



# Sub Regional RTEP Committee Mid-Atlantic JCPL

September 21, 2018

Need Number: JCPL-2018-002

Process Stage: Need Meeting

Date: 9/21/2018

Project Driver(s):

*Operational Flexibility and Efficiency, Performance and Risk*

Specific Assumption Reference(s)

Global Consideration

- Assess the risk associated with bus, stuck breaker, and N-2 contingencies to improve FERC tarified Transmission < 100 kV facilities.

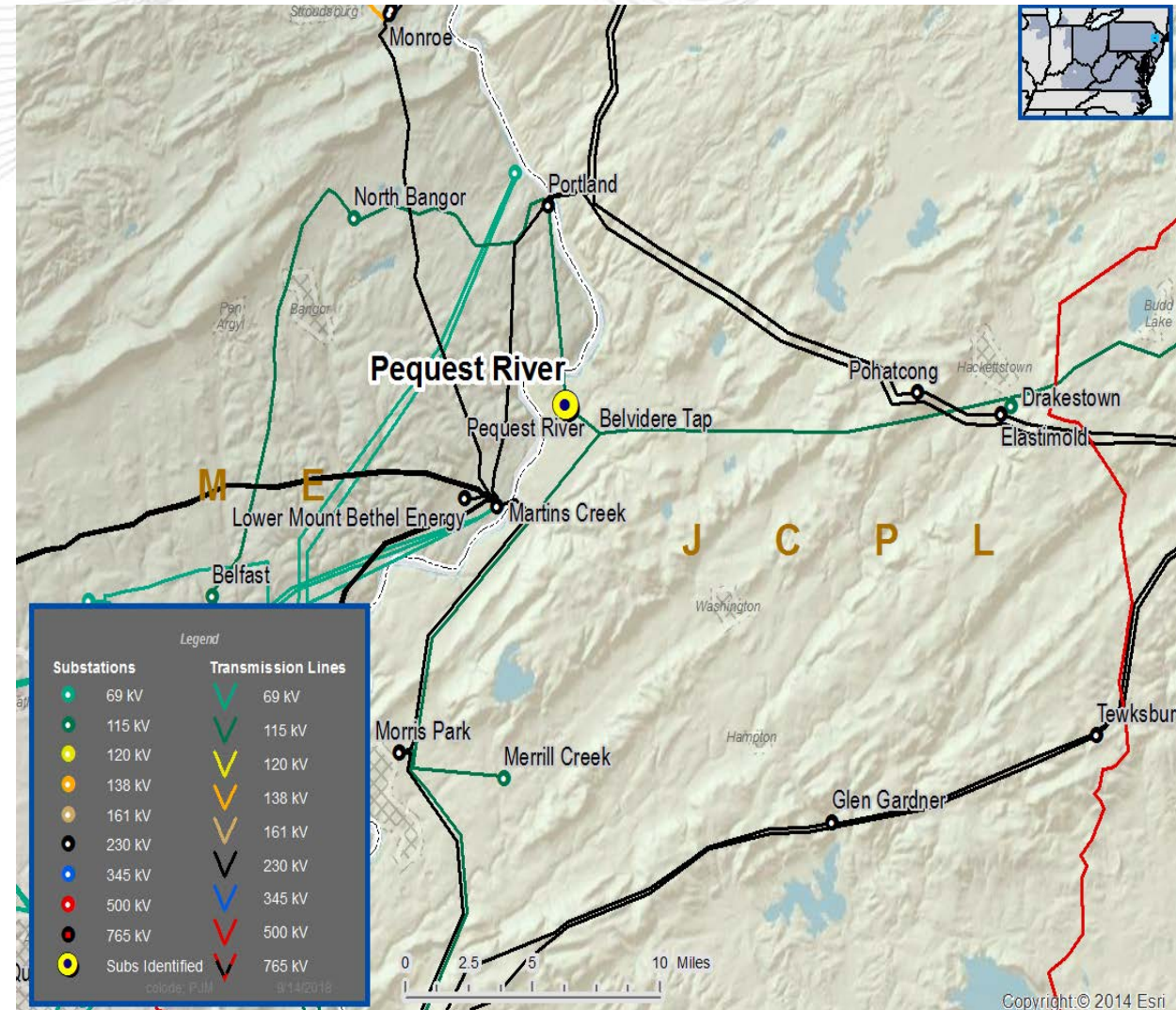
Add/Expand Bus Configuration

- Loss of substation bus adversely impacts transmission system performance
- Reduce the amount of exposed potential local load loss during contingency conditions.
- Eliminate simultaneous outages to multiple networked elements (excluding capacitor banks) under N-1 analysis.
- Eliminate simultaneous outages to multiple networked elements for stuck breakers, bus outages, N-2 events, etc.

