

# Subregional RTEP Committee – Mid-Atlantic FirstEnergy (Penelec) Supplemental Projects

November 18, 2020

# Solutions

Stakeholders must submit any comments within 10 days of this meeting in order to provide time necessary to consider these comments prior to the next phase of the M-3 process

**Need Number:** PN-2020-011

**Process Stage:** Solution Meeting 11/18/2020

**Previously Presented:**

Need Meeting 5/21/2020

**Project Driver:**

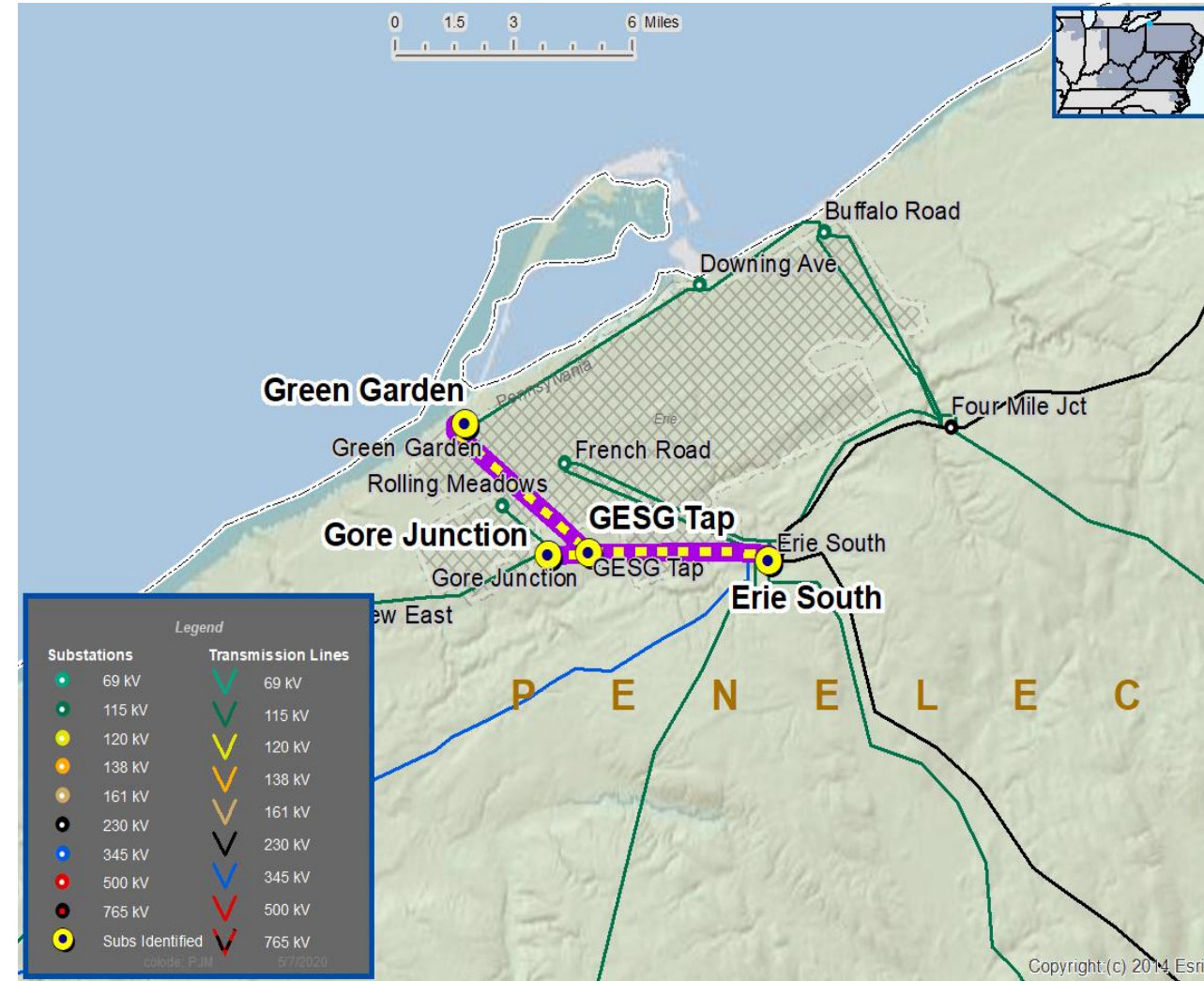
*Equipment Material Condition, Performance and Risk  
Operational Flexibility and Efficiency*

