

# Subregional RTEP Committee – Mid-Atlantic FirstEnergy (Met-Ed) Supplemental Projects

July 16, 2020

# 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:** ME-2019-040

**Process Stage:** Solution Meeting 07/16/2020

**Previously Presented:** Need Meeting 07/31/2019

**Project Driver:**

*Equipment Material Condition, Performance and Risk*

**Specific Assumption Reference:**

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures
- Age/condition of steel tower or steel pole transmission line structures
- Age/condition of transmission line conductors

System Performance Projects

- Substation/line equipment limits

**Problem Statement:**

Carsonia – Lyons – North Boyertown 69 kV line is exhibiting deterioration.

- Total line distance is approximately 22.8 miles.
- 339 out of 447 structures failed inspection (76% failure rate).
- Failure reasons include age, woodpecker holes, bayonet pole, top rot.

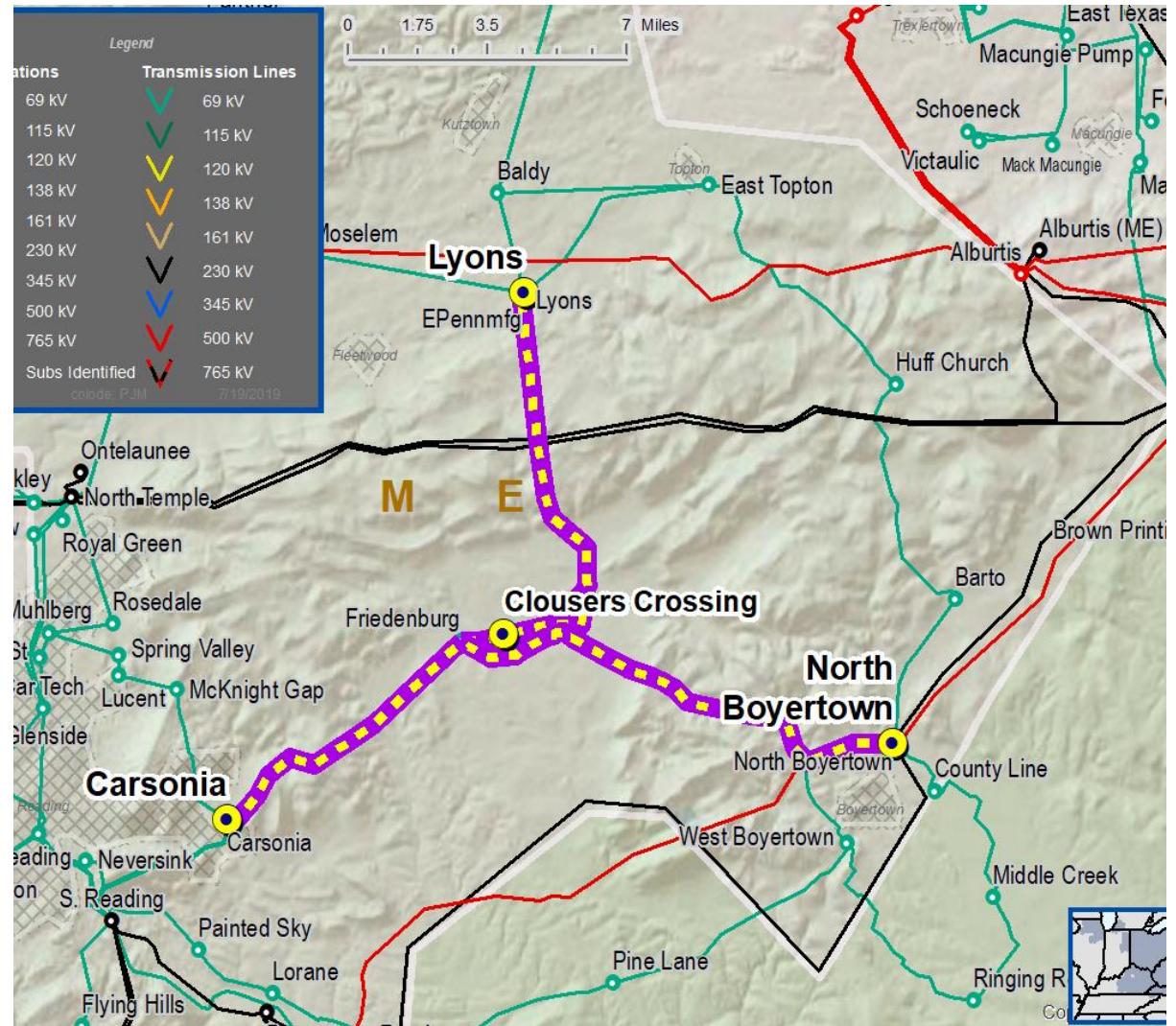
Thermal loading on the Clousers Crossing – North Boyertown 69 kV section is ~105% of the SE rating for the N-1-1 loss of the East Topton – Huffs Church 69 kV line section (bus 204829 to bus 20867) & North Boyertown 230-69 kV transformer (ME-P1-2-230-003)

