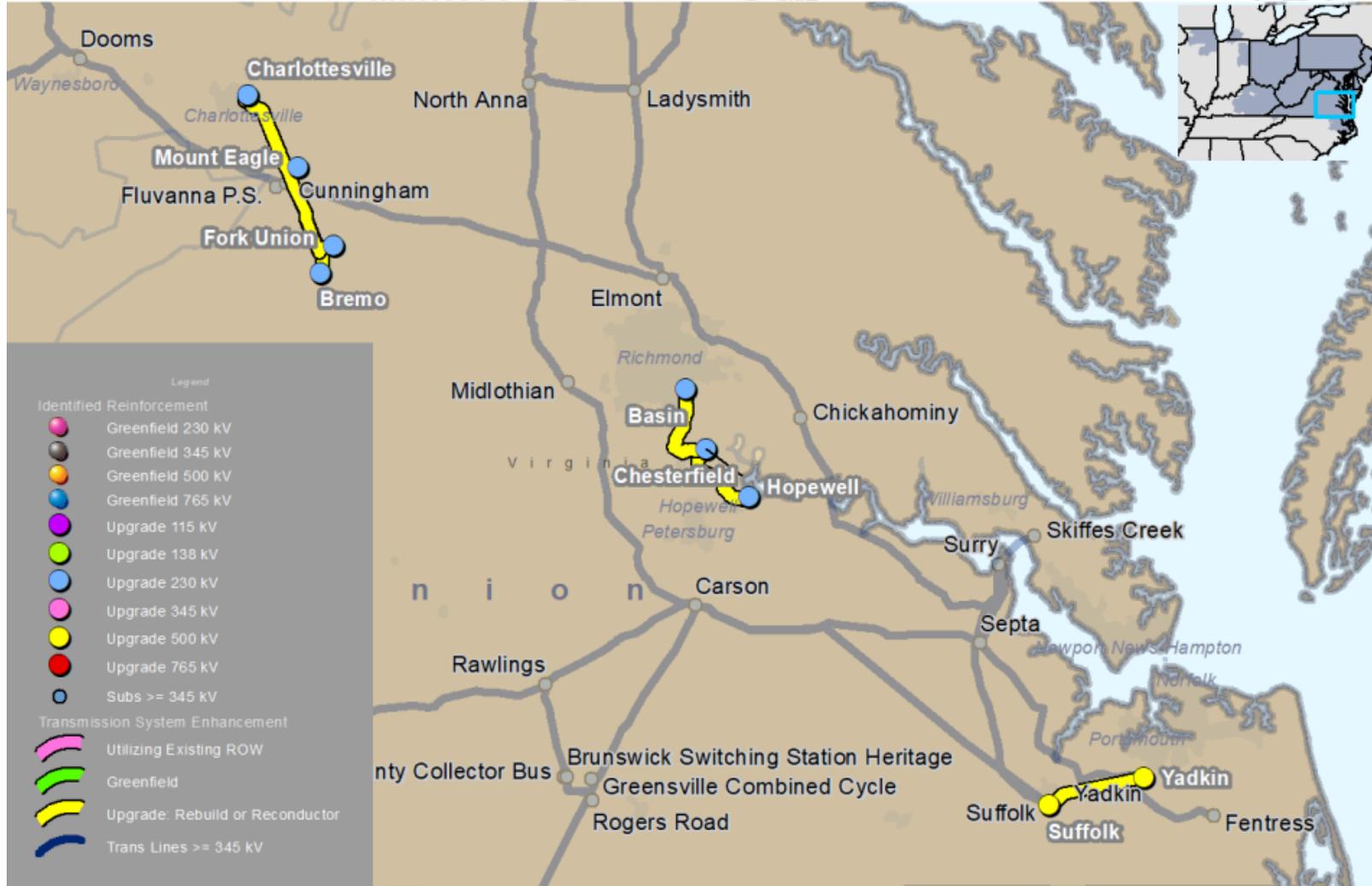
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