



Sub Regional RTEP Committee PJM South

June 24, 2014

- Baseline N-0 & N-1
- Generator Deliverability and Common Mode Outage
- Load Deliverability
- N-1-1
- TO Specific Criteria
- Next Steps
- Anticipated RTEP Proposal Window

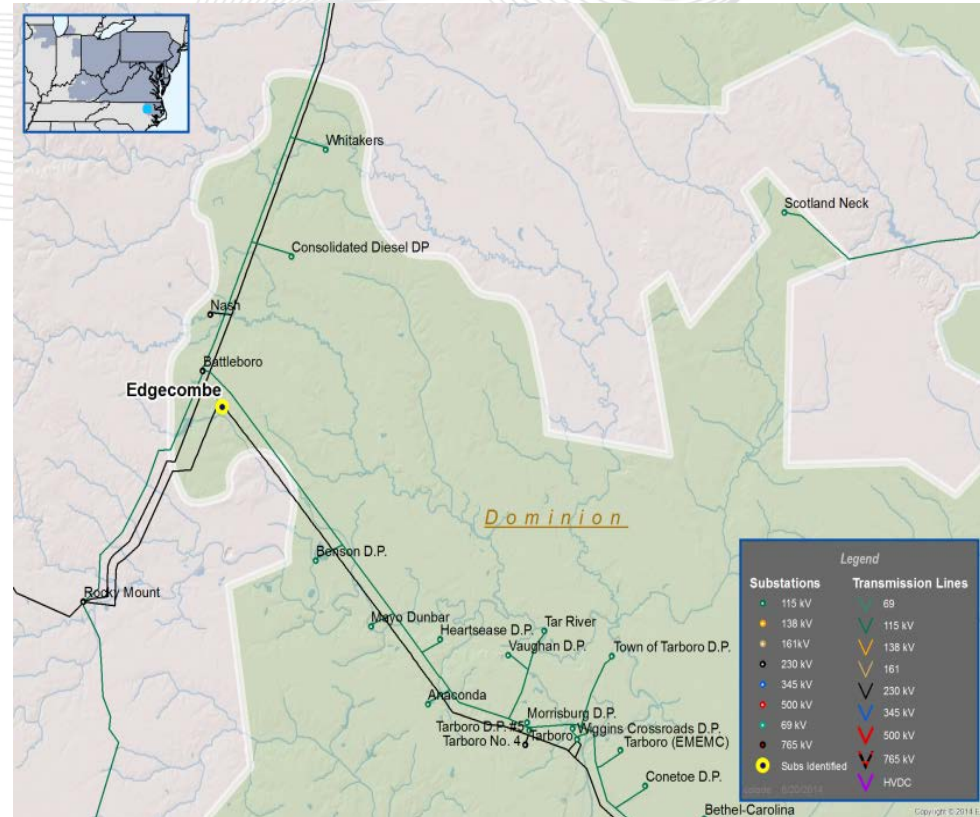


2014 RTEP Baseline Analysis Update

06/24/2014

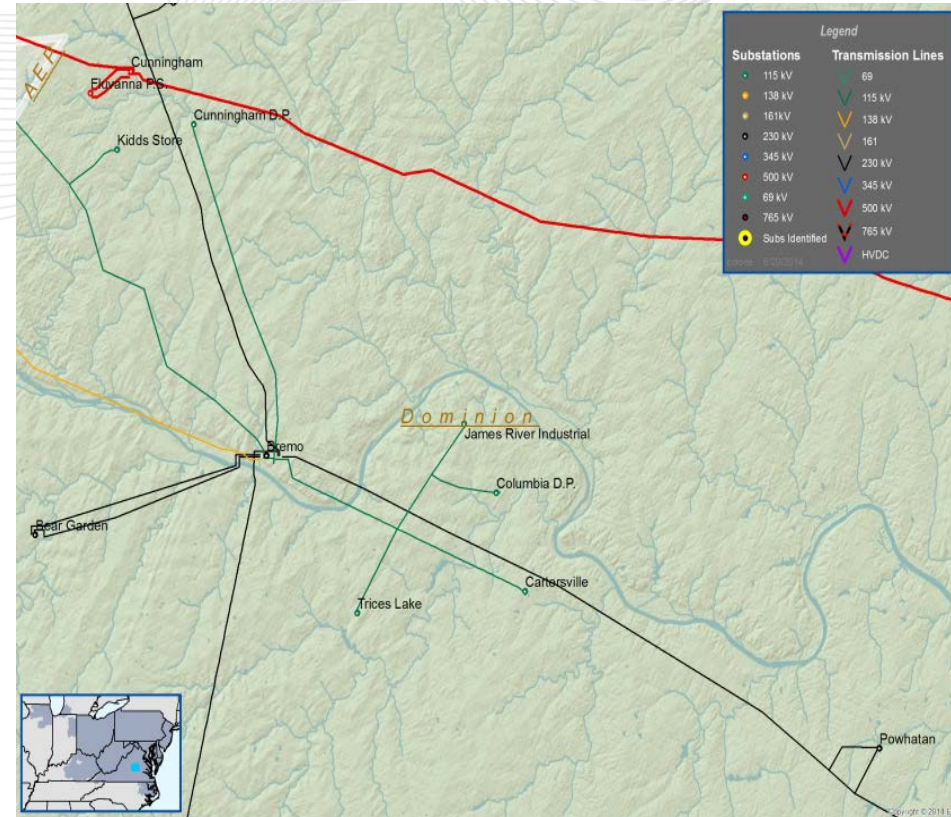
Dominion Transmission Zone

- B1794 Cost and Scope Change:
- Previous Scope:
 - Split 230 kV Line #2056 (Hornertown - Rocky Mount) and double tap the line to Battleboro Substation. Expand station, install a 230 kV 3 breaker ring bus and install a 230/115 kV transformer.
- New Scope:
 - Build a new substation near the Edgecombe NUG to be called Morning Star Substation with a 230-115kV Tx, 4-230kV breakers in a breaker and half scheme, 3-115kV breakers in a ring. Re-configure Lines 80 (Battleboro – Anaconda), 229 (Edgecombe – Tarboro) and 2058 to terminate into Morning Star Substation.
- Estimated Project Cost:
Previous → \$ 8 M
New → \$ 14.5 M
- Expected IS Date:
5/30/2016



