



Sub Regional RTEP Committee PJM Mid-Atlantic PSEG

January 25, 2019

Solutions

Supplemental Reliability Upgrades

Need Number: PSEG-2018-0003

Need Presented: 9/21/2018

Meeting Date: 1/25/2019

Process Stage: Solution Meeting

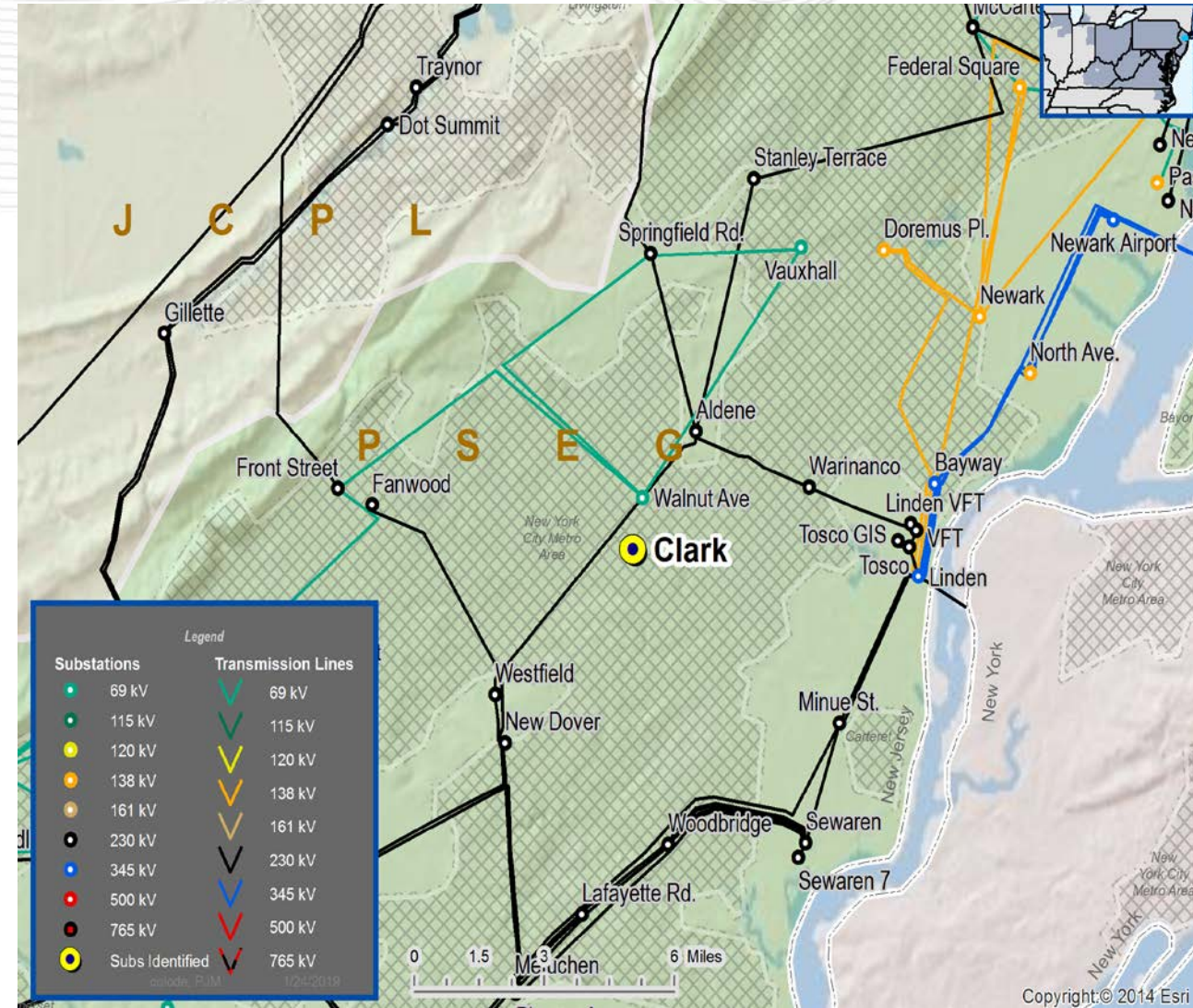
Supplemental Project Drivers: Equipment Material Condition, Performance and Risk; Customer Service

Problem Statement:

- Clark is supplied by 26kV circuits with increasing performance problems.
 - Over the past decade, the 26kV supply circuits have seen significant momentary and extended outages, with total duration of hundreds of hours.
- Station equipment at Clark has been in service for over 60 years. This equipment has been identified as being in poor condition and needs to be addressed. The station has outdoor metal clad switchgear that has resulted in rust and leaks over time, which causes bus failures.
 - Clark serves roughly 2,300 customers and 16 MVA of load.
- Stations around Clark are at or near capacity. There is a need for additional capacity in the area.

Specific Assumption References:

- [August 2017 26kV to 69kV PSE&G Presentation](#)
- [PSE&G 2018 Annual Assumptions](#)



Need Number: PSEG-2018-0003

Proposed Solution:

Walnut Ave 69kV Substation

- Purchase property to accommodate new construction.
- Install a 69kV bus with two (2) 69/13kV transformers.
- Construct a 69kV network between Front St, Springfield Rd, Vauxhall, and Walnut Ave.
- Eliminate Clark substation.
- Transfer load from nearby heavily loaded Aldene, Warinanco, and Westfield to the new station.
- Provide for future asset condition based retirements.

