Final Review and Recommendation
2020/21 Long-Term Window No. 1 – Cluster No. 4 (Charlottesville to Proffit 230 kV)

December 3. 2021

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2020/21 Long-Term Window No. 1 – Cluster No. 4

As part of its 2020/21 RTEP process cycle of studies, PJM identified clustered groups of congestion drivers that were put forward for proposals as part of the 2020/21 Long-Term Window 1. Specifically, Cluster No. 4 - discussed in this Final Review and Recommendation report - includes the congestion driver listed in **Table 1**.

Table 1. 2020/21 Long-Term Window No. 1 - Cluster No. 4 List of Congestion Drivers

Flowgate ID	Description	Voltage Level	Driver
ME-5	Charlottesville to Proffit	230 kV	Congestion Relief - Economic

Proposals Submitted to PJM

PJM conducted the 2020/21 Long-Term Window No. 1 for 120 days beginning January 11, 2021 and closing May 11, 2021. During the window, several entities submitted twelve proposals, through PJM's Competitive Planner Tool, for this cluster. 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. 2020/21 Long-Term Window No. 1 - Cluster No. 4 List of Proposals

Proposal ID#	Project Type	Project Description	Estimated Total In-Service Construction Cost ($, millions)	Cost Capping Provisions (Y/N)
196	Upgrade	Charlottesville-Proffit 230kV Line Rebuild	$19.49	N
238	Greenfield	Charlottesville-Gordonsville 230kV Greenfield Line.	$45.83	Y
309	Upgrade	5 MW Battery Energy Storage System at Louisa CT substation	$25.97	N
327	Greenfield	New Hollymeade Tap 230kV Substation. Charlottesville-Hollymeade Tap-Cash's Corner-Gordonsville 230kV Line Rebuild.	$35.93	N
533	Upgrade	10 MW Battery Energy Storage System at Hollymeade substation	$40.45	N
578	Greenfield	New Hollymeade Tap 230kV Substation	$10.02	N
589	Greenfield	Build Second Charlottesville-Gordonsville 230kV Line. Upgrade terminal equipment from Hollymeade to Gordonsville 230 kV.	$25.97	Y
632	Upgrade	5 MW Battery Energy Storage System at Gordonsville Substation	$29.15	N
651	Upgrade	Charlottesville-Proffit 230kV Line Series Reactor	$11.38	N
669	Upgrade	5 MW Battery Energy Storage System at Hollymeade Substation	$25.95	N
692	Greenfield	Sleepy Hollow-Stoney Point 230kV Greenfield Project	$36.07	Y
813	Greenfield	New Cismont 230kV Substation. Charlottesville-Hollymeade Tap-Cash's Corner-Gordonsville 230kV Line Rebuild.	$73.64	N
38	Greenfield	Sleepy Hollow-Gordonsville 230kV Greenfield Project	$40.17	Y

Additionally, during the 2021 Window 1, PJM received ten proposals for the reliability violation on Charlottesville to Proffit 230 kV. PJM evaluated these proposals as potential solutions to the congestion driver ME-5. Only one of these proposals addressed the congestion driver ME-5 and was included in **Table 2** as Proposal No. 38.

Final Review and Recommendation

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

- *Initial 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.
- *Initial Planning Level Cost Review* – PJM reviewed the estimated project cost submitted by the project sponsor and any relevant cost containment mechanisms submitted.
- *Initial Feasibility Review* – PJM reviewed the overall proposed implementation plan to determine if the project, as proposed, can feasibly be constructed.

The performance reviews yielded the following results:

1. Proposal Nos. 38, 238, 327, 651 and 813 addressed the congestion driver by significantly decreasing or eliminating congestion on the target driver ME-5. The proposals did not create significant congestion on other facilities.
2. The rest of the proposals either had little impact on the congestion driver ME-5 or shifted a significant amount of congestion to other facilities.
3. Proposal Nos. 38, 238, 327, 651 and 813 yield a benefit to cost ratio above 1.25 (see **Table 3**).