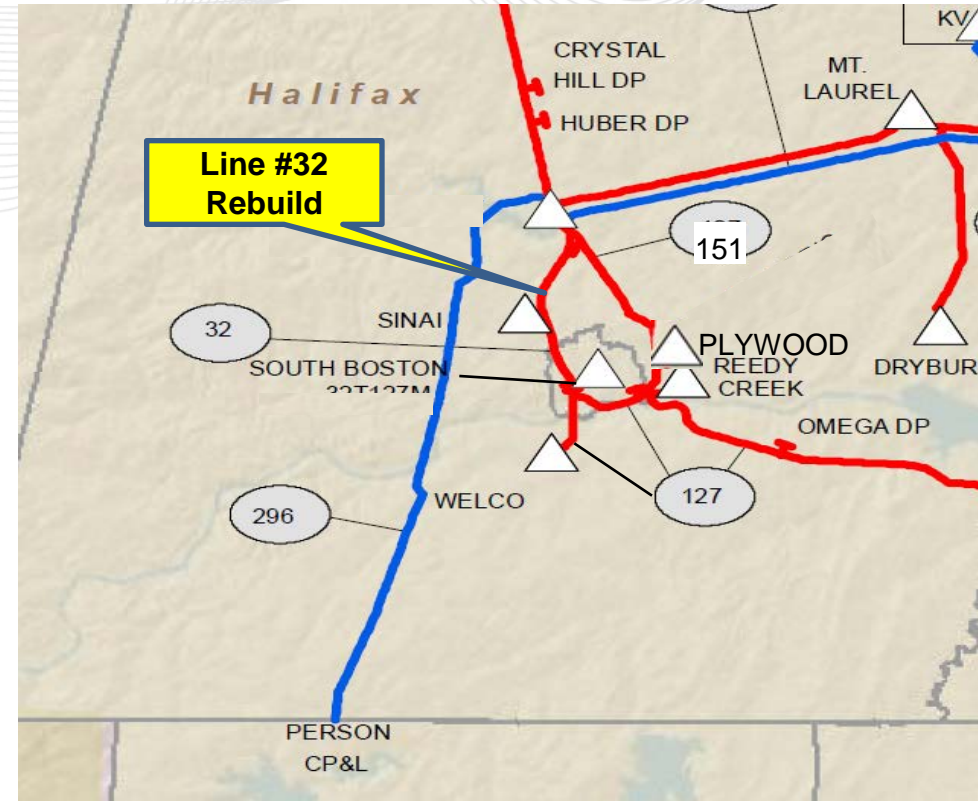
Dominion Transmission Zone

- Dominion Planning Criteria:
- Dominion 100 MW Radial Load Planning Criteria violation on line #4 Breomo – Cartersville 115 kV.
- To accommodate the load growth served by the line #4.
- Proposed Solution:
 - Install 230-34.5kV Tx at Breomo to transfer 22 MVA of load from Line #4 to Line #2028 (B2503.1).
 - Install 230-34.5kV Tx at Cartersville to transfer +12 MVA of load from Line #4 to Line #2027 (B2503.2).
 - Rebuild 3.8 miles of Line #4 as it leaves Breomo to address line age related reliability concerns (B2503.3).
 - Abandon 5.5 miles of Line #4 as it heads west from Cartersville (B2503.4).
- Estimated Project Cost:
\$ 9.2 M
- Projected IS Date:
6/1/2018