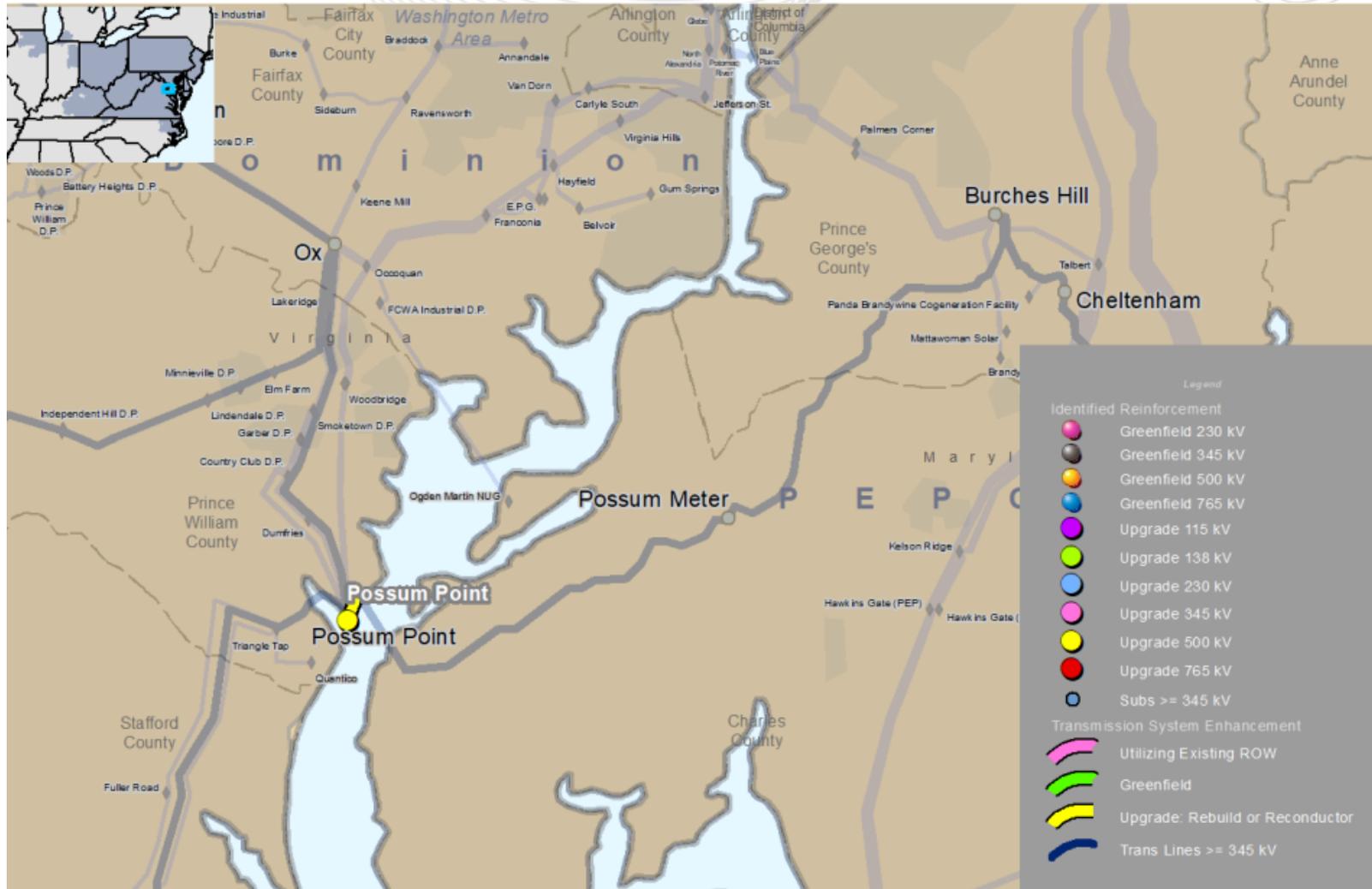


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