**Specific Assumption Reference:**

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits
- Upgrade Relay Schemes
- Relay schemes that have a history of misoperation
- Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.)
- Communication technology upgrades
- Bus protection schemes

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**Problem Statement:**

- FirstEnergy has identified protection schemes using a certain vintage of relays and communication equipment that have a history of misoperation.
- Proper operation of the protection scheme requires all the separate components perform adequately during a fault.
- In many cases the protection equipment cannot be repaired due to a lack of replacement part and available expertise in the outdated technology.
- Transmission line ratings are limited by terminal equipment.

Need Number	Transmission Line / Substation Locations	Existing Line Rating (SN / SE)	Existing Conductor Rating (SN / SE)	Limiting Terminal Equipment
PN-2020-011	Erie South – GESG Tap 115 kV Line	202 / 245	202 / 245	N/A
	GESG Tap – Gore Junction 115 kV Line	274 / 344	354 / 406	Disconnect Switch
	GESG Tap – Green Garden 115 kV Line	232 / 282	232 / 282	N/A



## Penelec Transmission Zone M-3 Process Misoperation Relay Projects

**Proposed Solution:**

Need Number	Transmission Line / Substation Locations	New MVA Line Rating (SN / SE)	Scope of Work	Estimated Cost (\$ M)	Target ISD
PN-2020-011	Erie South – GESG Tap 115 kV Line	202 / 245	• Erie South 115 kV Substation – Replace line relaying	\$2.1M	06/01/2022
	GESG Tap – Gore Junction 115 kV Line	354 / 406	• Gore Junction 115 kV Substation – Replace line relaying and disconnect switch		
	GESG Tap – Green Garden 115 kV Line	232 / 282	• Green Garden 115 kV Substation – Replace line relaying		

**Alternatives Considered:** Maintain existing condition

**Project Status:** Conceptual

**Model:** 2020 RTEP model for 2025 Summer (50/50)

**Need Number:** PN-2020-017

**Process Stage:** Solution Meeting 11/18/2020

**Previously Presented:** Need Meeting 8/13/2020

**Project Driver:**

*Operational Flexibility and Efficiency*

**Specific Assumption Reference:**

Add/Expand Bus Configuration

- Eliminate simultaneous outages to multiple network elements
- System Performance Projects
- Substation/line equipment limits

**Problem Statement:**

The loss of Nanty Glo substation results in loss of approximately 6.6 MW of load and approximately 1,600 customers. Substation consists of:

- Four networked 46 kV lines
- Two distribution transformers connected with switches

Transmission line ratings are limited by terminal equipment.

Nanty Glo – Revloc 46 kV Line (line relaying, substation conductor)