Estimated Cost: \$146M

Projected In-Service Date: 05/2023

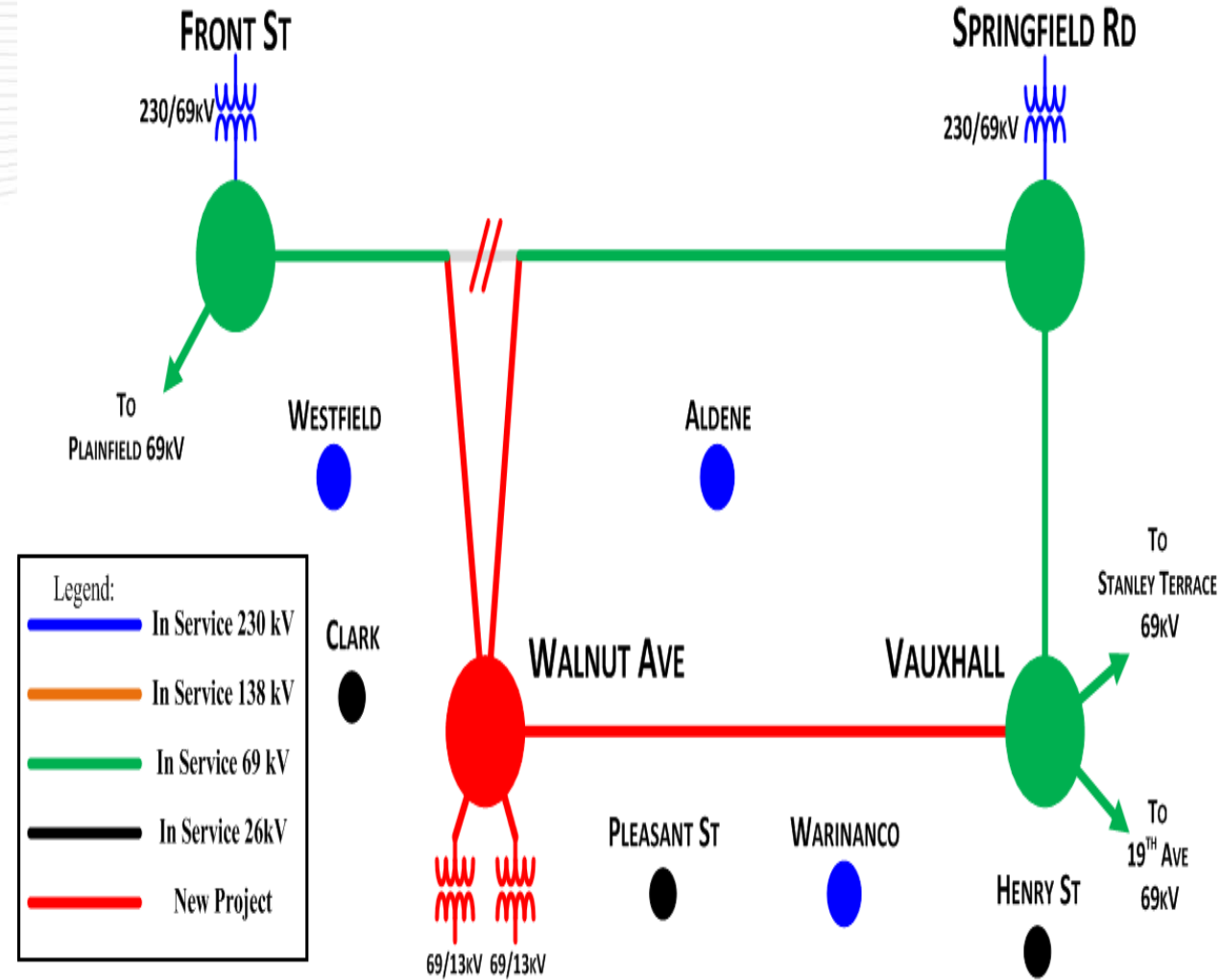
TO Alternatives Considered:

Alternative 1 – Walnut Ave 230kV/69kV Switching Station

- Purchase property to accommodate new construction.
- Install a 230kV bus with one (1) 230/69kV transformer.
- Cut and loop the Westfield-Aldene 230kV line in to the 230kV ring bus.
- Install a 69kV bus with two (2) 69/13kV transformers.
- Construct a 69kV network between Front St, Springfield Rd, and Walnut Ave.
- Eliminate Clark substation.
- Transfer load from nearby heavily loaded Aldene, Warinanco, and Westfield to the new station.
- Provide for future asset condition based retirements.
- Estimated Cost: \$161M

Alternative 2 – Rebuild Clark 26kV

- Replace 26kV equipment at Clark in kind and rebuild 26kV supply.
- This alternative is not feasible because it does not address presented needs.