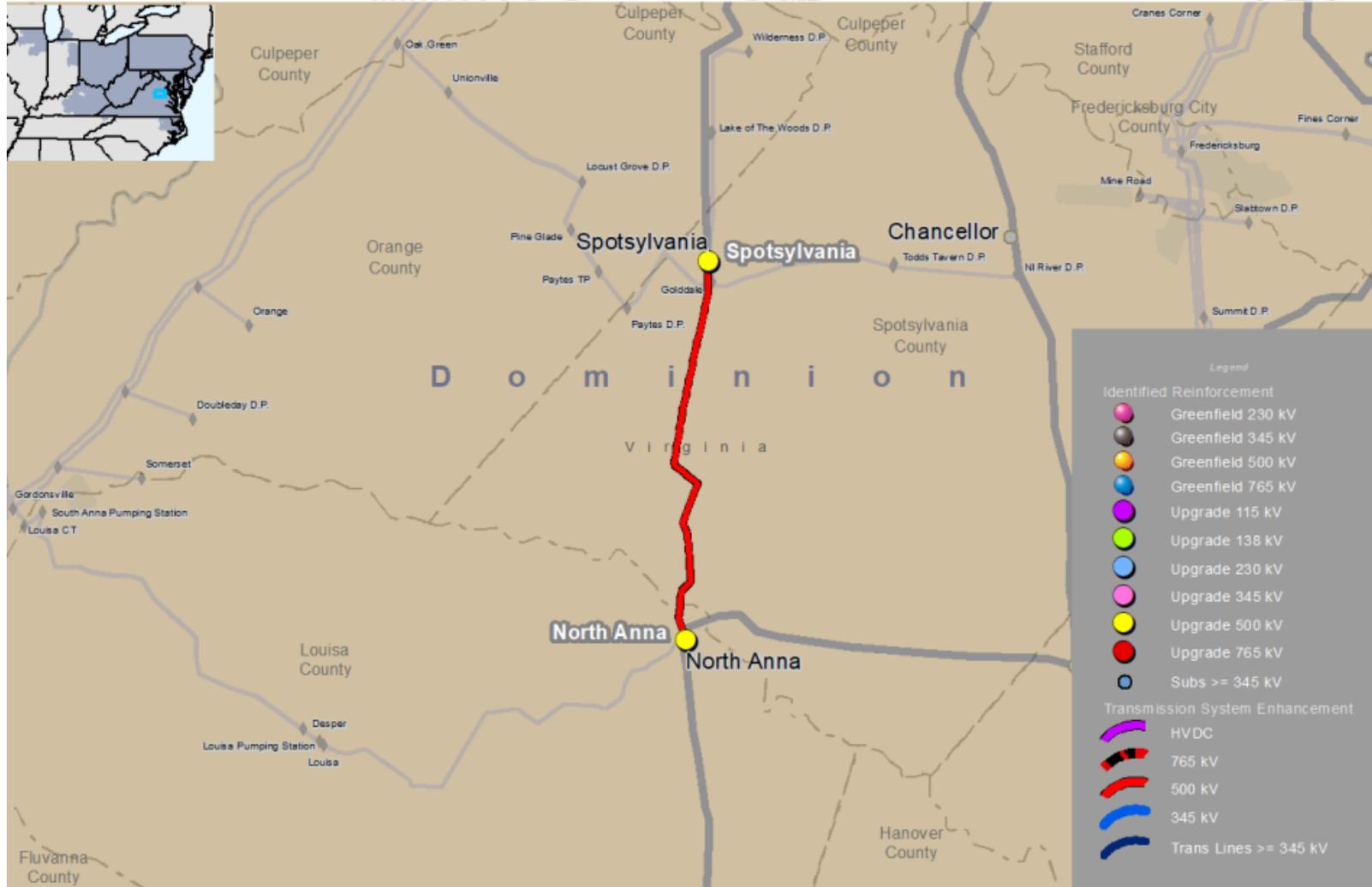


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