



Regional Transmission Expansion Plan (RTEP) Update

Sami Abdulsalam, Director
PJM Transmission Planning

Independent State Agencies Committee - ISAC
April 29, 2024

- 2023 Window 2 proposal summary
- 2024 Window 1 updates
- 2023 Window 2 DOM project first read
- PPL upgrade (B3800.3) scope change (2022W3 RTEP)
- Data Center Loads – Supplemental Projects vs Baseline Upgrades



2023 RTEP Window 2 Updates

Baseline Reliability Projects

2023 Window 2 opened on March 6 and closed on April 5

Window to address the following needs:

- | | | |
|--|--|--|
| <ul style="list-style-type: none">▪ AEP forecasted load growth in the Columbus, Ohio area. | <ul style="list-style-type: none">▪ Thermal issues in PSEG around Hinchmans area | <ul style="list-style-type: none">▪ 500kV line #588 Fentress -Yadkin End of Life (EOL) in Dominion |
|--|--|--|

- 2022 Window 3 selected solutions are included in the base cases.

PJM received 21 proposals from six entities (15 Upgrades and 6 Greenfield)

Three non-incumbents:

AEP Footprint:
3 x proposing entities

PSEG Footprint:
2 x proposing entities

Dominion Footprint (EOL):
No competing proposals

Proposal costs range from \$0.449M to \$229.3M

Five proposals with cost containment

2024 RTEP Window 1 Updates

Baseline Reliability Projects



2024 Window 1 – Progress and Timeline Update

- Current schedule
 - Internal initial 2029 model review still ongoing
 - Preliminary model posted on April 19th, 2024
 - Preliminary model posting to update models as needed basis – upcoming posting will be in early May
 - Requesting FERC Form 715 analysis results from transmission owners by the end of May
 - Targeting open 2024 RTEP proposal window 1 in the mid of July

2024 7/8-Year RTEP Window Baseline Reliability Projects

- NJ SAA 2.0 Window – Planned to open in July for 90 days
 - Will use an 8-year RTEP needs and NJ SAA OSW integration impacts
 - Deliverability of full 7,500 MWs of SAA 1.0 capability (remaining 3,742 MW beyond the 2028-29 level) of generation from SAA 1.0 expected to be in service 2031-2032 (reliability)
 - Account for load growth (5 to 8 years gap) and longer-term impacts of deactivations
 - New 3,500 MW of generation requested with SAA 2.0 expected in service starting 2033 (public policy)
 - Solutions will focus on meeting both needs and opportunities for multi-driver solutions
 - Targeting NJ BPU will accept solutions in Spring 2025.
 - Solutions presented to the PJM Board targeted for July 2025

2023 RTEP Window 2 First Review

Baseline Reliability Projects



Dominion Transmission Zone: Baseline 500kV Line #588 Rebuild (End of Life Criteria)

Process Stage: First Review

Criteria: Dominion's FERC 715 Planning Criteria (C.2.9 – End of Life Criteria)

Assumption Reference: FERC 715 Planning Criteria

Model Used for Analysis: 2023 Series 2028 RTEP cases

Problem Statement:

- Line #588 is approximately 13.66 miles of 500kV single circuit transmission line from Yadkin to Fentress. It was built on series 5 Corten towers that have been problematic for many years and fallen into a pattern where Dominion can expect to return for future maintenance if the line is not rebuilt by the requested target date. These structures were installed in 1975 and are approaching the end of service life.
- Third party assessment has determined that the towers have corroded to a point where they exhibit pre-mature thinning of structure members and pack-out at joints. If left unaddressed these issues could result in failure of structures and potentially the collapse of the line. (DOM-O1)

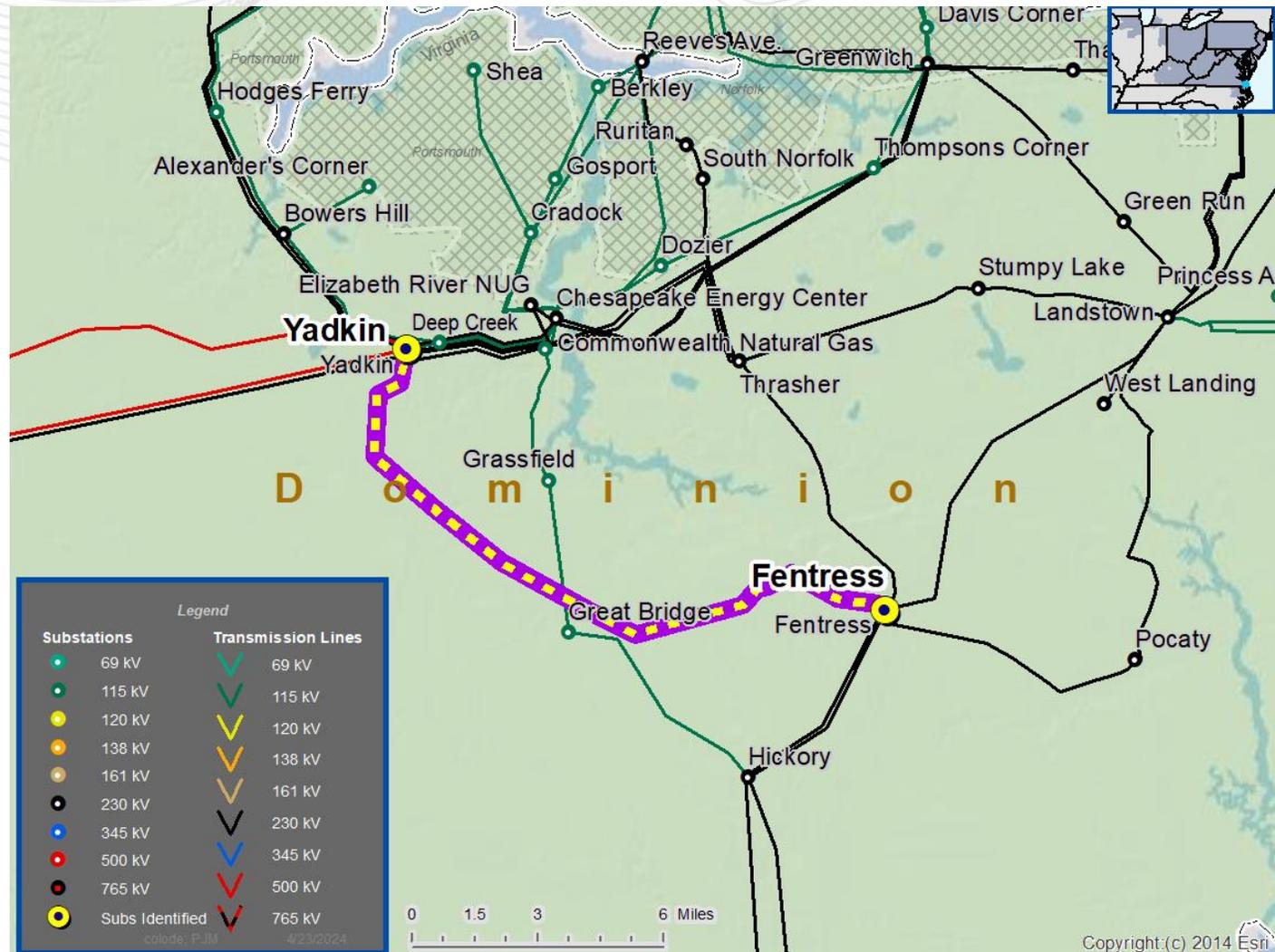
Existing Facility Rating: 3397/3426 MVA Summer (Normal/Emergency)

