



Transmission Expansion Advisory Committee Market Efficiency Update

November 5, 2015



Market Efficiency Long Term Proposal Window Update

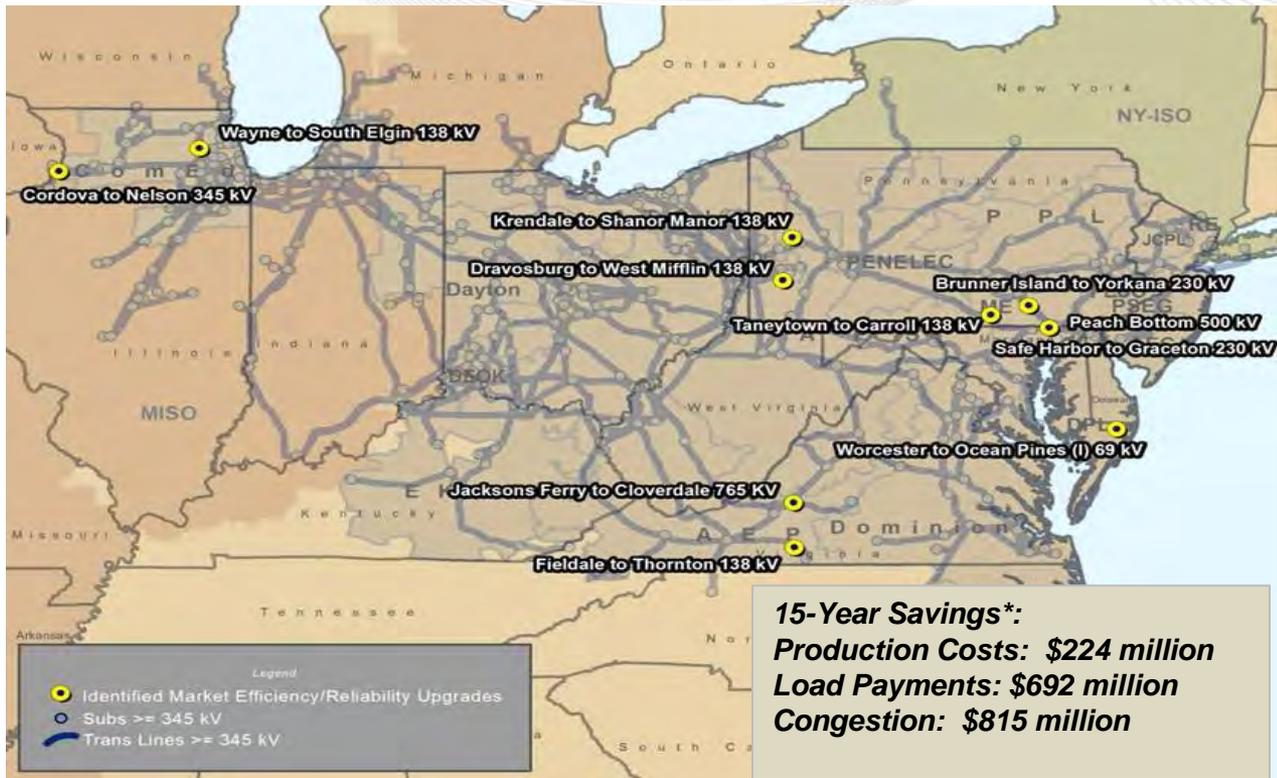
Area of Proposal	Number of Proposals	Greenfield Proposals	TO Upgrade Proposals
AEP	3	1	2
APS	5	3	2
APSOUTH and/or AEP-DOM Area	41	37	4
ATSI	4	-	4
BGE/PPL	4	-	4
ComEd	15	4	11
DEOK	8	8	-
DPL	1	-	1
DUQ	4	3	1
PECO	5	-	5
PSEG	3	2	1
Grand Total	93	58	35

Proposals were sorted based on the congestion they were addressing.

- Group 2-19 facilities* include facilities in which congestion may be alleviated with lower cost more locational type projects. Projects associated with these facilities can be more easily constructed or sometimes only require upgrades to existing equipment.
 - Projects were approved at PJM board in October
- Group 1 facilities are regional facilities associated with PJM IROL (Interconnected Reliability Operating Limit) Reactive interfaces. Evaluation of these projects is ongoing and may be complete either later this year or in 2016.

*Project evaluations still in progress for group 2 to study RPM benefits

October Board Approved Market Efficiency Projects



*Savings represent nominal value with assumptions of no additional RTEP upgrades

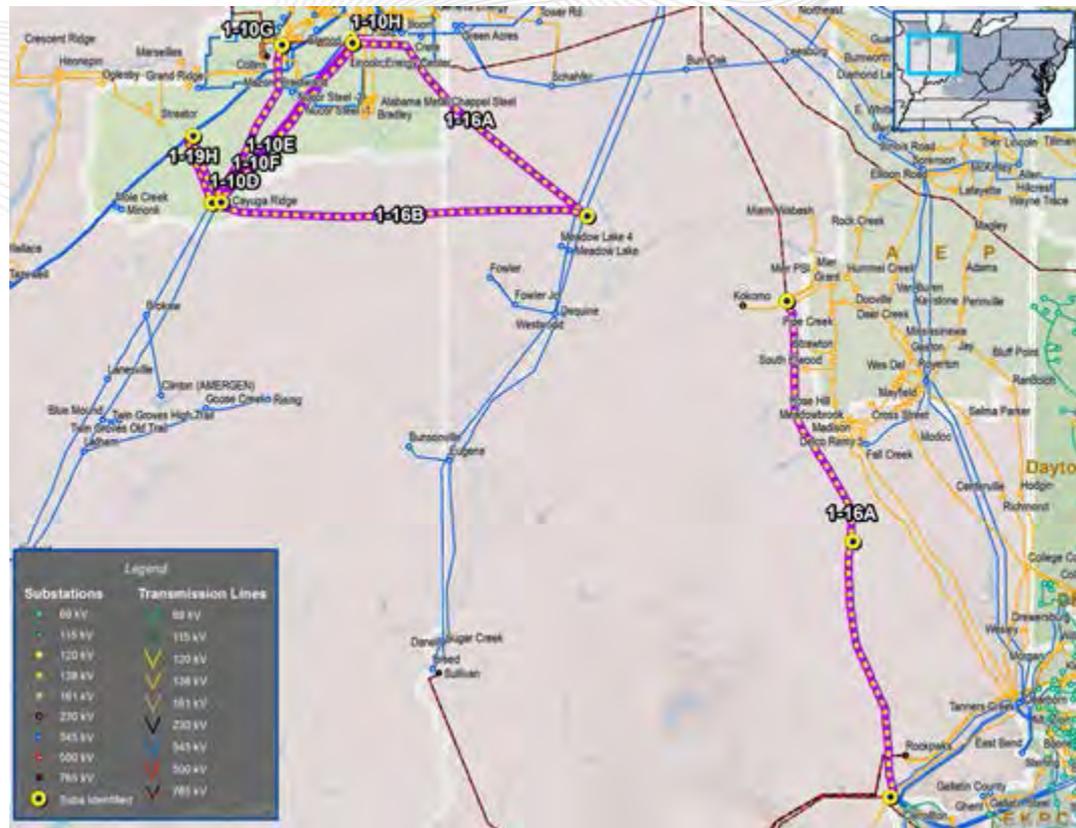
Projects details provided in Appendix A



UNDER EVALUATION:

Group 2: COMED - Loretto to Wilton Center

- 9 Projects:
 - 1-10C,1-10D,1-10E,1-10F,1-10G,1-10H,1-16A,1-16B,1-19H
- Cost:
 - From \$11.5M to \$290M
- Constraints:
 - Loretto to Wilton CTR 345 kV
- 2018/2019 RPM BRA Results
 - COMED LDA binding with Loretto to Wilton CTR 345 kV as limiting CETL constraint



- The Reliability Pricing Model Benefit component of the Benefit/Cost Ratio evaluates the benefits of a proposed economic-based enhancement or expansion that will be realized in the capacity market and is expressed as:
 - Reliability Pricing Benefit for Regional Projects = $[.50] * [\text{Change in Total System Capacity Cost}] + [.50] * [\text{Change in Load Capacity Payment}]$
 - Reliability Pricing Benefit for Lower Voltage Projects = $[1.0]*[\text{Change in Load Capacity Payment}]$
- RPM Benefits Study Process:
 1. Determine if upgrades impact CETL values.
 2. Run RPM auction for multiple study years using updated CETL values.
 3. Measure Benefits for 15 year period.
- PJM completed the analysis to determine the COMED LDA CETL impact of each proposed upgrades from group 2.
 - Three different levels of CETL increases (279 MW, 769 MW, 1086 MW)
 - Upgrades with same level of CETL increase will provide the same RPM benefits
- Total Benefits = Energy Benefits + RPM Benefits

*Only PJM transmission zones that show a decrease will be considered in determining the Change in Load Capacity Payment

Project ID	Upgrade/ Greenfield	Cost (\$M)	Target Zone	kV Level	ME Constraints Identified	Evaluation	Energy B/C Ratio	RPM B/C Ratio	CETL Increase (MW)
201415_1-10D	Upgrade	11.5	ComEd	345	Lorreto to Wilton CTR 345 kV	Lower Voltage	1.14	TBD	279
201415_1-10F	Upgrade	14	ComEd	345	Lorreto to Wilton CTR 345 kV	Lower Voltage	0.79	TBD	279
201415_1-16A	Greenfield	240	AEP/CE/NIPS	345	None Specified	Lower Voltage	.07	TBD	1086
201415_1-16B	Greenfield	290	AEP/CE/NIPS	345	Lorreto to Wilton CTR 345 kV	Regional	.08	TBD	769
201415_1-10C	Greenfield	37.8	ComEd	345	Lorreto to Wilton CTR 345 kV	Lower Voltage	0.73	TBD	< 0
201415_1-19H	Greenfield	42.9	ComEd	345	Lorreto to Wilton CTR 345 kV	Lower Voltage	0.9	TBD	< 0
201415_1-10E	Upgrade	17.4	ComEd	345	Lorreto to Wilton CTR 345 kV	Lower Voltage	0.93	TBD	279
201415_1-10G	Upgrade	19.9	ComEd	345	Lorreto to Wilton CTR 345 kV	Lower Voltage	0.81	TBD	279
201415_1-10H	Upgrade	25.9	ComEd	345	Lorreto to Wilton CTR 345 kV	Lower Voltage	0.62	TBD	279

Project Evaluations Group 1 (ApSouth/AEP-DOM Projects)

Project Name	Company	Cost (\$M)	In Service Date	Base B/C Ratio with Board Approved Projects Included	Congestion Savings AEP-DOM (\$M)	Congestion Savings AP-South (\$M)	Congestion Savings Interfaces (\$M)	Congestion Savings RTO (\$M)	Production Cost Savings (\$M)	Load Payment Savings (\$M)
201415_1-6B	Dominion	\$25	2019	1.94	(\$2.88)	\$10.95	\$24.03	\$23.80	\$15.65	(\$16.67)
201415_1-6C	Dominion	\$39	2019	4.64	(\$2.27)	\$91.67	\$79.33	\$82.35	\$25.94	\$86.56
201415_1-6D	Dominion	\$43	2019	2.42	(\$2.50)	\$52.58	\$64.81	\$63.31	\$33.74	(\$4.16)
201415_1-9A	DOM High Voltage/Transource	\$301	2020	2.64	\$10.92	\$134.02	\$163.57	\$174.41	\$67.12	\$48.28
201415_1-14A	DATC	\$52	2019	1.79	\$0.16	\$37.40	\$44.49	\$33.48	\$18.44	(\$153.50)
201415_1-17A	Nextera	\$17	2019	3.64	(\$28.21)	\$45.18	\$32.82	\$30.97	\$17.38	\$11.36
201415_1-17C	Nextera	\$16	2019	2.45	(\$20.76)	\$42.49	\$37.47	\$35.62	\$17.86	\$3.82
201415_1-19B	LSPower	\$39	2020	4.07	(\$28.73)	\$19.04	\$9.89	\$11.44	\$6.91	\$35.10
201415_1-19C	LSPower	\$42	2020	5.66	\$5.95	(\$56.37)	(\$29.65)	(\$25.91)	(\$14.47)	\$7.22
201415_1-19G	LSPower	\$49	2020	2.76	(\$7.95)	\$7.87	\$17.71	\$17.15	\$18.87	\$2.22

*Congestion, production cost, and load payment savings represent 2019 + 2022 study years. Positive values represents a benefit.



