Transmission Planning
Regional Transmission Expansion Plan
Reliability Analysis Update

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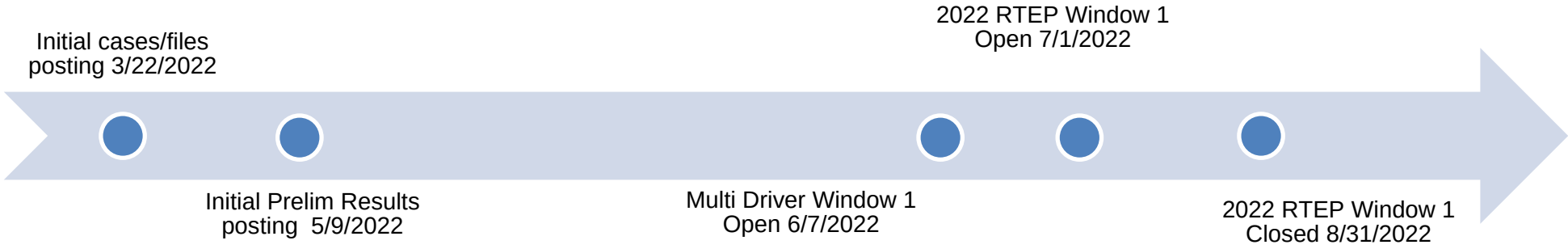
Presented to ISAC

