Reliability Analysis Report

2022 RTEP Window 3

December 8, 2023 – R3

For Public Use

The information contained herein is based on information provided in project proposals submitted to PJM by third parties through its 2022 RTEP Window 3. PJM analyzed such information for the purpose of identifying potential solutions for the 2022 RTEP Window 3. Any decision made using this information should be based upon independent review and analysis and shall not form the basis of any claim against PJM.

This maps contained in this report are only intended to illustrate the general electrical connectivity of the projects and should not be relied upon for exact geographical substation locations or line routes.

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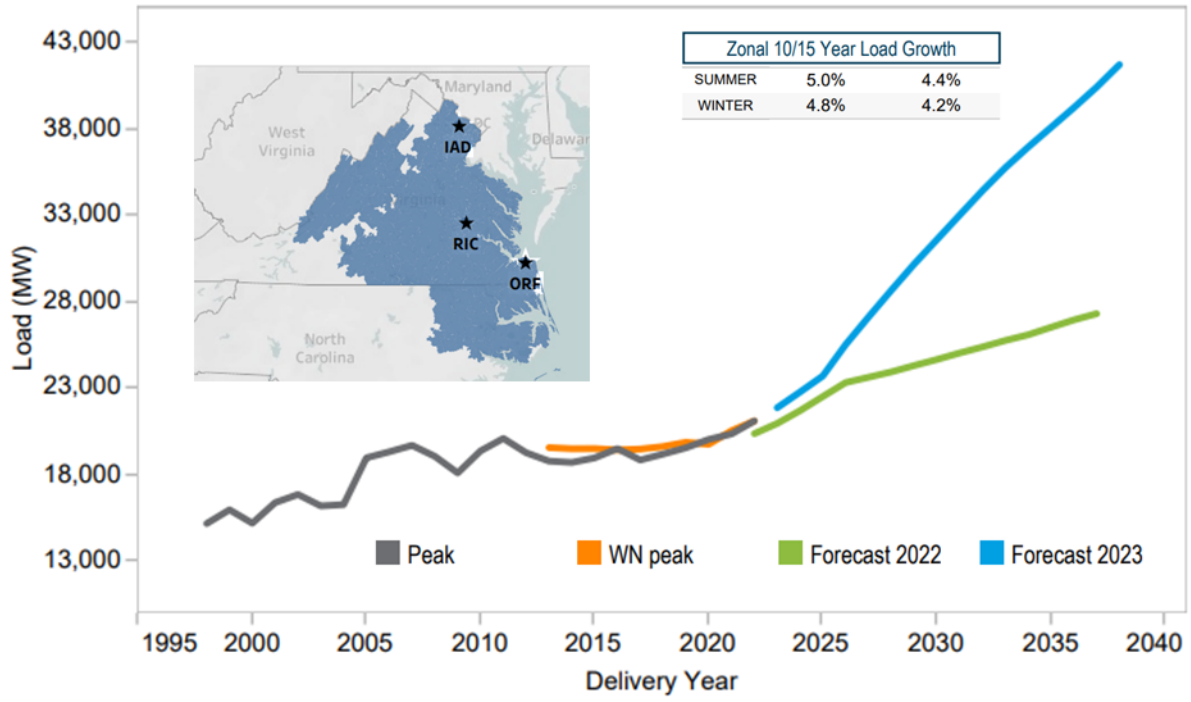
2022 RTEP Window 3 Reliability Analysis

Background

In early 2022, PJM shared its 2022 load forecast, which indicated high data center load growth activity, particularly in northern Virginia. In July 2022, PJM directed an immediate need transmission enhancement project to enable the integration of the forecasted data center load up to and including year 2025. Since then, data center loads within northern Virginia have been increasing at an unprecedented rate, and new data center load is being proposed in Maryland near the Doubs substation. As shown in **Table 1**, the recorded actual summer peak in 2022 was 21,156 MW while the 2022 forecast called for 20,424 MW. In an effort to stay ahead of these rapid increases, PJM continued its consultation efforts with Transmission and Distribution Owners in the area to refine its forecast and further enhance its need assessment.

PJM began receiving near and long term forecast input from Dominion, First Energy and NOVEC for data center load growth projections up to and including 2038 (15-year planning horizon). The PJM 2023 forecast calls for between 4.2% and 5.0% annual load growth in the Dominion area over the next 10- to 15-year time frame as shown in **Figure 1** below. The Load Forecast information was refined and modeled at a bus/substation level for the 2028 and 2030 study years, and PJM reassessed the transmission development needs in the area based on the refined forecast information and localized allocation of load.

Figure 1. Dominion 2023 Summer Peak Load Forecast



The data center load growth rate (currently concentrating in areas of northern Virginia) continues to increase. FirstEnergy's APS zone (just north of Virginia) is also experiencing data center load development, driving high flows within the northern Virginia transmission system, into the data center concentrated load pocket. The 2027 and 2027/28 study cases summer zonal load for Dominion and First Energy is provided in **Table 1**.

There are regional flows from the following:

- West and East toward Doubs-Goose Creek
- South into and out of Bristers toward Loudon

Major voltage support needs within Dominion and APS will be required. Some of the voltage violations are observed under N-0 conditions (fictitious MVARs were modeled in order to solve the case), and heavy regional transfers will require additional reinforcements to support the regional transfers.

Table 1. 2027/28 Case Summer Zonal Load for Dominion and FirstEnergy

	Summer Zonal Load (MW)	
Study Case	**Dominion/NOVEC**	**FirstEnergy (APS)**
2022 Peak	20,424 (forecast)/21,156 (actual)	8,675 (forecast)/8,412 (actual)
2027 RTEP	23,681	8,780
2027 Baseline	26,393	9,607
2027 High Load Growth	28,893	10,559
2028 RTEP (2023 Load Forecast)	28,705	9,568
Data Center Component Load (modeled in cases)	~5,700	~1,500

Case Development

2027

The 2022 RTEP Window 3 cases are based upon the 2022 RTEP, five-year out 2027 case with the following included:

- 2027 Dominion immediate need solution b3718
- 33 Dominion supplemental projects presented through the M-3 process from January to September of 2022
- Bus level data center load additions
- Summer, winter and light load cases were developed for baseline and high load growth scenarios

The immediate need baseline project, b3718, builds a new 500/230 kV substation called Wishing Star near Brambleton substation and installs one 500/230 kV 1440 MVA transformer at the substation. A new 500/230 kV substation called Mars will be built near Dulles International Airport, and one 500/230 kV 1440 MVA transformer will be installed at the substation. The 500 kV line No. 546 (Brambleton-Mosby) and 500 kV line No. 590 (Brambleton-Mosby) will be cut and extended to the proposed Wishing Star substation, and lines will terminate in a 500 kV breaker and a half configuration.

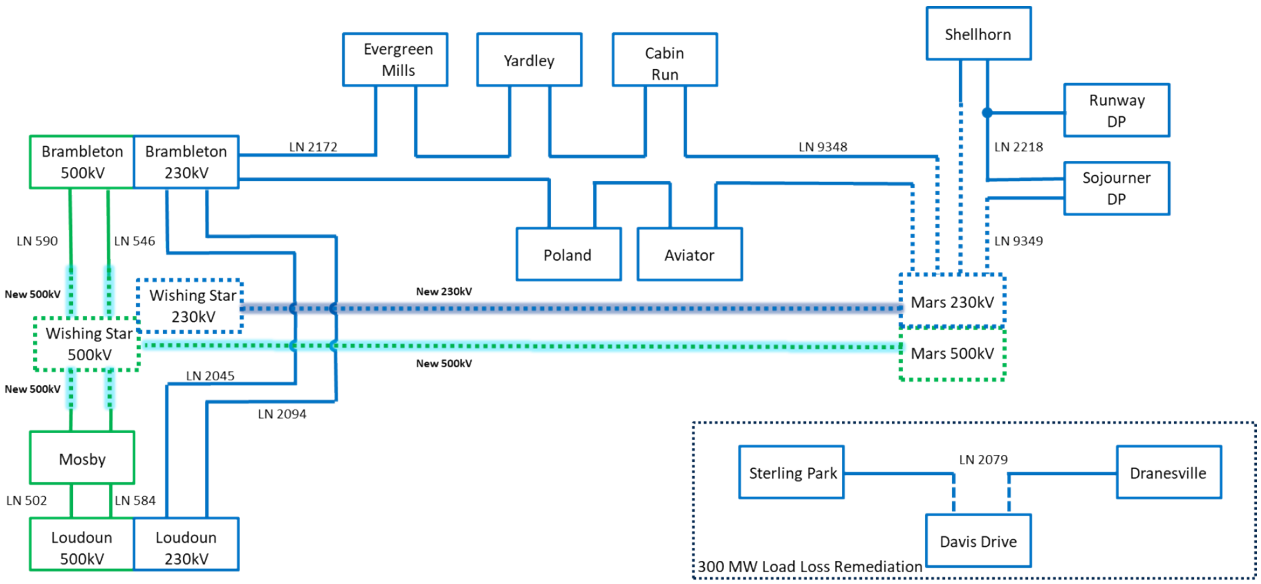
The project will reconductor the approximate mileage of the following lines:

- 0.62 miles of 230 kV line No. 2214 (Buttermilk-Roundtable)
- 1.52 miles of 230 kV line No. 2031 (Enterprise-Greenway-Roundtable)

- 0.64 miles of 230 kV line No. 2186 (Enterprise-Shellhorn)
- 2.17 miles of 230 kV line No. 2188 (Lockridge-Greenway-Shellhorn)
- 0.84 miles of 230 kV line No. 2223 (Lockridge-Roundtable)
- 3.98 miles of 230 kV line No. 2218 (Sojourner-Runway-Shellhorn)
- 1.61 miles of 230 kV line No. 9349 (Sojourner-Mars)

The project will also upgrade four 500 kV breakers to 63 kA on either end of 500 kV line No. 584 (Loudoun-Mosby circuit No. 1) and four 500 kV breakers to 63 kA on either end of 500 kV line No. 502 (Loudoun-Mosby circuit No. 2), cut and loop the 230 kV line No. 2079 (Sterling Park-Dranesville) into the Davis Drive substation and install two GIS 230 kV breakers. **Figure 2** below shows a high-level illustration of the project scope. The PJM Board approved cost for this project is $627.62 million. This project is identified as immediate need, with a required in-service date of June 2025. The projected in-service date for all project components is December 2026. The local transmission owner, Dominion, was designated to complete this work.

Figure 2. Dominion Immediate Need Solution b3718



2028

In addition to the data center load growth currently forecasted by 2027/2028 in Dominion (northern Virginia) and APS (Doubs) zones, there are a number of additional drivers necessitating the need for transmission development. Over the past two years, there has been approximately 11,100 MW of announced generator deactivations to the west and south of Conastone, about 5,300 MW of which occurred after the Window 3 2027 case was created. The replacement generation is coming from the region to the east of Peach Bottom as well as west of Doubs to meet projected load growth.

PJM has also implemented a new block dispatch procedure in the 2023 RTEP that more accurately reflects real-time operations dispatch and no longer tries to maintain historical intraregional transfer levels. The old dispatch procedure would have dispatched most of the generators in the Dominion zone at 100% or higher to maintain historical regional interchange. The 2028 case is subject to new generator deliverability testing requirements. After observing initial

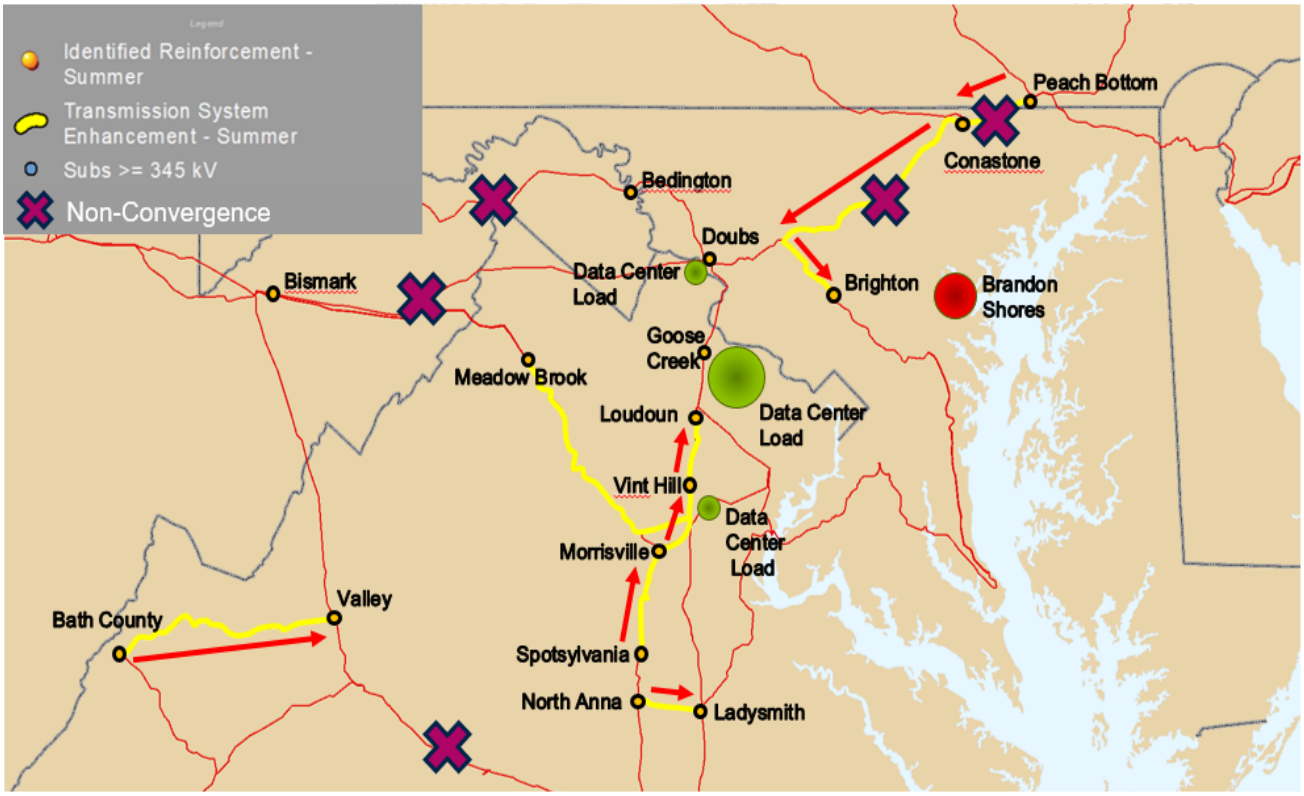
2028 analysis results, which showed an increased number and severity of overloads, PJM determined it would be prudent to utilize the 2028 cases to evaluate the proposals for robustness.

Window Objective

The objective of the 2022 RTEP Window 3 is to develop robust, holistic and expandable solutions that address the 2027/28 baseline violations as illustrated in **Map 1** associated with:

- **Local Constraints:** Resulting from directly serving the data center loads in APS and Dominion zones through the respective 230 kV networks and into the points of delivery:
  - Goose Creek-Ashburn-Mars-Wishing Star and Brambleton
- **Regional Constraints:** Resulting from imports into load center areas (500 kV primarily):
  - Doubs-Goose Creek
  - Front Royal-Morrisville-Vint Hill-Loudoun/Mosby
  - Meadow Brook-Loudoun/Mosby
  - Morrisville-Bristers-Ox
  - Peach Bottom-Conastone-Brighton-Doubs
- **Reactive Power Needs:** Needed reactive power MVAR reinforcements, both static and dynamic as deemed necessary, to address the reactive power needs of the system for the 2027/28 baseline scenario
- **Cummulative Impact of Generation Changes and Deactivations**:
  - 11,100 MW of announced deactivations to the west and south of Conastone
  - Approximately 5,300 MW occurring after the 2022 RTEP 2027 case was created
  - The vast majority of the new generation with signed ISAs has been solar, which has low availability during the winter period.
  - The replacement generation is coming from the region to the east of Peach Bottom as well as west of Doubs to meet projected load growth.
  - PJM has implemented a new block dispatch procedure.
  - The old dispatch procedure in the past (including that implemented in the 2027 study cases) maintained historical intraregional transfers, dispatching most of the generators in the Dominion zone at 100%.
- **Adherance to All Applicable Criteria:** The recommended solution must adhere to all applicable planning criteria, including PJM, NERC, SERC, RFC and local Transmission Owner FERC 715 criteria.

Map 1. 2022 RTEP Window 3 Map of Regional/Local Needs



Reliability Solutions and Initial Screening

PJM received 72 proposals from ten different entities as part of this window (**Table 2**). Of the ten proposing entities, six were incumbent Transmission Owners (TOs) and four were non-incumbent entities. PJM received 22 proposals that are upgrades, and received 50 greenfield proposals. The total cost of all proposals, not all of which are required, add up to approximately $54.4 billion. The proposals include:

- 230 kV, 500 kV and 765 kV developments
- HVDC developments
- Underground 500 kV AC cable developments
- 500 kV GIS substations
- Double circuit 500 kV proposals

Proposal Clusters/Groupings

The below **Map 2** shows the regional nature of the proposals, concentrating in four clusters: West, South, East, and Northern Virginia data center areas. Each cluster included proposals by different entities in the same need area and/or addressed the same local/regional needs.

Map 2. Regional Clusters

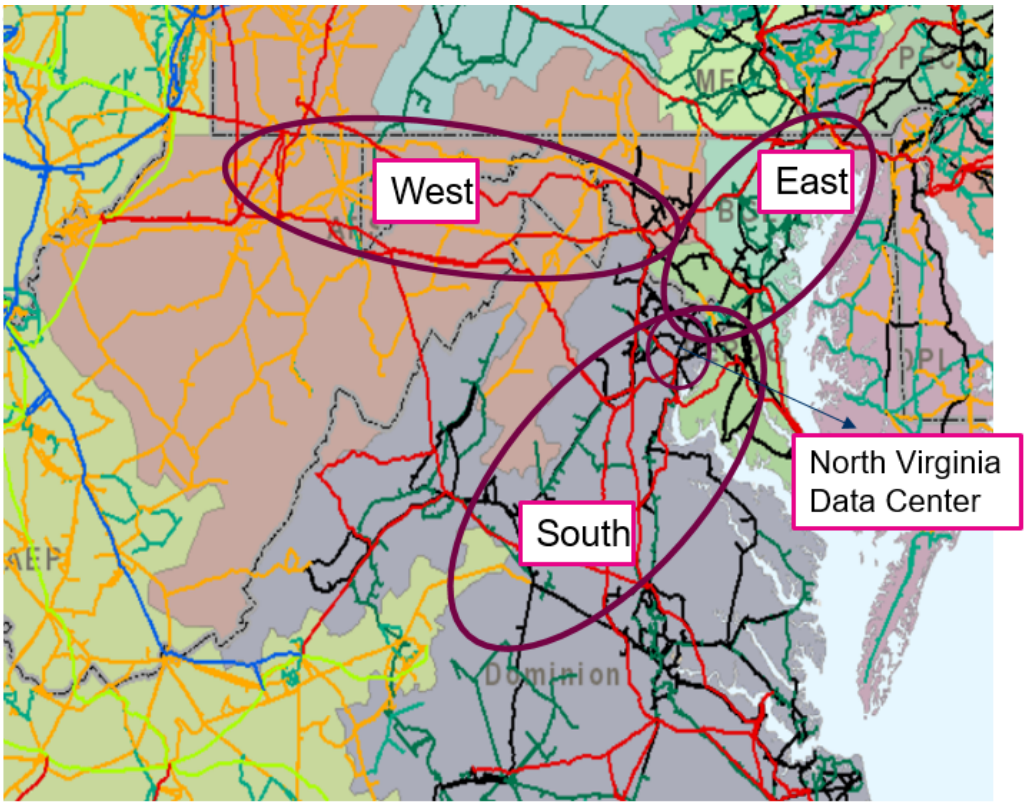


Table 2. 2022 RTEP Window 3 Submitted Proposals

#	ID	Proposing Entity	Focus Area	Project Title	Submitted Cost ($M)
1	9	AEP	Local AEP	Scottsville-Bremo Sag Study	$1.27
2	55			Boxwood-Scottsville 138 kV Rebuild	$104.88
3	181			Boxwood-Scottsville 138 kV Sag Study	$4.26
4	196			Glen Lyn-Peters Mountain Rebuild	$21.89
5	202			Cloverdale Transformer Addition	$57.29
6	234			Glen Lyn-Peters Mountain Sag Study	$0.80
7	410			Cloverdale Breaker Reconfiguration	$11.59
8	477			Fieldale-Franklin Rebuild	$74.89
9	524			Opossum Creek and New London Reactors	$8.86
10	537			Fieldale-Franklin Sag Study	$30.19
11	629			Scottsville-Bremo Rebuild	$31.31
12	856			Leesville-Altavista Rebuild	$28.85
13	487	AEP - Transource	Combo	Maryland & Pennsylvania Baseline Reliability Solution	$492.75
14	858		South	Stork-Flys 500 kV Greenfield Line and Substations	$510.44
15	904		Combo	Joshua Falls-Yeat 765 kV Greenfield Line and Substation	$1,048.10
16	977		South	Yeat 500/230 kV Greenfield Station	$232.14
17	30	Dominion	Local DOM	Charlottesville-Hollymead Line No. 2054 Rebuild	$159.87

#	ID	Proposing Entity	Focus Area	Project Title	Submitted Cost ($M)
18	74	Dominion	Local DOM	Line No. 2090 (Ladysmith CT-Fredericksburg) Rebuild	$57.34
19	129		South	Dominion Aggregate 500 kV Proposal	$3,035.05
20	211		Local DOM	Hollymead-Gordonsville Line No. 2135 Rebuild	$54.85
21	231			Reactive Power VAR Reinforcements	$155.82
22	516		East	Interregional solution- Aspen-Doubs Second 500 kV Line	$61.72
23	671		South	Line No. 541 (Front Royal to Morrisville) Rebuild	$299.03
24	692		South	Data Center Alley Local solution-New 500 kV/230 kV Aspen-Golden & Golden-Mars lines	$1,058.45
25	704		Local DOM	Hollymead-Gordonsville Line No. 2135 Rebuild	$36.89
26	711		South	Regional Solution-500 kV North Anna-Wishing Star Upgrades	$1,227.84
27	731		Local DOM	Locks Substation 230/115 kV Transformer Upgrade	$7.14
28	923		South	Second 500 kV line from Lexington to Dooms	$232.18
29	967		Local DOM	Charlottesville-Hollymead Line No. 2054 Rebuild	$183.48
30	548	LSPower	Scenario	RTEP Window 3 Solution	$2,404.48
31	28	NextEra	East/West	Hunterstown-Doubs-Goose Creek, Black Oak-Pike-Goose Creek, Pike SVC + Cap Banks	$884.05
32	116			Hunterstown-Doubs-Gant Solution	$478.87
33	175		Scenario	Combination of PEBO 215A + WOP 1F + SOP 8E	$6,265.95*
34	217		East	North Delta-Conastone Solution	$155.99
35	255		West	Hunterstown-Doubs-Gant Solution	$411.61
36	279			Black Oak-Woodside-Goose Creek, Woodside SVC + Cap Banks Solution	$429.18
37	347			Black Oak-Woodside-Gant, Woodside SVC + Cap Banks	$483.83
38	385		East	New 500/230 kV Bartholow substation, new 500/230 kV North Delta substation, new 230 kV Grisham switchyard, new 500/230 kV Goram substation	$1,140.73
39	419		East/West	Hunterstown-Doubs-Audobon-Goose Creek	$548.75
40	445		East	Muddy Creek/Delta-Conastone/Hunterstown-Doubs-Goose Creek Solution	$637.80
41	530			Muddy Creek/North Delta-Conastone Solution	$166.74
42	564			New 500/230 kV Bartholow substation, new 500/230 kV North Delta substation, new 230 kV Grisham switchyard, new 500/230 kV Goram substation	$876.88
43	577		South	Front Royal-Racefield, Warrenton-Wheeler, North Anna-Lady Smith	$258.38
44	598		Scenario	Combination of PEBO 220 + WOP 1F + SOP 8E	$2,036.47
45	631		East	Muddy Creek/North Delta-Conastone Solution	$184.47
46	642		West	502 Junction-Black Oak-Woodside-Gant, Woodside SVC + Cap Banks, Gant-Farmwell, Cochran Tap-Round Table	$747.31
47	663		South	Front Royal-Racefield, Warrenton-Rixlew, Warrenton-Hourglass, Mars-Ocean Court-Davis Drive	$284.17
48	676	NextEra	West	Black Oak-Stonewall-Gant, Stonewall SVC + Cap Banks, Gant-Farmwell, Cochran Tap-Round Table Solution	$552.49
49	685			Ft. Martin-Black Oak-Woodside, Woodside SVC + Cap Banks Solution	$609.78
50	719			Ft. Martin-Black Oak-Pike, Pike SVC + Cap Banks Solution	$600.90

#	ID	Proposing Entity	Focus Area	Project Title	Submitted Cost ($M)
51	728			Barnhart Substation, Bartholow Substation, Barnhart-Bartholow-Goose Creek solution	$385.36
52	766		South	Front Royal-Racefield, Warrenton-Wheeler	$239.59
53	846		West	Hunterstown-Doubs-Goose Creek, Black Oak-Woodside-Goose Creek, Stonewall SVC + Cap Banks	$892.94
54	853			502 Junction-Black Oak-Woodside-Gant, Woodside SVC + Cap Banks	$683.55
55	948		East	New 500/230 kV Bartholow substation, new 500/230 kV North Delta substation, new 230 kV Grisham switchyard, new 500/230 kV Goram substation, and Keeney to Waugh Chapel tie-in.	$5,381.25*
56	951		West	Black Oak-Gore-Goose Creek, Pike SVC + Cap Bank Solution	$419.86
57	344	PECO	East	PECO Expansion Plan for DOM Window 2023	$302.86
58	600		Local Other	Exelon Replacement Upgrades	$423.79
59	660	PEPCO	East	West Cooper BGE-PEPCO	$1,105.62
60	691			Mid-Atlantic Power Pathway (MAPP)	$1,990.28
61	23	POTOED - FirstEnergy	Combo	Data Center Reinforcement Proposal No. 2	$3,503.86
62	837			Data Center Reinforcement Proposal No. 1	$2,991.77
63	374	PPL	East	Otter Creek-Conastone 500 and 230 kV DCT Line	$154.21
64	606		Local Other	Juniata-Lewistown 230 kV No. 2 line	$141.16
65	24	PSEG	East	Proposal A-North Delta-New Raphael-Waugh Chapel 500 kV	$739.40
66	125		Local Other	Proposal B-North Delta-Northeast 230 kV	$313.34
67	229		East	Proposal C-Hunterstown-New Green Valley 500 kV	$529.11
68	325		Combo	Proposal E-Brambleton-Hinsons Ford Rd 500 kV	$944.05
69	637		East	Proposal D-Conastone-Doubs 500 kV	$684.22
70	741			Proposal G-Peach Bottom-New Brandon Shores 500 kV; Peach Bottom-Doubs 500 kV	$1,065.32
71	808			Proposal F-Peach Bottom-New Raphael-Waugh Chapel 500 kV; Peach Bottom-Doubs 500 kV	$1,150.80
72	962			Proposal H-Peach Bottom-Doubs 500 kV (Circuits No. 1 and No. 2)	$977.71
				Total:	**$54,408.06**

**The proposal cost was increase due to cost revision provided by proposing entity from approximately $1.6 billion to $5.4 billion.*

Proposal Screening

PJM performed a generator deliverability screening of all proposals on the 2027 cases to obtain a preliminary understanding of performance. It is important to note that many of the proposals are not intended to be standalone projects, as they are intended to be combined with other proposals in order to address flowgate violations. **Table 3** and **Table 4** summarize the performance evaluation results of all 72 submitted proposals. The tables summarize the intended flowgates by each proposal as specified in the proposing entity submission, the remediated flowgates as confirmed by PJM testing, the total addressed/unaddressed flowgates out of all window flowgates and whether the proposal, on its own, introduces any new flowgates. Where a high number of unaddressed flowgates are shown in the

Table 3, such as for some of Dominion and NextEra proposals, the specific proposals are either combined with other entitys' proposals and/or part of a larger scenario proposal.

Table 3. 2027 Proposal Summary by Number of Flowgates (FG)

#	ID	Proposing Entity	Focus Area	Project Intended FG	Remediated FG Intended	Unaddressed FG Intended	Addressed FG Posted (out of 527)	Unaddressed FG Posted (out of 527)	New FG Attributed to Project
1	9	AEP	Local AEP	0	0	0	36	491	13
2	55			16	16	0	61	466	17
3	181			16	14	2	55	472	6
4	196			1	1	0	44	483	17
5	202			1	1	0	43	484	11
6	234			1	1	0	43	484	10
7	410			1	1	0	180	347	79
8	477			2	2	0	176	351	81
9	524			2	2	0	176	351	82
10	537			2	2	0	169	358	20
11	629			0	0	0	175	352	83
12	856			2	1	1	175	352	87
13	30	Dominion	Local DOM	3	3	0	47	480	22
14	74[1]			108	4	104	44	483	7
15	129[1]		South	117	84	33	149	378	46
16	211[1]		Local DOM	113	7	106	52	475	11
17	231[1]			108	11	97	58	469	16
18	516		PB-C	15	15	0	195	332	25
19	671		Local DOM	0	0	0	43	484	8
20	692		South	62	62	0	127	400	11
21	704		Local DOM	2	2	0	49	478	7
22	711		South	35	33	2	127	400	143
23	731[1]		Local DOM	108	4	104	47	480	7
24	923		South	3	3	0	49	478	11
25	967[1]		Local DOM	114	7	107	47	480	22
26	600	Exelon	Local Other	126	124	2	287	240	81
27/28	660/344		PB-C	96	96	0	309	218	91
29	23[1]	FE (POTOMAC)	Combo	501	419	82	433	94	35
30	837[1]			501	421	80	434	93	21
31	548	LS Power	Scenario	515	509	6	518	9	32
32	28[1]	NextEra	West	339	263	76	306	221	102
33	116[1]			294	246	48	275	252	66
34	217[1]		PB-C	170	139	31	244	283	82
35	255[1]		West	298	189	109	249	278	86

[1] These proposals are designed to work in tandem with other proposal components submitted by the same proposing entity. The performance of these proposals is further judged through the scenario analysis exercise instead of individually only

#	ID	Proposing Entity	Focus Area	Project Intended FG	Remediated FG Intended	Unaddressed FG Intended	Addressed FG Posted (out of 527)	Unaddressed FG Posted (out of 527)	New FG Attributed to Project
36	279[1]			260	170	90	239	288	102
37	347[1]			228	165	63	237	290	105
38	385		PB-C	378	372	6	500	27	313
39	419[1]		West	492	242	250	272	255	81
40	445[1]		PB-C	318	268	50	306	221	105
41	530			1	1	0	236	291	86
42	564[1]			375	333	42	355	172	38
43	577[1]		South	127	75	52	163	364	208
44	598		Scenario	634	630	4	510	17	10
45	631[1]		PB-C	181	150	31	248	279	93
46	642[1]		West	353	257	96	303	224	176
47	663[1]		South	170	100	70	166	361	211
48	676[1]		West	253	189	64	277	250	93
49	685[1]			299	210	89	265	262	227
50	719[1]			297	197	100	252	275	231
51	728[1]			494	189	305	206	321	153
52	766[1]		South	127	74	53	160	367	208
53	846[1]		West	344	270	74	314	213	102
54	853[1]			301	210	91	266	261	99
55	948[1]		PB-C	382	341	41	365	162	31
56	951[1]		West	220	162	58	231	296	111
57	175		Scenario	466	463	3	510	17	11
58	374	PPL	PB-C	8	8	0	142	385	27
59	606[1]		Local Other	14	10	4	46	481	17
60	24	PSEG	PB-C	158	148	10	286	241	76
61	125		Local Other	111	110	1	268	259	71
62	229[1]		PB-C	191	177	14	295	232	93
63	325[1]		Combo	192	168	24	304	223	81
64	637		PB-C	161	148	13	281	246	101
65	741			194	184	10	290	237	88
66	808			198	188	10	327	200	79
67	962			181	164	17	283	244	97
68	487	TRANSRC	Combo	317	307	10	438	89	5
69	858		South	63	61	2	169	358	18
70	904		Combo	148	142	6	295	232	39
71	977		South	26	26	0	196	331	26

NOTE: Proposal 691 case did not converge, so no results are shown.