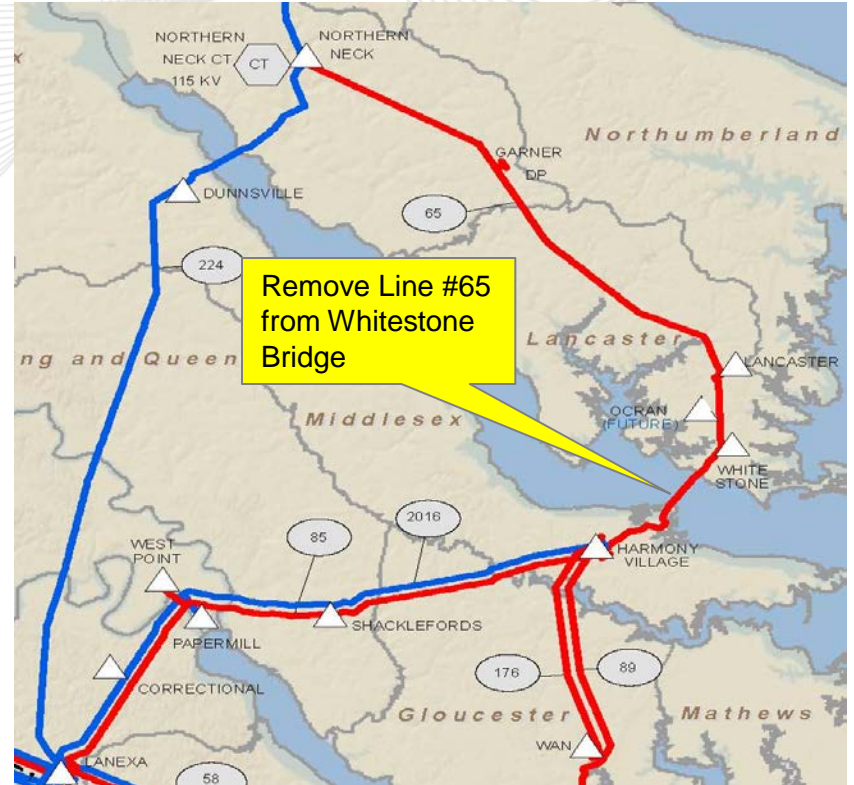
Dominion Transmission Zone

- Operational Performance:
- Line # 32 from South Boston – Halifax 115 kV has 6 miles of exposure serving 7600 customers. The line built in 1928 is mostly 3/0 ACSR on 2 pole wood H frame that is deteriorating. It has a motor operator auto-sectionalizing scheme that transfers South Boston's 4500 customers to Line # 127 (Reedy Creek – Halifax 115 kV) for Line #32 lockout. Line # 32 has had 3 momentary operations in the last 5 years.
- Line #127 has 27 miles of exposure serving 5300 customers. It has had 12 momentary operations and 2 lockouts in the last 5 years.
- Proposed Solution:
 - Rebuild the 115 kV Line #32 from Halifax to South Boston (6 miles) for a minimum of 240 MVA and transfer the Welco tap to Line #32. Moving Welco to Line #32 requires disabling the auto-sectionalizing scheme (B2504).
- Estimated Project Cost:
\$ 6.5 M
- Required IS Date:
6/30/2015



Dominion Transmission Zone

- Operational Performance:
- Line #65 Whitestone – Harmony Village 115kV is presently attached to the Rt. 3 bridge crossing the Rappahannock River
- VDOT maintenance on the bridge requires an outage of the 65 Line segment between Harmony Village and Whitestone Substations and creates a radial line for several months to over a year at time.
- This line serves almost 19,000 customers including over 5,800 NNEC customers.
- Outages attributed to bridge maintenance equipment have occurred while line segment is energized.
- Damaged insulators have been found due to objects thrown from bridge.
- Proposed Solution:
 - Install structures in river to remove the 115 kV #65 line from bridge and improve reliability of the line (B2505).
- Estimated Project Cost:
\$ 10 M
- Required IS Date:
5/31/2016

