



Reliability Analysis Update

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Transmission Expansion Advisory Committee

August 04, 2020

First Review Baseline Reliability Projects



Dominion Transmission Zone: Baseline Clifton 230kV Breaker “201182” and “XT2011” Replacements

Process Stage: First Review

Criteria: Over Duty Breaker

Assumption Reference: none

Model Used for Analysis: 2024 short circuit model

Proposal Window Exclusion: FERC 715 (TO Criteria)

Baseline Reliability: TO Criteria Violation (FERC 715 (TO Criteria) Exclusion)

*This project inherits the exclusion of its parent project.

Problem Statement:

The Clifton 230kV breakers “201182” and “XT2011” are overdutied.

Existing Facility Rating: 50kA interrupting duty

Significant Driver:

- **b3110:** Rebuild Line #2008 between Loudoun to Dulles Junction. Retire Line #156 from Loudoun to Bull Run. Cut and loop Line #265 (Clifton – Sully) into Bull Run Substation. Add three (3) 230kV breakers at Bull Run to accommodate the new line and upgrade the substation. (Dominion “End of Life Criteria”)

Proposed Solution:

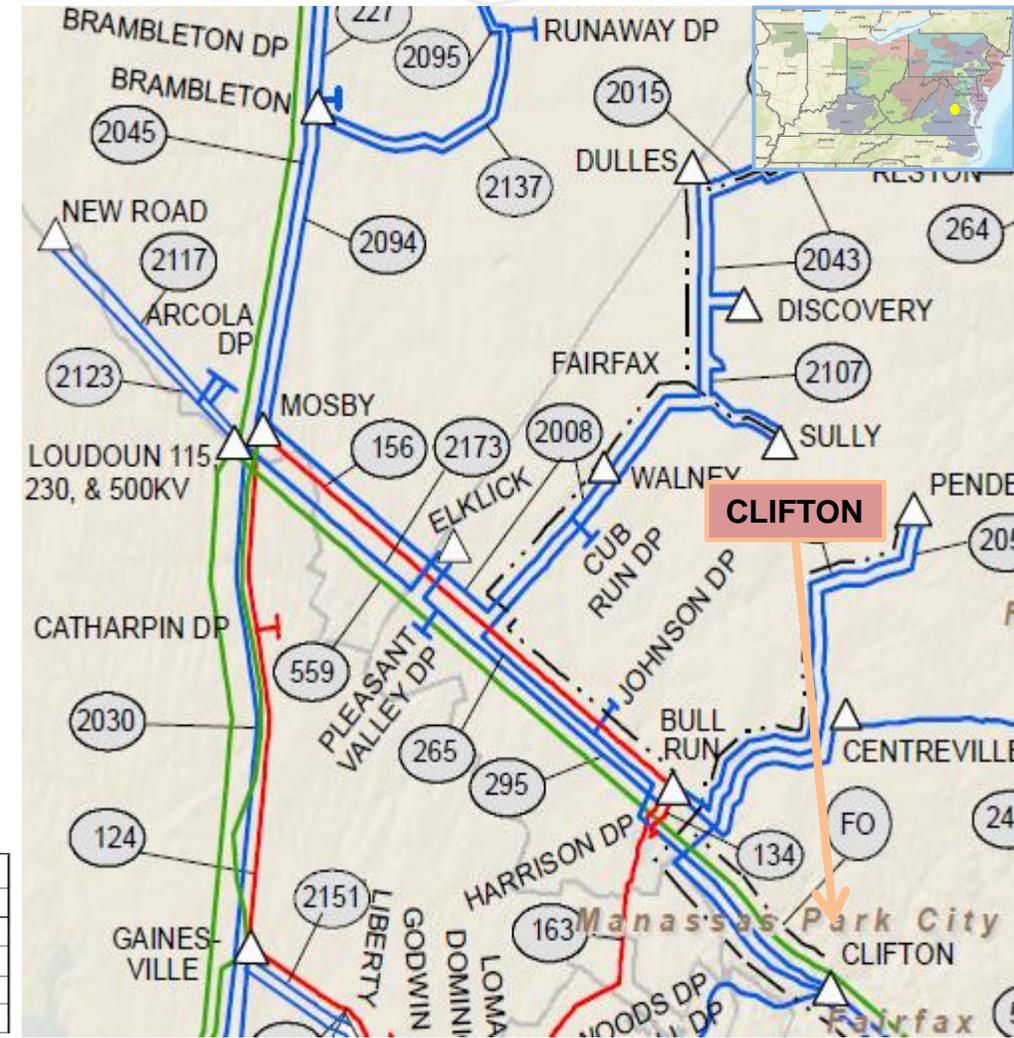
Replace the Clifton 230kV breakers “201182” and “XT2011” with 63kA breakers

Estimated Cost: \$0.934M (\$0.467M each)

Alternatives: None

Required In-Service: 12/31/2021

COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED





2020 RTEP Analysis Update

Window 1

May 15, 2020

- Preliminary 2025 results posted
 - Summer Baseline and N-1 Thermal
 - Summer Generator Deliverability

