Final Review and Recommendation
2023 RTEP Proposal Window 2 - Clusters No. 2, 3 & 5

July 9, 2024

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2023 RTEP Proposal Window No. 2 – Cluster3 No. 2, 3 & 5

As part of its 2023 RTEP process cycle of studies, PJM identified clustered groups of flowgates that were put forward for proposals as part of 2023 RTEP Window No. 2. Specifically, Clusters No. 2, 3, 5 and single floater proposals overlapped partially with cluster 2- discussed in this Initial Review and Screening report - includes those flowgates listed in **Table 1**. Cluster 3 includes the overloads on the Genoa - Westar 138kV line, Cluster 5 includes the overload on the Maliszewski – Polaris 138kV line, the single floaters includes the overloads on the Genoa – Spring Road 138kV lien and Polaris – Wester 138KV line, and Cluster 2 includes the overloads in Cluster 3, Cluster 5 , both single floaters, and the overloads on the Maliszewski transformer 765/138KV transformer and Maliszewski 138kV series reactor bypass, the Morse – Spring Road 138kV line, the Marysville – Hyatt 345kV line, the Hyatt – Vassell 345kV line, the Hyatt – Maliszewski #2 138kV line, the Genoa – Maliszewski 138kV #2 line. Due to these partially overlaps, all of them are listed in this document.

Table 1. 2023 RTEP Proposal Window No. 2 – Cluster No. 2, 3 & 5 List of Flowgates

Cluster	Proposal (s)	Flowgate	kV Level	Driver
2	117 343 27	2023W2-N1-ST21, 2023W2-N1-ST20, 2023W2-N1-ST23, 2023W2-N1-ST22, 2023W2-N1-ST25, 2023W2-N1-ST24, 2023W2-N1-ST27, 2023W2-N1-ST26, 2023W2-N1-ST19, 2023W2-N2-ST33, 2023W2-N2-ST38, 2023W2-N2-ST35, 2023W2-GD-S170, 2023W2-N1-ST10, 2023W2-N1-ST12, 2023W2-N1-ST16, 2023W2-N1-ST18, 2023W2-N1-ST17, 2023W2-N1-ST1, 2023W2-N2-ST21, 2023W2-N1-ST3, 2023W2-N1-ST2, 2023W2-N2-ST20, 2023W2-N1-ST5, 2023W2-N1-WT1, 2023W2-N1-ST4, 2023W2-N1-ST7, 2023W2-N1-WT3, 2023W2-N1-ST6, 2023W2-N1-WT2, 2023W2-N2-ST29, 2023W2-N2-ST27, 2023W2-N2-ST26, 2023W2-GD-S4, 2023W2-GD-S3, 2023W2-N2-WT6, 2023W2-GD-W154, 2023W2-GD-W155, 2023W2-GD-W153, 2023W2-GD-W156, 2023W2-GD-S115, 2023W2-GD-S114, 2023W2-N2-ST42, 2023W2-GD-S6, 2023W2-GD-W162, 2023W2-GD-W165, 2023W2-GD-W163, 2023W2-GD-W164, 2023W2-GD-S122, 2023W2-GD-S121, 2023W2-GD-S123, 2023W2-GD-S126, 2023W2-GD-S125, 2023W2-GD-S116, 2023W2-GD-W59, 2023W2-GD-W58, 2023W2-N1-WT10, 2023W2-N1-WT13, 2023W2-N1-WT14, 2023W2-N1-WT11, 2023W2-N1-WT12, 2023W2-GD-W213, 2023W2-N2-WT2, 2023W2-GD-W214, 2023W2-N2-ST3, 2023W2-GD-W217, 2023W2-GD-W215, 2023W2-GD-W216, 2023W2-GD-S127, 2023W2-N1-ST9, 2023W2-N1-WT5, 2023W2-N1-ST8, 2023W2-N1-WT4, 2023W2-N1-WT7, 2023W2-N1-WT6, 2023W2-N1-WT9, 2023W2-N1-WT8, 2023W2-N2-ST11, 2023W2-N2-ST19, 2023W2-N2-ST15, 2023W2-GD-W19, 2023W2-GD-W25	345 and 138	Thermal
3	596 729	2023W2-GD-S186, 2023W2-GD-S141, 2023W2-N2-WT1, 2023W2-N2-ST4, 2023W2-N2-ST2, 2023W2-N1-ST15, 2023W2-N2-ST1, 2023W2-N2-ST30, 2023W2-N2-ST31, 2023W2-N2-WT4, 2023W2-N2-ST7, 2023W2-N2-ST28, 2023W2-N2-ST39, 2023W2-N2-ST37, 2023W2-N2-ST48, 2023W2-N2-ST46	138	Thermal
5	188 340	2023W2-N2-ST6, 2023W2-N2-ST5, 2023W2-N1-ST14, 2023W2-GD-S165, 2023W2-N1-ST13, 2023W2-N2-ST3, 2023W2-GD-S135, 2023W2-N2-ST32, 2023W2-N2-ST43, 2023W2-N2-ST22, 2023W2-N2-ST44, 2023W2-N2-ST40, 2023W2-N2-WT5, 2023W2-N2-ST8, 2023W2-N2-WT3, 2023W2-N2-ST17, 2023W2-N2-ST49, 2023W2-N2-ST18, 2023W2-N2-ST13, 2023W2-N2-ST25, 2023W2-N2-ST47, 2023W2-N2-ST24	138	Thermal
-	426	2023W2-N2-ST50, 2023W2-N2-ST9, 2023W2-N2-ST16, 2023W2-N2-ST34, 2023W2-N2-ST45	138	Thermal
-	92	2023W2-N2-ST11, 2023W2-N2-ST41, 2023W2-N2-WT8, 2023W2-N2-ST10, 2023W2-N2-WT7, 2023W2-N2-ST36, 2023W2-N2-ST12, 2023W2-N2-ST23, 2023W2-N2-ST14	138	Thermal