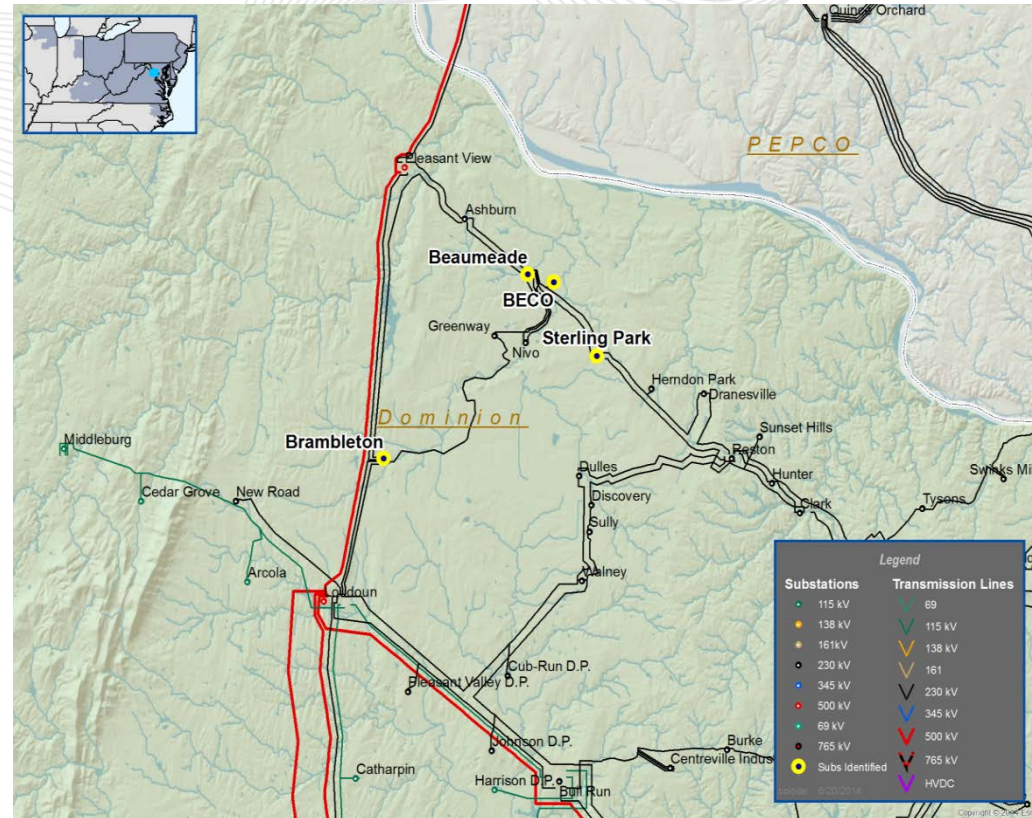




Supplemental Projects

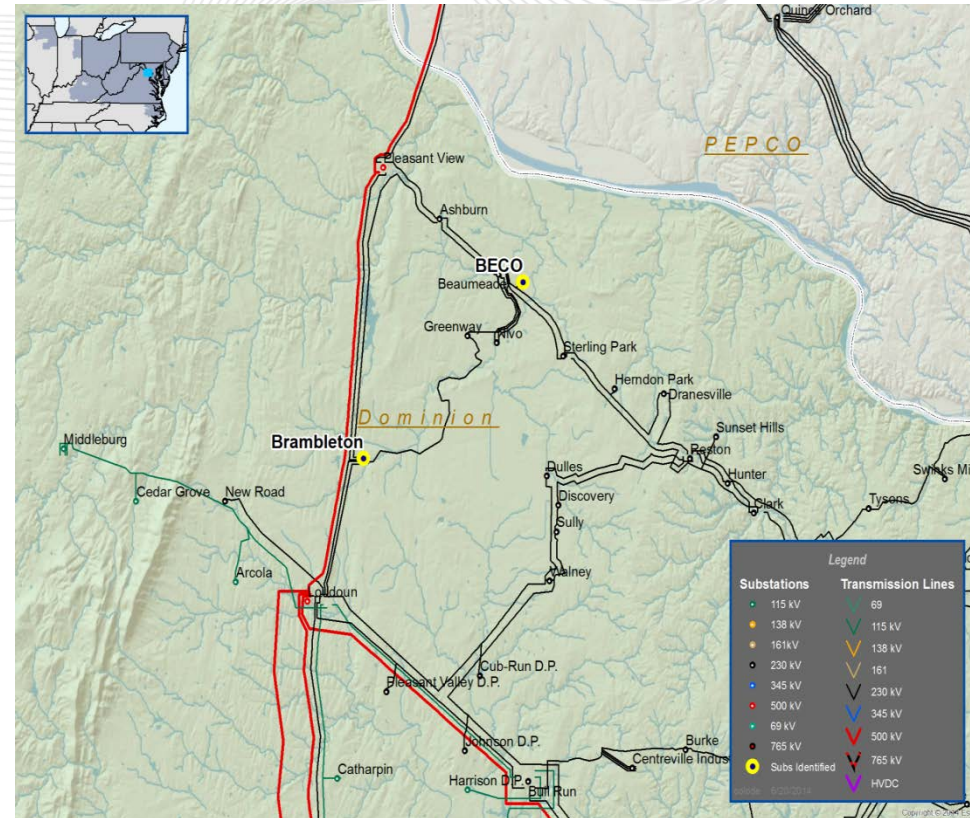
Dominion Transmission Zone

- Supplemental:
- Dominion Distribution (DVP) has submitted a Delivery Point (DP) Request for a proposed Pacific Substation (site acquired near Moran Rd and Pacific Blvd) for 60 MW load growing to over 100 MW by 2020.
- Proposed Solution:
 - Loop (in-and-out) an overhead, double-circuit, 230kV transmission line extension approximately 2 miles (along new right-of-way) from either Line #2137 (Brambleton-BECO) or Line #2081 (Beaumeade-Sterling Park) (S0744.1).
 - Install four 230kV breakers in a six-breaker ring arrangement to accommodate the connection of DVP 230-34.5kV transformers (S0744.2).
- Estimated Project Cost:
\$ 15 M
- Projected IS Date:
5/31/2016



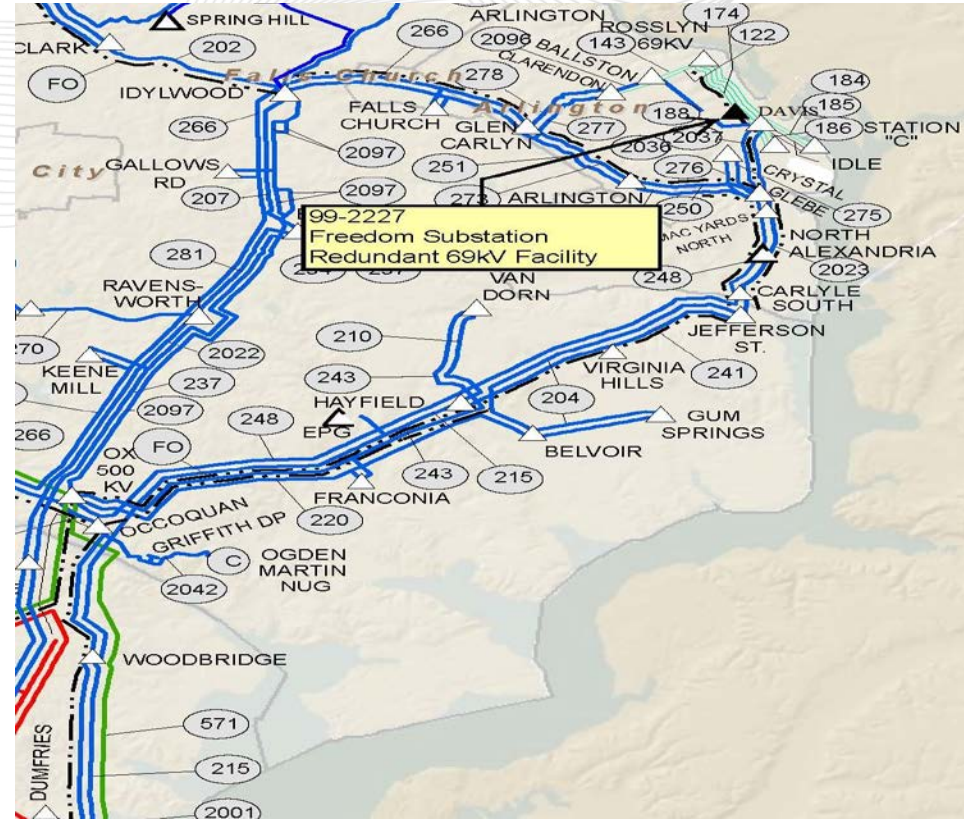
Dominion Transmission Zone

- Supplemental:
- Northern Virginia Electric Cooperative (NOVEC) has submitted a Delivery Point Request for a proposed Runway Substation for 8 MW load growing to over 15 MW by 2020 .
- Proposed Solution:
 - Tap Line #2137 (Brambleton-BECO) between structures 2095/57 and 2095/59. Install appropriate 230 kV transmission structures to accommodate tapping to DVP's backbone structure, including 2 – 230 kV air-break switches with vacuum bottle attachments (S0745).
- Estimated Project Cost:
\$ 0.75 M
- Projected IS Date:
5/30/2015