July 1, 2020

- Proposal Window No.1 opened

August 31, 2020

- Proposal Window No.1 closes

Window 2

July 1, 2020

- Proposal Window No.2 opened

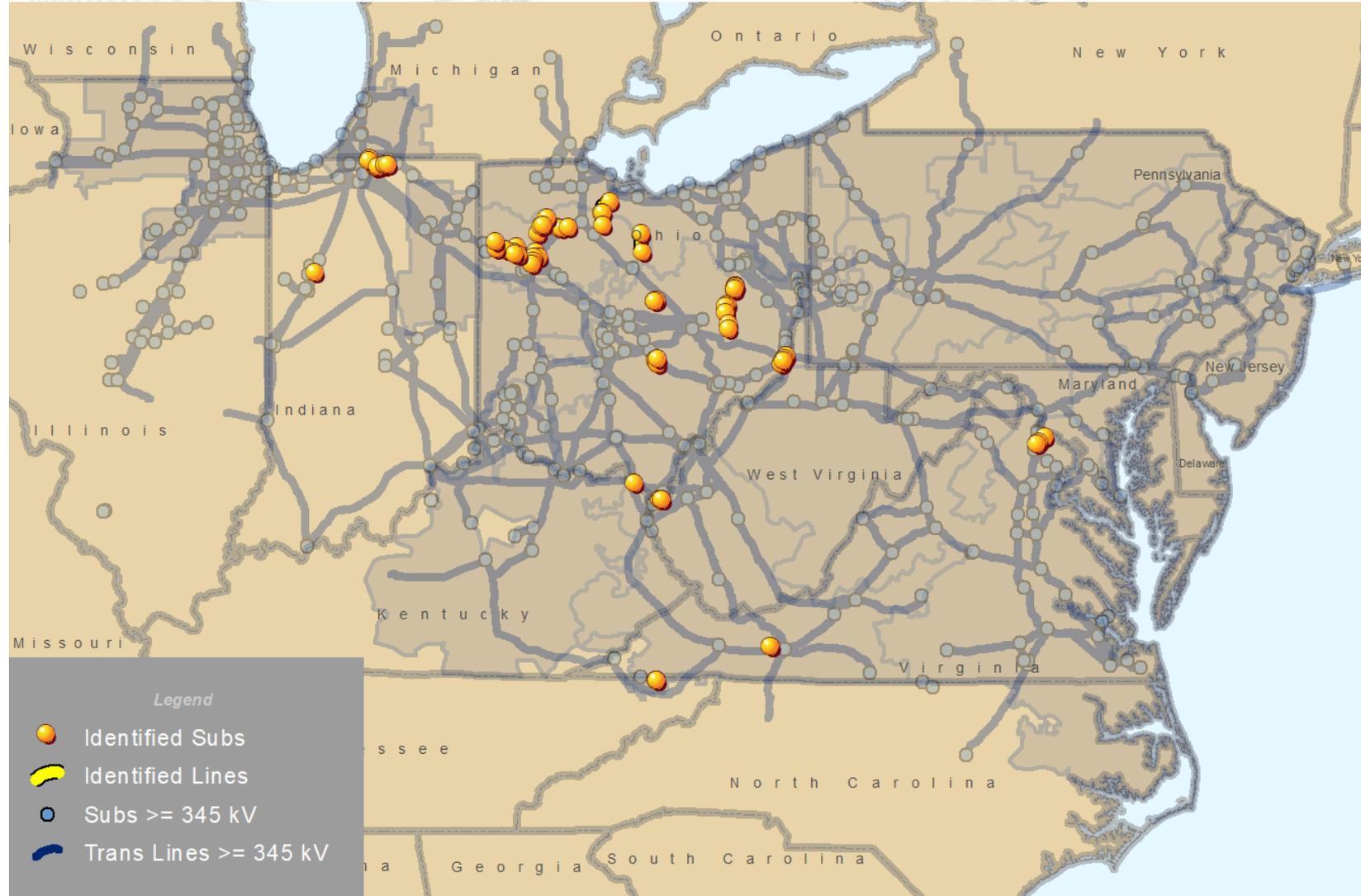
July 31, 2020

- Proposal Window No.2 closes

Overview of 2025 Results

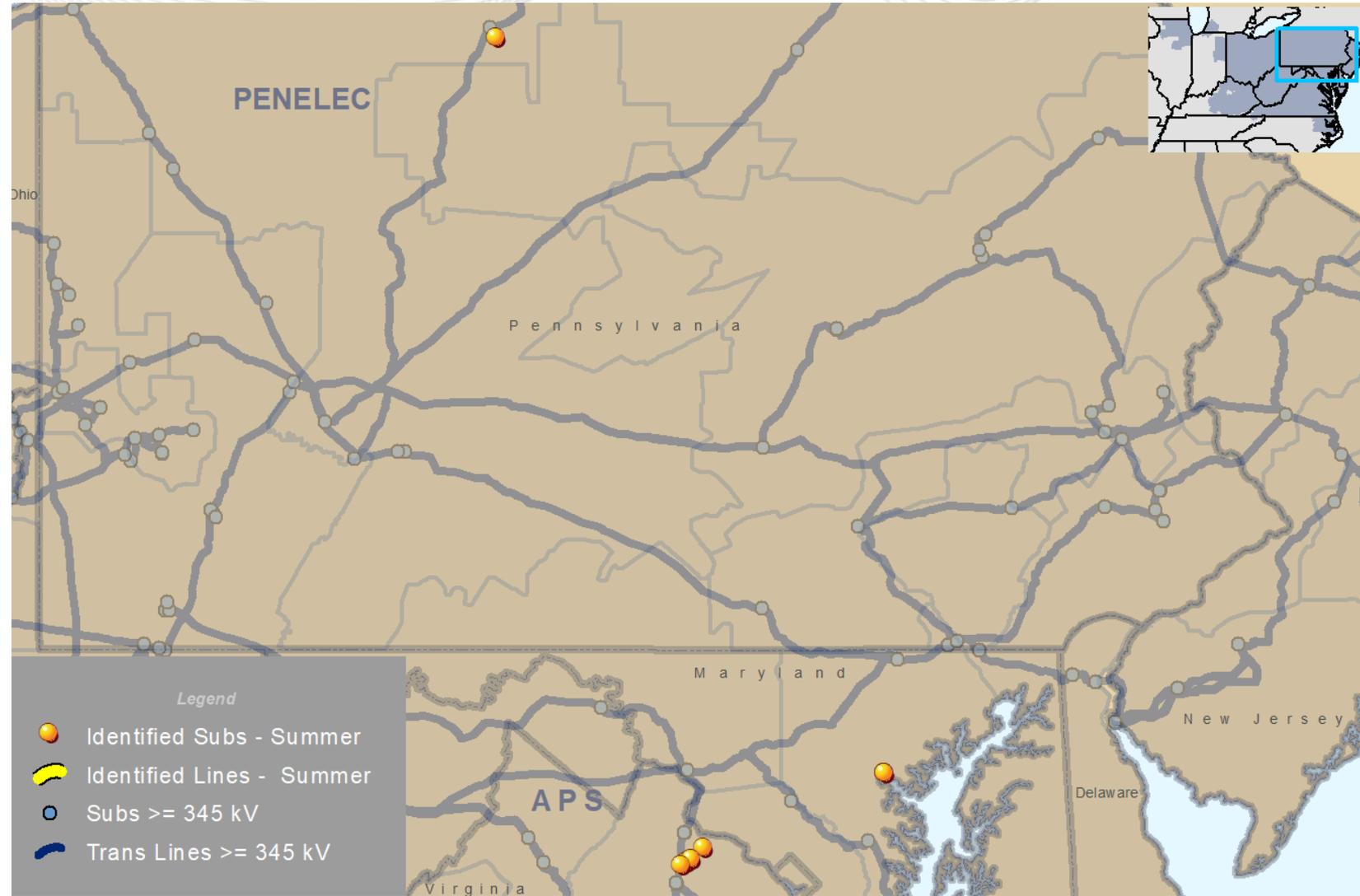
Total of 3228 flowgates identified

- 207 flowgates are eligible
 - 165 in the PJM West Region
 - 31 in the PJM South Region
 - 11 in PJM Mid-Atlantic Region
- 3021 flowgates excluded
 - 2226 due to the below 200 kV exclusion
 - 122 due to the substation equipment exclusion
 - 545 fixed by existing baseline
 - 108 Dominion Immediate Need
 - 11 fixed by supplemental project already in service due to customer needs or required as part of the customer service due to do no harm studies
 - 6 Non PJM Facility
 - 3 suspended queue generator