[1] These proposals are designed to work in tandem with other proposal components submitted by the same proposing entity. The performance of these proposals is further judged through the scenario analysis exercise instead of individually only

Table 4. 2027 Proposal Summary by Number of Facilities

#	ID	Proposing Entity	Focus Area	No Longer Overloaded (out of 146)	Remaining Overloads (out of 146)	New Overloads
1	9	AEP	Local AEP	15	131	1
2	55			20	126	1
3	181			19	127	0
4	196			16	130	0
5	202			16	130	0
6	234			16	130	0
7	410			45	101	10
8	477			45	101	9
9	524			44	102	10
10	537			48	98	0
11	629			44	102	11
12	856			42	104	10
13	30	Dominion	Local DOM	19	127	0
14	74			17	129	0
15	129		South	43	103	6
16	211		Local DOM	17	129	0
17	231			15	131	1
18	516		PB-C	65	81	3
19	671		Local DOM	18	128	0
20	692		South	37	109	2
21	704		Local DOM	17	129	0
22	711		South	39	107	7
23	731		Local DOM	16	130	0
24	923		South	18	128	0
25	967		Local DOM	19	127	0
26	600	Exelon	Local Other	63	83	11
27/28	660/344		PB-C	60	86	22
29	23	FE (POTOMAC)	Combo	97	49	6
30	837			100	46	3
31	548	LS Power	Scenario	114	32	11
32	28	NextEra	West	52	94	16
33	116			50	96	13
34	175		Scenario	117	29	4
35	217		PB-C	54	92	10
36	255		West	44	102	16
37	279			41	105	7
38	347			41	105	7
39	385		PB-C	81	65	13

#	ID	Proposing Entity	Focus Area	No Longer Overloaded (out of 146)	Remaining Overloads (out of 146)	New Overloads
40	419		West	55	91	18
41	445		PB-C	58	88	21
42	530			53	93	12
43	564			81	65	13
44	577		South	32	114	25
45	598		Scenario	117	29	3
46	631		PB-C	54	92	16
47	642		West	64	82	17
48	663		South	38	108	26
49	676		West	56	90	5
50	685			45	101	25
51	719			43	103	21
52	728			40	106	23
53	766		South	33	113	26
54	846		West	49	97	16
55	853			49	97	9
56	948		PB-C	80	66	10
57	951		West	36	110	7
58	374	PPL	PB-C	32	114	1
59	606		Local Other	16	130	1
60	24	PSEG	PB-C	53	93	16
61	125		Local Other	59	87	12
62	229		PB-C	58	88	22
63	325		Combo	52	94	19
64	637		PB-C	51	95	18
65	741			58	88	18
66	808			70	76	16
67	962	PSEG	PB-C	56	90	19
68	487	TRANSRC	Combo	100	46	0
69	858		South	56	90	0
70	904		Combo	69	77	2
71	977		South	49	97	1

NOTE: Proposal 691 case did not converge, so no results are shown.

The proposals submitted by AEP were intended to address local AEP flowgates posted with the window and were not included in the cluster evaluations. The proposals were evaluated in the 2027 and 2028 cases and addressed the posted flowgate violations.

Regional Proposal Components

The first step to scenario development was to cluster the 500 kV and above proposal components to determine the more efficient or cost-effective combination of backbone solution components. **Table 5** through **Table 8** organize the backbone proposal components into regional clusters.

Table 5. East Cluster

Proposal ID	Proposing Entity	List Components
344/660-1	Exelon	Peach Bottom North-Graceton New 500 kV West Cooper-Peach Bottom South New 500 kV Line West Cooper-High Ridge 500 kV Rebuild 5012 500 kV (will be looped in to West Cooper and Gracetone)
344/660-2		West Cooper-Peach Bottom South New 500 kV Line West Cooper-High Ridge 500 kV Rebuild 5012 500 kV (will be looped in to West Cooper)
344/660-3		Peach Bottom North-Graceton New 500 kV West Cooper-Peach Bottom South New 500 kV Line Rebuild 5012 500 kV (will be looped in to West Cooper and Gracetone)
691		230 mile, 500 kV AC/400 kV DC (Possum Pt-Burches Hill-Cheltenham-Chalk Pt. Mission to Salem 500 kV) Hallowing (HVDC)-Mission (HVDC)
548	LS Power	Conastone-North Delta 500 kV
		Huntersdown-Doubs 500 kV
217	NextEra	North Delta-Conastone 500 kV
385/564		New Otter Creek-Bartholow (Conastone-Brighton tap, Doubs-Brighton Tap) 500 kV
385/564		North Delta-Conastone 500 kV
530		North Delta-Conastone 500 kV
948	NextEra	New Otter Creek-Bartholow (Conastone-Brighton tap, Doubs-Brighton Tap) 500 kV
948		North Delta-Conastone 500 kV
374	PPL	Otter Creek-Conastone 500 and 230 kV DCT Line
229	PSEG	Hunterstown-Green Valley 500 kV
24		N. Delta-New Raphael-W. Chapel 500 kV
325		N. Delta-New Raphael-W. Chapel 500 kV
637		Conastone-Doubs 500 kV
741		Peach Bottom-Brandon Shore 500 kV
741		Peach Bottom-Doubs 500 kV
808		Peach Bottom-Raphael-W. Chapel 500 kV
808		Peach Bottom-Doubs 500 kV
962		Peach Bottom-Doubs 500 kV (two lines)

Table 6. West Cluster

Proposal ID	Proposing Entity	List Components
23	FE	Fort Martin-Doubs 500 No. 1 & 2
23		Meadow Brook-Doubs 500 kV
23		Meadow Brook-Pruntytown 500 kV
837		Fort Martin-Doubs 500 No. 1
837		Meadow Brook-Doubs 500 kV
837		Meadow Brook-Pruntytown 500 kV
548	LS Power	502 Junction-Black Oak-Doubs 500 kV
279	NextEra	Black Oak-Stonewall-Goose Creek 500 kV
28		Black Oak-Gore-Goose Creek 500 kV
347		Black Oak-Stonewall-Goose Creek 500 kV
642		Build new 500 kV line from 502 Junction to Black Oak to Stonewall to new Belmont/Gant 500 kV
676		Black Oak-Stonewall-Goose Creek 500 kV
685		Build new 500 kV line from Fort Martin to Black Oak to Stone Wall to Goose Creek
719		Fort Martin to Black Oak to Gore to Goose Creek 500 kV
846		Black Oak-Stonewall-Goose Creek 500 kV
853		Build new 500 kV line from 502 Junction to Black Oak to Stonewall to new Belmont/Gant 500 kV
951		Black Oak-Gore-Goose Creek 500 kV
116		Hunterstown-Doubs 500 kV
255		Hunterstown-Doubs 500 kV
28		Hunterstown-Doubs 500 kV
419		Hunterstown-Doubs 500 kV
445		Hunterstown-Doubs 500 kV
116		Hunterstown-Doubs 500 kV
255		Hunterstown-Doubs 500 kV

Table 7. South Cluster

Proposal ID	Proposing Entity	List Components
711	Dominion	New 500 kV Line (North Anna-Spotsylvania)
711		New 500 kV Line (Spotsylvania to Vint Hill)
711		New 500 kV Line (Vint Hill to Wishing Star)
923		Second 500 kV line from Lexington to Dooms
548	LS Power	Front Royal-VintHill 500 kV
577	NextEra	Front Royal to New Wishing Star sub 500 kV
663		Front Royal to New Wishing Star sub 500 kV
766		Front Royal to New Wishing Star sub 500 kV
325	PSEG	Brambleton-Hinsons Ford 500 kV

Proposal ID	Proposing Entity	List Components
904	TRANSRC	Joshua Falls to Yeat 765 kV

Table 8. Northern Virginia Data Center Cluster

Proposal ID	Proposing Entity	List Components
516	Dominion	Aspen-Doubs Second 500 kV Line | Line No. 514 (Goose Creek-Doubs) Rebuild
692		Aspen-Golden 500 kV Line Build
692		New Mars-Golden 500 kV
692		Aspen to Goose Creek 500 kV
23	FE	Aspen-Doubs Second 500 kV Line | Line No. 514 (Goose Creek-Doubs) Rebuild
837		Aspen-Doubs Second 500 kV Line | Line No. 514 (Goose Creek-Doubs) Rebuild
548	LS Power	Doubs-Goose Creek 500 kV
548		Goose Creek-Beaumeade 500 kV
116	NextEra	Doubs-Gant (new Belmont) 500 kV
255		Doubs-Gant (new Belmont) 500 kV
28		Doubs-Goose Greek 500 kV
419		Doubs-Beaumeade-Goose Creek 500 kV
445		Doubs -Goose Creek 500 kV
846		Doubs-Goose Greek 500 kV
858	TRANSRC	Stork-Flys 500 kV Underground Line

Window 3 Evaluations Process

Consultation Meetings With Proposing Entities

PJM held two rounds of meetings with each of the proposing entities, and the discussions focused on gaining clarity on proposed developments, assumptions, rationale of proposed alternatives and variations. The first round of meetings were conducted in June/July of 2023, and the second round was initiated in late July and concluded mid-August. The latter half of the discussions focused on outage scheduling, routing, risk and cost assumptions and considerations. In addition to the primary two consultation rounds, several additional consultation meetings were organized by PJM with short-listed proposing entities to assist with refining and finalizing the 2022 Window 3 selected proposal list.

Scenario Development

PJM developed scenarios, which were combinations of proposals and/or components from different proposals, addressing all areas of need and evaluated them against the 2027 and 2028 2022 Window 3 base cases. Over 30 scenarios were analyzed for the 2027 model, and over 100 scenarios were developed and analyzed for the 2028 model. Certain scenarios were full combination scenarios submitted by the proposing entities, such as those

submitted by the incumbent Transmission Owners, or other entities including NextEra, LS Power and Transource. PJM also optimized scenarios using components from incumbent and non-incumbent proposing entities. Several scenarios were found adequate to address the needs present in the 2027 analysis; however, the 2028 evaluations show the need for more robust reinforcements in the Eastern cluster and introduced changes to solutions in the Southern cluster. The Western cluster needs are less sensitive, though still impacted by the robustness test. A number of proposals that were developed by proposing entities to address the 2027 needs specifically did not offer the needed scalability and robustness to address the needs posed by the 2028 system conditions. Please refer to the scenario list and abbreviated description provided in Appendix B.

The scenarios were evaluated based on the following principles:

- **Performance**
  - Meeting the system needs of 2027 and being flexible to address 2028 needs
- **Scalability**
  - Scenario/development longevity – system robustness and utilization
- **Impact**
  - Utilization of existing right of way (ROW) where possible and efficient.
- **Validated Cost**
  - Cost evaluation using third-party benchmarking metrics
- **Risks**
  - Triggering additional costs:
    - Substation rebuilds due to extreme short-circuit levels
  - Avoid extended critical outages (Peach Bottom/Conastone rebuilds)
  - Imposing high permitting
  - Inability to meeting in-service date
- **Efficiencies**
  - Avoidance of redundant capital investment including recognizing synergies with EOL facilities and overlaps of previously approved (or imminent) supplemental/baseline upgrades

The scenarios were developed and tested to first address the regional needs and then were refined through new scenarios to address local needs. Scenarios were further refined using more effective proposal components as demonstrated through their performance in the analysis.

2027 Reliability Evaluation Summary

As described earlier on in this report, initial screening was performed on all submitted individual proposals for 2027. These proposals included proposed upgrades at voltage levels of 230 kV to 765 kV. Some of the proposals attempted to address all four cluster needs and were evaluated as standalone scenarios. PJM also developed a scenario by combining the incumbent Transmission Owner proposals, along with further refined scenarios that

utilized select components from various proposals. The 2027 reliability analysis results indicated that all submitted combination proposals could address the 2027 needs to a varying degree. In order to test the robustness of the proposal, PJM evaluated the scenarios on the 2028 cases.

This section outlines the key needs identified as part of the PJM 2022 RTEP Window 3, together with a brief summary of how each of the key proposals addressed those needs in the 2027 study base case scenario.

Eastern Quadrant:

For the eastern quadrant, all submitted proposals acknowledged the need to reinforce the Peach Bottom to Doubs 500 kV transmission corridor via various 230 kV and 500 kV proposals. Generally, all combination proposals submitted by proposing entities addressed the reliability evaluation tests including Gen Deliverability and N-1 analysis with varying degrees. Some of the proposals that did not consider the robustness evaluation requirement part of the PJM 2022 RTEP Window 3 Problem Statement were not designed to handle the higher power transfer demands from the East toward West and hence offered little room beyond meeting the 2027 needs. These proposals are primarily LS Power proposal 548 and Transource combined proposal. Both LS Power and Transource indicated that their proposed solutions were neither designed considering the 2028 robustness and needs base case scenarios nor tested against the 2028 cases.

Exelon proposal 344/660, PSEG proposal 229, 637, 741 ,808, Nextera proposal 217, 385, 445, 728, 948, PPL proposal 374 and Ls Power proposal 548 all proposed 500 kV transmission line developments to address the debottlenecking need of the Peach Bottom to Conastone corridor as well as provide additional supply into the northern Virginia system.

Western Quadrant:

In the west, three proposing entities (First Energy, Nextera and LS Power) offered 500 kV transmission developments to address the higher APS to northern Virginia (West to East) transfer capability needs. One entity (Transource) proposed a 765 kV development. All of these developments proved adequate, from a technical transfer capability perspective, in addressing the identified needs in the western quadrant either in combination or individually.

It is to be noted that although the proposed 765 kV development by Transource has merits from diversifying the West-East transfer path over a wider geographic area, it does pose its own routing, siting and construction risks that may delay meeting the needs in the area in 2027 or as close to that timeline as possible.

Other smaller proposal components, such as the Front Royal to Wishing Star/Loudon area 500 kV developments by Nextera (proposal numbers: 766, 577, 663), offer limited transfer enhancements once the needed bulk transmission reinforcements are in place. These developments, as outlined in the PJM constructability evaluation report pose much higher elevated construction risk and when compared to the limited incremental transfer capability offered were dropped from further consideration.

Southern Quadrant:

The 2027 analysis indicated that the proposed 500 kV line rebuilds in the existing 500 kV corridor currently running between Front Royal and Vint Hill are effective in addressing the identified overloads under the 2027 scenario. LS Power also proposed to build a new, greenfield 500 kV line along that corridor to enhance its transfer capability, which was proven also effective technically. It is to be noted, however, that the 2022 RTEP Window 3, 2027 basecase scenario adopted the older PJM generation dispatch and deliverability rules (in effect at the time) where each load zone tends to hold its import interchange with the rest of the PJM system constant at historical levels. With the much higher and material load increase forecasted in Dominion and APS (up to 7,500 MW), this is difficult to

justify and would require the local generation within Dominion to be dispatched up or close to their maximum capability. This higher Dominion dispatch affects the flows along the 500 kV corridor between North Anna and Morrisville 500 kV substations. With a more reasonable dispatch pattern, according to PJM's new block dispatch methodology, the higher South-to-North flow will drop in the 2028 robustness test scenarios, as further highlighted in the following section.

2027/28 Reliability Evaluation Summary

The 2028 case for the 2023 RTEP was still under development when the 2022 Window 3 opened, and once preliminary study results were available, PJM shared the results with stakeholders at the April 2023 special TEAC.

The 2028 evaluation indicated the need for further regional transfer reinforcements, beyond those offered through the 2027 and changes to a number of needs, particularly within the southern region due to:

- Major deactivation requests in the study area (e.g., Brandon Shores, among others)
- Higher regional transfers as a result of the new block dispatch and generator deliverability test

For this reason, PJM utilized the 2027/28 cases to further assess the robustness of the proposals. The LS Power (proposal 548), NextEra (proposal 598) and Transource (proposal combo) combination proposals did not prove effective in the 2027/28 initial testing. However, PJM further tested the components of LS Power and Transource proposals in developing additional scenarios. NextEra proposed a standalone add-on component upgrade to its 2027 combination proposal (proposal 598) to address 2028 needs through proposal No. 175. PJM evaluations showed that the NextEra proposal 175 and the incumbent Transmission Owners (Exelon, FirstEnergy and Dominion) combination proposal scenarios showed promising performance, and thus were used as starting points for further scenario development and assessments.

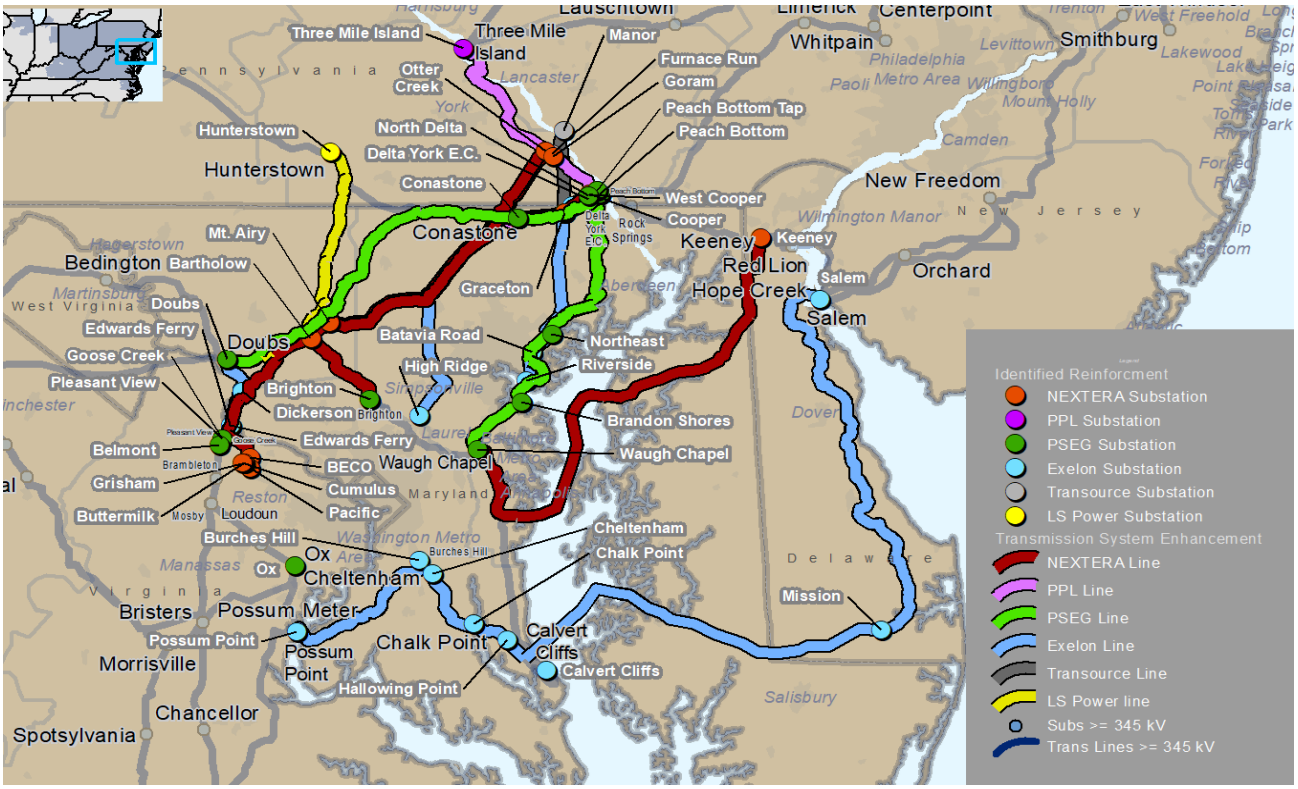
PJM evaluated every proposal individually, as well as various combinations of the proposals and components to identify the most effective solution. Based on different combinations of scenarios performed, PJM identified the need for three regional/local transmission solutions in the East cluster, and results are reflected in the short-listed scenarios.

East Proposal Cluster

Six proposing entities submitted over 15 proposals to address the East cluster violations, as illustrated in **Map 3**. During the window evaluations, PJM confirmed the need for regional and local reinforcements into the BGE system, along with regional reinforcements between Peach Bottom and northern Virginia.

PJM evaluated every proposal individually, as well as various combinations of the proposals and components to identify the more efficient or cost-effective solution. Based on different combinations of scenarios performed, PJM identified the need for three regional/local transmission solutions in the East cluster, which are reflected in the short-listed scenarios.

Map 3. East Proposal Cluster Map



*NOTE: This map is only intended to illustrate the general electrical connectivity of the projects and should **not** be relied upon for exact geographical substation locations or line routes.*

Listed below are groups of solutions evaluated as potential solutions to address the BGE local as well as regional transfers:

Solutions evaluated to address BGE local/regional

- **North Delta-High Ridge 500 kV (proposal ID 344/660):**

Approximately a 67-mile AC overhead line proposed by Exelon, the incumbent Transmission Owner. One hundred percent of the line will utilize existing ROW. The solution addresses all of the BGE violations and a majority of the violations due to transfer limitations. The proposed cost is approximately $550 million.

- **Peach Bottom/N. Delta-Raphael-Waugh Chapel 500 kV (Proposal ID 808):**

Approximately a 72-mile AC overhead line proposed by PSEG. The line would be greenfield and require new ROW (a portion of the circuit will parallel existing ROW). The solution will require additional upgrade(s), and there are potential short-circuit issues at Peach Bottom substation that will require rebuilding of the substation. The proposed cost is approximately $511 million in addition to any substation components included in the proposal.

- **Peach Bottom-Brandon Shore 500 kV (Proposal ID 741):**

Approximately a 56-mile AC overhead line proposed by PSEG. The line would be greenfield and require new ROW, majority of which will parallel existing ROW. The solution is comparable to the Exelon solution; however, there are potential short-circuit issues at Peach Bottom substation that will require rebuilding of the substation. The proposed cost is approximately $434 million in addition to any substation components included in the proposal.

- **Keeney-Waugh Chapel 230 kV double circuit (Proposal ID 948):**

Approximately a 73-mile AC overhead line, along with 31 miles of submarine cable, solution proposed by NextEra. The line would be greenfield and require new ROW (approximately 15% of the length would parallel existing ROW). Not only would the solution require additional upgrades to address the BGE local and regional needs, it has a proposed cost of over $4 billion.

Solutions evaluated to address BGE local area solutions (focused on Brandon Shores deactivation)

- **Graceton-Batavia double circuit 230 kV (Proposal ID 344/660):**

Approximately a 29-mile AC overhead line proposed by Exelon, the incumbent Transmission Owner. The solution will be adjacent to an existing circuit, will utilize an existing ROW, and addresses the majority of the local needs. The proposed cost is approximately $195 million.

- **Peach Bottom/N. Delta-Raphael-Waugh Chapel 500 kV *(Proposal ID 808)*:**

The same notes as described above in the "BGE Local/Regional Solutions" section for the same line would apply.

- **Peach Bottom-Brandon Shore 500 kV (Proposal ID 741):**

The same notes as described above in the "BGE Local/Regional Solutions" section for the same line would apply.

- **Keeney-Waugh Chapel 230 kV double circuit (Proposal ID 948):**

The same notes as described above in the "BGE Local/Regional Solutions" section for the same line would apply.

Listed below are solutions evaluated by PJM to address the regional transfer needs, mainly related to transfer to northern Virginia/APS areas:

Proposals evaluated to address regional transfer

- **Peach Bottom-Graceton-Conastone/N. Delta 500 kV upgrade (Proposal ID 344/660):**

A solution proposed by both Exelon and Transource that builds a new 500 kV substation (N. Delta) in the Peach Bottom area and reconfigures the Peach Bottom substation to avoid short-circuit issues that require the Peach Bottom station rebuild. The project includes a new Peach Bottom-Graceton 500 kV, Peach Bottom-N. Delta 500 kV, and N. Delta-High Ridge 500 kV lines, resulting in approximately 75 miles of new transmission that utilizes the existing ROW for the majority of the length, rebuilding of an existing 500 kV line from Peach Bottom-Conastone.

- **Peach Bottom-Doubs 500 kV (Proposal ID 741/808):**

Approximately 87 miles AC overhead greenfield line proposed by PSEG. This solution does not address the Peach Bottom short-circuit issue along with space constraints at the substation.

- **Conastone-Doubs 500 kV (Proposal ID 637):**

Approximately 69 miles AC overhead greenfield with small portion paralleling an existing line proposed by PSEG. The project along with the PPL-proposed project 374 provides the needed transfer capability into the northern Virginia area.

- **Otter Creek-Conastone 500 kV (Proposal ID 374):**

Approximately 17 miles AC overhead line proposed by PPL. The line will expand existing ROW to build the line. The Otter Creek-Conastone 500 kV line will tie in to the PSEG proposed Conastone-Doubs, bypassing the Conastone substation.

- **Hunterstown-Green Valley 500 kV (Proposal ID 229):**

Approximately a 40 miles AC overhead greenfield line proposed by PSEG. The Hunterstown termination causes 500 kV overloads in the Peach Bottom area. The proposal also results in short-circuit issues at Conastone substation, requiring a substation rebuild.

- **Hunterstown-Doubs-Goose Creek 500 kV (Proposal ID 548/846):**

This path is proposed by NextEra and LS Power. The NextEra proposal includes approximately 71 miles AC overhead greenfield line from Hunterstown-Doubs 500 kV, with 25% of the new ROW paralleling existing ROW. The Doubs-Groose Creek 500 kV section would be approximately 19 miles of greenfield line, 20% of which will be underground. The LS Power proposal includes approximately a 66-mile AC overhead Hunterstown-Doubs 500 kV line, of which, 20 miles would utilize existing ROW. The Doubs-Groose Creek 500 kV section would be approximately 18 miles, of which eight miles would utilize existing ROW. The lines out of the Hunterstown-Doubs cause violations on the PECO and BGE system requiring additional upgrades.

- **Otter Creek-T-Point 500 kV (Proposal ID 948):**

Approximately a 61-mile AC overhead greenfield line paralleling existing ROW proposed by NextEra. The solution results in short-circuit issues at Conastone substation requiring rebuild of the station.

- **Barnhart (Hunterstown-Conastone Tap)-T-Point 500 kV *(Proposal ID 728)*:**

Approximately a 37 mile AC overhead greenfield line, 5% of which is paralleling existing ROW, proposed by NextEra. The solution results in short-circuit issues at Conastone substation requiring rebuild of the station.

- **N. Delta-Conastone 500 kV (Proposal ID 217/385/530/564/548):**

This path is proposed by NextEra and LS Power, both of which are approximately 15 miles. The majority of the ROW parallels existing ROW or utilizes existing ROW. Exelon who is the owner of the ROW is utilizing the same ROW in their proposal.

- **T-Point-Data Center Alley 230 kV (Proposal ID 728):**

Approximately a 35-mile two greenfield single 230 kV circuits proposed by NextEra. Of the total length, 95% is AC overhead, and the remaining 5% would be underground. The 230 kV system can't be built without the 500 kV T-Point, which will cause a short-circuit issue at Conastone substation requiring the Conastone station rebuild.

- **Transource 230 kV development between Peach Bottom and Conastone (Proposal ID 487–IEC East):**

Scope includes Transource's 500/230 kV developments between Peach Bottom and Conastone. The project doesn't address the BGE local need.

Proposals evaluated to address PA/MD tie lines

- **Transource 230 kV development between New Rice-Ringgold (Proposal ID 487- IEC West):**

Scope includes Transource's new 500/230 kV Rice substation (tie into Vinco-Hunterstown 500 kV circuit) and approximately 29 miles of new double circuit 230 kV AC overhead greenfield transmission line between Rice and Ringgold (FE station).

- **First Energy new Hunterstown-Carroll 230 kV (Proposal ID 837)**

The project includes approximately 24 miles of rebuilding an existing Hunterstown-Carroll 115/138 circuit to 230 kV double circuit construction.

West Proposal Cluster

Four proposing entities submitted solutions to address the West cluster violations, as illustrated in **Map 4**. All proposals approached the West needs through new 500 kV or 765 kV lines.

Regional Solutions

- **502 Junction-Black Oak-Stonewall-New Belmont (Gant) 500 kV: (NextEra)**

Approximately 67 miles of one 500 kV line on existing or parallel to existing ROW to Black Oak 500 kV substation. The next portion of the line will be approximately 53 miles long terminating at Stonewall substation to existing or parallel to existing ROW. PJM's analysis did not show additional benefits of looping the line into Black Oak 500 kV substation. The 500 kV line will continue east for roughly 22 miles on existing or parallel to existing ROW before turning south for 25 miles as greenfield development to be terminated at New Belmont/Gant 500 kV substation.

- **Fort Martin-Doubs 500 kV double/single circuits: (FE)**

Construct approximately 158 miles of new 500 kV (double/single) line(s) from Fort Martin 500 kV substation to Doubs 500 kV substation. The new transmission line will require installation of new 500 kV breakers at Doubs and Fort Martin 500 kV substation and the expansion of Doubs 500 kV substation.

- **Pruntytown-Mt. Storm and Meadow Brook-Doubs 500 kV: (FE)**

- Construct approximately 50 miles of new 500 kV line from Pruntytown 500 kV substation to structure No. 5 of on the Meadow Brook to Mount Storm 500 kV line located adjacent to Mt. Storm 500 kV substation. Cut the existing Meadow Brook 500 kV to Mount Storm 500 kV line from the Mount Storm line terminal, and connect the new 500 kV line from Pruntytown 500 kV substation. The new transmission line will require expansion of Pruntytown 500 kV substation.

- Constuct approximately 55 miles of new 500 kV line from Meadowbrook 500 kV substation to Doubs 500 kV substation. Reterminate existing Meadow Brook to Loudon 500 kV line and existing Meadow Brook to Front Royal 500 kV line. The new transmission line will require installation of new 500 kV breakers at Doubs and Meadow Brook 500 kV substation and the expansion of Doubs 500 kV substation.

- **502 Junction-Black Oak-Doubs 500 kV: (LS Power)**

Construct approximately 73 miles of new 500 kV line from 502 Junction 500 kV substation to Black Oak 500 kV substation. Construct approximately 72 miles of new 500 kV line from Black Oak 500 kV substation to Doubs 500 kV substation. Approximately 52 miles of the 72-mile line will be built by rebuilding the existing 138 kV circuit to a double 500/138 kV circuit.

- **Joshua Falls-Yeat 765 kV: (Transource)**

Construct approximately 135 miles of new 765 kV line from existing Joshua Falls 765 kV substation to a new Yeat 765 kV substation. The new transmission line will require installation of new 765 kV breakers at Joshua Falls 765 kV substation.

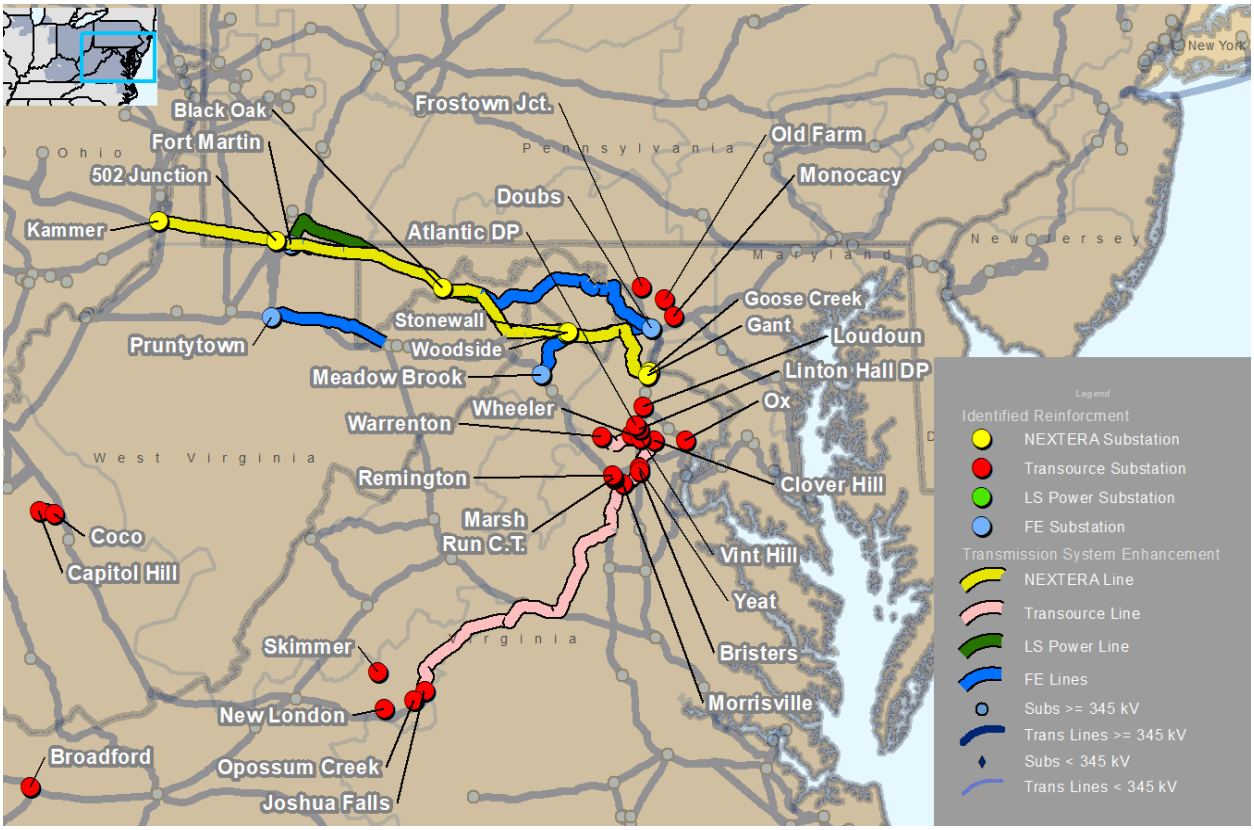
The above-proposed 500 kV solutions, regardless of proposing entity, overlapped in terms of proposed ROW with the exception of First Energy's proposal of new line from Pruntytown-Mt. Storm and Meadow Brook-Doubs. PJM also tested less effective/efficient solutions, two examples of which are provided below:

- Front Royal-New Wishing Star 500 kV: (NextEra)

- Black Oak-Goose Creek 500 kV: (NextEra)

PJM evaluated every proposal individually, as well as various combinations of the proposals and components to identify the most effective solution. Based on different combinations of scenarios performed, PJM identified that with adequate reinforcements in the East (three lines), only one 500 kV or 765 kV line with dedicated dynamic VAR support would be required. For the 500 kV reinforcement options terminating at Doubs, additional transfer capability would be required into Goose Creek (Northern VA area).

Map 4. West Proposal Cluster Map



*NOTE: This map is only intended to illustrate the general electrical connectivity of the projects and should **not** be relied upon for exact geographical substation locations or line routes.*

South Proposal Cluster

Four proposing entities submitted solutions to address the South cluster violations, as illustrated in **Map 5**. All proposals approached the South needs primarily through new 500 kV lines.

