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.
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.
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
**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

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

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