2023 RTEP 2028 Preliminary Summer & Winter Gen Deliv 500KV and above Violation Summary

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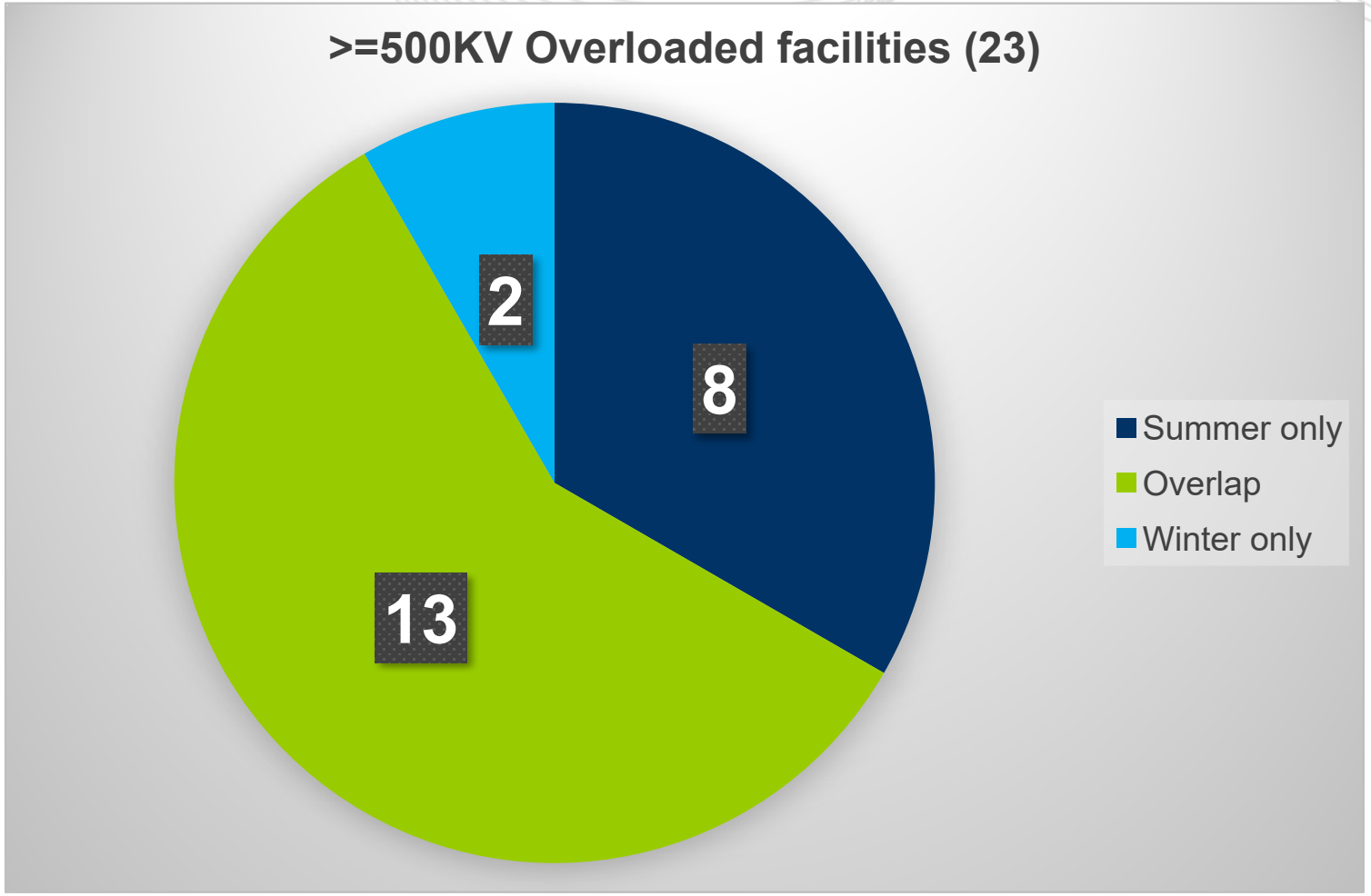
Purpose

- Summarize bulk transfer needs identified in the 2028 RTEP
- Summarize changes in the 2028 RTEP models impacting earlier and newly identified needs.
- Discuss how the 2028 RTEP needs may influence solutions to the 2027 RTEP Window 3.
- Focus on bulk transfer needs:
  - Vast majority of relevant overlapping needs are due to bulk transmission constraints for regional transfers.