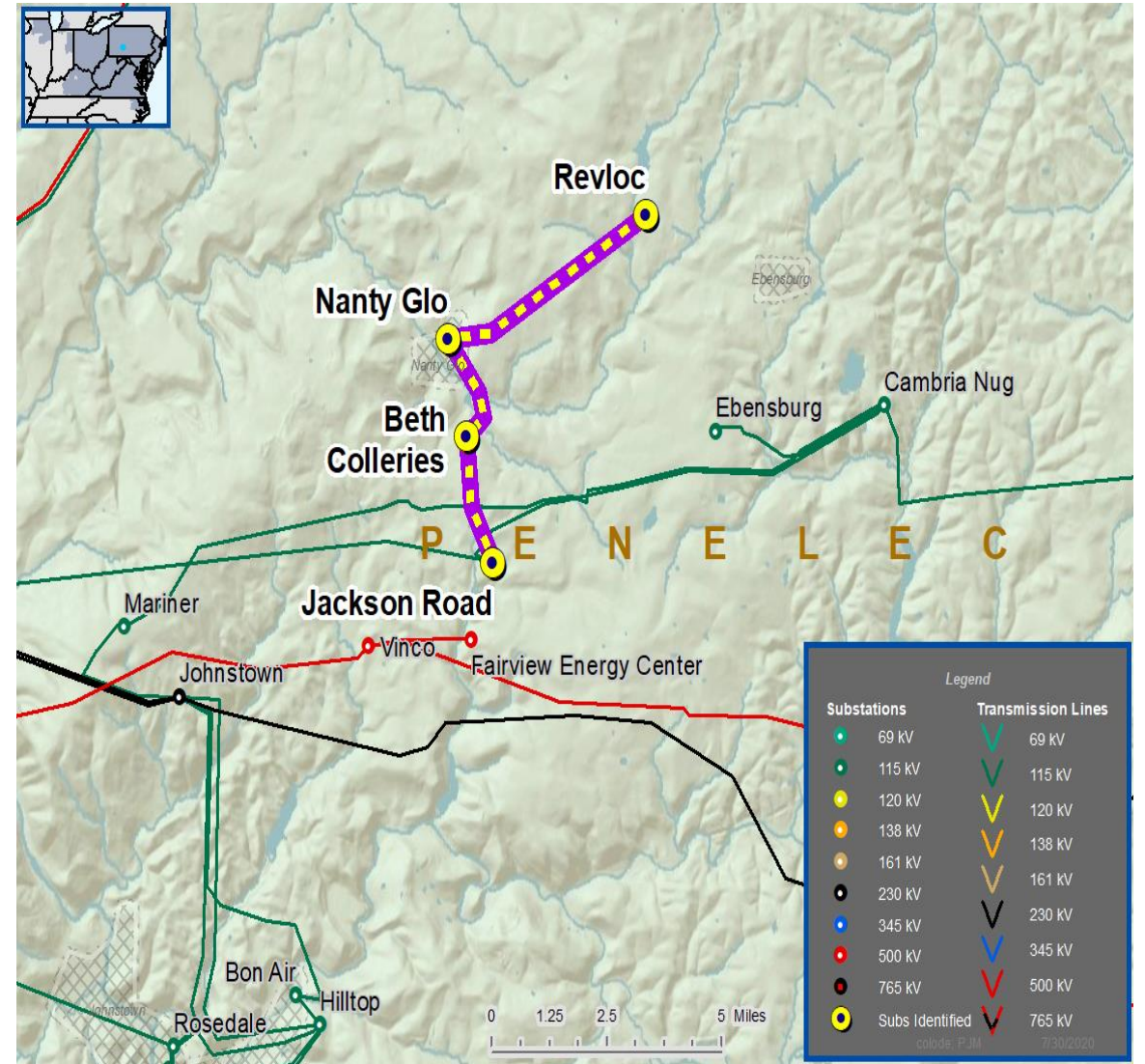
- Existing line rating: 26 / 26 MVA (SN / SE)
- Existing conductor rating: 37 / 37 MVA (SN / SE)

Nanty Glo – Beth Colleries S 46 kV Line (line relaying)

- Existing line rating: 25 / 25 MVA (SN / SE)
- Existing conductor rating: 32 / 32 MVA (SN / SE)

Beth Colleries – Jackson Road S 46 kV Line (line relaying, substation conductor)

- Existing line rating: 33 / 33 MVA (SN / SE)
- Existing conductor rating: 49 / 50 MVA (SN / SE)





# Penelec Transmission Zone M-3 Process Nanty Glo 46 kV Ring Bus

**Need Number:** PN-2020-017

**Process Stage:** Solutions Meeting 11/18/2020

**Proposed Solution:**

Nanty Glo 46 kV Substation:

- Construct six breaker ring bus
- Cancel existing supplemental projects 1781

Bethlehem 33 46 kV Substation:

- Replace line relaying

Jackson Road 46 kV Substation:

- Replace line relaying

Spangler 46 kV Substation:

- Adjust line relaying

**Alternatives Considered:**

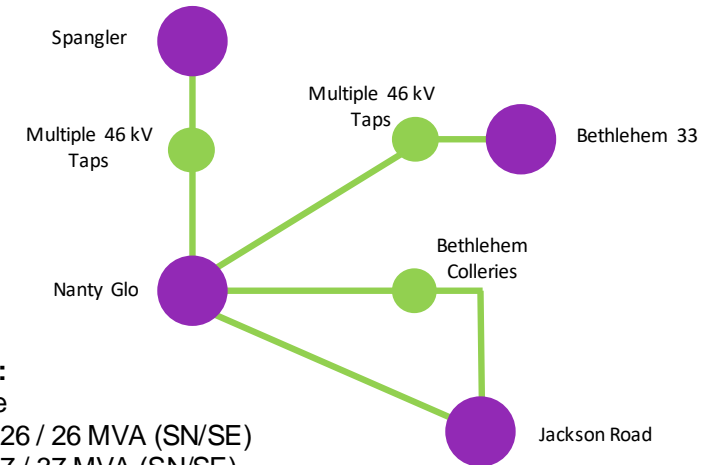
- Nanty Glo Bus Conductor Replacement (s1781, PN-2018-013)
- Nanty Glo Bus Differential Relaying

**Estimated Project Cost:** \$7.9M

**Projected In-Service:** 6/1/2024

**Project Status:** Conceptual

**Model:** 2020 RTEP model for 2025 Summer (50/50)



**Transmission Line Ratings:**

Nanty Glo – Revloc 46 kV Line

- Before Proposed Solution: 26 / 26 MVA (SN/SE)
- After Proposed Solution: 37 / 37 MVA (SN/SE)

Cambria County Prison – Bethlehem 33 46 kV Line

- Before Proposed Solution: 22 / 22 MVA (SN/SE)
- After Proposed Solution: 32 / 32 MVA (SN/SE)

Nanty Glo – Bethlehem Collieries 46 kV Line

- Before Proposed Solution: 25 / 25 MVA (SN/SE)
- After Proposed Solution: 32 / 32 MVA (SN/SE)

Bethlehem Collieries – Jackson Road 46 kV Line

- Before Proposed Solution: 33 / 33 MVA (SN/SE)
- After Proposed Solution: 49 / 50 MVA (SN/SE)

Nanty Glo – Jackson Road SJN 46 kV Line (b3144.1-2)

- Before Proposed Solution: 25 / 25 MVA (SN/SE)
- After Proposed Solution: 53 / 64 MVA (SN/SE)

Nanty Glo – Twin Rocks 46 kV Line (previously s1781)

- Before Proposed Solution: 34 / 44 MVA (SN/SE)
- After Proposed Solution: 67 / 81 MVA (SN/SE)

Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
34.5 kV	
23 kV	
New	

# Questions?





# Appendix

# High level M-3 Meeting Schedule

Assumptions	Activity	Timing
	Posting of TO Assumptions Meeting information	20 days before Assumptions Meeting
	Stakeholder comments	10 days after Assumptions Meeting
Needs	Activity	Timing
	TOs and Stakeholders Post Needs Meeting slides	10 days before Needs Meeting
	Stakeholder comments	10 days after Needs Meeting
Solutions	Activity	Timing
	TOs and Stakeholders Post Solutions Meeting slides	10 days before Solutions Meeting
	Stakeholder comments	10 days after Solutions Meeting
Submission of Supplemental Projects & Local Plan	Activity	Timing
	Do No Harm (DNH) analysis for selected solution	Prior to posting selected solution
	Post selected solution(s)	Following completion of DNH analysis
	Stakeholder comments	10 days prior to Local Plan Submission for integration into RTEP
	Local Plan submitted to PJM for integration into RTEP	Following review and consideration of comments received after posting of selected solutions

# Revision History

11/6/2020 – V1 – Original version posted to pjm.com