



PJM Update to ISAC

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Presented to Independent State
Agencies Committee (ISAC)
September 27, 2021



2021 RTEP

2021 RTEP 15 Year Analysis									
Season	Contingency	From Bus	From Name	To Bus	To Name	CKT	KVs	Areas	100% Year
Summer	Single	231001	EDGEMR 5	214236	LINWOOD85	1	230/230	235/230	2033
Summer	Single	231001	EDGEMR 5	231000	CLAY_230	1	230/230	235/235	2032
Summer	Single	231000	CLAY_230	214235	LINWOOD84	1	230/230	235/230	2031
Summer	Single	200924	26CANYON	200706	26N.MESHPN	1	230/230	226/226	2027
Winter	Single	200675	26E.TWANDA	200924	26CANYON	1	230/230	226/226	2030
Winter	Single	200924	26CANYON	200706	26N.MESHPN	1	230/230	226/226	2031
Summer	Single	213438	BRADFRD1	213436	BRADFR12	Z	230/230	230/230	2030
Summer	Tower	216950	ROSELAND	217808	CDRGV_Y	1	230/230	231/231	2035
Summer	Tower	270855	POWERTON ; R	349662	7TAZEWELL	1	345/345	222/357	2036

- PJM Manual 14B section C.4.4, the outcome of the long-term deliverability analysis will identify the need to include in the RTEP any:
 - New 230 kV or 345 kV circuits to support load growth in years 6 through 8
 - Right-of way acquisition for any new 230 kV or 345 kV circuits to support load growth in years 9 and 10
 - New 500 kV or greater circuits to support load growth in years 6 through 12
- PJM identified six 230 kV and one 345 kV overload in year 9 ~ 15, but there are no requirements to address the overload at this point
- PJM identified one 230 kV overload in year 6, and will monitor next year

- 2021 RTEP Window 1
 - Opened July 2, 2021
 - Closed: August 31, 2021
 - Initial reviews underway
- Beginning reviews of projects as they become available



2021 SAA Proposal Window to Support NJ OSW

- PJM is soliciting project proposals to build the necessary transmission to meet New Jersey's goal of facilitating the delivery of a total of 7,500 MW of offshore wind through 2035
 - Anticipated Schedule
 - Open Window April 15
 - Pre-bid meeting May 5
 - Close Window September 17
- Currently reviewing submissions

Changes to Existing Projects

Baseline Reliability Projects – Reduction in RTEP Costs



AEP Transmission Zone B3139 – B3141, B3220 Replacement

B3139 - B3141 (Originally Presented 10/17/2019, 11/14/2019 TEAC)
B3220 (Originally Presented 7/7/2020 and 11/4/2020 TEAC)

Driver: : AEP Buchanan units 1 and 2 Deactivation

Original Scope:

- **B3139:** Rebuild the Garden Creek - Whetstone 69 kV line (approx. 4 mile)
- **B3140:** Rebuild the Whetstone - Knox Creek 69 kV line (3.1 mile)
- **B3141:** Rebuild the Knox Creek - Coal Creek 69 kV line (2.9 mile)
- **B3220:** Install 14.4 MVAR Capacitor Bank at Whitewood 138 KV