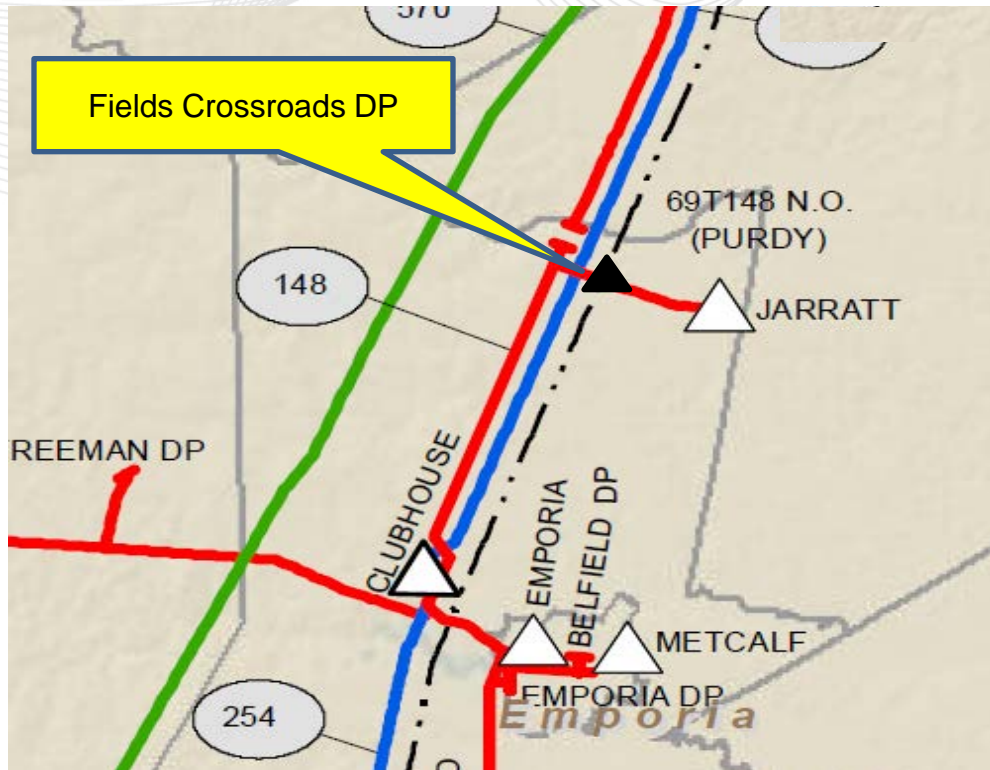


- Supplemental:
- Customer request (governmental) for redundant capacity
- Proposed Solution:
 - Cut and route Line #174 (Davis-Rosslyn) in and out of new substation (<0.25mi).
 - Install 3-breaker 69kV ring bus and customer owned transformation. (S0746).
- Estimated Project Cost:
\$ 0 M
- Projected IS Date:
2/1/2015

Dominion Transmission Zone



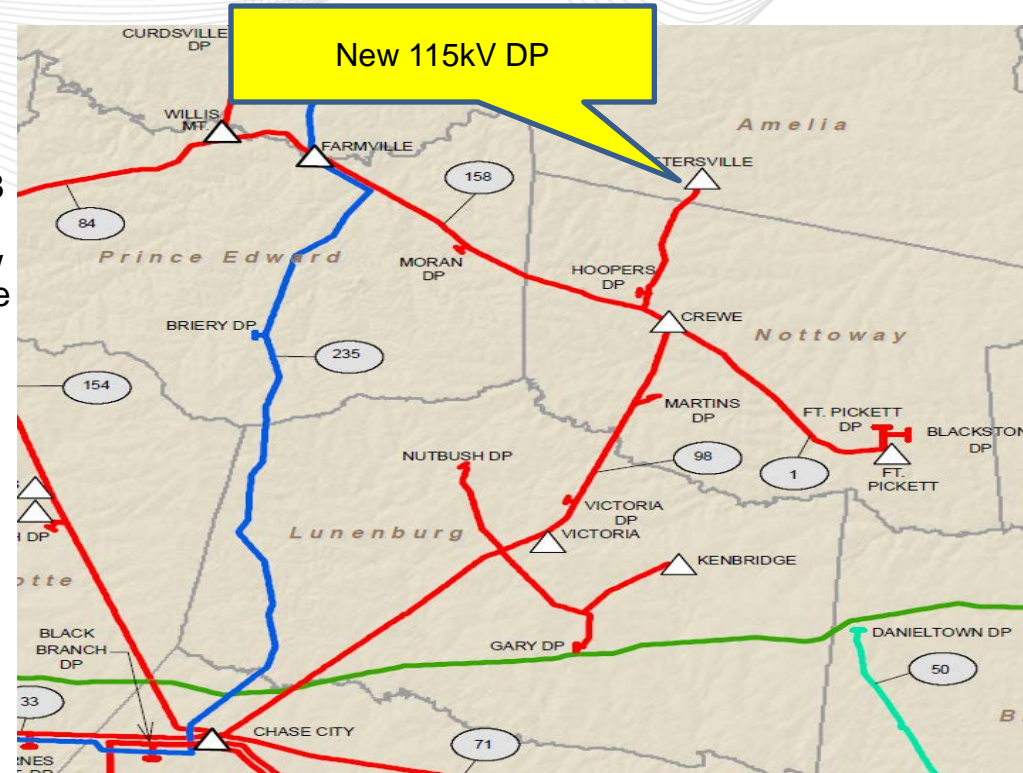
- Supplemental:
- Needed to relieve loading at Jarratt Substation with an initial 5 MW load transfer
- Projected 7 MW load in 2025
- Proposed Solution:
 - **Fields Crossroads** - Install a backbone structure and two 115kV switches on Line #148 (Clubhouse – Purdy)
 - Install transformer high side circuit switcher (S0747).
- Estimated Project Cost:
\$ 0.7 M
- Projected IS Date:
5/31/2015