### Problem Statement

In the event of a Pequest #1 115-34.5 kV transformer fault, the S919 line (3-terminal line) and the bus tie breaker are relied upon to clear the fault resulting in an additional loss of the Drakestown, Flanders, and Morris Park transformers.

At Pequest River, in the event of a stuck 115 kV bus tie breaker, both 115 kV feeds into Pequest River are outaged, along with two 115-34.5 kV transformers feeding the Pequest River area 34.5 kV network, the Drakestown #1, Flanders #2, and Morris Park #1 transformers.



**Need Number:** JCPL-2018-004

**Process Stage:** Need Meeting

**Date:** 9/21/2018

**Project Driver(s):**

*Operational Flexibility and Efficiency, Performance and Risk*

**Specific Assumption Reference(s)**

**Global Consideration**

- Assess the risk associated with bus, stuck breaker, and N-2 contingencies to improve FERC tariffed Transmission < 100 kV facilities.

**Add/Expand Bus Configuration**

- Loss of substation bus adversely impacts transmission system performance
- Reduce the amount of exposed potential local load loss during contingency conditions.
- Eliminate simultaneous outages to multiple networked elements for stuck breakers, bus outages, N-2 events, etc.

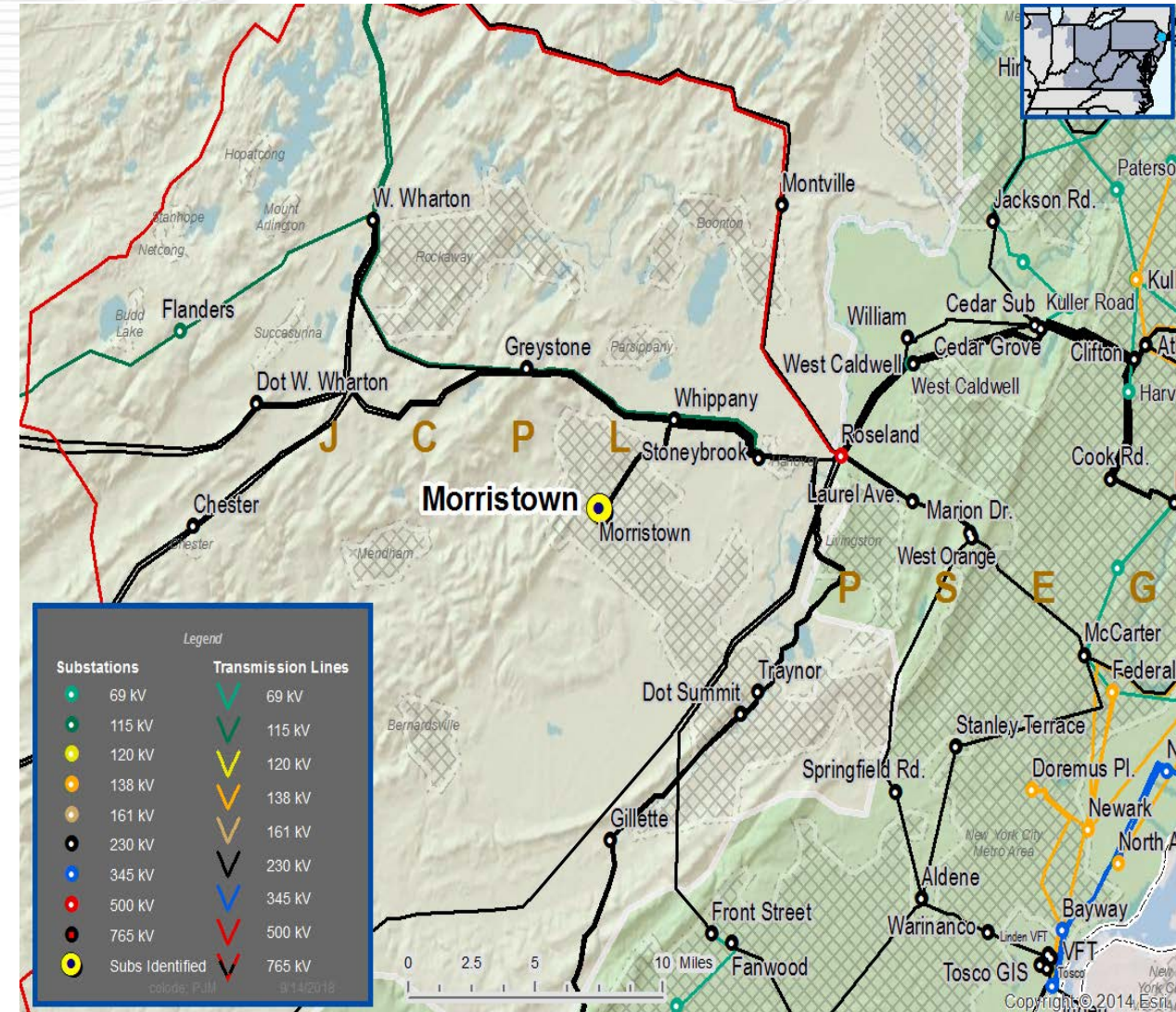
**Network Radial Lines**

- Radial lines will be evaluated based on load at risk and/or customers impacted along with its proximity to other networked facilities.

**Problem Statement**

At Morristown, in the event of a stuck 230 kV bus tie breaker, both 230 kV feeds are outaged, along with two 230-34.5 kV transformers feeding the Morristown area 34.5 kV network.

In the current configuration, the 230 kV feeds the 34.5 kV bus via 230-34.5 kV transformers. The 34.5 kV bus then feeds into the local 34.5 kV network which is operated in a radial configuration due to overdutied 34.5 kV breakers.



**Need Number:** JCPL-2018-001

**Process Stage:** Need Meeting

**Date:** 9/21/2018

**Project Driver(s):**

*Operational Flexibility and Efficiency, Performance and Risk*

**Specific Assumption Reference(s)**

Global Consideration

- Assess the risk associated with bus, stuck breaker, and N-2 contingencies to improve FERC tariffed Transmission < 100 kV facilities.

Add/Replace Transformers

- Transformer that if added or replaced would alleviate loading conditions under contingency scenarios.

Add/Expand Bus Configuration

- Reduce the amount of exposed potential local load loss during contingency conditions.