PSEG Transmission Zone

Need Number: PSEG-2018-0006

Need Presented: 11/28/2018

Meeting Date: 1/25/2019

Process Stage: Solution Meeting

Project Drivers:

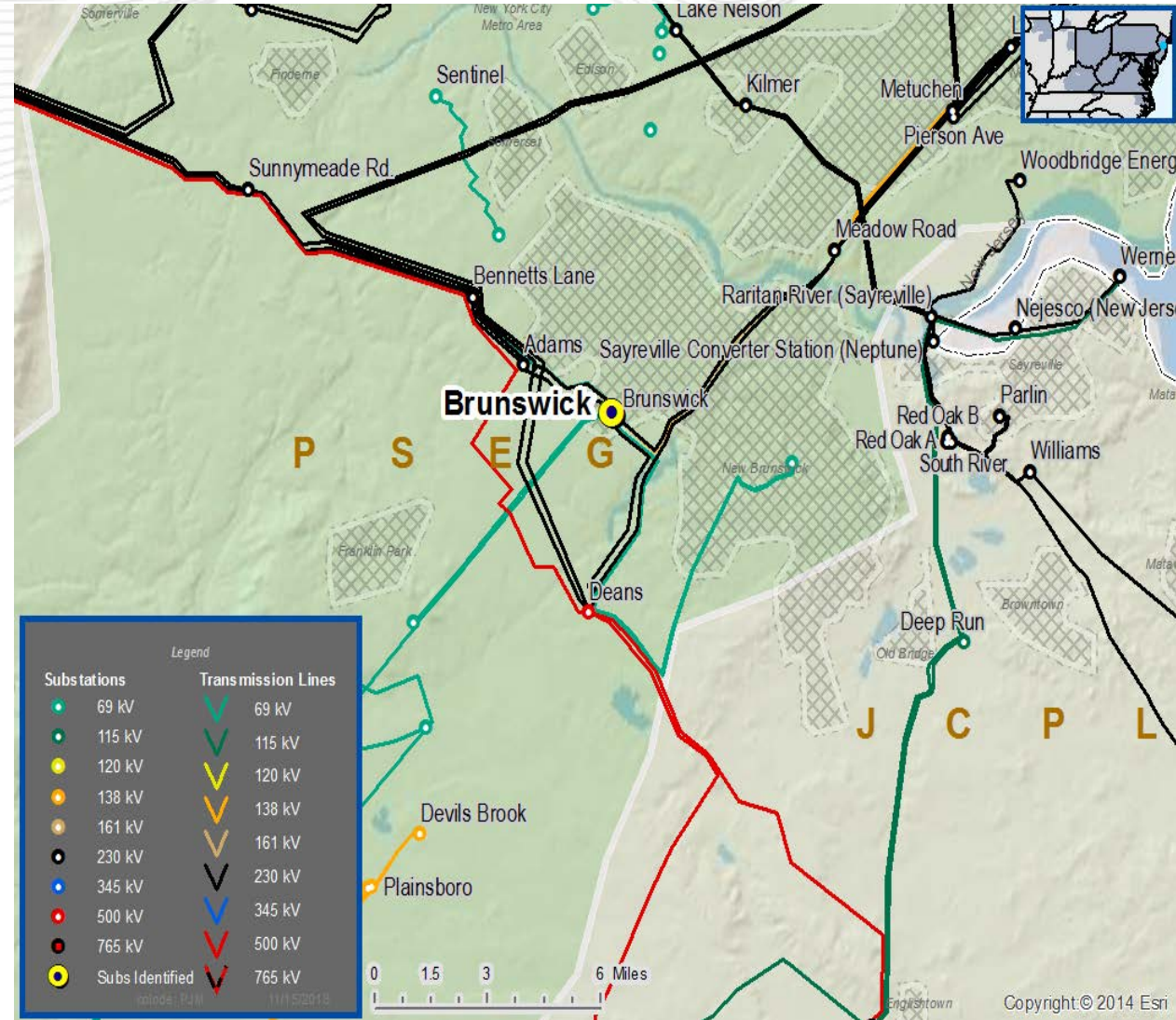
- Customer Service

Problem Statement:

- Stations in the New Brunswick area are at or near capacity. There is a need for additional capacity in the area.
 - Adams serves roughly 22,000 customers and 83 MVA of load.
 - Bennetts Lane serves roughly 21,000 customers and 83 MVA of load.
 - Brunswick serves roughly 10,000 customers and 46 MVA of load.
 - Station capacity for each station is 60 MVA, excluding the value of inter-station ties.

Specific Assumption References:

- [PSE&G 2018 Annual Assumptions](#)



Need Number: PSEG-2018-0006

Proposed Solution:

New 69kV Substation in North Brunswick

- Purchase property to accommodate construction.
- Install a 69kV breaker-and-a-half bus with two (2) 69/13kV transformers.
- Construct a 69kV network between Bennetts Lane, Brunswick, a customer substation, and the new station.
- Transfer load from nearby heavily loaded Adams, Bennetts Lane, and Brunswick to the new station.
- Provide for future asset condition based retirements and continued system expansion to accommodate future downtown New Brunswick load growth.

