Reliability Analysis Update

Transmission Expansion Advisory Committee

July 13, 2017

2017 Proposal Window Update

2017 RTEP Progress Update

May 18, 2017

- Preliminary 2022 Summer results posted
- Baseline N-1 Thermal
- Generator Deliverability - Thermal

July 5, 2017

- Posted additional preliminary 2022 Summer results:
  - N-1-1 Thermal & Voltage, Load Deliverability, N-1 Voltage
- Preliminary 2022 Light Load results and 2022 Winter results
- Noted determination of flowgates anticipated be excluded from window.

Anticipate window opening the week of (July 10)

Overview of 2022 Results

Total of 204 flowgates identified

- 43 to be included in the window
  - 34 in West region
  - 6 in the South region
  - 3 in the MAAC region

- 161 flowgates excluded
  - Immediate need (PJM OA 1.5.8(m))
  - < 200kV (PJM OA 1.5.8(n))

2017 RTEP Progress Update

- Proposal Window anticipated opening this week
- Anticipate a 45 day window
- Anticipate window closing by Friday, 8/25/17

AI Beneficiaries Update

Artificial Island Cost Allocation Update

"Alternative Approaches to Identification of Artificial Island Project Beneficiaries"

- Original document discussed at 6.9.2017 Artificial Island TEAC
- Incorporation of stakeholder feedback into Revision 1
  - Clean
    - http://pjm.com/~/media/committees-groups/committees/teac/20170713/20170713-stability-project-beneficiary-identification-clean-rev1.ashx
  - Redline
    - http://pjm.com/~/media/committees-groups/committees/teac/20170713/20170713-stability-project-beneficiary-identification-redline-rev1.ashx

Dominion Update
End of Life Criteria

Dominion Transmission Zone

Baseline Reliability - TO Criteria Violation

Line #231 Landstown to Thrasher Rebuild

Date Project Last Presented: 6/8/2017 TEAC

Problem Statement: Dominion "End of Life Criteria"

- 230kV Line #231 from Landstown to Thrasher is 8.5 miles long and was built mostly on double circuit weathering steel (Corten) towers in 1965. The corten structures are in poor condition. The existing summer emergency rating of this line is 955 MVA.
- This line needs to be rebuilt to current standards based on Dominion's "End of Life" criteria.
- Permanent MW load loss for removal of this line is 89 MW.

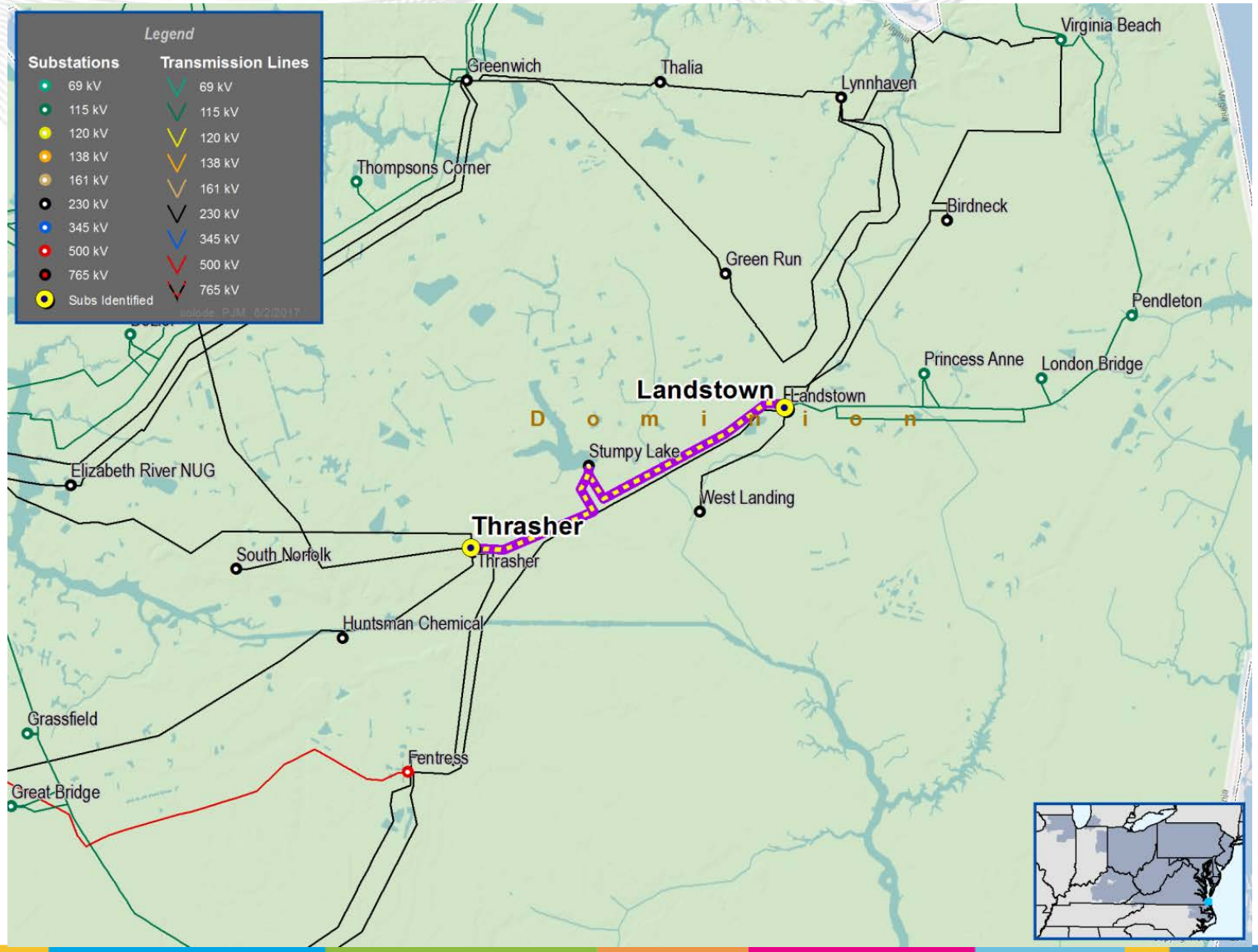
Recommended Solution:

- Line #231 will be rebuilt to current standard with a summer emergency rating of 1046 MVA at 230kV. Proposed conductor is 2-636 ACSR. Structures being considered include double circuit steel pole and double circuit galvanized steel tower. **(b2899)**
- Proposed conductor has a summer load dump rating of 1203 MVA. An N-1-1 study using the 2022 RTEP summer case indicates with the proposed conductor, 48% is the highest loading on the line. Therefore, there is no justification to consider a higher capacity conductor.

Alternatives: No feasible alternatives

Estimated Project Cost: $22 M

Projected IS Date: Dec 2020 **Project Status:** Conceptual



Dominion Transmission Zone

Baseline Reliability - TO Criteria Violation

Line #211 and #228 Chesterfield to Hopewell Partial Rebuild

Problem Statement: Dominion "End of Life Criteria"

- 230kV Lines #211 and #228 run 11 miles from Chesterfield to Hopewell and are double circuit lines
- Approximately 8 miles of the lines were built on double circuit weathering steel (Corten) towers in 1969. Field reports and condition assessment indicate the Corten structures are in poor condition. Static fiber is also at end of life.
- These lines provide critical outlet for Chesterfield Power station along with HCF and Polyester.

Potential Solution:

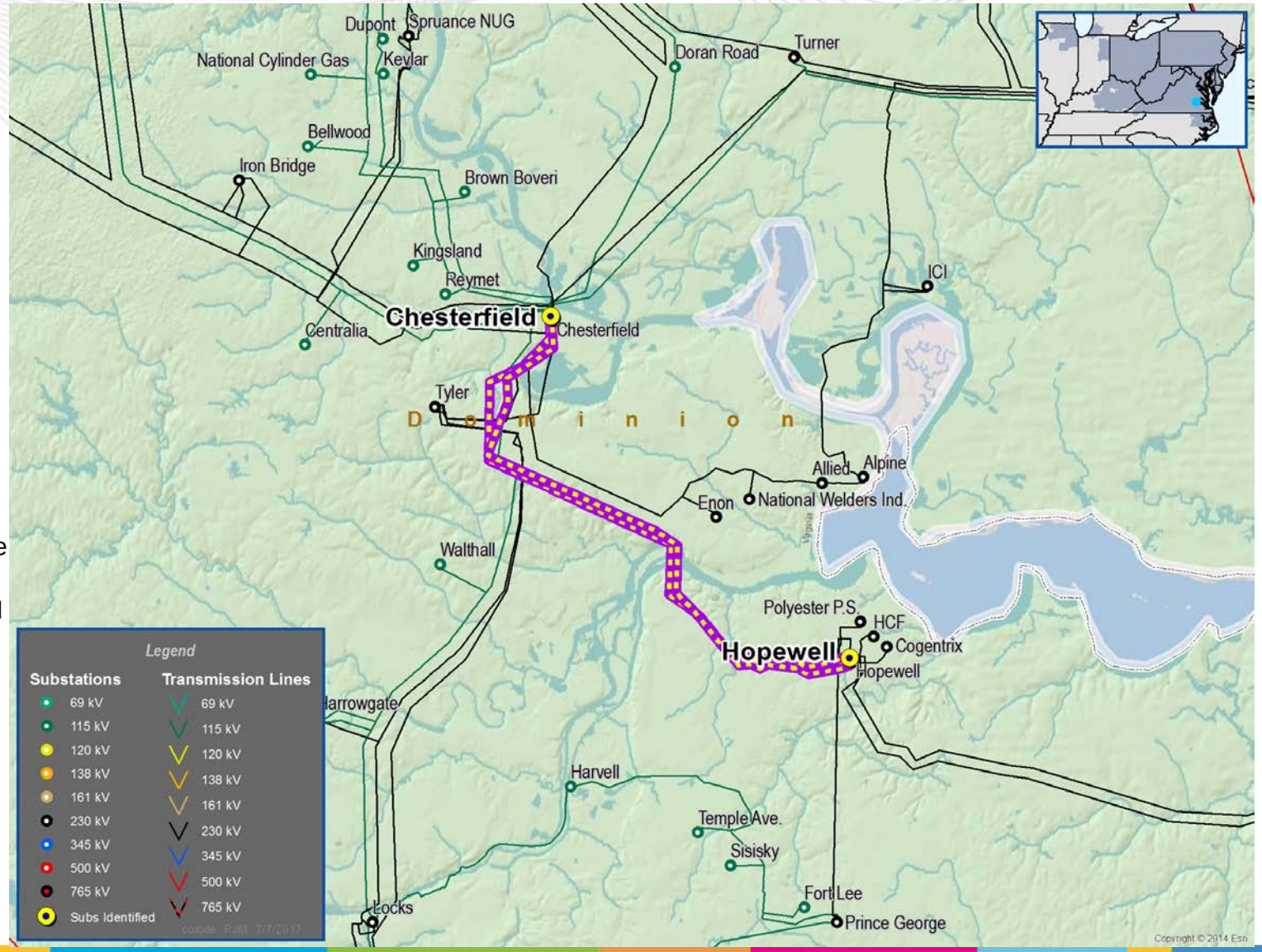
- Rebuild 8 miles of Line #211 and #228 to current standard. Proposed conductor is 2-636 ACSR. Summer emergency rating of the rebuilt section is 1046 MVA. Summer emergency rating of the entire lines after rebuild is 477 MVA with the remaining 3 mile section being the most limiting conductor.
- Structures being considered include double circuit steel pole and double circuit galvanized steel tower.
- Fiber on the entire line will be replaced.

