Initial Review and Screening
2022 RTEP Proposal Window 1 – Cluster No. 2~~3~~

December~~October 4~~ 6, 2022

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20212 RTEP Proposal Window No. 1 - Cluster No. 23

As part of its 2022 RTEP process cycle of studies, PJM identified clustered groups of flowgates that were put forward for proposals as part of 2022 RTEP Window No. 1. Specifically, Cluster No. 23 - discussed in this Initial Review and Screening report - includes the flowgates listed in **Table 1**.

Table 1. 2022 RTEP Proposal Window No. 1 – Cluster No. 23 List of Flowgates

Flowgate	kV Level	Driver
2022W1-GD-S5582022W1-GD-S595	138500/230 kV	Summer generation DeliverabilitySummer Generation Deliverability
2022W1-GD-S559	138	Summer generation Deliverability
2022W1-GD-S10	115	Summer generation Deliverability
2022W1-GD-S14	115	Summer generation Deliverability
2022W1-GD-S29	500/230	Summer generation Deliverability
2022W1-GD-S570	115	Summer generation Deliverability
2022W1-GD-S578	115	Summer generation Deliverability
2022W1-GD-S634	500/230	Summer generation Deliverability
2022W1-GD-S1043	230	Summer generation Deliverability
2022W1-GD-S38	230	Summer generation Deliverability
2022W1-GD-W387	138	Winter generation Deliverability
2022W1-GD-W388	138	Winter generation Deliverability
2022W1-GD-W33	115	Winter generation Deliverability
2022W1-GD-W36	500/230	Winter generation Deliverability
2022W1-GD-W37	115	Winter generation Deliverability
2022W1-GD-W376	115	Winter generation Deliverability
2022W1-GD-W391	115	Winter generation Deliverability
2022W1-GD-W35	500	Winter generation Deliverability
2022W1-GD-W39	500	Winter generation Deliverability
2022W1-GD-W53	500	Winter generation Deliverability
2022W1-GD-W57	500	Winter generation Deliverability
2022W1-GD-W60	500	Winter generation Deliverability
2022W1-GD-W411	230	Winter generation Deliverability
2022W1-GD-W42	230	Winter generation Deliverability
2022W1-GD-W55	230	Winter generation Deliverability

Flowgate	kV Level	Driver
2022W1-GD-W623	230	Winter generation Deliverability
2022W1-N2-VM1	138	Winter N-1-1 Voltage
2022W1-N2-VM2	138	Winter N-1-1 Voltage
2022W1-N2-VM3	138	Winter N-1-1 Voltage
2022W1-N2-VM4	138	Winter N-1-1 Voltage
2022W1-N2-VM5	138	Winter N-1-1 Voltage
2022W1-N2-VM12	138	Winter N-1-1 Voltage
2022W1-N2-VM15	138	Winter N-1-1 Voltage
2022W1-N2-VM16	138	Winter N-1-1 Voltage
2022W1-N2-VM17	138	Winter N-1-1 Voltage
2022W1-N2-VM18	138	Winter N-1-1 Voltage
2022W1-N2-VM19	138	Winter N-1-1 Voltage
2022W1-N2-VM20	138	Winter N-1-1 Voltage
2022W1-N2-VM21	138	Winter N-1-1 Voltage
2022W1-N2-VM22	138	Winter N-1-1 Voltage
2022W1-N2-VM23	138	Winter N-1-1 Voltage
2022W1-N2-VM24	138	Winter N-1-1 Voltage
2022W1-N2-VM25	138	Winter N-1-1 Voltage
2022W1-N2-VM26	138	Winter N-1-1 Voltage
2022W1-N2-VM27	138	Winter N-1-1 Voltage
2022W1-N2-VM28	138	Winter N-1-1 Voltage
2022W1-N2-VM29	138	Winter N-1-1 Voltage
2022W1-N2-VM32	138	Winter N-1-1 Voltage
2022W1-N2-VM33	138	Winter N-1-1 Voltage
2022W1-N2-VM34	138	Winter N-1-1 Voltage
2022W1-N2-VM35	138	Winter N-1-1 Voltage