3984/4018 MVA Winter (Normal/Emergency)

Proposed Facility Rating: 4357/4357 MVA Summer (Normal/Emergency)

5155/5155 MVA Winter (Normal/Emergency)

Continued on next slide....



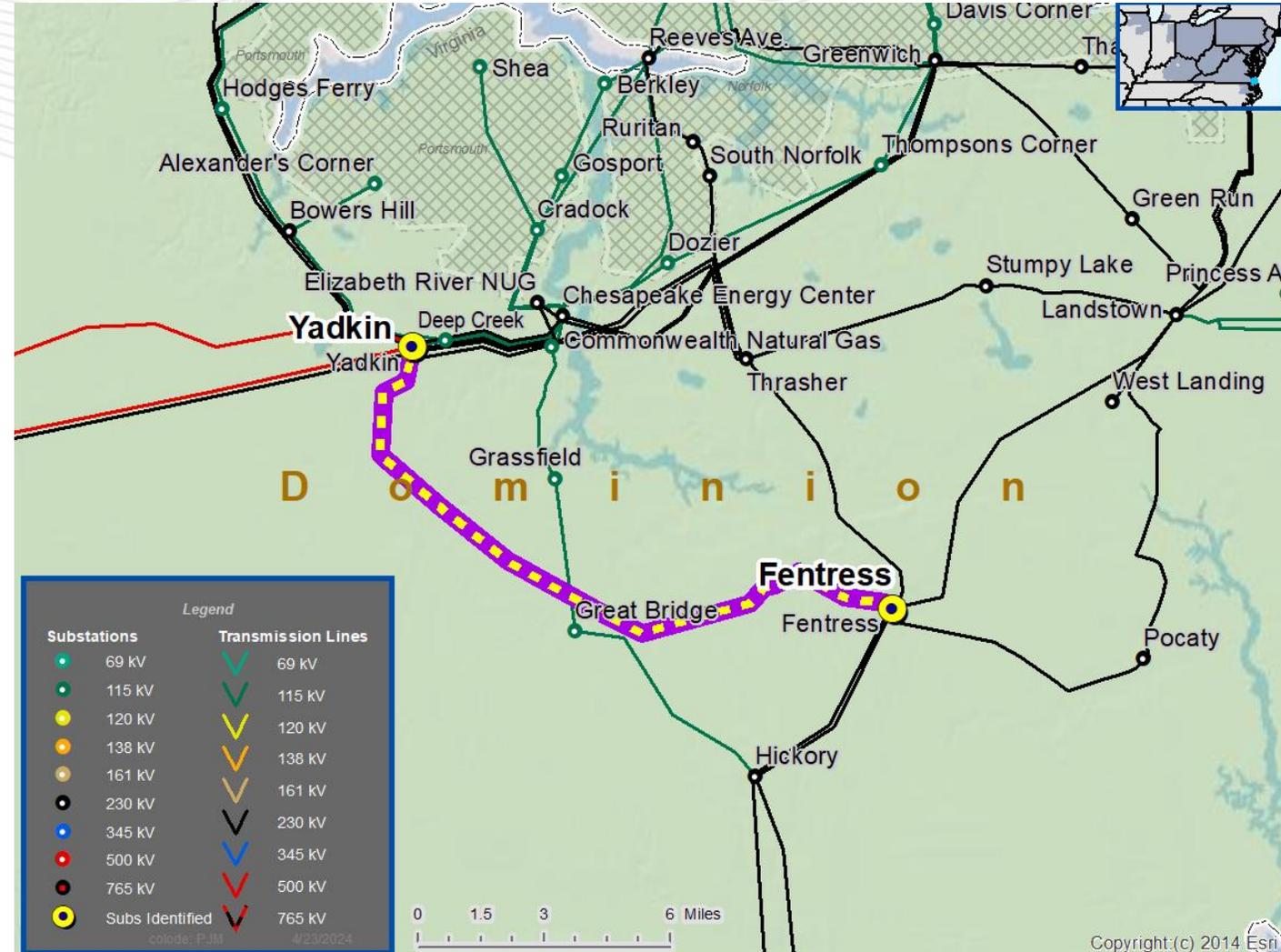
Dominion Transmission Zone: Baseline 500kV Line #588 Rebuild (End of Life Criteria)