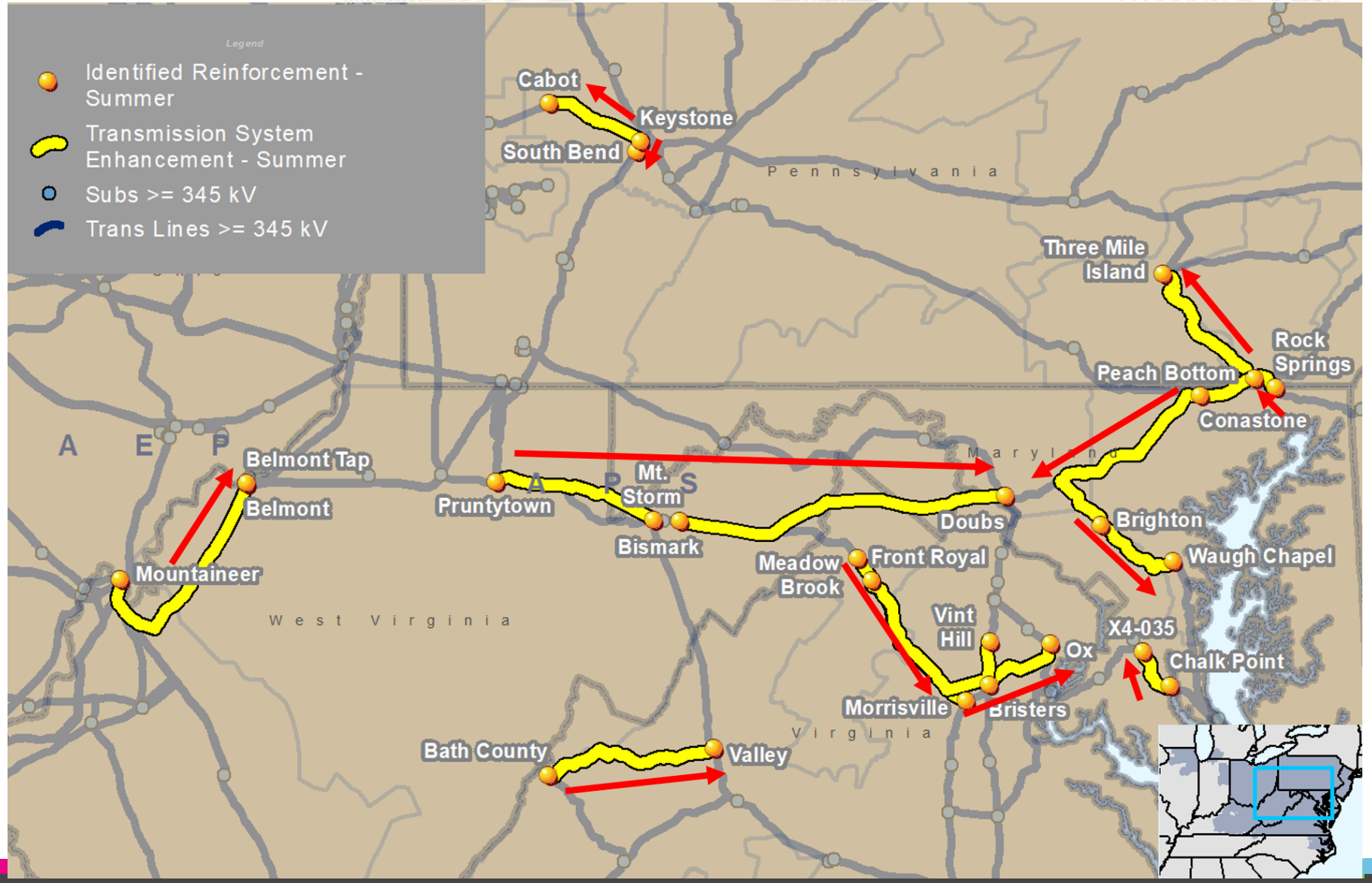
What's new in the 2028 RTEP Models?