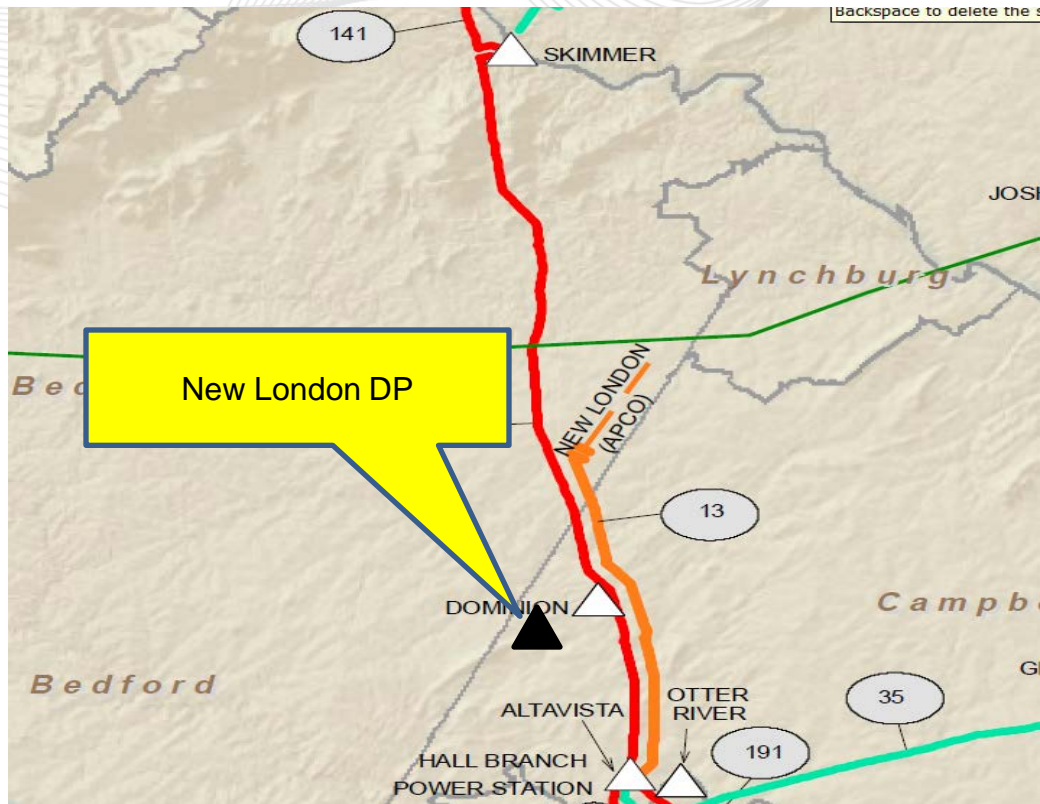
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- The map shows the Gladys Tap Substation (black triangle) at the center. A yellow callout box points to it with the text "Gladys Tap Substation". Power lines are color-coded: red for existing lines and green for new or future lines. Key locations include:
- Substations (triangles):** DOMINION, ALTAVISTA, HALL B. NICH, KLOPMAN, GREटना, CHATHAM, BANISTER.
 - Distribution Points (DPs):** GLADYS DP, HURT NUG, GRIT DP, MT. AIRY DP, HICKORY GROVE DP, SHOCKOE DP, CLIMAX DP.
 - Highways (circles):** 35, 191, 31, 173.
 - Other Labels:** "Campbell" (top right), "Halifa" (bottom right), "Pittsylvania" (bottom center), "OTTER RIVER" (top center), "FUTURE (2013) ALTAVISTA 2" (green line label).

Dominion Transmission Zone

- Supplemental:
- SEC has requested a new 115kV DP to replace Pointon 34.5kV DP to improve reliability - Pointon has been the worst performer on SEC's outage list for the last 8 years
- Dominion Distribution has a need for a new substation in 2018 in the Amelia Courthouse area to relieve the Jetersville transformer loading and for reliability
- **Proposed Solution:**
 - Perform a routing study, acquire right-of-way and build a single circuit 115kV line from Jetersville to the existing Pointon DP, approximately 8 to 10 miles long (S0749) .
- **Estimated Project Cost:**
\$ 17 M
- **Projected IS Date:**
7/30/2015