September 29, 2022

2022 RTEP

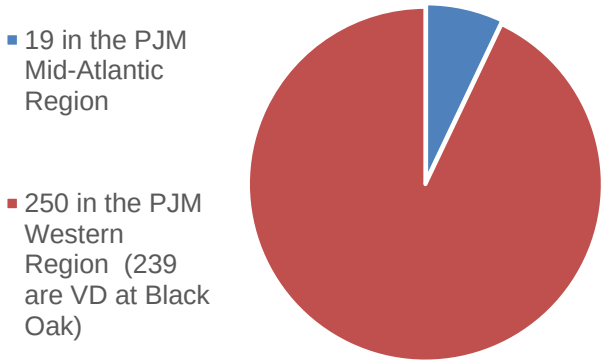
2022 RTEP Update



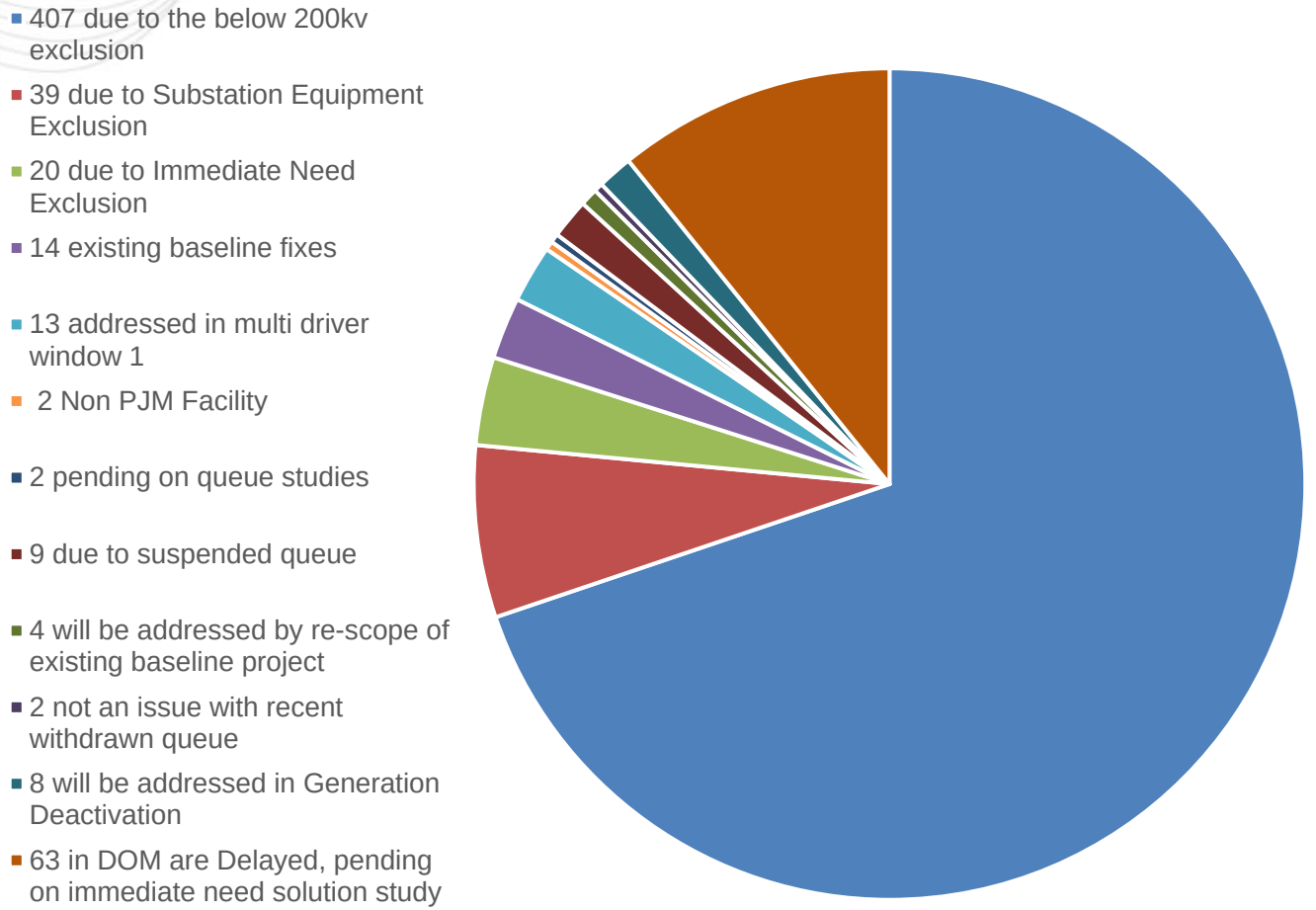
Overview of 2027 Results

Total of 852 flowgates identified at this point (239 flowgates are N-1-1 Voltage drop issues at Black Oak 500KV bus)