*(2018 RTEP Model – 2023 Summer)*

Transmission line ratings are limited by terminal equipment

Lyons – Lyons tap 69 kV line (line relaying)

- Existing line rating: 167/167 MVA (SN/SE)
- Existing conductor rating: 218/251 MVA (SN/SE)



**Need Number:** ME-2019-040

**Process State:** Solutions Meeting 07/16/2020

**Proposed Solution:**

Rebuild and reconductor Carsonia – Lyons – North Boyertown 69 kV line

*Carsonia 69 kV Substation*

Replace disconnect switches, substation conductor, and line relaying

*Friedensburg 69 kV Substation*

Replace disconnect switches and substation conductor

*North Boyertown 69 kV Substation*

Replace circuit breaker and disconnect switches

**Alternatives Considered:**

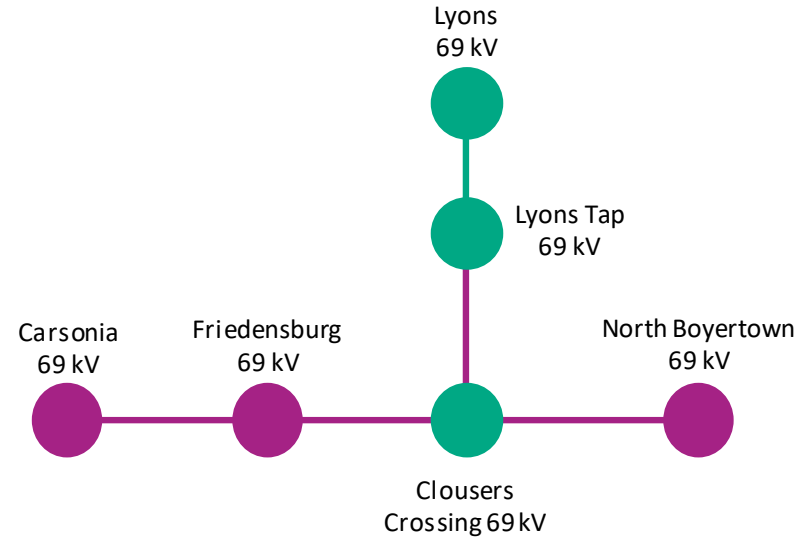
- Maintain existing condition

**Estimated Project Cost:** \$26.4 M

**Projected In-Service:** 12/31/2025

**Project Status:** Conceptual

**Model:** 2020 RTEP model for 2025 Summer (50/50)



**Transmission Line Rating:**

Clousers Crossing – North Boyertown 69 kV line:

- Before Proposed Solution: 55/56 MVA (SN/SE)
- After Proposed Solution: 111/134 MVA (SN/SE)

Clousers Crossing – Lyons Tap 69 kV line:

- Before Proposed Solution: 53/64 MVA (SN/SE)
- After Proposed Solution: 111/134 MVA (SN/SE)

Lyons Tap – Lyons 69 kV line:

- Before Proposed Solution: 167/167 MVA (SN/SE)
- After Proposed Solution: 218/251 MVA (SN/SE)

Clousers Crossing – Friedensburg 69 kV line:

- Before Proposed Solution: 55/56 MVA (SN/SE)
- After Proposed Solution: 111/134 MVA (SN/SE)

Friedensburg – Carsonia 69 kV line:

- Before Proposed Solution: 55/56 MVA (SN/SE)
- After Proposed Solution: 111/134 MVA (SN/SE)

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

**Need Number:** ME-2019-041

**Process Stage:** Solution Meeting 07/16/2020

**Previously Presented:** Need Meeting 07/31/2019

**Project Driver:**

*Equipment Material Condition, Performance and Risk*

**Specific Assumption Reference:**

System Condition Projects

- Substation Condition Rebuild/Replacement
- System Performance Projects
- Substation/line equipment limits

**Problem Statement:**

Lucent – Muhlenberg 69 kV line – Terminal equipment has an increased risk of failure (circuit breaker, disconnect switches, line relaying) due to obsolescence of equipment. Limited spare parts are available.

- Circuit breakers are 50+ years old with Type U bushings and have a history of oil leaks
- Lucent disconnect switch has bad contacts
- Line relays have a history of overtripping

Transmission line rating is limited by terminal equipment:

Lucent – Spring Valley 69 kV line (substation conductor, disconnect switches)

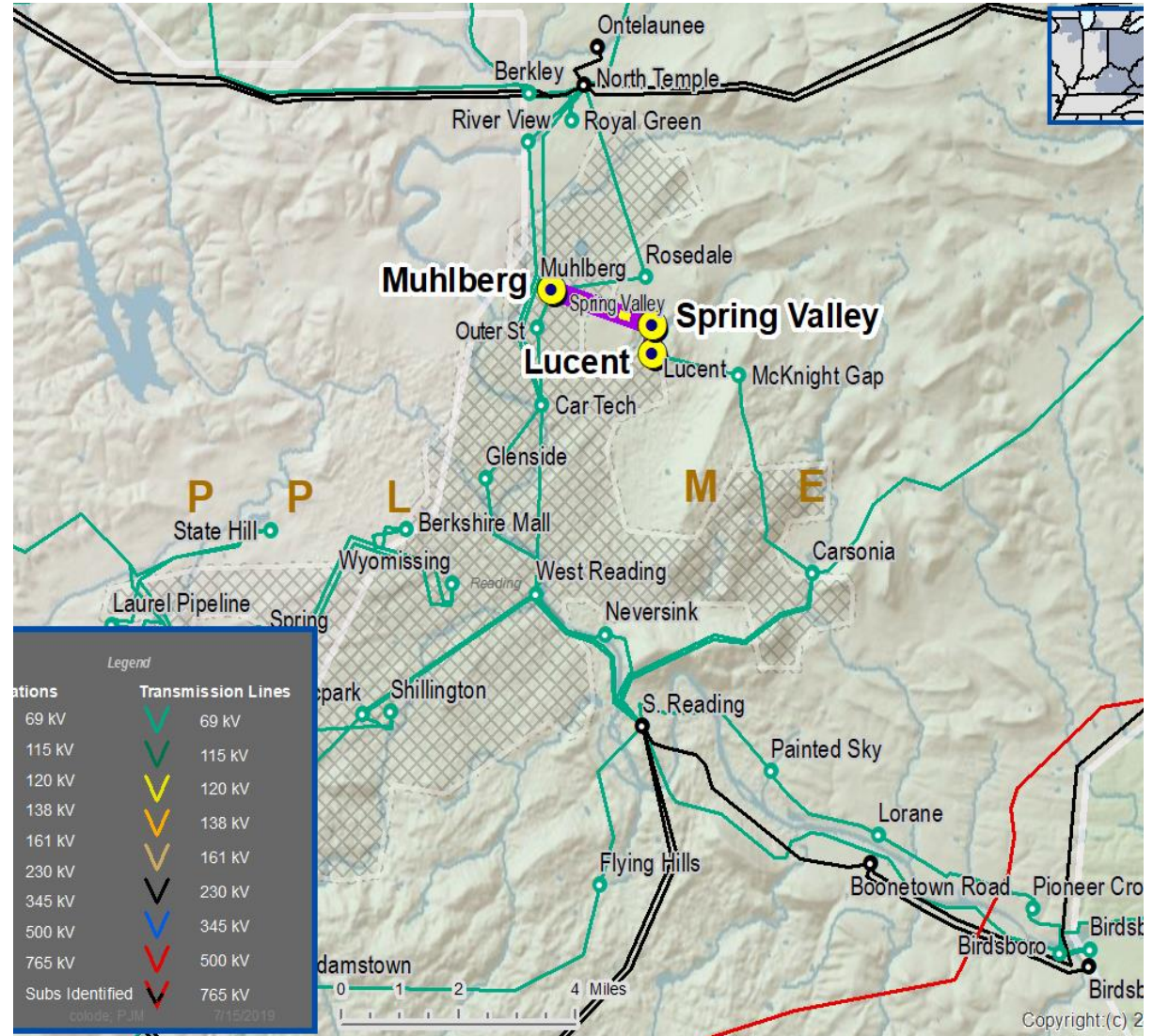
- Existing line rating: 71/91 MVA (SN/SE)
- Existing conductor rating: 111/134 MVA (SN/SE)