- 2023 Load Forecast
- Implementation of New Planning Methodology:
  - Generation Block Dispatch (Area transfer limits considerations)
  - Generation Deliverability Testing Requirements
- Recent Major Generation Retirements
- NJ Offshore Wind (Partial)

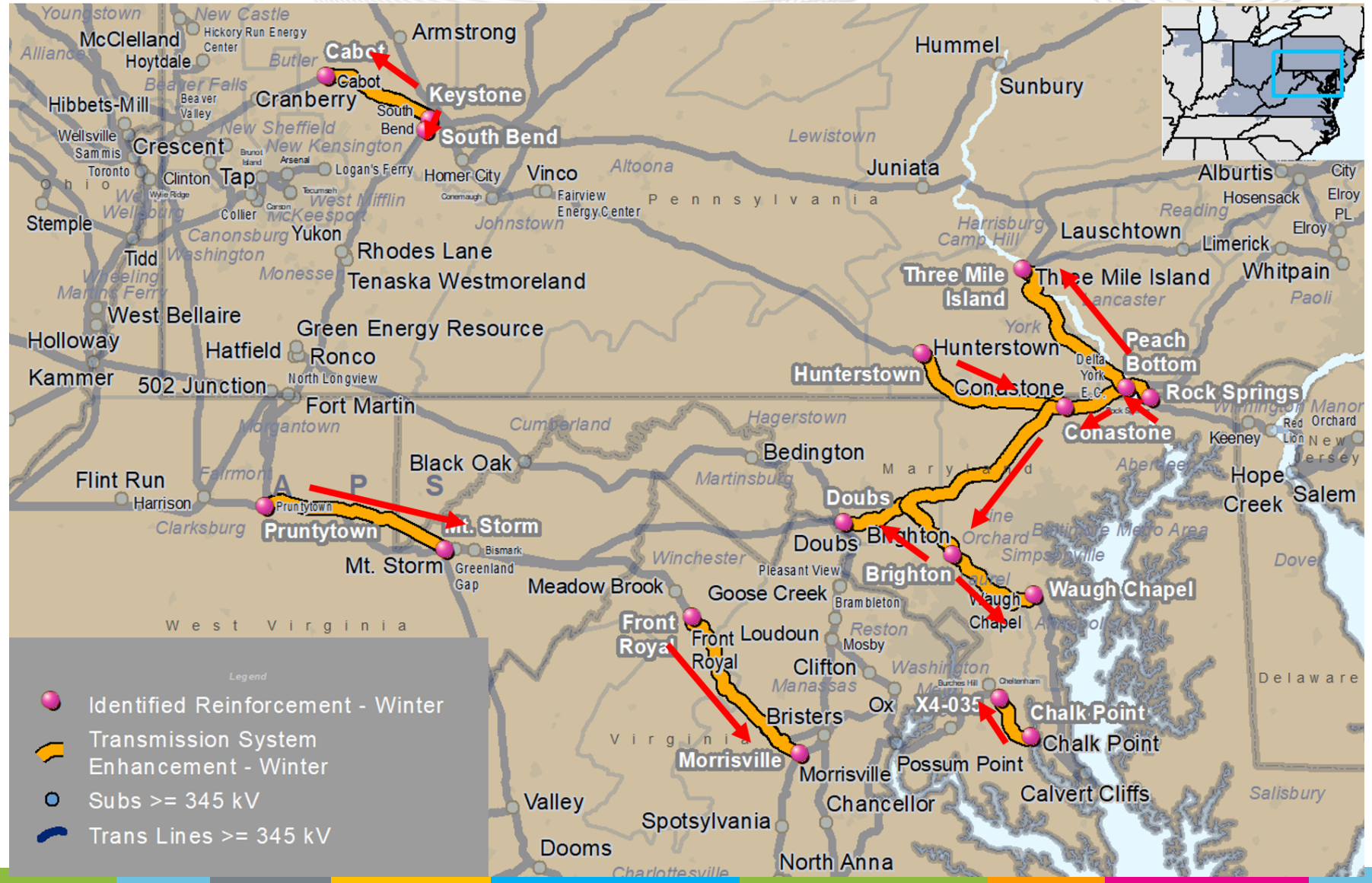
High Level Summary



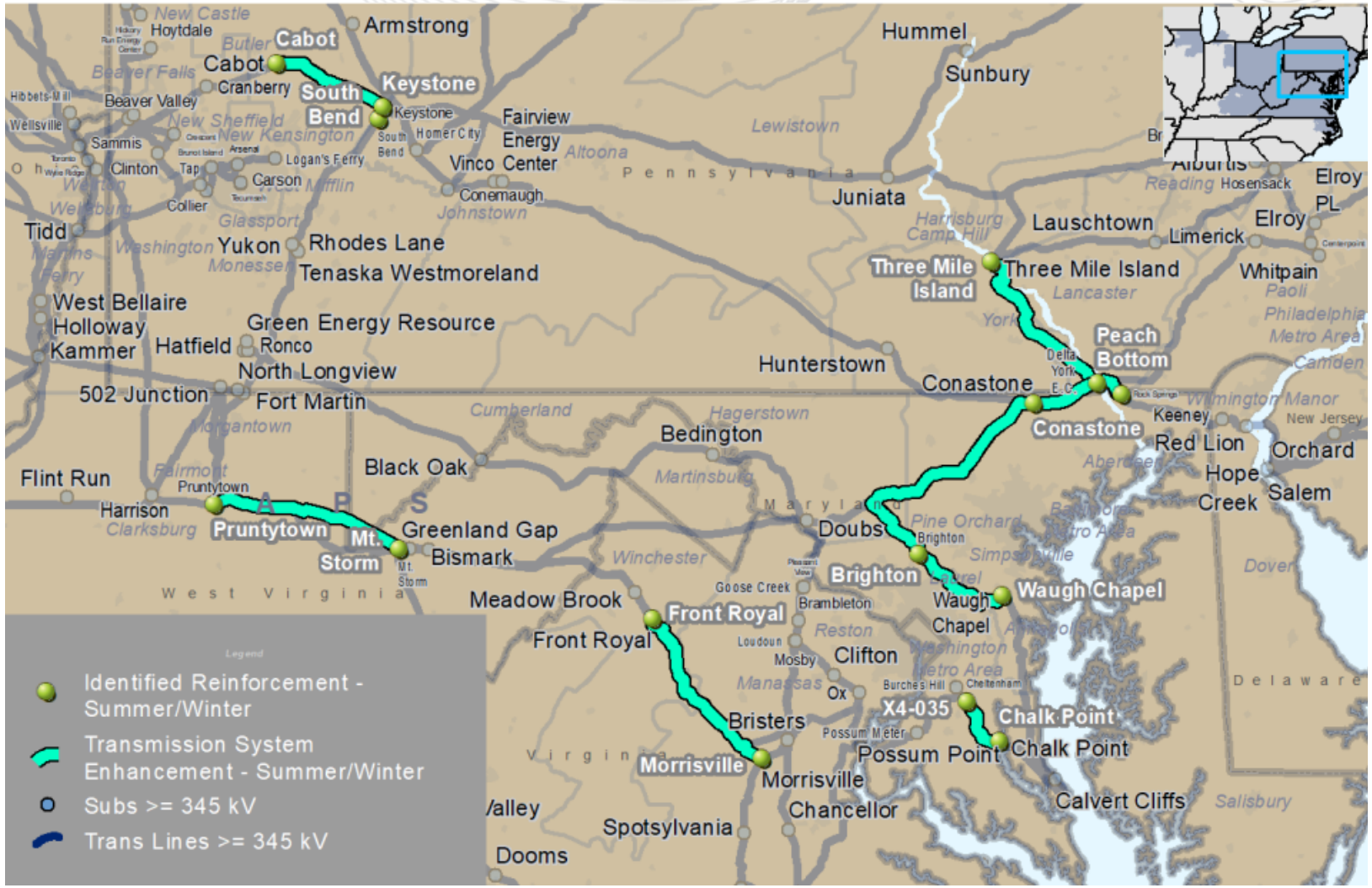
Overloaded 500kV and above facilities in Summer Gen Deliv