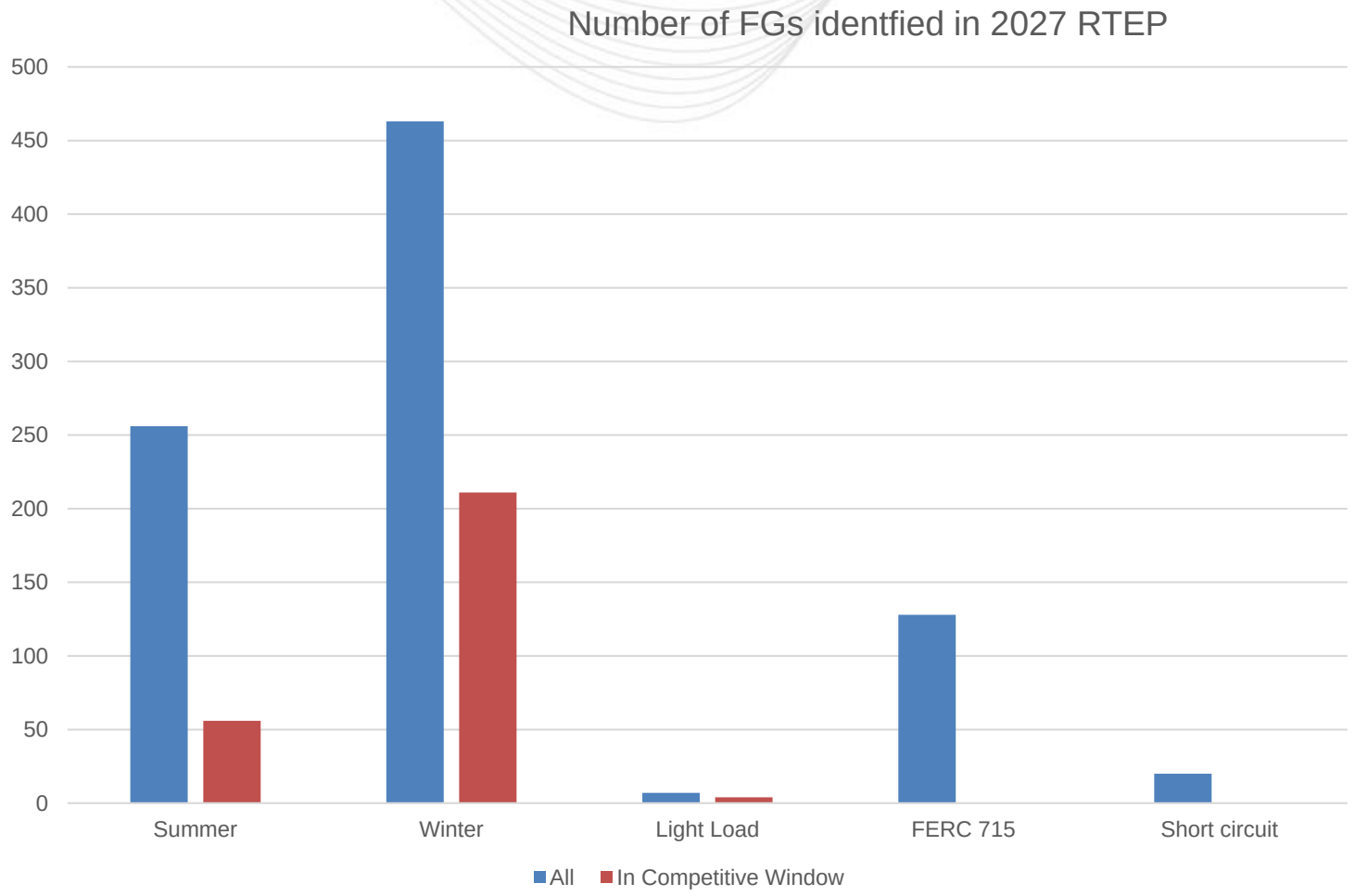
269 Competitive FGs



583 Non-competitive FGs



Overview of 2027 Results: By Type



2022 Reliability Proposal Window 1

2022 Reliability Proposal Window 1

- Window opened on 7/1/2022
- Window closed on 8/30/2022
- For this Window, PJM seeks technical solutions, also called proposals, to resolve potential reliability criteria violations on facilities identified in accordance with all applicable planning criteria (PJM, NERC, SERC, RFC, and Local Transmission Owner criteria).
- 17 total proposals submitted from 7 different entities (see Appendix for details)
  - 6 Greenfields
  - 11 Upgrades
- Cost Estimates: Approximate range from $0.26 – 386.73 M
- 275 Flowgates addressed (265 Competitive, 10 Excluded from competition)
- 7 proposals identified with cost containment

2022 RTEP
Long Term – 15 Years Outlook

15 Year Analysis Result

- Long-term deliverability analysis will identify the need to include in the RTEP:
  - New 230 kV or 345 kV circuits to support load growth in years 6 through 8
  - Right-of way acquisition for any new 230 kV or 345 kV circuits to support load growth in years 9 and 10
  - New 500 kV or greater circuits to support load growth in years 6 through 12
- PJM identified five 230 kV overload in years 7 ~ 10, and one 500 kV overload in years 9

Season	Contingency	From Bus	From Name	To Bus	To Name	CKT	KVs	Areas	100% Year
Summer	Single	200675	26E.TWANDA	200924	26CANYON	1	230/230	226/226	2030
Summer	Single	314068	6OX	314054	6KEENE M	1	230/230	345/345	2032
Summer	Single	314004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	2030
Summer	Single	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	2029
Summer	Single	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	2029
Winter	Single	200064	PCHBTM1S	200004	CNASTONE	1	500/500	230/232	2031

  - East Towanda – Canyon and Peach Bottom – Conastone overload could be addressed by line reconductor
  - All the other overloads will be addressed by 2022 RTEP immediate need solutions in Dominion