AP-South/AEP-DOM Combination Projects

PJM is currently studying combination projects created by selecting the best components of the most promising candidates:

Project Name	Company	Cost	ISD	Selected Project
201415_1-6B	Dominion	\$25	2019	1-6C
201415_1-6C	Dominion	\$39	2019	
201415_1-6D	Dominion	\$43	2019	
201415_1-9A	DOM High Voltage/Transource	\$301	2020	1-9A
201415_1-14A	DATC	\$52	2019	1-14A
201415_1-17A	Nextera	\$17	2019	1-17A
201415_1-17C	Nextera	\$16	2019	
201415_1-19B	LSPower	\$39	2020	1-19G
201415_1-19C	LSPower	\$42	2020	
201415_1-19G	LSPower	\$49	2020	



AP-South/AEP-DOM Combination Projects (continue)

The following combinations are currently being considered for analysis:

Combination Projects	Costs (\$ millions)	6C	9A	14A	17A	19G
6C(Caps Only)	\$ 14.1	■				
9A(Caps Only)	\$ 19.2		■			
6C(Caps Only) + 9A(Caps Only)	\$ 29.2	■	■			
6C(Caps Only) + 14A	\$ 65.6	■		■		
9A(Caps Only) + 14A	\$ 70.7		■	■		
6C(Caps Only)+9A(Caps Only)+14A	\$ 84.7	■	■	■		
6C(Caps Only) + 17A	\$ 30.6	■			■	
9A(Caps Only) + 17A	\$ 35.7		■		■	
6C(Caps Only)+9A(Caps Only)+17A	\$ 49.7	■	■		■	
6C(Caps Only) + 19G	\$ 62.7	■				■
9A(Caps Only) + 19G	\$ 67.8		■			■
6C(Caps Only)+9A(Caps Only)+19G	\$ 81.8	■	■			■
6C(Caps Only)+9A(Caps Only)+17A+19G	\$ 98.3	■	■		■	■

- Finalize the combination projects analysis
- Finalize reviews for costs and in-service dates
- Determine project(s) that pass B/C test, address congestion driver(s), and provide greatest market benefits
- Reliability/Constructability Review
- Reduce/Recommend Project(s)

Appendix A

Group 2-19

Board Approved Projects Details

Group	PJM Window Project ID	PJM Baseline ID	Area	Constraint	Cost (\$m)	Type	ISD	B/C 2014 Base	B/C 2015 Sensitivity	Does Project address congestion on Driver?
Group 4	201415_1-18G	b2688	APS	Taneytown to Carroll 138 kV	5.2	Upgrade	2019	55.7	90.1	Yes
Group 5	201415_1-12A	b2689	DUQ	Dravosburg to West Mifflin 138 kV	11.18	Upgrade	2018	5.8	2.0	Yes
Group 8	201415_1-2A	b2690	PPL - BGE	Safe Harbor to Graceton 230 kV	1.1	Upgrade	2019	4.3	14.4	Yes
Group 8	201415_1-2B	b2691	ME - PPL	Brunner Island to Yorkana 230 kV	3.1	Upgrade	2019	73.3	22.2	Yes
Group 9	201415_1-10J	b2692	COMED	Cordova to Nelson 345 kV	24.6	Upgrade	2019	1.7	1.9	Yes
Group 10	201415_1-10B	b2693	COMED	Wayne to South Elgin 138 kV	0.1	Upgrade	2019	7.2	6.4	Yes
Group 11	201415_1-11H	b2694	PECO	Peach Bottom 500 kV	9.7	Upgrade	2019	2.6	3.0	Yes
Group 14	201415_1-13E	b2695	DPL	Worcester to Ocean Pines (I) 69 kV	2.4	Upgrade	2019	82.7	65.3	Yes
Group 15	201415_1-18I	b2696	APS/ATSI	Krendale to Shanor Manor 138 kV	0.6	Upgrade	2019	35.8	123.4	Yes
Group 18	201415_1-4I	b2697	AEP	Fieldale to Thornton 138 kV	0.75	Upgrade	2019	114.2	101.2	Yes
Group 19	201415_1-4J	b2698	AEP	Jacksons Ferry to Cloverdale 765 KV	0.5	Upgrade	2019	15.8	62.0	Yes

Total Cost 59.23

Project ID: 201415_1-2A

Proposed by: PPL

Proposed Solution: Reconductor two spans of the Graceton-Safe Harbor 230kV transmission line.

Includes termination point upgrades

kV Level: 230

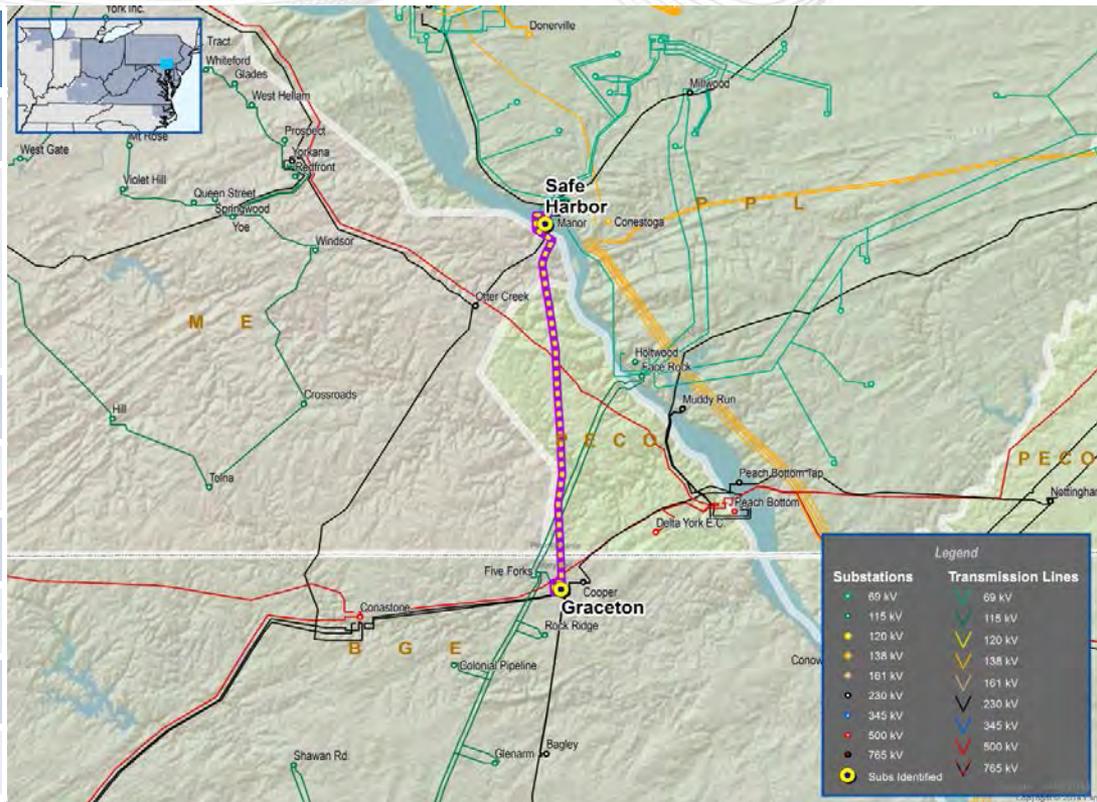
Cost (\$M): 1.1

IS Date: 2019

Target Zone: PPL/BGE

ME Constraints: Safe Harbor to Graceton 230 kV

Notes: **Board Approved 10/14/2015**



Project ID: 201415_1-2B

Proposed by: PPL

Proposed Solution: Reconductor three spans limiting the Brunner Island - Yorkana 230kV line, add 2 breakers to Brunner Island Switchyard, upgrade associated terminal equipment

kV Level: 230

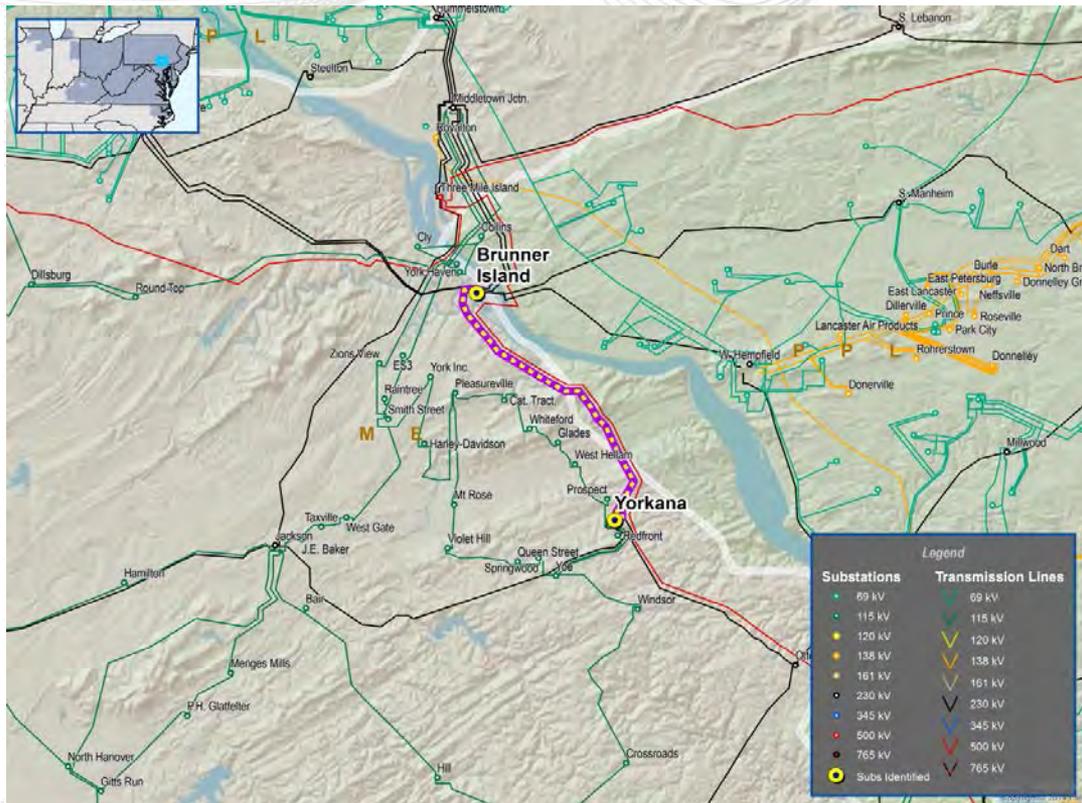
Cost (\$M): 3.1

IS Date: 2019

Target Zone: PPL/Meted

ME Constraints: Brunner Island to Yorkana 230 kV

Notes: **Board Approved 10/14/2015**



Project ID: 201415_1-41

Proposed by: AEP

Proposed Solution: Operate the Fieldale - Thornton - Franklin overhead at maximum operating temperature. Replace terminal equipment at Danville and East Danville substations.

kV Level: 138

Cost (\$M): 0.75

IS Date: 2019

Target Zone: AEP

ME Constraints: Fieldale to Thornton 138 kV

Danville to East Danville 138 kV

Notes: Board Approved 10/14/2015



Project ID: 201415_1-4J

Proposed by: AEP

Proposed Solution: Replace relays at AEP's Cloverdale and Jackson's Ferry substation to improve the thermal capacity of Cloverdale - Jackson's Ferry 765 kV line

