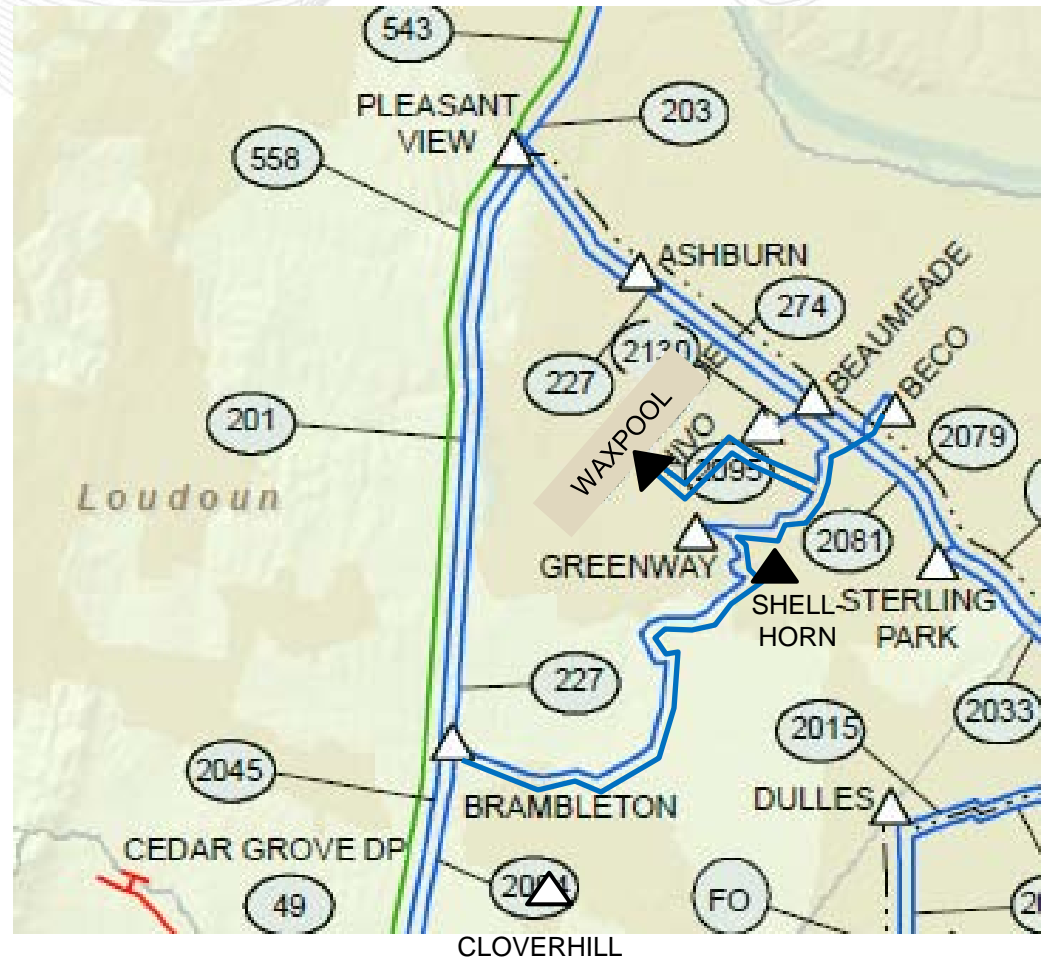




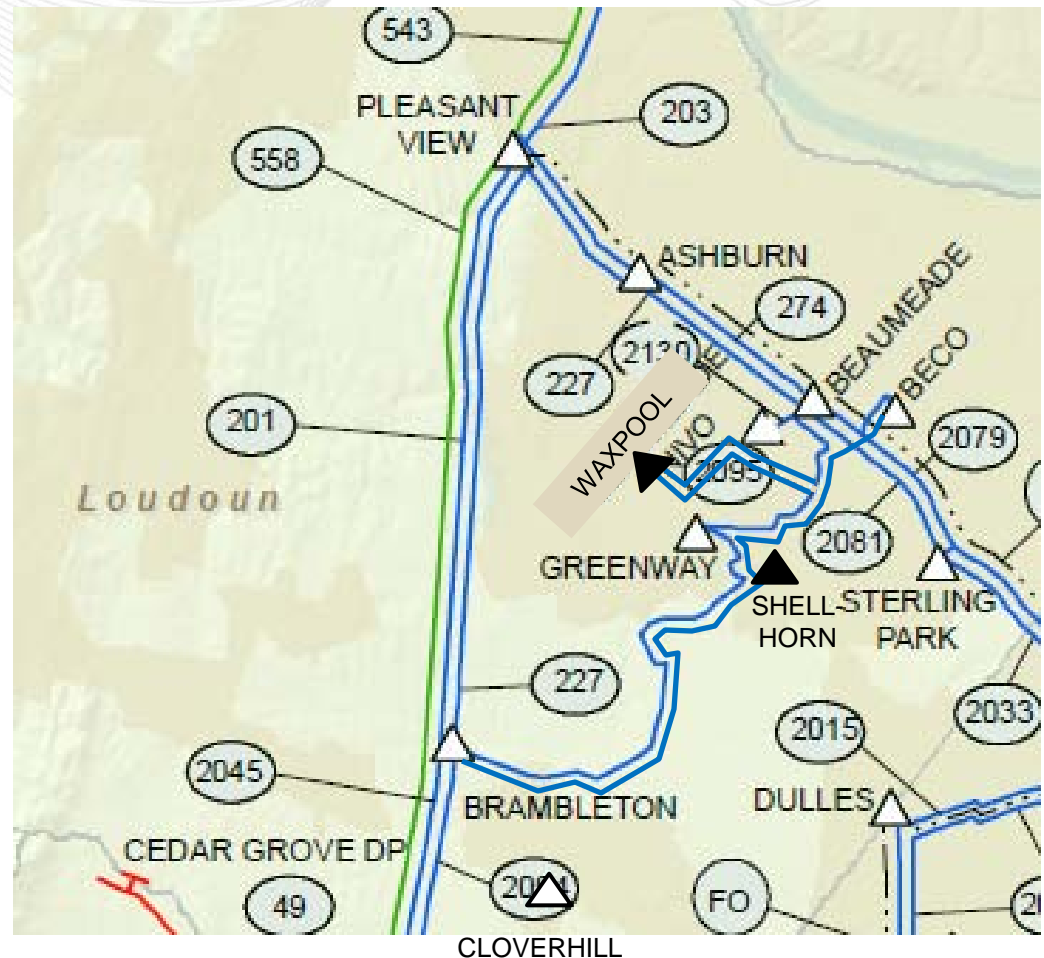
Sub Regional RTEP Committee – Southern Reliability Analysis Update

February 9, 2012

- Existing PJM project (b1503)
- Original proposal:
 - Feed a new 230kV Waxpool Substation by 11/2013 with a new 230kV underground line of approximately 1.6 miles from NIVO to Waxpool Substation
 - Install a four-breaker 230kV ring bus at Waxpool
 - Install a new 230kV overhead line of approx. 2.1 miles from Waxpool to Shellhorn.
- Additional Violation:
 - For the N-1 loss of Line #2095 between Brambleton and Shellhorn Substations, Line #227 (Brambleton - Beaumeade) loads to 97% in 2014.
 - By 2016, Line #227 loads to 117% for the same contingency scenario.