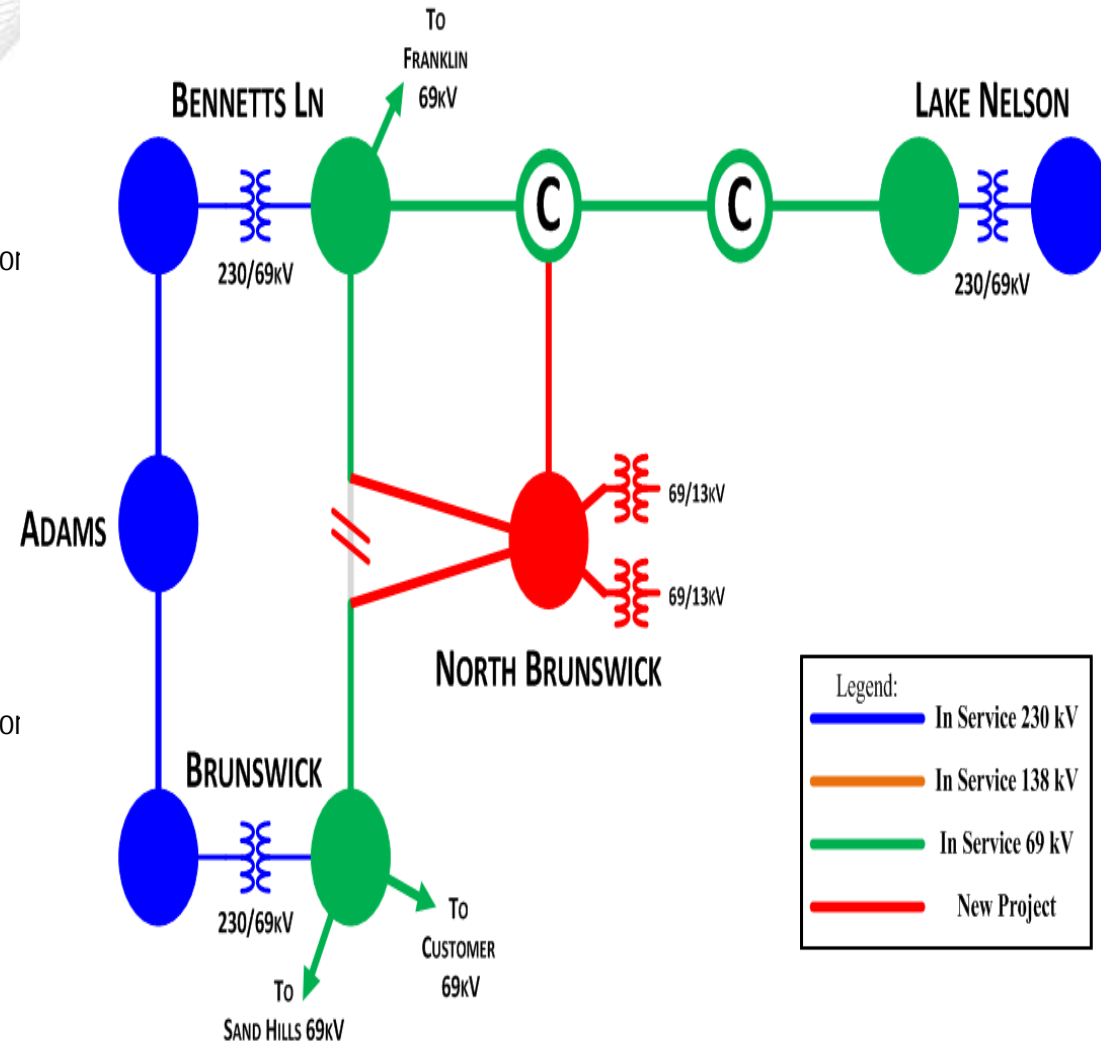
Estimated Cost: \$129M

Projected In-Service Date: 03/2023

TO Alternatives Considered:

New 69kV Substation in New Brunswick

- Purchase property to accommodate construction.
 - Install a 69kV ring bus with two (2) 69/13kV transformers.
 - Construct a 69kV network between Bennetts Lane, Brunswick, a customer substation, and the new station.
 - Transfer load from nearby heavily loaded Adams, Bennetts Lane, and Brunswick to the new station.
 - Does not provide for future asset condition based retirements or continued system expansion to accommodate future downtown New Brunswick load growth.
 - Property constraints and constructability challenges.
 - Potential property identified to accommodate project is no longer available
- Estimated Cost: Not quantifiable.



Need Number: PSEG-2018-0007

Need Presented: 11/28/2018

Meeting Date: 1/25/2019

Process Stage: Solution Meeting

Project Drivers:

- Customer Service
- Equipment Material Condition, Performance and Risk

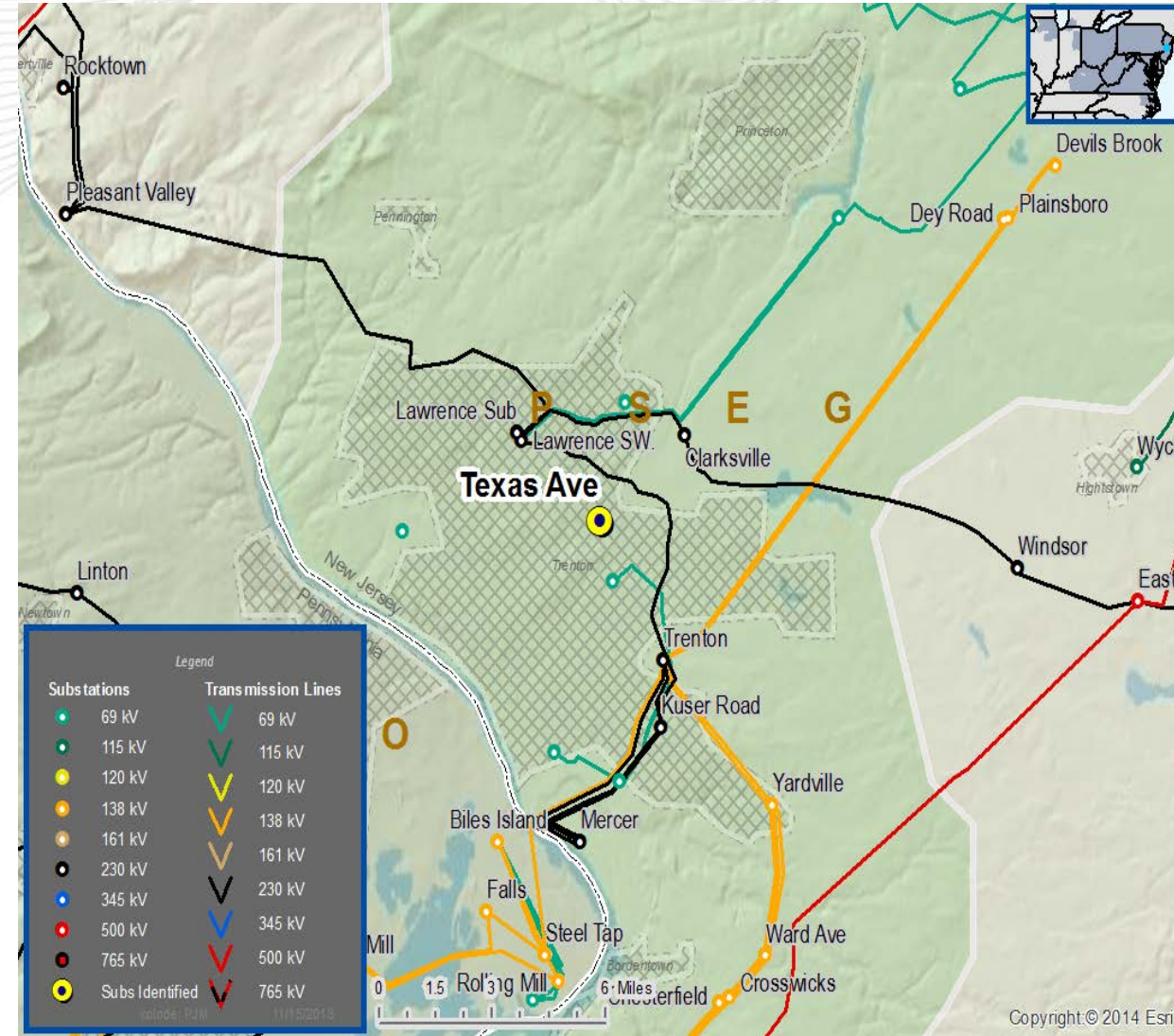
Problem Statement:

Stations around Texas Ave are at or near capacity. There is a need for additional capacity in the area.

- Lawrence serves roughly 26,000 customers and 121 MVA of load. Texas Ave is a unit substation supplied by two 26kV circuits with increasing performance problems.
- Over the past decade, the two 26kV supply circuits at Texas have experienced 10 extended outages and 32 momentary outages, with total duration of over 82 hours. Station equipment at Texas Ave has been in service for over 60 years. This equipment has been identified as being in poor condition and needs to be addressed.
- Texas Ave serves roughly 1,000 customers and 5 MVA of load.

Specific Assumption References:

- [PSE&G 2018 Annual Assumptions](#)



Need Number: PSEG-2018-0007

Proposed Solution:

New 69kV Substation at Texas Ave

- Purchase neighboring property to accommodate construction.
- Install a 69kV bus with two (2) 69/13kV transformers.
- Construct a 69kV network between Ewing, Hamilton, Lawrence, and the new station.
- Transfer load from nearby heavily loaded Lawrence to the new station.

Estimated Cost: \$71M

Projected In-Service Date: 04/2023

TO Alternatives Considered:

Alternative 1 – New 69kV Substation at Texas Ave (alternate 69kV network)

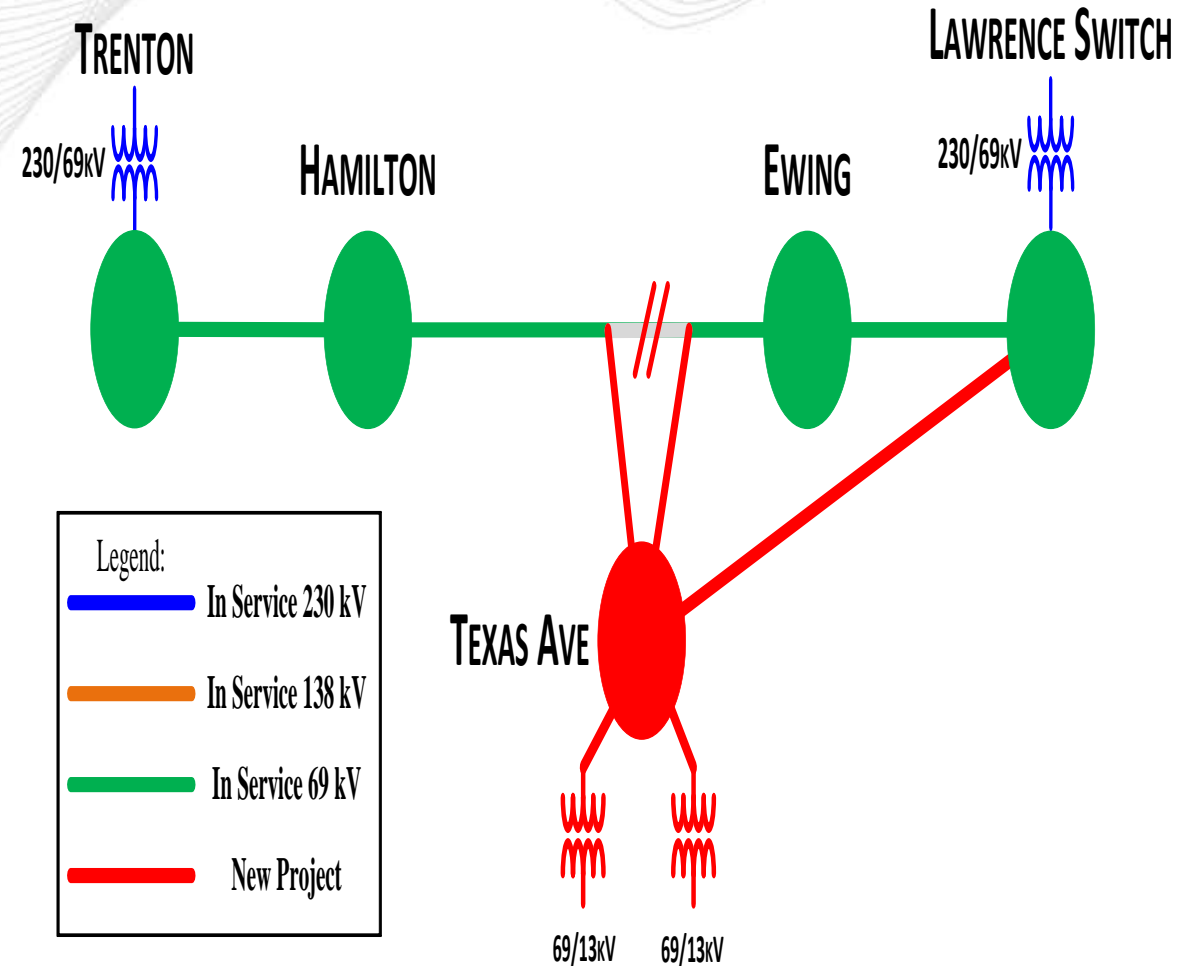
- Purchase neighboring property to accommodate construction.
- Install a 69kV bus with two (2) 69/13kV transformers.
- Construct a 69kV network between Ewing, Lawrence, Trenton and the new station.
- Transfer load from nearby heavily loaded Lawrence to the new station.