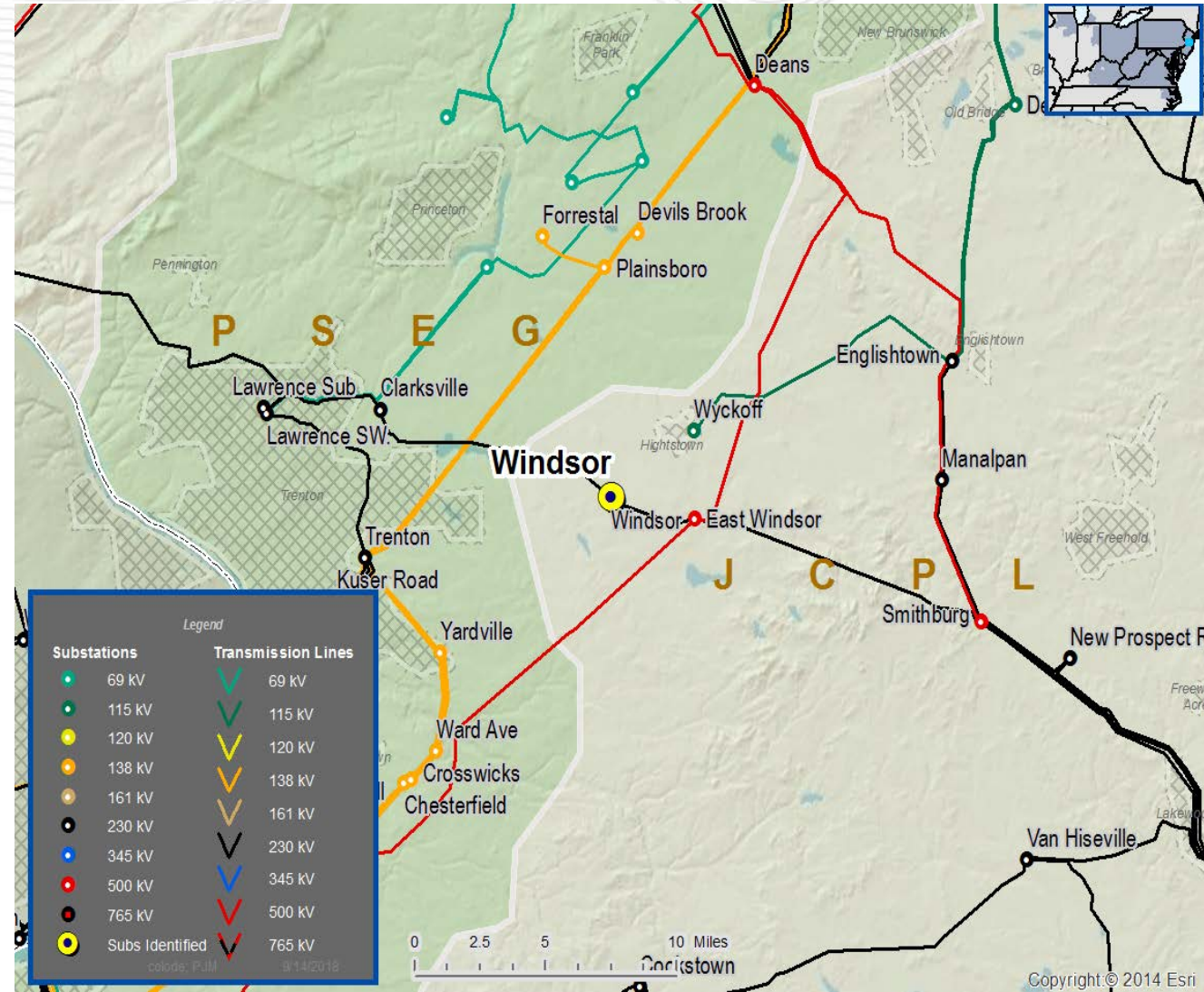
Reconductor/Rebuild Transmission Lines

- Transmission lines that are presently six-wired. Line should be evaluated to create two separate transmission circuits.

**Problem Statement**

At Windsor, in the event of a stuck 230 kV bus tie breaker, both 230 kV feeds are outaged, along with two 230-34.5 kV transformers feeding the Windsor are distribution load.

In the current configuration, the 230 kV feeds the 34.5 kV bus via a 230-34.5 kV transformer. The 34.5 kV bus then feeds into the local 34.5 kV network. This arrangement creates a transmission path through a lower voltage facilities.



**Need Number:** JCPL-2018-003

**Process Stage:** Need Meeting

**Date:** 9/21/2018

**Project Driver(s):**

*Operational Flexibility and Efficiency*

**Specific Assumption Reference(s)**

Global Consideration

- Assess the risk associated with bus, stuck breaker, and N-2 contingencies to improve FERC tariffed Transmission < 100 kV facilities.

Network Radial Lines

- Radial lines will be evaluated based on load at risk and/or customers impacted along with its proximity to other networked facilities.