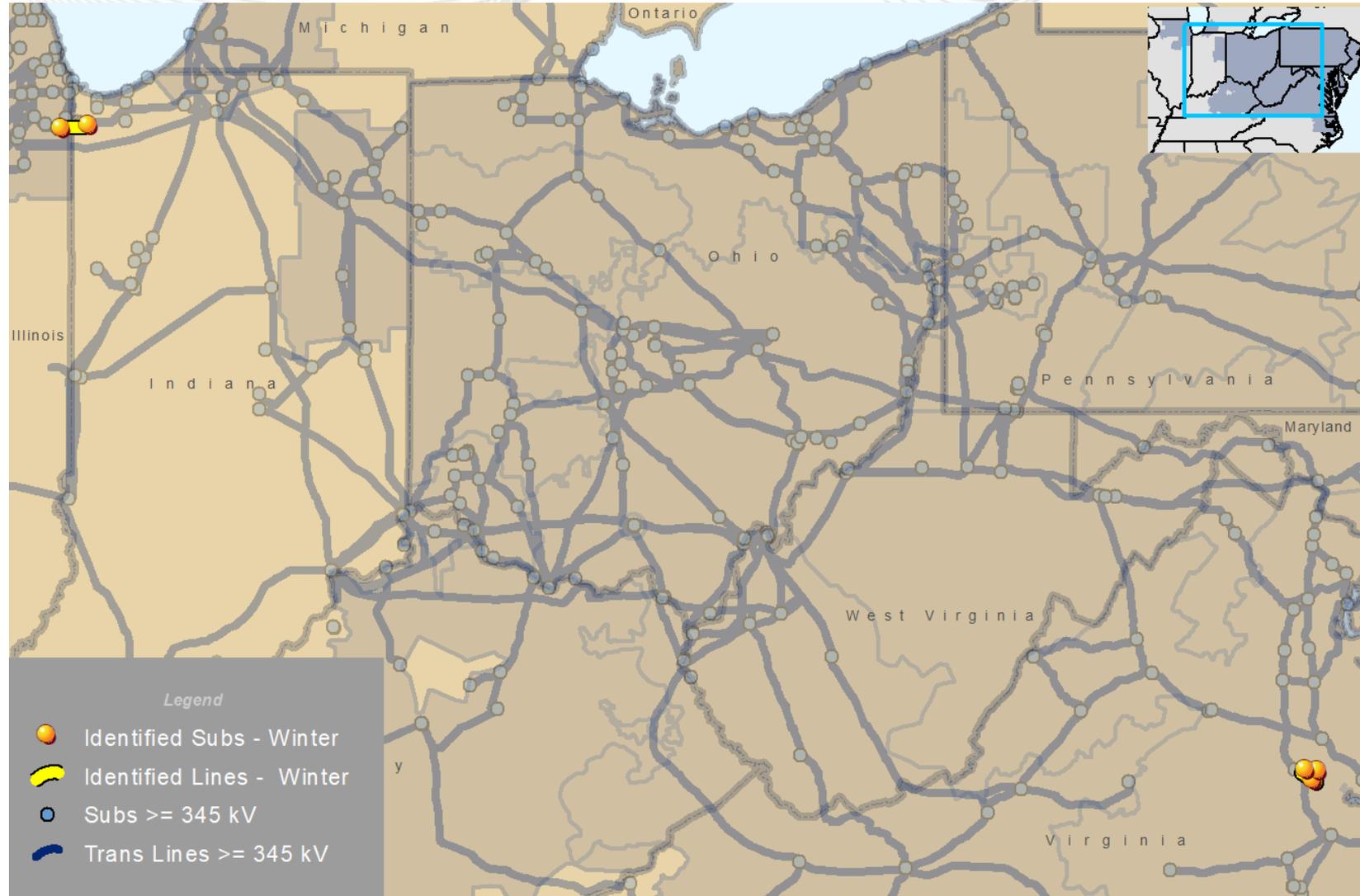
2025 Summer conditions

- 26 included violations
- 22 N-1-1
- 4 generation deliverability



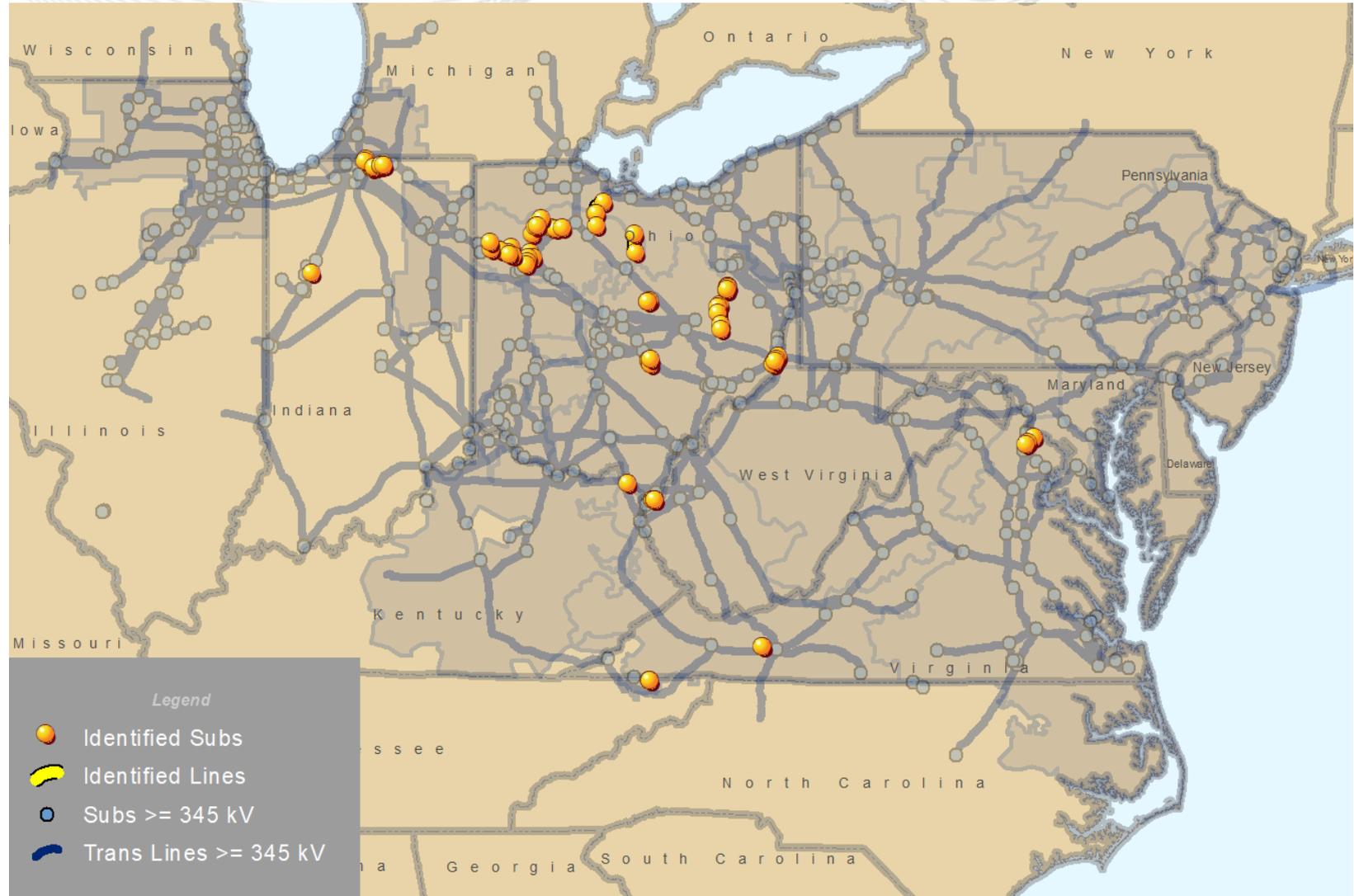
2025 Winter conditions

- 15 included violations
- 13 N-1-1
- 2 generation deliverability



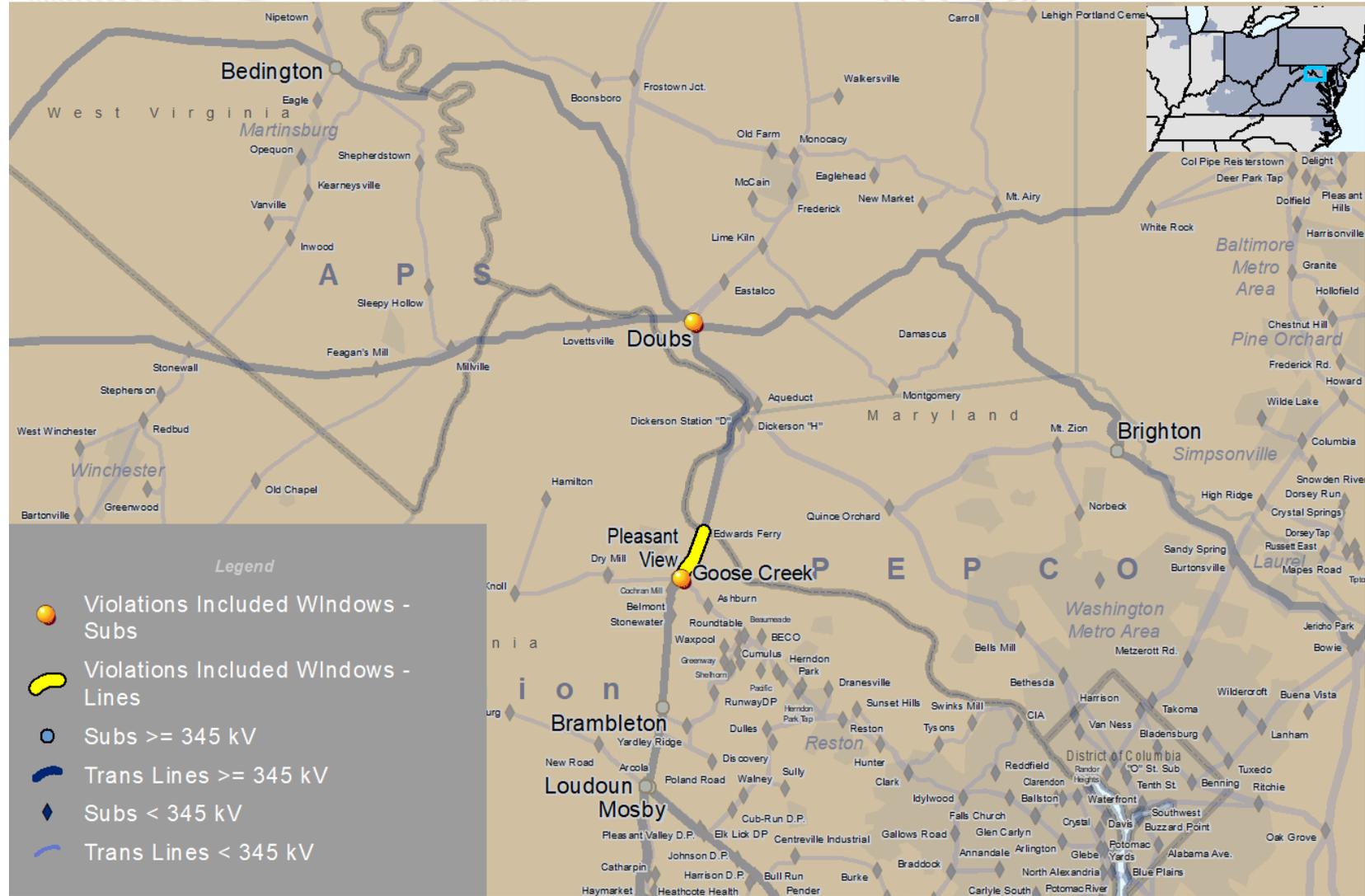
2025 FERC Form 715