kV Level: 765

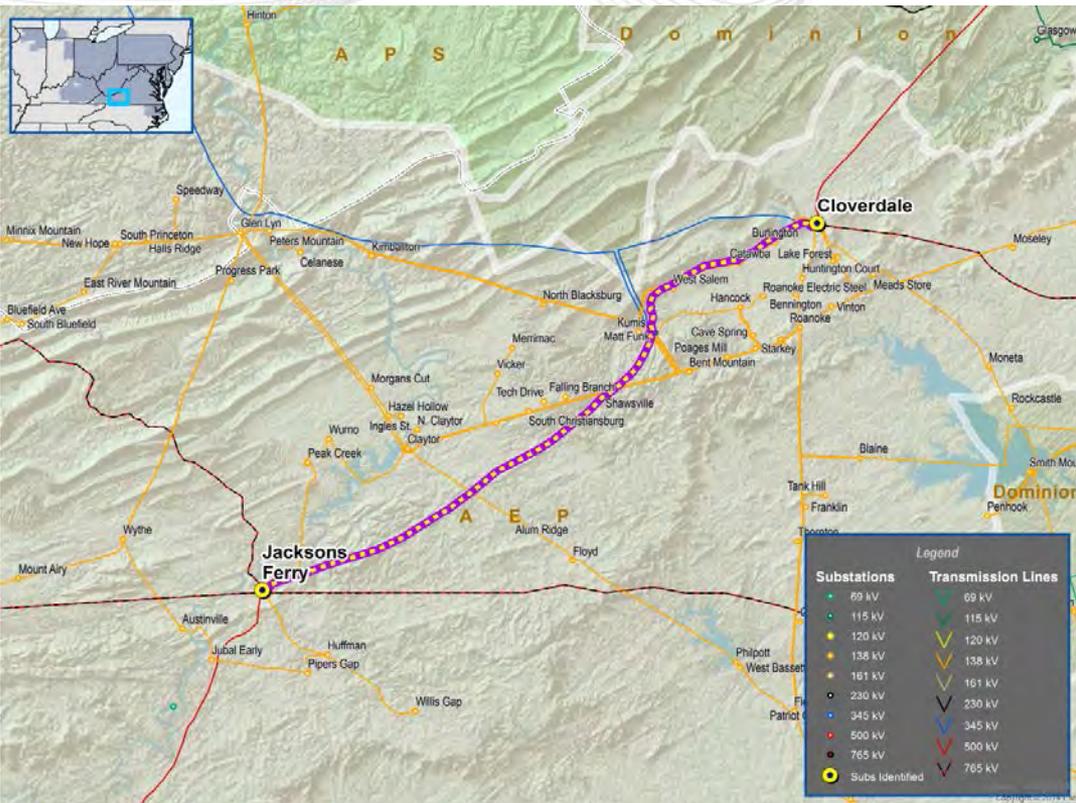
Cost (\$M): 0.5

IS Date: 2019

Target Zone: AEP

ME Constraints: Jackson's Ferry to Cloverdale 765 KV

Notes: **Board Approved 10/14/2015**



Project ID: 201415_1-10B

Proposed by: ComEd

Proposed Solution: Replace L7815 B phase line trap at Wayne substation

kV Level: 138

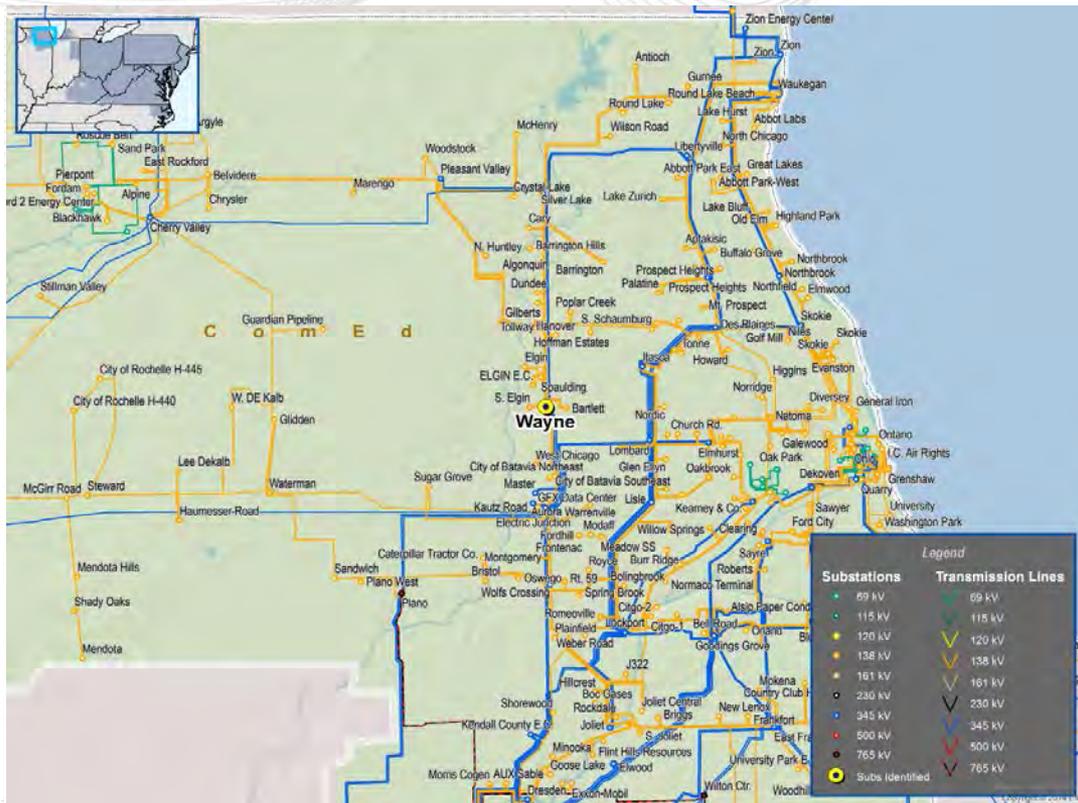
Cost (\$M): 0.1

IS Date: 2019

Target Zone: ComEd

ME Constraints: Wayne to South Elgin 138 kV

Notes: **Board Approved 10/14/2015**



Project ID: 201415_1-10J

Proposed by: ComEd

Proposed Solution: Replace station equipment at three stations and upgrade conductor rating of three lines by re-conductoring and mitigating sag limitations. NOTE: Component 1 of this project (s0704) is scheduled to complete on March 13, 2015

kV Level: 345

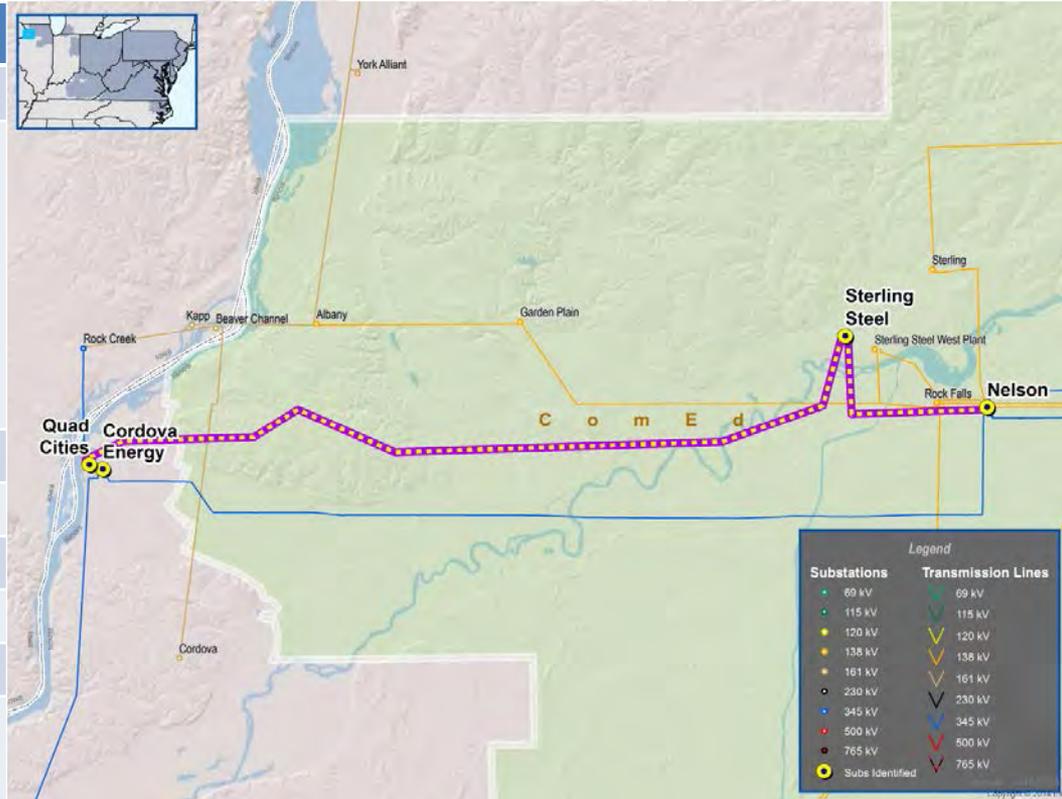
Cost (\$M): 24.6

IS Date: 2019

Target Zone: ComEd

ME Constraints: Cordova to Nelson 345 kV

Notes: **Board Approved 10/14/2015**



Project ID: 201415_1-11H

Proposed by: PECO

Proposed Solution: Increase ratings of Peach Bottom 500-230 kV transformer to 1479 MVA normal / 1839 MVA emergency

kV Level: 230

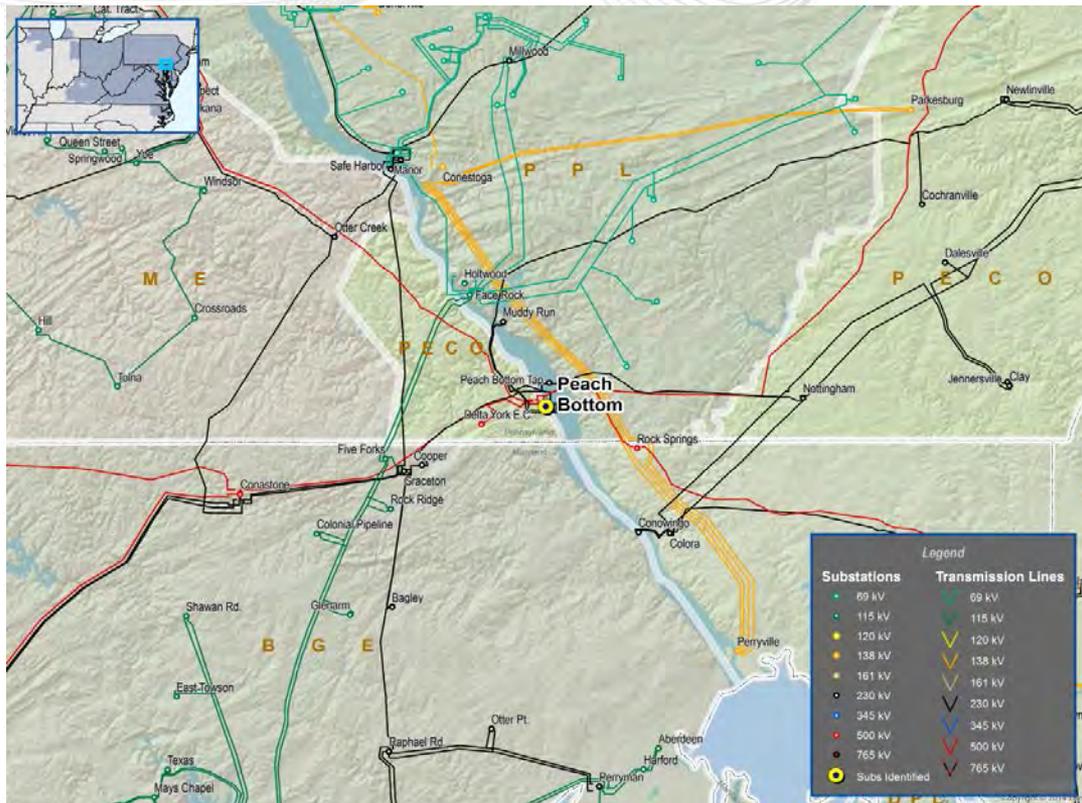
Cost (\$M): 9.7

IS Date: 2019

Target Zone: PECO

ME Constraints: Peach Bottom 500 kV

Notes: **Board Approved 10/14/2015**



Project ID: 201415_1-12A

Proposed by: Duquesne Light

Proposed Solution: Reconductor approximately 7 miles of the Woodville-Peters (Z-117) 138kV circuit, reconfigure the West Mifflin-USS Clairton (Z-15) 138kV circuit to establish the Dravosburg-USS Clairton (Z-14) 138kV circuit and the West Mifflin-Wilson (Z-15) 138kV circuit

kV Level: 138

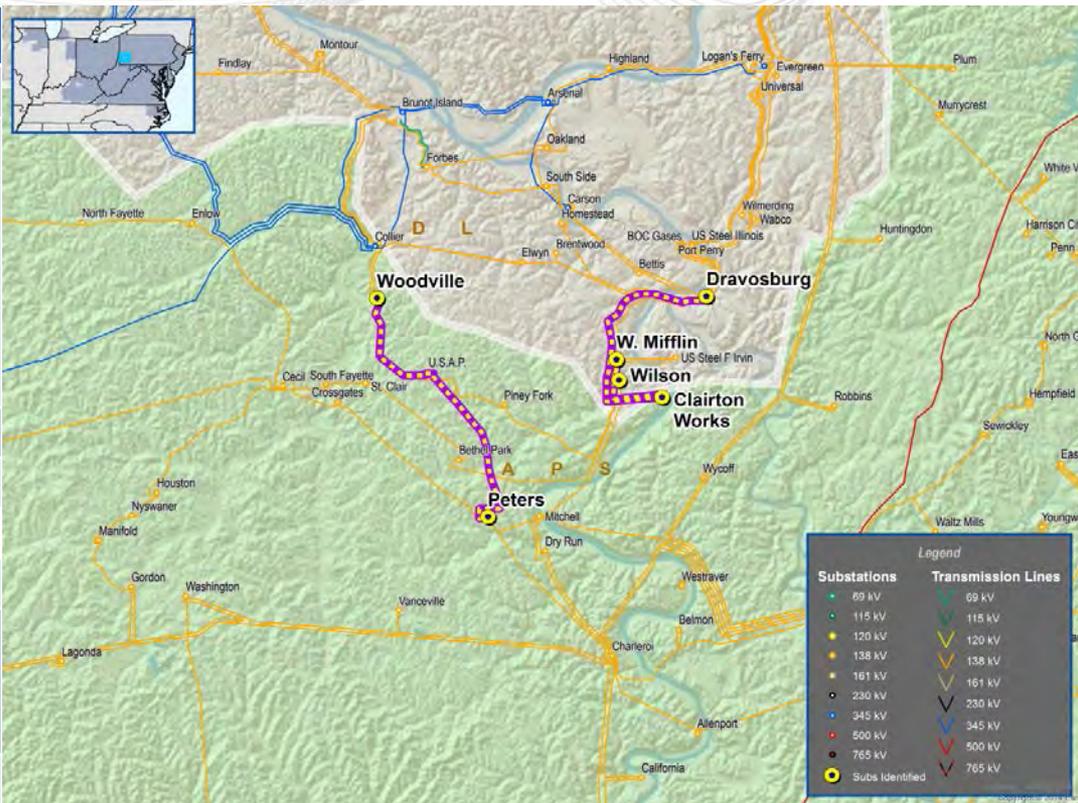
Cost (\$M): 11.184

IS Date: 2018

Target Zone: DUQ

ME Constraints: Dravosburg to West Mifflin 138 kV
Woodville to 15USAP 138 kV

Notes: **Board Approved 10/14/2015**



Project ID: 201415_1-18I

Proposed by: FirstEnergy

Proposed Solution: Upgrade 138 kV substation equipment at Butler, Shanor Manor, and Krendale substations. New rating of the line will be 353 MVA summer normal and 422 MVA summer emergency