2022 Multi-Driver Proposal Window 1

2022 Multi-Driver Proposal Window 1
First PJM Multi-Driver Window

- Window opened on 6/7/2022
- Window closed on 8/8/2022
- For this Window, PJM seeks technical solutions, also called proposals, to resolve potential reliability criteria violations on multi-driver facilities identified below in accordance with all applicable planning criteria (PJM, NERC, SERC, RFC, and Local Transmission Owner criteria).
- 14 total proposals submitted from 3 different entities (includes 3 carry-over proposals from 2021 Proposal Window 2)
  - 8 Greenfields
  - 6 Upgrades
- Cost Estimates: Approximate range from $215K – 127M
- **4 Proposals identified with cost containment**
- Redacted public proposals are available:

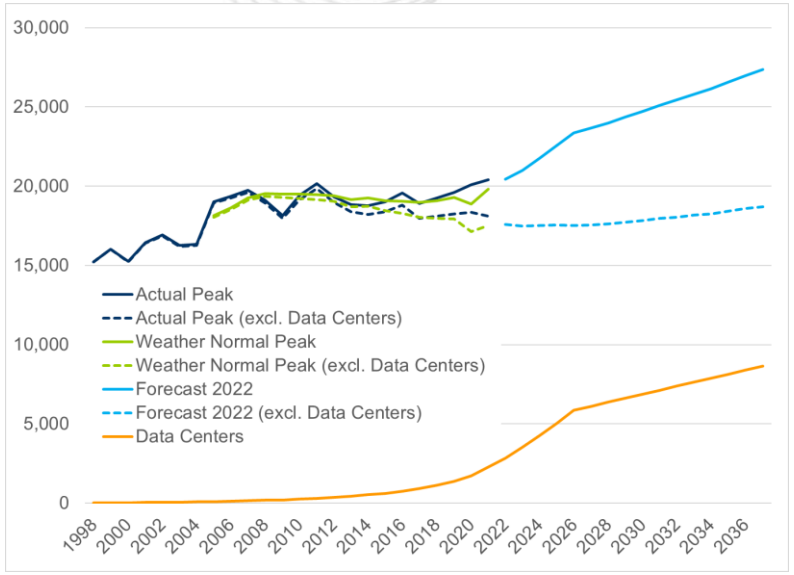
  https://pjm.com/planning/competitive-planning-process/redacted-proposals

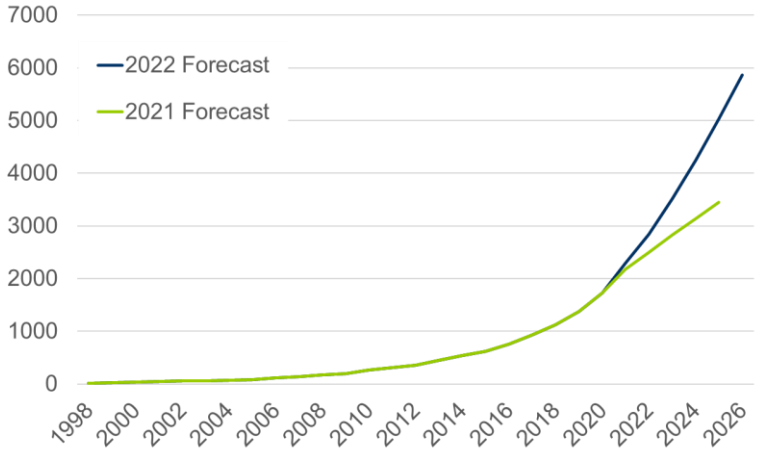
Data Center Load Additions

Immediate Need

Background

- At the June 7th TEAC, PJM presented information concerning the load growth that the Dominion area has been experiencing in the data center alley area around the Dulles airport.
- The data center loads reflect an annualized growth rate of 3%.
- Forecasted data center additions for the 2022 Load Forecast provided by Dominion and NOVEC were noticeably higher than in the prior year.
- At the July 12th TEAC, PJM indicated that due to the highly concentrated load growth in the data center alley area, numerous reliability violations were observed in the 2024 and 2025 timeframes despite planned supplemental and baseline upgrades.
- Without further transmission upgrades in the 2024/2025 timeframe, the area will not have sufficient transmission capability to serve the load.
- PJM announced an Immediate Transmission Development need (without a window) to serve the new load in the 2024/25 timeframe.