Spring Valley – MG Tap 69 kV line (substation conductor, disconnect switches)

- Existing line rating: 82/103 MVA (SN/SE)
- Existing conductor rating: 111/134 MVA (SN/SE)

MG Tap – Muhlenberg 69 kV line (substation conductor, disconnect switches)

- Existing line rating: 71/91 MVA (SN/SE)
- Existing conductor rating: 111/134 MVA (SN/SE)



**Need Number:** ME-2019-041

**Process State:** Solution Meeting 07/16/2020

**Proposed Solution:**

*Lucent 69 kV Substation*

Replace circuit breaker, disconnect switches, substation conductor, and line relaying

*Spring Valley 69 kV Substation*

Replace disconnect switches and substation conductor

*MG Tap*

Replace disconnect switches

*Muhlenberg 69 kV Substation*

Replace circuit breaker, disconnect switches, substation conductor, and line relaying

**Alternatives Considered:**

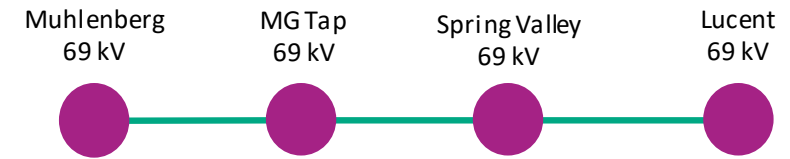
- Maintain existing condition

**Estimated Project Cost:** \$2M

**Projected In-Service:** 11/12/2021

**Project Status:** Conceptual

**Model:** 2020 RTEP model for 2025 Summer (50/50)



**Transmission Line Rating:**

Lucent – Spring Valley 69 kV line:

- Before Proposed Solution: 71/91 MVA (SN/SE)
- After Proposed Solution: 111/134 MVA (SN/SE)

Spring Valley – MG Tap 69 kV line:

- Before Proposed Solution: 82/103 MVA (SN/SE)
- After Proposed Solution: 111/134 MVA (SN/SE)

MG Tap – Muhlenberg 69 kV line:

- Before Proposed Solution: 71/91 MVA (SN/SE)
- After Proposed Solution: 111/134 MVA (SN/SE)

| Legend  |  |
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| 23 kV   |  |
| New     |  |

# 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

7/6/2020 – V1 – Original version posted to pjm.com