Original Presented Estimated Total Cost: \$33.2 M

Updated Functional Estimated Total Cost: \$28.66M

Required IS Date: 6/1/2023

Presented Projected IS Date: 6/1/2023

Updated Projected IS Date: 12/15/2023

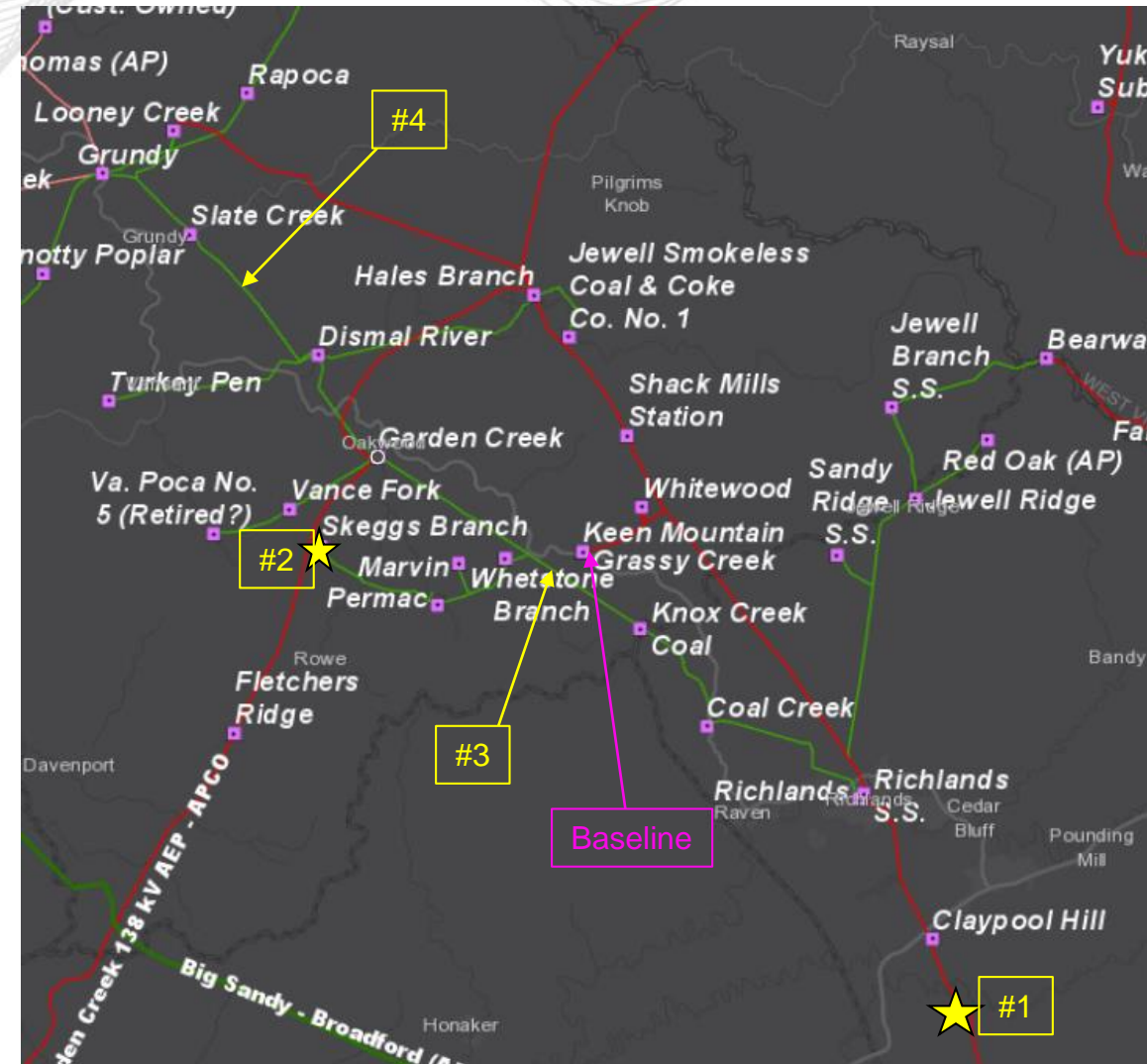
Reason for the delay:

- The schedule does not allow adequate time to complete the bat portal netting during September/October of 2021. This cannot be shifted to the next survey window due to the start of construction in July of 2022 to meet the current in-service date.
- The schedule does not allow for time of year restrictions for tree clearing due to endangered bat species.



Supplemental Needs identified in the area

1. Salmon substation (AEP-2021-AP003, Needs Meeting 1/15/2021)
2. Skeggs Branch Substation (AEP-2021-AP013, Needs Meeting 3/19/2021)
3. Garden Creek – Richlands – Skeggs Branch 69kV line (AEP-2021-AP014, Needs Meeting 3/19/2021)
4. Dismal River – Grundy – Looney Creek 69kV (AEP-2021-AP002, Needs Meeting 1/15/2021)