Estimated Cost: \$95M

Alternative 2 – New 69kV Substation at Texas Ave (alternate 69kV network)

- Purchase neighboring property to accommodate construction.
- Install a 69kV bus with two (2) 69/13kV transformers.
- Construct a 69kV network between Lawrence, Penns Neck, and Trenton and the new station.
- Transfer load from nearby heavily loaded Lawrence to the new station.

Estimated Cost: \$75M



Needs

Supplemental Reliability Upgrades

Need Number: PSEG-2019-0001

Meeting Date: 1/19/2019

Process Stage: Needs Meeting

Project Drivers:

Customer Service

Problem Statement:

Crosswicks and Bustleton are stations at capacity. There is a need for additional capacity in the area.

Crosswicks serves roughly 14,900 customer and projected load of 66 MVA in 2024.

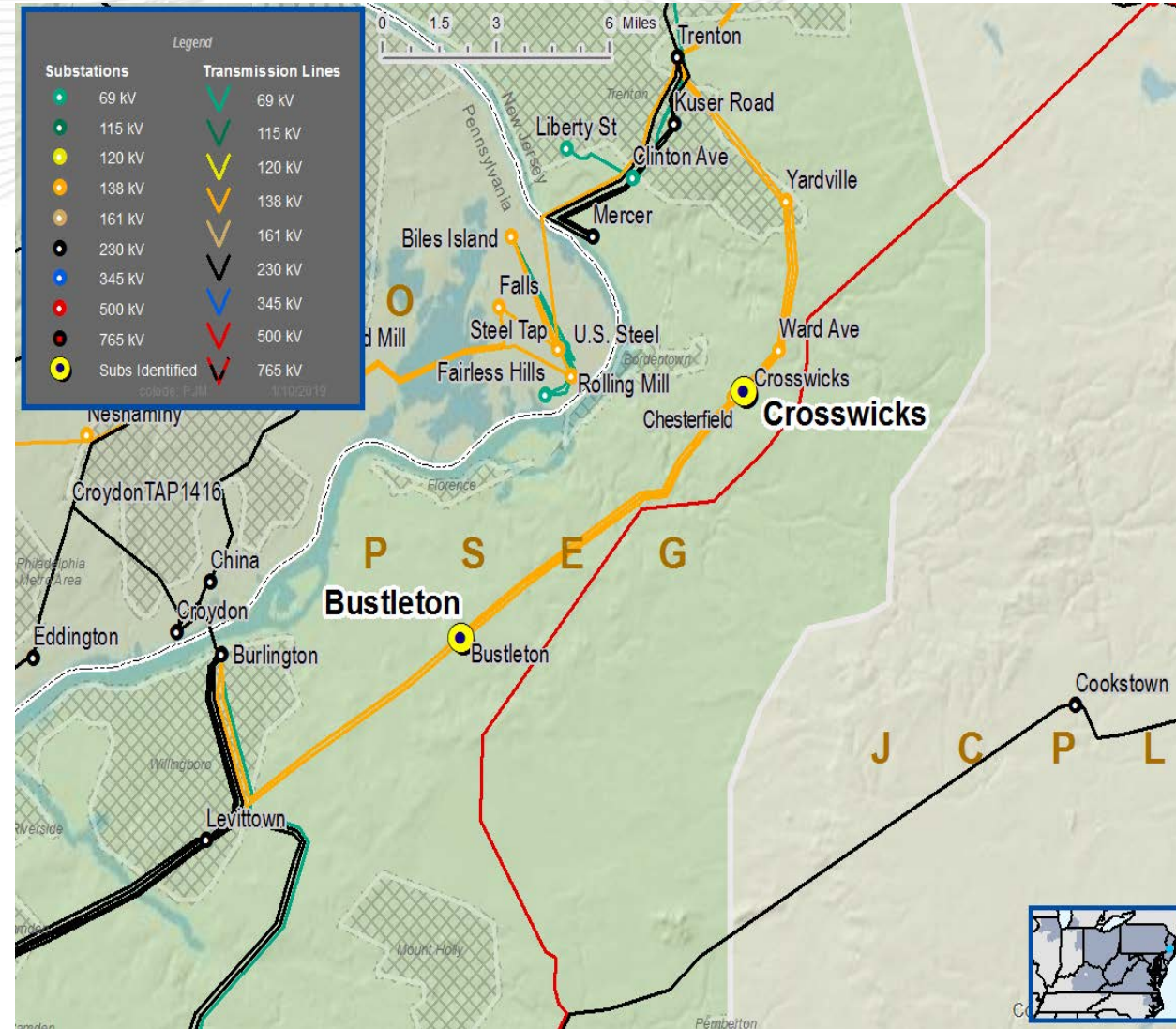
Bustleton serves roughly 16,400 customers and projected load of 77 MVA in 2024.