Dominion Transmission Zone: Baseline
Data Center Alley

Process Stage: Pending Board Approval – Oct 2022

Criteria: Summer N-1, GenDeliv, N-1-1 Thermal & 300 MW Load Loss

Assumption Reference: 2027 RTEP assumption

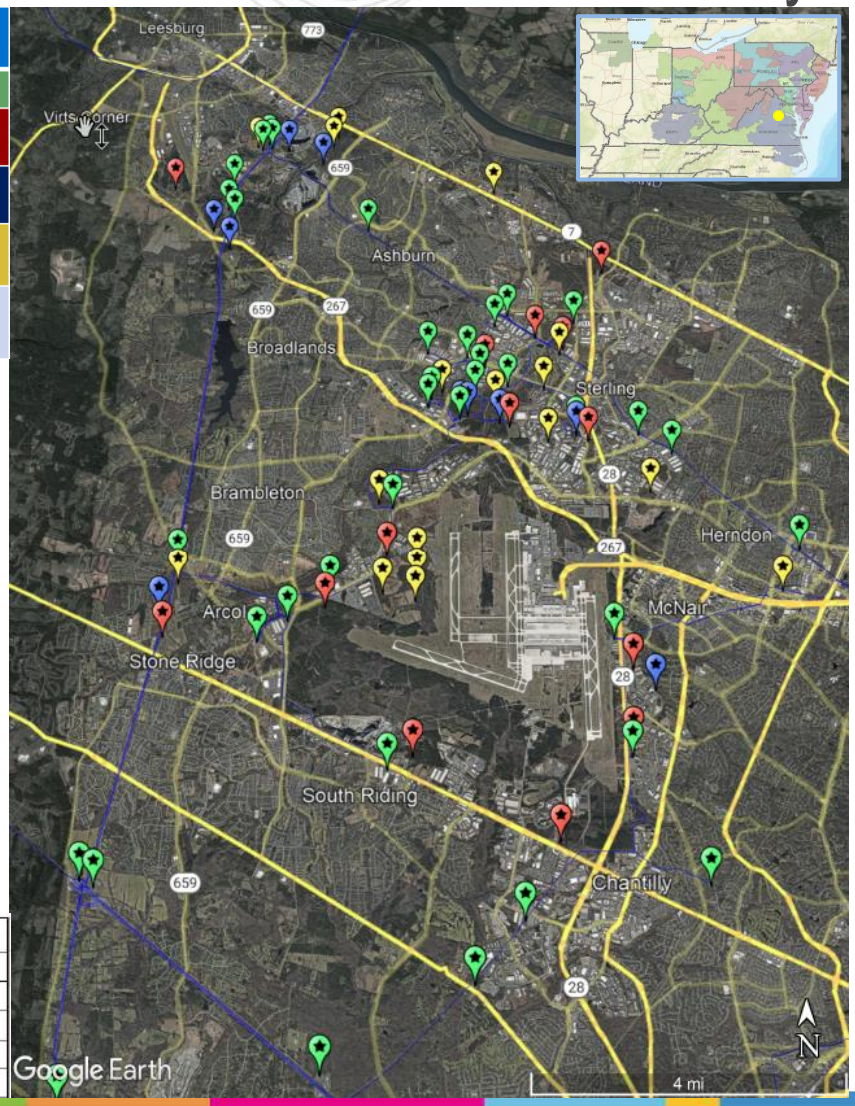
Model Used for Analysis: 2027 RTEP summer case

Proposal Window Exclusion: Immediate Need

Problem Statement:

- Various thermal issues and load loss in the Data Center Alley area around Dulles airport.
  - N-1: 2022W1-N1-ST16-18, 2022W1-N1-ST20, 2022W1-N1-ST23
  - GenDeliv: 2022W1-GD-S588, 2022W1-GD-S1028, 2022W1-GD-S622, 2022W1-GD-S35
  - N-1-1: 2022W1-N2-ST12-51
  - N-1-1 Load Loss: 2022W1-N2-SLD1, 2022W1-N2-SLD2