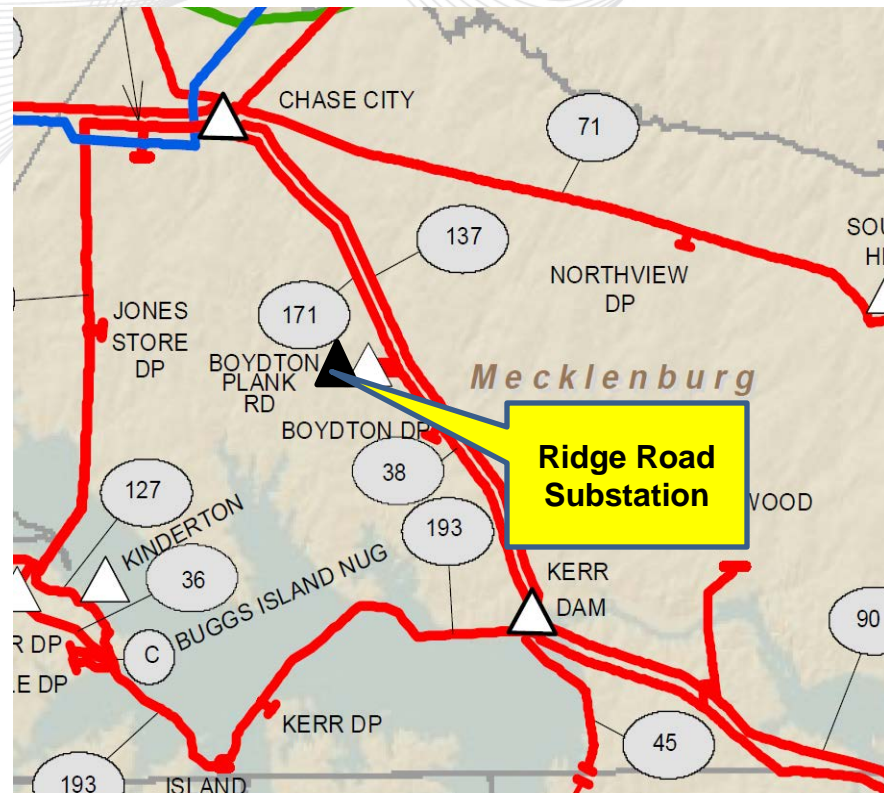


- Supplemental:
- Initially 4 MW load transferred from AEP's 138kV
- Potential two new tenants (additional 3 MW)
- Projected load 25 MW by 2023.
- Proposed Solution:
 - Install two 115kV switches on Line #30 (Altavista – Skimmer)
 - SEC to acquire ROW and build 115kV single transmission line from their proposed New London Substation to Dominion's structure (S0750)
- Estimated Project Cost: \$ 0.7 M
- Projected IS Date: 8/30/2014



- Supplemental:
- A large customer is building a facility north of Boynton Plank Road Substation in Mecklenburg County, VA. The initial load is 27 MW.
- Proposed Solution:
 - Build a new substation, Ridge Rd Substation with a 115kV breaker and a half scheme initially with 4 breakers and 2 distribution transformers (future build-out 9 breakers and 4 distribution transformers) (S0751.1)
 - Split Line #137 (Chase City-Kerr Dam) and extend a double circuit 115kV line for 1.9 miles to feed Ridge Road Substation (S0751.2).
- Estimated Project Cost:
\$ 9 M
- Projected IS Date:
4/15/2015

Dominion Transmission Zone



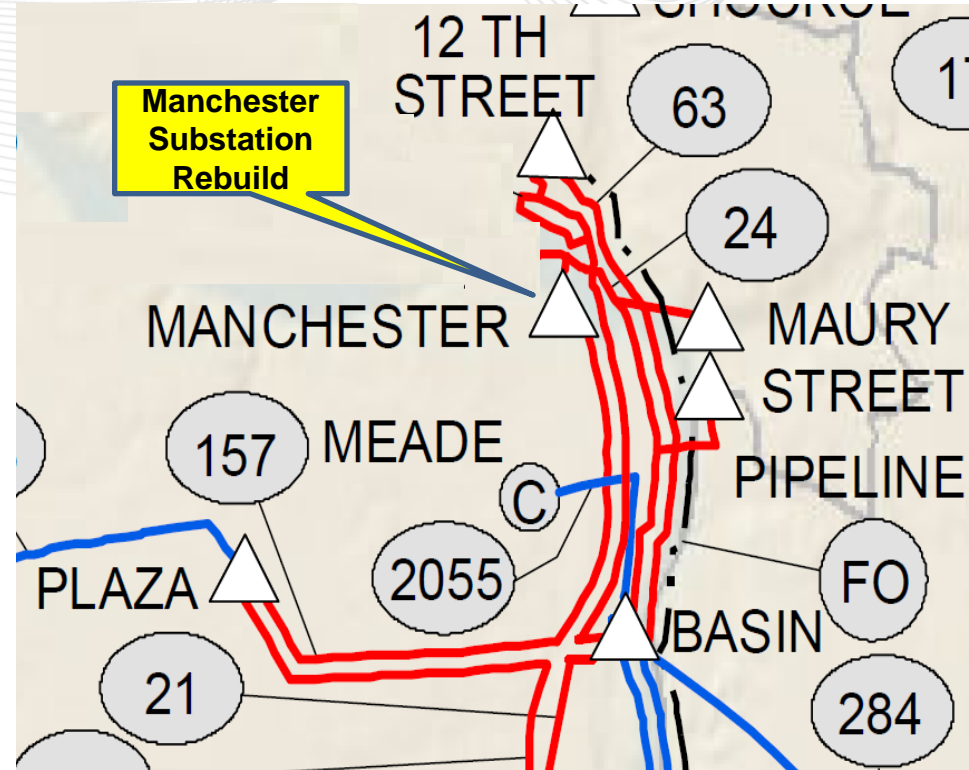
Dominion Transmission Zone

- Supplemental:
- Replace existing 115kV Delivery Point with 230kV Delivery Point for greater capacity.
- Transfer 8 MW from Newport News to the new 230kV delivery point. DP also needed to support Newport News transformer contingency.
- Projected load is 24.5MW in 2015 growing to 30 MW by 2025.
- **Proposed Solution:**
 - Copeland Park 230kV Delivery - Install 230kV Backbone, associated equipment and transformer high side circuit switcher (S0752).
- Estimated Project Cost:
\$ 0.8 M
- Projected IS Date:
5/31/2015