Overloaded 500kV and above facilities in Winter Gen Deliv



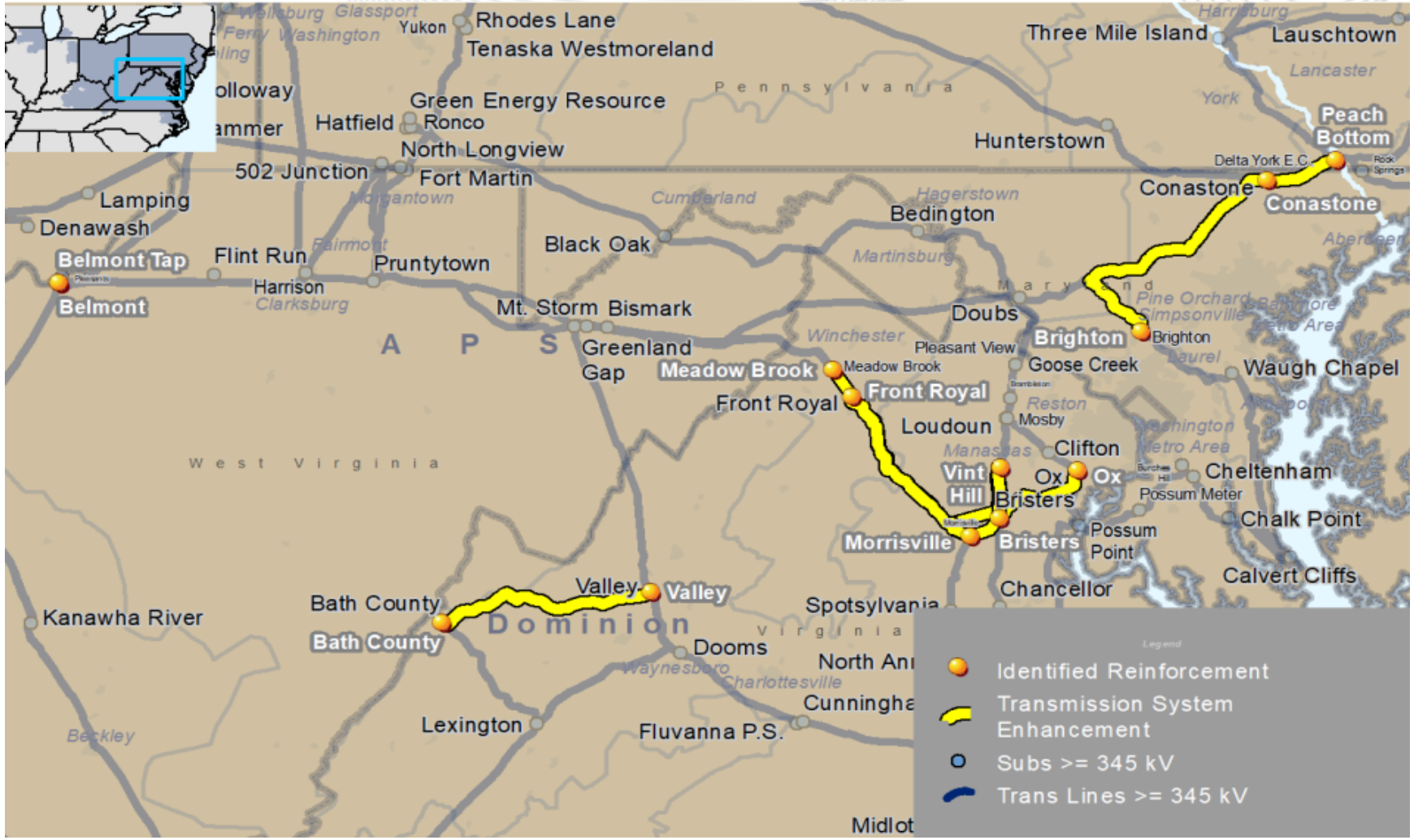
Overlap between Summer and Winter Violations



Overloaded 500kV and above facilities

Fr Bus	Fr Name	To Bus	To Name	CKT	kVs	Summer	Winter
235110	01MDWBRK	313440	8VINTHIL	1	500	Y	N
235112	01PRNTY	314937	8MT STORM2	1	500	Y	Y
242920	05BELMON	235102	01BELMNT	5	765/500	Y	N
242516	05MOUNTN	242920	05BELMON	1	765	Y	N
314901	8BATH CO	314991	8VALLEY SC	1	500	Y	N
314941	8BISMARK	235105	01DOUBS	1	500	Y	N
314900	8BRISTER	314919	8OX	1	500	Y	N
314929	8FRONT ROYAL	314916	8MORRSVL	1	500	Y	Y
314916	8MORRSVL	313440	8VINTHIL	1	500	Y	N
314991	8VALLEY SC	314926	8VALLEY	1	500	Y	N
200003	BRIGHTON	200025	W CHAPEL	1	500	Y	Y
200018	CHALK PT	200301	X4-035 TAP	1	500	Y	Y
200004	CNASTONE	200003	BRIGHTON	1	500	Y	Y
200011	KEYSTONE	235118	01SOBEND	1	500	Y	Y
200011	KEYSTONE	235104	01CABOT	1	500	Y	Y
200066	PCHBTM1N	200016	3 MILE I	1	500	Y	Y
200066	PCHBTM1N	200065	PCHBTM2S	2	500	Y	Y
200064	PCHBTM1S	200004	CNASTONE	1	500	Y	Y
200065	PCHBTM2S	200064	PCHBTM1S	Z1	500	Y	Y
200065	PCHBTM2S	200064	PCHBTM1S	Z2	500	Y	Y
200065	PCHBTM2S	200066	PCHBTM1N	2	500	Y	Y
200051	ROCKSPGS	200065	PCHBTM2S	1	500	Y	Y
200003	BRIGHTON	235105	01DOUBS	1	500	N	Y
200026	HUNTERTN	200004	CNASTONE	1	500	N	Y