Proposed Solution: Proposal 2023-W2-367:

- Rebuild approximately 13.51 miles of 500 kV line #588 from structure 588/184 inside Yadkin substation to structure 588/254 outside of Fentress substation.
- Line #588 terminal equipment at Yadkin substation will be upgraded to a rating of 5000A. Since the new 500kV line will be using fiber, the wave trap will be removed and the line protection scheme will be updated.
- At Fentress substation, since the new 500kV line will be using fiber, the wave trap will be removed and the line protection scheme will be updated.

Estimated Cost: \$79.7 M

Required In-Service: 6/1/2028



2022 Window 3 Upgrades Scope Change Or Modify Baseline Reliability Projects

Scope change for B3800.3 (Otter Creek – Conastone 500 and 230 kV)

Part of the 2022 Window 3 – PPL proposed to build a new 500 kV line from Otter Creek – Conastone by upgrading and replacing structures on the existing line corridor.

Current Proposed project:

Build New 500kV AC line from the new Otter Creek (Chanceford) 500 kV switchyard – towards PA/MD border ~12.5 miles

- Rebuild the existing Otter Creek - Conastone 230 kV line to become a double-circuit 500 kV and 230 kV line

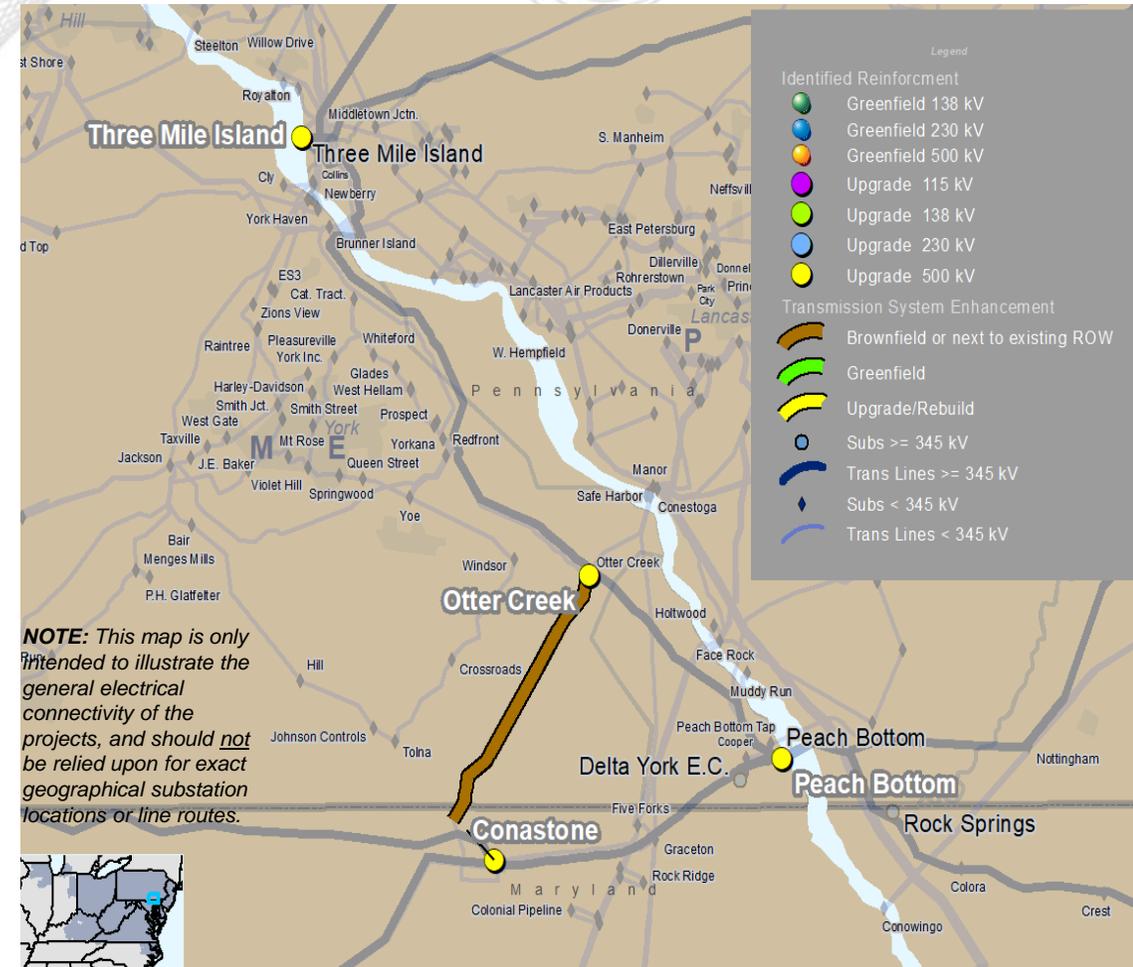
New Proposed Project:

Build New 500kV AC line from the new Otter Creek (Chanceford) 500 kV switchyard – towards PA/MD border ~12.5 miles

- Rebuild the existing Otter Creek - Conastone 230 kV line to become a double-circuit 500 kV line, operate Conastone circuit at 230 kV initially