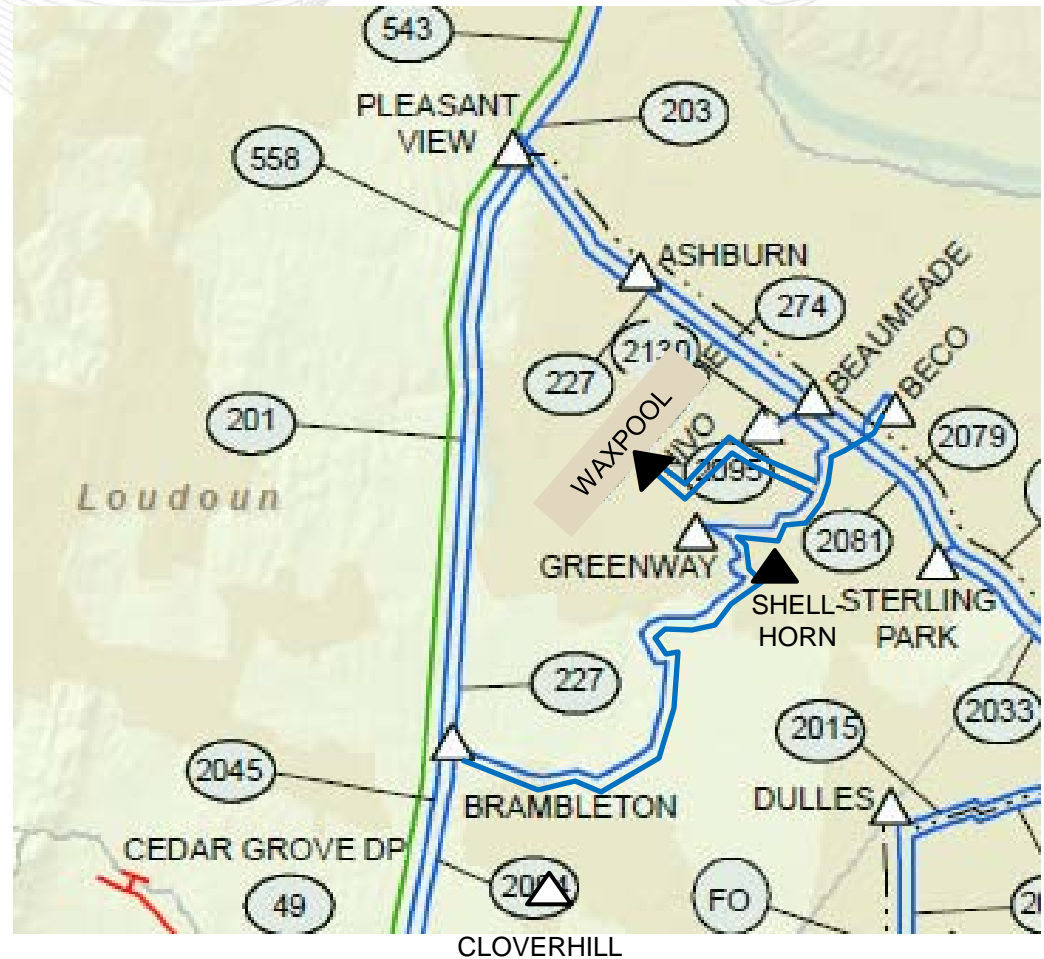
- Existing PJM project (b1503) continued from previous slide.
- Alternative solutions given additional criteria violation.
- Alternate A – Preferred Solution
 - Loop Line #2095 in and out of Waxpool approximately 1.5 miles.
 - Construct a new 230kV line from Brambleton to BECO Substation of approximately 11 miles with approximately 10 miles utilizing the vacant side of existing Line #2095 structures.
 - The new Brambleton - BECO line will relieve Line #2095 of Shellhorn Substation load and Greenway TX's #2&3 load.
 - Estimated Project Cost: \$39.7M



- Existing PJM project (b1503) continued from previous slide.
- Alternative solutions given additional criteria violation.

- Alternate B.
 - Same solution as above only new 230kV line is from Brambleton to Beaumeade.
 - Estimated Project Cost: \$42.3M

- Alternate C.
 - Construct new overhead 230kV line from Brambleton Substation to Waxpool Substation and new overhead 230kV line from Waxpool to NIVO Substation. \$46.4M