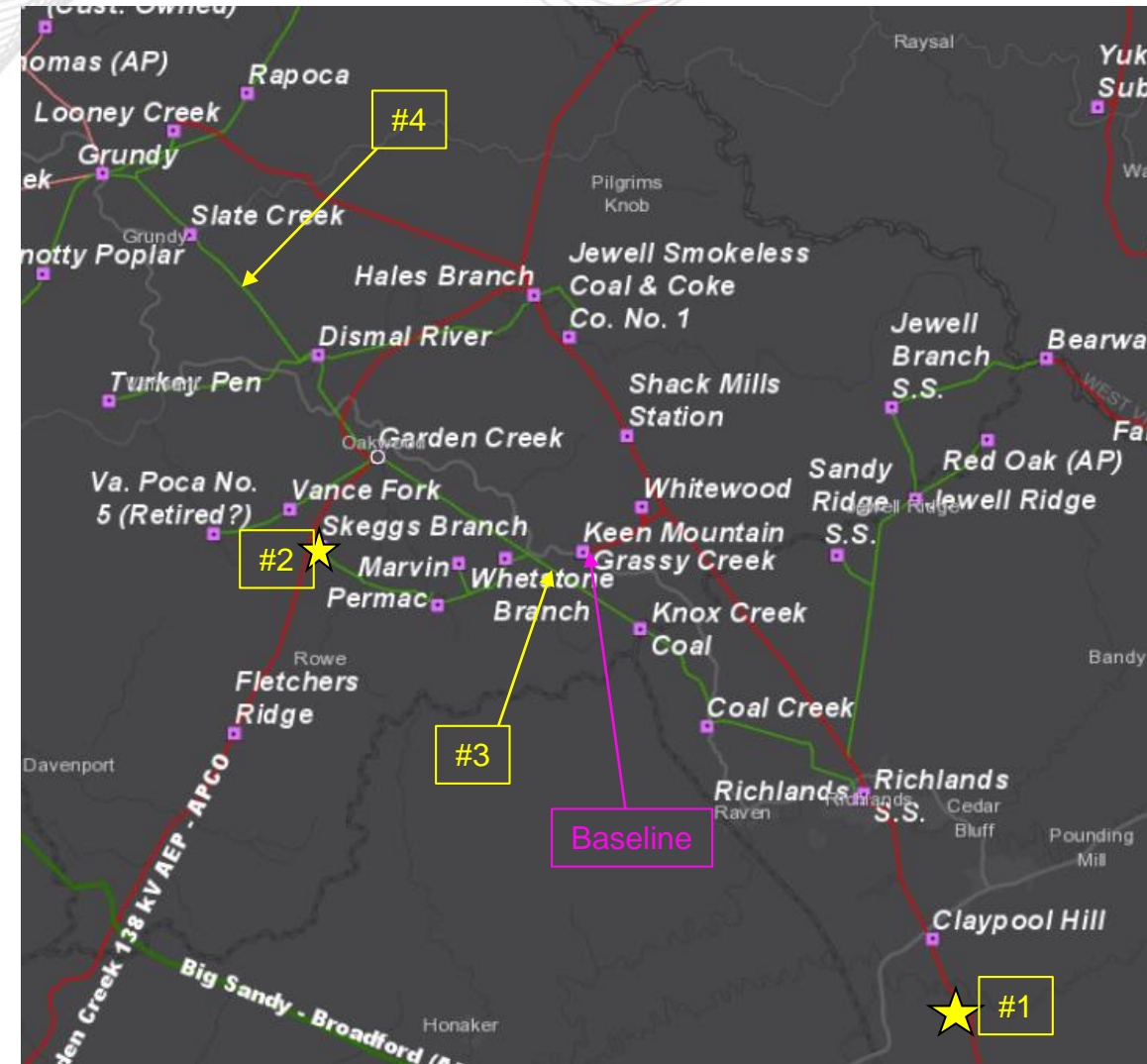


AEP Transmission Zone B3139 – B3141, B3220 Replacement

Current B3139 –B3141 and B3220

Supplemental needs Addressed:

- Part of AEP-2021-AP014
 - Garden Creek – Coal Creek 69kV line section





AEP Transmission Zone B3139 – B3141, B3220 Replacement

Holistic Alternative (Previously presented on 8/10/2021 TEAC):