kV Level: 138

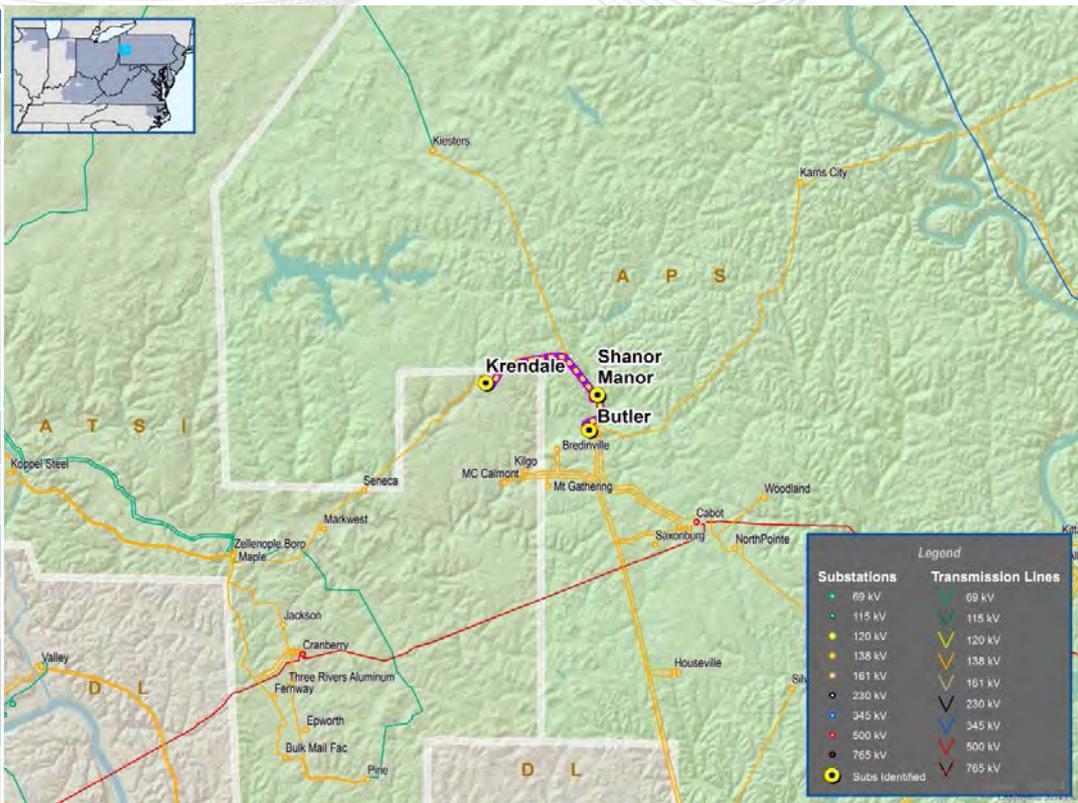
Cost (\$M): 0.6

IS Date: 2019

Target Zone: APS/ATSI

ME Constraints: Krendale to Shanor Manor 138 kV

Notes: **Board Approved 10/14/2015**



Project ID: 201415_1-18G

Proposed by: FirstEnergy

Proposed Solution: Upgrade terminal equipment on the Lincoln - Carroll 115/138kV path.

kV Level: 138

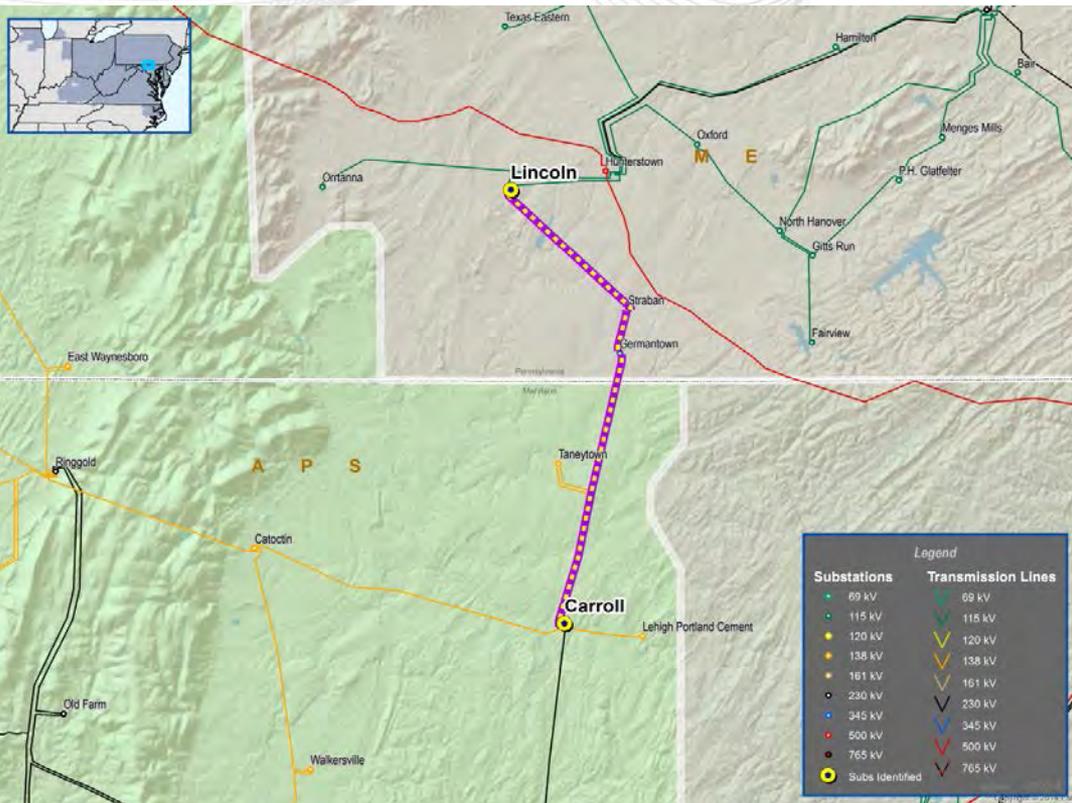
Cost (\$M): 5.2

IS Date: 2019

Target Zone: APS/Meted

ME Constraints: Taneytown to Carroll 138 kV

Notes: **Board Approved 10/14/2015**



Appendix B

Combination Projects Details (AP-South/AEP-DOM Projects)

Project ID: 201415_1-6C

Proposed by: Dominion

Proposed solution: Build one 500kv Thyristor Controlled Series Capacitor (TCSC) at Loudoun substation on Loudoun – Meadowbrook (535) line and build five (5) 230 kV capacitor banks at five (5) DVP substations to alleviate congestion on AP south and other PJM interfaces.

kV Level: 500

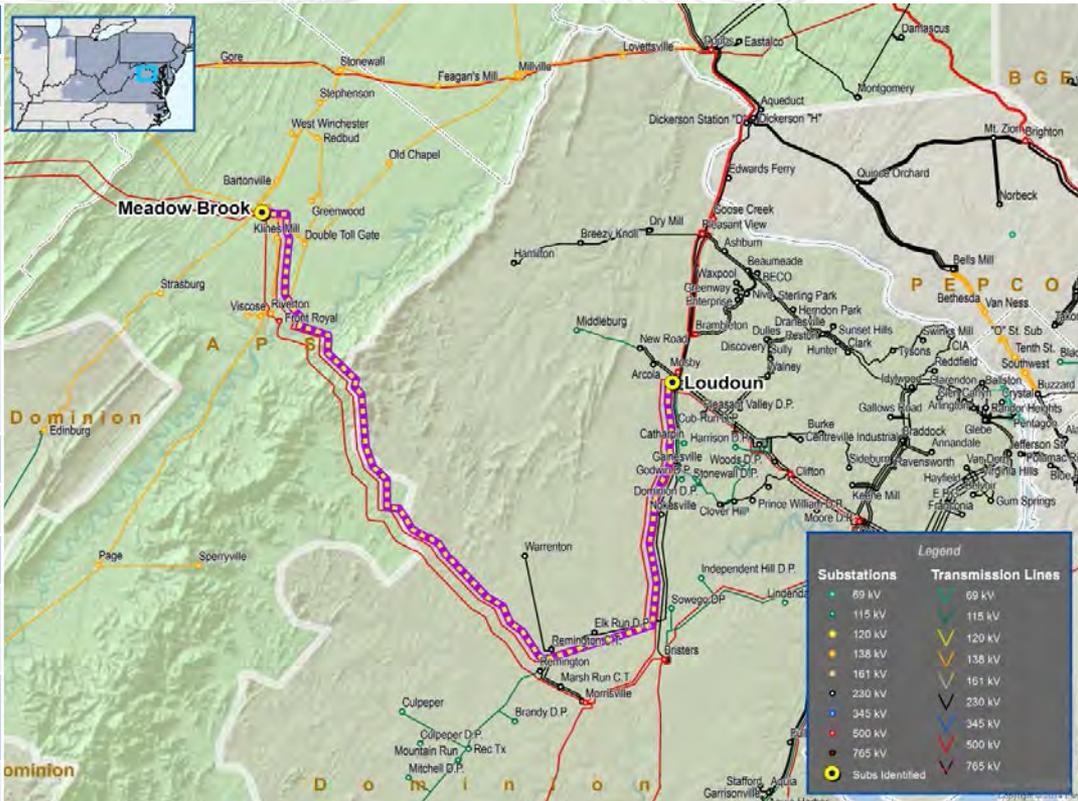
Cost(\$M): 39.06

IS Date: 2019

Congestion Reduction (\$M): 82.35

BC Ratio: 4.64

Notes:



Project ID: 1-9A

Proposed by: DOM High Voltage / Transource

Proposed Solution: Tap the Conemaugh - Hunterstown 500 kV line and build new 230 kV double circuit line between Rice and Ringgold. Build new 230 kV double circuit line between Furnzace Run and Conastone. Add cap banks to Jackson's Ferry, Bradford, Lexington, Dooms, Ashburn and Brambleton stations. Rebuild the Conastone - Northwest 230 kV line.

kV Level: 230

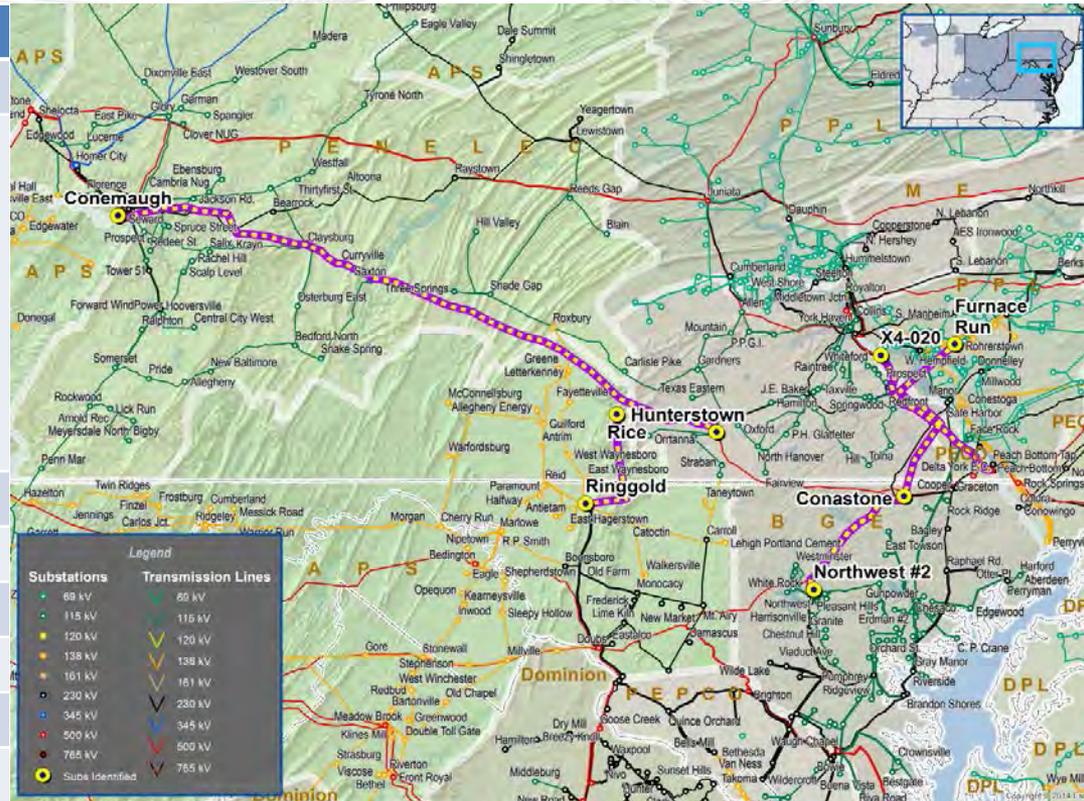
Cost (\$M): 301

IS Date: 2020

Congestion Reduction (\$M): 174.41

BC Ratio: 2.64

Notes:



Project ID: 201415_1-14A

Proposed by: DATC

Proposed Solution: A hybrid series capacitor and thyristor controlled series capacitor near the midpoint of Conemaugh to Hunterstown 500 kV line in southern Pennsylvania. Add a phase angle regulator on the Messick to Morgan 138 kV line and close the circuit in Maryland.