NOTE: In Cluster 2, proposal 343 also includes the flowgates (2023W2-GD-S170, 2023W2-GD-W58, 2023W2-GD-W213) on R.P. Mone – Maddox 345KV line, however, the proposal has minimal impact on the line loading (1% or less). Therefore these flowgates are left out on purpose in the table 2.

Proposals Submitted to PJM

PJM conducted 2023 RTEP Proposal Window No. 2 for 30 days beginning March 6, 2024 and closing April 5, 2024. During the window, one entity, the incumbent TO - AEP, submitted seven proposals for these two clusters through PJM's Competitive Planner Tool. The proposals are summarized in **Table 2**. Publicly available redacted versions of the proposals can be found on PJM's web site: https://www.pjm.com/planning/competitive-planning-process/redacted-proposals.aspx.

Table 2. 2023 RTEP Proposal Window No. 2 – Cluster No. 2, 3, 5 & single floaters overlapped with Cluster 2 List of Proposals

Cluster (s)	Proposal ID#	Project Type	Project Description	Total Construction Cost M$	Cost Capping Provisions (Y/N)
2	117	Upgrade	Connect and energize a second 765/345 kV bank at Vassell station. Replace 765 kV breaker D at Maliszewski station.	33.729	N
2	27	Greenfield	1) new 765/345kV Barron substation, 2) A new double circuit 345kV transmission line from the new Barron Substation to the existing Hayden Substation, 3) Splitting the existing Conesville - Hyatt 345kV single circuit line and looping it into the existing Vassel substation, 4) Sag studies for the Genoa - Westar and Genoa - Spring Road 138kV transmission lines to increase their ratings, 5) Reconductoring the existing Maliszewski - Polaris and Polaris - Westar 138kV transmission lines.	203.830	Y
2	343	Greenfield	Build Jester greenfield 765/345kV station approximately 18.5 miles south of Marysville 765kV and 12 miles west of Hayden 345kV station; Reroute Hyatt – West Millersport 345kV line and loop into Corridor 345kV substation; Rebuild Kenny – Roberts 138kV circuit.	229.311	Y
3	596	Upgrade	Mitigate clearance issues on Westar - Genoa 138 kV line to allow line to operate to conductor's designed rating	2.815	N
3	729	Upgrade	Rebuild the approximately 2 mile 138 kV line between Westar and Genoa stations..	8.789	N
5	188	Upgrade	Reconductor the 2.8 mile 138 kV line between Maliszewski and Polaris stations.	7.231	N
5	340	Upgrade	Rebuild the 2.8 mile 138 kV line between Maliszewski and Polaris stations.	8.884	N
-	426	Upgrade	Mitigate clearance issues on Genoa - Spring Rd SW 138 kV line. Replace a station riser at Genoa station.	3.461	N
-	92	Upgrade	Rebuild the majority of the 3.7 mile 138 kV line between Polaris and Westar stations. Replace station equipment at Polaris station.	12.196	N