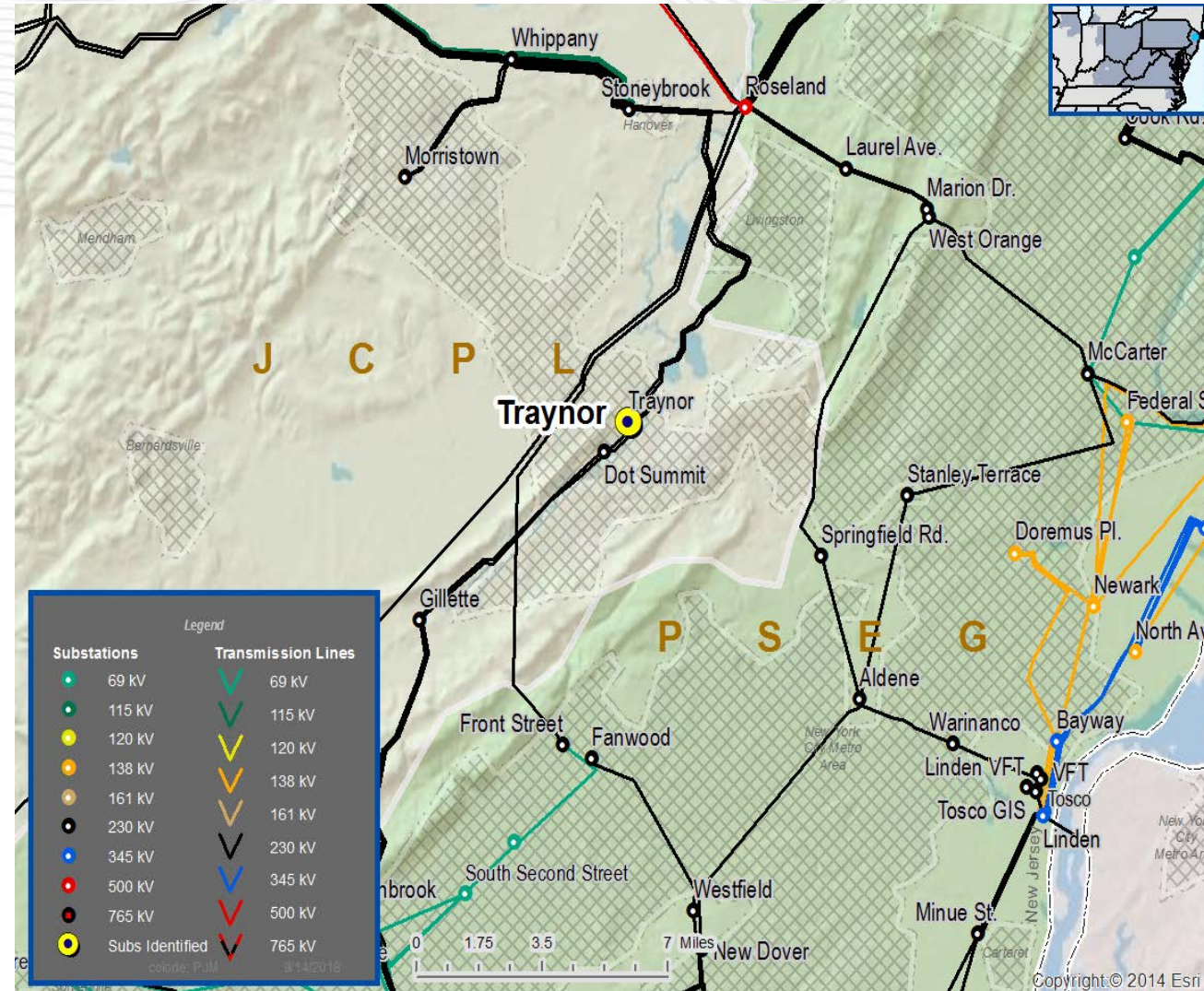
Add/Expand Bus Configuration

- Reduce the amount of exposed potential local load loss during contingency conditions.
- Eliminate simultaneous outages to multiple networked elements under N-1 analysis.

**Problem Statement**

N-1-1 outages result in loss of the 34.5 kV lines serving the area impacting approximately 7,717 customers and approximately 33 MW of load.

N-1-1 outage of the Traynor-Madison 34.5 kV and the Traynor- Livingston Switch Point 34.5 kV lines, thermal loading on the Traynor – Madison (N14) 34.5 kV line is greater than 105% of its 50 MVA limit.