kV Level: 500

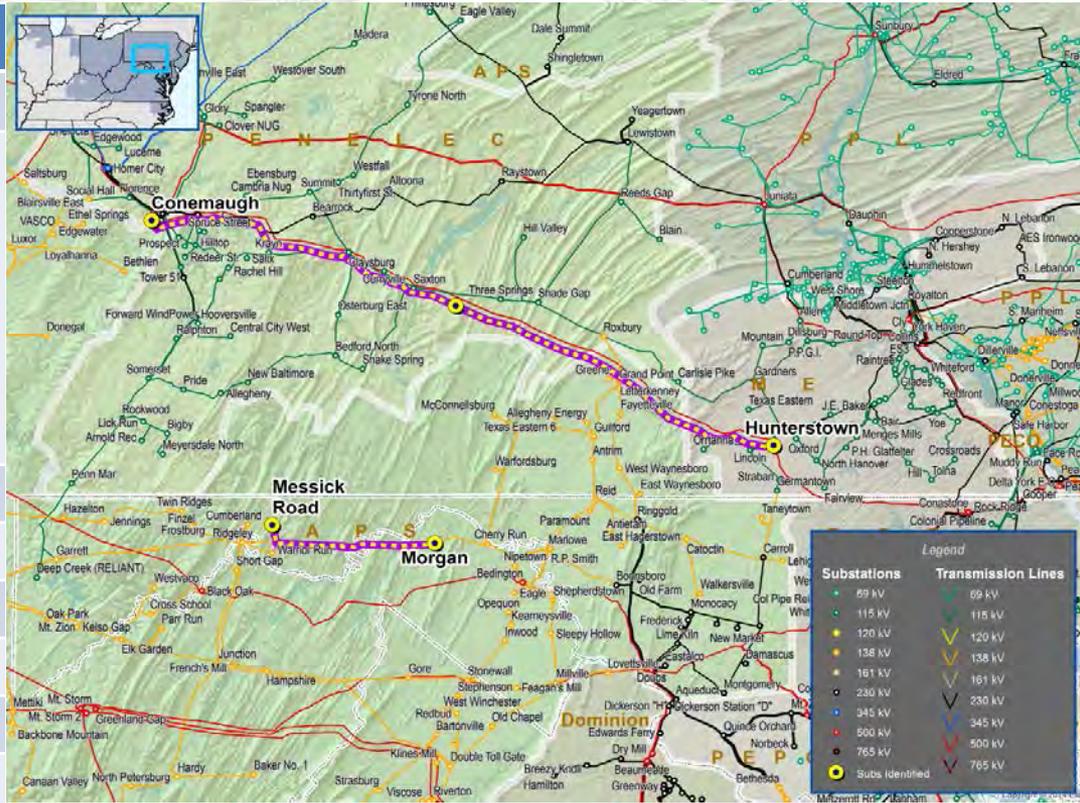
Cost (\$M): 51.53

IS Date: 2019

Congestion Reduction (\$M): 33.48

BC Ratio: 1.79

Notes:



Project ID: 201415_1-17A

Proposed by: Nextera

Proposed Solution: Build new Cochran Mill 230 kV switchyard with 600 MVAR Capacitors, and a new 230 kV line from Cochran Mill - Pleasant View 230 kV

kV Level: 230

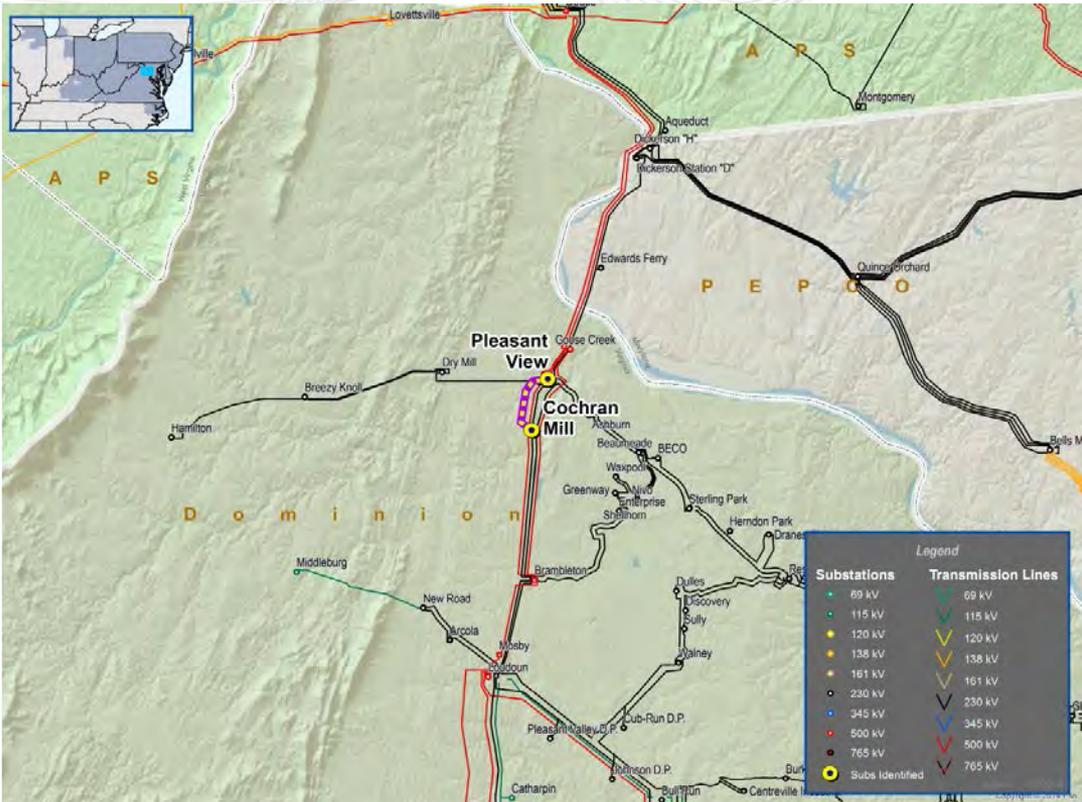
Cost (\$M): 16.5

IS Date: 2019

Congestion Reduction (\$M): 30.97

BC Ratio: 3.64

Notes:



Project ID: 201415_1-19G

Proposed by: Northeast Transmission Development

Proposed Solution: Build 500/230 kV Substation (Keysers Run) Interconnecting Conastone-Brighton 500 kV Line to Northwest 230 kV Substation.

kV Level: 230

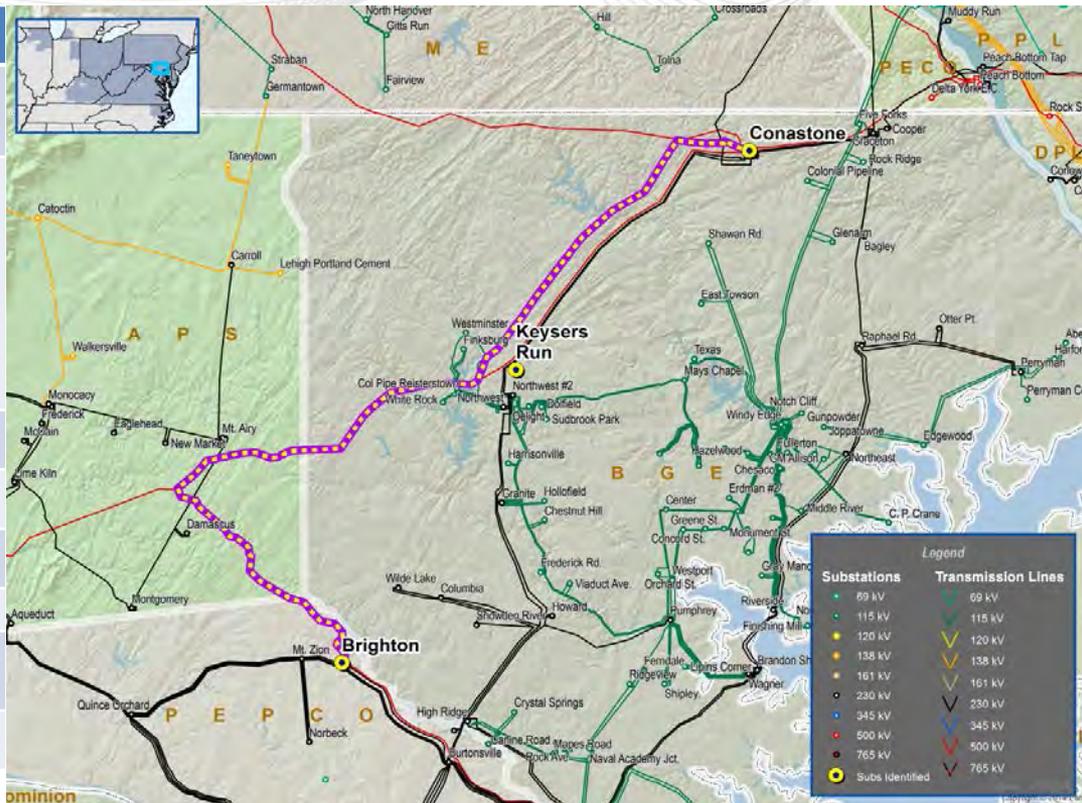
Cost (\$M): 48.6

IS Date: 2020

Congestion Reduction (\$M): 17.15

BC Ratio: 2.76

Notes:



Project ID: 6C (Caps Only)

Proposed by: Dominion

Proposed Solution: Build five 230 kV capacitor banks at the following five DVP substations: Dooks, Shelhorn, Morrisville, Liberty, Cannon Branch.

kV Level: 230

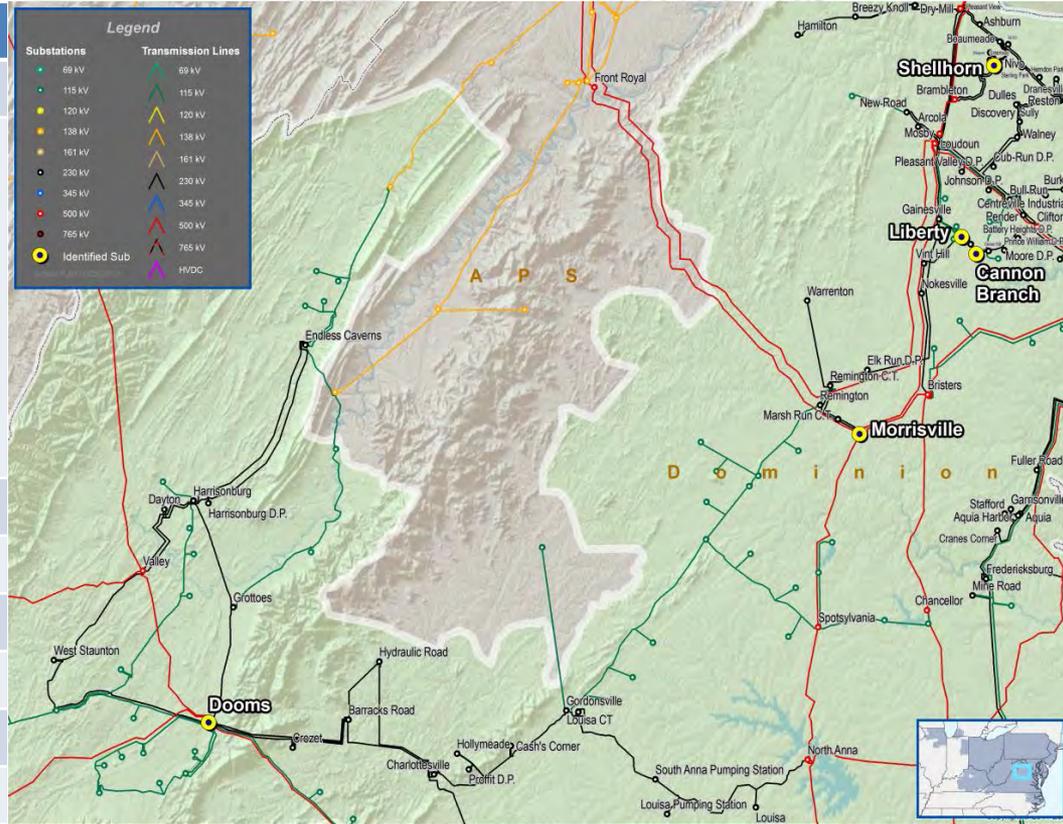
Cost (\$M): 14.06

IS Date: 2019

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



Project ID: 9A (caps only)

Proposed by: DOM High Voltage/Transource

Proposed Solution: Add cap banks to Jackson's Ferry, Broadford, Lexington, Doods, Ashburn and Brambleton stations.