- 165 included thermal violations

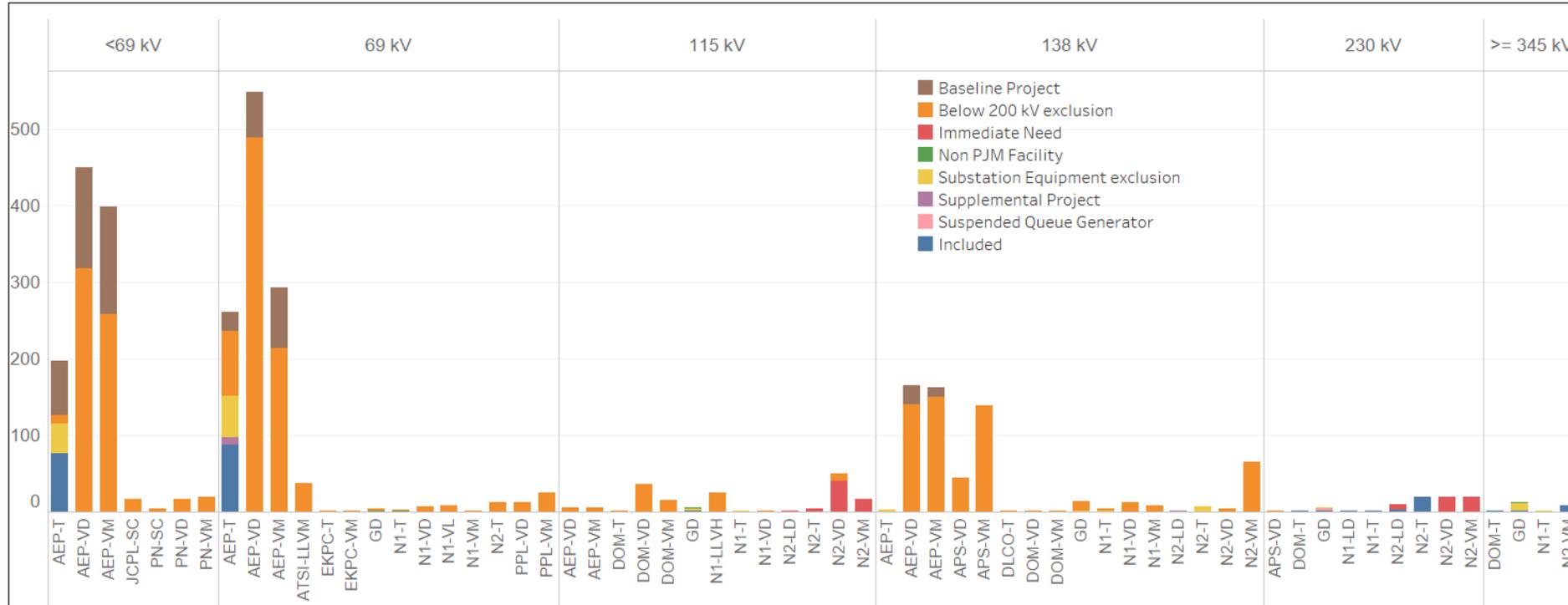


2025 Dominion Local TO Criterion for End of Life

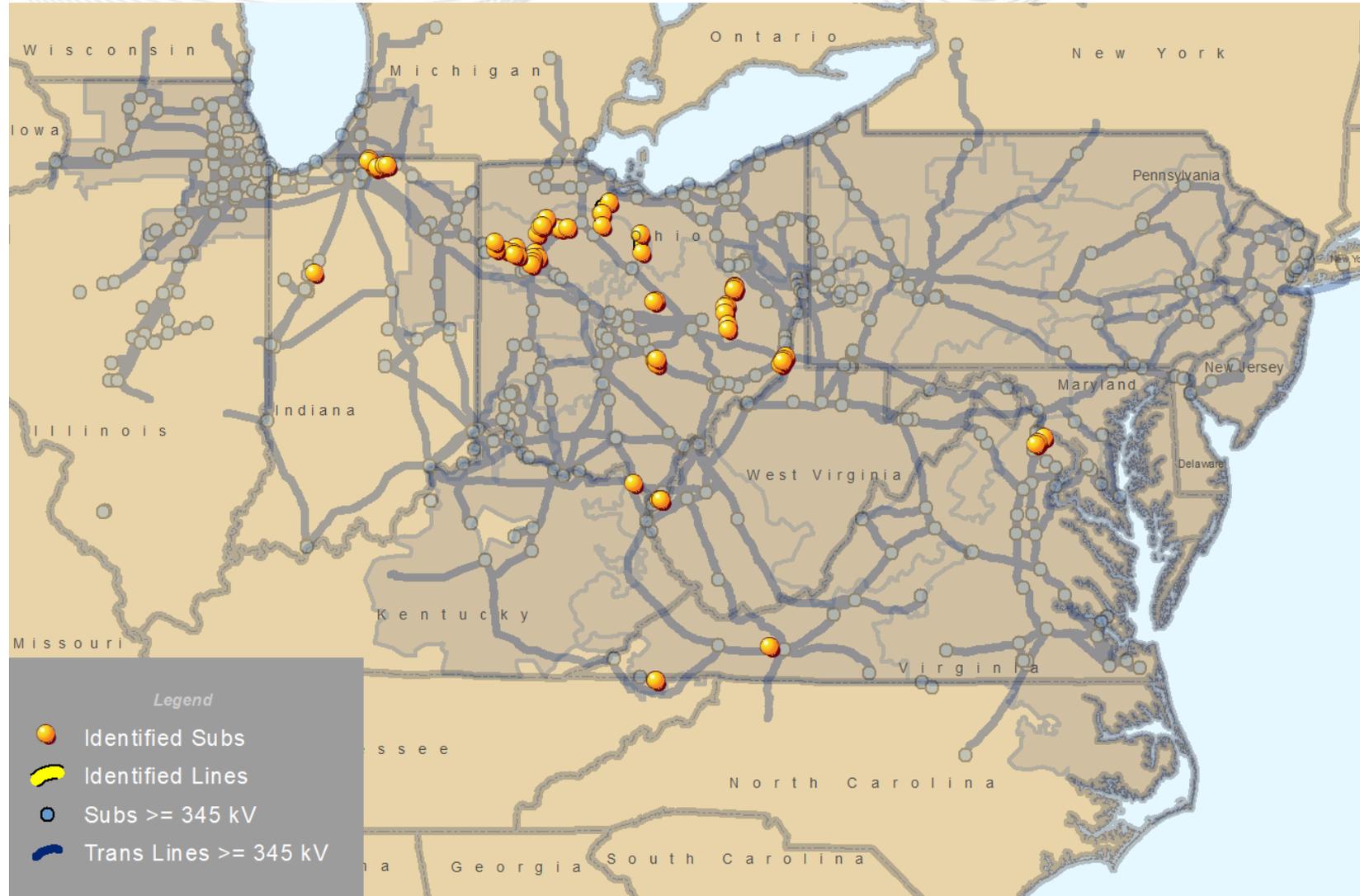
- 1 C2.9 End of Life Criteria

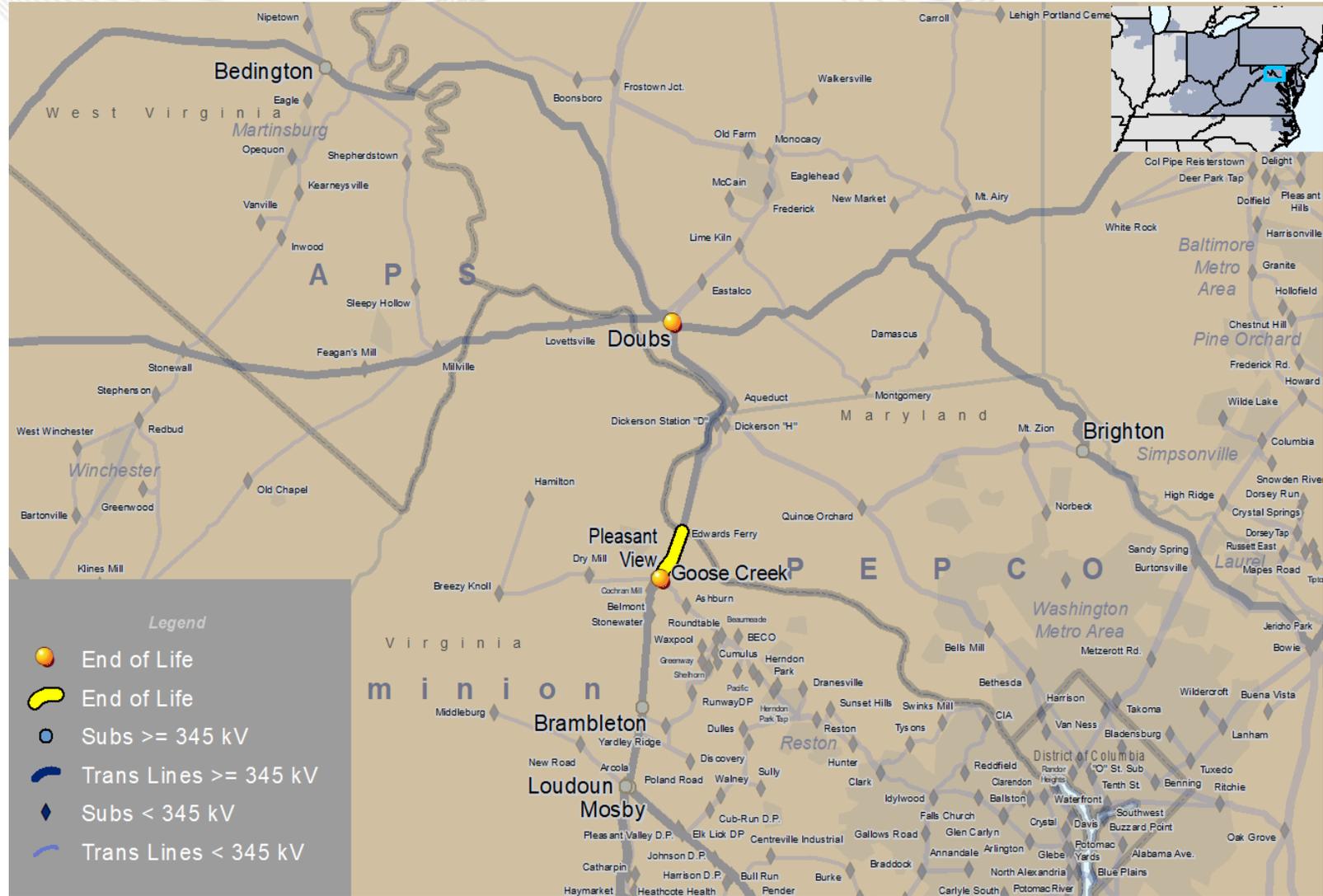


Voltage	Window Excluded							Window Included	Total
	Baseline Project	Below 200 kV exclusion	Immediate Need	Non PJM Facility	Substation Equipment exclusion	Supplemental Project	Suspended Queue Generator		
<69 kV	345	642			40			76	1,103
69 kV	163	898		4	55	10		87	1,217
115 kV		99	61	1	3			2	166
138 kV	37	585			12	1			635
230 kV		2	47		1		3	30	83
345 kV				1	10			11	22
500 kV								1	1
765 kV					1				1
Total	545	2,226	108	6	122	11	3	207	3,228