**Need Number:** JCPL-2018-005

**Process Stage:** Need Meeting

**Date:** 9/21/2018

**Project Driver(s):**

*Operational Flexibility and Efficiency*

**Specific Assumption Reference(s)**

**Network Radial Lines**

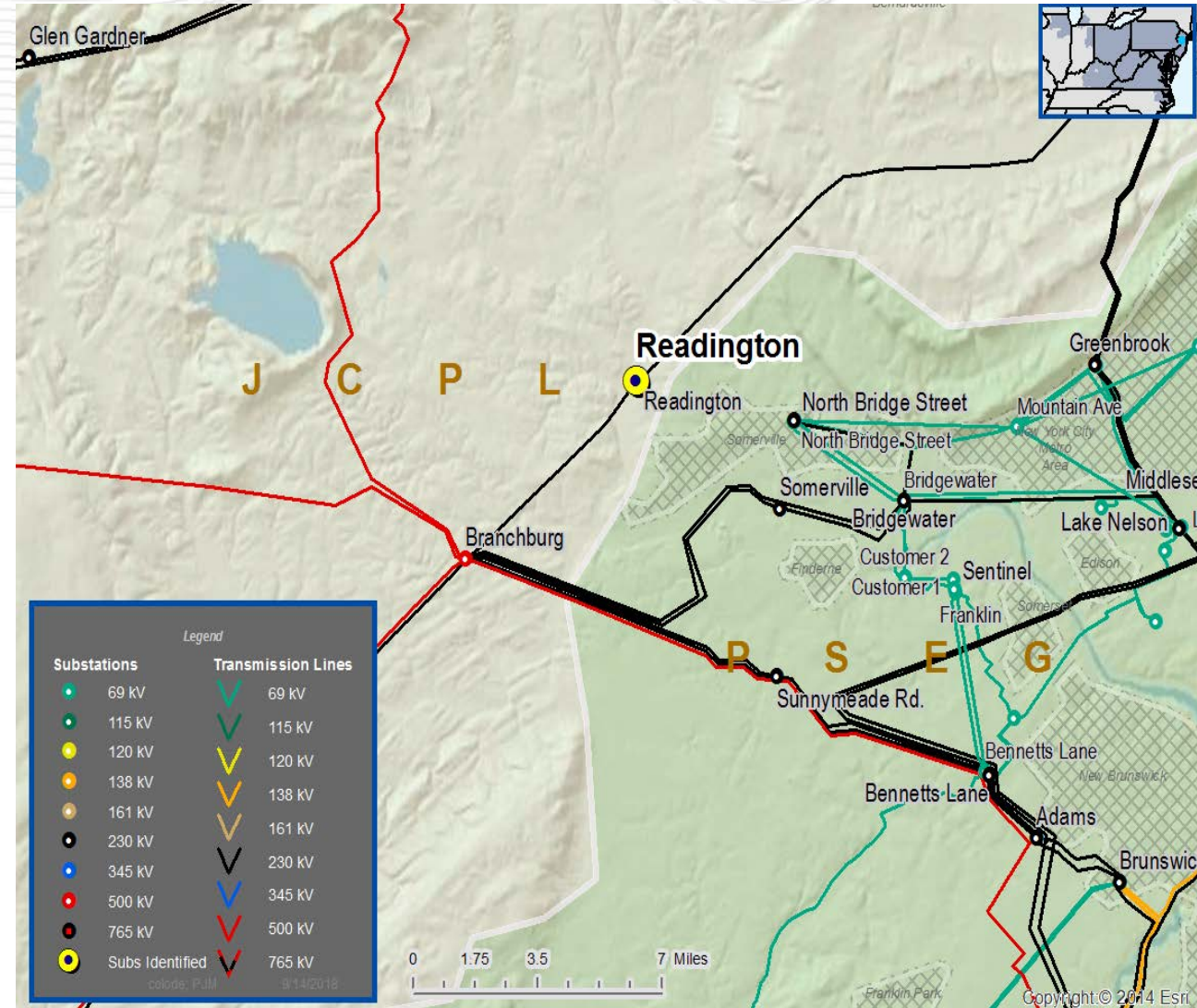
- Radial lines will be evaluated based on load at risk and/or customers impacted along with its proximity to other networked facilities.

**Build New Transmission Line**

- Network radial lines.

**Problem Statement**

Readington T774 34.5 kV line is radial. Line outage or contingency as well as 34.5 kV bus maintenance or outages result in loss of the T774 impacting approximately 1,711 customers and approximately 35 MW of load.





# Revision History

9/13/2018 – V1 – Original version posted to [pjm.com](http://pjm.com)

9/14/2018 – V2 – Added maps