kV Level: 230

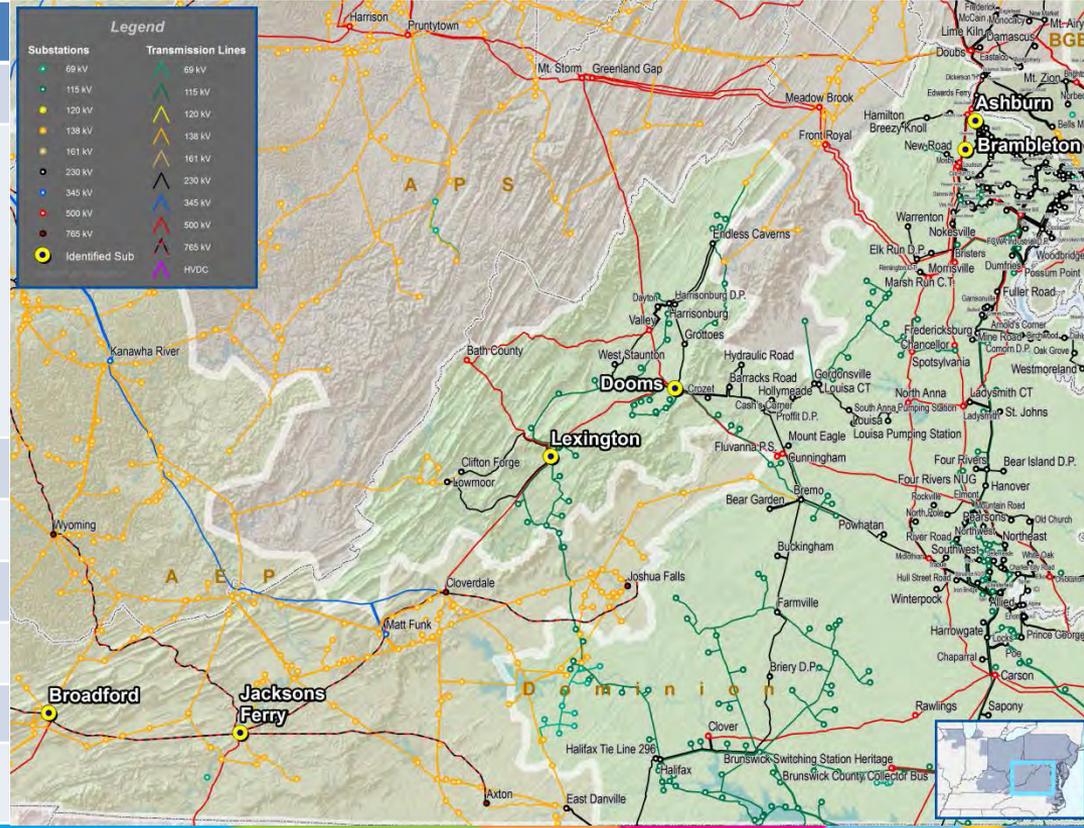
Cost (\$M): 19.15

IS Date: 2019

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



Project ID: 6C (caps only) + 9A (caps only)

Proposed by: Dominion, DOM High Voltage / Transource

Proposed Solution: Build five 230 kV capacitor banks at the following five DVP substations: Doods, Shelhorn, Morrisville, Liberty, Cannon Branch.

Add cap banks to Jackson's Ferry, Broadford, Lexington, Ashburn and Brambleton stations.

kV Level: 230

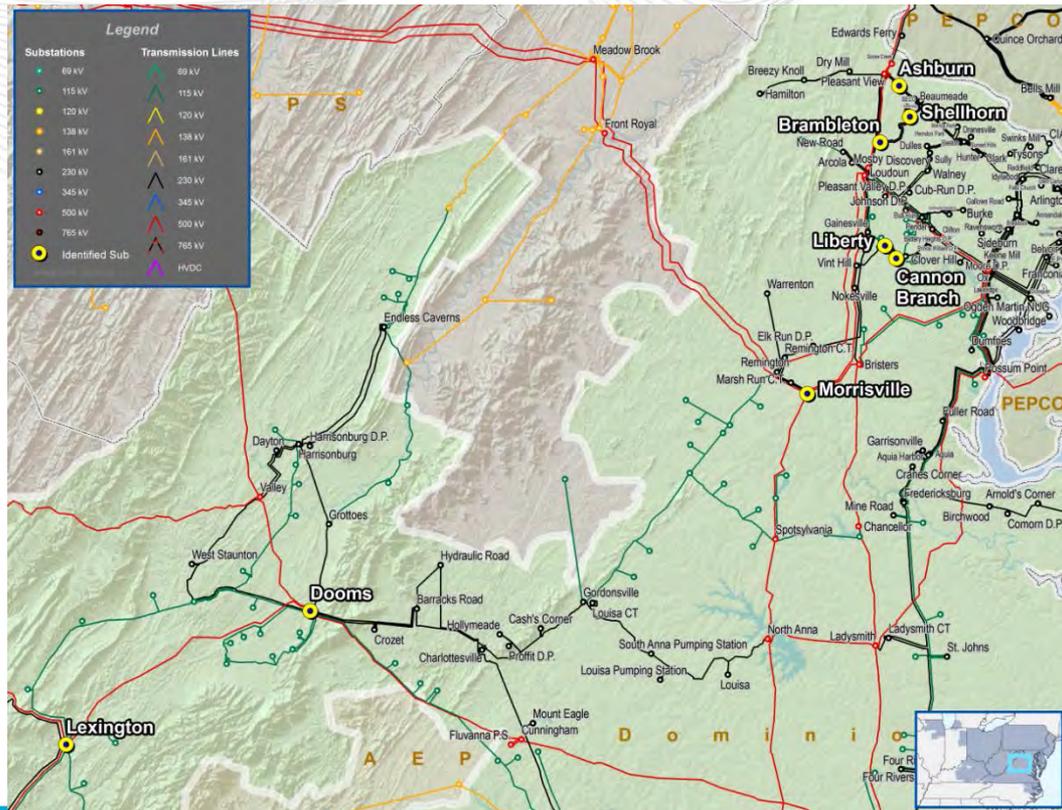
Cost (\$M): 29.2

IS Date: 2019

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



Project ID: 6C (caps only) + 14A

Proposed by: Dominion, DATC

Proposed Solution: Build five 230 kV capacitor banks at the following five DVP substations: Dooms, Shelhorn, Morrisville, Liberty, Cannon Branch.

A hybrid series capacitor and thyristor controlled series capacitor near the midpoint of Conemaugh to Hunterstown 500 kV line in southern Pennsylvania. Add a phase angle regulator on the Messick to Morgan 138 kV line and close the circuit in Maryland.

kV Level: 500

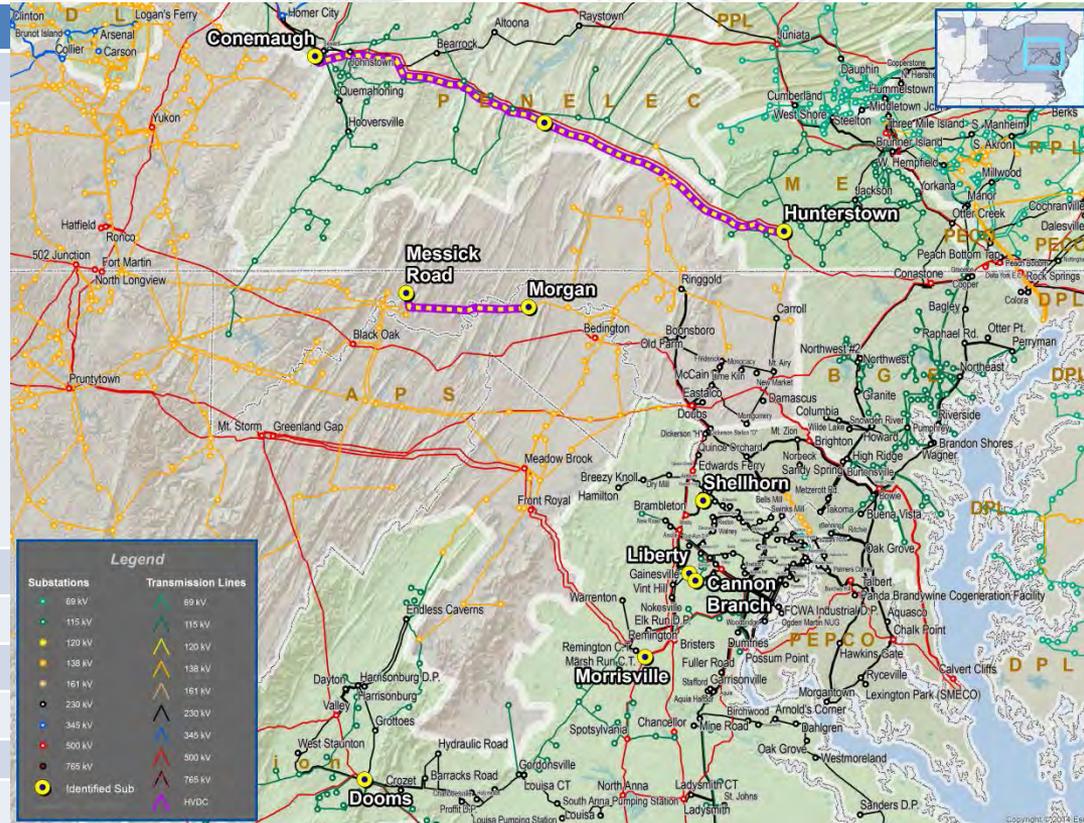
Cost (\$M): 65.6

IS Date: 2019

Congestion Reduction(\$M):

BC Ratio:

Notes: Analysis in progress



Project ID: 9A (caps only) + 14A

Proposed by: DOM High Voltage/Transource, DATC

Proposed Solution: Add cap banks to Jackson's Ferry, Broadford, Lexington, Dooks, Ashburn and Brambleton stations.

A hybrid series capacitor and thyristor controlled series capacitor near the midpoint of Conemaugh to Hunterstown 500 kV line in southern Pennsylvania. Add a phase angle regulator on the Messick to Morgan 138 kV line and close the circuit in Maryland.

kV Level: 500

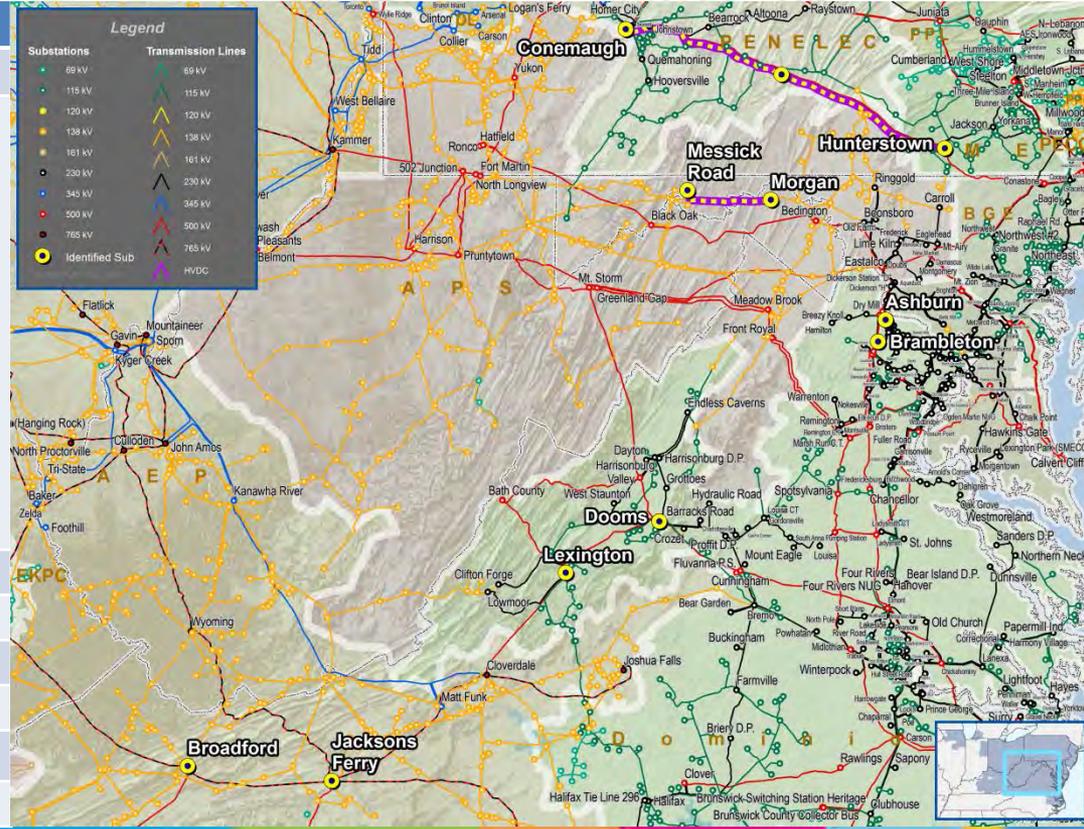
Cost (\$M): 70.7

IS Date: 2020

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



Project ID: 6C (caps only) + 9A (caps only) + 14A

Proposed by: Dominion, DOM High Voltage / Transource, DATC

Proposed Solution: Build five 230 kV capacitor banks at the following five DVP substations: Dooks, Shelhorn, Morrisville, Liberty, Cannon Branch.

Add cap banks to Jackson's Ferry, Broadford, Lexington, Ashburn and Brambleton stations.

