

First Energy (JCP&L) Local Plan Submission for the 2020 RTEP

Need Number: JCPL-2020-001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 10/16/2020

Previously Presented:

Need Meeting 3/20/2020

Solutions Meeting 7/7/2020

Project Driver:

Operational Flexibility and Efficiency

Specific Assumption Reference:

Global Factors

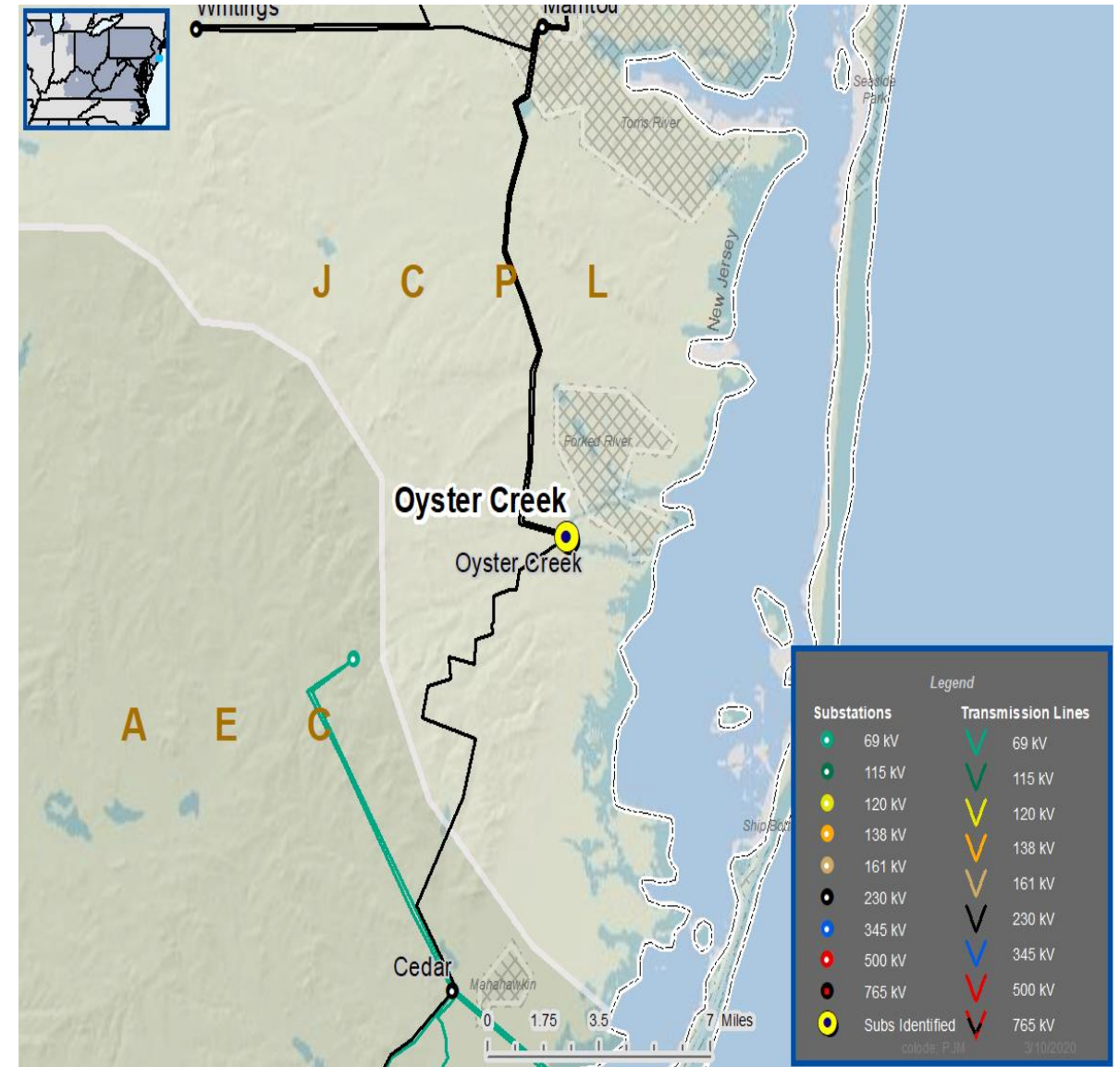
- System reliability and performance
- Reliability of Non-BES facilities
- Load at risk in planning and operational scenarios

Add/Replace Transformers

- System concerns related to loss of an existing transformer or other contingency scenarios at a specific voltage level(s)

Problem Statement:

Oyster Creek substation serves approximately 30,300 customers and 120 MW of load. Loss of the Oyster Creek #7 and #8 230-34.5 kV transformers results in a local voltage collapse with the Oyster Creek – Bamber Lake – Whittings (Q121) 34.5 kV line overloaded >125% of its 52 MVA SE rating.