Alternatives: Replace fiber. Rebuild entire 11 miles of lines to current standard. Summer emergency rating of the new lines is 1046 MVA. Estimated project cost is $34.1M.

Estimated Project Cost: $28.1 M

Possible IS Date: Dec 2020

Project Status: Conceptual



Canceled Project

Dominion Transmission Zone

Project Cancellation

Baseline Reliability - TO Criteria Violation

Line #2104 Cranes Corner to Stafford Rebuild

Problem Statement:

The Cranes – Stafford 230 kV is overloaded for single contingency loss of the Ladysmith – Possum Point 500 kV circuit.

Recommended Solution:

- Reconductor 7.63 miles of existing line between Cranes and Stafford and upgrade associated line switches at Stafford. (2014_2-1C) **(b2585)**

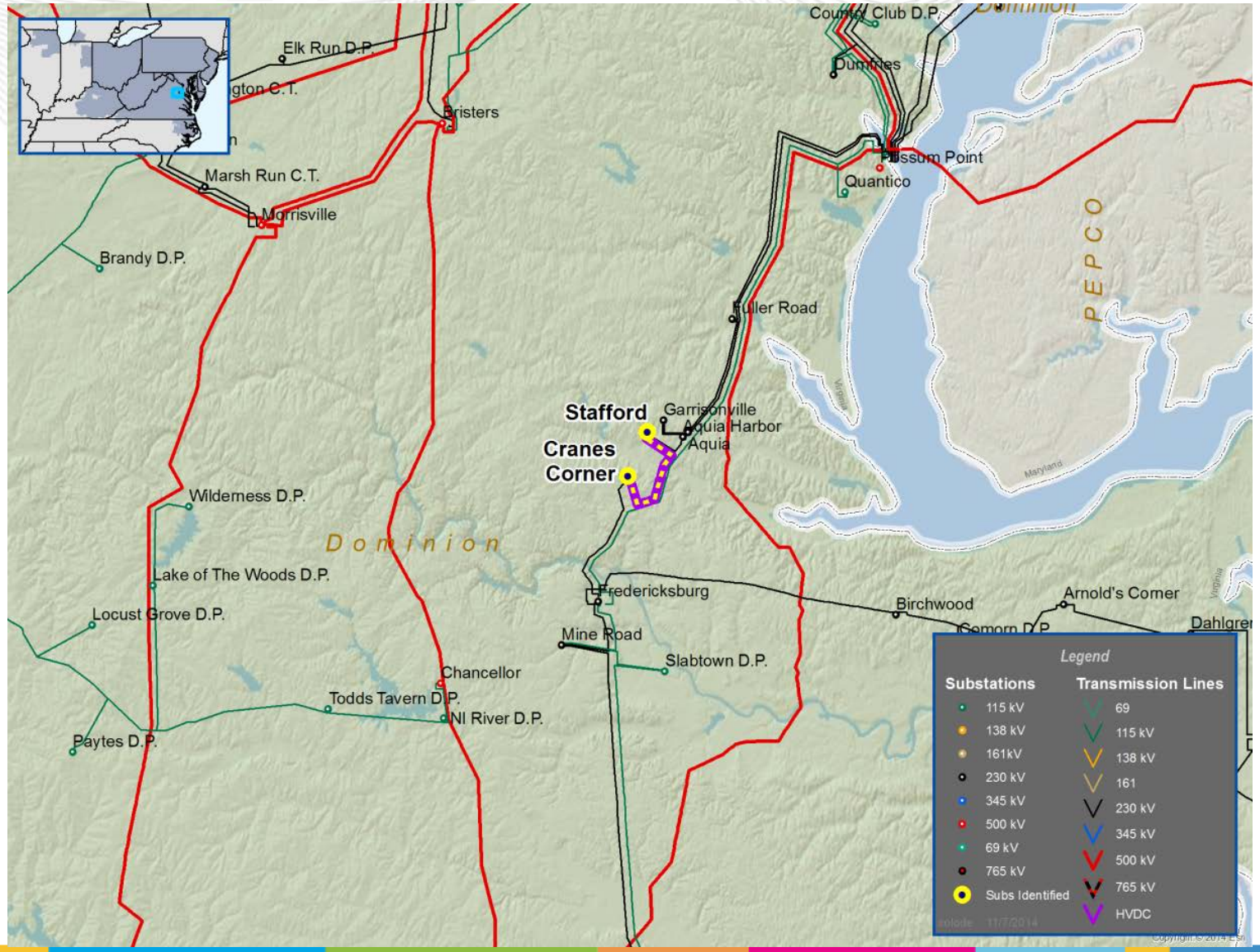
Reason for Cancellation:

- Flows on this line segment went down due to the addition of generation in the area to the north. This would include 800 MW at the Panda facility and 1350 MW at the Warren County CT on Line #592.