Additional Cost Estimate: \$19.5 M

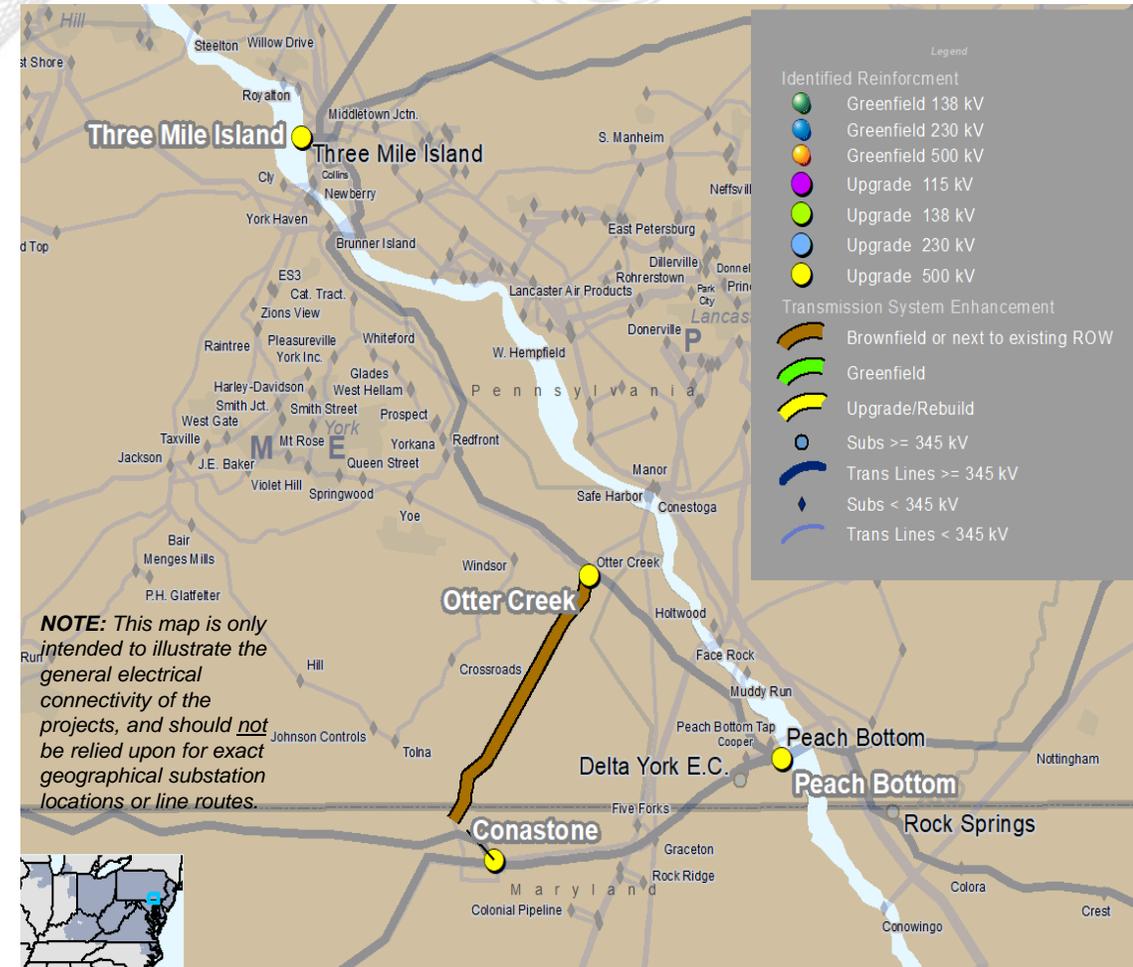
Total Proposed Cost Estimate: \$102.8 M



Scope change for B3800.3 (Otter Creek – Conastone 500 and 230 kV)

Reason for Scope change:

- **To prepare for future additional 500kV needs in corridor with minimum work**
 - Critical North-South corridor between PA and MD
 - Scalable to future needs and utilization
- **Minimize future impacts to the local community**
 - Largely uses existing ROW with minor expansion
 - Limit work in same area to the extent achievable
- **Efficiencies**
 - Incremental additional investment to support future synergies





PPL/ME/PECO Baseline Upgrades Scope Modification

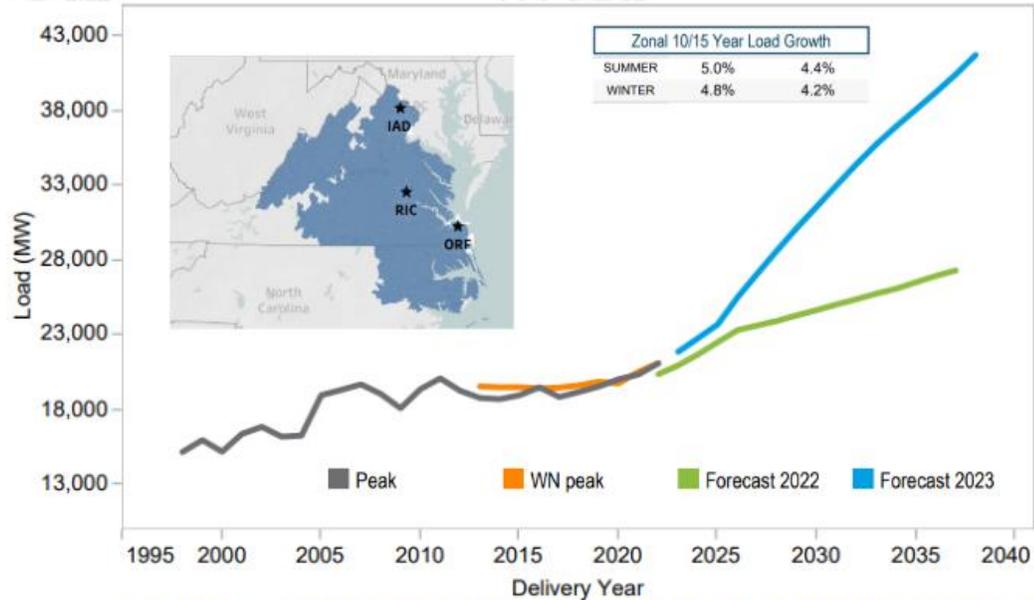
Upgrade Id	Previous Project Description	Transmission Owner	Previous Cost Estimate (\$M)	Upgrade Id	New Project Description	Transmission Owner	New Cost Estimate (\$M)
b3800.2	Break the existing TMI-Peach Bottom 500 kV line and re-terminate into adjacent Otter Creek 500 kV Switchyard.	ME	18.3	b3800.2	Break the existing TMI-Peach Bottom line within the existing right of way and install new structures re-routing the line towards Chanceford Switchyard taps being constructed by PPL	ME	7.43
N/A*	N/A*	N/A*	N/A*	b3800.53	Construct a double-circuit 500kV line from the existing TMI-Peach Bottom 500kV right-of-way to the proposed Chanceford Switchyard approximately 1.0 miles in length	PPL	12.59
b3800.5	Peach Bottom-TMI 500 kV - Replace terminal equipment at Peach Bottom.	PECO	0	b3800.5	Peach Bottom-TMI 500 kV - Replace terminal equipment at Peach Bottom (install new line terminal relays and communication infrastructure within Peach Bottom and along the 5007)	PECO	2.5