207 flowgates are eligible for Window 1





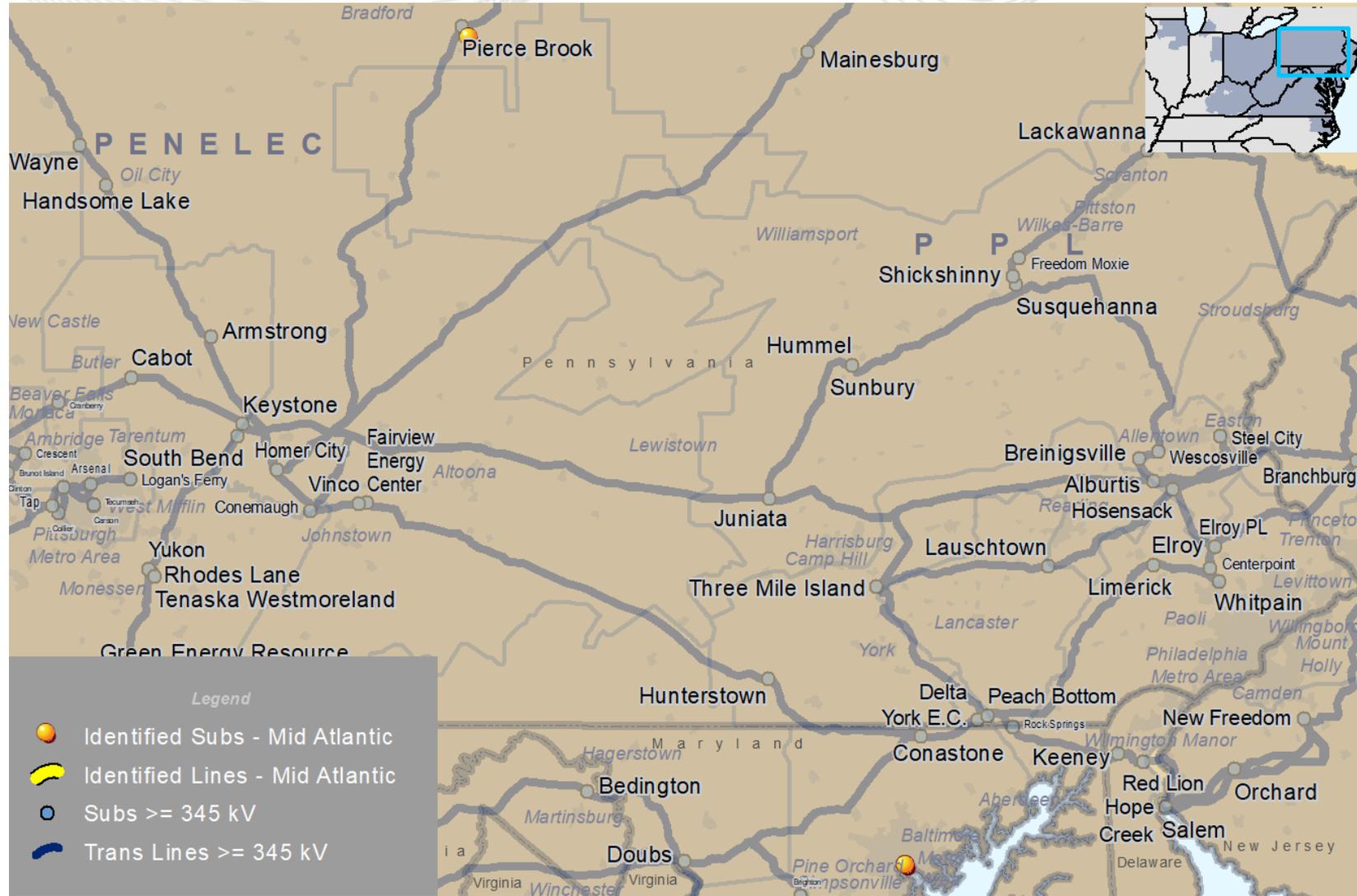
1 flowgate is eligible for Window 2

11 Eligible Flowgates

- 9 Voltage
- 2 Generation Deliverability

156 Flowgates Excluded from Window

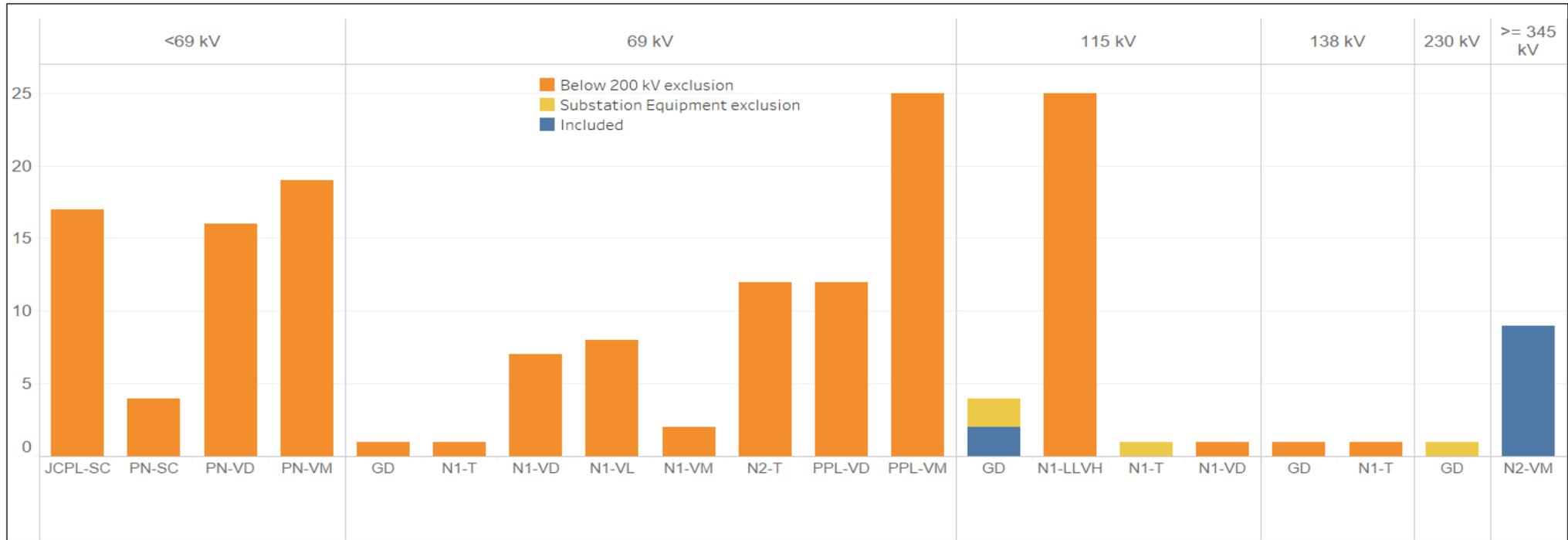
- 152 Below 200kV
- 4 Substation Equipment





2020 RTEP Proposal Window 1 – Mid-Atlantic Results

Voltage	Window Excluded		Window Included	Total
	Below 200 kV exclusion	Substation Equipment exclusion		
<69 kV	56			56
69 kV	68			68
115 kV	26	3	2	31
138 kV	2			2
230 kV		1		1
345 kV			9	9
Total	152	4	11	167