Previous TEAC Date: 1/7/2015

Estimated Project Cost: $7.12 M

Required IS Date: 6/1/2019



Supplemental Projects

Dominion Transmission Zone Supplemental Project

Supplemental Project: Copeland Park Substation – New 230kV DP

Date Project Last Presented: 6/8/2017 TEAC

Problem Statement:

- Dominion Distribution has identified the need of a 230kV delivery point at Copeland substation because of load growth and contingency consideration. Load on existing 115/23kV TX#1 will be shifted to this new transformer.

Selected Solution:

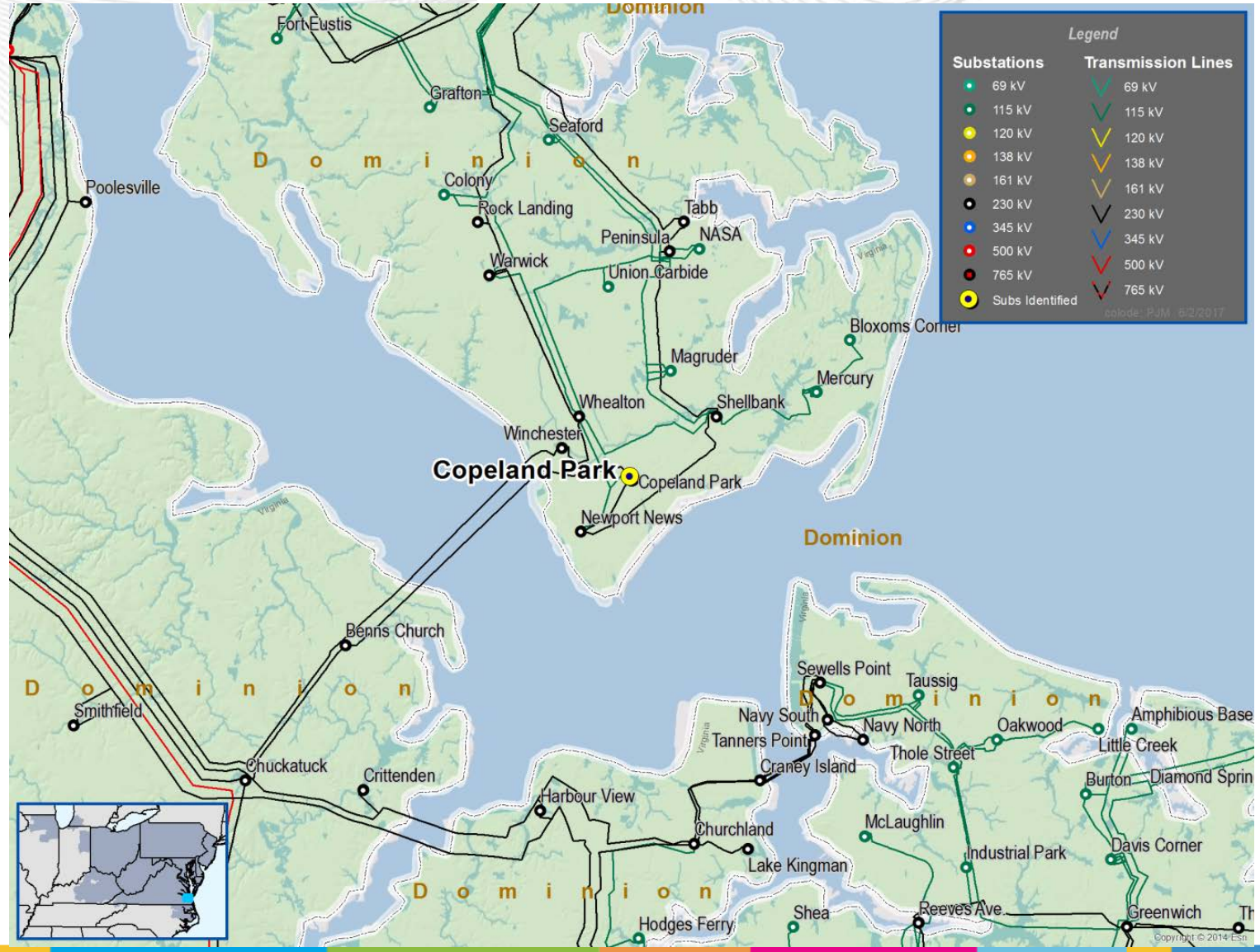
- Transmission will support the delivery point request by installing a 230kV circuit switcher and performing other necessary transmission work on the high side of the new transformer. **(s1354)**

Alternatives: No feasible alternatives

Estimated Project Cost: $600 K

Projected IS Date: 05/15/2019

Project Status: Conceptual



Dominion Transmission Zone Supplemental Project

Supplemental Project: Plaza Substation – New 230kV Circuit Switcher

Date Project Last Presented: 6/8/2017 TEAC

Problem Statement:

- Dominion Distribution has identified the need to upgrade existing 56MVA 230/34.5kV Transformer #5 to a 84MVA transformer.