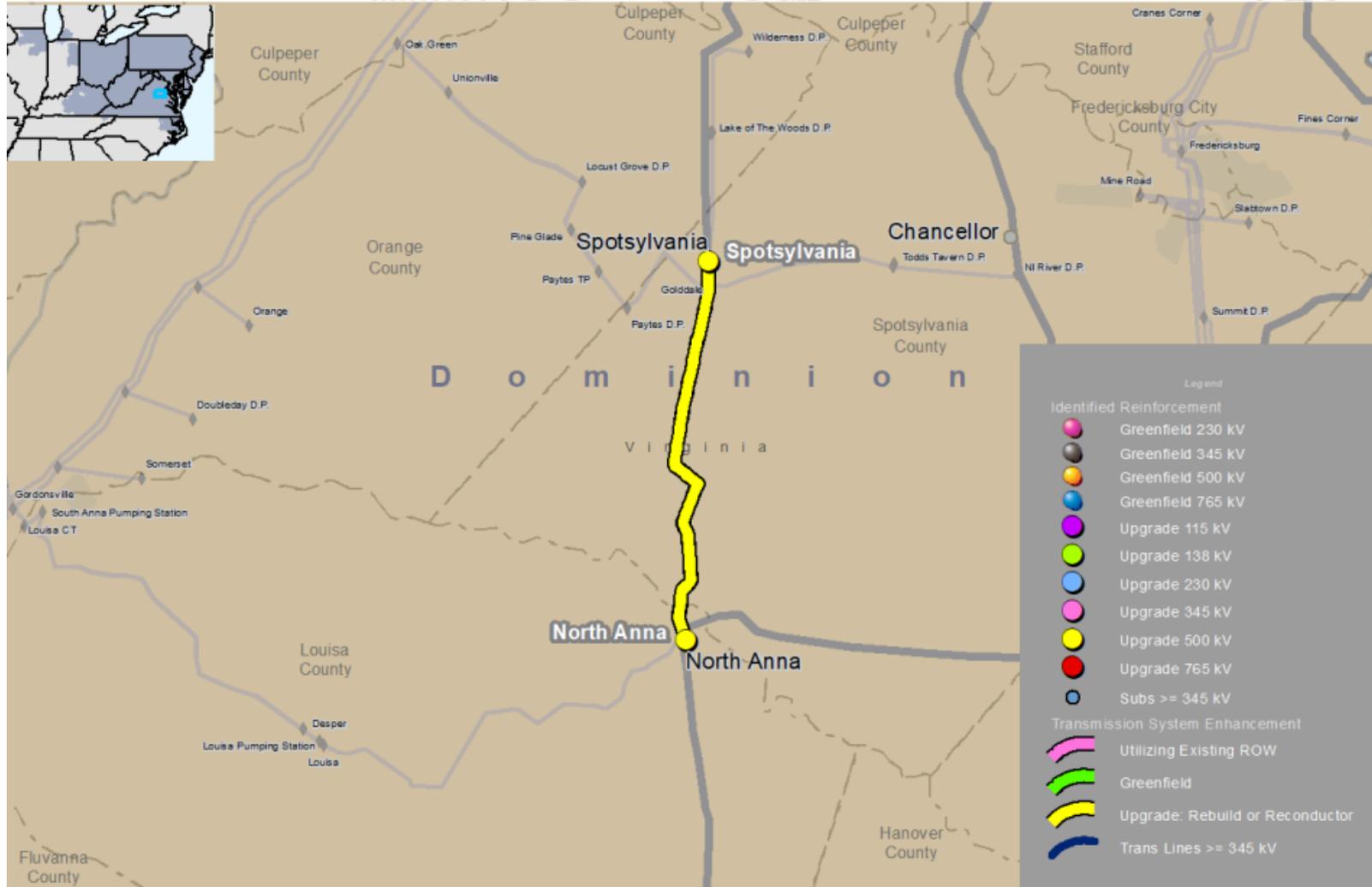