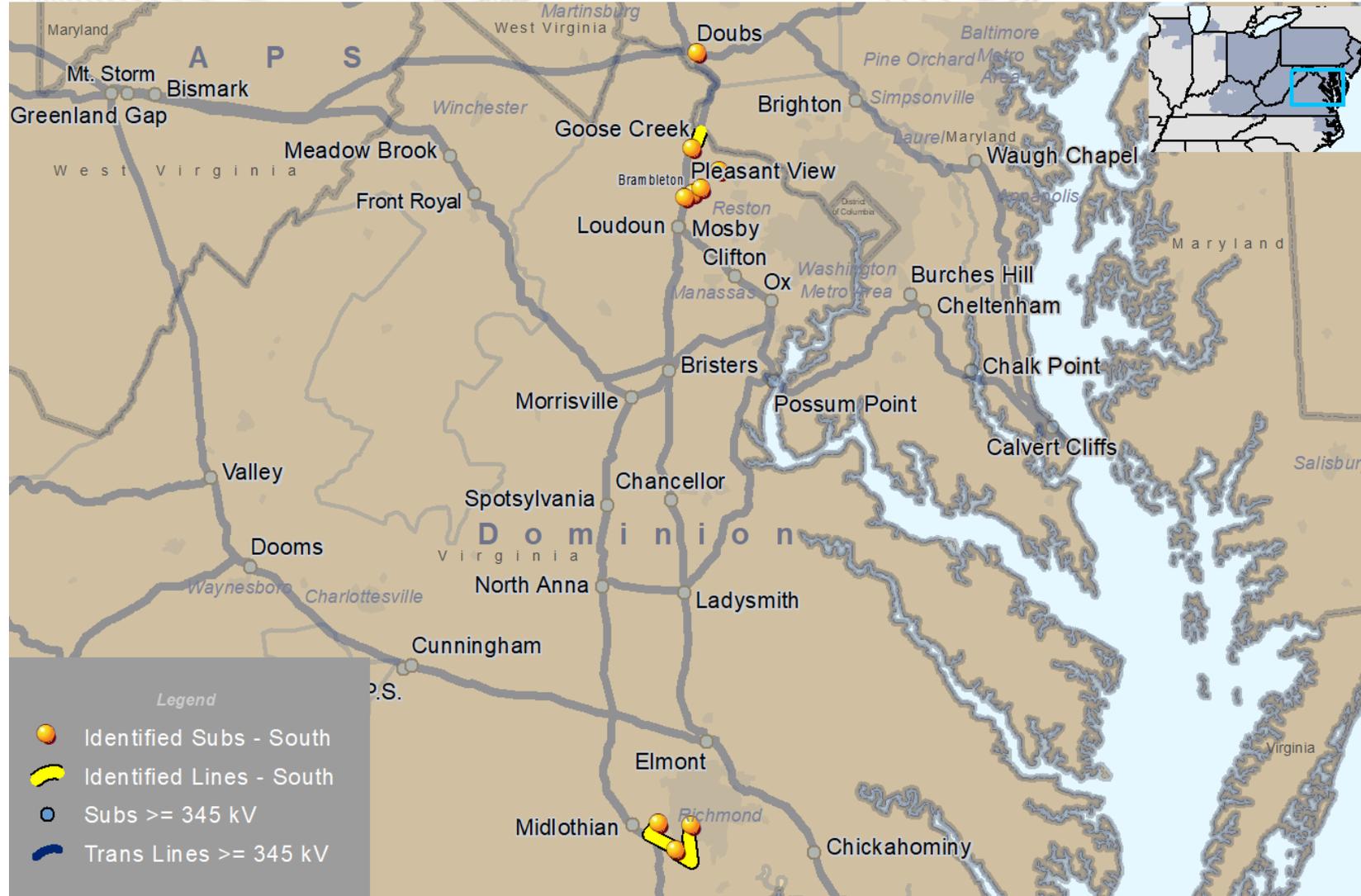


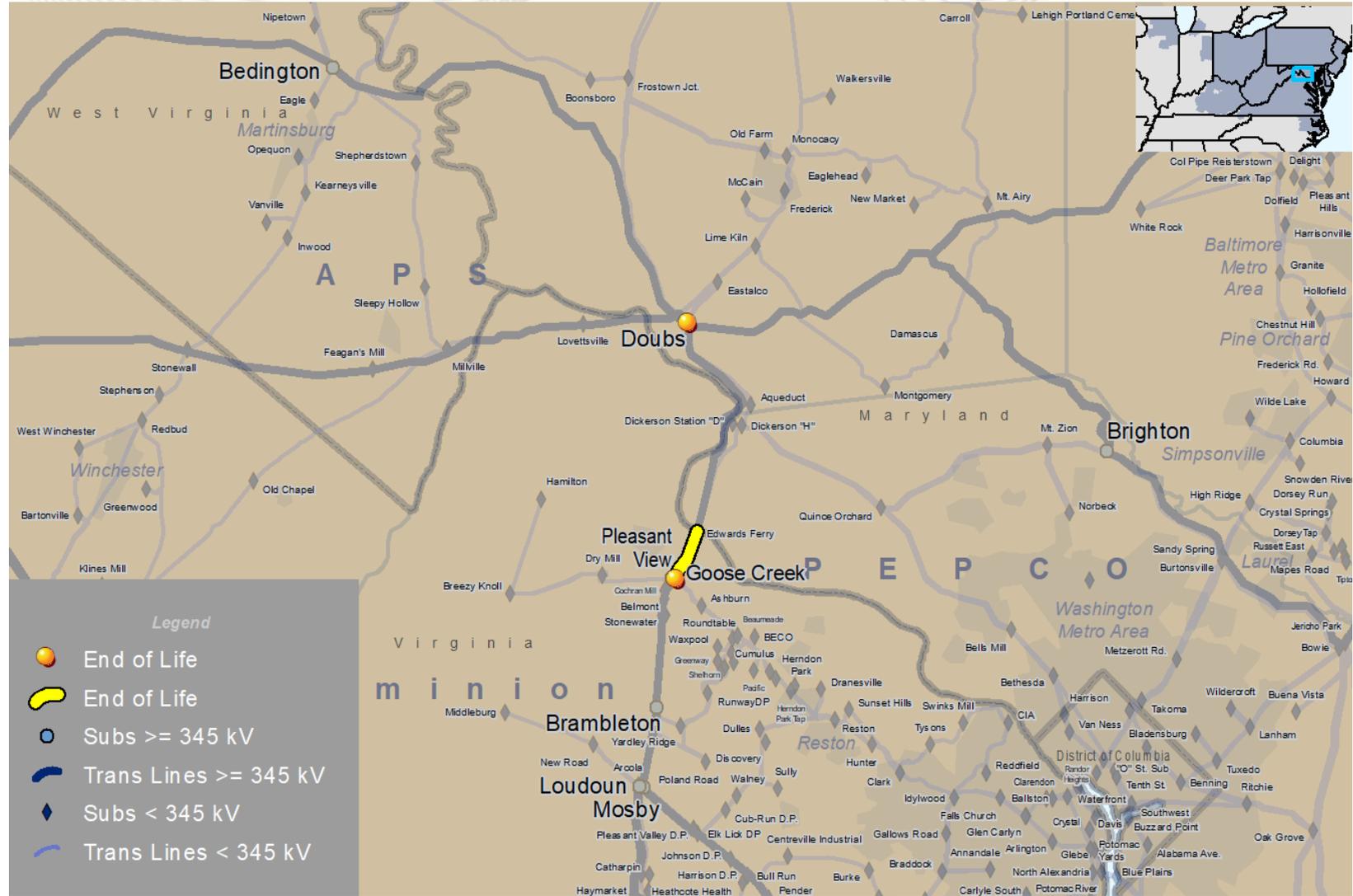
30 Eligible Flowgates

- 2 Generation Deliverability
- 23 Thermal
- 5 Load Drop

180 Flowgates Excluded from Window

- 68 Below 200kV
- 108 Immediate Need
- 1 Non PJM Facility
- 3 Suspended Queue Generator

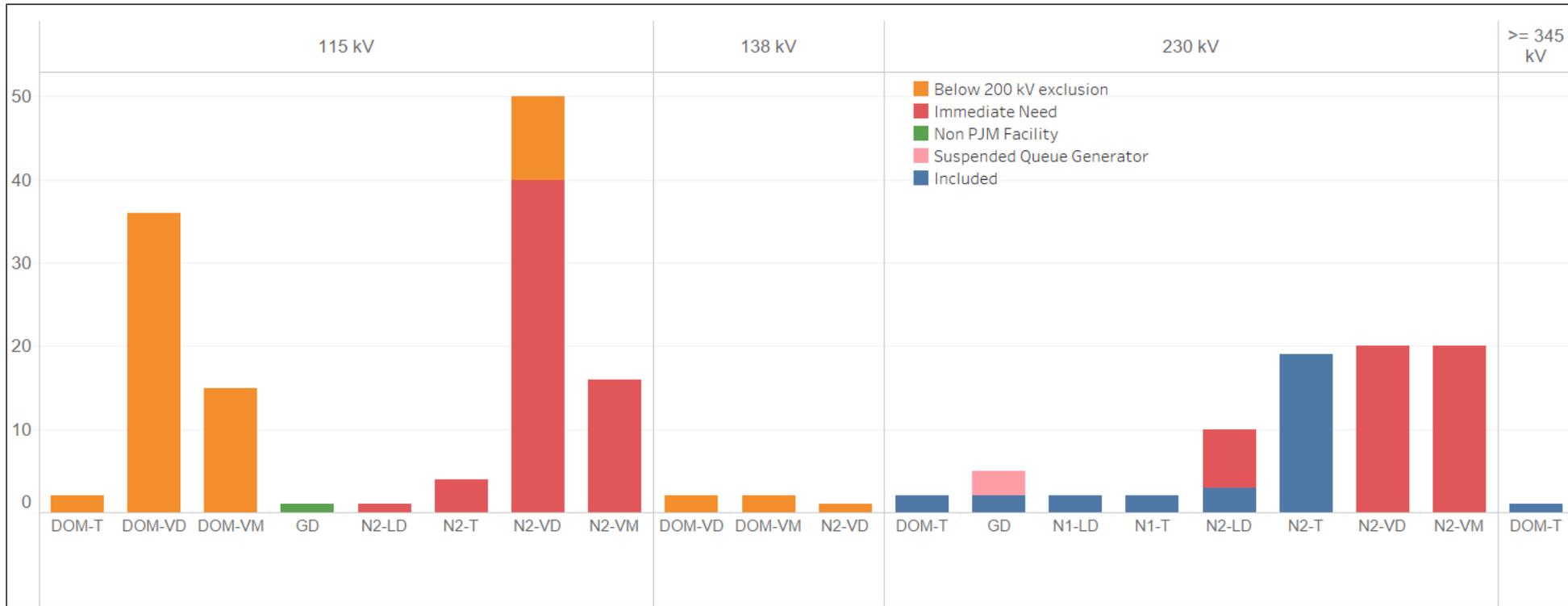




- 1 Eligible Flowgates
- End of Life Criteria

2020 RTEP Proposal Window 1 & 2 – South Results

Voltage	Window Excluded				Window Included	Total
	Below 200 kV exclusion	Immediate Need	Non PJM Facility	Suspended Queue Generator		
115 kV	63	61	1			125
138 kV	5					5
230 kV		47		3	30	80
500 kV					1	1
Total	68	108	1	3	31	211