Selected Solution:

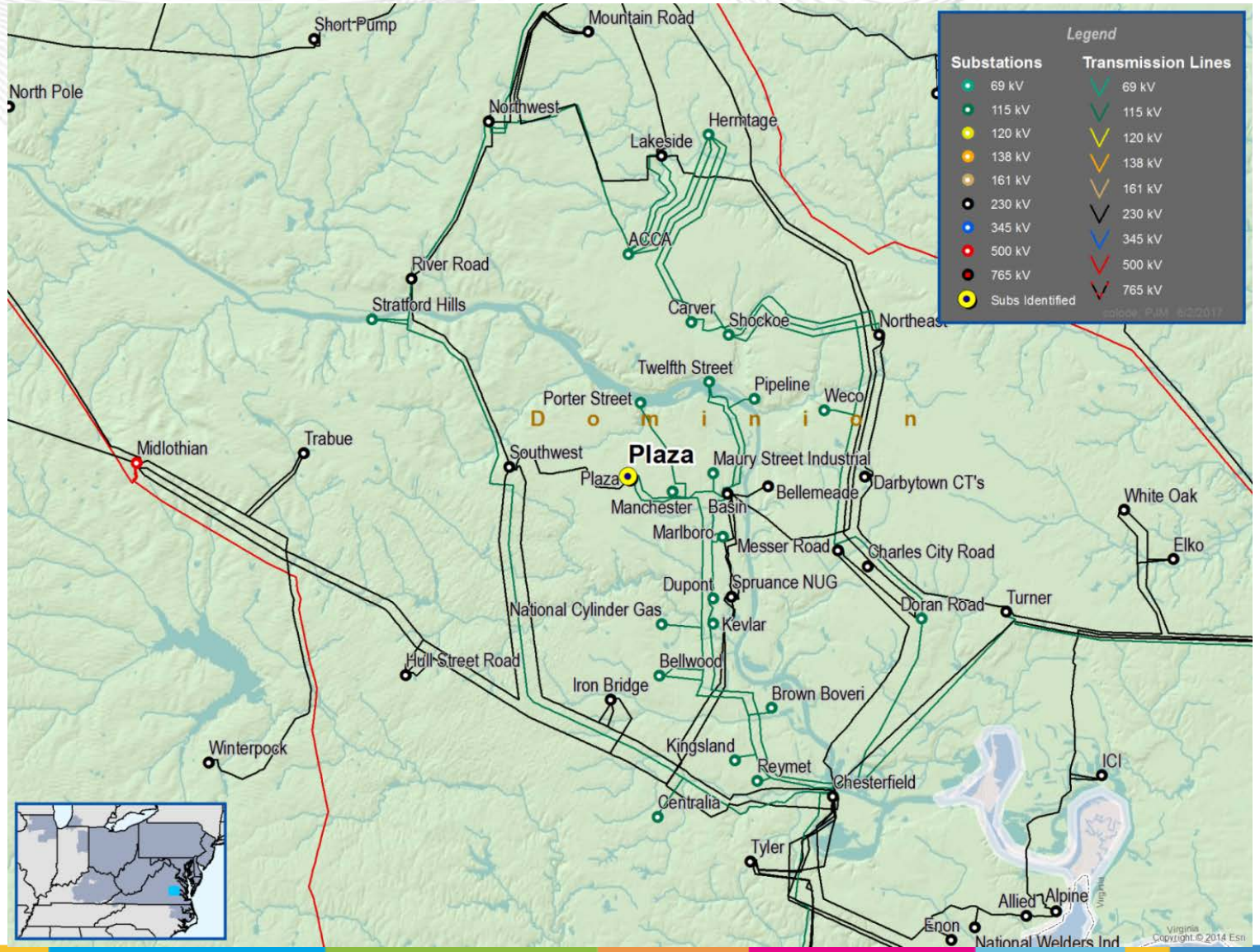
- Remove existing MOAB, install a 230kV circuit switcher and perform other necessary transmission work on the high side of the new transformer. **(s1355)**