Final Review and Recommendation

PJM has completed the final review of the proposals listed in **Table 2** and PJM based on data and information provided by the project sponsors as part of their submitted proposals. This review included the following analytical quality assessments:

- *Performance Review* – PJM evaluated whether or not the project proposal solved the required reliability criteria violation drivers posted as part of the open solicitation process.
- *Comparative Cost Review* – PJM reviewed the estimated project costs and cost containment mechanisms submitted for those projects sufficiently addressing the same violation(s) or constraint(s) submitted through the proposal window. A comparative analysis of the proposed costs and cost containment was performed
- Feasibility Review – PJM reviewed the overall proposed implementation plan to determine if the project, as proposed, can feasibly be constructed.
- *Additional Benefits Review* – PJM reviewed information provided by the proposing entity to determine if the project, as proposed, provides additional benefits such as the elimination of other needs on the system.

Performance Review

As shown in table 1, Clusters 3 and 5 proposals, and the two single floater proposals only target part of the issues in the New Albany area, while cluster 2 proposals target to solve all the issues in the area. Since cluster 2 needs to be selected anyway with and without the rest of the clusters and single floater proposals, the evaluation starts from cluster 2. Analysis shows that with any proposal in cluster 2, all the posted flowgates in New Albany area are addressed. Therefore, no further analysis for clusters 3 and 5 proposals, and the two single floater proposals is needed.

Performance reviews for cluster 2 yielded the results summarized in Table 3:

Table 3. 2023 RTEP Proposal Window No. 2 – Cluster No. 2 Reliability Analysis Summary

Proposal ID#	Reliability Evaluation Results	Cost As Proposed ($M)	Cost Adjustment *($M)	Total Cost ($M)
117	Solves all the target issues with good margin. No new reliability violations identified.	33.729	0	33.729
27	Solves all the target issues with good margin. Causes overload on the Kenny – Roberts 138KV circuit. The following components are not needed and can be removed. 4) Sag studies for the Genoa - Westar and Genoa - Spring Road 138kV transmission lines to increase their ratings, 5) Reconductoring the existing Maliszewski - Polaris and Polaris - Westar 138kV transmission lines.	203.830	+49.860 -6.644	247.046

Proposal ID#	Reliability Evaluation Results	Cost As Proposed ($M)	Cost Adjustment *($M)	Total Cost ($M)
343	Solves all the target issues with good margin. No new reliability violations identified.	229.311	0	229.311

PJM's performance review showed that both proposal 117 and proposal 343 solve the posted/intended reliability criteria violations in cluster 2, while proposal 27 causes new overload on the Kenny – Roberts 138kV circuit. Additionally, PJM analysis shows the components in proposal 27, 4) Sag studies for the Genoa - Westar and Genoa - Spring Road 138kV transmission lines to increase their ratings and 5) Reconductoring the existing Maliszewski - Polaris and Polaris - Westar 138kV transmission lines, are not needed, therefore can be removed from the proposal. The cost for proposal 27 is adjusted accordingly, removing the cost of the unneeded components and adding the additional fix cost for the Kenney – Roberts 138kV circuit overloaded caused by the proposal. The additional fix is to rebuild the Kenney – Roberts, which is also a component in proposal 343. The cost estimate is from the component cost in proposal 343 and PJM reached the incumbent TO, AEP, confirmed the cost for the component since this is an upgrade. The total costs are listed in the table 3.