* Upgrade was originally assigned to MetEd (B3800.2) and now portion of the scope is assigned to PPL (B3800.53)

Data Center Loads – Supplemental vs Baseline Upgrades

Baseline Reliability Projects

Forecast and Planning Approach

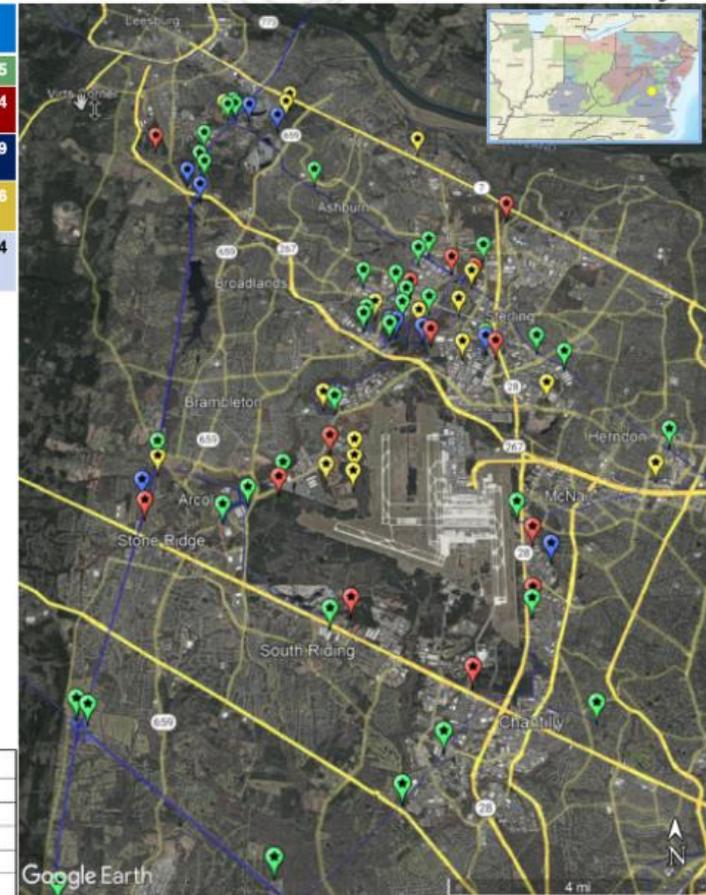


<https://pjm.com/-/media/library/reports-notice/load-forecast/2022-load-report.ashx>