Regional Solutions

- **Front Royal-New Wishing Star (Racefield) 500 kV: (NextEra)**

Approximately a 48-mile AC overhead line proposed by NextEra with about 70% greenfield ROW, 25% adjacent to road ROW and 5% an expansion of existing transmission ROW. This solution is the most direct route, from west to east, into the Loudoun area and is similar in nature to the originally proposed Trail project (Meadow Brook-Loudoun). The Trail project was a 500 kV line proposed by Dominion and Allegheny Power, through their subsidiary TrAILCo. It began in western Pennsylvania, crossed through West Virginia, and into Loudoun County, Virginia. Due to the amount of opposition at the time, the line took a much longer route heading south toward Morrisville before heading back up to Loudoun. PJM performed sensitives with and without the new Front Royal-New Wishing Star 500 kV line and did not see a substantial impact on solved violations. PJM believes obtaining new ROW will be difficult following the TrAILCo project.

- **Front Royal-Vint Hill 500 kV: (NextEra)**

Approximately a 64-mile AC overhead greenfield line proposed by LS Power. The line primarily parallels existing ROW along Front Royal-Morrisville and Meadow Brook-Vint Hill (previously Loudoun).

- **Hinsons Ford Rd-Brambleton 500 kV: (PSEG)**

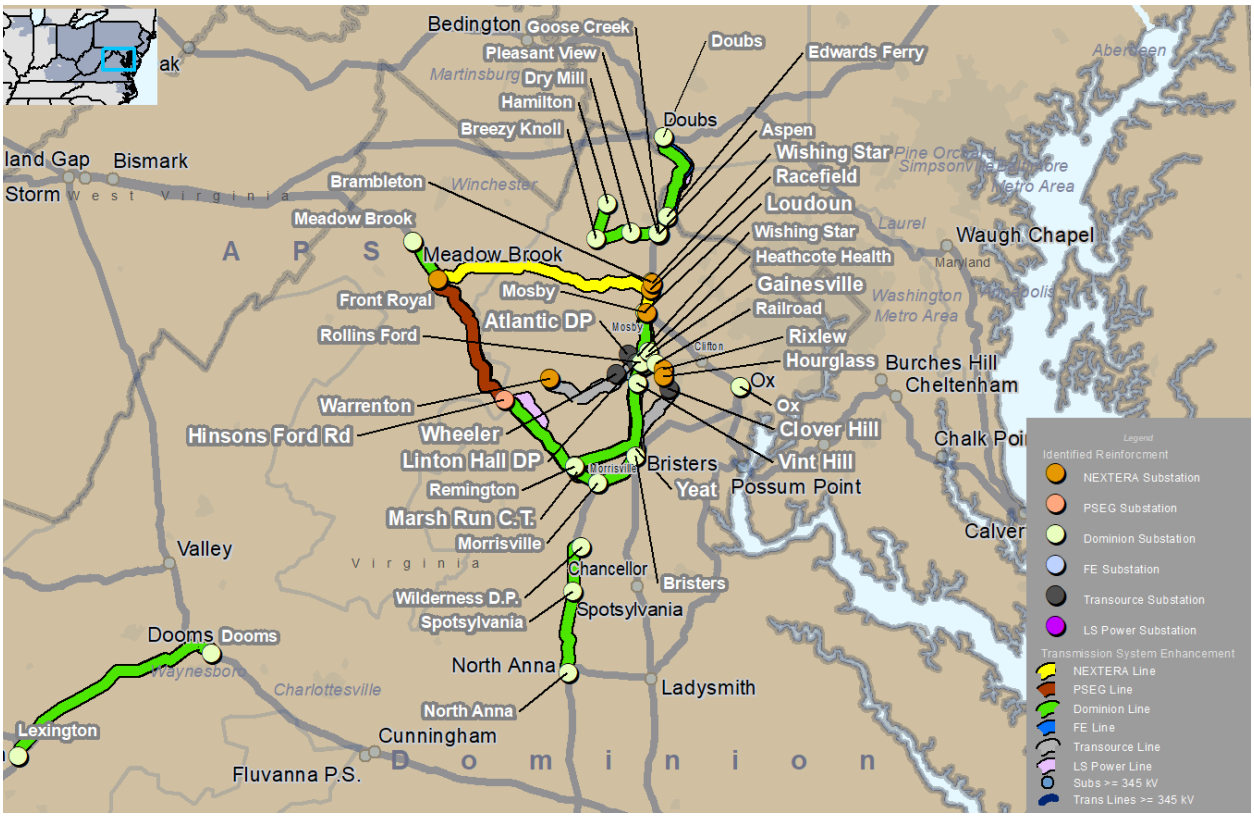
Approximately 34-mile AC overhead greenfield line proposed by PSEG. The proposal shows some similarities to the two above proposals by NextEra and LS Power. While not going directly from west to east or travels as far south to Morrisville, the line would cut across to Brambleton/Loudon area.

- **North Anna-Wishing Star 500 kV: (Dominion)**

The Dominion solution brings a 500 kV line from North Anna all the way up to Wishing Star connecting to Spotsylvania and Vint Hill along the way. In order to fit the additional 500 kV line in their existing corridor, Dominion would wreck and rebuild structures from Morrisville to Wishing Star, which will impact two 500 kV and two 230 kV lines. The North Anna-Spotsylvania section is approximately a 14 mile, the Spotsylvania-Vint Hill section is approximately 38 miles and the Vint Hill-Wishing Star section is approximately 17 miles, all of which would be new AC overhead lines using existing ROW. However, PJM observed that some violations seen in the 2027 results are not present in 2028, likely due to the assumption and methodology changes, and so it may not be necessary to go as far south as North Anna, but rather start at Morrisville instead.

PJM evaluated every proposal individually, as well as various combinations of the proposals and components to identify the most effective solution.

Map 5. South Proposal Cluster Map



*NOTE: This map is only intended to illustrate the general electrical connectivity of the projects and should **not** be relied upon for exact geographical substation locations or line routes.*

Northern Virginia Data Center Cluster

Three proposing entities submitted solutions to address the Northern VA data center cluster violations, as illustrated in **Map 6**. Proposals approached the data center needs primarily either through underground 500 kV cables or an overhead 500 kV and 230 kV line.

Data Center Alley Solutions

- **Goose Creek-Beaumeade 500 kV underground (LS Power) – 2308/3596 MVA for SN/SE**

Approximately a 5-mile greenfield underground double circuit cable proposed by LS Power. The proposal would expand Dominion's existing Goose Creek and Beaumeade substations to accommodate the new line. LS Power proposes to follow the W&OD Trail in which Dominion currently owns the ROW.

- **Stork-Flys 500 kV underground:**

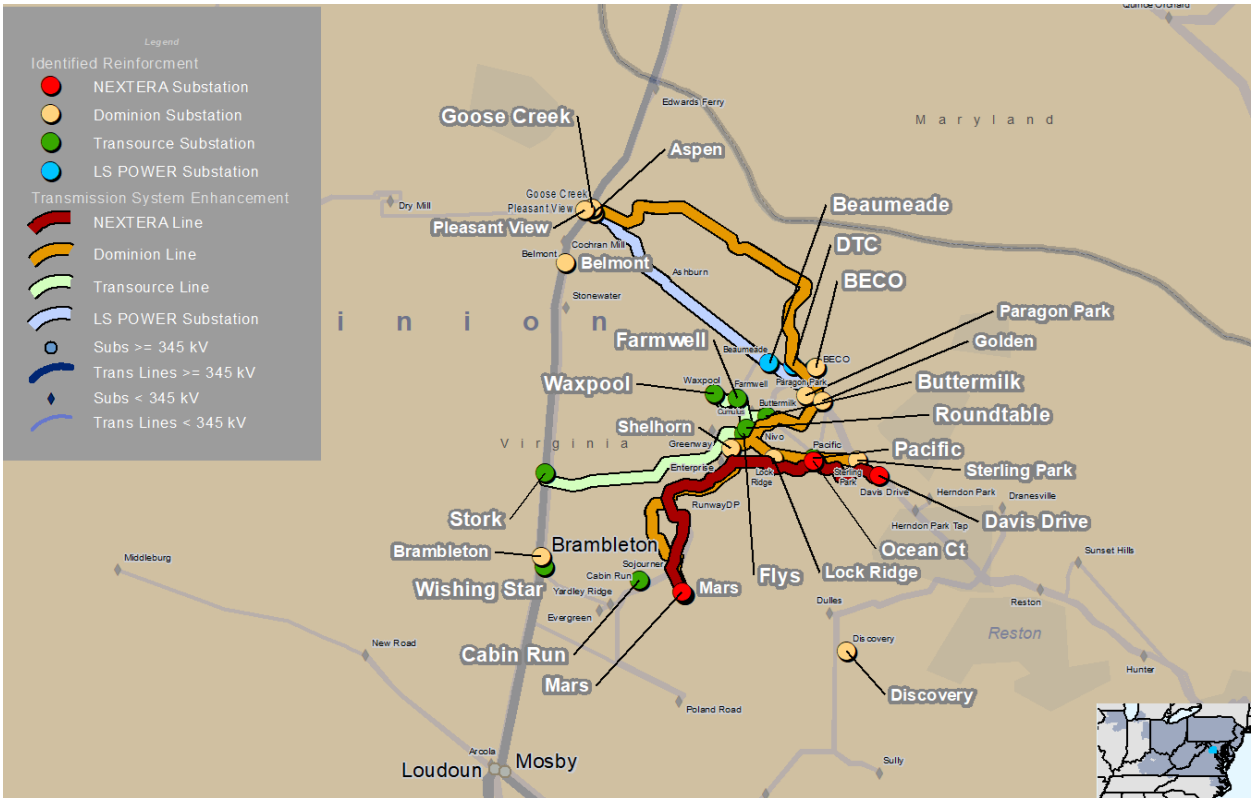
Approximately a 5-mile greenfield underground cable proposed by Transource. The line would be built along the center median of a road. The summer normal and emergency ratings would be 3302/3302 MVA (SN/SE)

- **Aspen-Golden-Mars 500/230 kV overhead (Dominion) – 4357/4357 MVA for SN/SE**

The proposal builds a new Aspen substation adjacent to Goose Creek, along with another new substation called Golden southeast of Aspen. The new line would start at Aspen, move southeast toward Golden, and then eventually close the 500 kV ring around the data center area to Mars. The Aspen-Golden section of the line would be approximately 8.5 miles, and the Golden-Mars section would be approximately 8.3 miles, both of which would be 500 kV AC overhead with 230 kV underneath. The project cost is approximately $1 billion.

PJM evaluated every proposal individually, as well as various combinations of the proposals and components to identify the most effective solution. All three proposals have comparable performance in terms of solving the violations in the Data Center Alley area.

Map 6. Northern VA Data Center (Data Center Alley) Proposal Cluster Map



*NOTE: This map is only intended to illustrate the general electrical connectivity of the projects and should **not** be relied upon for exact geographical substation locations or line routes.*

Short-Circuit Analysis

Drivers for the 2022 Window 3 are reliability violations stemming from load flow analysis, not short-circuit analysis. Short-circuit analysis followed a screening process to support the 2022 Window 3 evaluation of proposals. The short-circuit screening identified potential additional scope attributed to overduty breakers, and potential switchyard rebuilds. Short-circuit analysis was applied holistically, where the scenario under study was comprised of one or more proposals, designed to address all Window violations at once which ensures accounting for all short-circuit contributions by all proposed solution facilities of each scenario.

The screening process considered 11 separate TO breaker sets[2] using the window posted 2027 baseline case, then analyzed the proposals and scenarios using a single Aspen OSF (Options Settings File) based on PECO's study parameters. Short-circuit screening was performed on all scenarios deemed promising based on power flow analysis results and on the final selected proposals base case.

As part of the scenario screening process, breakers identified as overduty attributed to the scenario under study were reviewed. For proposals that included breaker replacements, those breakers were reviewed for adequacy of their proposed interrupting capability. The study also identified breakers that became overdutied as a consequence of the scenario under study, but were not addressed in the individual proposals received by PJM. If replacing the consequential overduty breaker with a breaker having a greater interrupting capability could remediate the overduty condition, then the cost of the breaker replacement was factored into the overall scenario cost.

However, in some scenarios, the identified fault level increase was quite high, exceeding the ratings of the substation ground grid and other fault-sensitive facilities within the substation. In these situations, simply upsizing the breaker does not fully address the high fault level violation. For example, at the Conastone 500 kV yard, excessively high fault level would require the entire substation to be rebuilt.

The Peach Bottom 500 kV North and South yards were also monitored closely. Remediation of excessively high fault levels could require a long duration outage of the 500 kV Peach Bottom switchyards, which may impact the availability and operability of the Peach Bottom nuclear plant during the rebuild if so required. Scenarios that created excessively high fault levels at either Conastone or Peach Bottom were hence flagged, and impacts to both cost and schedule factors were given due consideration when evaluation feasibility of proposed solutions.

The 2022 Window 3 selected scenario underwent a subsequent short-circuit analysis more rigorous than the short-circuit screening. An Aspen Breaker Duty Report, using the native TO Option Settings File, was generated for each TO area where overduty breakers were identified in the initial screening. Results were shared with the impacted TOs for validation and breaker replacement cost estimation.

Objectives of the short-circuit analysis were achieved with the 2022 Window 3 selected scenario. Neither the Conastone nor Peach Bottom substations were impacted for excessively high fault levels that exceed the existing short-circuit capability reported by the transmission owner. There were, however, 36 breakers identified as overdutied, which were not included in the submitted proposals. These breakers are located in APS and Dominion substations at nominal voltages of 138kV, 230 kV and 500 kV. Costs to remediate these overduty breakers are incorporated into the selected scenario cost estimate.

[2] AE-DPL, AEP, APS, ATSI, FirstEnergy(JCPL-MetEd-Penelec), BGE, DOM, PECO, PEPCO, PPL, PSEG

Table 9. Identified Circuit Breaker Upgrades/Replacements (beyond those proposed by proposing entities)

TO Area	Substation	kV	BREAKER (Qty)
APS	Double Toll Gate	138	1
	Doubs	500	1
DOM	Ashburn	230	1
	Beaumeade	230	1
	Beco	230	2
	Belmont	230	1
	Brambleton	230	6
	Gainesville	230	1
	Loudon	230	2
	Ox	230	7
	Paragon Park	230	4
	Reston	230	1
	Stonewater	230	4
	Waxpool	230	4

Load Deliverability Analysis

Load Deliverability is one of the studies conducted in evaluating the 2022 Window 3 proposals. PJM performed the load deliverability analysis to determine the increased CETL (Capacity Emergency Transfer Limit) enabled by the proposed proposals individually and in combination within a specific scenario. The CETL Calculation focused on specific LDAs based on the potential impact of the 2022 Window 3 proposals on the transfer limit to the LDAs. PJM selected APS, BGE, Dominion and SWMAAC LDAs for evaluation.

The load deliverability analysis was performed according to PJM Manual 14B requirements.[3] The study was conducted using the 2023 series RTEP 2028 base case, with 2022 Window 3 scenario solutions applied.

PJM conducted the CETL test on the short-list scenarios and observed the following:

- The APS CETL/CETO margin is well above 115% for all scenarios and the CETL value is comparable.

The NextEra Proposal 175:

- The CETL/CETO for the SWMAAC is <115%, while the CETL/CETO for BGE barely meeting 100%.

PJM Combined Proposal 500 kV or 765 kV Option:

- The CETL/CETO margin for BGE, SWMAAC and Dominion LDA are well above 115%.

PJM examined the Dominion CETL for different components related to the West 500 kV proposals, including the First Energy proposed ID 837 solution. The analysis has identified the need to terminate the West solution into the Dominion Data Center vicinity, as such the NextEra proposal ID 853 option yielded higher CETL.

The CETL study result also revealed the addition of the Otter Creek-Doubs 500 kV line increases the Dominion CETL by ≈20%.

[3] PJM Manual 14B: PJM Region Transmission Planning Process: https://www.pjm.com/~/media/documents/manuals/m14b.ashx

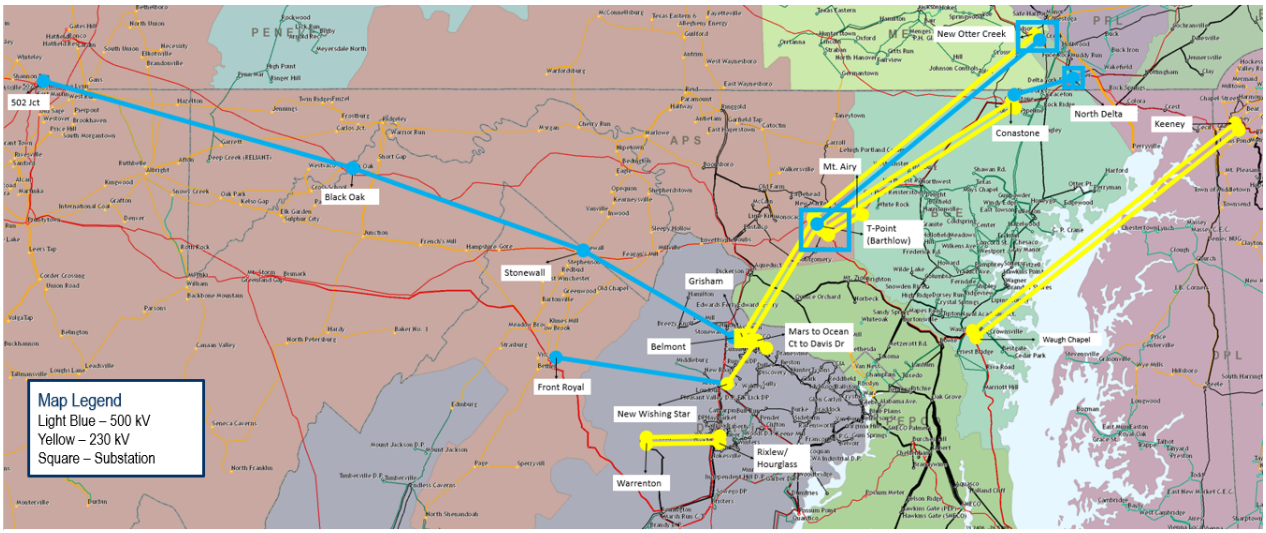
Selection of Short-Listed Scenarios and Proposal Components

Scenarios listed below represent the initial short list of scenarios presented at the October 3, 2023, TEAC. The merits and shortcomings of each are further detailed along with a very high-level point-to-point illustration of the project components on the associated maps.

NextEra Proposal 175

The simplified map illustration below in **Map 7** summarizes the high-level scope of the NextEra proposal 175 designed to address 2028 needs. The proposal from an analytical perspective appears to address the needs identified on the system; however, the majority of the lines are greenfield, some of which cross sensitive areas such as Front Royale-Wishing Star in the West and the Chesapeake Bay crossing in the South. The proposal as a whole, while theoretically may appear acceptable, results in a considerably higher-risk profile and does not have significant cost difference to the two scenarios that PJM built using a combination of proposal and components.

Map 7. NextEra Proposal 175



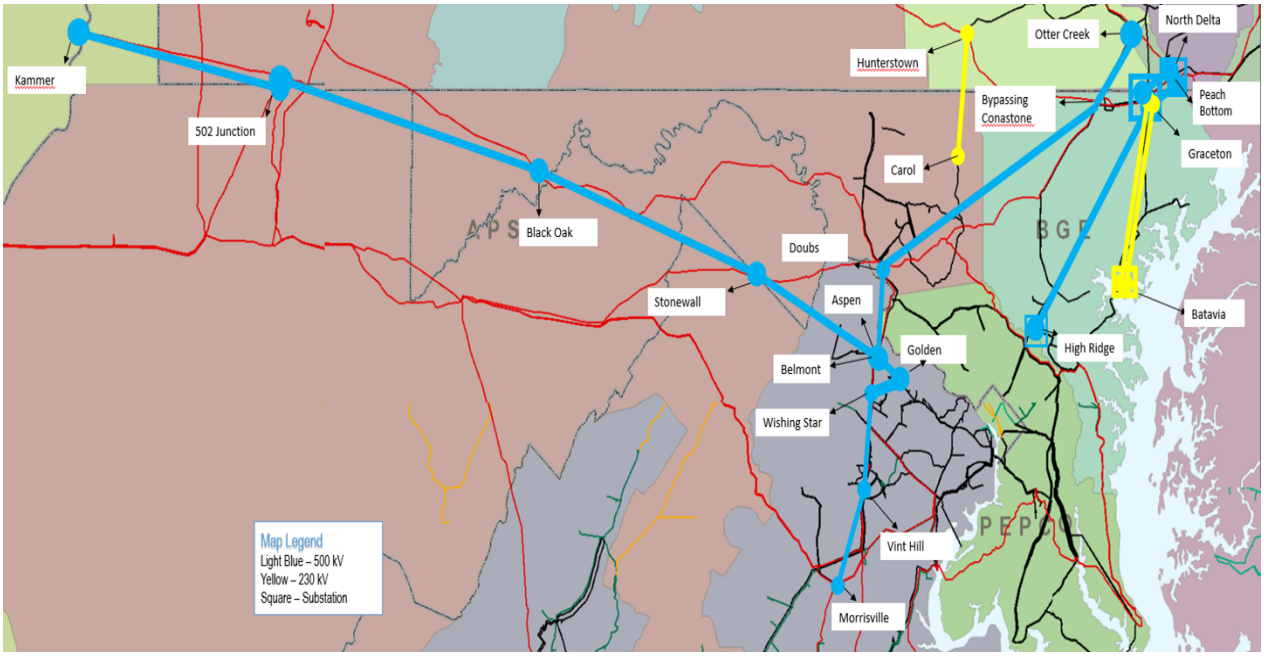
*NOTE: This map is only intended to illustrate the general electrical connectivity of the projects and should **not** be relied upon for exact geographical substation locations or line routes.*

PJM Combination – 500 kV Scenario

The simplified map illustration below in **Map 8** summarizes the high-level scenario designed by PJM to address 2028 needs. The scenario includes proposal components from both incumbent Transmission Owners (Dominion, Exelon, FirstEnergy and PPL) and non-incumbent entities (NextEra and PSEG). The scenario attempts to address the reliability needs with less impact on sensitive geographic areas at a comparable cost. The scenario results in overall lower land and social impacts due to the number of circuits proposed at the appropriate voltage level, including two 500 kV lines in the East and only a single 500 kV line in the West, combined with Dominion local solutions. This scenario includes a non-incumbent 500 kV component in the East that establishes a new 500 kV path between MAAC and the northern Virginia/West area. It is important to note that some of these proposed components were very similar. For example, for the 500 kV reinforcements identified in the West, FirstEnergy, NextEra and LS Power proposed very similar proposals. What is selected in this scenario is NextEra's proposal between 502 Junction to Black Oak to Stonewall to directly into Data Center Alley. This proposal adds one additional 500 kV line between the

APS system and Dominion while also following very similar ROW adjacent to existing facilities. PJM refined this short-listed scenario further in order to come up with the final recommended solution.

Map 8. PJM Combination – 500 kV Scenario

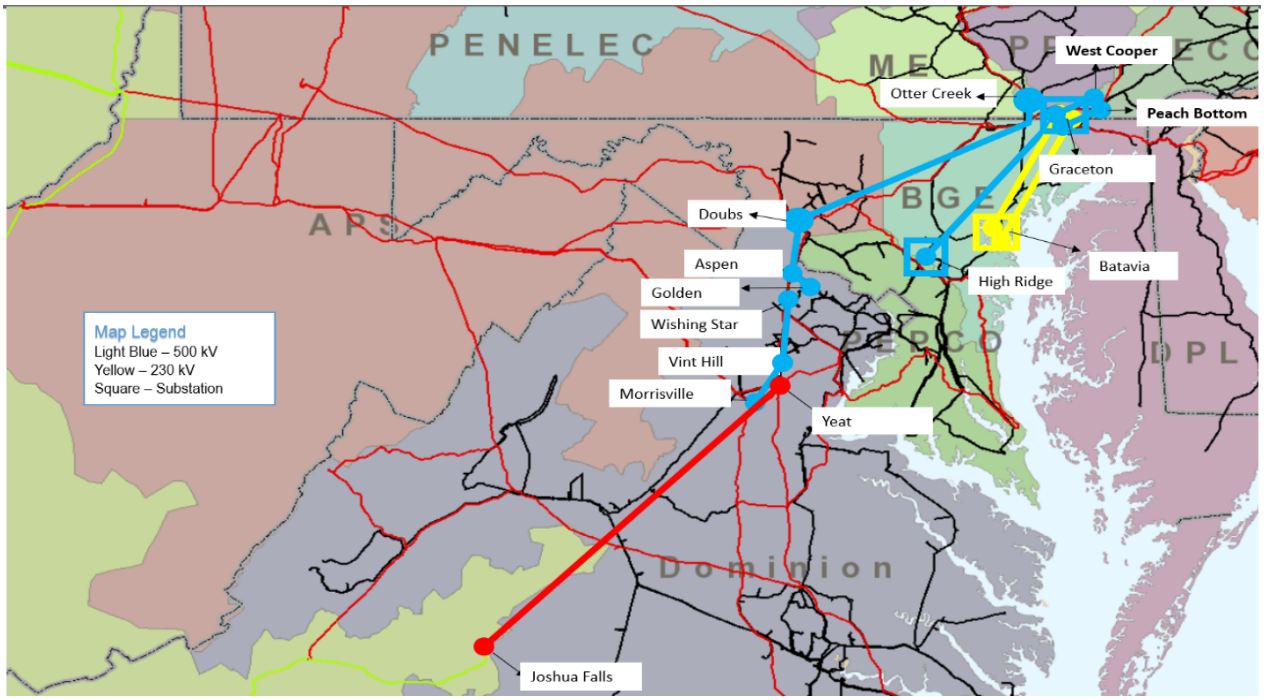


*NOTE: This map is only intended to illustrate the general electrical connectivity of the projects and should **not** be relied upon for exact geographical substation locations or line routes.*

PJM Combination – 765 kV Scenario

The simplified map illustration below in **Map 9** summarizes the high-level scenario designed by PJM to address 2028 needs. The scenario primarily replaces the 500 kV developments in the northern West cluster with a 765 kV proposed development by Transource in the South/West. The proposal is performs comparably to meet the system needs, but offers more flexibility to meet needs further in the South as the load growth will likely shift southward in future years. It also provides balanced supply between North and South supply direction rather than concentrating the supply from the North. The 765 kV development also reduces the flow on the four existing 500 kV lines in APS running west-to-east. The main risk for this scenario is the timeline to construct the 765 kV circuit.

Map 9. PJM Combination – 765 kV Scenario



*NOTE: This map is only intended to illustrate the general electrical connectivity of the projects and should **not** be relied upon for exact geographical substation locations or line routes.*

Final Reliability Analysis and Recommended Solution

While PJM provided a short list of scenarios at the October 3, 2023, TEAC meeting, PJM since then further refined the 500 kV scenario and presented the recommended solution for 2022 Window 3 at the October 31, 2023, and December 5, 2023, TEAC meetings. This section summarizes the selected set of proposals and associated rationale to address the reliability needs for the 2022 RTEP Window 3. **Table 10** at the end of this section provides summary of evaluation rationale, relevant study scenarios supporting the selection as well as a high-level summary of the scenario build up and analysis.

Eastern Quadrant

As discussed earlier, the eastern quadrant needs primarily focus on; (1) enhancing the east to west bulk power transfers, (2) support the load deliverability and reliability needs for the BGE system and (3) support the additional load demands of the APS and northern Virginia transmission systems where a large amount of load growth is being forecasted.

All three shortlisted scenarios, discussed in the preceding section address this need. However, PJM selected the eastern cluster proposals part of the PJM 500 kV combination scenario to be the most effective and efficient solutions to address those needs for the following reasons;

1. Both the PJM developed 500 kV and 765 kV shortlisted combination scenarios have the same eastern quadrant solutions (cluster).
2. The PJM 500 kV combination scenario offers the needed reliability reinforcements with the least amount of infrastructure development and with much higher reliability margin compared to the NextEra proposal which is both of higher cost and involves developing a significantly higher amount of facilities.
3. The PJM 500 kV combination proposal offers full utilization of existing right of ways, debottlenecking the historically constrained Peach Bottom – Conastone 500 kV transmission corridor.
4. Addresses the load deliverability needs into the BGE system which is further exacerbated by the deactivation of key power plant(s) in the BGE zone. The NextEra proposal fails the load deliverability test for the 2027/28 year while the PJM 500 kV proposal combination meets the reliability needs with a healthy margin to spare following the deactivation of the Brandon Shores plant.

Western Quadrant

The western quadrant reinforcements are critical due to the high demand for west to east power flow and into the APS and northern Virginia networks. This transmission corridor extending from the Kammer 765 kV substation in the West towards the eastern edge of the APS system (Doubs) and the northern edge of the Dominion transmission network (Goose Creek area) was experiencing voltage collapse conditions under the higher transfer demands represented in both the 2027 and 2027/28 scenarios.

Again all shortlisted scenarios address the need for the west to east transfer, either through a single 500 kV (in the north) or 765 kV (in the south) transmission path developments.

The NextEra proposed 500 kV transmission development between 502 Junction in the west towards Stonewall and then terminating into the planned Aspen 500 kV development offers the needed reliability reinforcement to serve both the West to east transfer need and also provide a third 500 kV supply source into the northern Dominion load center region.

The 765 kV development proposed by Transource imposed higher schedule and constructability risk due to its predominantly greenfield nature which will impose an avoidable reliability and operational risks in the northern Virginia and APS areas if the schedule of the project is delayed.

Southern Quadrant

PJM selected the southern cluster part of the PJM 500 kV combination scenario to be the more effective and cost efficient solution to the needs in the southern quadrant. This solution predominantly utilizes the existing 500 kV corridor while meets the reliability and load deliverability needs for the system.

This proposed selection avoids introduced multiple and unnecessary green field developments that may not be effective in the longer term and do not contribute to reinforce the greater 500 kV transmission corridor extending between the Goose Creek area in northern Virginia and the existing Morrisville substation further to the south within the Dominion footprint.

Dominion Quadrant

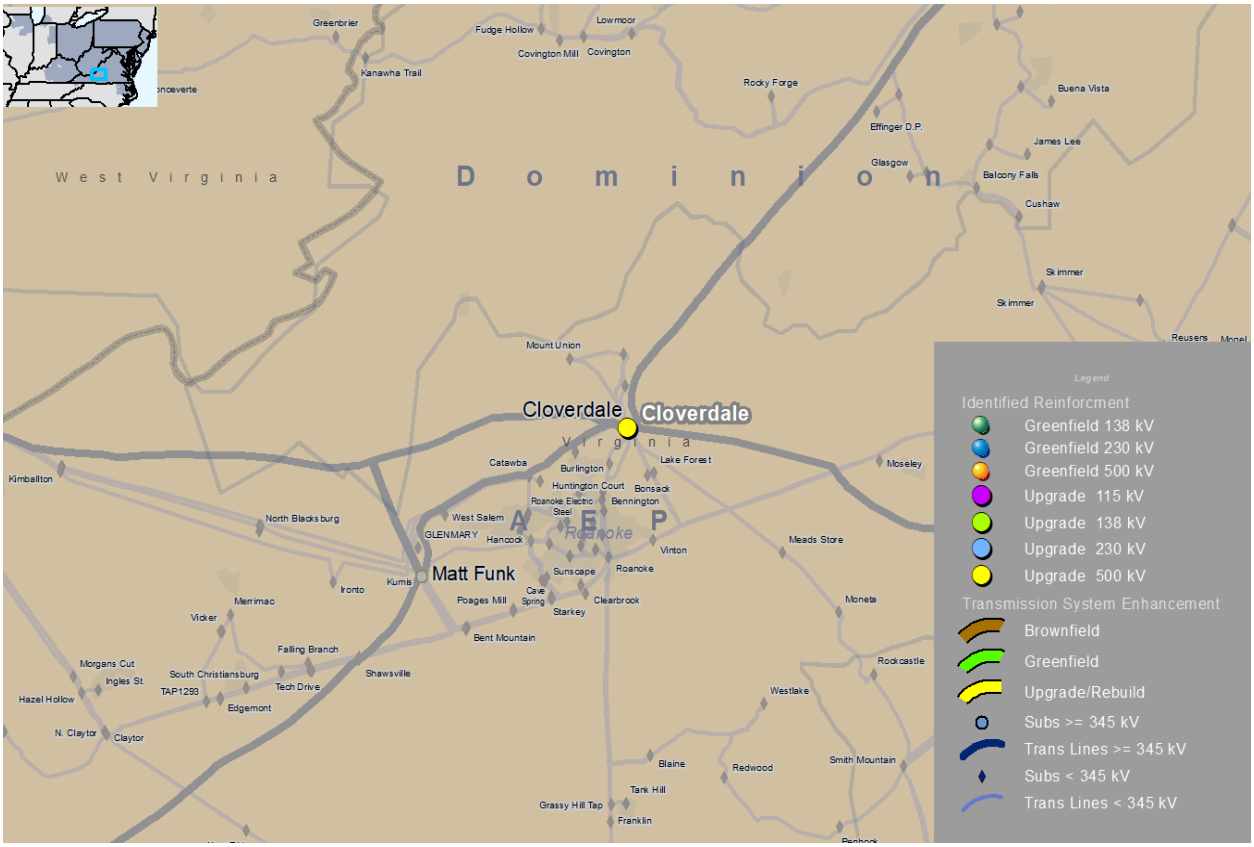
PJM selected the Dominion/northern Virginia cluster of its shortlisted 500 kV combination solution to be the more cost effective and efficient solutions to address the needed reliability needs in northern Virginia. The selected solutions offer the needed local transmission system reinforcement to support the local data center load concentration in northern Virginia and establishes a robust, high capacity overhead transmission line reinforcement through the data center load area. This allows for easy access to integrate load as demand increases and also offers reinforcement to the 500 kV path between Goose Creek and Loundon/Brambelton substations that is currently served via a single 500 kV circuit.