Table 3. 2020/21 Long-Term Window No. 1 - Cluster No. 4 Comparison of Anticipated Costs and B/C Ratios

Proposal ID#	Project Description	In-Service Date	Estimated Total Construction Cost ($, millions)	B/C Ratio Metric	B/C Ratio	Percent of Congestion Alleviated
196	Charlottesville-Proffit 230kV Line Rebuild	11/1/2024	$19.49	Low voltage	N/A	100%
238	Charlottesville-Gordonsville 230kV Greenfield Line.	12/1/2025	$45.83	Low voltage	3.02	100%
309	5 MW Battery Energy Storage System at Louisa CT substation	6/1/2023	$25.97	Low voltage	N/A	0.87%
327	New Hollymeade Tap 230kV Substation. Charlottesville-Hollymeade Tap-Cash's Corner-Gordonsville 230kV Line Rebuild.	4/1/2025	$35.93	Low voltage	3.99	99.48%
533	10 MW Battery Energy Storage System at Hollymeade substation	6/1/2023	$40.45	Low voltage	N/A	7.82%
578	New Hollymeade Tap 230kV Substation	5/1/2023	$10.02	Low voltage	N/A	0%
589	Build Second Charlottesville-Gordonsville 230kV Line. Upgrade terminal equipment from Hollymeade to Gordonsville 230 kV.	12/1/2025	$25.97	Low voltage	N/A	100%
632	5 MW Battery Energy Storage System at Gordonsville Substation	9/1/2023	$29.15	Low voltage	N/A	4.57%
651	Charlottesville-Proffit 230kV Line Series Reactor	6/1/2023	$11.38	Low voltage	16.05	99.52%
669	5 MW Battery Energy Storage System at Hollymeade Substation	6/1/2023	$25.95	Low voltage	N/A	6.46%
692	Sleepy Hollow-Stoney Point 230kV Greenfield Project	6/1/2025	$36.07	Low voltage	N/A	100%
813	New Cismont 230kV Substation. Charlottesville-Hollymeade Tap-Cash's Corner-Gordonsville 230kV Line Rebuild.	5/1/2025	$73.64	Low voltage	2.17	100%
38	Sleepy Hollow-Gordonsville 230kV Greenfield Project	5/1/2026	$40.17	Low voltage	3.97	100%

The cost review shows cost commitment provisions from Proposal Nos. 38 and 238 that, in summary, will cap ROE incentives for the project cost portion that exceeds estimated designated project capital costs. Proposal Nos. 327, 651, and 813 do not contain cost commitment provisions.

Proposal Nos. 38, 238, 327, and 813 incorporate greenfield constructions that will require new or additional easements, and which may impact the ability to timely complete the proposals.

A high level review of the plans identified in the proposals did not reveal any other concerns.

Proposal No. 651 yields a robust benefit to cost ratio that far exceeds all other proposals. PJM performed reliability analysis on Proposal No. 651 and no reliability violation was identified associated with this solution.

PJM presented a First Read of the Initial Performance Review and Recommended Solution for Proposal No. 651 at the November 2nd, 2021 TEAC meeting. No stakeholder comments in opposition to the selected solution were received at that meeting nor afterward via Planning Community.

Informational Sensitivity Analyses

For proposals that passed the B/C ratio threshold and addressed the congestion driver, PJM also completed a set of informational sensitivity analyses. The results for the sensitivity analyses can be found in the Market Efficiency Update, Appendix A, presented at the November 2nd, 2021 TEAC meeting[1].

Recommended Solution

Based on this information, Proposal No. 651 is the more efficient or cost effective solution in Cluster No. 4 with a projected in-service date of 6/1/2023.

PJM will submit Proposal No. 651 to the PJM Board for review and approval to include in the RTEP at its February 2022 meeting.

[1] https://www.pjm.com/-/media/committees-groups/committees/teac/2021/20211102/20211102-item-03-market-efficiency-update.ashx