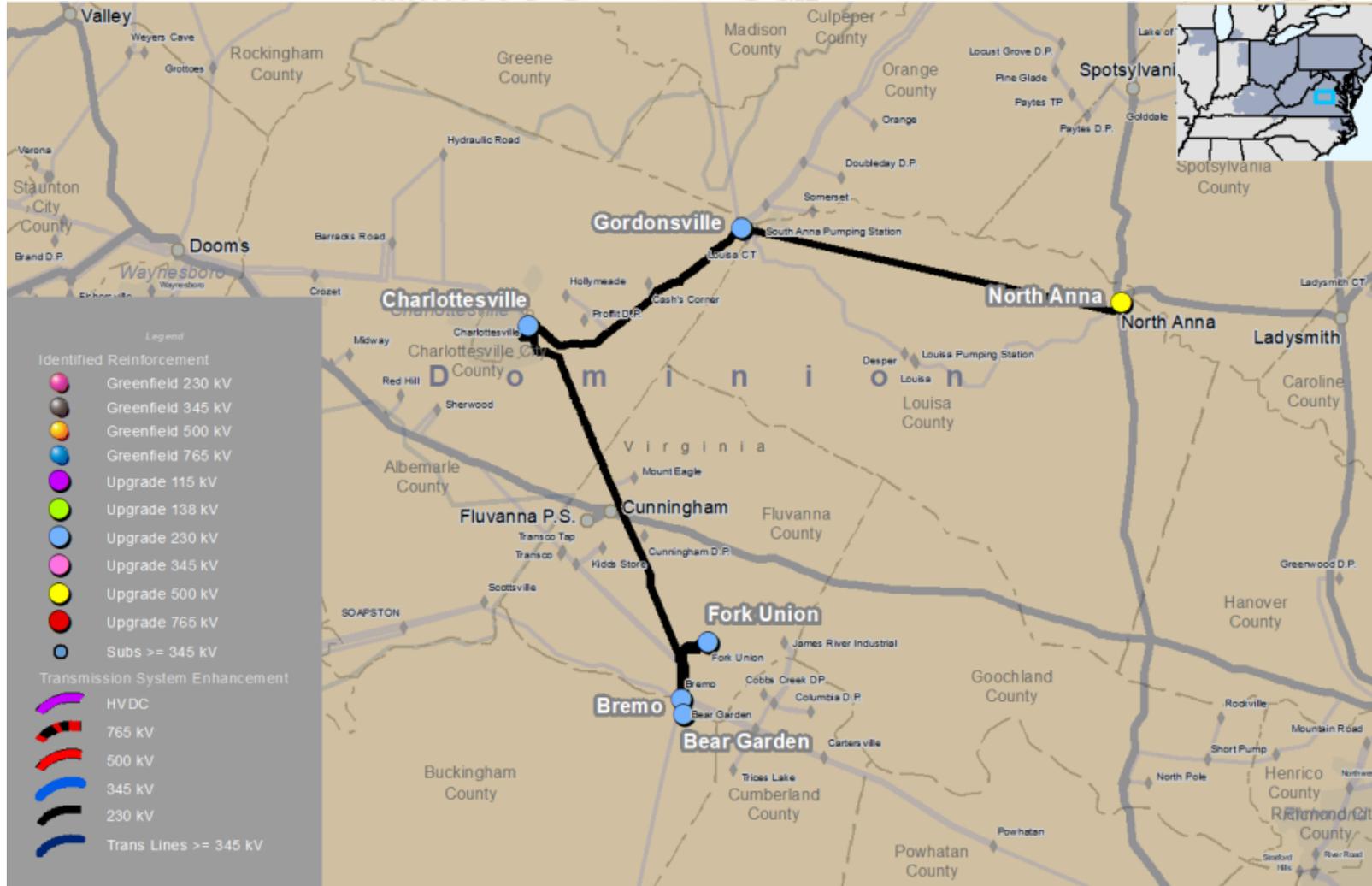
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