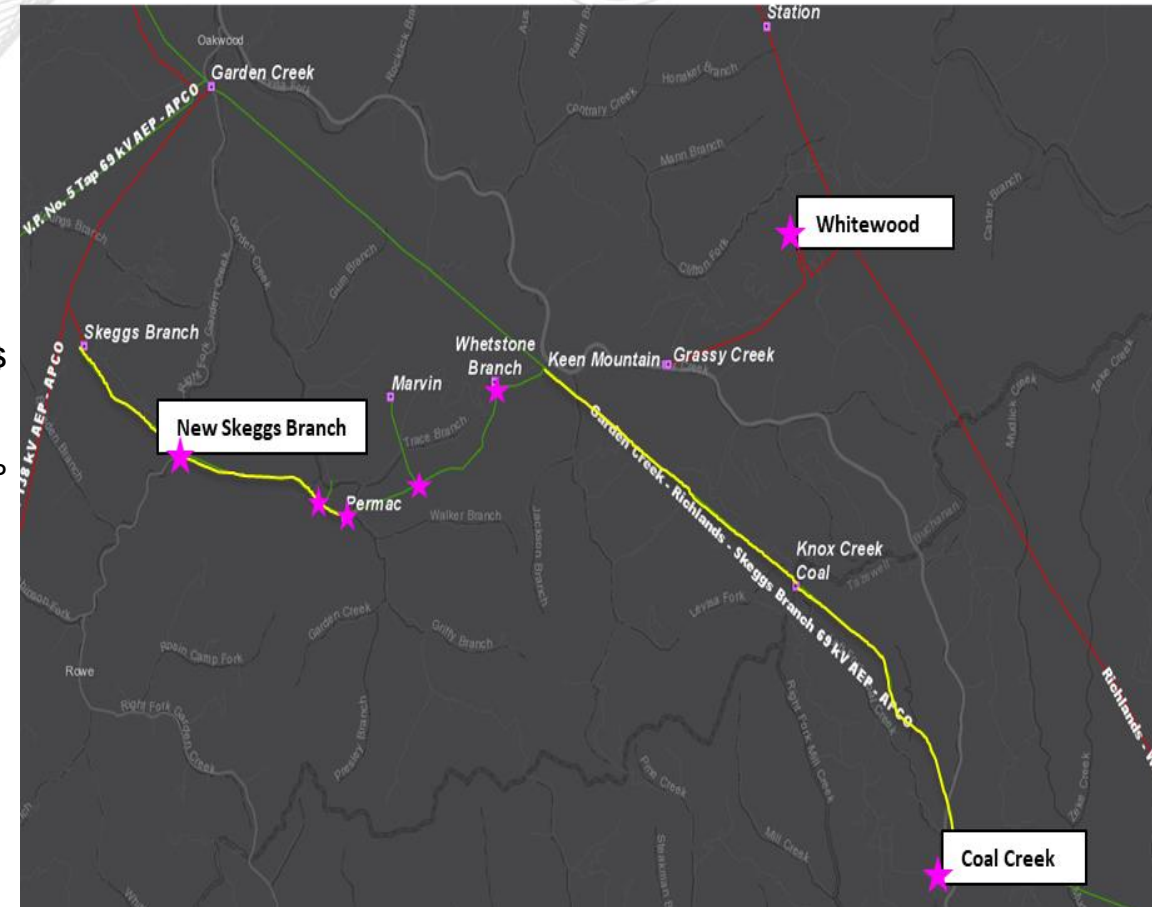
- **Rebuild Skeggs Branch** substation in the clear as Coronado substation. Establish New 138kV and 69kV Buses. Install 138/69kV 130 MVA transformer, 138kV Circuit Switcher, 69kV breaker. Retire Existing Skeggs Branch substation. **(B3333.1) \$ 6.315 M**
- **New ~1.2 mi 138kV extension** to new Skeggs Branch substation location. **(B3333.2) \$ 4.62 M**
- **Install 46.1 MVAR Cap bank** at Whitewood substation along with a 138kV breaker. **(B3333.3) \$ 1.05 M**
- **Rebuild ~9 mi 69kV line** from new Skeggs branch station to Coal Creek 69kV line. **6-wire the short double circuit** section between Whetstone Branch and Str. 340-28 to convert the line to single circuit. **Retire** Garden Creek to Whetstone Branch 69kV line section. **(B3333.4) \$ 26.25 M**
- **Retire** Knox Creek SS. **(B3333.5) \$ 0.06 M**
- **Retire** Horn Mountain SS. This will be served directly from 69kV bus at New Skeggs branch Substation. **(B3333.6) \$ 0.05 M**
- **At Clell SS**, Replace (2) 600A POP Switches and Poles with single 2 Way 1200A POP Switch and Pole. **(B3333.7) \$ 0.34 M**
- **At Permac**, Replace 600A Switch and structure with 2 Way 1200A POP Pole Switch and pole. **(B3333.8) \$ 0.31 M**
- **At Marvin SS**, Replace 600A Switch and structure with 2 Way 1200A POP Pole Switch and pole. **(B3333.9) \$ 0.31 M**
- **At Whetstone Branch substation**, Replace 69KV 600A 2 Way POP Switch with 69KV 1200A 2 Way POP Switch. Remove 69KV to Skeggs Branch (Switch "22" POP). **(B3333.10) \$ 0.568 M**
- **At Garden Creek substation**, Remove 69KV Richlands (via Coal Creek) line (Circuit Breaker F and disconnect switches) and update relay settings. **(B3333.11) \$ 0.138 M**
- **Remote End work** at Clinch River substation. **(B3333.12) \$0.08 M**
- **Remote End work** at Clinchfield substation. **(B3333.13) \$0.08 M**