Need Number: JCPL-2020-001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 10/16/2020

Selected Solution:

Install one 230-34.5 kV Transformer at Oyster Creek

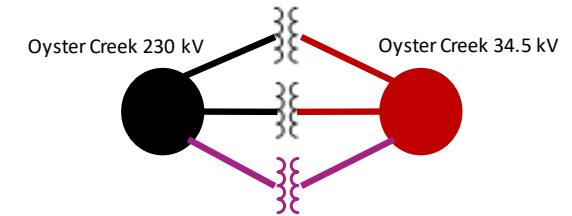
- Install one 230-34.5 kV 125 MVA Transformer.
- Extend the 230 kV bus and install two 230 kV breakers.
- Install two 34.5 kV breakers for connection to the 34.5 kV.

Estimated Cost: \$6.8 M

Projected In-Service: 6/1/2023

Supplemental Project ID: s2300

Model: 2019 RTEP Model for 2024



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

Need Number: JCPL-2020-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 10/16/2020

Previously Presented:

Need Meeting 6/16/2020

Solutions Meeting 7/16/2020

Project Driver:

Customer Service

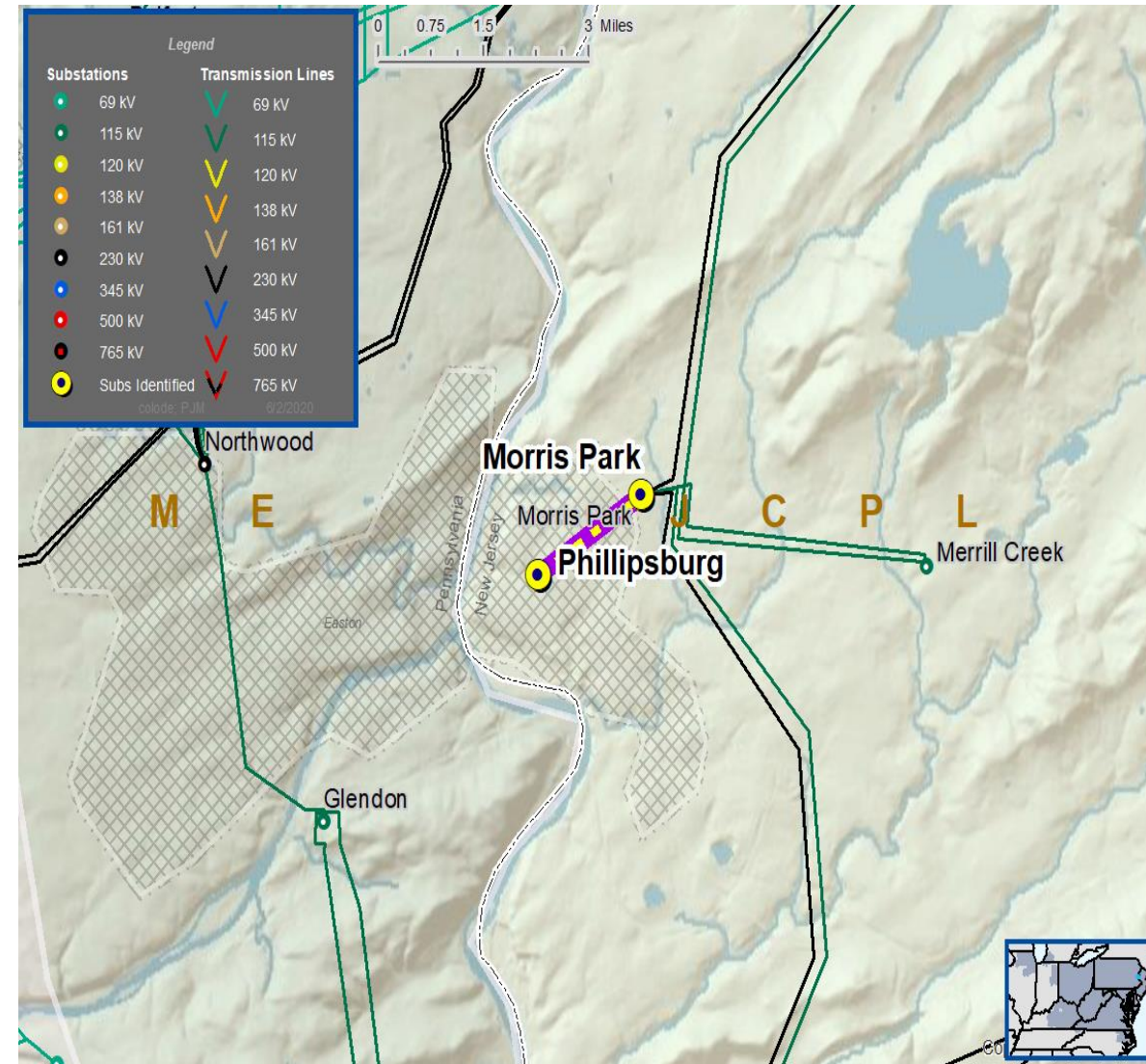
Specific Assumption Reference:

New customer connection request will be evaluated per FirstEnergy’s “Requirements for Transmission Connected Facilities” document and “Transmission Planning Criteria” document.

Problem Statement:

New Customer Connection – A customer requested 34.5 kV service, anticipated load is 7 MW, location is near the Morris Park – Phillipsburg 34.5 kV line.

Requested in-service date is July 2020.



Need Number: JCPL-2020-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 10/16/2020

Selected Solution:

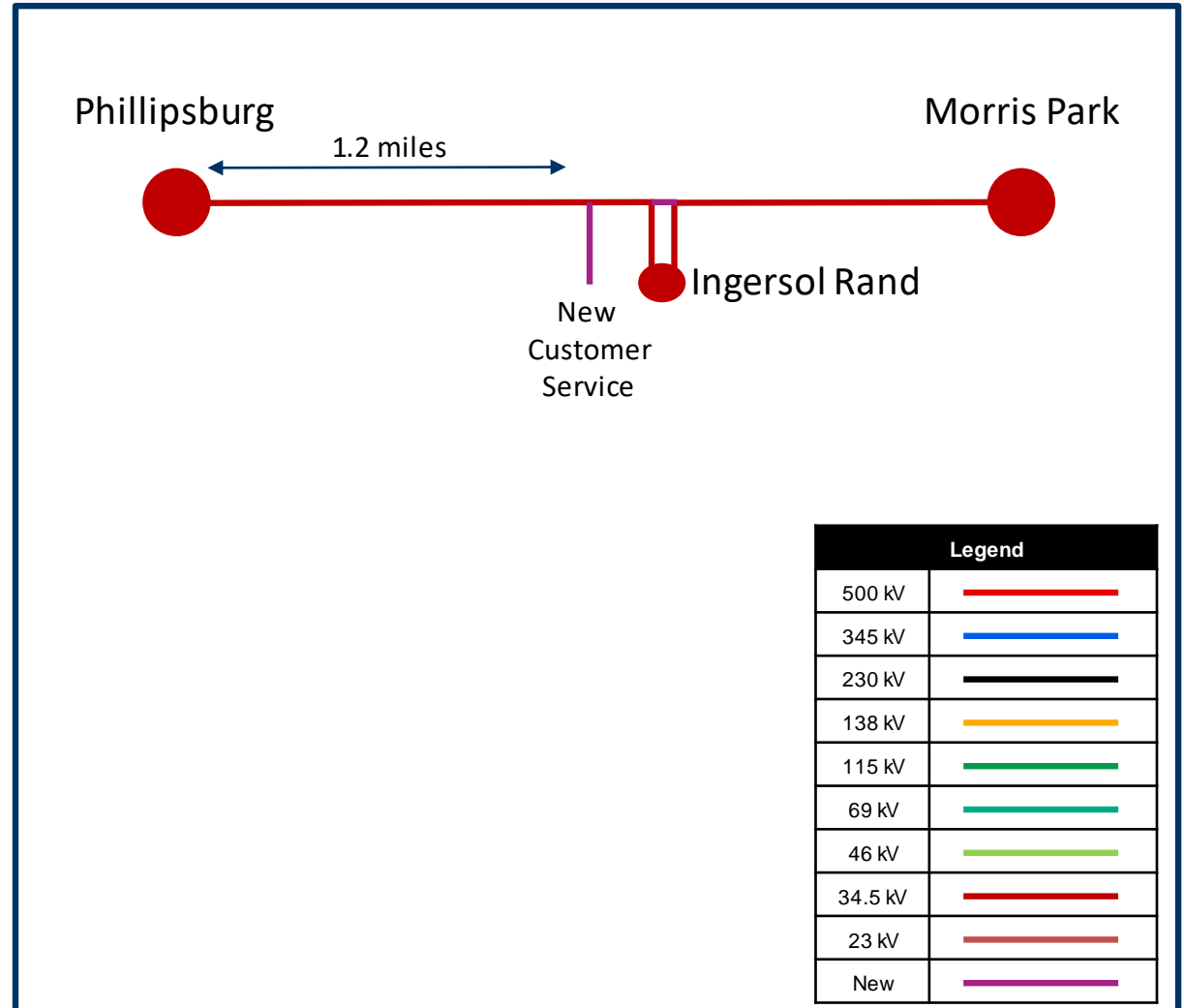
- Tap the Morris Park-Phillipsburg 34.5 kV line approximately 1.2 miles from Phillipsburg substation and build a 34.5 kV line one span toward the proposed customer substation.
- Disconnect the out-of-service customer owned 34.5 kV double circuit lines and jumper the 34.5 kV line at the tap location.
- Install two (2) 34.5 kV in-line switches on either side of the new customer tap connection
- Install one (1) 34.5 kV in-line switch on the line extension towards the customer substation