A hybrid series capacitor and thyristor controlled series capacitor near the midpoint of Conemaugh to Hunterstown 500 kV line in southern Pennsylvania. Add a phase angle regulator on the Messick to Morgan 138 kV line and close the circuit in Maryland.

kV Level: 500

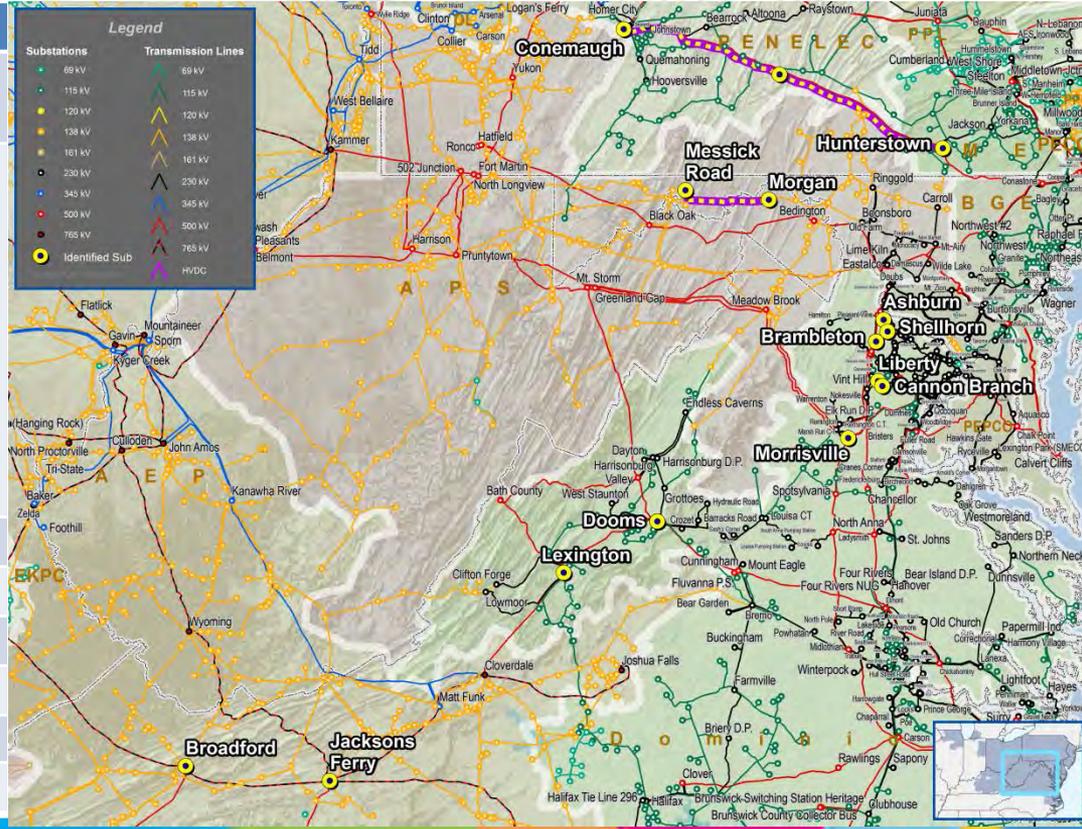
Cost (\$M): 80.7

IS Date: 2019

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



Project ID: 6C (caps only) + 17A

Proposed by: Dominion, Nextera

Proposed Solution: Build five 230 kV capacitor banks at the following five DVP substations: Dooms, Shelhorn, Morrisville, Liberty, Cannon Branch.

Build new Cochran Mill 230 kV switchyard with 600 MVAR Capacitors, and a new 230 kV line from Cochran Mill - Pleasant View 230.

kV Level: 230

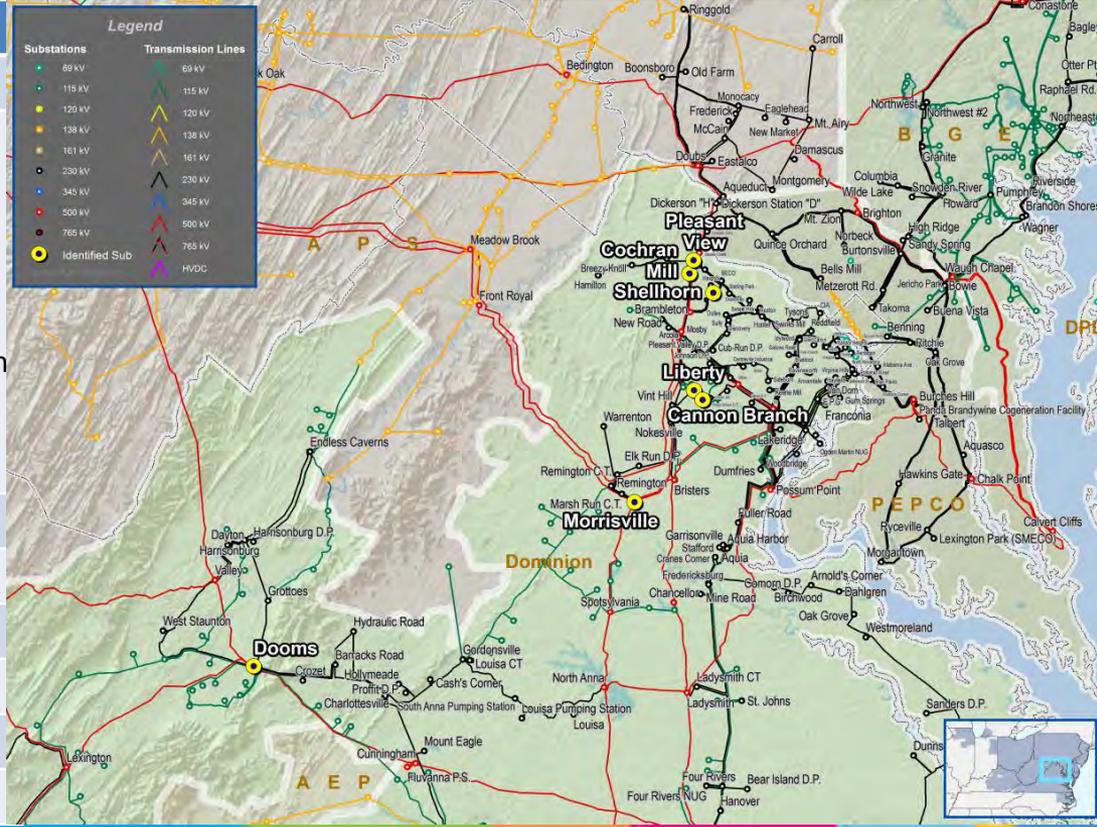
Cost (\$M): 30.6

IS Date: 2019

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



Project ID: 9A (caps only) + 17A

Proposed by: DOM High Voltage / Transource, Nextera

Proposed Solution: Add cap banks to Jackson's Ferry, Broadford, Lexington, Doods, Ashburn and Brambleton stations.

Build new Cochran Mill 230 kV switchyard with 600 MVAR Capacitors, and a new 230 kV line from Cochran Mill - Pleasant View 230.

kV Level: 230

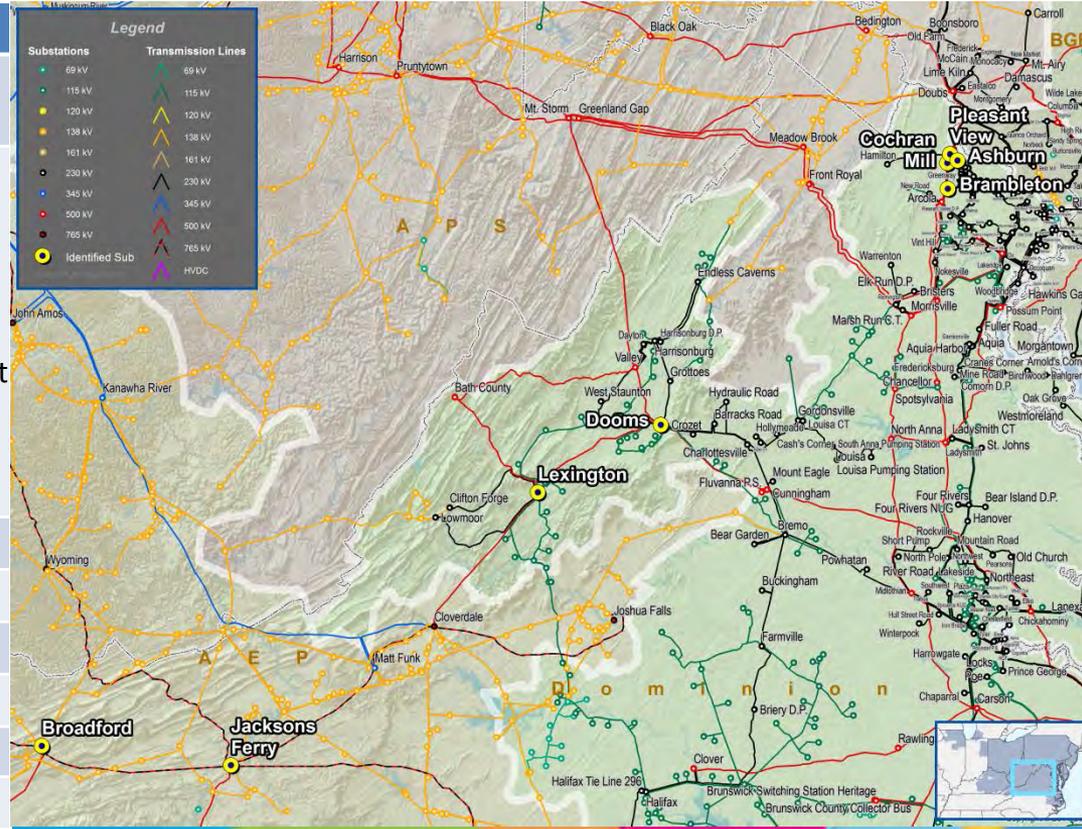
Cost (\$M): 35.7

IS Date: 2020

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



6C (caps only) + 9A (caps only) + 17A

Project ID:

6C (caps only) + 9A (caps only) + 17A

Proposed by: Dominion, DOM High Voltage / Transource, Nextera

Proposed Solution: Build five 230 kV capacitor banks at the following five DVP substations: Dooks, Shelhorn, Morrisville, Liberty, Cannon Branch.

Add cap banks to Jackson's Ferry, Broadford, Lexington, Ashburn and Brambleton stations.

Build new Cochran Mill 230 kV switchyard with 600 MVAR Capacitors, and a new 230 kV line from Cochran Mill - Pleasant View 230.

kV Level: 230

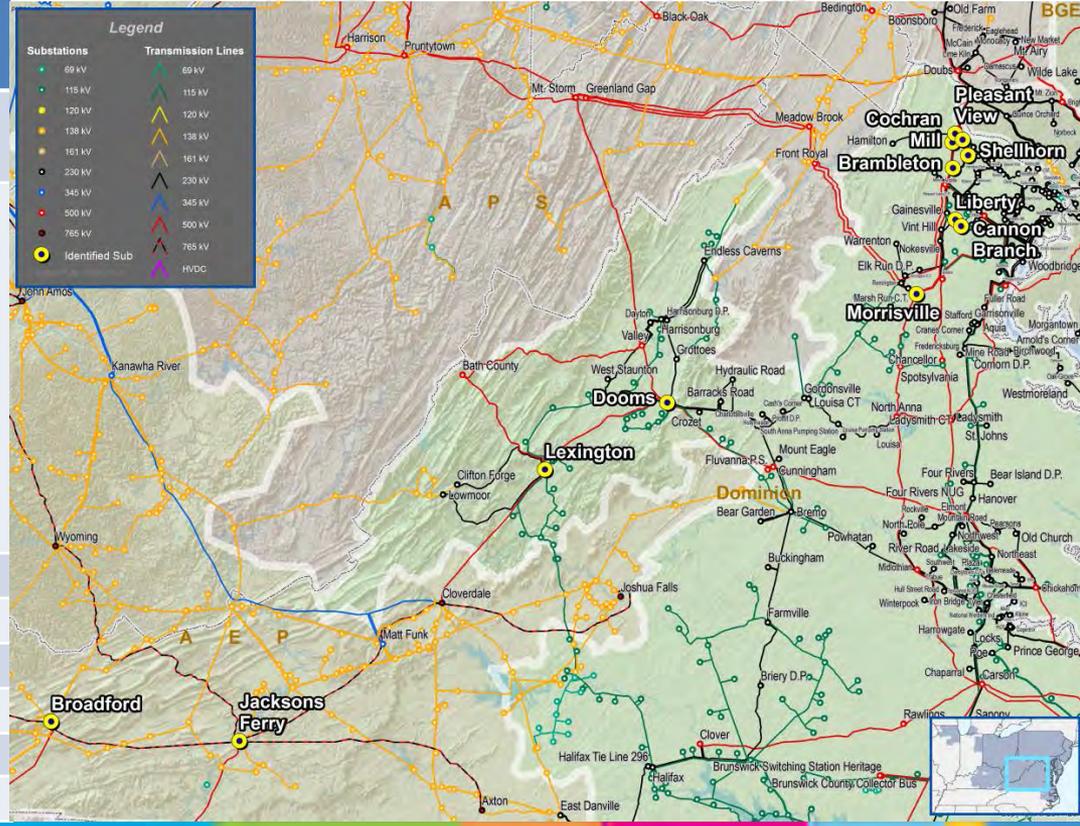
Cost (\$M): 45.7

IS Date: 2019

Congestion Reduction:

BC Ratio:

Notes: Analysis in progress



Project ID: 6C (caps only) + 19G

Proposed by: Dominion, Northeast Transmission Development

Proposed Solution: Build five 230 kV capacitor banks at the following five DVP substations: Dooms, Shelhorn, Morrisville, Liberty, Cannon Branch.