Total Estimated Cost: \$40.171 M

Projected IS Date: 12/15/2023

Supplemental needs Addressed:

- AEP-2021-AP013: Skeggs Branch substation needs.
- Part of AEP-2021-AP014
 - N.O. at Permac station.
 - Improved sectionalizing capability for multiple substations (Twin Valley SS, Marvin, Clell) being hard tapped to 69kV Line or operated radially.
 - Three – terminals at Whetstone Branch.
 - Garden Creek-Coal Creek line condition
- Part of AEP-2021-AP003: Accommodates New Salmon substation load addition.





AEP Transmission Zone B3139 – B3141, B3220 Replacement

Cost Comparison: Solve the same baseline needs and additional supplemental needs

B3139 –B3140, B3220 estimated cost: \$28.6 M	Baseline Alternative estimated cost: \$40.13 M
Additional Supplemental estimated cost: \$17.42 M	Additional Supplemental estimated cost: \$1 M
Total estimated cost: \$46.02 M	Total estimated cost: \$41.13 M

Projected IS Date: 12/15/2023

Projected IS Date: 12/15/2023

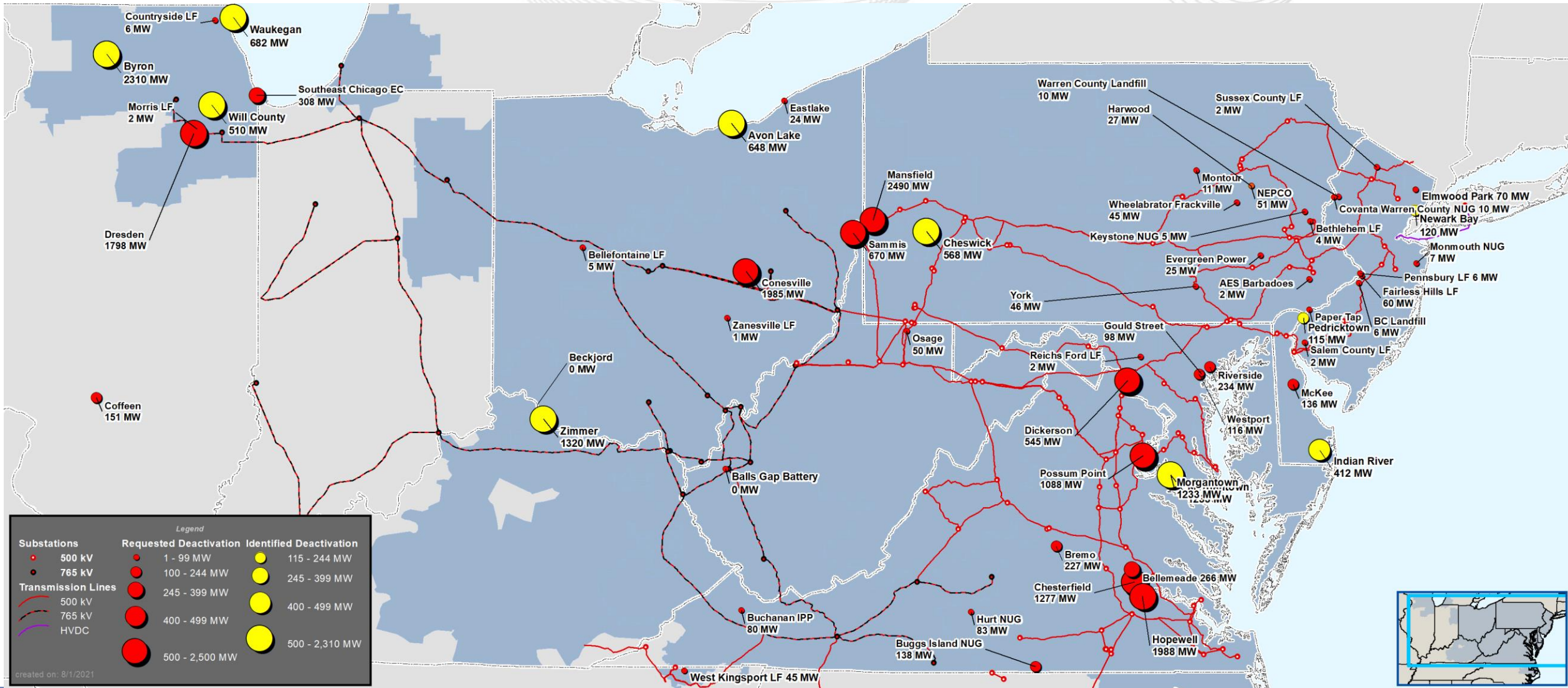
Besides ~\$5 M cost saving, the proposed alternative allows for less future work and mitigates duplicity of the Transmission line and substation work in a rugged and mountainous terrain. By rebuilding the line and adding sectionalizing to the Skeggs Branch-Whetstone line as proposed in the alternate, the line between Garden Creek and Whetstone can be retired completely. All additional supplemental work not addressed by the scope change will be presented through the M-3 process as those solutions are developed.