Alternatives: No feasible alternatives

Estimated Project Cost: $450 K

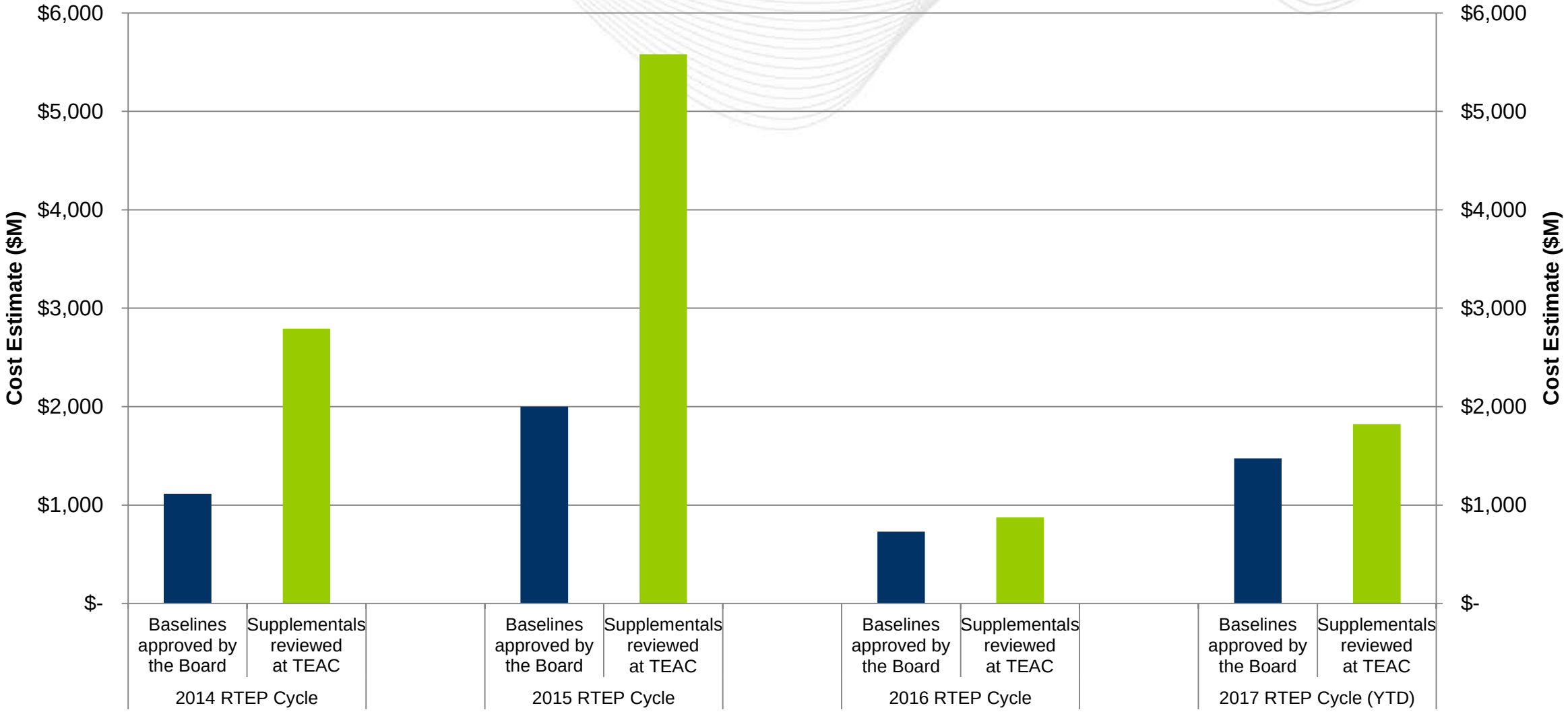
Projected IS Date: 10/15/2018

Project Status: Conceptual

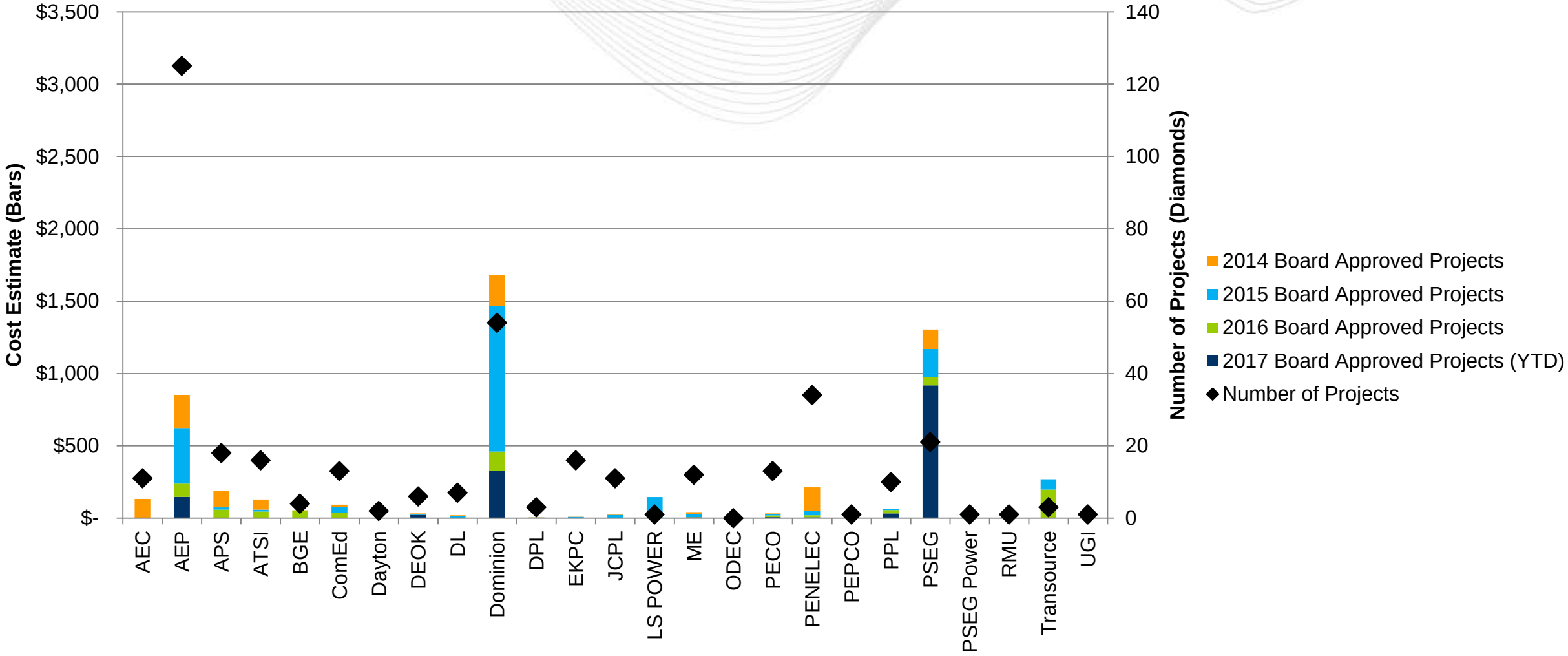