The total cost estimate for the recommended solution is approximately $5,142.98 million. The following sections summarize the selected project components by cluster:

AEP Local

PJM recommends proposal 410 by AEP to address the AEP local area needs. The project will establish a new 500 kV breaker position for the low side of the existing 765/500 kV transformer at Cloverdale station. The new position will be between two new 500 kV circuit breakers located in a new breaker string, electrically converting the 500 kV yard to “double-bus double-breaker” configuration. The estimated cost is $11.59 million, and the required in-service date is June 2027 with a projected in-service date of October 2026. The local transmission owner, AEP will be designated to complete this work.

Map 10. AEP Local Area Improvements



South

PJM recommends a revised scope of proposal 711, proposal 967, proposal 211, proposal 731, partial scope of proposal 74 and proposal 231 proposed by Dominion to address the South cluster needs. There are also a number of additional upgrades identified by PJM.

The revised scope of proposal 711 includes a new Morrisville-Vint Hill-Wishing Star 500 kV line (approximately 36.3 miles) while maximizing the use of existing ROW within this corridor. The project scope also includes wrecking and rebuilding both the 500/230 kV double circuit towers (horizontal, stacked layout) in the Morrisville-Loudoun-Brambleton corridor to free up space for the new single 500 kV monopole within the same corridor. Below is a list of line rebuilds:

- 500 kV Line No. 545 (Bristers-Morrisville) rebuild
- 500 kV Line No. 569 (Loudoun-Morrisville) rebuild
- 500 kV Line No. 535 (Vint Hill-Loudoun) resag/rebuild
- 500 kV Line No. 546 (Mosby-Wishing Star) rebuild
- 500 kV Line No. 590 (Mosby-Wishing Star) rebuild
- 230 kV Line No. 2030 (Gainesville-Loudoun) rebuild

- 230 kV Line No. 2045 (Loudoun-Brambleton) rebuild
- 230 kV Line No. 2094 & 2227 (Brambleton-Racefield-Loudoun) rebuild
- 230 kV Line No. 2101 (Bristers-Vint Hill) rebuild
- 230 kV Line No. 2114 (Remington CT-Rollin Ford) rebuild
- 230 kV Line No. 2140 (Loudoun-Heathcote) rebuild
- 230 kV Line No. 2151 (Railroad DP-Gainesville) rebuild
- 230 kV Line No. 2163 (Vint Hill-Liberty) rebuild
- 230 kV Line No. 2176 (Heathcote-Gainesville) rebuild
- 230 kV Line No. 2222 (Rollins Ford-Gainesville) rebuild
- 115 kV Line No. 183 (Bristers-Ox) rebuild

The project includes substation upgrades at the following substations:

- **Bristers:** Upgrade and install equipment at Bristers substation to support the new conductor 5000A rating for 500 kV Line No. 545.
- **Brambleton:** Upgrade and install equipment at Brambleton substation to support the new conductor termination. All terminal equipment for 230 kV Lines No. 2045 & No. 2094 to be rated for 4000A continuous current rating.
- **Dawkins Branch:** Revise relay settings at 230 kV Dawkins Branch.
- **Gainesville:** Upgrade and install equipment at Gainesville substation to support the new conductor termination. All terminal equipment for 230 kV Line No. 2030 to be rated for 4000A continuous current rating.
- **Heathcote:** Revise relay settings at 230 kV Heathcote.
- **Loudoun:** Upgrade and install equipment at Loudoun substation to support the new conductor 5000A rating for line 569 (500 kV), 2030 (230 kV), 2045 (230 kV), and 2094 (230 kV).
- **Mint Springs:** Revise relay settings at 230 kV Mint Springs.
- **Morrisville:** Upgrade and install equipment at Morrisville substation to support the new 500 kV conductor termination. All terminal equipment to be rated for 5000A for 500 kV Line No. 545 & No. 569. Upgrade 500 kV bus 2 to 5000A.
- **Mosby:** Upgrade and install equipment at Mosby substation to upgrade terminal equipment to be rated for 5000A for line 546 and line 590.
- **North Star:** Revise relay settings at 230 kV North Star.
- **Racefield:** Revise relay settings at 230 kV Racefield.
- **Railroad:** Revise relay settings at 230 kV Railroad.
- **Vint Hill:** Install terminal equipment at Vint Hill substation to support a 500 kV 5000A line to Spotsylvania. Update relay settings for 230 kV Lines No. 2101, No. 2163, and 500 kV Line No. 535.

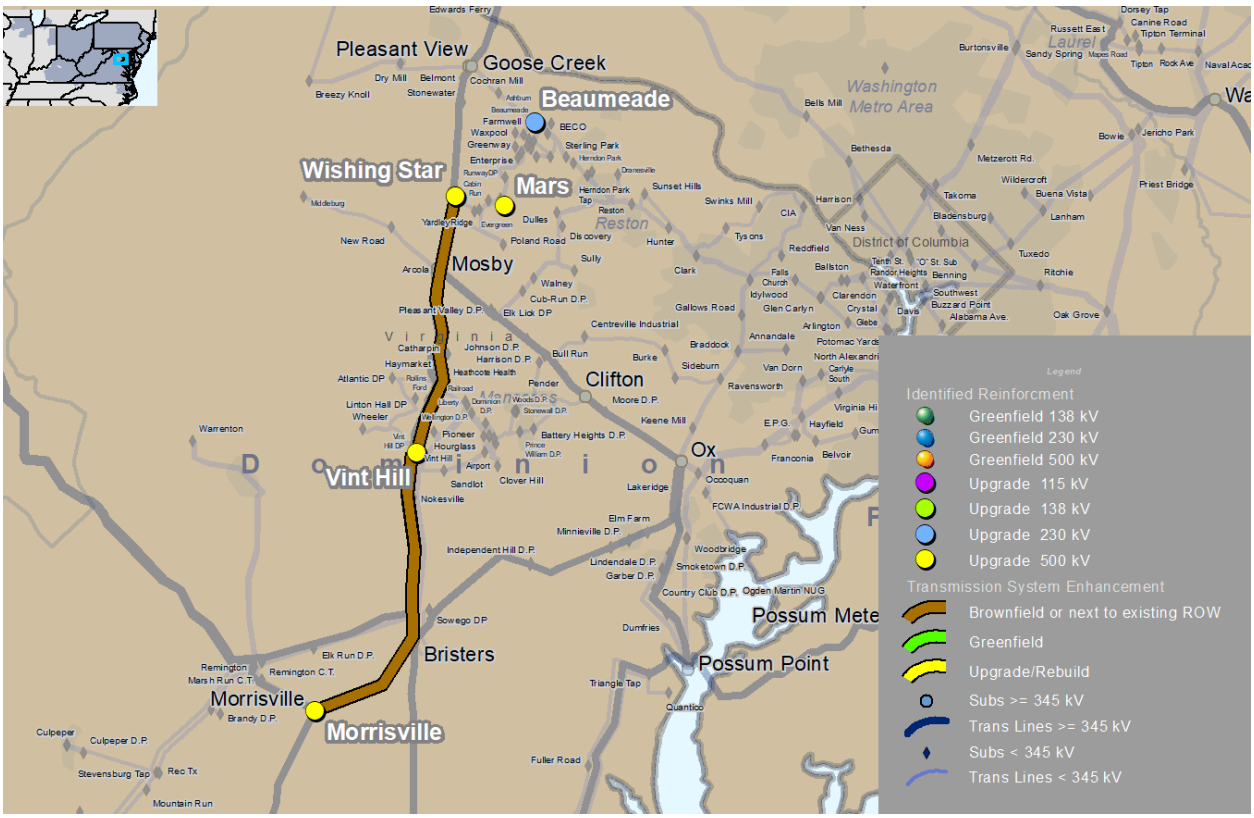
- **Wishing Star:** Install terminal equipment at Wishing Star substation to support a 500 kV 5000A line to Vint Hill. It also provides for new relay settings for 500 kV lines 546 and 590.
- **Youngs Branch:** Revise relay settings at 230 kV Youngs Branch

Breaker upgrades will also be required as follows:

- Replace 4 overdutied 230 kV breakers at Loudoun substation with 80 kA breakers.
- Replace 1 overdutied 500 kV breaker at Ox Substation with a 63 kA breaker.

The estimated cost is $842.19 million, and the required in-service date is June 2027 with a projected in-service date of June 2028. The local transmission owner, Dominion, will be designated to complete this work.

Map 11. South Area Improvements – Revised Scope of Proposal 711

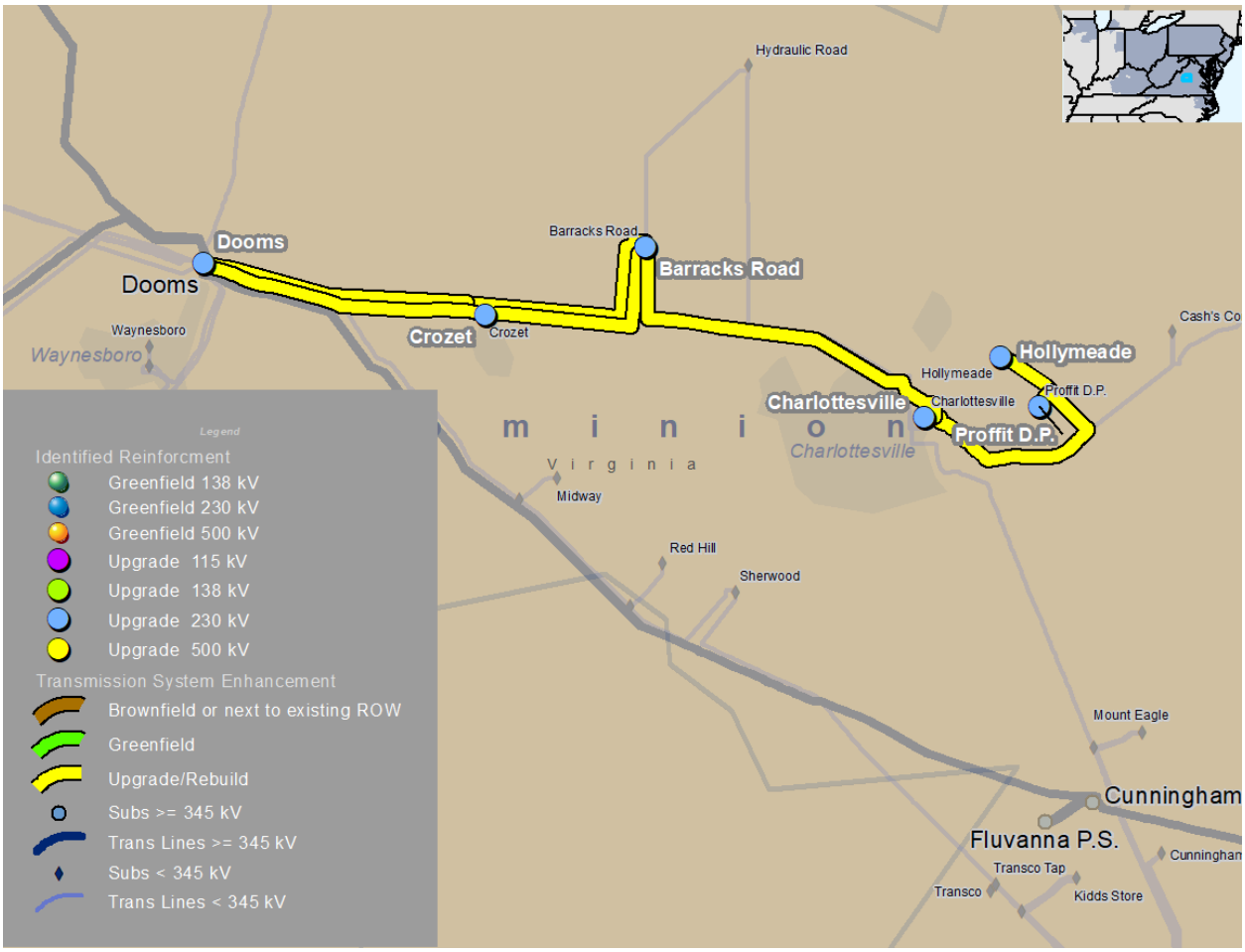


Proposal 967 includes the following 230 kV line rebuilds, along with relay resets/revisions at Hollymeade, Proffit, Barracks Road and Crozet substations:

- Line No. 2054 (Charlottesville-Proffit DP) rebuild using double circuit capable 500/230 kV poles (the 500 kV circuit will not be wired as part of this project)
- Line No. 233 (Charlottesville-Hydraulic Rd-Barracks Road-Crozet-Dooms) rebuild
- Line No. 291 (Charlottesville-Barracks Road-Crozet-Dooms) rebuild

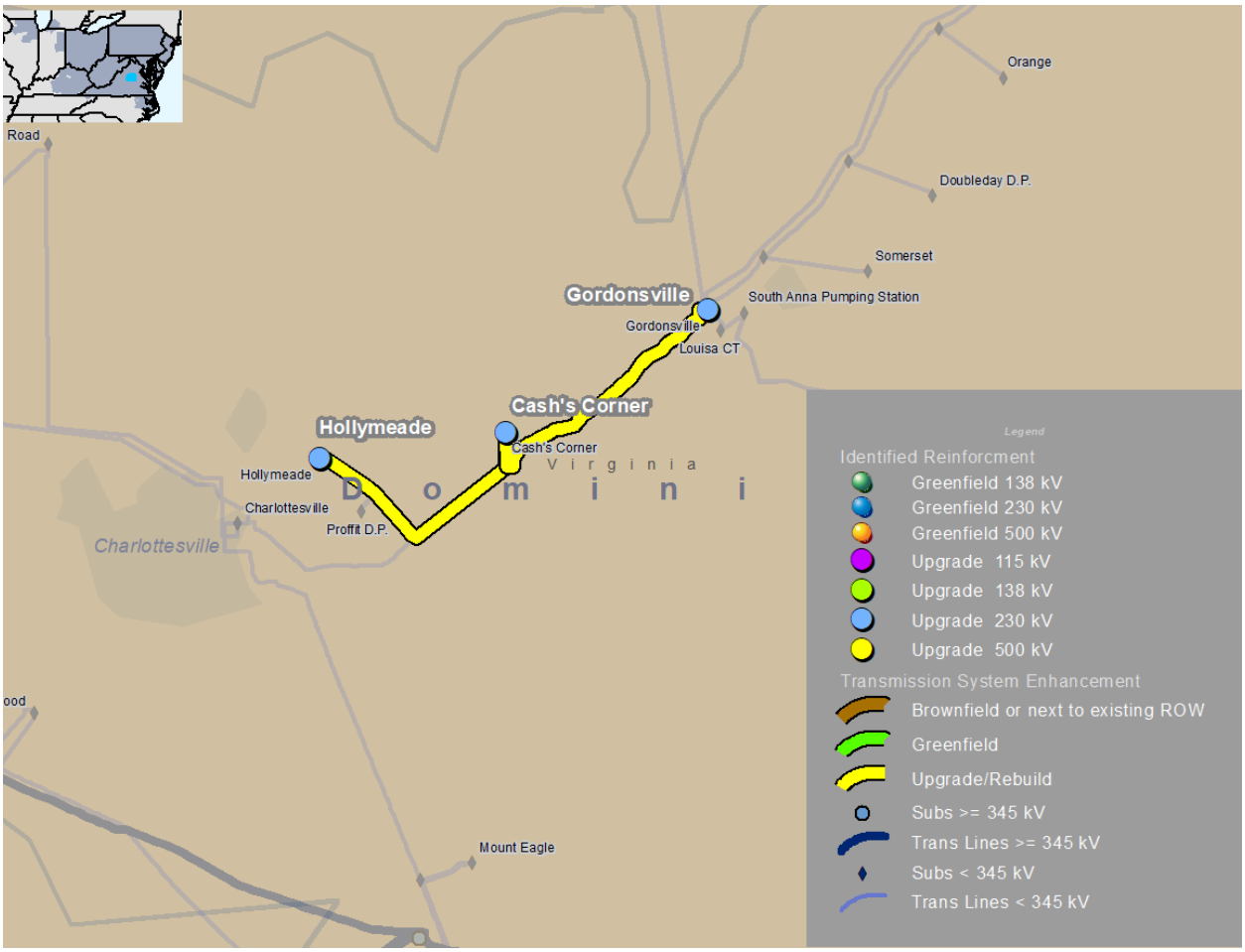
Terminal equipment upgrades will also be required at Charlottesville substation for the Line No. 2054, Line No. 233 & Line No. 291 rebuilds, Hydraulic Road for the Line No. 233 & Line No. 291 rebuilds and Dooms substation for the Line No. 233 & No. 291 rebuilds. The estimated cost is $183.49 million, and the required in-service date is June 2027 with a projected in-service date of June 2028. The local transmission owner, Dominion, will be designated to complete this work.

Map 12. South Area Improvements – Proposal 967



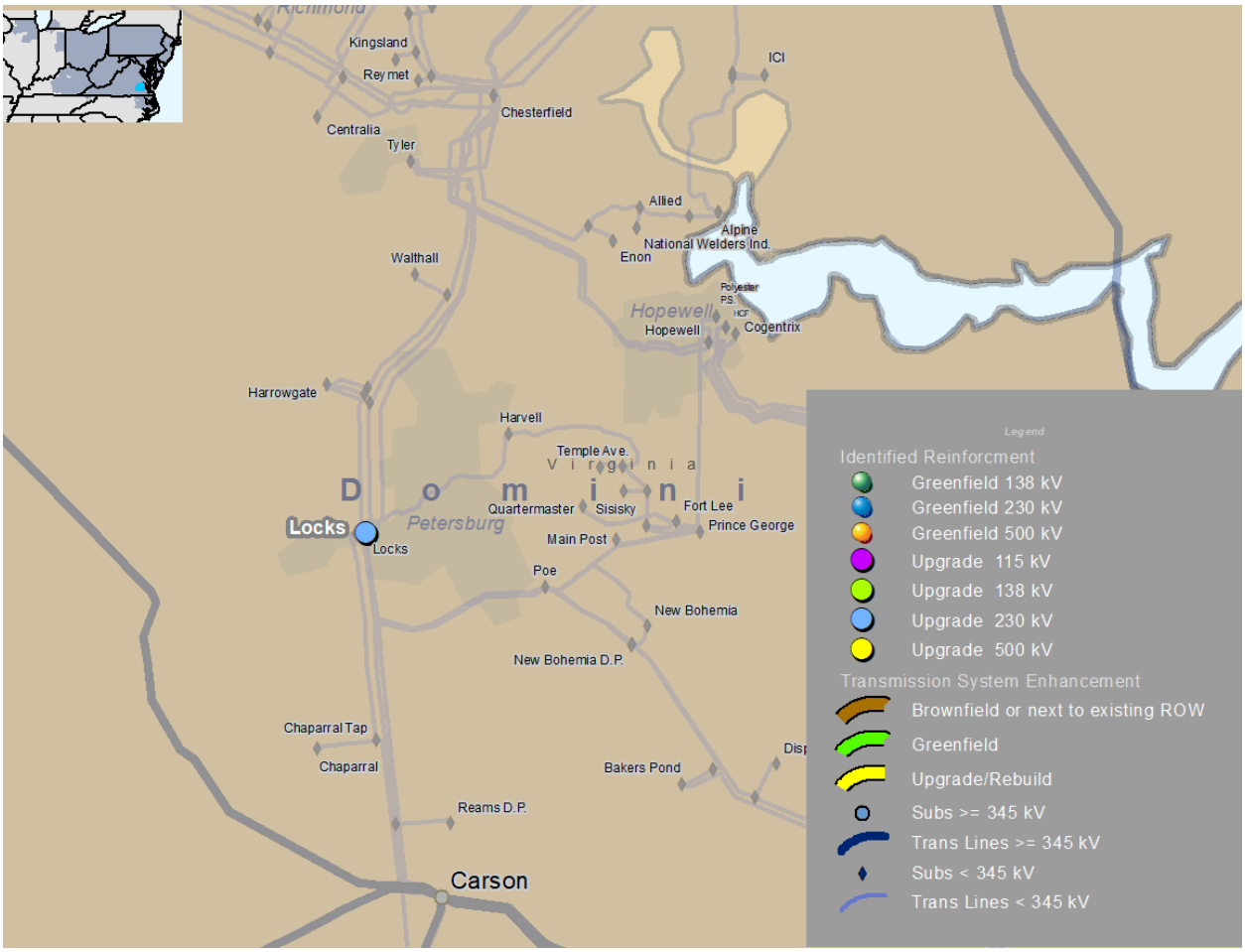
Proposal 211 includes the rebuild of line No. 2135, Hollymeade-Gordonsville 230 kV, using double circuit capable 500/230 kV poles (the 500 kV circuit will not be wired as part of this project). Terminal equipment will also be upgraded at the Hollymeade, Gordonsville and Cash's Corner 230 kV substations. The estimated cost is $54.85 million, and the required in-service date is June 2027 with a projected in-service date of June 2028. The local transmission owner, Dominion, will be designated to complete this work.

Map 13. South Area Improvements – Proposal 211



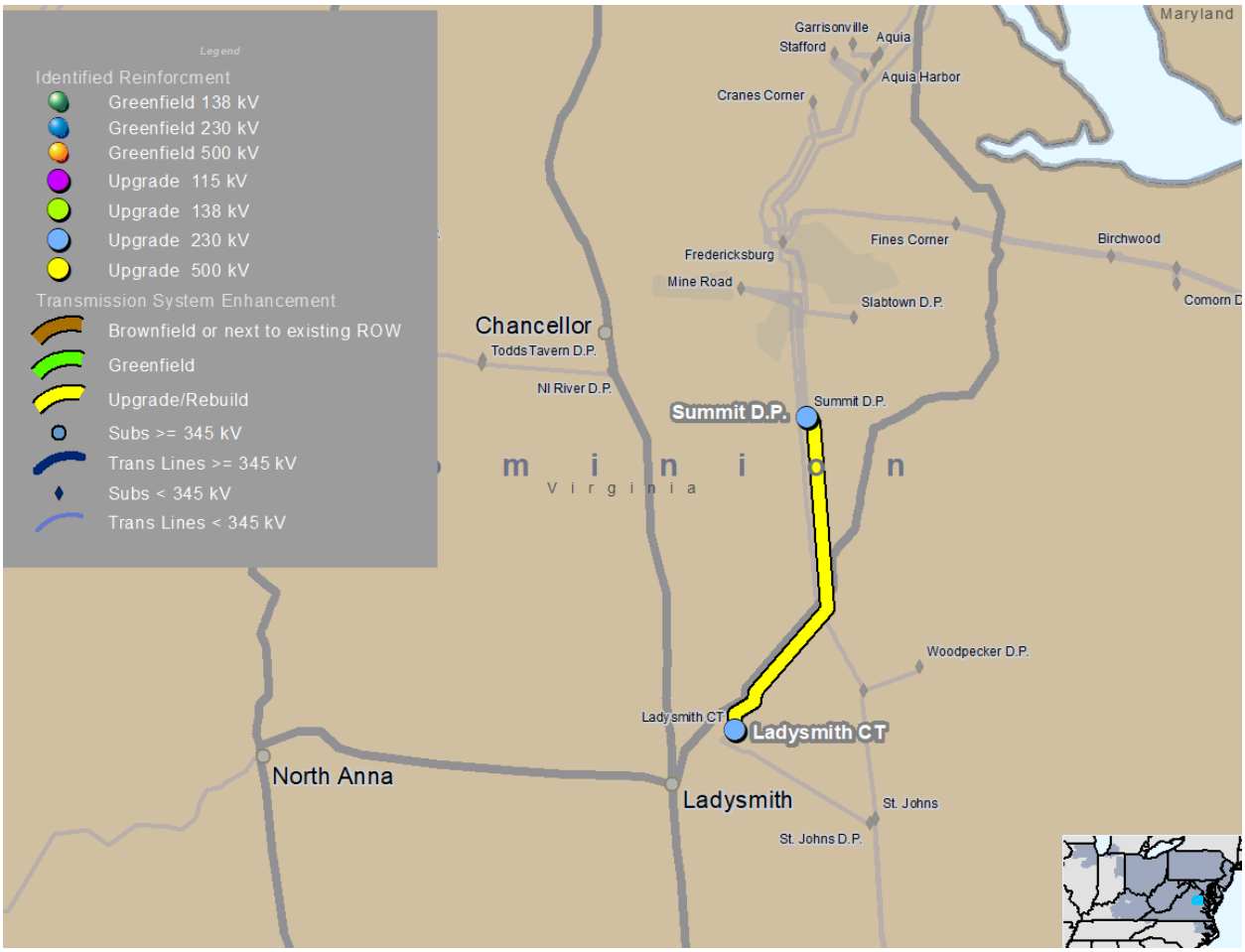
Proposal 731 replaces the single unit Locks 230/115 kV 168 MVA transformer TX No. 7 with a new single unit transformer with a rating of 224 MVA. The leads line at the 115 kV level would also be upgraded to 2000A. The estimated cost is $7.14 million, and the required in-service date is June 2027 with a projected in-service date of June 2028. The local transmission owner, Dominion, will be designated to complete this work.

Map 14. South Area Improvements – Proposal 731



The partial scope of proposal 74 includes the wreck and rebuild of line No. 2090, Ladysmith CT-Summit D.P. 230 kV segment as a double circuit 230 kV line; however, only one circuit will be wired at this stage. Circuit breaker leads, switches and line leads will be upgraded at Ladysmith CT 230 kV substation. The estimated cost is $36.50 million, and the required in-service date is June 2027 with a projected in-service date of December 2027. The local transmission owner, Dominion, will be designated to complete this work.

Map 15. South Area Improvements – Partial Scope of Proposal 74

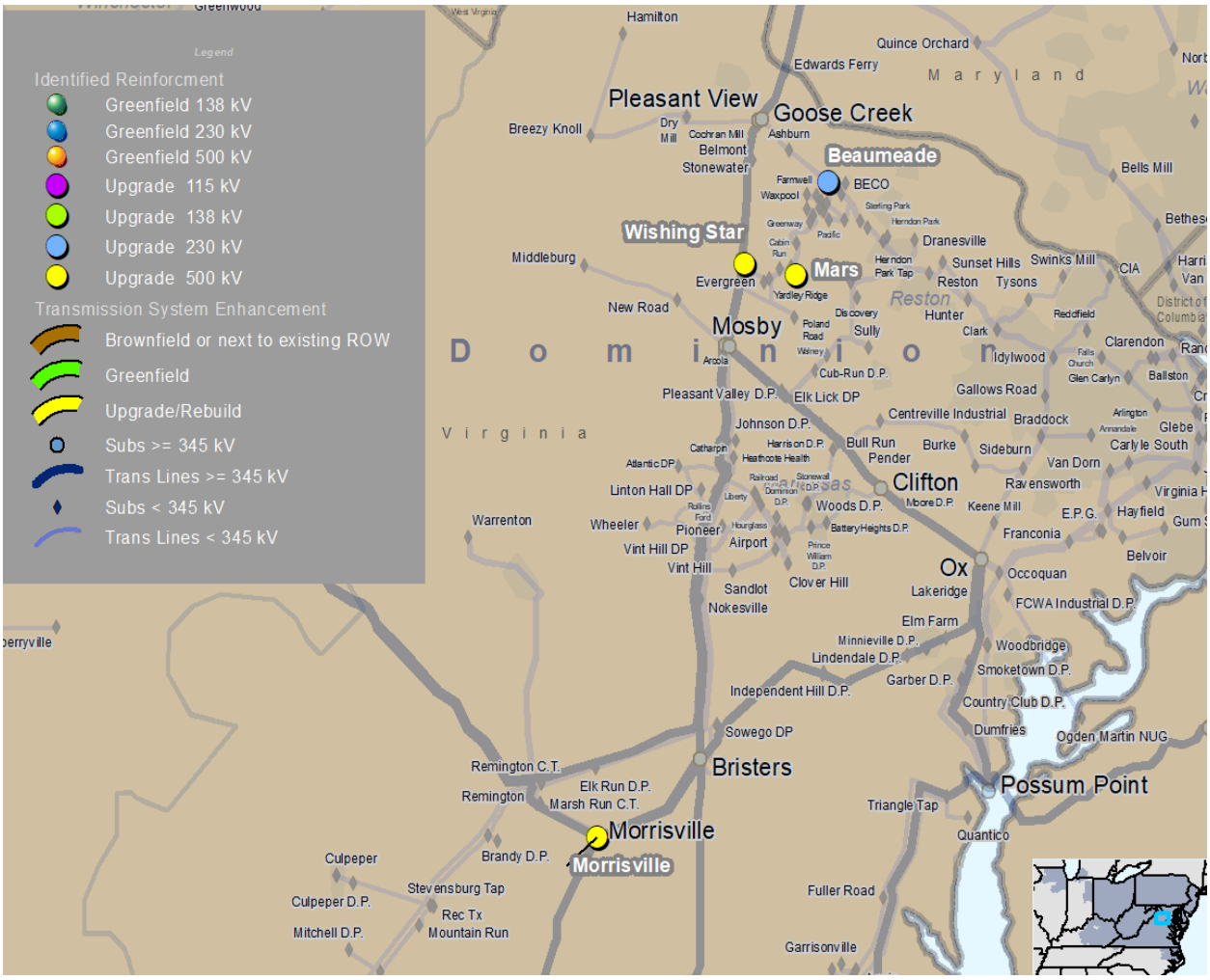


Proposal 231 entails the installation of 230 kV and 500 kV shunt cap banks (static devices) as well as STATCOMs (dynamic devices) and associated equipment to address the reactive power needs of the system. Below is the list of the devices:

- One 500 kV, 150 MVAR shunt capacitor bank and associated equipment at Morrisville substation
- One 230 kV, 150 MVAR shunt capacitor bank and one 500 kV, 293.8 MVAR shunt capacitor bank and associated equipment at Wishing Star substation
- One 500 kV, 300 MVAR static synchronous compensator (STATCOM) and one 230 kV, 150 MVAR shunt capacitor bank and associated equipment at Mars substation
- One 230 kV, 300 MVAR static synchronous compensator (STATCOM) and associated equipment at Beaumeade substation

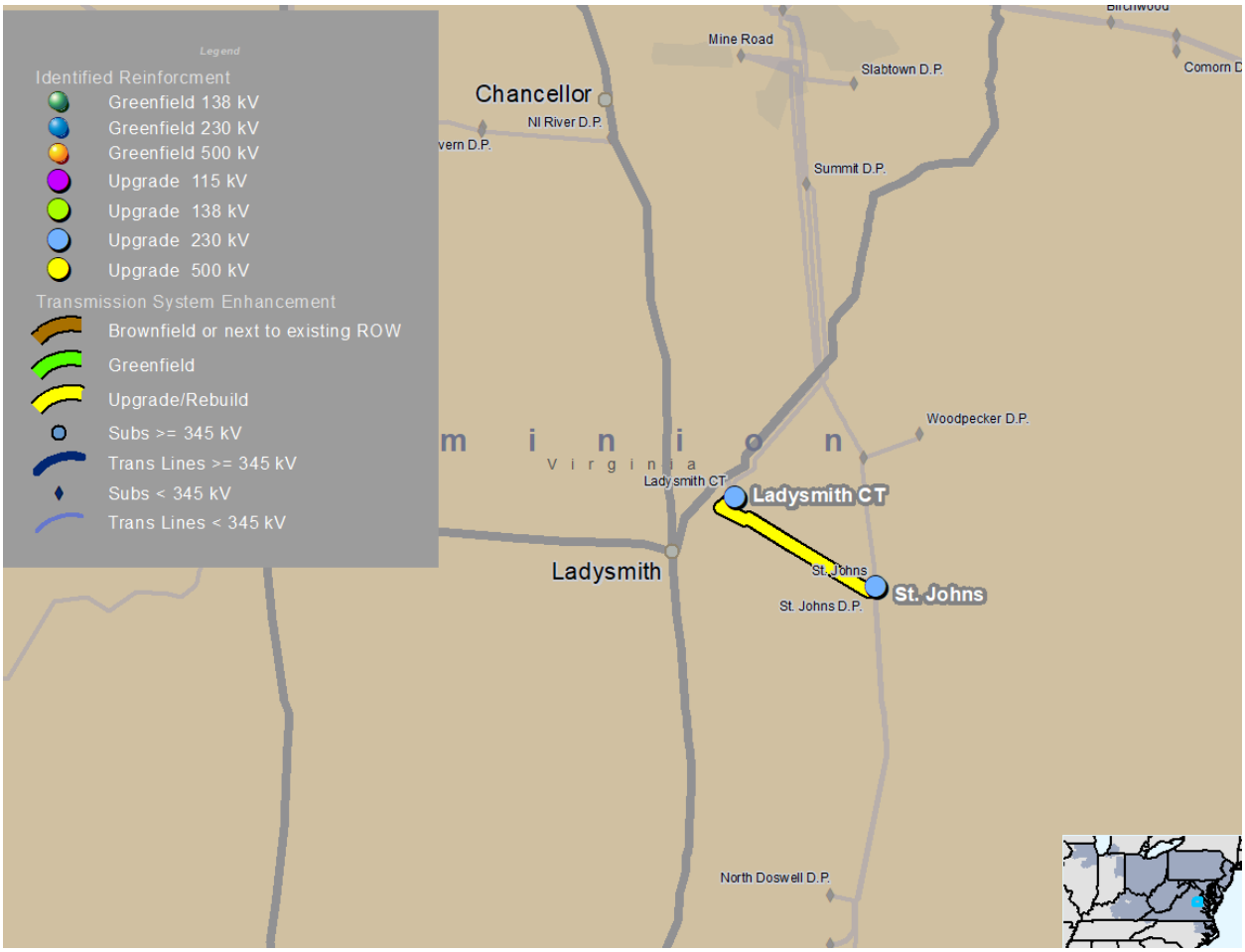
The estimated cost is $103.79 million, and the required in-service date is June 2027 with a projected in-service date of December 2027. The local transmission owner, Dominion, will be designated to complete this work.