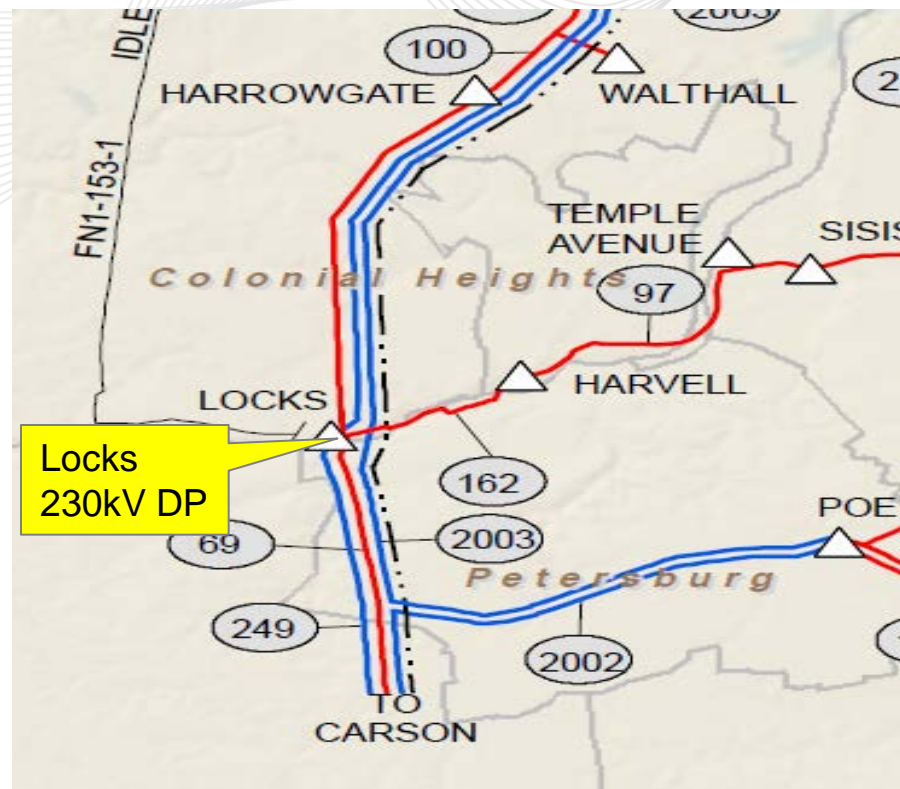
Dominion Transmission Zone

- Supplemental:
- All 115kV concrete structures and foundations in Manchester Substation are deteriorating. The 115kV has a straight bus arrangement with 2 line breakers and a tie breaker.
- Proposed Solution:
 - Rebuild Manchester Substation with 2 new backbones and a 115kV four breaker ring bus. Add high side circuit switchers to the 2 distribution transformers (S0753).
- Estimated Project Cost:
\$ 3 M
- Projected IS Date:
6/30/2015



Dominion Transmission Zone

- Supplemental:
- Transferring 31 MW (winter) from Locks 115 kV to the new 230kV DP needed for transformer contingency (exceeds mobile transformer rating).
- Projected load is 38 MW by 2025.
- Proposed Solution:
 - Relocate section of Locks 230 kV bus and install high side switch and circuit switcher (S0754).
- Estimated Project Cost:
\$ 0.5 M
- Projected IS Date:
11/30/2014

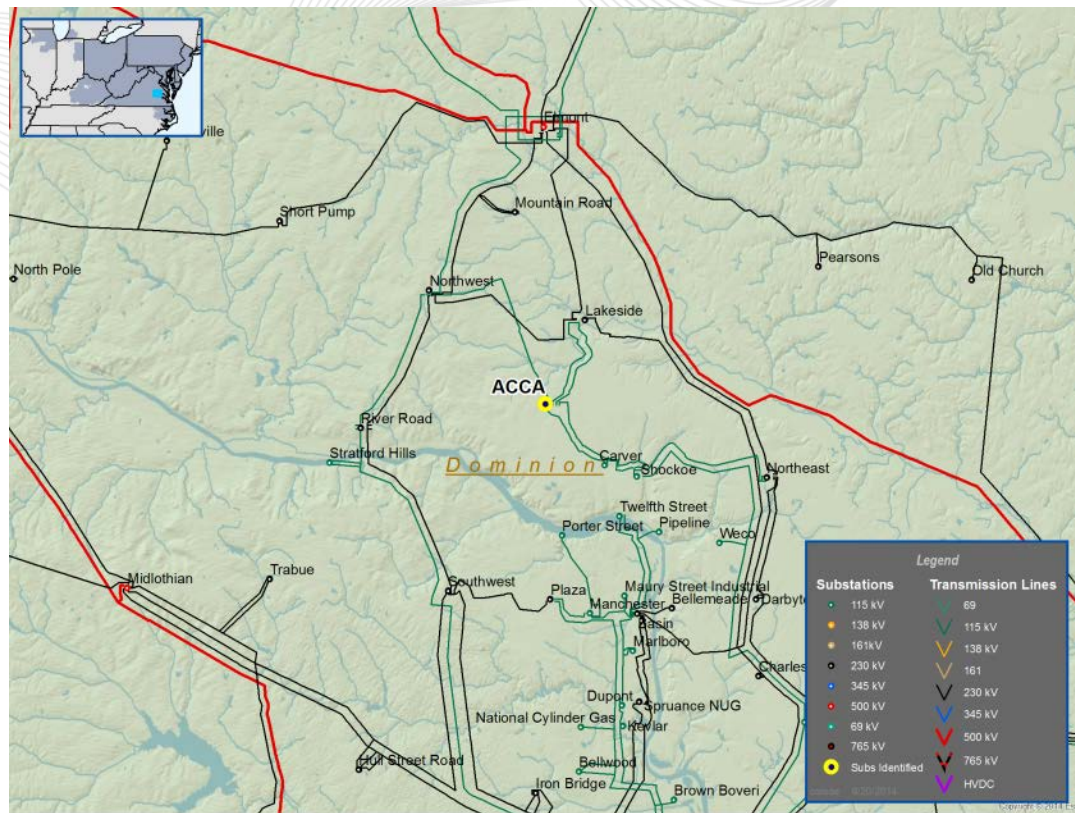




2014 RTEP Preliminary Reliability Results Posted for the Anticipated 6/27/2014 RTEP Window

- Baseline and Generation Deliverability Violation.
- The ACCA to Shockoe 115 kV circuit is overloaded for single contingency loss of Northeast – Shockoe 115 kV circuit.

Dominion Transmission Zone



- Baseline and Generation Deliverability Violation.
- The Northeast to Carver 115 kV circuit is overloaded for single contingency loss of Northeast – Shockoe 115 kV circuit.