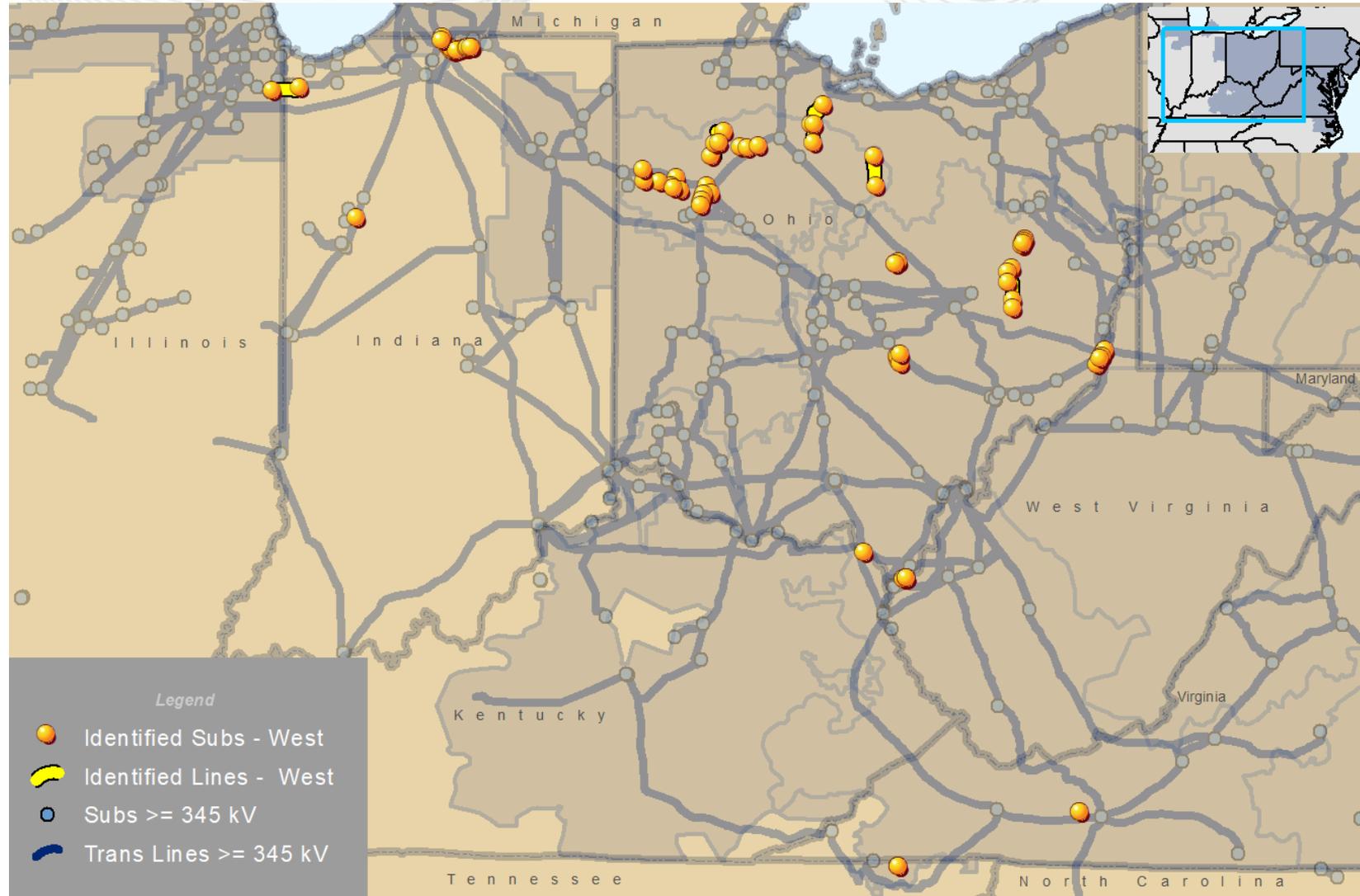


165 Eligible Flowgates

- 2 Generation Deliverability
- 163 Thermal

2685 Excluded Flowgates

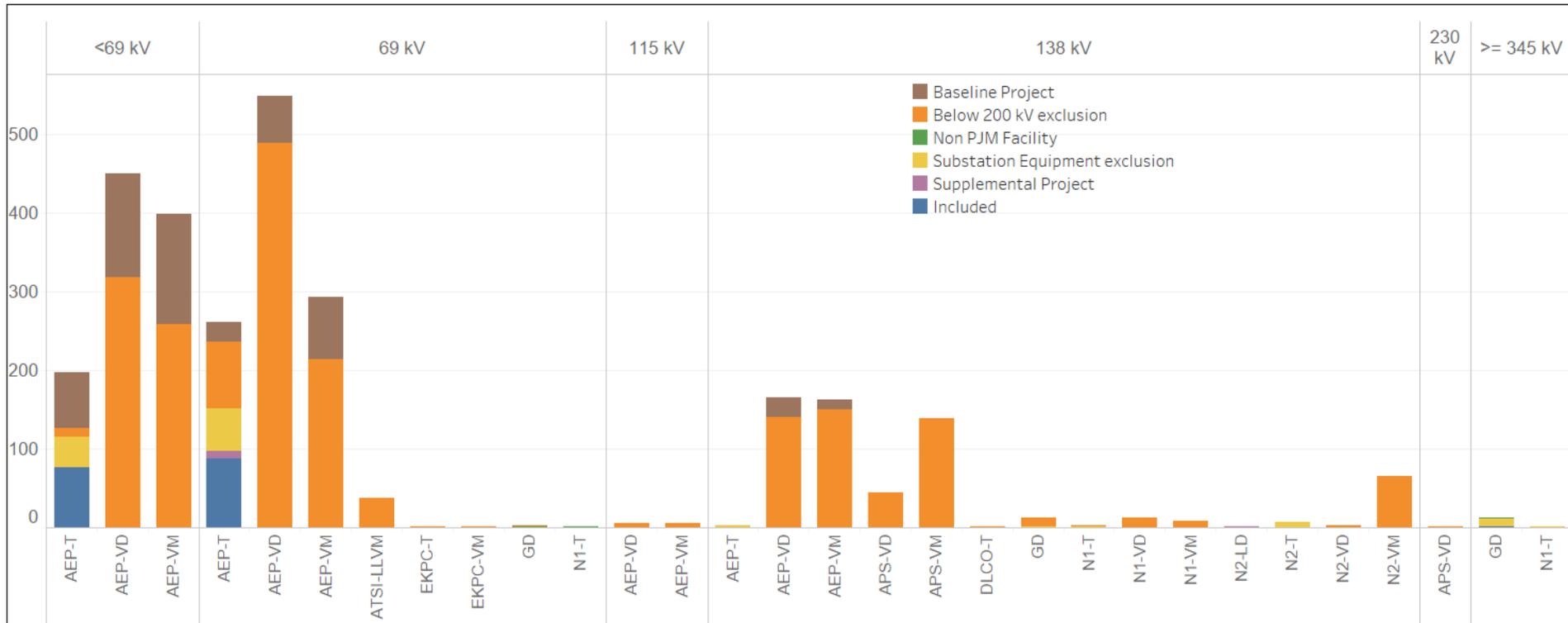
- 2006 Below 200 kV
- 118 Substation Equipment
- 545 Existing Baseline
- 11 fixed by supplemental project already in service due to customer needs or required as part of the customer service due to do no harm studies
- 5 Non PJM Facility





2020 RTEP Proposal Window 1 – West Results

Voltage	Window Excluded					Window Included	Total
	Baseline Project	Below 200 kV exclusion	Non PJM Facility	Substation Equipment exclusion	Supplemental Project		
<69 kV	345	586		40		76	1,047
69 kV	163	830	4	55	10	87	1,149
115 kV		10					10
138 kV	37	578		12	1		628
230 kV		2					2
345 kV			1	10		2	13
765 kV				1			1
Total	545	2,006	5	118	11	165	2,850



- If you have any questions related to Competitive Planning Process and Competitive Planner Tool, please contact ProposalWindow-Admin@pjm.com
- If you need an assistance with registration to Competitive Planner Tool, please contact AccountManager@pjm.com
- PJM Competitive Planning Process Webpage
<https://www.pjm.com/planning/competitive-planning-process.aspx>
- Access Competitive Planner tool through PJM Planning Center Webpage
<https://www.pjm.com/markets-and-operations/etools/planning-center.aspx>
- Competitive Planner Tool Updates at Tech Change Forum
<https://www.pjm.com/committees-and-groups/tech-change-forum.aspx>

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Reliability Analysis Update



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Questions?



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2020

- TEAC meetings are the following Tuesdays or Wednesday in 2020
- 1/7, 2/4, 3/10, 4/14, 5/12, 6/2, 7/7, 8/4, 9/1, 10/6, 11/4 (Wednesday), 12/1.

- V1 – 7/30/2020 – Original slides posted