Map 16. South Area Improvements – Proposal 231



In addition to the proposals identified above, there are a number of required upgrades identified by PJM. The recommended solution will uprate 12.44 miles of 230 kV circuit 256 from St. Johns to Ladysmith CT. Approximately 7.14 miles of the line from St. Johns substation to structure 256/108 is supported by a mix of single circuit wood and steel H-frames installed in 1991. This portion of the line will be rebuilt with a mix of light duty steel DOM pole tangent H-frames and engineered steel three-pole dead-end angle structures. The proposed conductor for the rebuilt line will be 2-768 ACSS "Maumee" with dual 48 fiber DNO-11410 for shielding. The remaining 5.3 miles of the line from structure 256/107 to Ladysmith CT is supported on double circuit lattice towers installed in 2010–2011. This portion of the line will be reconductored with proposed 2-768 ACSS "Maumee" conductor, and the existing structures and shield wire will remain. Transmission line switch 25666 will be upgraded to 4000A at St. Johns substation. Terminal equipment at remote end substations will be upgraded to 4000A continuous current rating to support new conductor ratings. The estimated cost is $37.89 million, with a required and projected in-service date is June 2028. The local transmission owner, Dominion, will be designated to complete this work.

Map 17. South Area Improvements – PJM Identified Upgrades



Overall, the total cost estimate for the recommended south area improvements is approximately $1,265.85 million.

Northern Virginia Data Center

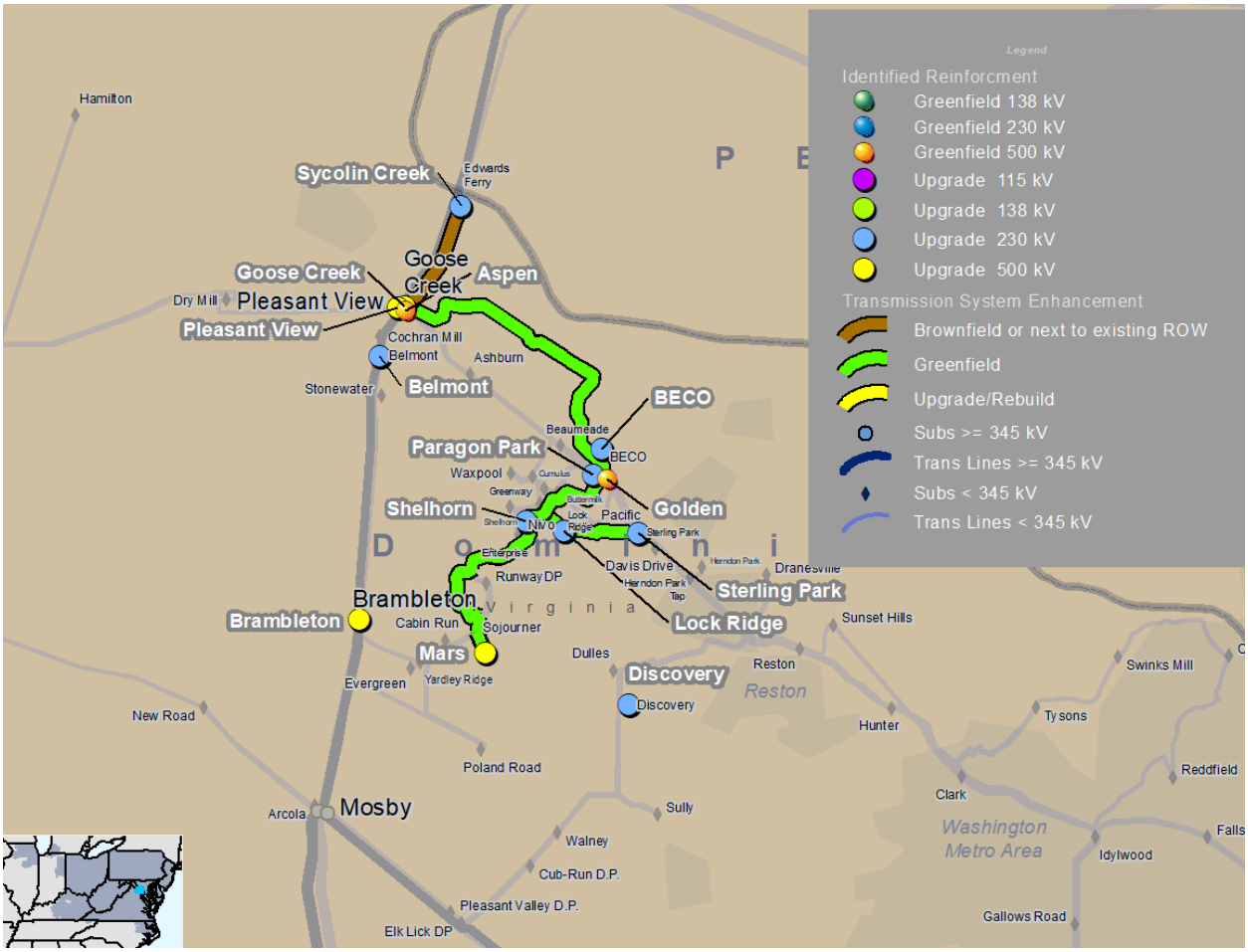
PJM recommends proposal 692 and 516 proposed by Dominion, proposal 344/660 proposed by Exelon and proposal 837 proposed by FirstEnergy to address the northern Virginia data center cluster needs. There are also a number of additional upgrades identified by PJM.

Proposal 692 includes the construction of two new 500/230 kV substations, Aspen and Golden. The Aspen substation will be tapping the 500 kV line No. 558. New double circuit 500/230 kV lines from Aspen to Golden substation will be constructed, where the 230 kV line will connect Aspen-Sycolin Creek-Golden. Similarly, the proposal also includes construction of new double circuit 500/230 kV lines from Golden to Mars, where the 230 kV line will connect Golden-Lockridge-Mars. The project will build a new Aspen-Goose Creek 500 kV line, and install a second 500/230 kV 1440 MVA transformer at the Mars substation. The existing double circuit Golden-Paragon Park 230 kV lines (lines No. 2150 and 2081) will be upgraded, along with the existing single circuit Paragon Park-BECO 230 kV line (line No. 2207). The latter 230 kV line will require a minimum normal summer rating of 1573 MVA, and equipment at each substation will be upgraded to support the new conductor rating of 4000A. The relay settings at Golden substation will be reset, and the overdutied breakers at Belmont, BECO, Beaumeade, Pleasant View, Shellhorn and Discovery will be replaced. The estimated cost is $1,025.06 million, and the required in-service date is

June 2027 with a projected in-service date of June 2028. The local transmission owner, Dominion, will be designated to complete this work.

In addition to the scope identified above, there are a couple of reconductors that will be needed. Specifically, 1.47 miles of the Sterling Park-Golden 230 kV double circuit lines (line No. 2081 and 2150), and 0.67 miles of the Davis Drive-Sterling Park 230 kV double circuit lines (lines No. 2194 and 9231) will need to be reconductored. The estimated cost is $13.5 million, and the required in-service date is June 2027 with a projected in-service date of June 2028. The local transmission owner, Dominion, will be designated to complete this work.

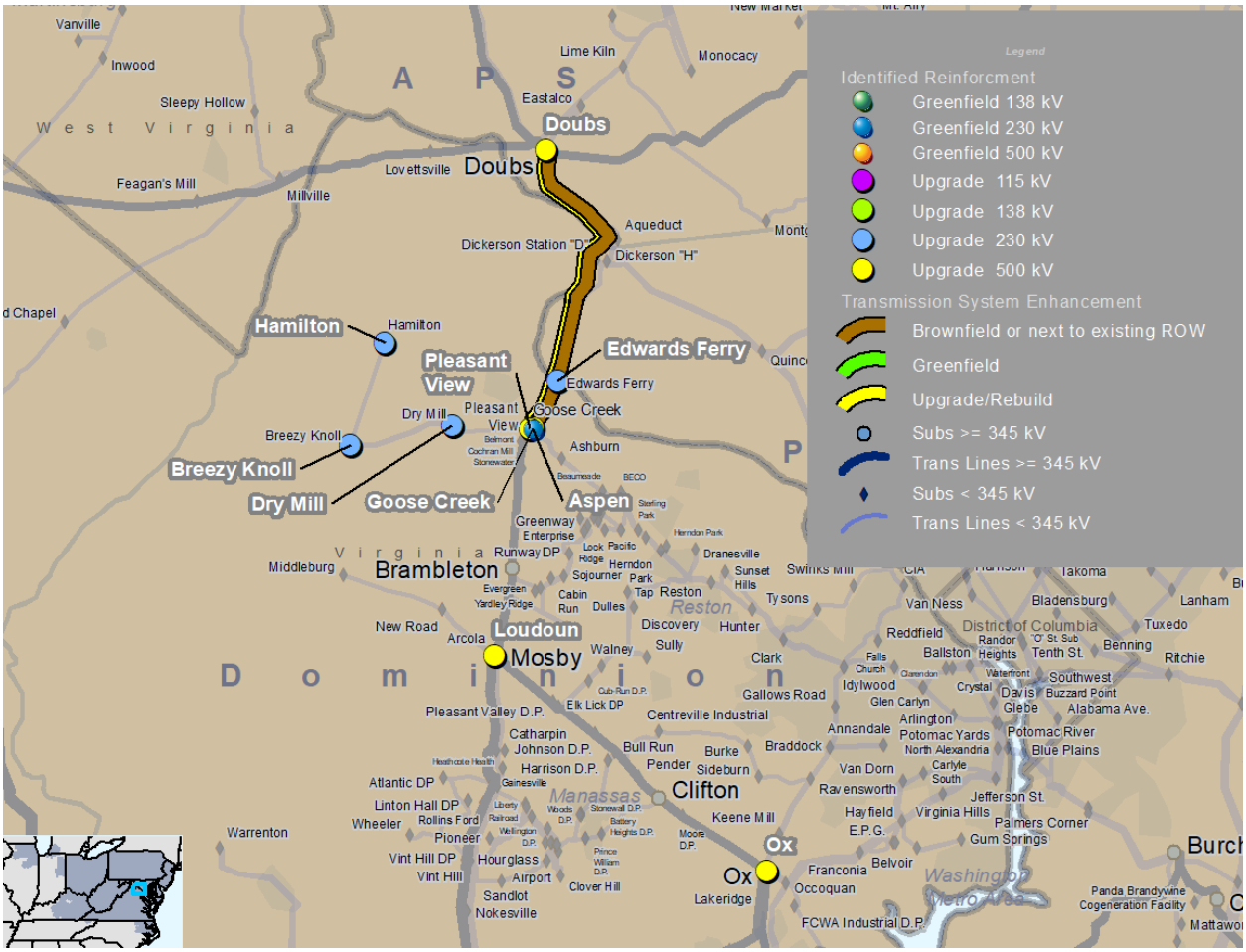
Map 18. Data Center Area Improvements – Proposal 692 and Additional Reconductors



Proposal 516 includes the rebuild of Doubs-Goose Creek 500 kV (line No. 514) using double circuit 500/230 kV towers on foundations. This scope covers line construction between Goose Creek and the Doubs Interconnection point, which is south of the Potomac River. The proposal also constructs a new 500 kV line between Doubs and the new Aspen substation, including line construction between Aspen and the Doubs Interconnection point, which is south of the Potomac River. The Pleasant View-Dickerson 230 kV line (line No. 203), from Pleasant View substation and structure 203/15 within the existing ROW, will be rebuilt using double circuit 500/230 kV towers on foundations. Approximately 1 mile of 230 kV line No. 2098 between Pleasant View and Structure 2098/9, where line No. 2098 turns toward Hamilton Substation, will be wrecked and rebuilt. The one-mile portion will share the new double circuit 500/230 kV towers with line No. 514, which is being rebuilt as part of the project. Relays will be reset or revised at Breezy, Dry Mill and Hamilton 230 kV substations. The terminal equipment at Goose Creek, Pleasant View and

Edwards Ferry 230 kV substations will be upgraded, and overdutied breakers will be replaced at the Loudon, Ox and Pleasant View 500 kV substations. The estimated cost is $78.4 million, and the required in-service date is June 2027 with a projected in-service date of December 2027. The local transmission owner, Dominion, will be designated to complete this work.

Map 19. Data Center Area Improvements – Proposal 516

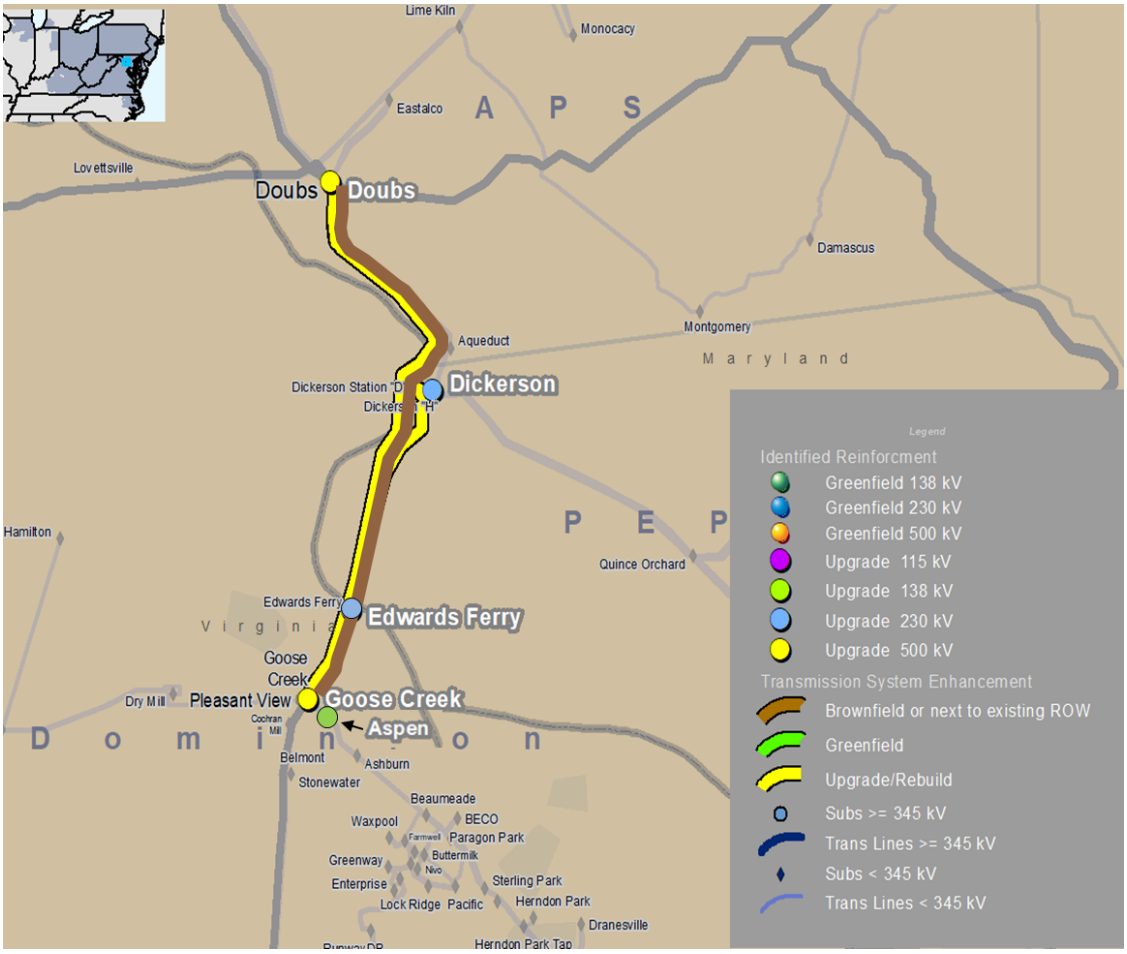


The recommended scope from proposal 344/660 by Exelon includes rebuilding 7.26 miles of existing 230 kV circuit from Dickerson Station H to Ed's Ferry area to accommodate the new 500 kV circuit between Doubs and Goose Creek. The new structure will carry both 500 kV and the 230 kV from Dickerson Station H to Ed's Ferry circuits. The Dickerson H 230 kV substation will be reconfigured and terminal equipment upgraded. The Exelon portion of the new Doubs-Goose Creek 500 kV scope utilizes existing Exelon ROW. The estimated cost is $66.38 million, and the required in-service date is June 2027 with a projected in-service date between 2028 and 2030. The local transmission owner, Exelon, will be designated to complete this work.

Proposal 837 from FirstEnergy includes the rebuild of the Doubs-Goose Creek 500 kV (line No. 514). The proposal also builds a new Doubs-Aspen 500 kV line (the Aspen substation is part of Dominion's proposal 692 detailed above). The Doubs – Dickerson 230kV line will be rebuilt. The Doubs-Aqueduct and Aqueduct-Dickerson 230 kV lines will be rebuilt and attached on the same structures as those for the Doubs-Aspen 500 kV line. At Doubs substation, the rebuilt Doubs-Goose Creek 500 kV line will be reterminated in its existing bay, and the new Doubs-Aspen 500 kV line will be terminated in the open bay at Doubs. Additionally, three circuit breakers, terminal

equipment including disconnect switches, CTs and substation conductor, and relaying will be replaced at the Doubs 500 kV substation. The estimated cost is $234.96 million, and the required in-service date is June 2027 with a projected in-service date of June 2030. The local transmission owner, FirstEnergy, will be designated to complete this work.

Map 20. Data Center Area Improvements – Proposals 344/660 and 837



Overall, the total cost estimate for the recommended northern Virginia data center area improvements is approximately $1,418.3 million.

East

PJM recommends proposal 344/660 by Exelon, proposal 374 by PPL, proposal 637 by PSEG and proposal 837 by FirstEnergy to address the East cluster needs.

PJM is sought to utilize and incorporate already Board-approved NJ SAA project scope at North Delta substation, and adjusted the Exelon proposal 344/660 scope accordingly. The recommended solution expands the North Delta 500 kV substation (scope beyond that proposed under Brandon Shore deactivation) to accommodate the termination of the new 500 kV lines as well as reconfiguration of the Peach Bottom substation. The North Delta 500 kV substation expansion will include a four bay breaker and a half configuration. The proposal includes building a High Ridge 500 kV substation, which will cut into the Brighton-Waugh Chapel 500 kV line. The High Ridge 500 kV substation will include

three bay breaker and a half configuration with two 500/230 kV transformers, and terminal equipment will require replacement at both Brighton and Waugh Chapel 500 kV substations.

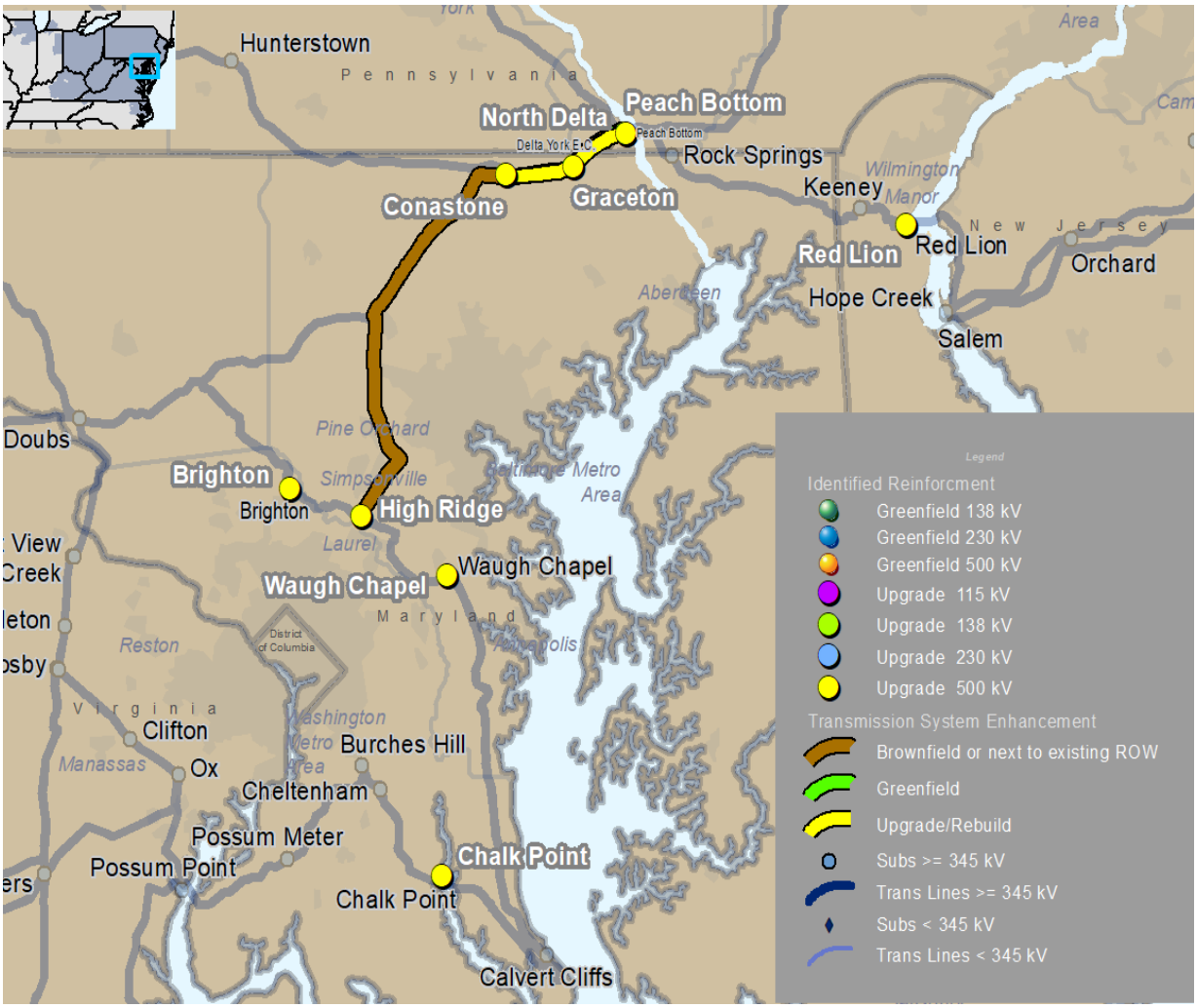
The proposal builds a new Peach Bottom South-North Delta 500 kV line by cutting into Peach Bottom tie No. 1 and extending the line to North Delta, which entails approximately 1.25 miles new ROW. The existing Peach Bottom-Conastone 500 kV line (5012L) will be rebuilt on single circuit structures within existing ROW and cut into North Delta 500 kV and Gracetone 500 kV stations. Furthermore, the proposal builds a new North Delta-High Ridge 500 kV line, which will extend approximately 65 miles.

In addition to the regional proposal scope described above, there following Exelon proposal components would be required:

- Conastone-Brighton 500 kV (5011 circuit) – Replace terminal equipment limitations at both Conastone and Brighton 500 kV
- Brighton-Waugh Chapel 500 kV (5053) – Replace terminal equipment limitations at Brighton 500 kV
- Chalk Point-Cheltanham 500 kV (5073) – Replace relay at Chalk Point 500 kV
- Conastone-Peach Bottom 500 kV (5012 circuit) – Upgrade two existing 500 kV breakers at Conastone from 4000A to 5000A
- Peach Bottom 500 kV – Reconfigure and upgrade several terminal/substation equipment at both North and South Peach Bottom 500 kV substations
- Red Lion-Hope Creek 500 kV – Replace terminal equipment at Red Lion

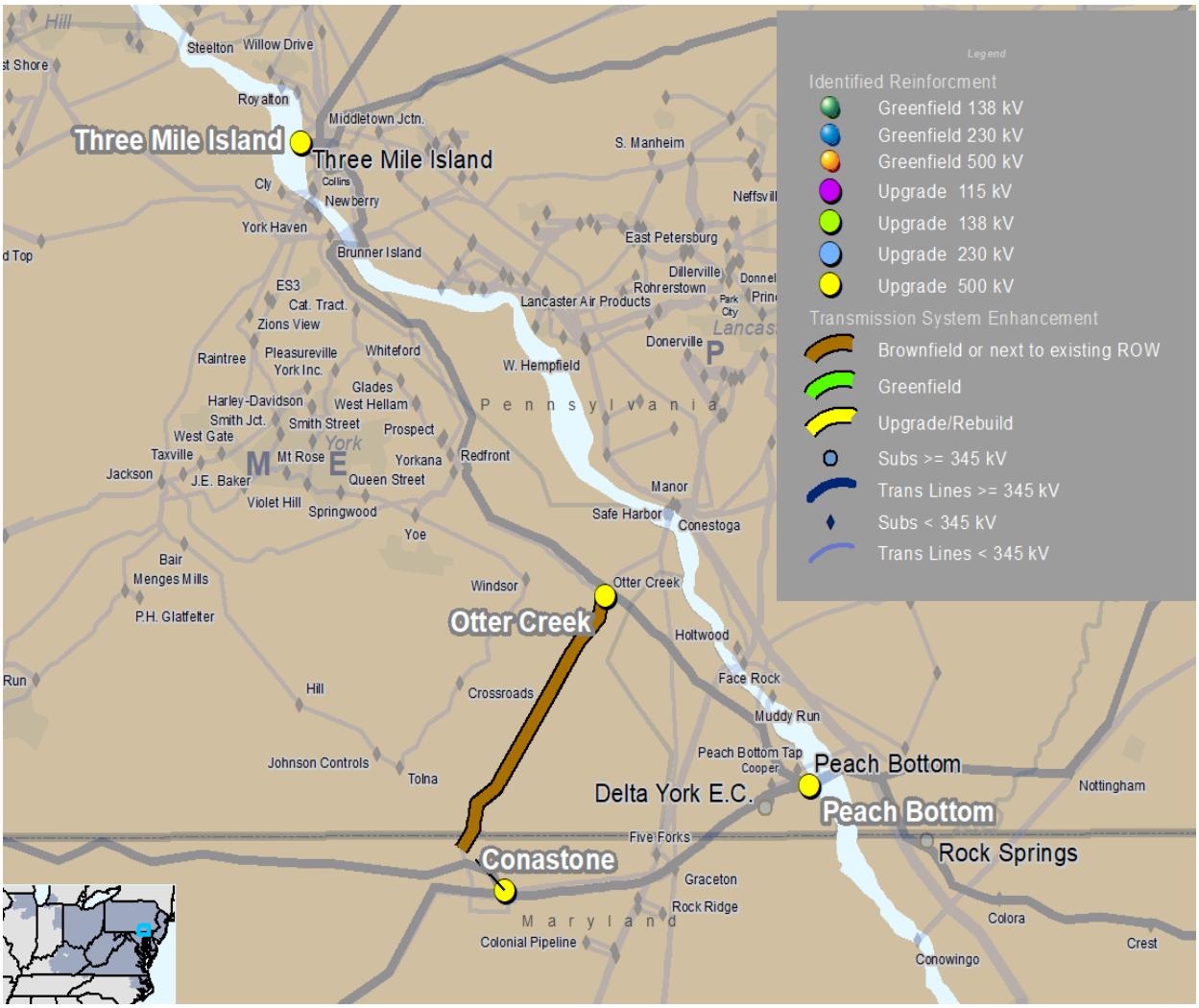
The estimated cost for the work described above is $708.77 million, and the required in-service date is June 2027 with a projected in-service date between 2028 and 2030. The local transmission owners, Exelon, will be designated to complete this work.

Map 21. East Area Improvements – Proposal 344/660



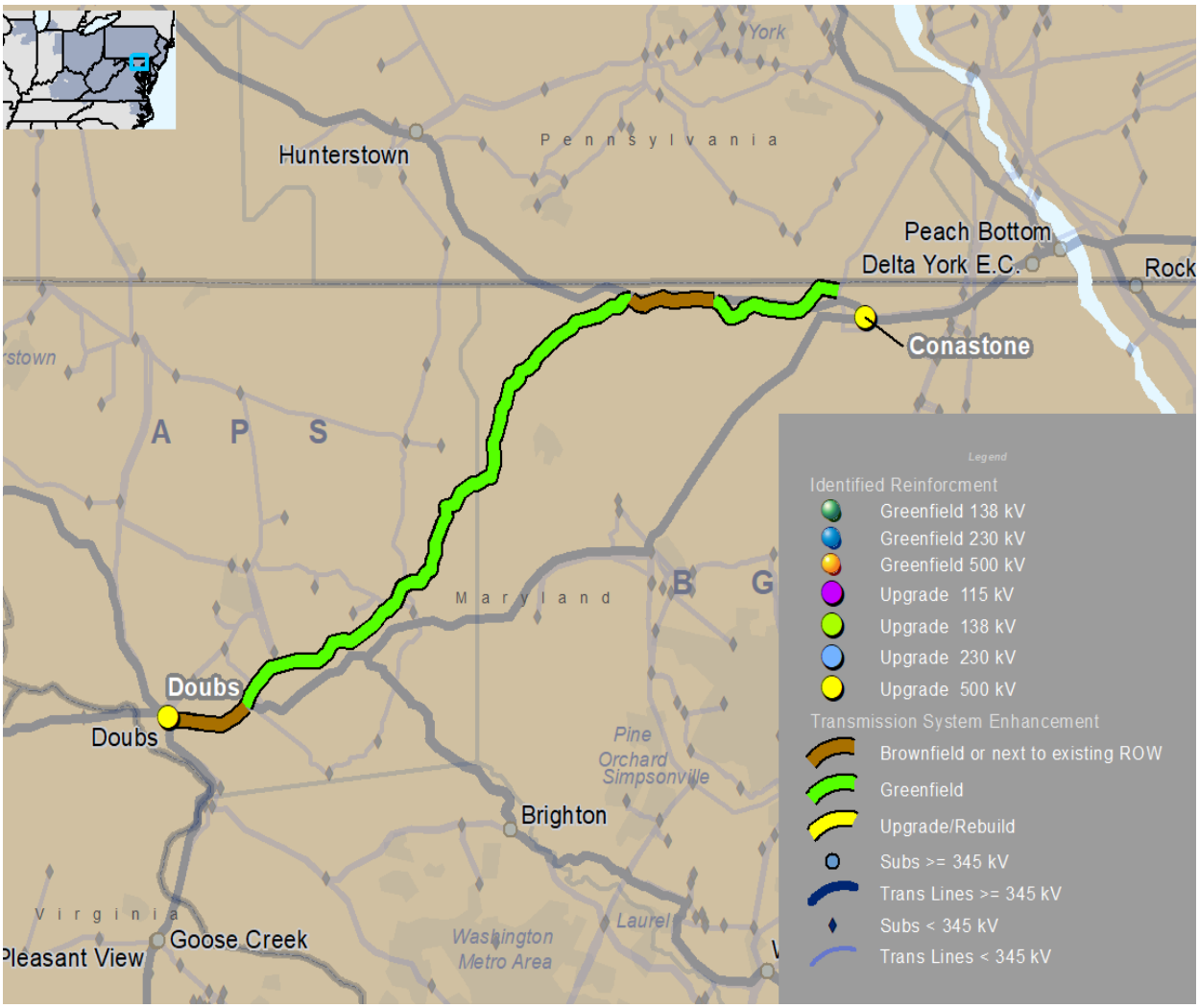
Proposal 374 by PPL includes building a new Otter Creek 500 kV switching station, with two bay three-breaker configuration, that cuts into the Peach Bottom-TMI 500 kV line. An approximately 17-mile new 500 kV line from Otter Creek toward the Conastone station fence (Conastone demarcation point) would be built, and the existing Otter Creek-Conastone 230 kV line would be rebuild to become a double circuit 500 and 230 kV line. Additionally, terminal equipment will be upgraded at the Peach Bottom and TMI 500 kV substations. The estimated cost is $134.2 million, with a required and projected in-service date of June 2027. The local transmission owners, PPL and BGE, will be designated to complete this work.

Map 22. East Area Improvements – Proposal 374



Proposal 637 by PSEG includes an approximately 40-mile new 500 kV line from the Conastone demarcation point (with the PPL Otter Creek line) to Doubs substation. The Conastone substation is referenced for this demarcation point only for general reference and does not have to necessarily be in the area of the Conastone substation. The new 500 kV line will tie into the PPL-proposed Otter Creek-Conastone 500 kV, bypassing the actual Conastone substation. The Doubs 500 kV substation will be reconfigured and terminal equipment upgraded to terminate the new line. The estimated cost is $447.5 million, with a required and projected in-service date of June 2027. The proposing entity, PSEG, will be designated to complete this work.