Station capacity for each station is 60 MVA.

Specific Assumption References:

[PSE&G 2019 Annual Assumptions](#)

- Localized Load Growth & Contingency Overloads

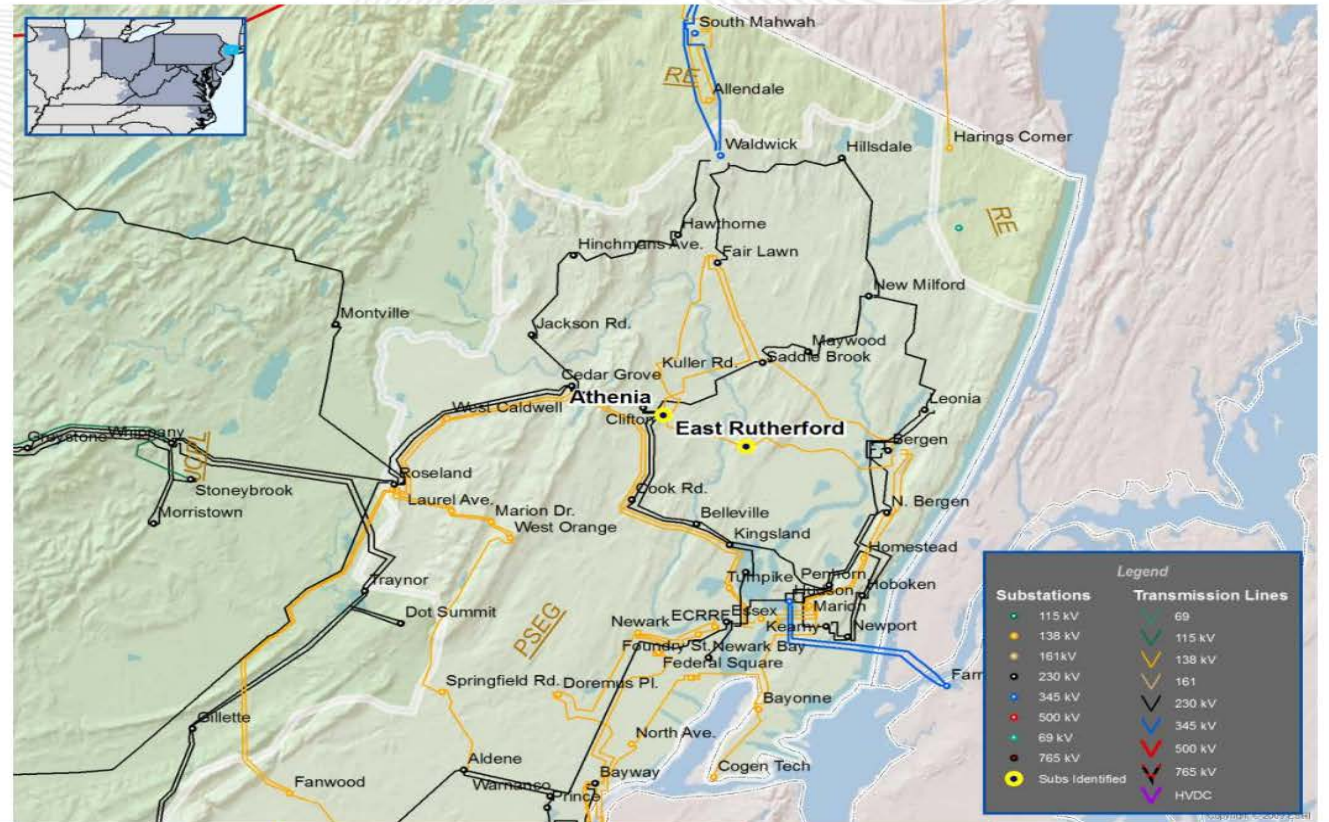


s0508 South Paterson Area 69kV Network Project Update



PSEG Transmission Zone

- PSE&G Reliability:
- Improves reliability at South Paterson Substation and eliminates the old Getty Ave. substation.
- Proposed Solution:
 - Construct a new South Paterson and Athenia 69 kV substations and build 69 kV circuit from East Rutherford – South Paterson – North Paterson and from South Paterson – Athenia (S0508).
- Estimated Project Cost: \$ 85 M
- Expected IS Date: 6/1/2017



South Paterson

- Owner of identified property to be acquired passed away prior to contract execution.
- Owner's estate was contested by heirs, requiring prolonged renegotiation of terms.
- Property acquisition subsequently delayed over two years.