- In an effort to reduce the development of duplicate information, RTEP statistics can now be found as part of the annual RTEP book
- RTEP Statistics for 2020 are contained in Appendix 5 of the RTEP book

<https://www.pjm.com/-/media/library/reports-notices/2020-rtep/2020-rtep-book-1.ashx>



Generation Deactivation Notification Update



Unit(s)	Transmission Zone	Requested Deactivation Date	PJM Reliability Status
Indian River 4 - 411.9 MW	DPL	5/31/2022	Reliability analysis complete. New and existing baselines resolve identified impacts.
Waukegan 7 - 328 MW	ComEd	5/31/2022	Reliability analysis complete. New and existing baselines resolve identified impacts. Units can retire as scheduled.
Waukegan 8 - 354.4 MW	ComEd	5/31/2022	
Will County 4 - 510 MW	ComEd	5/31/2022	
Pedricktown - 115.3 MW	AEC	5/31/2022	Reliability analysis complete. New baseline resolves identified impact. Units can retire as scheduled.
Newark Bay - 120.2 MW	PSEG	5/31/2022	Reliability analysis complete. New and existing baselines resolve identified impacts. Unit can retire as scheduled.
Zimmer 1 - 1320 MW	DEOK	5/31/2022	

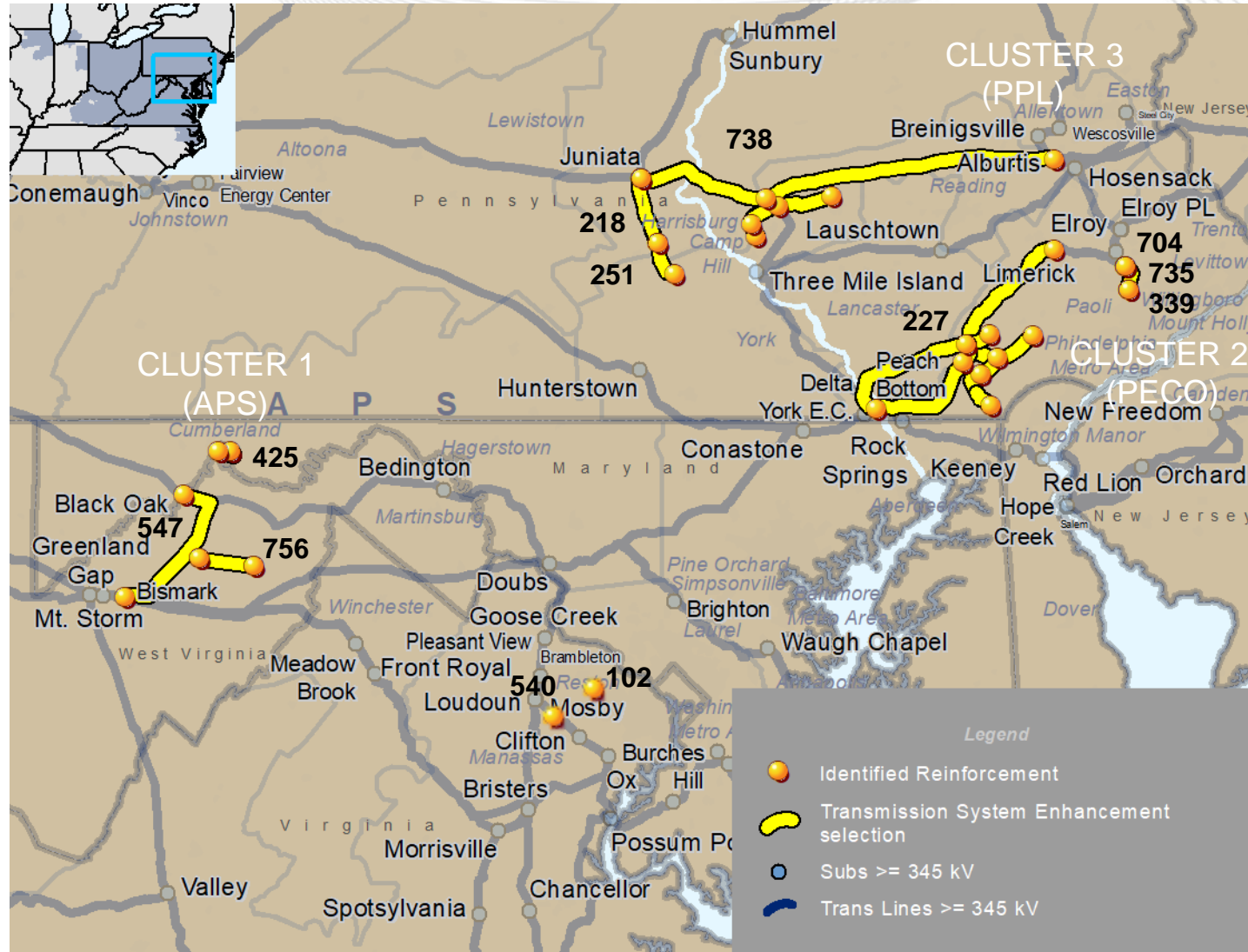
Unit(s)	Transmission Zone	Requested Deactivation Date	PJM Reliability Status
Avon Lake 9 -627 MW	ATSI	4/01/2022	Reliability analysis complete. New and existing baselines resolve identified impacts. Units can retire as scheduled.
Avon Lake 10 -21 MW	ATSI	4/01/2022	
Cheswick - 567.5 MW	Duquesne	4/01/2022	
Morgantown 1 -613.3 MW	PEPCO	5/31/2022	
Morgantown 2 -619.4 MW	PEPCO	5/31/2022	

Note: Byron 1 & 2, as well as Dresden 3 & 4 deactivations have been withdrawn



Market Efficiency Update

- 2020/21 Long-Term Window 1
 - Opened on January 11, 2021 and closed on May 11, 2021.