Comparative Cost Review

PJM compared the costs and cost containment proposed for the 3 competing proposals as shown in **Table 4** below.

Table 4. Review of Costs and Cost Containment

Category	Proposal 117	Proposal 27	Proposal 343
Proposal Project Cost ($M)	$33.729	$203.830	$229.311
Adjusted Project Cost based on Performance Review	$33.729	$247.046	$229.311
Proposal Project Cost - Capped Components only ($M)	N/A	$168.083	$160.753
Binding Project Cost Cap ($M)	None	$200.940	None
Binding ROE Cap (inclusive of adders/incentives)	None	None	Yes; while entity will still recover FERC approved ROE, entity will not recover any RTO participation adder on any investment exceeding share of estimated project capital cost escalated at 3% annually

Binding Equity % Cap	None	None	None
Exclusions	N/A	Uncontrollable costs due to: 1. Change in scope and schedule by PJM 2. Change in Law 3. Destruction or damage to project caused by Force Majeure events, or governmental / third party actions 4. Delays to project by interconnecting or affected Transmission Owner	Cost containment provisions exclude all cost elements (e.g permitting/ routing/ siting, materials & equipment, etc.) with the exception of Engineering & design.

PJM's review of costs did not identify any concerns with the cost estimates provided for the competing proposals.

Proposal 117 is the least cost proposal due to its being a substation upgrade proposal, in comparison to the other two greenfield proposals, which are similar in scope and costs. Proposal 117 has no cost containment, while proposals 27 and 343 have cost containment provisions. The most robust cost containment provisions are provided for proposal 27, which offers a simple binding (hard) cap on capital costs. In comparison, proposal 343 offers a less robust cap on that foregoes recovery of RTO participation adders on project cost overruns.

Feasibility Review

Proposal 117, which focuses on substation upgrades, is the least risk alternative from a constructability perspective, with the main challenges being the procurement of substation equipment, particularly the proposed EHV transformer. Proposal 27 and 343 share similar constructability and right-of-way risks with the greenfield transmission line routes proposed, and the greenfield substation locations that are required. However, Proposal 343 displayed more progress on the greenfield substation project, with an option already secured for the proposed land parcel. From an outage coordination perspective, the upgrade proposal 117 is the least impactful, while both greenfield proposals 27 and 343 will require existing transmission line outages and outage coordination for the rebuild scope to address the Kenny – Roberts overloads, as well as the greenfield line and substation cut-ins.

Risk Assessment Summary

PJM's risk assessment summary factoring in cost, constructability, and schedule risks are summarized in **Table 5** below.

Table 5. PJM Risk Assessment Summary

Proposal ID	Cost Estimate Risks	Cost Containment Risks	Schedule Risk	Constructability Risks	Use of Existing ROW & Brownfield	Outage Coordination Risks
117	Low	High	Low	Low	Low	Low
27	Low	Low	Medium-High	Medium-High	High	Medium
343	Low	Medium	Medium-High	Medium-High	High	Medium

The above table shows that proposal 117 poses the least risk of the options considered.

Additional Benefits

In order to ensure that PJM develops more efficient or cost effective transmission solutions to identified regional needs, RTEP Process consideration must be given to the additional benefits a proposal window-submitted project may provide beyond those required to solve identified reliability criteria violations. As discussed in Section 1.1 and Section 1.4.2 of PJM manual 14B, Transmission Owner Attachment M-3 needs and projects must be reviewed to determine any overlap with solutions proposed to solve the violations identified as part of opening an RTEP proposal window.

A review of these overlaps as part of PJM's 2023 Window No. 2 Cluster 2 screening has identified no potential benefits beyond solving identified reliability criteria violations.

Final Review Conclusions and next steps

Based on PJM's evaluations, proposal #117 is the most efficient and cost effective solution in Clusters No. 2, 3 & 5 to address the reliability needs.

PJM will present this Recommended Solution to stakeholders at the July 9, 2024 TEAC. A final recommendation will be made to the PJM Board at its next meeting scheduled for review and approval.