Estimated Project Cost: \$0.4M

Projected In-Service: 7/31/2020

Supplemental Project ID: s2308

Model: 2019 Series 2024 Summer RTEP 50/50



Need Number: JCPL-2020-003

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 10/16/2020

Previously Presented:

Need Meeting 6/16/2020

Solutions Meeting 7/16/2020

Project Driver:

Customer Service

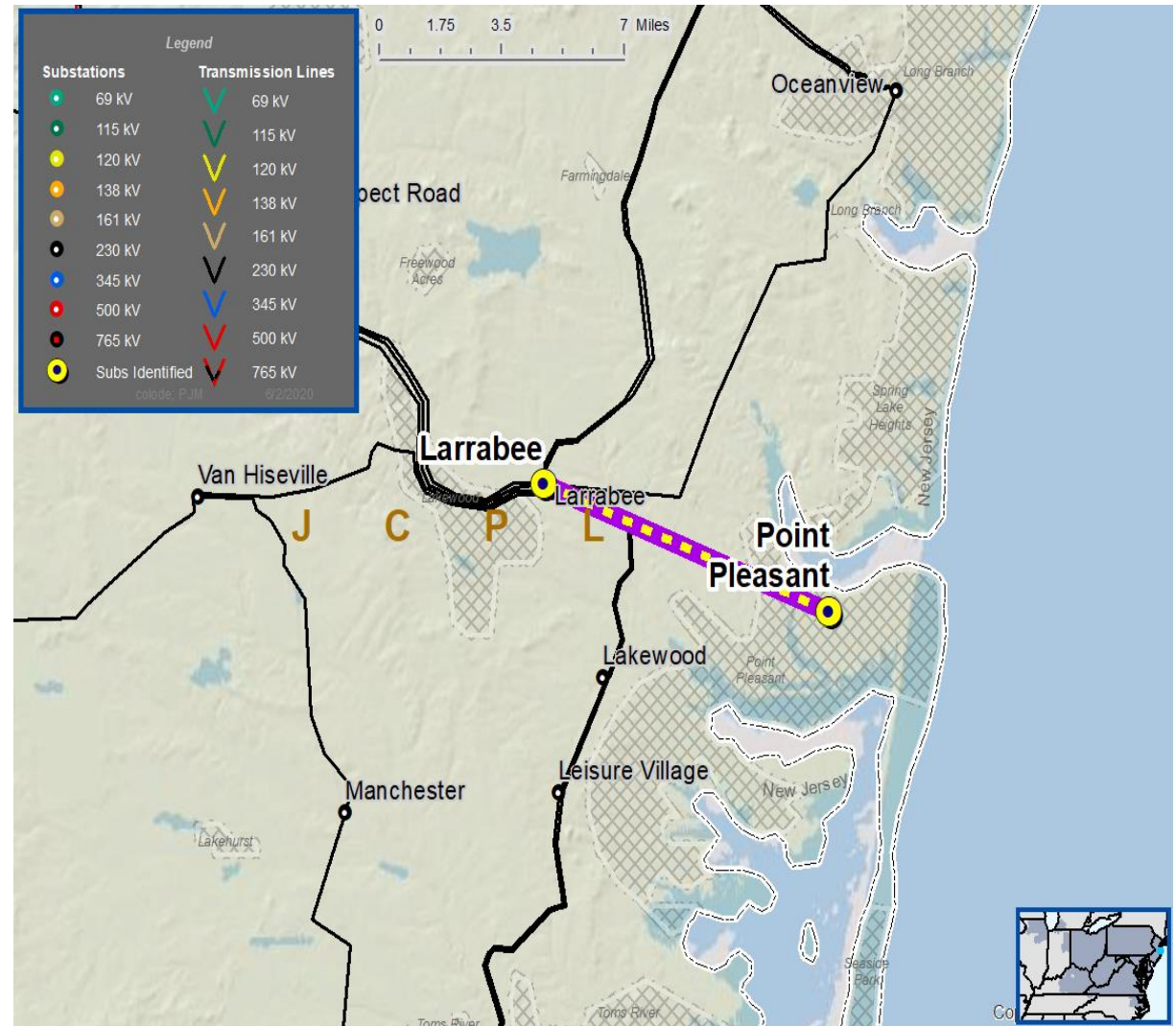
Specific Assumption Reference:

New customer connection request will be evaluated per FirstEnergy’s “Requirements for Transmission Connected Facilities” document and “Transmission Planning Criteria” document.

Problem Statement:

New Customer Connection – A customer requested 34.5 kV service, anticipated load is 4 MW, location is near the Larrabee – Point Pleasant 34.5 kV line.

Requested in-service date is September 2020.



Need Number: JCPL-2020-003

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 10/16/2020

Selected Solution:

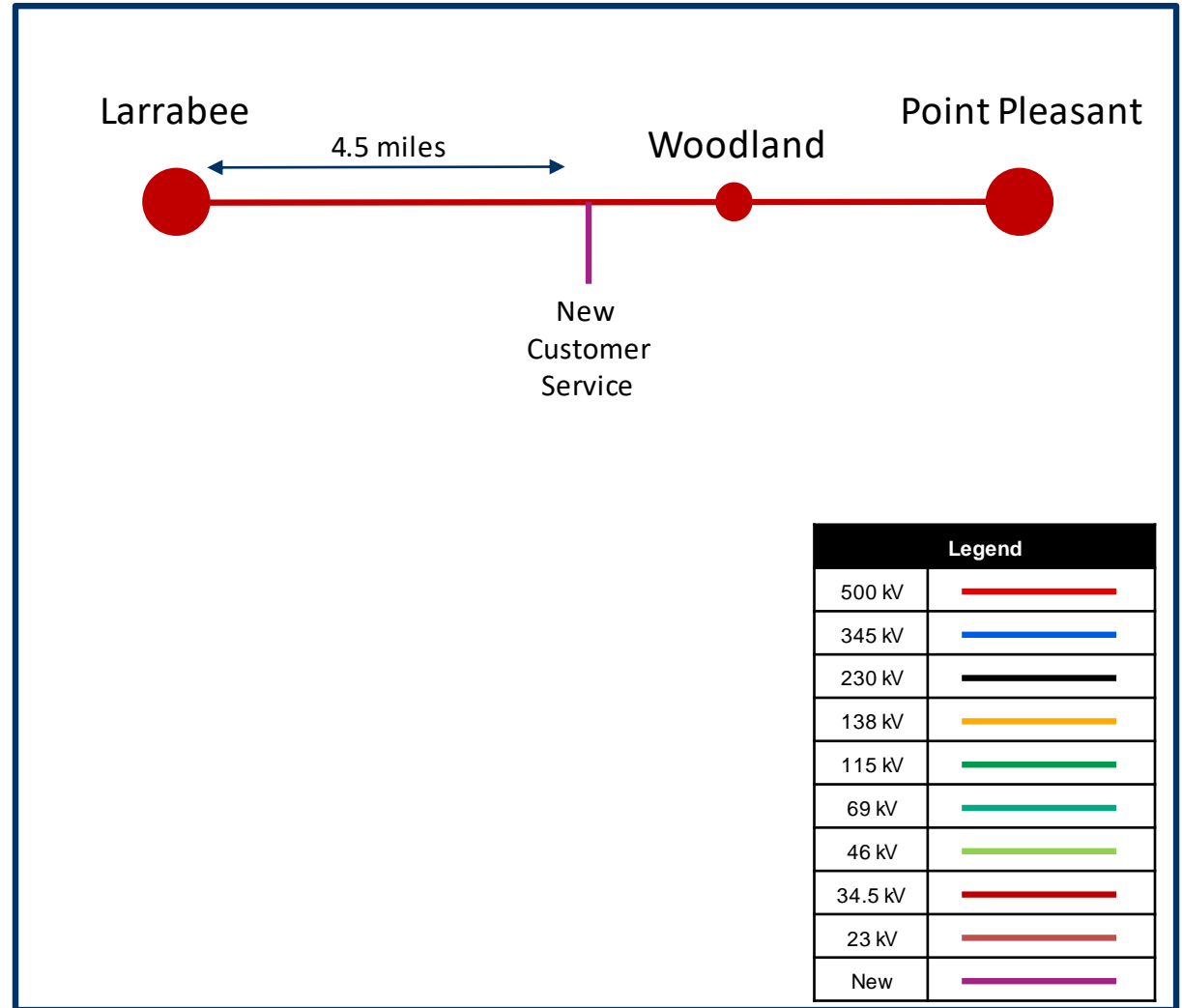
- Tap the Larrabee-Point Pleasant 34.5 kV line approximately 4.5 miles from Larrabee substation and build a 34.5 kV line one span toward the proposed customer substation.
- Install two (2) 34.5 kV in-line switches on either side of the new customer tap connection
- Install one (1) 34.5 kV in-line switch on the line extension towards the customer substation