500kV and above Facilities Limited by Conductor



List of Facilities Limited by Conductor Summary

Fr Bus	Fr Name	To Bus	To Name	CKT	kVs	Areas	Pre Contingency Loading	Number of Single Contingencies and Worst Loading	Number of Breaker Contingencies and Worst Loading	Number of Tower Contingencies and Worst Loading	Number of Bus Contingencies and Worst Loading
235110	01MDWBRK	313440	8VINTHIL	1	500	201/345		(1)103%	(4)113%		
242920	05BELMON	235102	01BELMNT	5	765/500	201/205		(3) 110%	(3) 136%		
314901	8BATH CO	314991	8VALLEY SC	1	500	345		(1) 102%			
314900	8BRISTER	314919	8OX	1	500	345				(1) 104%	
314929	8FRONT ROYAL	314916	8MORRSVL	1	500	345		(1) 113%			
314916	8MORRSVL	313440	8VINTHIL	1	500	345		(7) 123%	(10) 131%	(3) 132%	
314991	8VALLEY SC	314926	8VALLEY	1	500	345		(1) 102%			
200004	CNASTONE	200003	BRIGHTON	1	500	225	185%	(13) 183%	(11) 188%	(12) 210%	(13) 179%
200064	PCHBTM1S	200004	CNASTONE	1	500	225	213%	(12) 188%	(15) 197%	(13) 195%	(12) 192%
200066	PCHBTM1N	200065	PCHBTM2S	2	500	225			(2) 141%		
200065	PCHBTM2S	200064	PCHBTM1S	Z1	500	225	100%	(2) 147%	(4) 215%		
200065	PCHBTM2S	200064	PCHBTM1S	Z2	500	225	114%	(9) 200%	(9) 211%	(4) 103%	(3) 105%

Summary on the >= 500kV overloaded facilities

12 facilities are limited by conductor and expect to drive regional solutions

- **North:** Peach Bottom-Conastone –Brighton 500KV path is the most severe overload in the study (and overloaded in window 3). Peach Bottom 500kV station buses are heavily overloaded.
  - Loss of the Peach Bottom – Conastone 500kV line causes overloads on 22 different 230KV circuits
  - Loss of the Conastone – Brighton 500kV line causes overloads on 23 different 230kV circuits
  - Reinforcing the Peach Bottom-Conastone-Brighton path will relieve/avoid the associated 230 kV overloads in addition to addressing the existing 500kV path overload.
- **South:**
  - Morrisville – Vint Hill 500kV line and Bath County – Valley 500KV line are overloaded in Window 3,
  - The proposed solution for the above line could potential address/impact Meadow Brook – Vint Hill 500kV, Morrisville –Front Royal 500KV and Brister – OX 500KV overloads.
- **West:**
  - Belmont 765/500kV transformer

Summary on the >= 500kV overloaded facilities -Continued

11 facilities are terminal equipment limited, can be addressed by substation equipment upgrades (subject to confirmation)

- **North:**
  - Peach Bottom – TMI 500KV line
  - Brighton – Doubs 500kV line
  - Chalk Point – X4-035 Tap 500kV line
  - Huntertown – Conastone 500kVline
  - Brighton – Waugh Chapel 500kVline
  - Rockspring – Peach Bottom 500KVline

- **West:**
  - Pruntytown –Mt. Storm 500kV line
  - Mountaineer - Belmont 765kV line
  - Bismark - Doubs 500KV line
  - Keystone – South Bend 500kV line
  - Keystone – Cabot 500kV line

Key Takeaways

- Preliminary 2028 RTEP needs further affirm the earlier identified needs under 20227 RTEP W3 and the need for robust solutions.

- 2027 RTEP W3 solutions need to be robust
  - ➢ This allows for prudent right sizing of solutions
  - ➢ Solutions offered under 2027 W3 need to be “compatible” with the needs identified part of the 2028 RTEP.
  - ➢ Minimizes scope of the planned 2028 RTEP retool (towards end of 2023); enhances efficiency and timely development.

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Revision History

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1	4/26/2023	• Original slides posted

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