Proposals Submitted to PJM

PJM conducted 2022 RTEP Proposal Window No. 1 for 60 days beginning July 1, 2022 and Closing August 30, 2022. During the window, fiveone entitiesy submitted severalthree proposals to address cluster 23 needs. Six of the proposals were submitted through PJM's Competitive Planner Tool. Four of the proposals were submitted by the Transmission Owners as those proposals were excluded from the competition. PJM packaged the proposals into three groups. Each group contains both competitive and non-competitive projects and provides a complete solution to the list of flowgates in cluster 2. The proposals are summarized in **Table 2, 3 and 4** by group (Options 1, 2 and 3). Publicly available redacted versions of the competitive proposals can be found on PJM's web site: https://www.pjm.com/planning/competitive-planning-process/redacted-proposals.aspx.https://www.pjm.com/planning/competitive-planning-process/redacted-proposals

Table 2. 20221 RTEP Proposal Window No. 1 – Cluster No. 23 List of Proposals received for **Option 1**

Proposal ID#	Project Type	Project Description	Total Construction Cost M$	Cost Capping Provisions (Y/N)
N/A127	UpgradeUpgrade	Replace 4 meters and bus work inside Peach Bottom substationReterminate the Lackawanna T3 and T4 500 / 230 kV transformers on the 230 kV side to remove them from the 230 kV buses and bring them into dedicated bay positions that are not adjacent to one another.	3.8$10.65	N/A?
N/A553	UpgradeUpgrade	Increase Ratings of breaker bushings for the two breakers on 500kV line 5012 at Conastone Substation.Replace the existing Lackawanna 500/230 kV T3 and T4 transformers with larger 1250 MVA units. Upgrade bay equipment to accommodate the new higher rated transformers.	2$55.97	N/A?
N/A	Upgrade	Reconductor 27.3 miles of the Messick Road - Morgan 138 kV Line from 556 ACSR to 954 ACSR At Messick Road Substation: -Replace 138 kV wavetrap, circuit breaker, CT's, disconnect switch, and substation conductor. - Upgrade relaying At Morgan Substation: - Upgrade Relaying	49.23	N/A
209	Upgrade	Rebuild/Reconductor the Germantown - Lincoln 115 kV Line. Approximately 7.6 miles. Upgrade limiting terminal equipment at Lincoln, Germantown and Straban.	17.36	No
880	Greenfield	Install second 500/230kV Transformer with additional 500 and 230 bus expansions.	30.19	No

94	Upgrade	Reconductor two (2) 230 kV circuits from Conastone to Northwest #2.	37.76	No
912	Upgrade	Rebuild 1.4 miles of existing single circuit 230 kV tower line between BGE's Graceton substation to the PPL tie-line at the MD/PA state line to double circuit steel pole line with one (1) circuit installed to uprate 2303 circuit.	8.4	No
N/A~~907~~	Greenfield~~Greenfield~~	At McConnellsburg 138 kV Susbtation: Install a 138 kV Breaker, Install 33 MVAR switched capacitor and Upgrade relaying~~Install a new 1500 MVA 500/230 kV transformer at Lackawanna substation. Re-terminate the Lackawanna - Lackawanna Energy to the Lackawanna 500kV using the new 500/230 kV transformer~~	3.05~~$51.48~~	N/A~~?~~

Table 3. 2022 RTEP Proposal Window No. 1 – Cluster No. 2 List of Proposals received for **Option 2**

Proposal ID#	Project Type	Project Description	Total Construction Cost M$	Cost Capping Provisions (Y/N)
N/A	Upgrade	Replace 4 meters and bus work inside Peach Bottom substation	3.8	N/A
N/A	Upgrade	Increase Ratings of breaker bushings for the two breakers on 500kV line 5012 at Conastone Substation.	2	N/A
N/A	Upgrade	Reconductor 27.3 miles of the Messick Road - Morgan 138 kV Line from 556 ACSR to 954 ACSR At Messick Road Substation: -Replace 138 kV wavetrap, circuit breaker, CT's, disconnect switch, and substation conductor. - Upgrade relaying At Morgan Substation: - Upgrade Relaying	49.23	N/A
476	Upgrade Greenfield	Rebuild the Hunterstown – Carroll 115/138 kV Corridor as Double Circuit using 230kV construction standards. New circuit will be operated at 230kV. Existing circuit to remain at 115/138kV. Construct a new 230 kV Ring Bus at Carroll (PE) and add a new 230 kV Breaker to the Hunterstown 230 kV Substation	148.83	No
880	Greenfield	Install second 500/230kV Transformer with additional 500 and 230 bus expansions.	30.19	No
94	Upgrade	Reconductor two (2) 230 kV circuits from Conastone to Northwest #2.	37.76	No