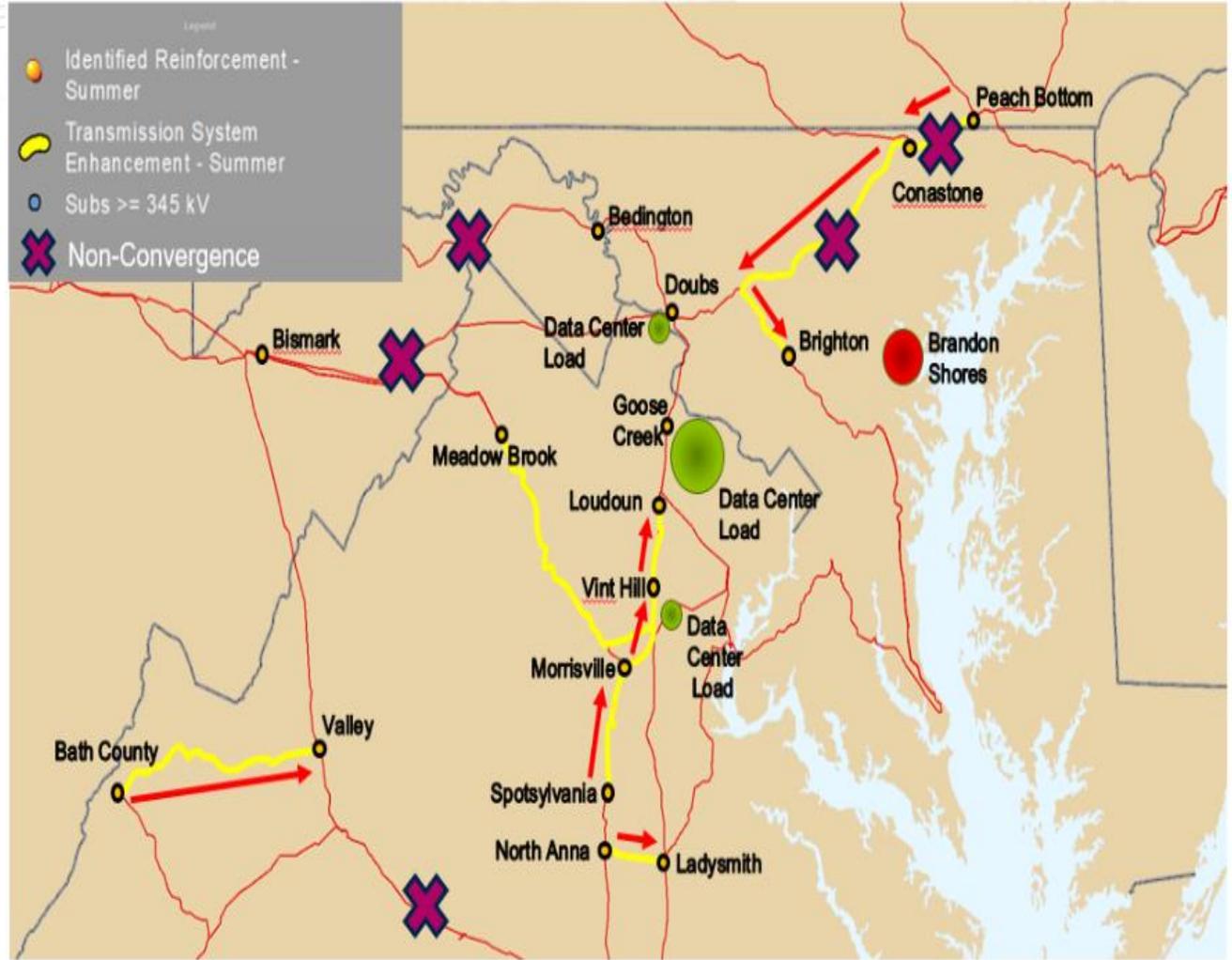
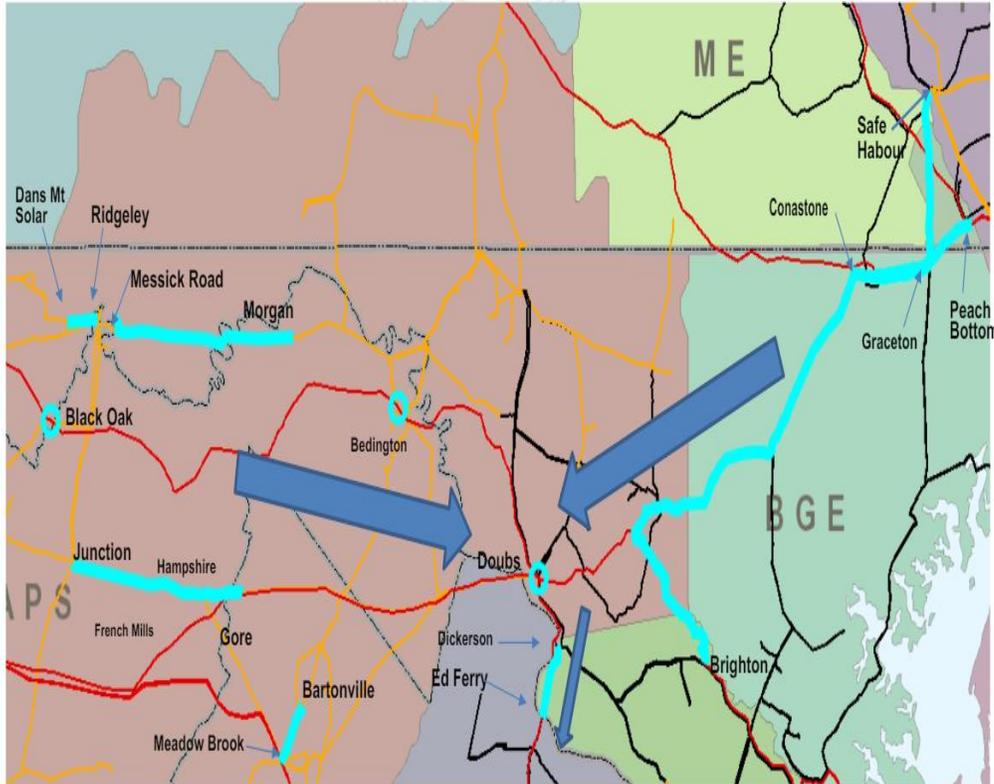
Initially, PJM developed and studied two load scenarios: Baseline and High-Growth. The latest revision of PJM 2023 load forecast trends closely towards the high-load growth scenario.