Athenia

- Work associated with the Athenia GIS Bus Upgrade Project forced a change in the initial 69kV design plans from the front of the station yard to the ROW under the 230kV, creating technical challenges, including fitting the GIS in that location and conflicts in getting the circuits out of the station.
- Congestion in the area - both overhead and underground - created challenges in determining final routes for 69kV lines.
- Strong opposition from the municipality encountered by the Athenia GIS Bus Upgrade Project.

Current Path

- Update South Paterson Project scope
- De-scope Athenia segment

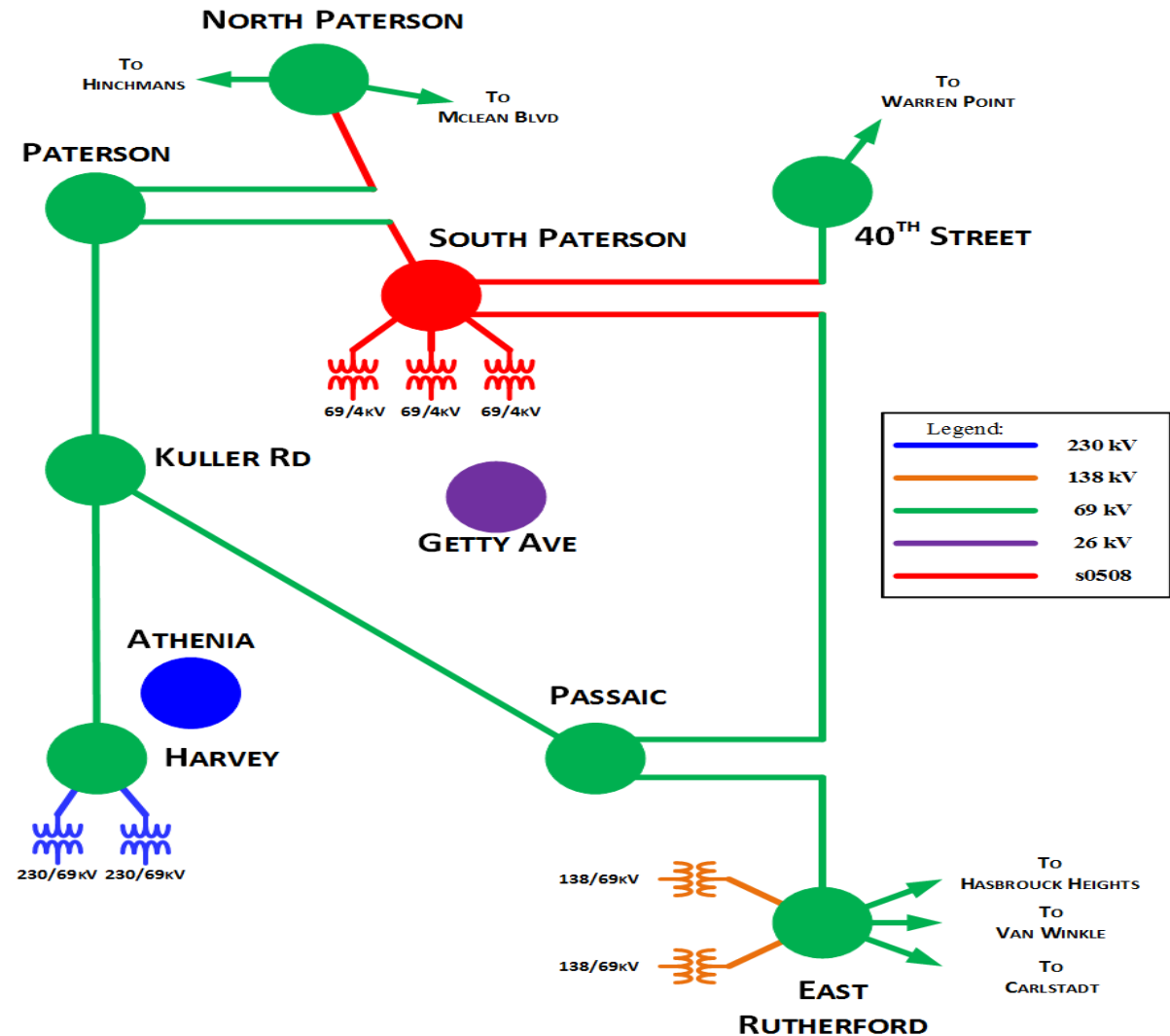
Updated South Paterson Project Scope:

South Paterson 69kV Substation

- Purchase property to accommodate new construction.
- Install a 69kV bus with three (3) 69/4kV transformers to provide capacity for existing South Paterson load and elimination of Getty Ave.
- Construct a new 69kV circuit from South Paterson to North Paterson.
- Loop the East Rutherford to 40th St 69kV circuit into South Paterson.
- The 69kV Substation at Athenia and the Athenia to South Paterson 69kV circuit are no longer part of the project. Increased network strength in the area due to other approved projects has allowed de-scoping these elements of the project.

Estimated Cost: \$68.5M

Projected In-Service Date: 05/31/2020



Questions?





Revision History

1/15/2019 – V1 – Original version posted to pjm.com

1/24/2019 – V2 - map replaced on Slide #2