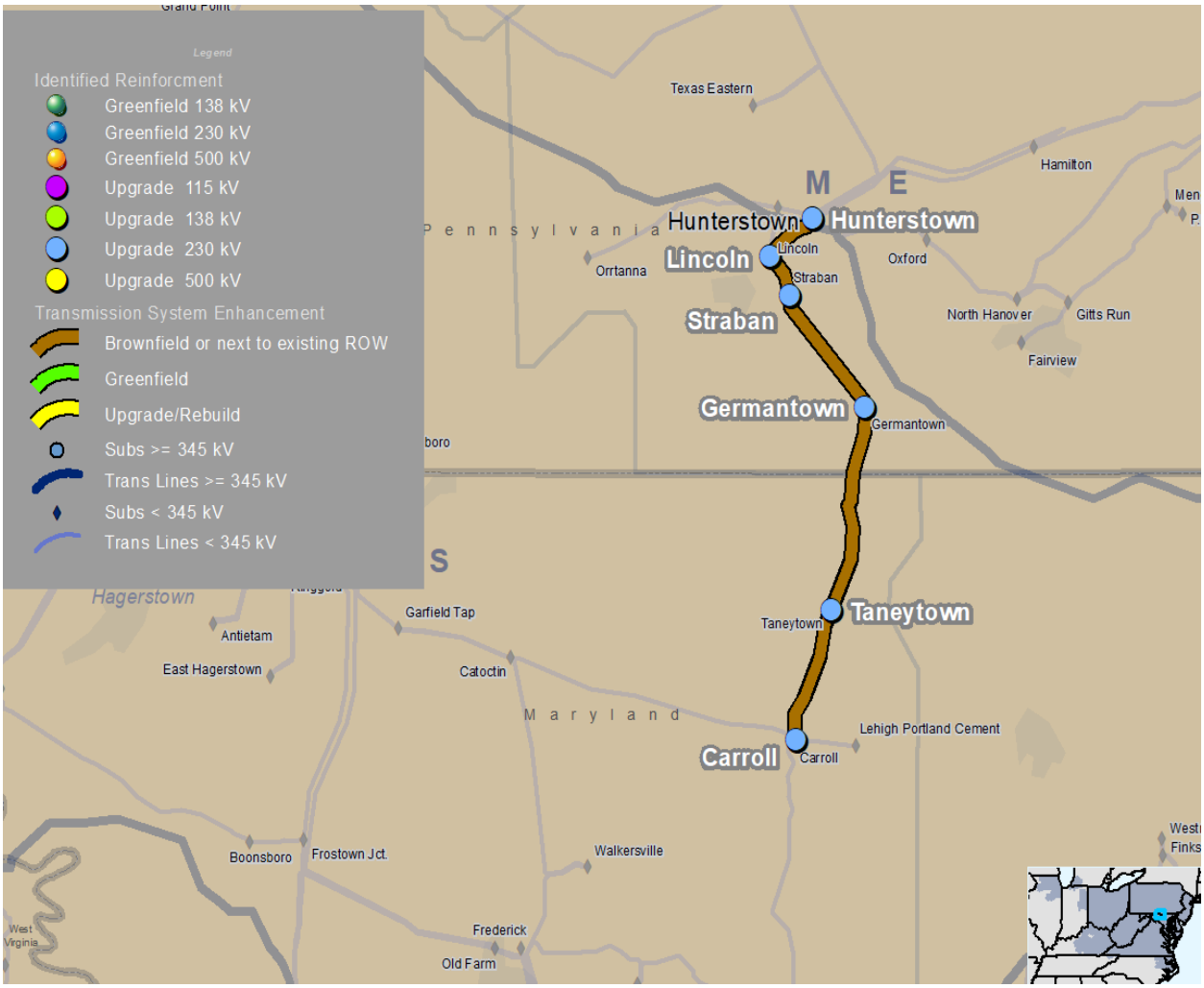
Map 23. East Area Improvements – Proposal 637



Proposal 837 by FirstEnergy builds a new Hunterstown-Carroll 230 kV line in addition to rebuilding the existing 115/138 kV corridor as double circuit using 230 kV construction standards.

In addition to the Hunterstown-Carroll 230 kV line scope, there are a few PJM identified upgrades that will be needed. Specifically, the Lincoln-Orrtanna 115 kV line will be reconductored, and the line trap at the Grand Point 138 kV substation for the Fayetteville-Grand Point 138 kV line will be replaced. The proposal also includes the replacement of the line trap, substation conductor, breaker, relaying and CTs at Ringgold 138 kV substation for the Reid-Ringgold 138 kV line. Furthermore, with this additional scope, the baseline project b3768, which rebuilds/reconductors the Germantown-Lincoln 115 kV line ($17.36 million) is not required and the baseline project would be canceled. The total estimated cost of the proposal 837 scope of work and the additional PJM identified upgrades is $152.65 million, and the required in-service date is June 2027 with a projected in-service date between 2028 and 2030. The local transmission owner, FirstEnergy, will be designated to complete this work.

Map 24. East Area Improvements – Proposal 837



Overall, the total cost estimate for the recommended East area improvements is approximately $1,443.12 million.

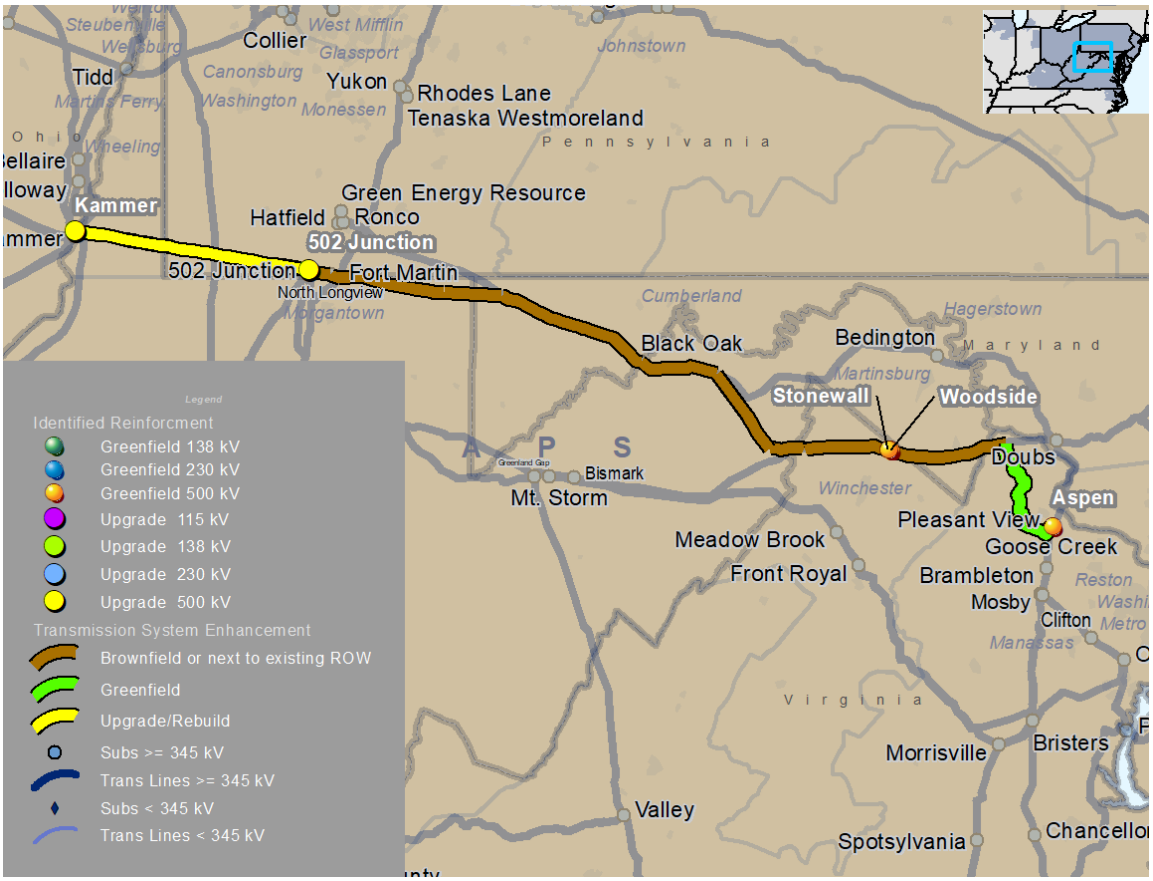
West

PJM recommends a modified scope of proposal 853 proposed by NextEra to address the West cluster needs. The recommended scope includes a new 500 kV line from the existing 502 Junction substation to a Woodside 500 kV substation, noting that the line will bypass the Black Oak substation. The existing First Energy substation, primarily 502 Jct 500 kV and Stonewall 138 kV will be upgraded by adding additional bay position via new breakers. The Woodside 500 kV substation will be a breaker and half configuration built adjacent to the existing Stonewall 138 kV substation, and loop in the Bismark-Doubs 500 kV line. The substation will include two 500/138 kV transformers, and two 150 MVAR capacitor banks as well as one +500/-300 MVAR STATCOM. Furthermore, the project will also build a new 500 kV line from the Woodside substation to the new Aspen substation (part of Northern Virginia Data Center cluster recommended solution). Aspen substation work will be required to terminate the Woodside-Aspen 500 kV line. The 500 kV line to be built east and west of existing Stonewall 138 kV will be assigned to First Energy's on existing ROW with 500 kV overbuilt. First Energy will be assigned roughly 36 miles of the 500 kV overbuilt.

The recommended solution also includes a LIDAR sag study to assess the summer emergency rating and any needed upgrades on the Kammer-502 Junction 500 kV line to adequately increase the line rating.

The estimated cost of work assigned to FE is $392.55 million. The estimated cost of work assigned to NextEra is $512.61 million and the estimated cost of work assigned to Dominion is $35.59 million. The estimated cost of work assigned to AEP is $0.1 million. The required in-service date is June 2027 with a projected in-service date between 2027 and 2030. The proposing entity, NextEra, along with the local transmission owners, FirstEnergy, Dominion and AEP, will be designated to complete this work. Overall, the total cost estimate for the recommended West area improvements is approximately $940.85 million.

Map 25. West Area Improvements – Modified Proposal 853



Short Circuit

Stemming from PJM's short-circuit analysis, PJM recommends the replacement of 36 circuit breakers, as detailed in the Short-Circuit Analysis section of this report. The total cost estimate to for the breaker replacements is approximately $63.27 million.

Table 10. Rationale – All Clusters

#	Proposal ID	Proposing Entity	Focus Area (s)	Project Title	Submitted Cost ($M)	Meet Reliability Needs In: 2027 Model	Meet Reliability Needs In: 2028 Model	Selected Y/N	Rationale	Applicable Scenarios	
1	9	**AEP**	Local AEP	Scottsville-Bremo Sag Study	$1.27	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A	
2	23	**POTOED – FirstEnergy**	West	Data Center Reinforcement Proposal No. 2 • 2 - 500 kV circuits from Fort Martin-Doubs • 1 - 500 kV circuit from Prutnytown-Meadow Brook-Doubs • Second 500 kV from Doubs-Aspen and Rebuild the existing Doubs-Goose Creek 500 kV • Rebuild Hunterstown-Caroll 115/138 kV line for 230 kV double circuit construction	$3,503.86	**Yes**	**No**	Yes *(partial)*	• Proposal attempts to address the west-east transfer needs and voltage collapse concerns along the transfer path • PJM analysis indicated that the system reliability benefits more from spreading the reinforcements for transfer between the East and West corridors instead of just the Western corridor • All options provide injections into Doubs; however, no solutions offered to debottleneck the Doubs-Goose Creek corridor • Currently there is no need for 2x500 kV double circuit development along the West-East corridor • Only 1x500 kV is required part of the PJM selected solution • Cost is higher than similar 500 kV proposals by other entities that provide stronger cost containment provisions • Proposal utilizes existing ROWs for parts of the projects including the new Doubs-Aspen 500 kV and Huntertown-Caroll 230 kV, which both components are in the list of PJM selected projects	• 0F • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0M	• 0N • 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S
3	24	**PSEG**	EAST	Proposal A - North Delta-New Raphael-Waugh Chapel 500 kV	$739.40	**Yes**	**Yes**	No	Selected proposal meets needed system performance with less impact (Green Field vs Brownfield and Timeline/construction risk considerations)	OS-REV	

#	Proposal ID	Proposing Entity	Focus Area (s)	Project Title	Submitted Cost ($M)	Meet Reliability Needs In: 2027 Model	Meet Reliability Needs In: 2028 Model	Selected Y/N	Rationale	Applicable Scenarios
4	28	**NextEra**	East/ West/ Northern Virginia	Hunterstown-Doubs-Goose Creek, Black Oak-Pike-Goose Creek, Pike SVC + Cap Banks	$884.05	**Yes**	**No**	No	The proposed 500 kV line is similar in length to the PJM selected 500 kV line from Otter Creek to Doubs, which is more effective in meeting the reliability need	0H/0H2
5	30	**Dominion**	South	Charlottesville-Hollymead Line No. 2054 Rebuild	$159.87	**Yes**	**Yes**	No	Dominion proposal No. 967 chosen over proposal No. 30. Both proposals include a wreck and rebuild of 230 kV Line No. 2054. However, proposal No. 30 utilizes double-circuit capable 230 kV poles, whereas proposal No. 967 utilizes double-circuit capable 500/230 kV poles.	0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown - Carrol Rebuild / 0E11-7-B + Hunterstown - Carrol Rebuild + IEC West • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S
6	55	**AEP**	Local AEP	Boxwood-Scottsville 138 kV Rebuild	$104.88	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500kV solutions (that address the primary need drivers for the window)	N/A
7	74	**Dominion**	South	Line No. 2090 (Ladysmith CT-Fredericksburg) Rebuild	$57.34	**Yes**	**Yes**	Yes *(partial)*	Required for reliability needs. Most efficient or cost-effective solution	0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown - Carrol Rebuild / 0E11-7-B + Hunterstown - Carrol Rebuild + IEC West / 0E11-7-B Final • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S

#	Proposal ID	Proposing Entity	Focus Area (s)	Project Title	Submitted Cost ($M)	Meet Reliability Needs In: 2027 Model	Meet Reliability Needs In: 2028 Model	Selected Y/N	Rationale	Applicable Scenarios
8	116	**NextEra**	East/ Northern Virginia	Hunterstown-Doubs-Gant Solution, two new 230 kV line from new Belmont to Farmwell and Roundtable substation to feed data center alley	$478.87	**Yes**	**No**	No	The proposed 500 kV line is similar in length to the PJM selected 500 kV line from Otter Creek to Doubs, which is more effective in meeting the reliability need	0H/0H2
9	125	**PSEG**	EAST	Proposal B - North Delta-Northeast 230 kV	$313.34	**Yes**	**No**	No	Not required to meet the 2022W3 needs (inferior to selected solutions) with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A
10	129	**Dominion**	Northern Virginia/ South	Dominion Aggregate 500 kV Proposal	$3,035.05	**Yes**	**Yes**	Yes *(Partial)*	Offers robust solution to serve the data center loads in the Dominion zone (northern Virginia) and also offers parallel 500 kV path to the single 500 kV line between Goose Creek and Wishing Star	• 1A / 1B / 1C / 1C-1 • 0E Series • 0F • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S
11	175	**NextEra**	ALL	Combination of PEBO 215A + WOP 1F + SOP 8E	$6,265.95	**Yes**	**Yes**	No	• Solution (as one package) is more expensive, less effective and less efficient than selected proposal. • The combination solutions fails the load deliverability test in BGE and SW-MAAC • The combination proposal, particularly in the Eastern cluster introduces significant additional number of 230 kV circuits, while this elected proposal addresses those needs via 2x500 kV circuits predominantly along existing ROWs	• 0B / 0B2 / 0B3 • 0O / 0O2 / 0O3 • 0R / 0R2
12	181	**AEP**	Local AEP	Boxwood-Scottsville 138 kV Sag Study	$4.26	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A

#	Proposal ID	Proposing Entity	Focus Area (s)	Project Title	Submitted Cost ($M)	Meet Reliability Needs In: 2027 Model	Meet Reliability Needs In: 2028 Model	Selected Y/N	Rationale	Applicable Scenarios
13	196	**AEP**	Local AEP	Glen Lyn-Peters Mountain Rebuild	$21.89	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A
14	202	**AEP**	Local AEP	Cloverdale Transformer Addition	$57.29	**Yes**	**Yes**	No	Much higher cost comparing to Proposal 410	N/A
15	211	**Dominion**	South	Hollymead-Gordonsville Line No. 2135 Rebuild	$54.85	**Yes**	**Yes**	Yes	Required for reliability needs. Considers future load growth in Culpeper and Louisa area by supporting 500 kV developments with double-circuit capable 500/230 kV poles.	• 0E11-7-B Final • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S
16	217	**NextEra**	East	North Delta-Conastone Solution	$155.99	**Yes**	**Yes**	No	Solution offered part of an alternate more efficient and cost-effective proposal while utilizing existing ROW and with limited impacts	• 2 / 2A / 2B / 2C / 2D / 2E / 2F • QT1 / QT3
17	229	**PSEG**	East	Proposal C - Hunterstown-New Green Valley 500 kV	$529.11	**Yes**	**No**	No	Hunterstown supply into the northern Virginia system is inferior to supplying the northern Virginian system from the Peach Bottom area	0E2
18	231	**Dominion**	Northern Virginia/ South	Reactive Power VAR Reinforcements	$155.82	**Yes**	**Yes**	Yes *(partial)*	Required for reliability needs. Most efficient or cost-effective solution	0E11-7 / 0E11-7-A / 0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown -Carrol Rebuild / 0E11-7-B + Hunterstown -Carrol Rebuild + IEC West / 0E11-7-B Final / 0E11-8 / 0E11-9 / 0E11-10 / 0E11-10-A / 0E11-11 / 0E11-12
19	234	**AEP**	Local AEP	Glen Lyn-Peters Mountain Sag Study	$0.80	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A
20	255	**NextEra**	East/ Northern Virginia	Hunterstown-Doubs-Gant Solution	$411.61	**Yes**	**No**	No	The proposed 500 kV line is similar in length to the PJM selected 500 kV line from Otter Creek to Doubs, which is more effective in meeting the reliability need	0H/0H2

#	Proposal ID	Proposing Entity	Focus Area (s)	Project Title	Submitted Cost ($M)	Meet Reliability Needs In: 2027 Model	Meet Reliability Needs In: 2028 Model	Selected Y/N	Rationale	Applicable Scenarios
21	279	**NextEra**	West/ Northern Virginia	Black Oak-Woodside-Goose Creek, Woodside SVC + Cap Banks Solution	$429.18	**Yes**	**No**	No	Does not provide the needed supply source into the Dominion northern Virginia transmission system (Load Centers)	0E11-12
22	325	**PSEG**	East/ South	Proposal E - Brambleton-Hinsons Ford Rd 500 kV, North Delta-New Raphael Road-Waugh Chapel 500 KV	$944.05	**Yes**	**No**	No	Limited overall effectiveness of solution to meet the needs if bulk transfer solutions are adequately addressed. Line has high greenfield construction risk and high project delay risk are identified	2D
23	344	**PECO**	East	PECO Expansion Plan for DOM Window 2023	$302.86	**Yes**	**Yes**	Yes	• Meets performance requirements and efficiently utilizes existing ROW • Most efficient or cost-effective • Provides solid robust performance to meet the needs in the PB-Conastone and BGE areas	• 1A • 1B • 0E Series • 0F • 0G • 0H / 0H2 • 0H2 • 0I • 0J / 0J-2/ 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S • 2 / 2A / 2B / 2C / 2D / 2E
24	347	**NextEra**	West/ Northern Virginia	Black Oak-Woodside-Gant, Woodside SVC + Cap Banks	$483.83	**Yes**	**No**	No	Does not provide the needed supply source into the Dominion northern Virginia transmission system (Load Centers)	0E11-3 / 0E11-4 / 0E11-5 / 0E11-6 / 0E11-7 / 0E11-7-A / 0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown -Carrol Rebuild / 0E11-7-B + Hunterstown -Carrol Rebuild + IEC West / 0E11-7-B Final / 0E11-8 / 0E11-9 / 0E11-10 / 0E11-11 / 0E11-12
25	374	**PPL**	East	Otter Creek-Conastone 500 and 230 kV DCT Line	$154.21	**Yes**	**Yes**	Yes	• Most cost-effective or efficient solution to achieve additional East-West bulk transfer reinforcements and also assist with clearing capacity along the PB-Conastone corridor • Line supports the BGE/PEPCO system under outage conditions, Load Deliverability and needed supply source capability into northern Virginia/APS	0E Series (except for 0E2 / 0E3 / 0E6 / 0E6-1 / 0E7)

#	Proposal ID	Proposing Entity	Focus Area (s)	Project Title	Submitted Cost ($M)	Meet Reliability Needs In: 2027 Model	Meet Reliability Needs In: 2028 Model	Selected Y/N	Rationale	Applicable Scenarios
26	385	NextEra	East/ Northern Virginia	New 500/230 kV Bartholow substation, new 500/230 kV North Delta substation, new 230 kV Grisham switchyard, new 500/230 kV Goram substation	$1,140.73	Yes	Yes	No	• New substation (Barthlow) not needed part of the selected solution set • Major substation with 12 - 230 and 500 kV lines terminating into it that could be eliminated • No need for a new North Delta substation (one already approved and well-ahead through process) • Grisham and Goran substations are both new proposed substation, which are both avoided under the PJM selected proposal	• 0O • 0R
27	410	AEP	Local AEP	Cloverdale Breaker Reconfiguration	$11.59	Yes	Yes	Yes	Required part of the PJM 500 kV selected solution for 2022W3	0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown - Carrol Rebuild / 0E11-7-B + Hunterstown - Carrol Rebuild + IEC West / 0E11-7-B Final / 0E11-10 / 0E11-10-A / 0E11-11
28	419	NextEra	East/ Northern Virginia	Hunterstown-Doubs-Audobon-Goose Creek	$548.75	Yes	No	No	The proposed 500 kV line is similar in length to the PJM selected 500 kV line from Otter Creek to Doubs, which is more effective in meeting the reliability need	0H/0H2
29	445	NextEra	East	Muddy Creek / Delta-Conastone / Hunterstown-Doubs-Goose Creek Solution	$637.80	Yes	Yes	No	• Similar 500 kV solution that is planned for construction efficiently and effectively along existing ROW is part of the PJM selected proposal • The selected PJM proposal achieves the needed transfer capability East-West with less impact (fewer lines and much less new substations)	• 2E • 0H / 0H2
30	477	AEP	Local AEP	Fieldale-Franklin Rebuild	$74.89	Yes	Yes	No	Not required to meet the 2022W3 needs with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A

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21	487	**AEP - Transource**	East	Maryland & Pennsylvania Baseline Reliability Solution	$492.75	**Yes**	**No**	No	• Does not meet the 2027/28 needs • Solution designed predominantly to address the 2027 case needs only • More cost-effective and efficient solutions were offered part of the 2022W3 RTEP • The solutions are less effective than those selected by PJM • Proposal does not offer solutions to the BGE local needs and fails the load deliverability test/needs • Solution is predominantly greenfield	• 1C / 1C-1 • 0A • 0E5 • 0E8-2 • 0E11-7-B+IEC West • 0E11-7-B + Hunterstown-Carrol Rebuild + IEC West • 0E11-8 • 0E11-11 • 0P / 0P2
32	516	**Dominion**	Northern Virginia	Aspen-Doubs Second 500 kV Line	$61.72	**Yes**	**Yes**	Yes	Provides a second 500 kV line into the Load Center area in Dominion and utilizes existing/advacent ROW across the Potomac river	• 1A / 1B / 1C / 1C-1 • 2 / 2A / 2B / 2C / 2D / 2E / 2F • 0E Series • 0F • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 /0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 0S
33	524	**AEP**	Local AEP	Opossum Creek and New London Reactors	$8.86	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A
34	530	**NextEra**	East	Muddy Creek / North Delta-Conastone Solution	$166.74	**Yes**	**Yes**	No	Same as for proposal 38	2 / 2A / 2B / 2C / 2D / 2E / 2F
35	537	**AEP**	Local AEP	Fieldale-Franklin Sag Study	$30.19	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A

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36	548	**LSPower**	ALL	RTEP Window 3 Solution	$2,404.48	**Yes**	**No**	No	• Does not meet the 2027/28 needs • Solution designed predominantly to address the 2027 case needs only • The western 500 kV solution does terminate at the existing Doubs substation and does not offer an outlet capacity from Doubs into the Goose Creek area • More cost-effective and efficient solutions were presented part of the 2022W3 RTEP • The eastern cluster solutions are less effective than those selected by PJM • Proposal does not offer solutions to the BGE local needs and fails the load deliverability test/needs • High constructability risk (ROW owned by Dominion) for the 500 kV UG line portion of proposal from Goose Creek to Beaumeade and technically inferior to the PJM selected 500 kV development in the area.	• 2B • 2C • 0E11-9
37	564	**NextEra**	East/ Northern Virginia	New 500/230 kV Bartholow substation, new 500/230 kV North Delta substation, new 230 kV Grisham switchyard, new 500/230 kV Goram substation	$876.88	**Yes**	**Yes**	No	• New substation (Barthlow) not needed part of the selected solution set • Major substation with 12x230 and 500 kV lines terminating into it that could be eleminated by PJM selected 500 kV solutions • No need for a new North Delta substation (one already approved and well-ahead through process) • Grisham and Goran substations are both new proposed substation, which are both avoided under the PJM selected proposal	0O and 0R

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38	577	**NextEra**	South	Front Royal-Racefield, Warrenton-Wheeler, North Anna-Lady Smith	$258.38	**Yes**	**Yes**	No	Not required with the development of the needed 500 kV selected proposal by PJM, particularly the third 500 kV feed into Aspen and the looped 500 kV development in Dominion (Aspen-Golden-Mars). Avoids highly sensitive, high risk greenfield ROW	0B
39	598	**NextEra**	ALL	Combination of PEBO 220 + WOP 1F + SOP 8E	$2,036.47	**Yes**	**No**	No	• Solution does not meet the 2027/28 needs and robustness test. • Proposals relies heavily on 230 kV developments which introduces significant impacts in the East that could be effectively and mitigated by just 2x500 kV developments in the same area, predominantly on existing ROWs • For this combination proposal to meet the 2027/28 needs, an expensive ~4Bn additional 2x230 kV circuits are required across the Chesapeake bay • Even with the above development, the solution fails the Load Deliverability test in BGE and SW-MAAC	0C
40	600	**PECO**	East	Exelon Replacement Upgrades	$423.79	**No**	**No**	No	The proposal is upgrades to an existing Exelon system and is not enough to address the violations identified in the 2022 Window 3	N/A
41	606	**PPL**	Local Other	Juniata-Lewistown 230 kV No. 2 line	$141.16	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A
42	629	**AEP**	Local AEP	Scottsville-Bremo Rebuild	$31.31	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500 kV solutions (that address the primary need drivers for the window)	N/A

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43	631	**NextEra**	East	Muddy Creek / North Delta-Conastone Solution	$184.47	**Yes**	**Yes**	No	Same as for proposal 38	2 / 2A / 2B / 2C / 2D / 2E / 2F
44	637	**PSEG**	East	Proposal D-Conastone-Doubs 500 kV	$684.22	**Yes**	**Yes**	Yes	Addresses the reliability needs effectively and efficiently (in combination with PPL's proposal 374)	• 0E Series (except for 0E2 / 0E3 / 0E6 / 0E6-1 / 0E7) • 0K • 0O • 0R
45	642	**NextEra**	West/ Northern Virginia	502 Junction-Black Oak-Woodside-Gant, Woodside SVC + Cap Banks, Gant-Farmwell, Cochran Tap-Round Table	$747.31	**Yes**	**No**	No	The Gant-Farmwell and Cochran Tap-Round Table are, not as robust as the selected 500 kV loop established by the selected DOM proposal between Aspen, Golden and Mars	0E11-3 / 0E11-4 / 0E11-5 / 0E11-6 / 0E11-7 / 0E11-7-A / 0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown -Carrol Rebuild / 0E11-7-B + Hunterstown -Carrol Rebuild + IEC West / 0E11-7-B Final / 0E11-8 / 0E11-9 / 0E11-10 / 0E11-11 / 0E11-12
46	660	**PEPCO**	East	West Cooper BGE-PEPCO	$1,105.62	**Yes**	**Yes**	Yes	• Meets performance requirements and efficiently utilizes existing ROW • Most efficient or cost-effective • provides solid robust performance to meet the needs in the PB-Conastone and BGE areas	• 1A • 1B • 0E Series • 0F • 0G • 0H / 0H2 • 0H2 • 0I • 0J / 0J-2/ 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S • 2 / 2A / 2B / 2C / 2D / 2E
47	663	**NextEra**	Northern Virginia/ South	Front Royal-Racefield, Warrenton-Rixlew, Warrenton-Hourglass, Mars-Ocean Court-Davis Drive	$284.17	**Yes**	**Yes**	No	Not required with the development of the needed 500 kV selected proposal by PJM, particularly the 3rd 500 kV feed into Aspen and the looped 500 kV development in Dominion (Aspen-Golden-Mars). Avoids highly sensitive, high risk greenfield ROW	0L

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48	671	**Dominion**	West/ South	Lines No. 541 (Front Royal to Morrisville) Rebuild	$299.03	**Yes**	**Yes**	No	Not required with the PJM selected 500 kV solution.	• 2 / 2A / 2B / 2E • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S
49	676	**NextEra**	West/ Northern Virginia	Black Oak-Stonewall-Gant, Stonewall SVC + Cap Banks, Gant-Farmwell, Cochran Tap-Round Table Solution	$552.49	**Yes**	**No**	No	Not as robust as the selected 500 kV loop established by the selected DOM proposal between Aspen, Golden and Mars	0E11-3 / 0E11-4 / 0E11-5 / 0E11-6 / 0E11-7 / 0E11-7-A / 0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown -Carrol Rebuild / 0E11-7-B + Hunterstown -Carrol Rebuild + IEC West / 0E11-7-B Final / 0E11-8 / 0E11-9 / 0E11-10 / 0E11-11 / 0E11-12
50	685	**NextEra**	West	Ft. Martin-Black Oak-Woodside, Woodside SVC + Cap Banks Solution	$609.78	**Yes**	**No**	No	Does not provide the needed supply source into the Dominion northern Virginia transmission system (Load Centers)	0E11-3 / 0E11-4 / 0E11-5 / 0E11-6 / 0E11-7 / 0E11-7-A / 0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown -Carrol Rebuild / 0E11-7-B + Hunterstown -Carrol Rebuild + IEC West / 0E11-7-B Final / 0E11-8 / 0E11-9 / 0E11-10 / 0E11-11 / 0E11-12
51	691	**PEPCO**	East	Mid-Atlantic Power Pathway (MAPP)	$1,990.28	**No**	**No**	No	Project not considered due to supply chain and long lead times requirements	N/A
52	692	**Dominion**	Northern Virginia	Data Center Alley Local solution-New 500 kV/230 kV Aspen-Golden & Golden-Mars lines	$1,058.45	**Yes**	**Yes**	Yes	Required for reliability needs. Most efficient or cost-effective solution. Offers robust solution to serve the data center loads in the dominion zone (northern Virginia) and also offers parallel 500 kV path to the single 500 kV line between Goose Creek and Wishing Star	• 1A / 1B / 1C / 1C-1 • 2 / 2C / 2D / 2E / 2F • 0E Series • 0F • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S

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53	704	**Dominion**	South	Hollymead-Gordonsville Line No. 2135 Rebuild	$36.89	**Yes**	**Yes**	No	Dominion proposal No. 211 chosen over proposal No. 704. Both proposals include a wreck and rebuild of 230 kV Line No. 2135. However proposal No. 704 utilizes double-circuit capable 230 kV poles, whereas proposal No. 211 utilizes double-circuit capable 500/230 kV poles.	• 0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown - Carrol Rebuild / 0E11-7-B + Hunterstown -Carrol Rebuild + IEC West • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S
54	711	**Dominion**	South	Regional Solution - 500 kV North Anna-Wishing Star Upgrades	$1,227.84	**Yes**	**Yes**	Yes *(Partial)*	Offers robust solution to serve the data center loads in the dominion zone (northern Virginia). Proposal utilizes efficiently the existing ROW between Morrisville and Wishing Star. Segment between Morssisville and North Anna eliminated by PJM 500 kV solution.	• 1A / 1B / 1C / 1C-1 • 0E Series • 0F • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S
55	719	**NextEra**	West	Ft. Martin-Black Oak-Pike, Pike SVC + Cap Banks Solution	$600.90	**Yes**	**No**	No	Does not provide the needed supply source into the Dominion northern Virginia transmission system (Load Centers)	0E11-3 / 0E11-4 / 0E11-5 / 0E11-6 / 0E11-7 / 0E11-7-A / 0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown -Carrol Rebuild / 0E11-7-B + Hunterstown -Carrol Rebuild + IEC West / 0E11-7-B Final / 0E11-8 / 0E11-9 / 0E11-10 / 0E11-11 / 0E11-12

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56	728	**NextEra**	East/ Northern Virginia	Barnhart Substation, Bartholow Substation, Barnhart-Bartholow-Goose Creek solution	$385.36	**Yes**	**No**	No	• Does not provide the needed supply source into the Dominion northern Virginia transmission system (Load Centers) • Barthlow substation deemed not required with the PJM selected proposal, which has much less overall impact (many 500 and 230 kV greenefield lines compared to just 2x500 kV lines under PJM proposal and without Barthlow sub)	0E2
57	731	**Dominion**	South	Locks Substation 230/115 kV Transformer Upgrade	$7.14	**Yes**	**Yes**	Yes	Required for reliability needs. Most efficient or cost-effective solution	0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown - Carrol Rebuild / 0E11-7-B + Hunterstown - Carrol Rebuild + IEC West / 0E11-7-B Final • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S
58	741	**PSEG**	East	Proposal G - Peach Bottom-New Brandon Shores 500 kV; Peach Bottom-Doubs 500 kV	$1,065.32	**Yes**	**Yes**	No	• Selected incumbent proposal addresses the needs for bulk transfers between Peach Bottom and Conastone (in combination with other proposals) predominantly using existing ROW in the PB-Conastone corridor • PSEG proposal to develop a line from Conastone to Doubs has already been selected part of Proposal No. 637 - in combination with PPL proposal 374	• 0E4-1-2 / 0E11-7-B Final • 0Q