 - 4 congestion drivers posted:
 - Cluster No. 1 (APS) - French's Mill to Junction 138 kV.
 - Cluster No. 2 (PECO) - Plymouth Meeting to Whitpain 230 kV.
 - Cluster No. 3 (PPL) - Juniata to Cumberland 230 kV.
 - Cluster No. 4 (DOM) - Charlottesville to Proffit 230 kV.
 - 24 proposals received from 7 submitting entities (10 greenfield proposals, 14 upgrades).
- Charlottesville to Proffit 230 kV (DOM)
 - Constraint also posted as a reliability violation in the 2021 Window 1.
 - Proposals must be submitted to the 2021 Window 1 to be included in the reliability window evaluation.



*Cluster 4 (DOM) not shown on the map.

- Completed
 - Data validation.
 - Preliminary reliability and market efficiency analyses Cluster Nos. 1 (APS), 2 (PECO) and 3 (PPL).
 - Cluster 4 proposals will be evaluated in conjunction with the reliability window*.
- Initial Reviews
 - Performance Review – PJM evaluated whether or not the project proposal satisfied the benefit to cost ratio threshold of 1.25 and solved the required congestion driver.
 - Planning Level Cost Review – PJM reviewed the estimated project cost submitted by the project sponsor and any relevant cost containment mechanisms submitted.
 - Feasibility Review – PJM reviewed the overall proposed implementation plan to determine if the project, as proposed, can feasibly be constructed.

- Finalize retooling Market Efficiency Base Case that will be used to conduct the final review of all proposals.
- Cost / Constructability Analysis as needed.
- PJM intends to share the results of the final review with stakeholders at the December TEAC after which a final recommendation will be made to the PJM Board for review and approval.