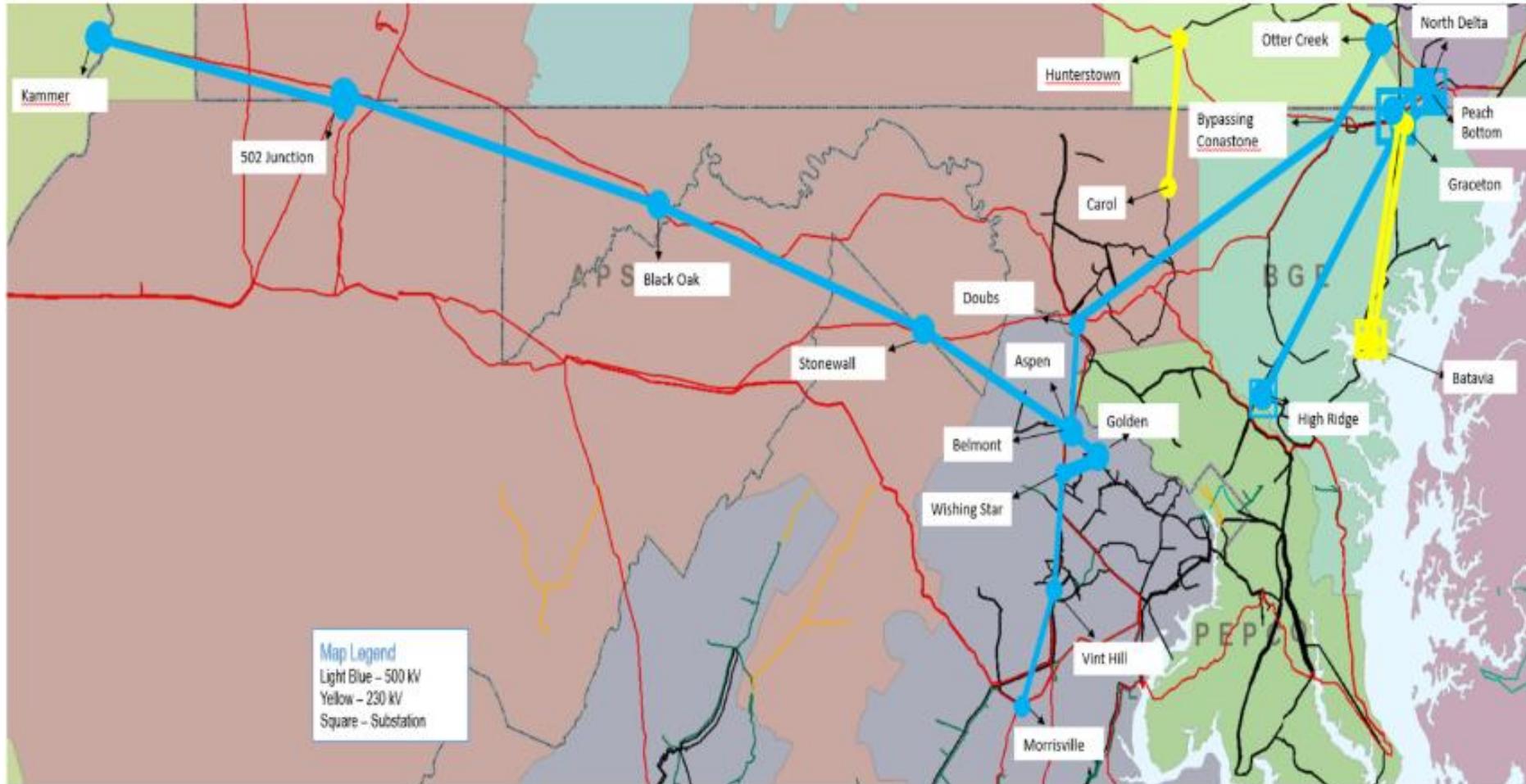
Dominion Transmission Zone: Baseline Data Center Alley

	Dominion Energy	NOVEC	Total
Existing	28	7	35
Design/Construction	11	3	14
In Planning Stage	6	3	9
Inquiry Stage	10	6	16
Total	55	19	74