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59	766	**NextEra**	South	Front Royal-Racefield, Warrenton-Wheeler	$239.59	**Yes**	**Yes**	No	Not required with the development of the needed 500 kV selected proposal by PJM, particularly the 3rd 500 kV feed into Aspen and the looped 500 kV development in Dominion (Aspen-Golden-Mars). Avoids highly sensitive, high risk greenfield ROW	QT3
60	808	**PSEG**	East	Proposal F - Peach Bottom-New Raphael-Waugh Chapel 500 kV; Peach Bottom-Doubs 500 kV	$1,150.80	**Yes**	**Yes**	No	Immediate need proposal to address the Peach Bottom deactivation needs in BGE has a much lower risk of construction, more cost-effective and efficient solution	• 0E4-1-1 / 0E13 / 0E13-1 • 0S
61	837	**POTOED - FirstEnergy**	East/ West/ Northern Virginia	Data Center Reinforcement Proposal No. 1 • 1 - 500 kV circuits from Fort Martin-Doubs • 1 - 500 kV circuit from Prutnytown-Meadow Brook-Doubs • Second 500 kV from Doubs-Aspen and Rebuild the existing Doubs-Goose Creek 500 kV • Rebuild Hunterstown-Caroll 115/138 kV line for 230 kV double circuit construction	$2,991.77	**Yes**	**No**	Yes *(partial)*	• Proposal attempts to address the west-east transfer needs and voltage collapse concerns along the transfer path • PJM analysis indicated that the system reliability benefits more from spreading the reinforcements for transfer between the East and West corridors instead of just the Western corridor • All options provide injections into Doubs, however, no solutions offered to debottleneck the Doubs-Goose Creek corridor • Currently there is no need for 2x500 kV double circuit development along the West-East corridor • only 1x500kV is required part of the PJM selected solution • Cost is higher than similar 500 kV proposals by other entities that provide stronger cost containment provisions • Proposal utilizes existing ROWs for parts of the projects including the new Doubs-Aspen 500 kV and Huntertown-Caroll 230 kV, which	• 1A / 1B / 1C / 1C-1 • 2 / 2A / 2B / 2C / 2D / 2E / 2F • 0E Series (except for 0E8-2 / 0E11-3 / 0E11-5 / 0E11-6) • 0L

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									both components are in the list of PJM selected projects	
62	846	**NextEra**	East/ West/ Northern Virginia	Hunterstown-Doubs-Goose Creek, Black Oak-Woodside-Goose Creek, Stonewall SVC + Cap Banks	$892.94	**Yes**	**No**	No	• The proposed 500 kV line is similar in length to the PJM selected 500 kV line from Otter Creek to Doubs, which is more effective in meeting the reliability need • PJM selected 500 kV combination is more effective in meeting the reliability need	0H/0H2
63	853	**NextEra**	West/ Northern Virginia	502 Junction-Black Oak-Woodside-Gant, Woodside SVC + Cap Banks	$683.55	**Yes**	**Yes**	Yes *(partial)*	• Effective solution to address the reliability needs for West to East transfers and offers a 3rd 500 kV supply line to the load center in Dominion • The selected component is modified to bypass the Black Oak and terminate at Aspen (original proposal terminate at Gant)	0E11-3 / 0E11-4 / 0E11-5 / 0E11-6 / 0E11-7 / 0E11-7-A / 0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown -Carrol Rebuild / 0E11-7-B + Hunterstown -Carrol Rebuild + IEC West / 0E11-7-B Final / 0E11-8 / 0E11-9 / 0E11-10 / 0E11-11 / 0E11-12
64	856	**AEP**	Local AEP	Leesville-Altavista Rebuild	$28.85	**Yes**	**Yes**	No	Not required to meet the 2022W3 needs with the selected PJM 500kV solutions (that address the primary need drivers for the window)	N/A

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65	858	**AEP - Transource**	Northern Virginia	Stork-Flys 500 kV Greenfield Line and Substations	$510.44	**Yes**	**Yes**	No	High constructability risk (proposes use of Loudoun County roadways which was deemed high concern by VDOT officials) and technically inferior to the PJM selected 500 kV development in the area.	• 2A • 0A • 0M
66	904	**AEP - Transource**	West/ South	Joshua Falls-Yeat 765 kV Greenfield Line and Substation	$1,048.10	**Yes**	**Yes**	No	Project proposes new, greenfield 765 kV development close to 135 miles long. Introduces high risk to area reliability due to delayed project construction and in service year risk. PJM selected 500 kV solution addresses the need cost-effective and efficiently. The 765 kV solution could be pursued part of the longer term solutions in the area depending on how load and generation materialize.	• 2F • 0A • 0E8 / 0E8-1/ 0E8-1-1 / 0E8-2 / 0E8-2-1 / 0E8-2-2 / 0E11-4 / 0E11-5 / 0E11-7-B + Yeat / 0E11-10-A / 0E11-11
67	923	**Dominion**	South	Second 500 kV line from Lexington to Dooms	$232.18	**Yes**	**Yes**	No	Not required under the 2027/28 analysis scenario	• 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S

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68	948	**NextEra**	East/ Northern Virginia	New 500/230 kV Bartholow substation, new 500/230 kV North Delta substation, new 230 kV Grisham switchyard, new 500/230 kV Goram substation, and Keeney to Waugh Chapel tie-in.	$5,381.25 *	**Yes**	**Yes**	No	• New substation (Barthlow) not needed part of the selected solution set • Major substation with 12x230 and 500kV lines terminating into it that could be eliminated by PJM selected 500 kV solutions • No need for a new North Delta substation (one already approved and well-ahead through process) • Grisham and Goran substations are both new proposed substation, which are both avoided under the PJM selected proposal • The proposal includes expensive ~4Bn and high constructability/schedule risk additional 2x230 kV circuits across the Chesapeake bay	• 0E4-1-3 • 0I • 0J / 0J-2 / 0J-3 • 0B
69	951	**NextEra**	West/ Northern Virginia	Black Oak-Gore-Goose Creek, Pike SVC + Cap Bank Solution	$419.86	**Yes**	**No**	No	Does not provide the needed supply source into the Dominion northern Virginia transmission system (Load Centers)	0E11-3 / 0E11-4 / 0E11-5 / 0E11-6 / 0E11-7 / 0E11-7-A / 0E11-7-B / 0E11-7-B + Yeat / 0E11-7-B +IEC West / 0E11-7-B + Hunterstown -Carrol Rebuild / 0E11-7-B + Hunterstown -Carrol Rebuild + IEC West / 0E11-7-B Final / 0E11-8 / 0E11-9 / 0E11-10 / 0E11-11 / 0E11-12
70	962	**PSEG**	East	Proposal H - Peach Bottom-Doubs 500 kV (Circuits No. 1 and No. 2)	$977.71	**Yes**	**Yes**	No	See comments associated with Proposal No. 741	N/A
71	967	**Dominion**	South	Charlottesville-Hollymead Line No. 2054 Rebuild	$183.48	**Yes**	**Yes**	Yes *(partial)*	Required for reliability needs. Considers future load growth in Culpeper and Louisa area by supporting 500 kV developments with double-circuit capable 500/230 kV poles.	• 0E11-7-B Final • 0G • 0H / 0H2 • 0I • 0J / 0J-2 / 0J-3 • 0K • 0L • 0M • 0N • 0O / 0O2 / 0O3 • 0P / 0P2 / 0P NGME • 0Q / 0Q2 / 0Q3 / 0Q4 • 0R / 0R2 • 0S

#	Proposal ID	Proposing Entity	Focus Area (s)	Project Title	Submitted Cost ($M)	Meet Reliability Needs In: 2027 Model	Meet Reliability Needs In: 2028 Model	Selected Y/N	Rationale	Applicable Scenarios
72	977	**AEP - Transource**	South	Yeat 500/230 kV Greenfield Station	$232.14	**Yes**	**Yes**	No	Project proposes new, greenfield 765 kV development close to 135 miles long. Introduces high risk to area reliability due to delayed project construction and in service year risk. PJM selected 500 kV solution addresses the need cost-effective and efficiently. The 765 kV solution could be pursued part of the longer term solutions in the area depending on how load and generation materialize.	• 0A • 0E6 / 0E6-1 / 0E7

Critical Substation Planning Analysis

The Critical Substation Planning Analysis (CSPA)[4] was created as an extension of the PJM Transmission Owners' Attachment M-4 process. The purpose of the CSPA is to conduct additional screening as part of a five-year annual PJM RTEP cycle to ensure no new CIP-14 facilities is introduced to the PJM system as the transmission network evolves.

PJM CSPA evaluates system reinforcements, consistent with RTEP CSPA methodology as described in Section 2.9 of Manual 14B. CSPA is performed to identify Instability, Uncontrolled Separation, or Cascading resulting in one or more of the following outcomes due to the loss of all voltage levels 69 kV and above at a single transmission facility that meet the NERC CIP-14 substation criteria.

- Loss of load approaching 1000 MW
- Three levels of facility trips
- Case non-convergence issue in steady-state or dynamic analysis covering both angular and voltage stability tests

For 2022 Window 3, PJM conducted CSPA for proposals in 12 scenarios based on PJM RTEP 2028 summer peak case. No new critical substation was identified due to selected system upgrades in 2020 Window 3.

Power System Stability Analysis

The 2022 Window 3 needs are predominantly driven by steady state (both thermal and voltage) reliability violations. However, PJM conducted stability analysis to ensure the final recommended solution meet all applicable planning stability criteria (PJM, NERC, and Local Transmission Owner criteria) with the PJM-selected reinforcements capturing the impact of the load increase, change in generation resource mix and dispatch pattern. The dynamic performance of PJM system with the final selected solution was analyzed from three key stability aspects: transient (angle) stability, small signal (damping) stability and transient voltage stability.

Critical system conditions for stability analysis on the PJM system are generally characterized by light load and peak load conditions. In this stability study, PJM RTEP 2028 summer peak and light load dynamics cases were used. The assumptions used for generation dispatch can be critical to the stability results. PJM followed PJM's stability dispatch methodology to create conservative system conditions for stability analysis. Dynamic models of the proposed STATCOMs at Stonewall, Mars, Beaumeade, Granite and Brighton stations were properly incorporated in the study dynamics cases.

PJM selected more than 70 critical NERC Planning events (P1, P4, P6 and P7) at 22 key substations associated with the final solution from East, West, South and Northern Virginia data center loads areas. The critical contingencies were selected based on system topology, loading interruption size by contingency events, and the size of dynamic reactive devices, as well as past study experiences and engineering judgement. PSS/E, which is well-accepted

[4] *See* PJM Manual 14B, section 2.9

power system analysis software, was used as a stability simulation tool. The findings from the stability study are summarized as follows:

- No potential stability criteria violations were identified.
- There are no transient (angle) stability issues at major generation stations including Peach Bottom, Limerick and North Anna nuclear plants.
- PJM system demonstrated acceptable damping performance after system disturbances by the contingencies.
- No transient voltage recovery performance issue around major load centers was identified.

Appendix A: Scope of Final Reliability Analysis

PJM seeks technical solutions, also called proposals, to resolve potential reliability criteria violations on facilities identified below in accordance with all applicable planning criteria (PJM, NERC, SERC, RFC and Local Transmission Owner criteria).

Criterion Applied by PJM for this Proposal Window

- 2027–28 Summer
- Baseline Thermal and Voltage N-1 Contingency Analysis
- Generator Deliverability and Common Mode Reliability Analysis
- N-1-1 Thermal and Voltage Analysis and Voltage Collapse
- Load Deliverability Thermal and Voltage Analysis
- Dynamic Stability Assessment
- 2027–28 Winter
- Baseline Thermal and Voltage N-1 Contingency Analysis
- Generator Deliverability and Common Mode Reliability Analysis
- N-1-1 Thermal and Voltage Analysis and Voltage Collapse
- Load Deliverability Thermal and Voltage Analysis
- Dynamic Stability Assessment
- 2027–28 Light Load
- Baseline Thermal and Voltage N-1 Contingency Analysis
- Generator Deliverability and Common Mode Reliability Analysis

Appendix B: Window 3 Scenarios and Screening Performance

Listed below are high-level descriptions and screening performance of some of the major scenarios.

Scenario 1A

Scenario Components

Primary Incumbent TOs Proposals – regional components

- Exelon: 2022-W3-344/660
- Rebuild 5012 500 kV (will be looped in to West Cooper and Gracetone)
- West Cooper-Peach Bottom South New 500 kV Line
- West Cooper-High Ridge 500 kV
- FE: 2022-W3-837
- Fort Martin-Doubs 500 No. 1
- DOM: 2022-W3-711
- New 500 kV Line (North Anna-Spotsylvania)
- New 500 kV Line (Spotsylvania to Vint Hill)
- New 500 kV Line (Vint Hill to Wishing Star)
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- DOM: 2022-W3-692 (include 230 kV)
- Aspen-Golden 500 kV Line Build
- New Mars-Golden 500 kV
- Aspen to Goose Creek 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	34
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	1
138 kV Overloads	20
115 kV Overloads	6

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	74
500 kV Overloads	14
345 kV Overloads	0
230 kV Overloads	27
138 kV Overloads	14
115 kV Overloads	10

Scenario 1B

Scenario Components

Primary Incumbent TOs Proposals – No Dominion South – regional components

- Exelon: 2022-W3-344/660
- Rebuild 5012 500 kV (will be looped in to West Cooper and Gracetone)
- West Cooper-Peach Bottom South New 500 kV Line
- West Cooper-High Ridge 500 kV
- FE: 2022-W3-837
- Fort Martin-Doubs 500 No. 1
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- DOM: 2022-W3-692 (include 230 kV)
- Aspen-Golden 500 kV Line Build
- New Mars-Golden 500 kV
- Aspen to Goose Creek 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	54
500 kV Overloads	10
345 kV Overloads	2
230 kV Overloads	6
138 kV Overloads	26
115 kV Overloads	5

Scenario 1C

Scenario Components

Primary Incumbent TOs Proposals – regional components – use TRANSRC ID 487 east component (IEC-East)

- Transource: 2022-W3-487 IEC-East
- Furnace Run 500/230 kV station
- Furnace Run-Conastone 230 kV
- Furnace Run-Gracetone 230 kV
- FE: 2022-W3-837
- Fort Martin-Doubs 500 No. 1
- DOM: 2022-W3-711
- New 500 kV Line (North Anna-Spotsylvania)
- New 500 kV Line (Spotsylvania to Vint Hill)
- New 500 kV Line (Vint Hill to Wishing Star)
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- DOM: 2022-W3-692 (include 230 kV)
- Aspen-Golden 500 kV Line Build
- New Mars-Golden 500 kV
- Aspen to Goose Creek 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	49
500 kV Overloads	2
345 kV Overloads	0
230 kV Overloads	5
138 kV Overloads	25
115 kV Overloads	11

Scenario 1C-1

Scenario Components

Primary Incumbent TOs Proposals – regional components – use TRANSRC ID 487 east component (IEC-East) + b3737

- Transource: 2022-W3-487 IEC-East
- Furnace Run 500/230 kV station
- Furnace Run-Conastone 230 kV
- Furnace Run-Gracetone 230 kV
- B3737
- North Delta 500/230 and N. Delta-Graceton 230 kV
- FE: 2022-W3-837
- Fort Martin-Doubs 500 No. 1
- DOM: 2022-W3-711
- New 500 kV Line (North Anna-Spotsylvania)
- New 500 kV Line (Spotsylvania to Vint Hill)
- New 500 kV Line (Vint Hill to Wishing Star)
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- DOM: 2022-W3-692 (include 230 kV)
- Aspen-Golden 500 kV Line Build
- New Mars-Golden 500 kV
- Aspen to Goose Creek 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	**40**
500 kV Overloads	**1**
345 kV Overloads	**0**
230 kV Overloads	**2**
138 kV Overloads	**23**
115 kV Overloads	**10**

Scenario 2

Scenario Components

Primary Incumbent TOs Proposals – regional components – Upgrade F Royal-Morsvl + NextEra - ND – Conastone + Full DOM local

- NEET: 2022-W3-530
- North Delta-Conastone 500 kV
- FE: 2022-W3-837
- Fort Martin-Doubs 500 No. 1
- DOM: 2022-W3-671
- Line No. 541 (Front Royal to Morrisville) Rebuild
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- DOM: 2022-W3-692 (include 230 kV)
- Aspen-Golden 500 kV Line Build
- New Mars-Golden 500 kV
- Aspen to Goose Creek 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	88
500 kV Overloads	17
345 kV Overloads	1
230 kV Overloads	16
138 kV Overloads	32
115 kV Overloads	12

Scenario 2A

Scenario Components

Primary Incumbent TOs Proposals – regional components – Upgrade F Royal-Morsvl + NextEra - ND – Conastone + TRANSC - 500 kV UG

- NEET: 2022-W3-530
- North Delta-Conastone 500 kV
- FE: 2022-W3-837
- Fort Martin-Doubs 500 No. 1
- DOM: 2022-W3-671
- Line No. 541 (Front Royal to Morrisville) Rebuild
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- Transource: 2022-W3-858
- Stork-Flys 500 kV Underground Line

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	83
500 kV Overloads	14
345 kV Overloads	1
230 kV Overloads	17
138 kV Overloads	32
115 kV Overloads	11

Scenario 2B

Scenario Components

Primary Incumbent TOs Proposals – regional components – Upgrade F Royal-Morsvl + NextEra - ND – Conastone + LSP - 500 kV UG

- NEET: 2022-W3-530
- North Delta-Conastone 500 kV
- FE: 2022-W3-837
- Fort Martin-Doubs 500 No. 1
- DOM: 2022-W3-671
- Line No. 541 (Front Royal to Morrisville) Rebuild
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- LS Power: 2022-W3-548
- Goose Creek-Beaumeade 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	96
500 kV Overloads	17
345 kV Overloads	1
230 kV Overloads	24
138 kV Overloads	32
115 kV Overloads	12

Scenario 2C

Scenario Components

Primary Incumbent TOs Proposals – regional components – NextEra - ND – Conastone + LSP - West 500 kV FRoyl-Vhill

- NEET: 2022-W3-530
- North Delta-Conastone 500 kV
- FE: 2022-W3-837
- Fort Martin-Doubs 500 No. 1
- LS Power: 2022-W3-548
- Front Royal –VintHill 500 kV
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- DOM: 2022-W3-692 (include 230 kV)
- Aspen-Golden 500 kV Line Build
- New Mars-Golden 500 kV
- Aspen to Goose Creek 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	48
500 kV Overloads	6
345 kV Overloads	0
230 kV Overloads	1
138 kV Overloads	25
115 kV Overloads	11

Scenario 2D

Scenario Components

Primary Incumbent TOs Proposals – regional components – NextEra - ND – Conastone + PSEG Bramb-HinsonsF 500 kV

- NEET: 2022-W3-530
- North Delta-Conastone 500 kV
- FE: 2022-W3-837
- Fort Martin-Doubs 500 No. 1
- PSEG: 2022-W3-325
- Brambleton-Hinsons Ford 500 kV
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- DOM: 2022-W3-692 (include 230 kV)
- Aspen-Golden 500 kV Line Build
- New Mars-Golden 500 kV
- Aspen to Goose Creek 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	49
500 kV Overloads	6
345 kV Overloads	0
230 kV Overloads	2
138 kV Overloads	25
115 kV Overloads	11

Scenario 2E

Scenario Components

Primary Incumbent TOs Proposals – regional components – NextEra - ND – Conastone + Hunt-Doubs 500 kV

- NEET: 2022-W3-530
- North Delta-Conastone 500 kV
- NEET: 2022-W3-445
- Hunterstown -Doubs 500 kV
- DOM: 2022-W3-671
- Line No. 541 (Front Royal to Morrisville) Rebuild
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- DOM: 2022-W3-692 (include 230 kV)
- Aspen-Golden 500 kV Line Build
- New Mars-Golden 500 kV
- Aspen to Goose Creek 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	84
500 kV Overloads	14
345 kV Overloads	2
230 kV Overloads	22
138 kV Overloads	34
115 kV Overloads	6

Scenario 2F

Scenario Components

Primary Incumbent TOs Proposals – regional components – TRASRC - 765 kV + NextEra - ND – Conastone + Full DOM local

- NEET: 2022-W3-530
- North Delta-Conastone 500 kV
- Transource: 2022-W3-904
- Joshua Falls to Yeat 765 kV
- DOM/FE: 2022-W3-516/837
- Aspen-Doubs Second 500 kV Line
- Line No. 514 (Goose Creek-Doubs) Rebuild
- DOM: 2022-W3-692 (include 230 kV)
- Aspen-Golden 500 kV Line Build
- New Mars-Golden 500 kV
- Aspen to Goose Creek 500 kV

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	78
500 kV Overloads	10
345 kV Overloads	0
230 kV Overloads	10
138 kV Overloads	33
115 kV Overloads	11

Scenario 0A

Scenario Components

- Transource: 2022-W3-487
- Transource: 2022-W3-904
- Transource: 2022-W3-977
- Transource: 2022-W3-858

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	18
500 kV Overloads	1
345 kV Overloads	1
230 kV Overloads	4
138 kV Overloads	8
115 kV Overloads	1

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	113
500 kV Overloads	13
345 kV Overloads	0
230 kV Overloads	47
138 kV Overloads	11
115 kV Overloads	27

Scenario 0B

Scenario Components

- NEET: 2022-W3-175

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	23
500 kV Overloads	2
345 kV Overloads	2
230 kV Overloads	2
138 kV Overloads	13
115 kV Overloads	2

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	28
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	9
138 kV Overloads	3
115 kV Overloads	4

7,500 MW OSW Screening Performance

Overload	Number of Overloads
Total Overloads	52
500 kV Overloads	9
345 kV Overloads	0
230 kV Overloads	24
138 kV Overloads	4
115 kV Overloads	4

11,000 MW OSW Screening Performance

Overload	Number of Overloads
Total Overloads	74
500 kV Overloads	12
345 kV Overloads	0
230 kV Overloads	31
138 kV Overloads	4
115 kV Overloads	4

Scenario 0B2

Scenario Components

- NEET: 2022-W3-175
- Removal of two 230 kV line from Warrenton-Rixlew/Hourglass, 500 kV line from Front Royal-New Wishing Star

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	28
500 kV Overloads	3
345 kV Overloads	0
230 kV Overloads	10
138 kV Overloads	3
115 kV Overloads	4

Scenario 0B3

2028 Scenario Components

- NEET: 2022-W3-175
- Removal of two 230 kV line from Warrenton-Rixlew/Hourglass, 500 kV line from Front Royal-New Wishing Star
- Removal of Keeney to Waugh Chapel 230 kV circuit 1 and 2

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	40
500 kV Overloads	6
345 kV Overloads	0
230 kV Overloads	20
138 kV Overloads	2
115 kV Overloads	7

Scenario 0C

Scenario Components

- NEET: 2022-W3-598

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	23
500 kV Overloads	2
345 kV Overloads	2
230 kV Overloads	2
138 kV Overloads	13
115 kV Overloads	2

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	39
500 kV Overloads	6
345 kV Overloads	0
230 kV Overloads	17
138 kV Overloads	2
115 kV Overloads	6

Scenario 0D

Scenario Components

- LS Power: 2022-W3-548

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	21
500 kV Overloads	2
345 kV Overloads	2
230 kV Overloads	2
138 kV Overloads	11
115 kV Overloads	2

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	93
500 kV Overloads	17
345 kV Overloads	0
230 kV Overloads	38
138 kV Overloads	6
115 kV Overloads	21

Scenario 0E

Scenario Components

1A_ALL

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711
- DOM/FE: 2022-W3-516/837
- DOM: 2022-W3-692

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	24
500 kV Overloads	0
345 kV Overloads	2
230 kV Overloads	1
138 kV Overloads	16
115 kV Overloads	3

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	57
500 kV Overloads	13
345 kV Overloads	0
230 kV Overloads	26
138 kV Overloads	4
115 kV Overloads	6

Scenario 0E1

Scenario Components

0E + PPL (374) + PSEG (637 component 5 and 8) → It will 0E +PPL (Otter to Conastone 500 kV) + PSEG (Conastone to Doubs 500 kV)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711
- DOM/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	22
500 kV Overloads	0
345 kV Overloads	2
230 kV Overloads	1
138 kV Overloads	15
115 kV Overloads	2

7,500 MW OSW Screening Performance

Overload	Number of Overloads
Total Overloads	57
500 kV Overloads	10
345 kV Overloads	0
230 kV Overloads	33
138 kV Overloads	3
115 kV Overloads	4

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	33
500 kV Overloads	3
345 kV Overloads	0
230 kV Overloads	19
138 kV Overloads	2
115 kV Overloads	4

11,000 MW OSW Screening Performance

Overload	Number of Overloads
Total Overloads	80
500 kV Overloads	15
345 kV Overloads	0
230 kV Overloads	41
138 kV Overloads	8
115 kV Overloads	5

Scenario 0E2

Scenario Components

0E + PSEG (229 component 8&9) → It will be 0E + PSEG (Hunterstown to Green Valley 500 kV)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711
- DOM/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PSEG: 2022-W3-229 – only component 8&9

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	53
500 kV Overloads	16
345 kV Overloads	0
230 kV Overloads	27
138 kV Overloads	1
115 kV Overloads	3

Scenario 0E3

Scenario Components

0E Modified (500 kV Morrisville Start)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711 Modified
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	57
500 kV Overloads	13
345 kV Overloads	0
230 kV Overloads	27
138 kV Overloads	4
115 kV Overloads	6

Scenario 0E4

Scenario Components

0E1 + T-Point (loop Conastone-Brighton, Brighton-Doubs and Conastone-Doubs 500 kV)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711
- DOM/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374 – (Otter Creek-Conastone 500 kV)
- PSEG: 2022-W3-637 – only component 5&8 (Conastone-Doubs 500 kV new line)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	35
500 kV Overloads	5
345 kV Overloads	0
230 kV Overloads	19
138 kV Overloads	2
115 kV Overloads	4

Scenario 0E4-1

Scenario Components

0E4 and bypass the Otter Creek-Conastone-T-Point at Conastone (the new line will be Otter Creek-T-Point 500 kV)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374 –(Otter Creek-Conastone 500 kV)
- PSEG: 2022-W3-637 – only component 5&8 (Conastone-Doubs 500 kV new line)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	34
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	19
138 kV Overloads	2
115 kV Overloads	4

Scenario 0E4-1-1

Scenario Components

0E4-1 and replace Cooper-High Ridge 500 kV with Peach Bottom-Waugh Chapel 500 kV

- Exelon: 2022-W3-344/660 – Remove component 3&7 (Remove Cooper-High Ridge 500 kV and High Ridge 500/230 kV transformers)
- FE: 2022-W3-837
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374 –(Otter Creek-Conastone 500 kV)
- PSEG: 2022-W3-637 – only component 5&8 (Conastone-Doubs 500 kV new line)
- PSEG: 2022-W3-808 – Add Peach Bottom-Waugh Chapel 500 kV – exclude/bypass Raphael 500 kV bus

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	38
500 kV Overloads	5
345 kV Overloads	0
230 kV Overloads	22
138 kV Overloads	2
115 kV Overloads	4

Scenario 0E4-1-2

Scenario Components

0E4-1 and replace Cooper-High Ridge 500 kV with Peach Bottom-Brandon Shore 500 kV

- Exelon: 2022-W3-344/660 – Remove component 3&7 (Remove Cooper-High Ridge 500 kV and High Ridge 500/230 kV transformers)
- FE: 2022-W3-837
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374 –(Otter Creek-Conastone 500 kV)
- PSEG: 2022-W3-637 – only component 5&8 (Conastone-Doubs 500 kV new line)
- PSEG: 2022-W3-741 – Add Peach Bottom-Brandon Shore 500 kV

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	39
500 kV Overloads	6
345 kV Overloads	0
230 kV Overloads	21
138 kV Overloads	2
115 kV Overloads	5

Scenario 0E4-1-3

Scenario Components

0E4-1 and replace Cooper-High Ridge 500 kV with Keeney-Waugh 230 kV double circuit

- Exelon: 2022-W3-344/660 – Remove component 3&7 (Remove Cooper-High Ridge 500 kV and High Ridge 500/230 kV transformers)
- FE: 2022-W3-837
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374 (Otter Creek-Conastone 500 kV)
- PSEG: 2022-W3-637 – only component 5&8 (Conastone-Doubs 500 kV new line)
- NextEra: 2022-W3-948 – Add Keeney-Waugh 230 kV double circuit

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	39
500 kV Overloads	6
345 kV Overloads	0
230 kV Overloads	18
138 kV Overloads	3
115 kV Overloads	5

Scenario 0E5

Scenario Components

0E1 – FE 837 (component C18-30) + TRANSRC 487 (Component IEC-West)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374 – (Otter Creek-Conastone 500 kV)
- PSEG: 2022-W3-637 – only component 5&8 (Conastone-Doubs 500 kV new line)
- Remove FE: 2022-W3-837 component C18-30_MAIT_Germantown-Carroll
- Add TRANSRC: 2022-W3-487 component IEC-West

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	33
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	21
138 kV Overloads	1
115 kV Overloads	2

Scenario 0E6

Scenario Components

0E3 (500 kV Morrisville Start) - remove part of FE 837(Fort Martin-Doubs 500 kV) + Add Part of 977 (Yeat sub and Joshua-Yeat 765 kV line)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 Modified (remove Fort Martin-Doubs 500 kV)
- DOM: 2022-W3-711 Modified
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- Transource: 2022-W3-977 (only add Yeat sub and Joshua-Yeat 765 kV line)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	55
500 kV Overloads	11
345 kV Overloads	0
230 kV Overloads	23
138 kV Overloads	9
115 kV Overloads	6

Scenario 0E6-1

Scenario Components

0E6_Remove Prnty-Mt. Storm & Meadow Brook-Doubs

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 Modified (remove Fort Martin-Doubs 500 kV)
- DOM: 2022-W3-711 Modified
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- Transource: 2022-W3-977 (only add Yeat sub and Joshua-Yeat 765 kV line)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	66
500 kV Overloads	11
345 kV Overloads	0
230 kV Overloads	23
138 kV Overloads	17
115 kV Overloads	7

Scenario 0E7

Scenario Components

0E6 - remove all FE 837

- Exelon: 2022-W3-344/660
- DOM: 2022-W3-711 Modified
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- Transource: 2022-W3-977 (only add Yeat sub and Joshua-Yeat 765 kV line)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	75
500 kV Overloads	12
345 kV Overloads	0
230 kV Overloads	22
138 kV Overloads	20
115 kV Overloads	10

Scenario 0E8

Scenario Components

0E1 + Removal of remove Doubs-Fort Martin No. 1 500 kV & Pruntytown-Mt. Storm 500 kV & Meadowbrook-Doubs 500 kV lines and add Joshua Falls to Yeat 765 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 – Removal of Doubs-Fort Martin No. 1 500 kV & Pruntytown-Mt. Storm 500 kV & Meadowbrook-Doubs 500 kV line(s)
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- Transource: 2022-W3-904-Joshua Falls (AEP) to Yeat (Transource) 765 kV

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	40
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	17
138 kV Overloads	11
115 kV Overloads	5

Scenario 0E8-1

Scenario Components

0E1 + Removal of remove Doubs-Fort Martin No. 1 500 kV & Pruntytown-Mt. Storm 500 kV & Meadowbrook-Doubs 500 kV lines and add Joshua Falls to Yeat 765 kV line + Removal of North Anna to Morrisville 500 kV line + Removal of Golden-Mars 500 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 – Removal of Doubs-Fort Martin No. 1 500 kV & Pruntytown-Mt. Storm 500 kV & Meadowbrook-Doubs 500 kV line(s)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- Transource: 2022-W3-904 – Joshua Falls (AEP) to Yeat (Transource) 765 kV

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	38
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	15
138 kV Overloads	11
115 kV Overloads	5

Scenario 0E8-1-1

Scenario Components

0E8-1 + Remove Golden-Mars 230 kV side line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 – Removal of Doubs-Fort Martin No. 1 500 kV & Pruntytown-Mt. Storm 500 kV & Meadowbrook-Doubs 500 kV line(s)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- Transource: 2022-W3-904 – Joshua Falls (AEP) to Yeat (Transource) 765 kV

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	39
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	16
138 kV Overloads	11
115 kV Overloads	5

Scenario 0E8-2

Scenario Components

0E8-1 + Remove the rest of the FE837 + Add Transouce 487 (Component IEC-West only)

- Exelon: 2022-W3-344/660
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- Transource: 2022-W3-904 – only Joshua Falls (AEP) to Yeat (Transource) 765 kV
- Transource: 2022-W3-487 (Component IEC-West only)

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	29
500 kV Overloads	1
345 kV Overloads	1
230 kV Overloads	2
138 kV Overloads	17
115 kV Overloads	2

7,500 MW OSW Screening Performance

Overload	Number of Overloads
Total Overloads	57
500 kV Overloads	9
345 kV Overloads	0
230 kV Overloads	31
138 kV Overloads	7
115 kV Overloads	2

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	31
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	16
138 kV Overloads	6
115 kV Overloads	2

11,000 MW OSW Screening Performance

Overload	Number of Overloads
Total Overloads	75
500 kV Overloads	12
345 kV Overloads	0
230 kV Overloads	38
138 kV Overloads	11
115 kV Overloads	2

Scenario 0E8-2-1

Scenario Components

0E8-2 + Remove Golden-Mars 230 kV side line

- Exelon: 2022-W3-344/660
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- Transource: 2022-W3-904 – only Joshua Falls (AEP) to Yeat (Transource) 765 kV
- Transource: 2022-W3-487 (Component IEC-West only)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	32
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	17
138 kV Overloads	6
115 kV Overloads	2