912	Upgrade	Rebuild 1.4 miles of existing single circuit 230 kV tower line between BGE's Graceton substation to the PPL tie-line at the MD/PA state line to double circuit steel pole line with one (1) circuit installed to uprate 2303 circuit.	8.4	No
N/A	Greenfield	At McConnellsburg 138 kV Susbtation: Install a 138 kV Breaker, Install 33 MVAR switched capacitor and Upgrade relaying	3.05	N/A

Table 4. 2022 RTEP Proposal Window No. 1 – Cluster No. 2 List of Proposals received for **Option 3**

Proposal ID#	Project Type	Project Description	Total Construction Cost M$	Cost Capping Provisions (Y/N)
633	Upgrade Greenfield	• The IEC West Portion, build new 500/230 kV station (Rice) by tapping the existing Conemaugh - Hunterstown 500 kV. Construct approximately 29 miles of new double-circuit 230 kV AC overhead transmission line between the existing Ringgold Substation and the new Rice Substation. • The reconfigured IEC East Portion - build new 500/230 kV substation (Furnace Run) by tapping the existing Peach Bottom - TMI 500 kV. The 230 kV will be comprised of adding 230 kV AC overhead transmission lines between the new Furnace Run Substation in York County, Pennsylvania and the existing BGE Conastone (via Baltimore County) and Graceton Substations in Harford County, Maryland. The Manor - Graceton 230 kV and Conastone – Otter Creek 230 kV circuit will loop into the New Furnace Run 230 kV. • Rebuild Conastone - Northwest 230 kV circuits • Rebuild Ringgold 230 kV to breaker and half configurations and replace the Ringgold 230/138 kV transformers • Rebuild the Ringgold - Catoctin 138 kV to 230 kV	386.73	Yes

N/A	Greenfield	At McConnellsburg 138 kV Susbtation: Install a 138 kV Breaker, Install 33 MVAR switched capacitor and Upgrade relaying	3.05	N/A

Initial Review and Screening

PJM completed an initial review and screening of the proposals listed in **Table 2, 3 and 4** above based on data and information provided by the project sponsors as part of their submitted proposals. This review and screening included the following preliminary analytical quality assessment:

- *Initial 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, and didn't cause a new violation.
- *Initial Planning Level Cost Review* – PJM reviewed the estimated project cost submitted by the project sponsor and any relevant cost containment mechanisms submitted as well.
- *Initial 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

Initial performance reviews yielded the following results:

1. All three options (set of proposals as summarized in Table 2, 3 and 4)) solve the identified reliability criteria violations
2. Option 1 (set of proposals) create one new reliability violation and with an the additional cost to address of will be $2.5M. Option 2 (set of proposals) create two new reliability violations and the additional cost to address those will be $49.09M. See **Table 5**.None of the proposals create a new reliability issueviolation

Table 5. 2022 RTEP Proposal Window No. 1 – Cluster No. 2 List of Additional Upgrades identified

	Project Type	Project Discription	Total Construction Cost M$
Additional Upgrades due to	Upgrade	Option 1 Additional Scope: Upgrade terminal equipment at Brunner Island (on the Brunner Island - Yorkanna 230 kV circuit)	2.5

DNH study	Upgrade	Option 2 Additional Scope: Rebuild the 14.1-mile line section of the Jackson – TMI 230 kV line	47.09

Initial cost reviews provide no significant factors to consider other than the differences in apparent costs. A high level review of the plans identified in the proposals does not reveal any concerns at this stage of review.