	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



COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
	500 KV.	500 thru 599
	230 KV.	200 thru 299 & 2000 thru 2099
	115 KV.	1 thru 199
	138 KV.	AS NOTED
	69 KV.	AS NOTED

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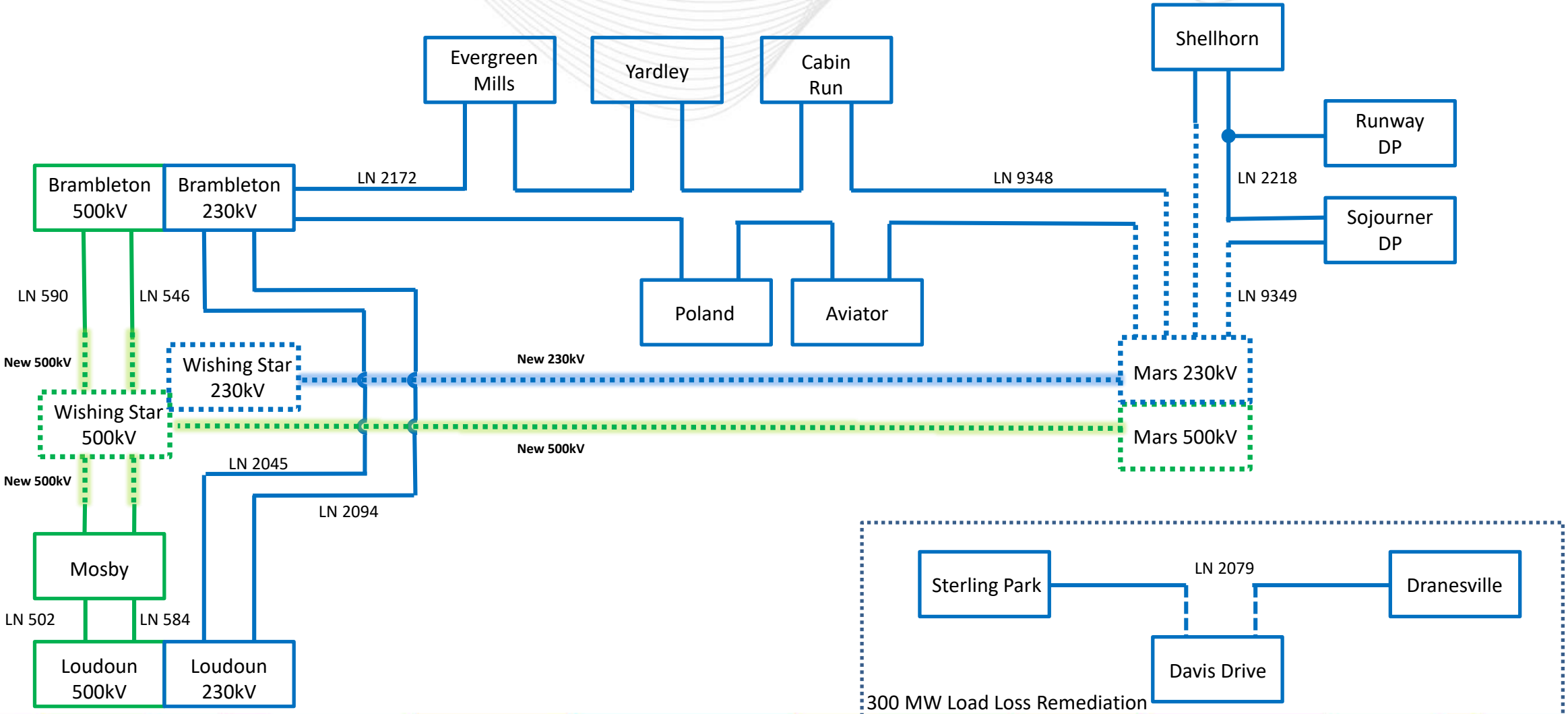
Dominion Transmission Zone: Baseline Data Center Alley



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