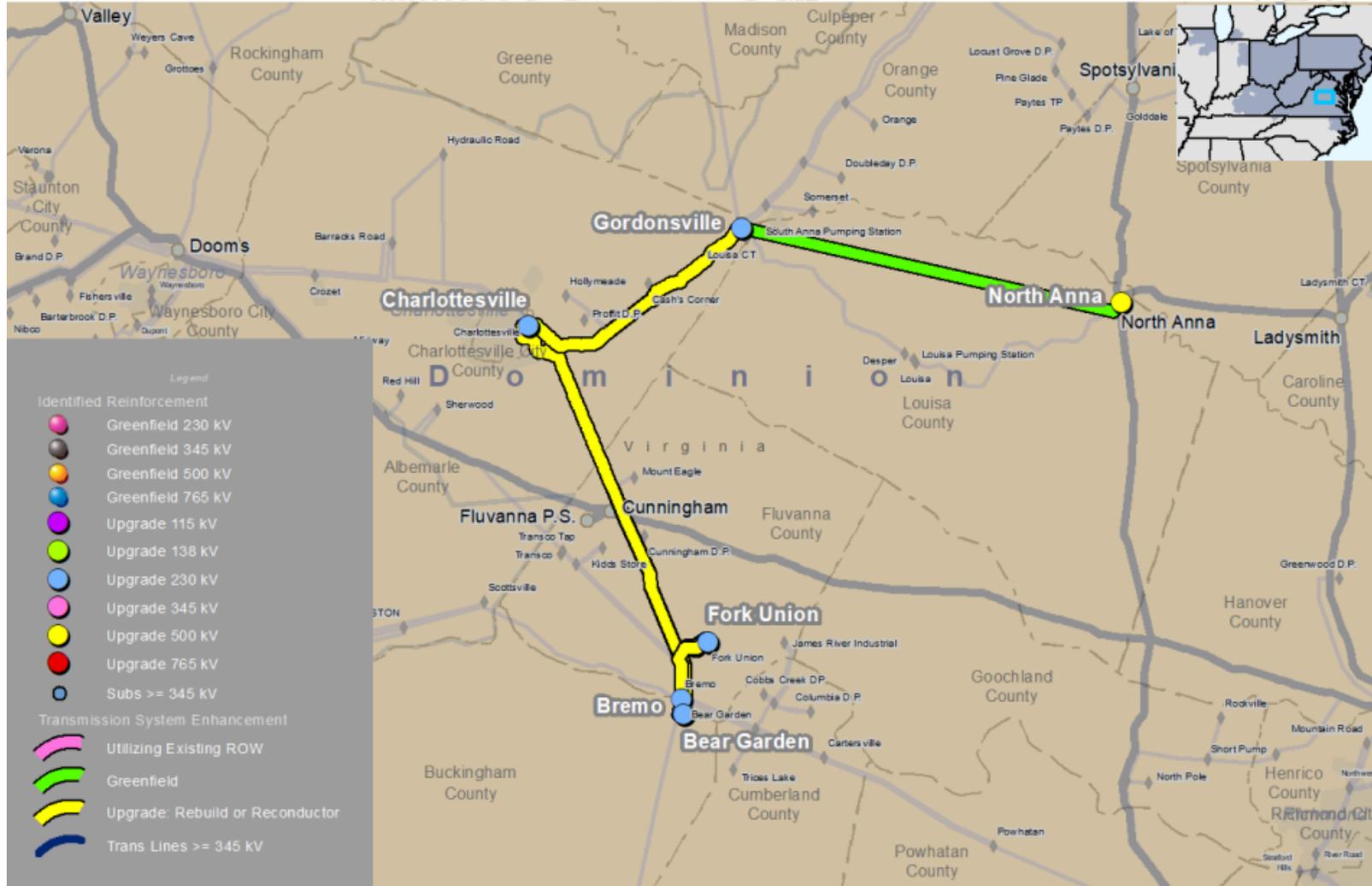
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