Transmission Expansion Advisory Committee – PSE&G Supplemental Projects

August 4, 2020

Needs

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

PSE&G Transmission Zone M-3 Process

Need Number: PSEG-2020-0005

Process Stage: Need Meeting 8/04/2020

Supplemental Project Driver:

Operational Flexibility and Efficiency

Specific Assumption Reference:

- Modernize legacy system to meet current standards
- Engineering directives & guidelines (both internal and external)
  - PJM Relay Subcommittee Directional Comparison Blocking (DCB) recommendations effective 4/17/2014
    - Recommendations recognize DCB is widely used and dependable line protection scheme, but when certain elements of DCB schemes fail to operate, they often trip more equipment than is necessary.
    - The tolerance for overtrips may be unacceptable when the stability of large generating units is adversely affected.
    - A protection scheme more secure than DCB is recommended in cases where additional analysis reveals stability concerns.

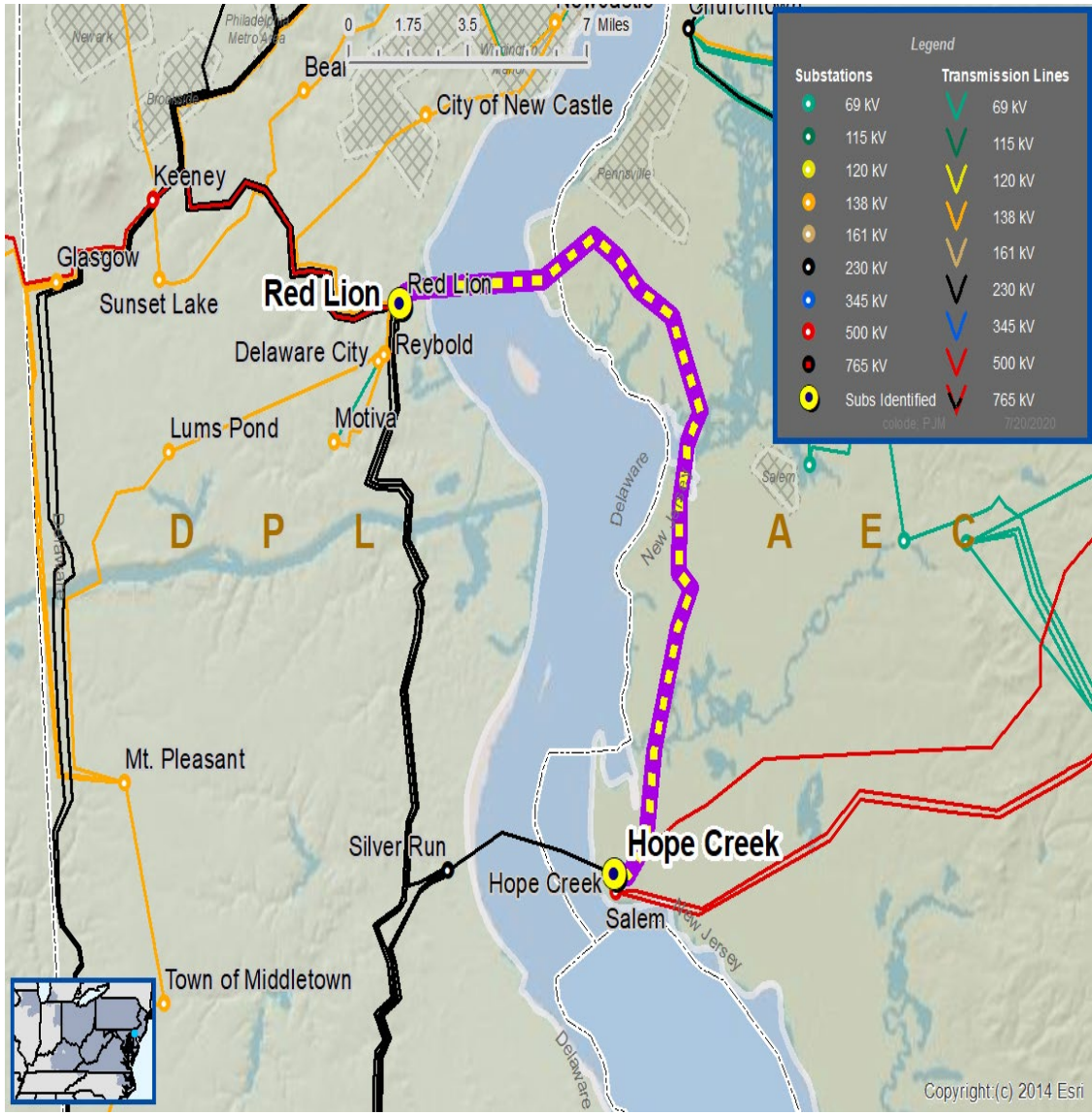
Problem Statement:

The 5015 line in southern New Jersey runs from Red Lion (DPL) to Hope Creek Nuclear Station (PSE&G) and has experienced 9 faults in the past 10 years due to avian activity and lightning strikes, with the two most recent faults occurring in April 2020. The line is currently protected using power line carrier relaying. Additional simulation testing has revealed a more secure and reliable method for fault detection and isolation is required to avoid potential overtrips.

Multiple towers on this line are only accessible by boat, so more accurate fault location methods are required.

- Faults on this line are very difficult to locate and detect.
- 5015 line is critical to the operation of Hope Creek and Salem Nuclear Power plants.

Model: 2019 Series 2024 Summer RTEP 50/50



Solution

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

PSE&G Transmission Zone M-3 Process
Western Essex County Area

Need Number: PSEG-2020-0002

Process Stage: Solutions Meeting 08/04/2020

Previously Presented: Need Meeting 07/07/2020

Supplemental Project Driver:

- Customer Service

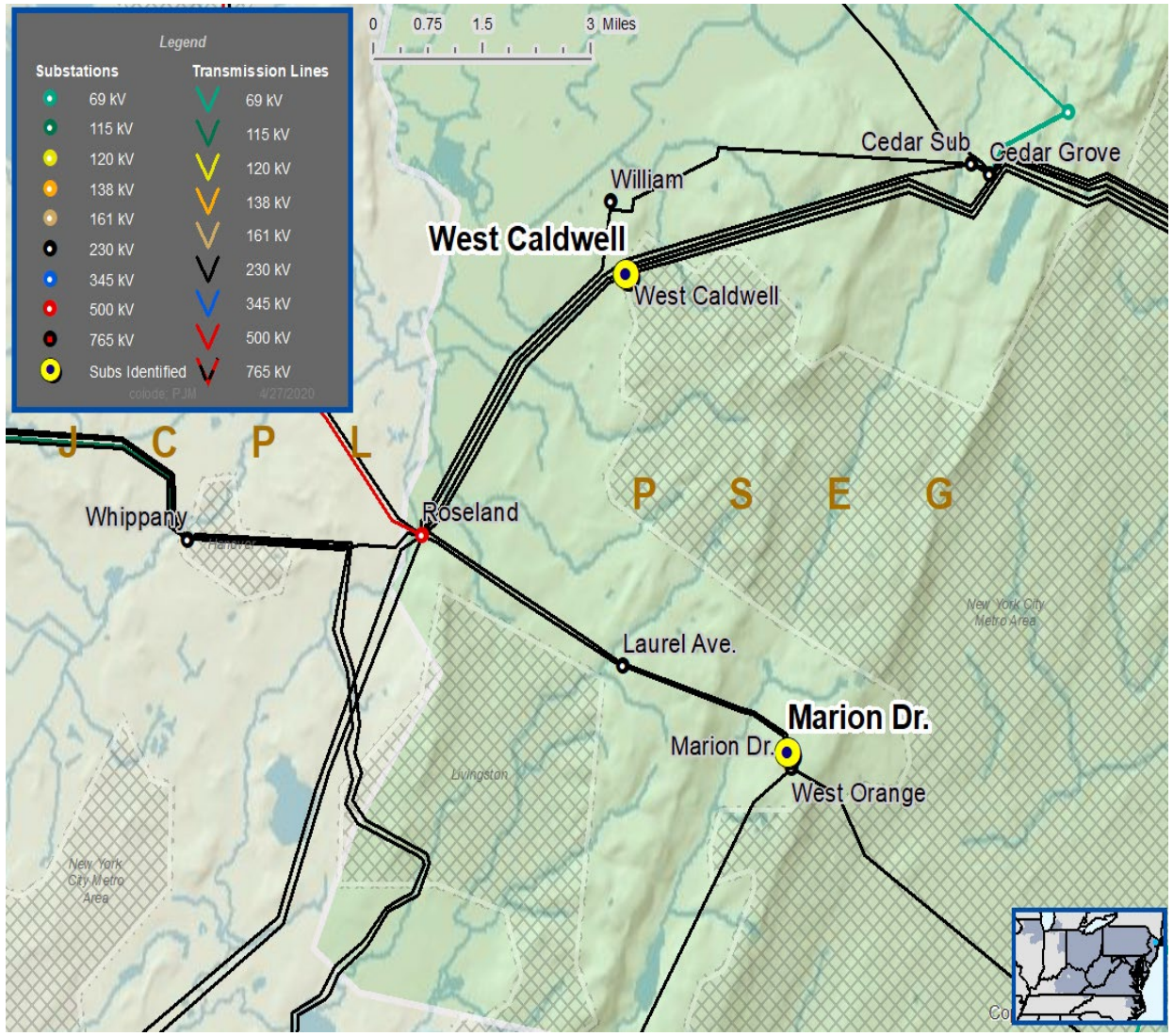
Specific Assumption Reference:

- PSE&G 2019 Annual Assumptions
- Localized Load Growth & Contingency Overloads

Problem Statement:

- West Caldwell is a station in the Western Essex County area at capacity of 120 MVA. Marion Drive is a station in the Western Essex County area at capacity of 60 MVA.
- Marion Drive serves roughly 18,200 customers with a peak load of 62 MVA in 2019.
- West Caldwell serves roughly 18,000 customers with a peak load of 131 MVA in 2019.

Model: 2019 Series 2024 Summer RTEP 50/50



PSE&G Transmission Zone M-3 Process
Western Essex County Area

Need Number: PSEG-2020-0002

Process Stage: Solutions Meeting 08/04/2020

Proposed Solution:

- New 230-13kV Station in Livingston
  - Install a 230 kV station with two (2) 230/13kV transformers.
  - Cut and loop the Roseland-Laurel Ave 230kV line into the 230kV bus.
  - Transfer load from heavily loaded Marion Drive and West Caldwell to the new station.
  - **Estimated Cost:** $29.8M

Ancillary Benefits:

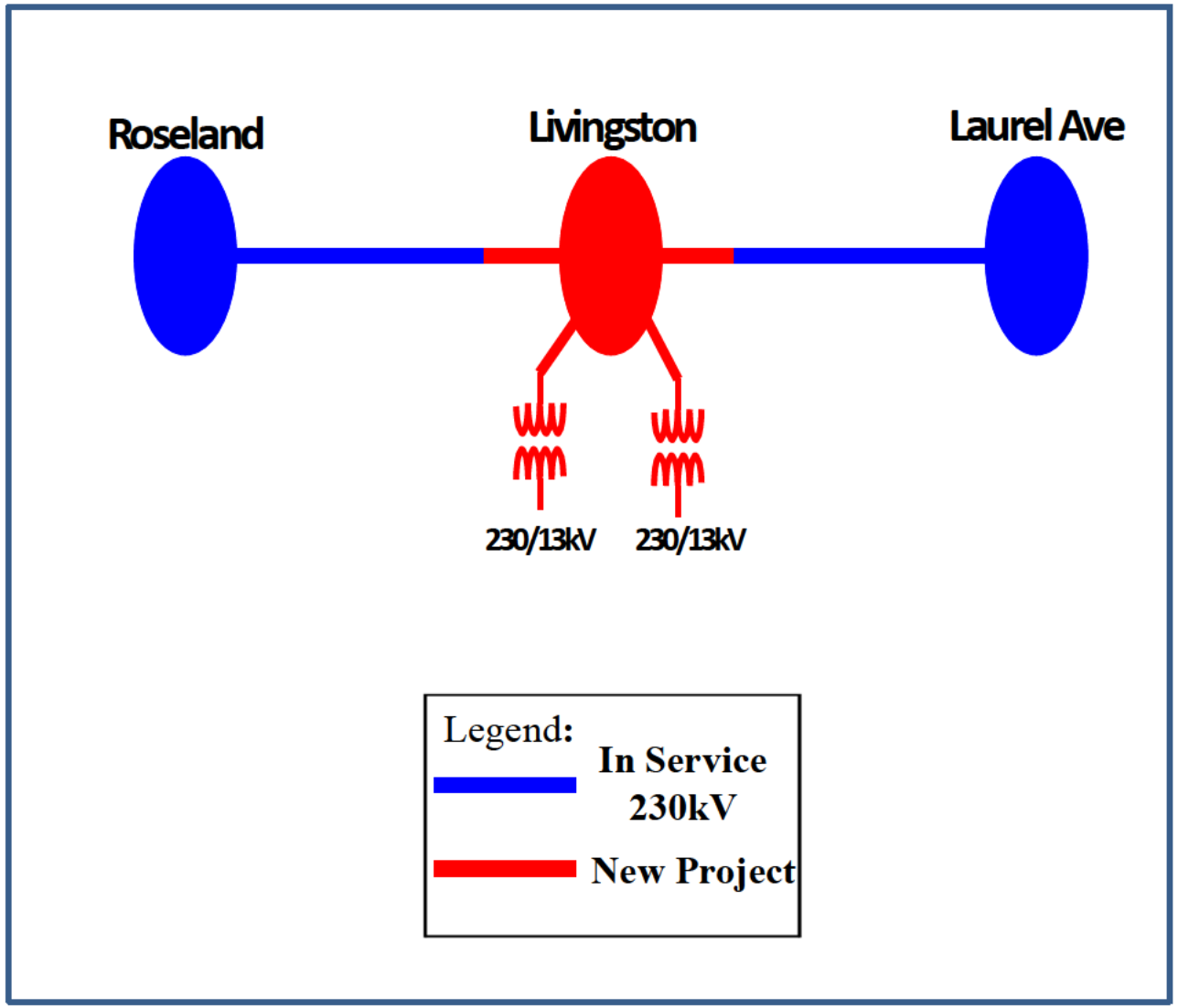
- Does not require an extension of the existing 230kV circuits due to close proximity to the 230kV Right of Way.
- Decreases the amount of exposure and increases the reliability of the 230kV circuit.

Alternatives Considered:

- New 230-13kV Substation in Livingston
  - Install a 230kV station with two (2) 230/13kV transformers.
  - Evaluated two different bus configuration design alternatives from the proposed solution.
  - Cut and loop the Roseland-Laurel Ave 230kV line into the 230kV bus.
  - Transfer load from heavily loaded Marion Drive and West Caldwell to the new station.
  - Estimated Cost for Solid Insulated Bus Design: $47.3M
  - Estimated Cost for Gas Insulated Bus Design: $43.0M

Projected In-Service: 12/2024

Project Status: Conceptual



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

7/24/2020 – V1 – Original version posted to pjm.com