RTEP Baseline and Supplemental Project Statistics

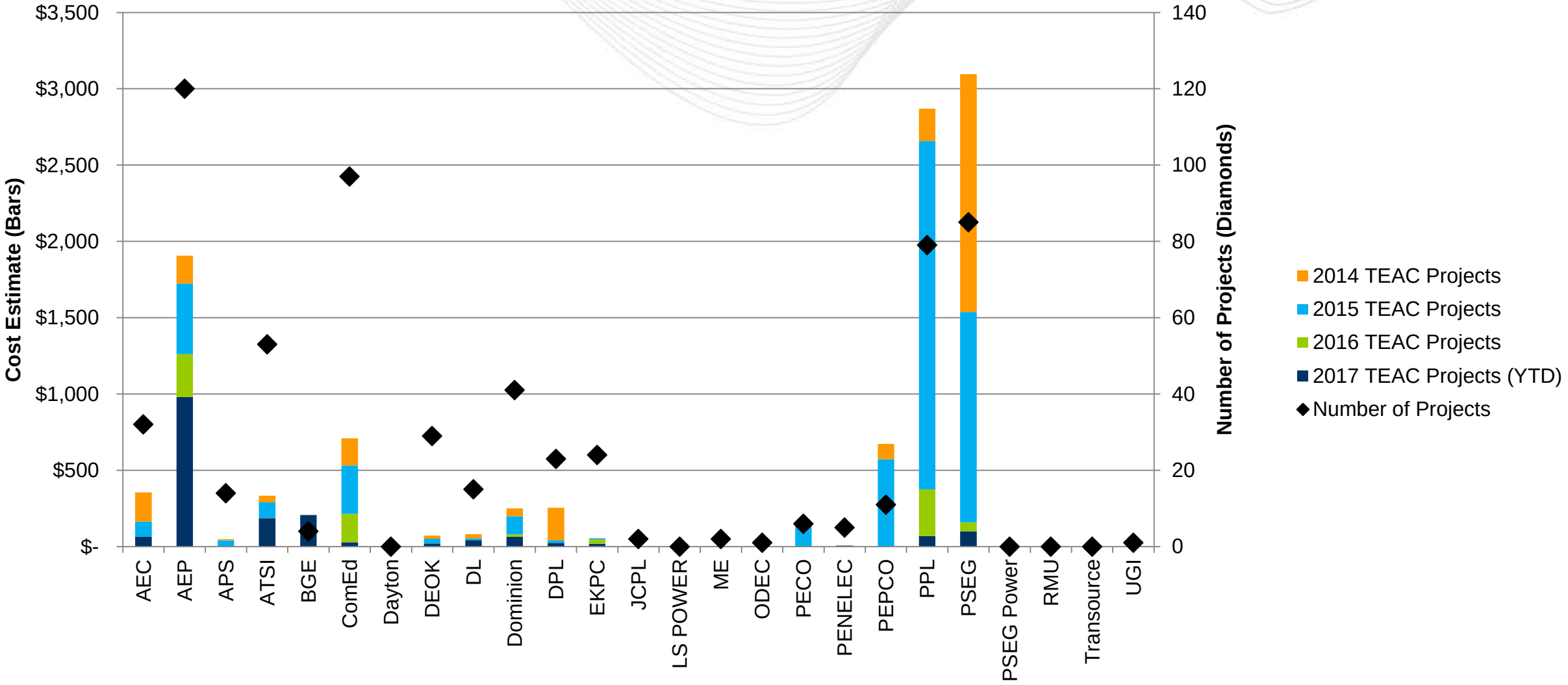
Baseline and Supplemental Projects by Year



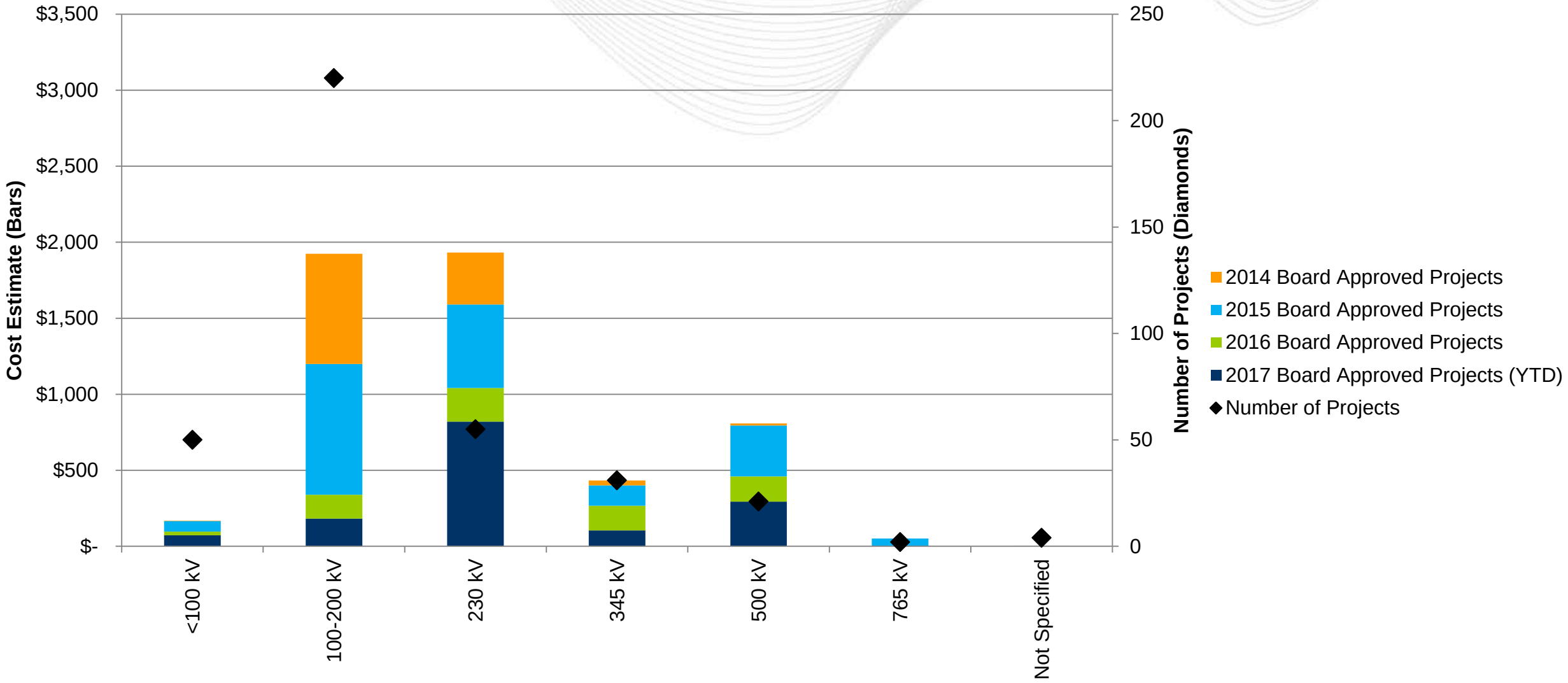
Baseline Upgrades by Transmission Owner Zone