Additional Benefits

In order to ensure that PJM develops more efficient or cost effective transmission solutions to the 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 proposals as part of PJM's 2022 Window No. 1 screening has identified potential benefits beyond solving identified reliability criteria violations as discussed below.

Option 1

Proposal No. 94 – Part of the project cost already spent as part of 9-A project (sunk cost to be utilized). CPCN Waiver was requested and awarded. BGE already has major materials on-hand, design & engineering previously completed, only needing to be refreshed.
Proposal No. 912 - Part of the project cost already spent as part of 9-A/3-A project. BGE already has major materials on-hand, design & engineering previously completed, only needing to be refreshed.

Option 2:

Proposal No. 94 – Part of the project cost already spent as part of 9-A project (sunk cost to be utilized). CPCN Waiver was requested and awarded. BGE already has major materials on-hand, design & engineering previously completed, only needing to be refreshed.
Proposal No. 912 - Part of the project cost already spent as part of 9-A/3-A project. BGE already has major materials on-hand, design & engineering previously completed, only needing to be refreshed.
Proposal No. 476 - Project alleviates congestion mitigating the need to open the Germantown Tie Line.

Option 3

Proposal No. 633 – Utilize an already proposed project 9-A components.

- The project will take less time than another project as long lead-time assets (transformers/structures) are procured and on site, station land has been secured, and 70% of ROWs have been secured.

- Cost projections have a high-level of certainty, based on work already undertaken and assets already acquired for Project 9A; assets/costs will be repurposed in the Proposed Solution (including transformers, structures, land, rights-of-way, advanced engineering, and siting analyses, etc.)
- Costs previously incurred in Maryland approval processes will not be duplicated with the Proposed Solution, as the MD PSC has approved a substantially similar project
- Supplemental projects from incumbent utilities may cause additional congestion issues in the PS area and related constraints FERC's recent NOPR addressed robust regional transmission planning and collaboration between neighboring utilities. The Proposed Solution emphasizes these tenets by incorporating seven (7) incumbent utilities for upgrades and greenfield components that tie systems together in a robust regional upgrade solution. Collaboration with the incumbent utilities is at an advanced stage, including agreements specific to the Proposed Solution with Incumbents PPL and BGE, and extensive completed collaboration with First Energy affiliates.

~~Proposal No. 127 - Eliminates the specific common mode event of concern along with other common mode events. Proposal No. 306 – Provides additional transformation capacity at the Lackawanna substation.~~Proposal No. 907 - ~~Based on study results using future queue projects, this option may potentially have a longer lifespan than the option of replacing the existing transformers with larger units.~~

Initial Review Conclusions and next steps

The Option 1 set of projects solve the violations identified in cluster 2. One additional violation was identified by PJM and the needed upgrade to address the violation is to replace terminal equipment for $2.5 M. All projects in option 1 are upgrades to ~~an~~ existing facilities or don't require new ROW. The total cost to address all identified violations is approximately **$154 M**.

Option 2 set of projects address the violations identified in cluster 2, however causes two new violations. The two additional upgrades will cost close to $50 M. The projects in option 2 are either upgrade to an existing facilities or the greenfields don't need new ROW. The total cost to address all identified violations is approximately **$333 M**.

Option 3 set of projects address the violations identified in cluster 2. The projects in option 3 include some upgrades to an existing facilities and requires big portion of greenfield. The total cost to address the violations in cluster 2 is approximately **$390 M**.

Based on ~~this~~the summary above ~~information~~, the set of proposals/upgrades in option 1 appear to be the more efficient and cost-effective solutions in cluster No. 2 for the near term. As part of the

future RTEP studies PJM anticipates a long term solution to the AP South and Northern Virginia, due to high load growth in the area. PJM's initial planning level cost review and initial feasibility review suggests that further constructability review and financial analysis would not materially contribute to the analysis of the other proposals submitted for this cluster.

~~Based on this information, proposal No. 553 and 907 solve the violation, however, are not the most cost effective solution. Proposal No. 127 appears to be the more efficient and cost-effective solution in Cluster No. 3. PJM's initial planning level cost review and initial feasibility review suggests that further constructability review and financial analysis would not materially contribute to the analysis of the other proposals submitted for this cluster.~~