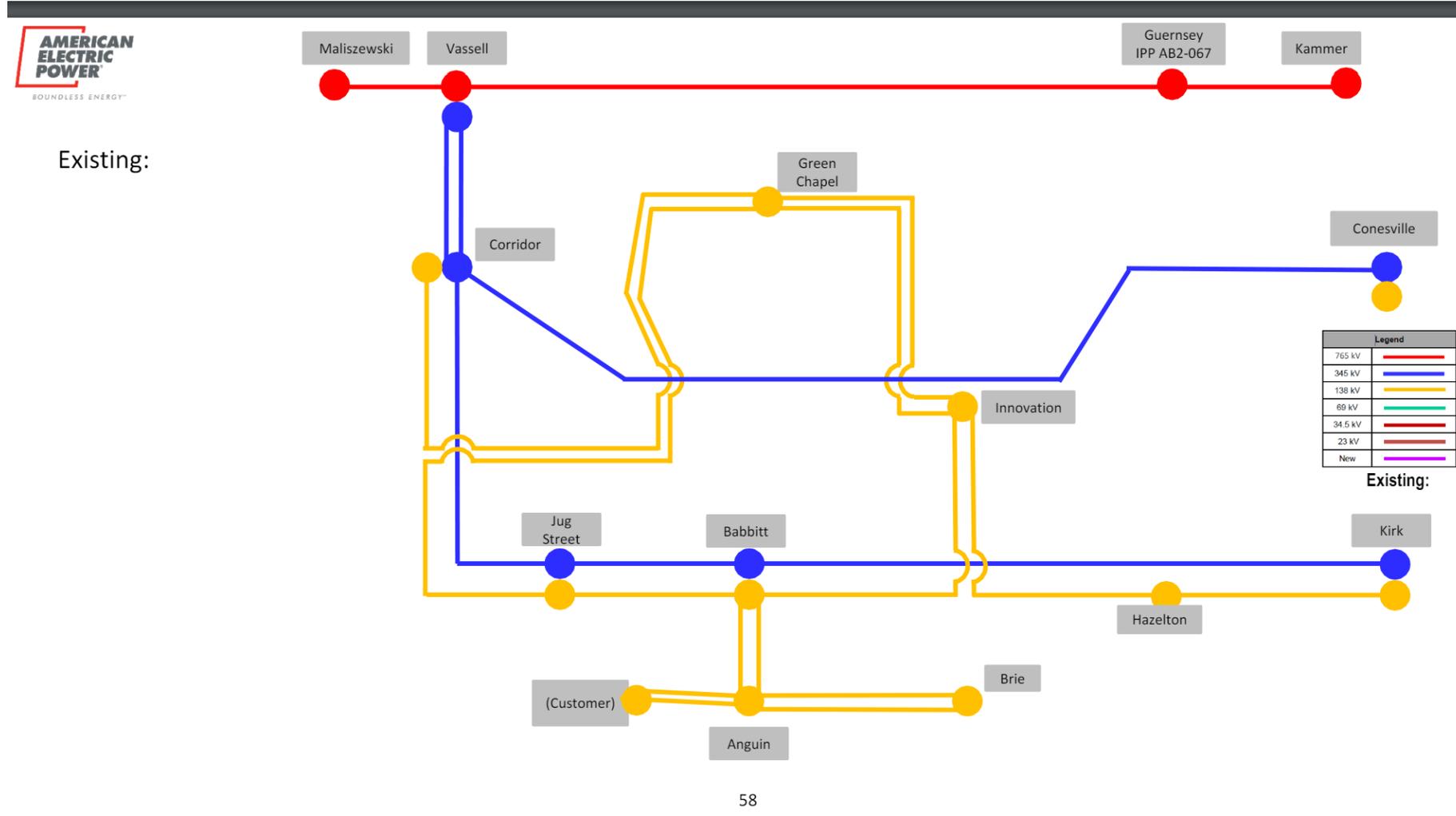


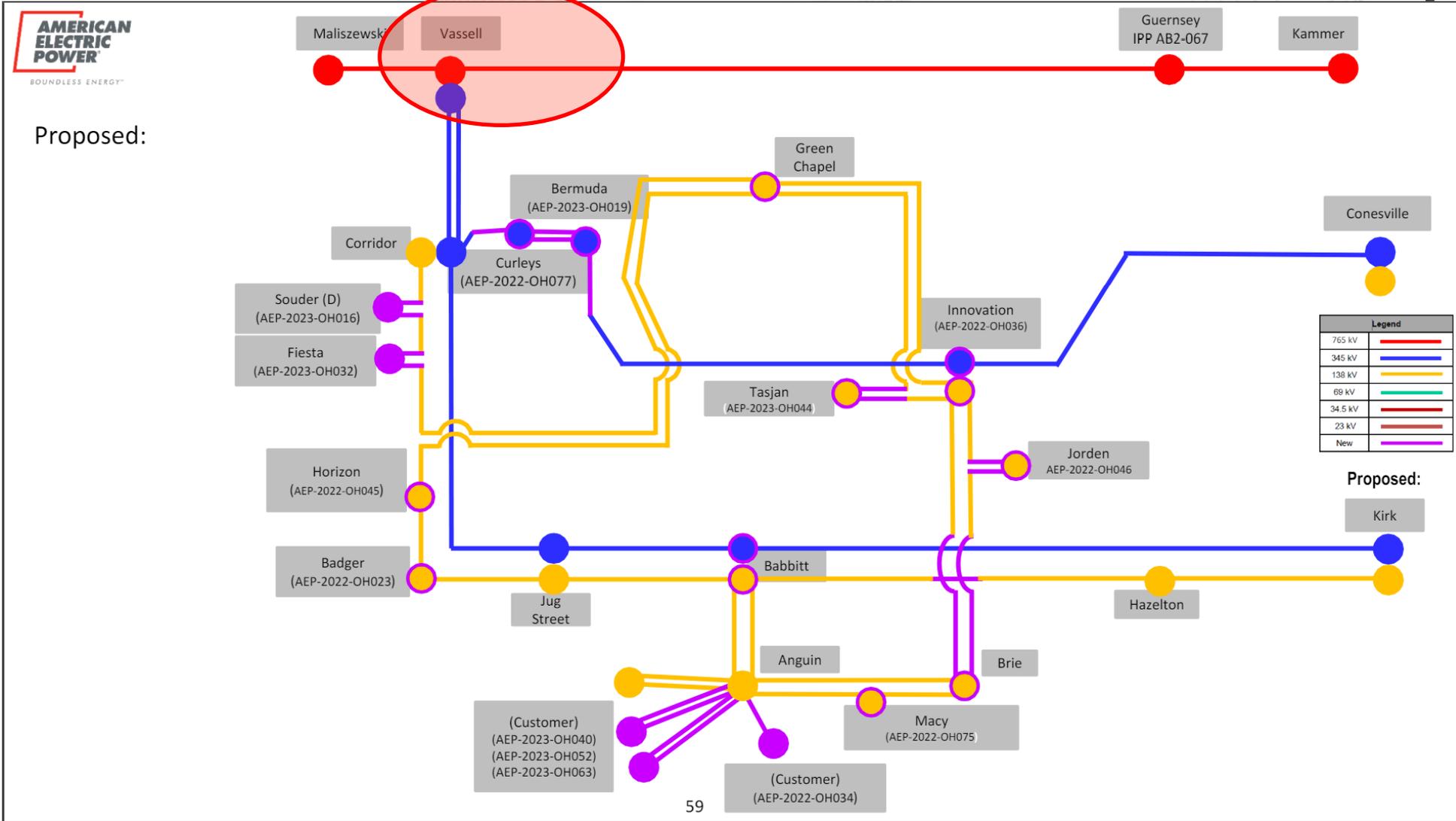
Regional and Reactive Interface Thermal Constraints (N-1 and Gen Deliverability) - Preliminary





*NOTE: This map is only intended to illustrate the general electrical connectivity of the projects and should **not** be relied upon for exact geographical substation locations or line routes.*





SME/Presenter:
Sami Abdulsalam,
Sami.Abdulsalam@pjm.com

Reliability Analysis Update



Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com

Version No.	Date	Description
1	4/26/2024	<ul style="list-style-type: none">• Original slides provided
2	4/29/2024	<ul style="list-style-type: none">• Updated Slides covering supplemental projects

**PROTECT THE
POWER GRID
THINK BEFORE
YOU CLICK!**



Be alert to
malicious
phishing emails.

Report suspicious email activity to PJM.
(610) 666-2244 / it_ops_ctr_shift@pjm.com