Scenario 0E8-2-2

Scenario Components

0E8-2-1 + Remove uprate on 500 kV Line Meadow Brook-Vint Hill

- Exelon: 2022-W3-344/660
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- Transource: 2022-W3-904 – only Joshua Falls (AEP) to Yeat (Transource) 765 kV
- Transource: 2022-W3-487 (Component IEC-West only)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	32
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	17
138 kV Overloads	6
115 kV Overloads	2

Scenario 0E9

Scenario Components

0E1 + Modified DOM_711 (500 kV Morrisville Start) + Modified DOM_692 (Remove Golden-2-Mars Extension)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711 Modified (500 kV Morrisville Start)
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 Modified (Remove Golden-2-Mars Extension)
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	35
500 kV Overloads	3
345 kV Overloads	0
230 kV Overloads	20
138 kV Overloads	2
115 kV Overloads	5

Scenario 0E10

Scenario Components

0E1 modified (the Otter Creek-Conastone-Doubs 500 kV circuit will bypass the Conastone station and will be Otter Creek-Doubs 500 kV)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	37
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	21
138 kV Overloads	2
115 kV Overloads	5

Scenario 0E11

Scenario Components

0E1 + Removal of remove Doubs-Fort Martin No. 1 500 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 – Removal of Doubs-Fort Martin No. 1 500 kV line
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	46
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	23
138 kV Overloads	7
115 kV Overloads	5

Scenario 0E11-1

Scenario Components

0E1 + Removal of remove Doubs-Fort Martin No. 1 500 kV line + Removal of North Anna to Morrisville 500 kV line+ Removal of Golden-Mars 500 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 – Removal of Doubs-Fort Martin No. 1 500 kV line
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	45
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	23
138 kV Overloads	7
115 kV Overloads	5

Scenario 0E11-1-1

Scenario Components

0E11-1 + Remove Golden-Mars 230 kV side line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 – Removal of Doubs-Fort Martin No. 1 500 kV line
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	46
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	24
138 kV Overloads	7
115 kV Overloads	5

Scenario 0E11-2

Scenario Components

0E11-1-1 + Remove Pruntytown to Mt.Storm and Meadow Brook to Doubs 500 kV line & Add Fort Martin to Doubs 500 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 – Remove Pruntytown to Mt.Storm and Meadow Brook to Doubs 500 kV lines, Add Fort Martin to Doubs 500 kV line
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	38
500 kV Overloads	6
345 kV Overloads	0
230 kV Overloads	19
138 kV Overloads	3
115 kV Overloads	5

Scenario 0E11-3

Scenario Components

0E11-1-1 + Remove all FE 2022-W3 -837 + Add NextEra 2022-W3-853

- Exelon: 2022-W3-344/660
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- NextEra: 2022-W3-853

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	37
500 kV Overloads	2
345 kV Overloads	0
230 kV Overloads	19
138 kV Overloads	4
115 kV Overloads	7

Scenario 0E11-4

Scenario Components

0E11-3 + Add Joshua Falls-Yeat 765 kV line

- Exelon: 2022-W3-344/660
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- NextEra: 2022-W3-853
- Transource: 2022-W3-904 – only Joshua Falls (AEP) to Yeat (Transource) 765 kV & Yeat 765/500 kV substation

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	31
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	14
138 kV Overloads	7
115 kV Overloads	5

Scenario 0E11-5

Scenario Components

0E11-4 + Remove uprate on 500 kV Line Meadow Brook-Vint Hill

- Exelon: 2022-W3-344/660
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- NextEra: 2022-W3-853
- Transource: 2022-W3-904 – only Joshua Falls (AEP) to Yeat (Transource) 765 kV & Yeat 765/500 kV substation

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	31
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	14
138 kV Overloads	7
115 kV Overloads	5

Scenario 0E11-6

Scenario Components

0E11-3 + Remove Otter Creek-Conastone-Doubs 500 kV

- Exelon: 2022-W3-344/660
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- NextEra: 2022-W3-853

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	60
500 kV Overloads	11
345 kV Overloads	0
230 kV Overloads	27
138 kV Overloads	7
115 kV Overloads	9

Scenario 0E11-7

Scenario Components

0E11-3+ (bypass Conastone for the Otter Creek-Doubs line) +/- reactive

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-853
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	33
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	18
138 kV Overloads	3
115 kV Overloads	6

Scenario 0E11-7-A

Scenario Components

0E11-7 with full proposal 692 modeled

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-853
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	33
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	18
138 kV Overloads	3
115 kV Overloads	6

Scenario 0E11-7-B

Scenario Components

0E11-7-A + bypass Black Oak + AEP 410 (cloverdale breaker) + DOM additional_Post Fixes

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-853 (Bypass Black Oak)
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar
- AEP: 2022-W3-410
- DOM Additional:
- 2022-W3-30: Line No. 2054 (Charlottesville to Hollymead) Rebuild (Option 1) (exclude DNH portion for now)
- 2022-W3-704: Line No. 2135 (Holly Meade to Gordonsville) Rebuild (Option 1)
- 2022-W3-731: Locks Substation 230/115 kV Transformer Upgrade
- 2022-W3-74: Line No. 2090 (Ladysmith to Fredericksburg) Rebuild
- Post Fixes:
  - Line No. 256 Rebuild St. Johns-Ladysmith CT
  - Sterling Park-Golden
  - Davis Drive-Sterling Park

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	26
500 kV Overloads	2
345 kV Overloads	0
230 kV Overloads	12
138 kV Overloads	3
115 kV Overloads	6

2030 Screening Performance

Overload	Number of Overloads
Total Overloads	60
500 kV Overloads	12
345 kV Overloads	0
230 kV Overloads	22
138 kV Overloads	11
115 kV Overloads	9

Scenario 0E11-7-B + Yeat

Scenario Components

0E11-7-B + YEAT 765 kV line

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-853 (Bypass Black Oak)
- Transource: 2022-W3-904 (only include Yeat sub and Joshua Falls-Yeat 765 kV line)
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar
- AEP: 2022-W3-410
- DOM Additional:
- 2022-W3-30: Line No. 2054 (Charlottesville to Hollymead) Rebuild (Option 1) (exclude DNH portion for now)
- 2022-W3-704: Line No. 2135 (Holly Meade to Gordonsville) Rebuild (Option 1)
- 2022-W3-731: Locks Substation 230/115 kV Transformer Upgrade
- 2022-W3-74: Line No. 2090 (Ladysmith to Fredericksburg) Rebuild
- Post Fixes:
  - Line No. 256 Rebuild St. Johns-Ladysmith CT
  - Sterling Park-Golden
  - Davis Drive-Sterling Park

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	25
500 kV Overloads	2
345 kV Overloads	0
230 kV Overloads	9
138 kV Overloads	6
115 kV Overloads	5

2030 Screening Performance

Overload	Number of Overloads
Total Overloads	50
500 kV Overloads	9
345 kV Overloads	0
230 kV Overloads	15
138 kV Overloads	12
115 kV Overloads	7

Scenario 0E11-7-B + IEC West

Scenario Components

0E11-7-B + IEC West

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-853 (Bypass Black Oak)
- Transource: 2022-W3-487(only include IEC West)
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar
- AEP: 2022-W3-410
- DOM Additional:
- 2022-W3-30: Line No. 2054 (Charlottesville to Hollymead) Rebuild (Option 1) (exclude DNH portion for now)
- 2022-W3-704: Line No. 2135 (Holly Meade to Gordonsville) Rebuild (Option 1)
- 2022-W3-731: Locks Substation 230/115 kV Transformer Upgrade
- 2022-W3-74: Line No. 2090 (Ladysmith to Fredericksburg) Rebuild
- Post Fixes:
  - Line No. 256 Rebuild St. Johns-Ladysmith CT
  - Sterling Park-Golden
  - Davis Drive-Sterling Park

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	21
500 kV Overloads	2
345 kV Overloads	0
230 kV Overloads	14
138 kV Overloads	0
115 kV Overloads	2

Scenario 0E11-7-B + Hunterstown-Carrol Rebuild

Scenario Components

0E11-7-B + Hunterstown -Carrol Rebuild

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-853 (Bypass Black Oak)
- FE: 2022-W3-837 (only include Hunterstown-Carrol Rebuild (C18-30), but UPDATED idv from FE)
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar
- AEP: 2022-W3-410
- DOM Additional:
- 2022-W3-30: Line No. 2054 (Charlottesville to Hollymead) Rebuild (Option 1) (exclude DNH portion for now)
- 2022-W3-704: Line No. 2135 (Holly Meade to Gordonsville) Rebuild (Option 1)
- 2022-W3-731: Locks Substation 230/115 kV Transformer Upgrade
- 2022-W3-74: Line No. 2090 (Ladysmith to Fredericksburg) Rebuild
- Post Fixes:
  - Line No. 256 Rebuild St. Johns-Ladysmith CT
  - Sterling Park-Golden
  - Davis Drive-Sterling Park

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	25
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	16
138 kV Overloads	2
115 kV Overloads	3

Scenario 0E11-7-B + Hunterstown-Carrol Rebuild + IEC West

Scenario Components

0E11-7-B + Hunterstown-Carrol Rebuild + IEC West

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-853 (Bypass Black Oak)
- Transource: 2022-W3-487(only include IEC West)
- FE: 2022-W3-837 (only include Hunterstown-Carrol Rebuild (C18-30) – the idv in the proposal was wrong, use updated idvs PJM sent later)
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar
- AEP: 2022-W3-410
- DOM Additional:
- 2022-W3-30: Line No. 2054 (Charlottesville to Hollymead) Rebuild (Option 1) (exclude DNH portion for now)
- 2022-W3-704: Line No. 2135 (Holly Meade to Gordonsville) Rebuild (Option 1)
- 2022-W3-731: Locks Substation 230/115 kV Transformer Upgrade
- 2022-W3-74: Line No. 2090 (Ladysmith to Fredericksburg) Rebuild
- Post Fixes:
  - Line No. 256 Rebuild St. Johns-Ladysmith CT
  - Sterling Park-Golden
  - Davis Drive-Sterling Park

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	22
500 kV Overloads	2
345 kV Overloads	0
230 kV Overloads	15
138 kV Overloads	0
115 kV Overloads	2

Scenario 0E11-7-B Final

Scenario Components

- Exelon: 2022-W3-344/660
- DOM: 2022-W3-711 (Remove North Anna to Morrisville 500 kV line)
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374 and PSEG: 2022-W3-637 (only component 5&8) – Bypass Conastone
- NextEra: 2022-W3-853 (bypass Black Oak, end at Aspen)
- DOM: 2022-W3-231 (Partial)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom
- AEP: 2022-W3-410
- FE: 2022-W3-837 (Partial): Hunterstown-Carrol rebuild (use the updated idv PJM sent later)
- DOM: 2022-W3-731
- DOM: 2022-W3-211
- DOM: 2022-W3-967 (Partial)
- Entire Line No. 2054 (Charlottesville to Hollymead) Rebuild, Entire Line No. 291 Rebuild and Portion of Line No. 233 rebuild
- 230 kV Line No. 2054
- 6CHARLVL (314749) – 6PROFFIT (314772) ckt 1
- 230 kV Line No. 233
- 6BARRCK2 (314742) – 6CROZET1 (314751) ckt 1
- 230 kV Line No. 291
- 6CROZET2 (314752) – 6DOOMS (314794) ckt 1
- 6BARRCK1 (314741) – 6CROZET2 (314752) ckt 1
- 6BARRCK1 (314741) – 6CHARLVL (314749) ckt 1
- DOM: 2022-W3-74 (Partial)
- 6SUMMIT (313837) – 6LDYSMITH CT (314197) ckt 1
- Sterling Park-Golden Rebuild ($7.97M)
- Davis Drive-Sterling Park Rebuild ($5.5M)
- Red Lion-Hope Creek 500 kV line terminal equipment upgrade
- Peach Bottom terminal equipment upgrades
- Carrol-Mt Airy 230 kV Terminal Equipment upgrades
- Reconductor the Lincoln-Orrtanna 115 kV line
- FAYETT-GRANDP 138 kV line terminal equipment upgrades

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	21
500 kV Overloads	1
345 kV Overloads	0
230 kV Overloads	13
138 kV Overloads	1
115 kV Overloads	2

Scenario 0E11-8

Scenario Components

0E11-7+ IEC West (Transource 487)

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-853
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar
- Transourse: 2022-W3-487 (Only include the IEC West)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	**31**
500 kV Overloads	**1**
345 kV Overloads	**0**
230 kV Overloads	**22**
138 kV Overloads	**1**
115 kV Overloads	**2**

Scenario 0E11-9

Scenario Components

0E11-7+ Modified West line (part of 853 + Part of 548)

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- LS Power: 2022-W3-548 (only include 502 J- Black Oak-Doubs 500 kV line but bypass Black Oak), connect with the Doubs-Apsen 500 kV line in 516 and bypass Doubs
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-853 (Only include Stonewall tap-Belmont tap 500 kV line, including the Stonewall and Belmont sub)
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	36
500 kV Overloads	2
345 kV Overloads	0
230 kV Overloads	20
138 kV Overloads	3
115 kV Overloads	6

Scenario 0E11-10

Scenario Components

0E11-7+ Replace the NEET 853 with Transource 765 kV line

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- FE: 2022-W3-837 (Only include Bedington SVC, no lines)
- Transource: 2022-W3-904 (only include Yeat sub and Joshua Falls-Yeat 765 kV line)
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar (part of Brandon Shores deactivation)
- AEP: AEP: 2022-W3-410

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	42
500 kV Overloads	3
345 kV Overloads	0
230 kV Overloads	13
138 kV Overloads	13
115 kV Overloads	7

Scenario 0E11-10-A

Scenario Components

0E11-10 with full proposal 692 modeled

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- FE: 2022-W3-837 (Only include Bedington SVC, no lines)
- Transource: 2022-W3-904 (only include Yeat sub and Joshua Falls-Yeat 765 kV line)
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar (part of Brandon Shores deactivation)
- AEP: AEP: 2022-W3-410

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	42
500 kV Overloads	3
345 kV Overloads	0
230 kV Overloads	13
138 kV Overloads	13
115 kV Overloads	7

Scenario 0E11-11

Scenario Components

0E10 + IEC West (Transource 487)

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- FE: 2022-W3-837 (Only include Bedington SVC, no lines)
- Transource: 2022-W3-904 (only include Yeat sub and Joshua Falls-Yeat 765 kV line)
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar (part of Brandon Shores deactivation)
- AEP: AEP: 2022-W3-410
- Transource: 2022-W3-487 (IEC West Only)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	**34**
500 kV Overloads	**2**
345 kV Overloads	**0**
230 kV Overloads	**18**
138 kV Overloads	**6**
115 kV Overloads	**2**

Scenario 0E11-12

Scenario Components

0E11-7 + Remove 853 + Add 279

- Exelon: 2022-W3-344/660 (remove the 500 kV cap banks at Gracetone and Conastone)
- DOM: 2022-W3-711 – Remove North Anna to Morrisville 500 kV line + Remove uprate on 500 kV Line Meadow Brook-Vint Hill
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-Mars 500 kV line & Remove Golden-Mars 230 kV side line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8 – bypass Conastone
- NextEra: 2022-W3-279
- DOM: 2022-W3-231 (only include the components below)
- 150 MVARs at Morrsivlle 500 kV,
- 293 MVARs at Wishing Star 500 kV
- 150 MVARs at Mars 230 kV
- 150 MVARs at Wishing Star 230 kV
- 300 MVARs STATCOM at Mars 500 kV
- 300 MVARs STATCOM at Beaumeade 230 kV
- Granite Statcom: +/- 350 MVar

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	42
500 kV Overloads	5
345 kV Overloads	0
230 kV Overloads	18
138 kV Overloads	8
115 kV Overloads	6

Scenario 0E12

Scenario Components

(0E1 + Addition of one additional 500 kV line between Doubs and Aspen + Remove Golden-Mars 500 kV + Remove North Anna-Morrisville 500 kV) or (0E9 + Additional one 500 kV line from Doubs to Aspen)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837
- DOM: 2022-W3-711 – Remove North Anna-Morrisville 500 kV line
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692 – Remove Golden-March 500 kV line
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- Additional one 500 kV line from Doubs to Aspen

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	33
500 kV Overloads	2
345 kV Overloads	0
230 kV Overloads	20
138 kV Overloads	2
115 kV Overloads	4

Scenario 0E13

Scenario Components

0E1 + Remove Exelon 344 component 4&5 + add PSEG 808 (Peach Bottom-Raphael-W. Chapel 500 kV)

- Exelon: 2022-W3-344/660 – Remove component 4&5
- FE: 2022-W3-837
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- PSEG: 2022-W3-808 – add the Peach Bottom-Raphael Rd-W. chapel 500 kV component

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	30
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	17
138 kV Overloads	1
115 kV Overloads	4

Scenario 0E13-1

Scenario Components

0E13 + Remove Graceton 500/230 kV transformers

- Exelon: 2022-W3-344/660 – Remove component 4&5 and Graceton 500/230 kV transformers
- FE: 2022-W3-837
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/837
- DOM: 2022-W3-692
- PPL: 2022-W3-374
- PSEG: 2022-W3-637 – only component 5&8
- PSEG: 2022-W3-808 – add the Peach Bottom-Raphael Rd-W. chapel 500 kV component

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	32
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	19
138 kV Overloads	1
115 kV Overloads	4

Scenario 0F

Scenario Components

1A-Alter_ALL

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	22
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	1
138 kV Overloads	13
115 kV Overloads	3

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	55
500 kV Overloads	13
345 kV Overloads	0
230 kV Overloads	25
138 kV Overloads	4
115 kV Overloads	5

Scenario 0G

Scenario Components

1A-Alter_ALL (Full DOM proposals)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	18
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	0
138 kV Overloads	11
115 kV Overloads	3

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	50
500 kV Overloads	13
345 kV Overloads	0
230 kV Overloads	22
138 kV Overloads	3
115 kV Overloads	5

Scenario 0H

Scenario Components

1A-Alter_ALL (Full DOM proposals) _Hunterstown-Doubs-Goose Creek

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: part of 2022-W3-445 (Hunterstown-Doubs-Goose Creek 500 kV part)

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	15
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	0
138 kV Overloads	9
115 kV Overloads	2

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	44
500 kV Overloads	14
345 kV Overloads	0
230 kV Overloads	21
138 kV Overloads	1
115 kV Overloads	2

Scenario 0H2

Scenario Components

0G (1A-Alter_ALL (Full DOM proposals) _Hunterstown-Doubs-Goose Creek) + Remove Fort Martin-Doubs ckt 2 and Hunterstown-Carroll 230 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23 (Remove Fort Martin-Doubs ckt 2 and Hunterstown-Carroll 230 kV line)
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: part of 2022-W3-445 (Hunterstown-Doubs-Goose Creek 500 kV part)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	45
500 kV Overloads	14
345 kV Overloads	0
230 kV Overloads	19
138 kV Overloads	3
115 kV Overloads	5

Scenario 0I

Scenario Components

1A-Alter_ALL (Full DOM proposals) _T-Point substation

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: Part of 2022-W3-948 (T-Point sub, just the Tap, no lines)

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	21
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	0
138 kV Overloads	14
115 kV Overloads	3

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	47
500 kV Overloads	14
345 kV Overloads	0
230 kV Overloads	19
138 kV Overloads	2
115 kV Overloads	5

Scenario 0J

Scenario Components

1A-Alter_ALL (Full DOM proposals) _T-Point substation + two T-Point-Doubs or Goose Creek 230 kV lines

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: Part of 2022-W3-948 (T-Point sub, just the Tap, two 230 kV line from T- Point-Doubs or Goose Creek)

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	21
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	1
138 kV Overloads	13
115 kV Overloads	3

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	49
500 kV Overloads	16
345 kV Overloads	0
230 kV Overloads	20
138 kV Overloads	2
115 kV Overloads	5

Scenario 0J-2

Scenario Components

1A-Alter_ALL (Full DOM proposals) _T-Point substation + T-Point-Doubs 500 kV lines

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: Part of 2022-W3-948 (T-Point sub, just the Tap, T- Point-Doubs 500 kV line)

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	21
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	0
138 kV Overloads	14
115 kV Overloads	3

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	48
500 kV Overloads	17
345 kV Overloads	0
230 kV Overloads	18
138 kV Overloads	2
115 kV Overloads	5

Scenario 0J-3

Scenario Components

1A-Alter_ALL (Full DOM proposals) _ 0J-2 with REMOVING West Cooper-High Ridge 500 kV line

- Exelon: 2022-W3-344/660 (Remove West Cooper-High Ridge 500 kV line)
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: Part of 2022-W3-948 (T-Point sub, just the Tap) + T- Point-Doubs 500 kV line

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	25
500 kV Overloads	2
345 kV Overloads	2
230 kV Overloads	1
138 kV Overloads	14
115 kV Overloads	4

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	82
500 kV Overloads	17
345 kV Overloads	0
230 kV Overloads	29
138 kV Overloads	6
115 kV Overloads	16

Scenario 0K

Scenario Components

1A-Alter_ALL (Full DOM proposals) _ Conastone-Doubs 500 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- PSEG: Part of 2022-W3-637 (Conastone-Doubs 500 kV line)

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	19
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	0
138 kV Overloads	12
115 kV Overloads	3

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	45
500 kV Overloads	16
345 kV Overloads	0
230 kV Overloads	18
138 kV Overloads	1
115 kV Overloads	4

Scenario 0L

Scenario Components

1A-Alter_ALL (Full DOM proposals)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-837 (not include Meadow Brook-Doubs line)
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: 663 (Add Front Royal-New Wishing Star 500 kV line)

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	20
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	0
138 kV Overloads	13
115 kV Overloads	3

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	49
500 kV Overloads	13
345 kV Overloads	0
230 kV Overloads	21
138 kV Overloads	3
115 kV Overloads	5

Scenario 0M

Scenario Components

1A-Alter_ALL (Full DOM proposals) _ 500 kV Stork-Flys UG Line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711 (Regional Solution South)
- DOM/FE: 2022-W3-516/23 (DOM/FE Interregional Solution)
- TRANSRC: 2022-W3-858 (500 kV Stork-Flys UG Line)
- DOM: 2022-W3-923 (500 kV Dooms-Lexington)
- DOM: 2022-W3-671 (Front Royale-Morrisville)
- DOM: 2022-W3-731 (Locks TX Upgrade)
- DOM: 2022-W3-704/211 (Hollymeade-Gordonsville)
- DOM: 2022-W3-30/967 (Charlottesville-Hollymeade-Dooms)
- DOM: 2022-W3-74 (Ladysmith-Fredericksburg)

Note: Grab Aspen bus + 2nd 500 kV line from Aspen to Goose Creek from 2022-W3-692

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	20
500 kV Overloads	0
345 kV Overloads	1
230 kV Overloads	2
138 kV Overloads	13
115 kV Overloads	2

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	49
500 kV Overloads	14
345 kV Overloads	0
230 kV Overloads	18
138 kV Overloads	4
115 kV Overloads	5

Scenario 0N

Scenario Components

1A-Alter_ALL (Full DOM proposals)_500 kV Goose Creek-Beaumeade UG Line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711 (Regional Solution South)
- DOM/FE: 2022-W3-516/23 (DOM/FE Interregional Solution)
- LSPower: 2022-W3-548 (500 kV Goose Creek-Beaumeade UG Line + Loop 230 kV Beaumeade - DTC through BECO)
- DOM: 2022-W3-923 (500 kV Dooms-Lexington)
- DOM: 2022-W3-671 (Front Royale-Morrisville)
- DOM: 2022-W3-731 (Locks TX Upgrade)
- DOM: 2022-W3-704/211 (Hollymeade-Gordonsville)
- DOM: 2022-W3-30/967 (Charlottesville-Hollymeade-Dooms)
- DOM: 2022-W3-74 (Ladysmith-Fredericksburg)

Note: Grab Aspen bus + 2nd 500 kV line from Aspen to Goose Creek from 2022-W3-692

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	25
500 kV Overloads	0
345 kV Overloads	1
230 kV Overloads	0
138 kV Overloads	18
115 kV Overloads	4

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	52
500 kV Overloads	13
345 kV Overloads	0
230 kV Overloads	24
138 kV Overloads	4
115 kV Overloads	5

Scenario 0O

Scenario Components

1A-Alter_OK+ Conastone-Doubs 500 kV line loop in T-Point + Otter Creek-T-Point 500 kV

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- PSEG: Part of 2022-W3-637 (Conastone-Doubs 500 kV line) and loop in T-Point
- NEET: part of 175 (Otter Creek-T-Point)

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	19
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	0
138 kV Overloads	13
115 kV Overloads	2

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	31
500 kV Overloads	8
345 kV Overloads	0
230 kV Overloads	15
138 kV Overloads	1
115 kV Overloads	2

Scenario 0O2

Scenario Components

1A-Alter_OK+ Otter Creek-T-Point 500 kV

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: part of 175 (Otter Creek-T-Point)

2027 Screening Performance

Overload	Number of Overloads
Total Overloads	18
500 kV Overloads	1
345 kV Overloads	2
230 kV Overloads	0
138 kV Overloads	11
115 kV Overloads	3

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	34
500 kV Overloads	7
345 kV Overloads	0
230 kV Overloads	17
138 kV Overloads	1
115 kV Overloads	4

Scenario 0O3

Scenario Components

0O2 (1A-Alter_OK+ Otter Creek-T-Point-Doubs 500 kV) + Remove Fort Martin-Doubs ckt 2 and Hunterstown-Carroll 230 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23 – Remove Fort Martin-Doubs ckt 2 and Hunterstown-Carroll 230 kV line
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: part of 175 (Otter Creek - T-Point-Doubs)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	34
500 kV Overloads	6
345 kV Overloads	0
230 kV Overloads	16
138 kV Overloads	3
115 kV Overloads	5

Scenario 0P

Scenario Components

(OG + updated 9A)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- Transource: part of 2022-W3-487 (IEC)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	35
500 kV Overloads	4
345 kV Overloads	0
230 kV Overloads	24
138 kV Overloads	1
115 kV Overloads	3

Scenario 0P2

Scenario Components

(OG + updated 9A East)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- Transource: part of 2022-W3-487 (IEC East only)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	44
500 kV Overloads	5
345 kV Overloads	0
230 kV Overloads	24
138 kV Overloads	4
115 kV Overloads	5

Scenario 0P NGME

Scenario Components

1A-Alter_ALL (Full DOM proposals) _ Remove Golden-2-Mars Extension

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711 (Regional Solution South)
- DOM/FE: 2022-W3-516/23 (DOM/FE Interregional Solution)
- DOM: 2022-W3-692 (DC Alley Solution) – Remove Golden-2-Mars Extension
- DOM: 2022-W3-923 (500 kV Dooms-Lexington)
- DOM: 2022-W3-671 (Front Royale-Morrisville)
- DOM: 2022-W3-731 (Locks TX Upgrade)
- DOM: 2022-W3-704/211 (Hollymeade-Gordonsville)
- DOM: 2022-W3-30/967 (Charlottesville-Hollymeade-Dooms)
- DOM: 2022-W3-74 (Ladysmith-Fredericksburg)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	53
500 kV Overloads	13
345 kV Overloads	0
230 kV Overloads	23
138 kV Overloads	4
115 kV Overloads	5

Scenario 0Q

Scenario Components

0G remove Graceton-High Ridge 500 kV line + Peach Bottom -Brandon Shore 500 kV line (Part of 741)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- Remove Graceton-High Ridge 500 kV line
- Add Peach Bottom -Brandon Shore 500 kV line (Part of 741)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	67
500 kV Overloads	15
345 kV Overloads	0
230 kV Overloads	29
138 kV Overloads	6
115 kV Overloads	8

Scenario 0Q2

Scenario Components

0G [1A-Alter_ALL (Full DOM proposals)] + Remove Pruntytown-Mt Storm, Fort Martin-Doubs ckt 2 and Hunterstown-Carroll 230 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23 – Remove Pruntytown-Mt Storm, Fort Martin-Doubs ckt 2 and Hunterstown-Carroll 230 kV line
- DOM: 2022-W3-711 (Regional Solution South)
- DOM/FE: 2022-W3-516/23 (DOM/FE Interregional Solution)
- DOM: 2022-W3-692 (DC Alley Solution) – Remove Golden-2-Mars Extension
- DOM: 2022-W3-923 (500 kV Dooms-Lexington)
- DOM: 2022-W3-671 (Front Royale-Morrisville)
- DOM: 2022-W3-731 (Locks TX Upgrade)
- DOM: 2022-W3-704/211 (Hollymeade-Gordonsville)
- DOM: 2022-W3-30/967 (Charlottesville-Hollymeade-Dooms)
- DOM: 2022-W3-74 (Ladysmith-Fredericksburg)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	83
500 kV Overloads	15
345 kV Overloads	0
230 kV Overloads	26
138 kV Overloads	26
115 kV Overloads	10

Scenario 0Q3

Scenario Components

0G [1A-Alter_ALL (Full DOM proposals)] + Remove Fort Martin-Doubs ckt 2 and Hunterstown-Carroll 230 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23 – Remove Fort Martin-Doubs ckt 2 and Hunterstown-Carroll 230 kV line
- DOM: 2022-W3-711 (Regional Solution South)
- DOM/FE: 2022-W3-516/23 (DOM/FE Interregional Solution)
- DOM: 2022-W3-692 (DC Alley Solution) – Remove Golden-2-Mars Extension
- DOM: 2022-W3-923 (500 kV Dooms-Lexington)
- DOM: 2022-W3-671 (Front Royale-Morrisville)
- DOM: 2022-W3-731 (Locks TX Upgrade)
- DOM: 2022-W3-704/211 (Hollymeade-Gordonsville)
- DOM: 2022-W3-30/967 (Charlottesville-Hollymeade-Dooms)
- DOM: 2022-W3-74 (Ladysmith-Fredericksburg)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	60
500 kV Overloads	14
345 kV Overloads	0
230 kV Overloads	25
138 kV Overloads	7
115 kV Overloads	9

Scenario 0Q4

Scenario Components

0G (1A-Alter_ALL (Full DOM proposals))_ Remove Fort Martin-Doubs ckt 1 and 2 and Hunterstown-Carroll 230 kV line

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23 – Remove Fort Martin-Doubs ckt 1 and 2 and Hunterstown-Carroll 230 kV line
- DOM: 2022-W3-711 (Regional Solution South)
- DOM/FE: 2022-W3-516/23 (DOM/FE Interregional Solution)
- DOM: 2022-W3-692 (DC Alley Solution) – Remove Golden-2-Mars Extension
- DOM: 2022-W3-923 (500 kV Dooms-Lexington)
- DOM: 2022-W3-671 (Front Royale-Morrisville)
- DOM: 2022-W3-731 (Locks TX Upgrade)
- DOM: 2022-W3-704/211 (Hollymeade-Gordonsville)
- DOM: 2022-W3-30/967 (Charlottesville-Hollymeade-Dooms)
- DOM: 2022-W3-74 (Ladysmith-Fredericksburg)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	72
500 kV Overloads	14
345 kV Overloads	0
230 kV Overloads	27
138 kV Overloads	16
115 kV Overloads	10

Scenario 0R

Scenario Components

1A-Alter_OK+ Conastone-Doubs 500 kV line loop in T-Point + Otter Creek-T-Point 500 kV

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- PSEG: Part of 2022-W3-637 (Conastone-Doubs 500 kV line) and loop in T-Point
- NEET: part of 175 (Otter Creek-T-Point)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	30
500 kV Overloads	8
345 kV Overloads	0
230 kV Overloads	14
138 kV Overloads	1
115 kV Overloads	2

Scenario 0R2

Scenario Components

1A-Alter_OK+ Otter Creek-T-Point 500 kV

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- NEET: part of 175 (Otter Creek-T-Point)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	34
500 kV Overloads	7
345 kV Overloads	0
230 kV Overloads	17
138 kV Overloads	1
115 kV Overloads	4

Scenario 0S

Scenario Components

0G + remove Graceton-High Ridge 500 kV line + Remove High Ridge 500/230 station + Add Peach Bottom-New Raphael-Waugh Chapel 500 kV line and Raphael 500/230 station (Part of 808)

- Exelon: 2022-W3-344/660
- FE: 2022-W3-23
- DOM: 2022-W3-711
- Dom/FE: 2022-W3-516/23
- DOM: 2022-W3-692
- DOM: 2022-W3-923
- DOM: 2022-W3-671
- DOM: 2022-W3-731
- DOM: 2022-W3-704
- DOM: 2022-W3-211
- DOM: 2022-W3-30
- DOM: 2022-W3-967
- DOM: 2022-W3-74
- Remove Graceton-High Ridge 500 kV line and Remove High Ridge 500/230 kV station
- PSEG: 2022-W3-808 Part (Add Peach Bottom-New Raphael-Waugh Chapel 500 kV line and Raphael 500/230 station)

2028 Screening Performance

Overload	Number of Overloads
Total Overloads	55
500 kV Overloads	14
345 kV Overloads	0
230 kV Overloads	26
138 kV Overloads	4
115 kV Overloads	5

Document Revision History

10/17/2023 – R1: original version posted

11/30/2023 – R2:

- Update to cost estimates included in the "Final Reliability Analysis and Recommended Solution" section, reflecting latest estimates received.
- Correction to Map 5 - South Proposal Cluster Map.

12/8/2023 – R3:

- Update to cost estimates included in the "Final Reliability Analysis and Recommended Solution" section, reflecting latest estimates received consistent with Dec. 5, 2023 TEAC.
- Corrected footnote in Table 3.
- Clarification of sentences on pages 20, 22 and 23.