Estimated Project Cost: \$0.4M

Projected In-Service: 9/1/2020

Supplemental Project ID: s2309

Model: 2019 Series 2024 Summer RTEP 50/50



Need Number: JCPL-2020-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 10/16/2020

Previously Presented:

Need Meeting 7/7/2020

Solutions Meeting 8/4/2020

Project Driver:

Customer Service

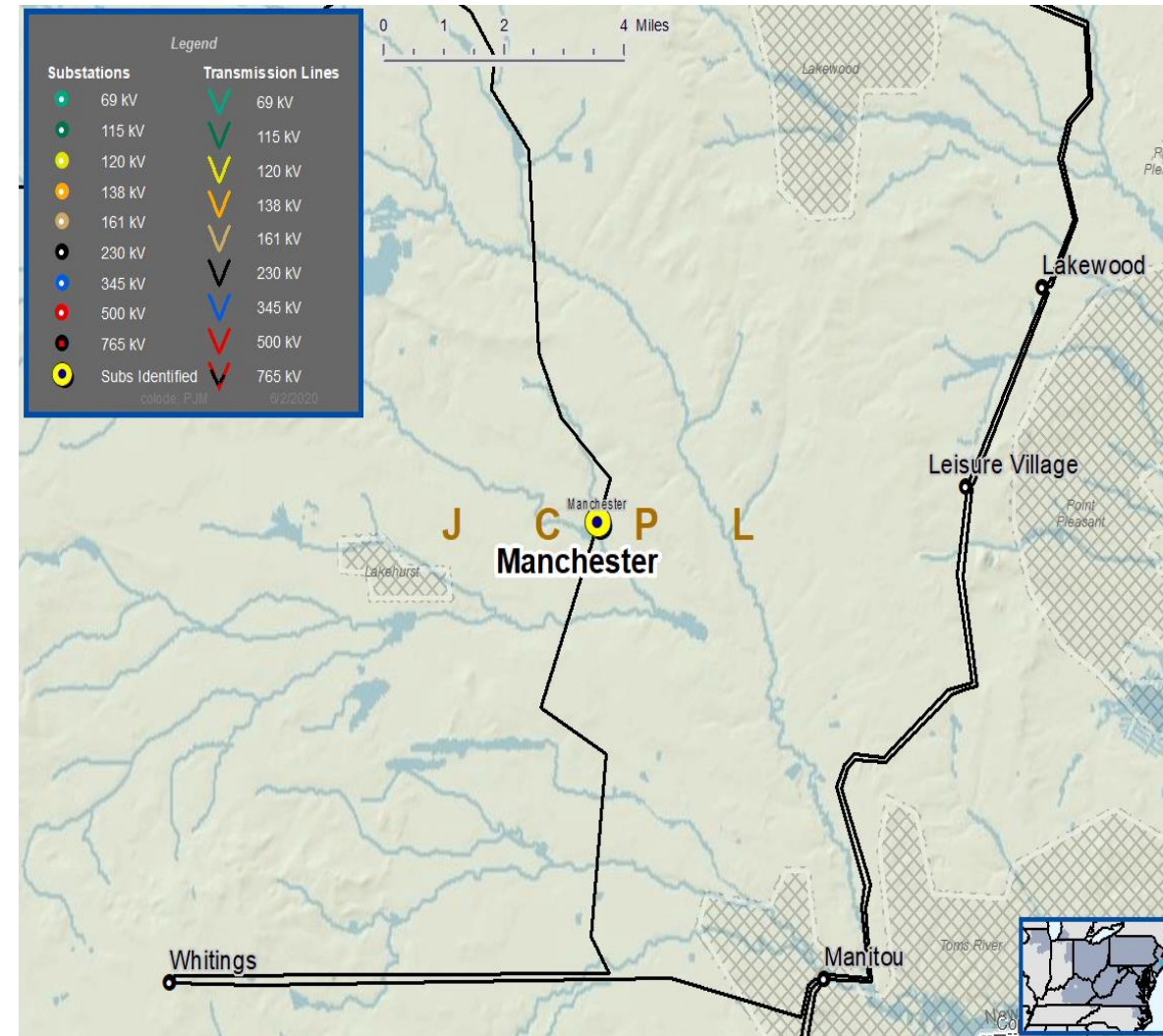
Specific Assumption Reference:

Customer connection request will be evaluated per FirstEnergy's "Requirements for Transmission Connected Facilities" document and "Transmission Planning Criteria" document

Problem Statement:

Customer Connection – JCP&L Distribution requested to complete a 230 kV service connection in 2016 with an initial in-service date of June 2018. The anticipated load is 9 MW, location is at the existing Manchester 230-12.5 kV substation.

Requested in-service date is June 2020.



Need Number: JCPL-2020-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 10/16/2020

Selected Solution:

Manchester 230-12.5 kV Transformer

- Install 230 kV circuit breaker and associated equipment (switch, relaying, etc.) to feed the new 230-12.5 kV #2 transformer.
- Remove 34.5-12.5 kV Mobile transformer.

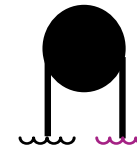
Estimated Project Cost: \$0.2 M

Projected In-Service: 8/31/2020

Supplemental Project ID: s2315

Model: 2019 RTEP Model for 2024

Manchester 230 kV



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

Need Number: JCPL-2019-028

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/11/2020

Previously Presented:

Need Meeting 04/11/2019

Solutions Meeting 12/12/2019

Project Driver:

Equipment Material Condition, Operational Flexibility and Efficiency

Specific Assumption Reference:

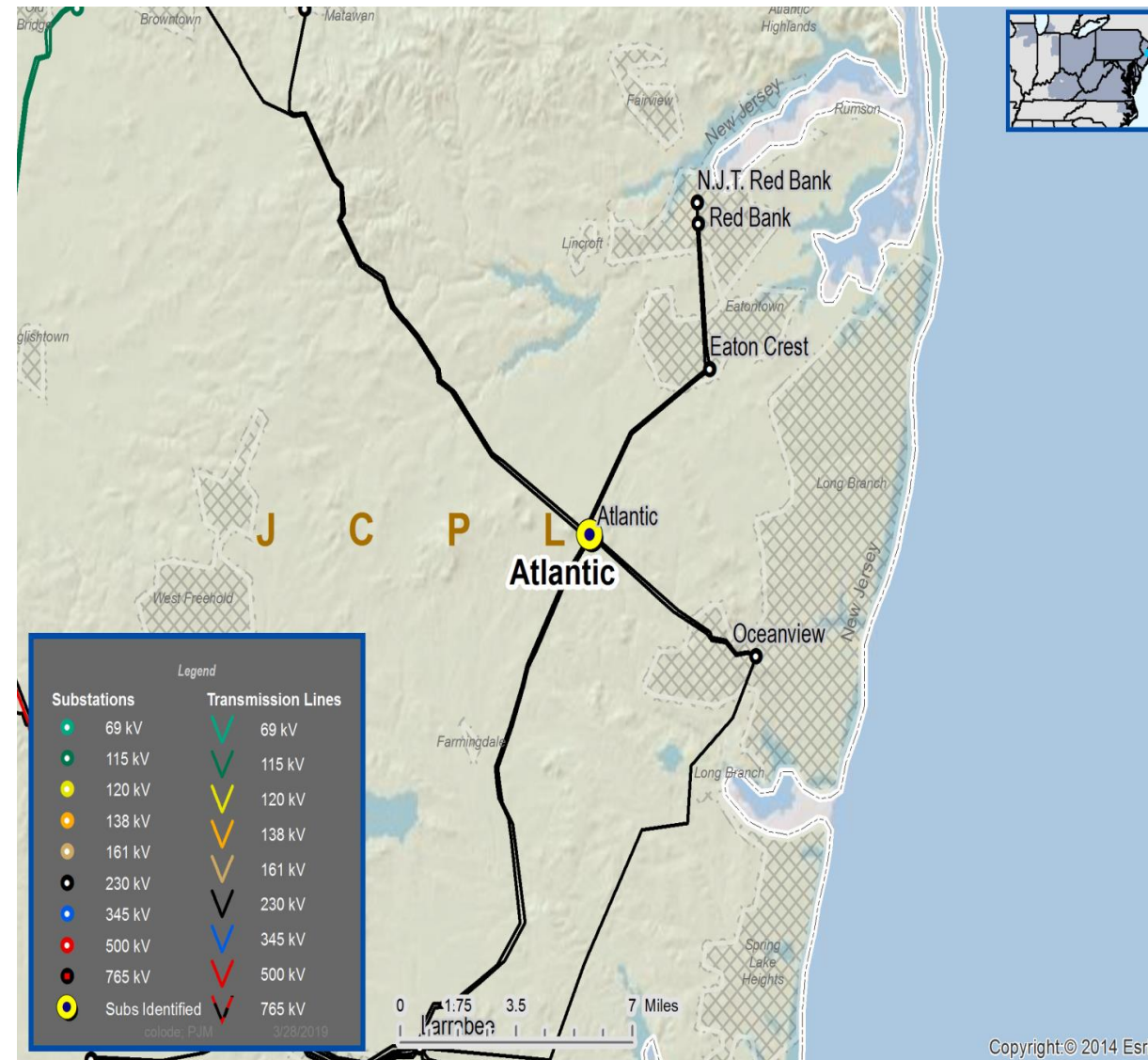
System Performance Projects Global Factors

- Past system reliability and performance
- Permanent Reactive Device Installations
- Reactive device with multiple trips in recent years
- Reactive device to reduce high voltage
- Substation Condition Rebuild/Replacement
- Reactive power support system

Problem Statement:

The Atlantic SVC has an increasing trend of outages and failures increasing maintenance needs.

High voltage on the 230 kV system has been observed at Atlantic substation with either the SVC in-service or out-of-service. The 230 kV voltage at Atlantic substation with the SVC in-service has been measured as high as 1.06 per unit. With the SVC out-of-service the measured system voltage was as high as 1.07 per unit.



Need Number: JCPL-2019-028

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/11/2020

Selected Solution:

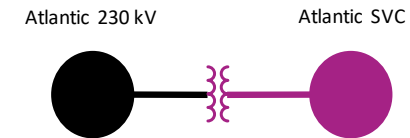
Replace the Atlantic 230 kV Static Var Compensator (SVC) with a +/- 300 MVAR, 230 kV STATCOM

Estimated Project Cost: \$55.7 M

Projected In-Service: 12/31/2020

Supplemental Project ID: s2244

Model: 2019 RTEP Model for 2024 (Light Load)



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

Questions?



Revision History

10/16/2020 – V1 – Original version posted to pjm.com. Included S2300, S2308, S2309 and S2315

11/11/2020 – V2 – Added local plan for S2244