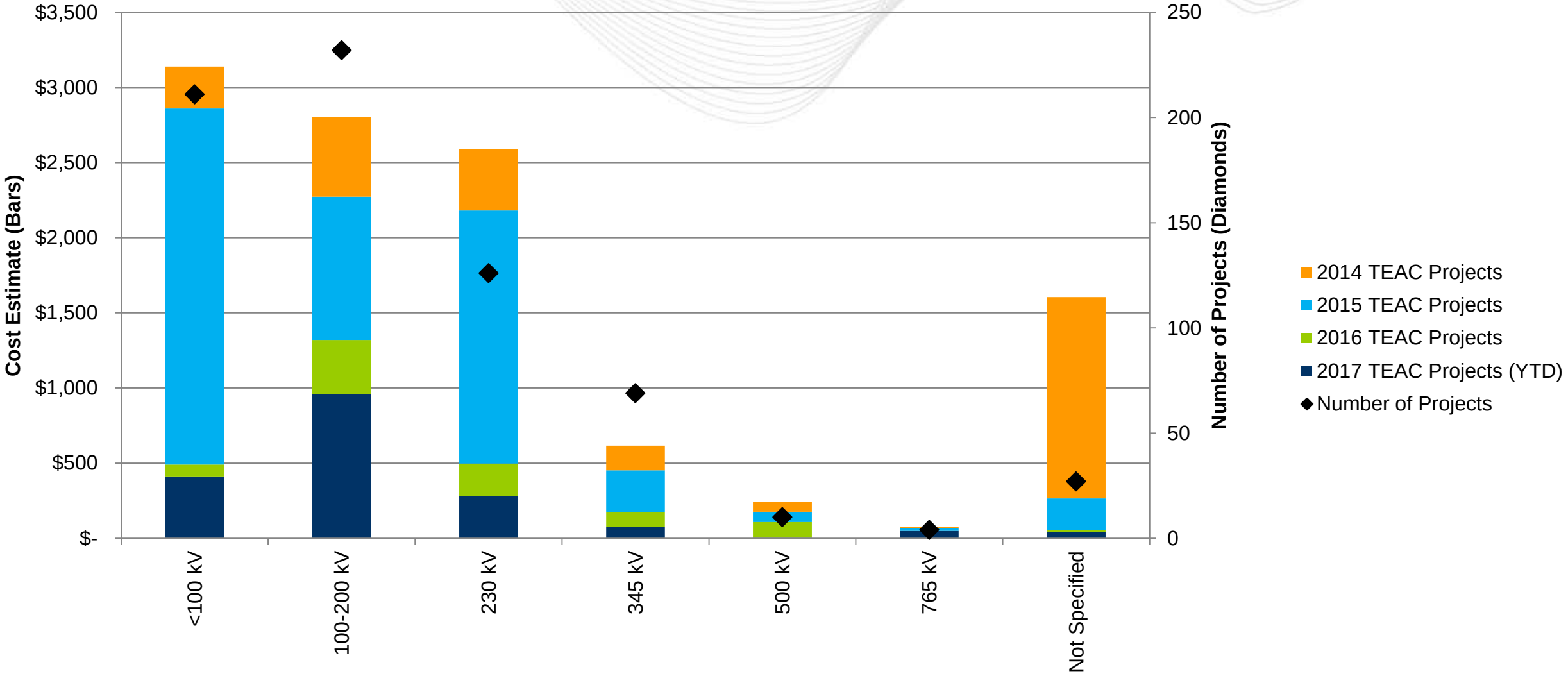
Supplemental Upgrades by Transmission Owner Zone



Baseline Upgrades by Voltage



Supplemental Upgrades by Voltage



2017 RTEP Next Steps

2017 RTEP Next Steps

- Open reliability analysis proposal window
- Review 2022 window violations at TEAC
- Review immediate need reliability violations and solutions

Sub-regional meetings scheduled through the end of the year

West	South	MAAC
7/21/2017	8/29/2017	8/31/2017
8/30/2017	10/30/2017	10/31/2017
9/29/2017*	12/18/2017	12/19/2017
11/2/2017		
12/18/2017		

* Note change to previously announced date.

Proposed 2018 SRRTEP schedule

One meeting every other month:

January	March	May
July	September	November

Expect meetings will be scheduled for the end of the month.

Upcoming TEAC Meetings and anticipated PJM Board Review

8/10 – TEAC Reliability Analysis Update

9/14 – TEAC Reliability Analysis Update

10/12 – TEAC Reliability Analysis Update

10/17 – PJM Board of Managers Review

11/9 – TEAC Reliability Analysis Update

12/4 – PJM Board of Managers Review

Questions?

Email: RTEP@pjm.com

Revision History

- 7/10/2017 – Original Version Posted to PJM.com