Build 500/230 kV Substation (Keyzers Run) Interconnecting Conastone-Brighton 500 kV Line to Northwest 230 kV Substation.

kV Level: 230

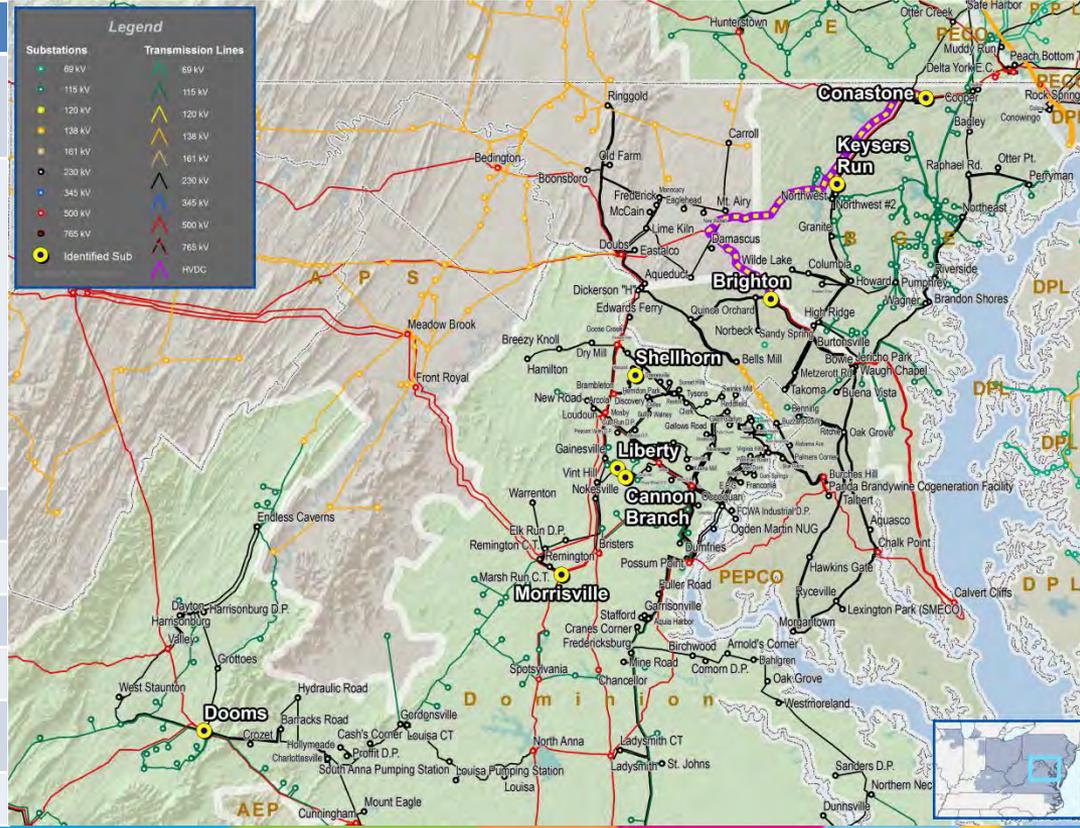
Cost (\$M): 62.7

IS Date: 2020

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



Project ID: 9A(caps only) + 19G

Proposed by: DOM High Voltage / Transource,
Northeast Transmission Development

Proposed Solution: Add cap banks to Jackson's Ferry,
Broadford, Lexington, Doods, Ashburn and Brambleton
stations.

Build 500/230 kV Substation (Keysers Run) Interconnecting
Conastone-Brighton 500 kV Line to Northwest 230 kV
Substation.

kV Level: 230

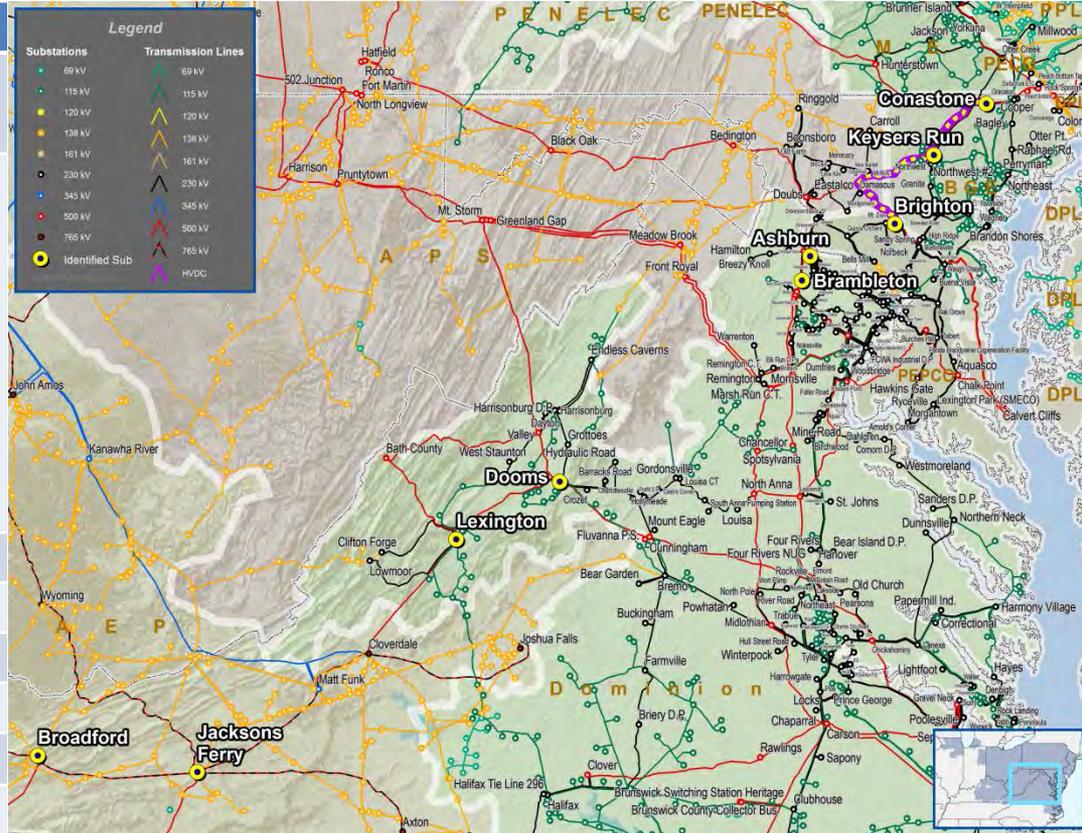
Cost (\$M): 67.8

IS Date: 2020

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



Project ID: 6C (caps only) + 9A (caps only) + 19G

Proposed by: Dominion, DOM High Voltage/
Tranource, Northeast Transmission Development

Proposed Solution: Build five 230 kV capacitor banks at the following five DVP substations: Dooks, Shelhorn, Morrisville, Liberty, Cannon Branch.

Add cap banks to Jackson's Ferry, Broadford, Lexington, Ashburn and Brambleton stations.

Build 500/230 kV Substation (Keysers Run) Interconnecting Conastone-Brighton 500 kV Line to Northwest 230 kV Substation.

kV Level: 230

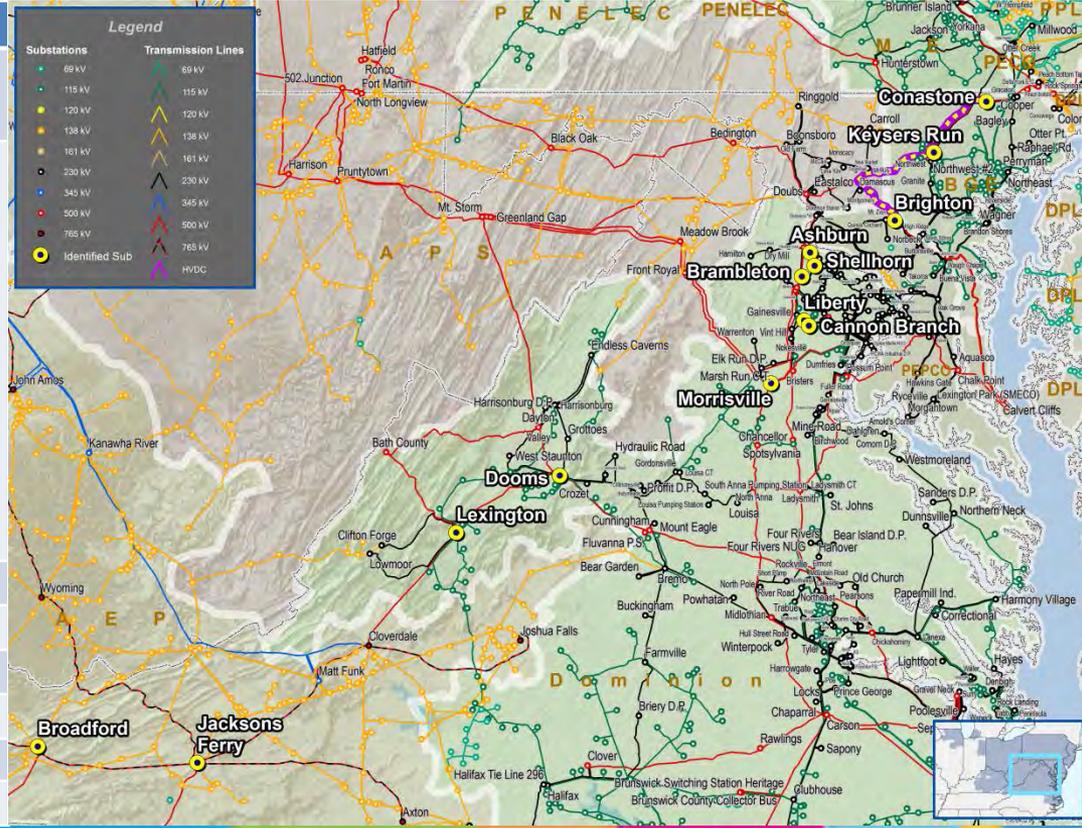
Cost (\$M): 78

IS Date: 2020

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



6C(caps only) + 9A(caps only) + 17A + 19G

Project ID: 6C(caps only) + 9A(caps only) + 17A + 19G

Proposed by: Dominion, DATC, Nextera, Northeast Transmission Development

Proposed Solution: Build five 230 kV capacitor banks at the following five DVP substations: Dooks, Shelhorn, Morrisville, Liberty, Cannon Branch.

Add cap banks to Jackson's Ferry, Broadford, Lexington, Ashburn and Brambleton stations.

Build new Cochran Mill 230 kV switchyard with 600 MVAR Capacitors, and a new 230 kV line from Cochran Mill - Pleasant View 230 .

Build 500/230 kV Substation (Keyzers Run) Interconnecting Conastone-Brighton 500 kV Line to Northwest 230 kV Substation.

kV Level: 230

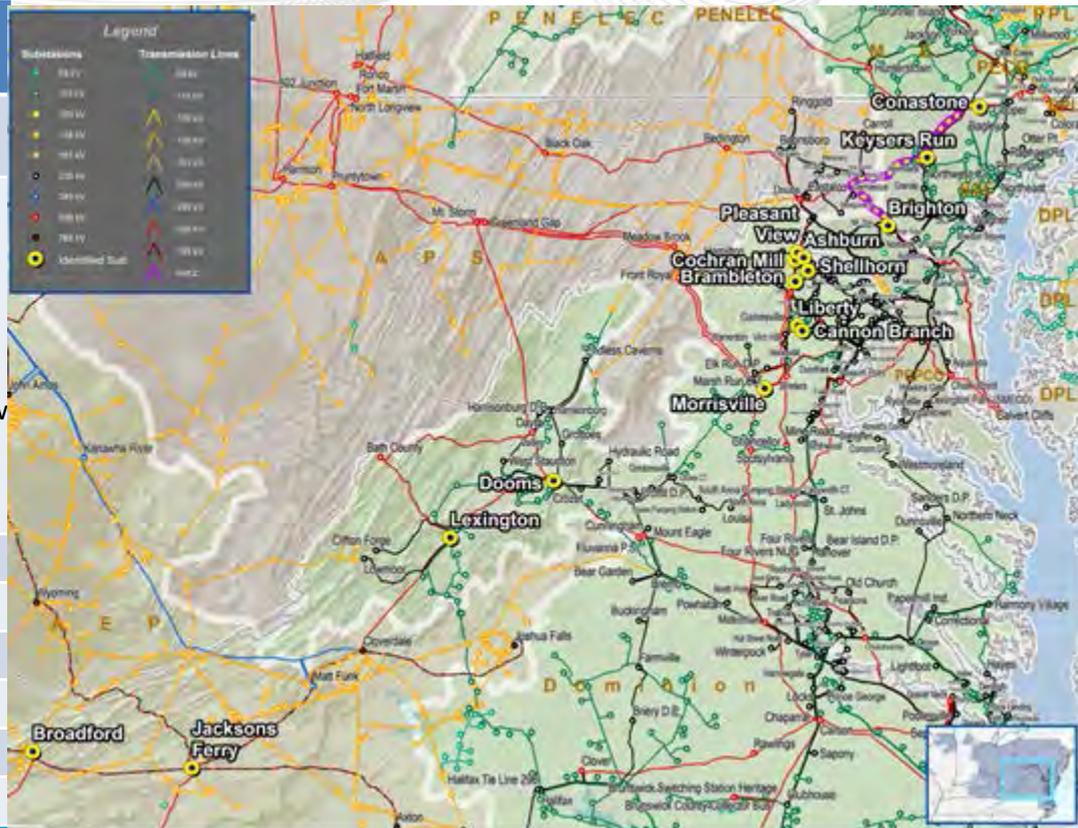
Cost (\$M): 98.3

IS Date: 2020

Congestion Reduction (\$M):

BC Ratio:

Notes: Analysis in progress



Questions?

Email: RTEP@pjm.com