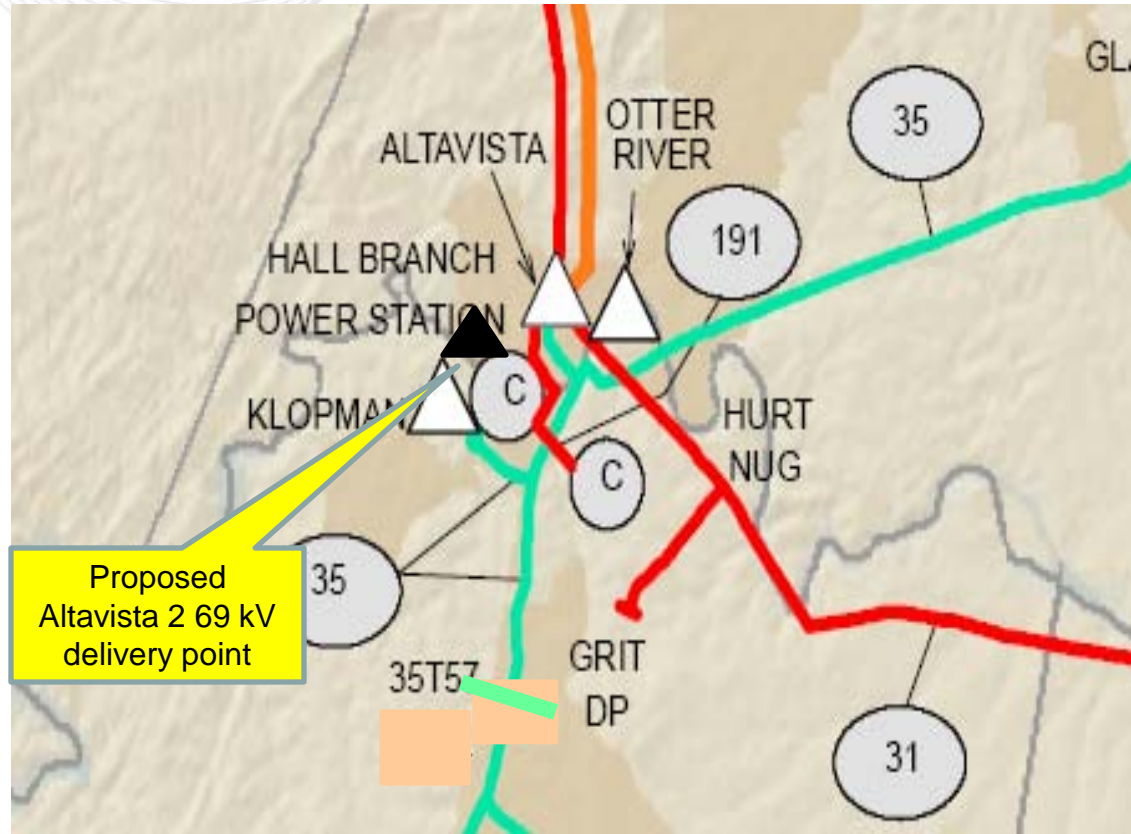


Supplemental Projects

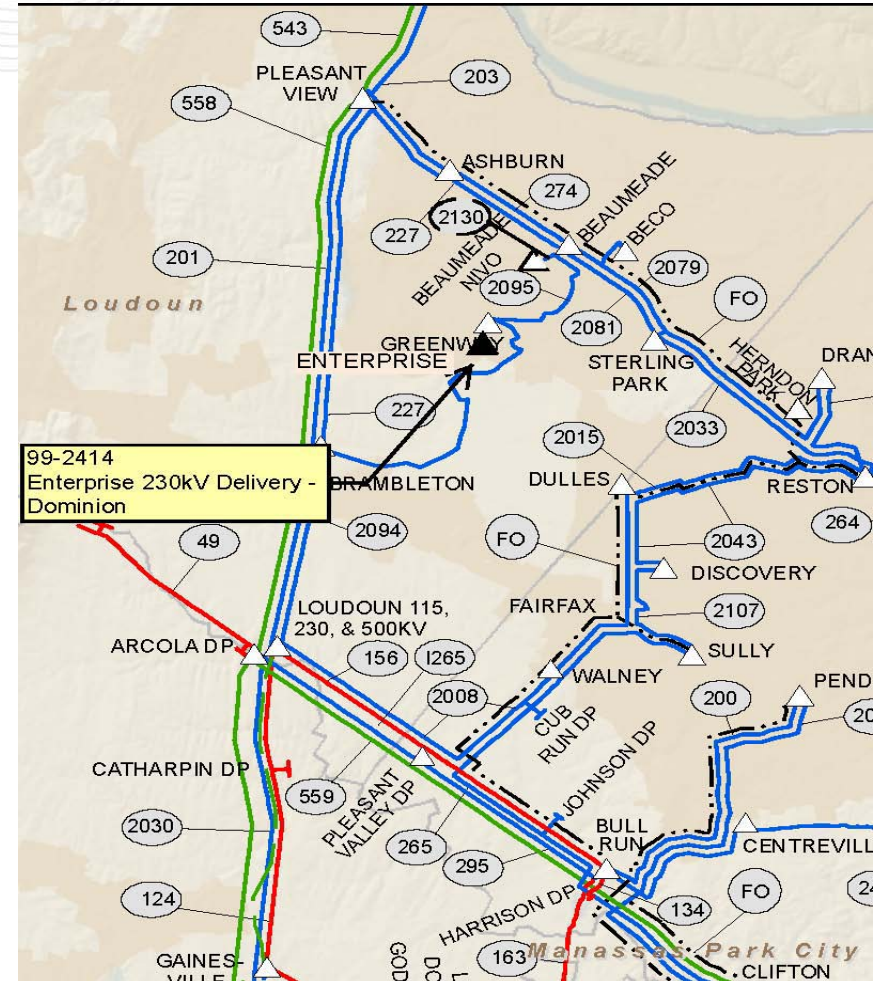
- New South Hertford 230 kV delivery point.
- Estimated load is 9 MW (2013) and 10 MW in ten years.
- Tap Line #64 (Winfall - Mackeys), after the conversion from 115 to 230 kV, and will install two 230 kV line switches.
- Estimated cost \$ 0.4 M
- Projected IS Date: May 2013



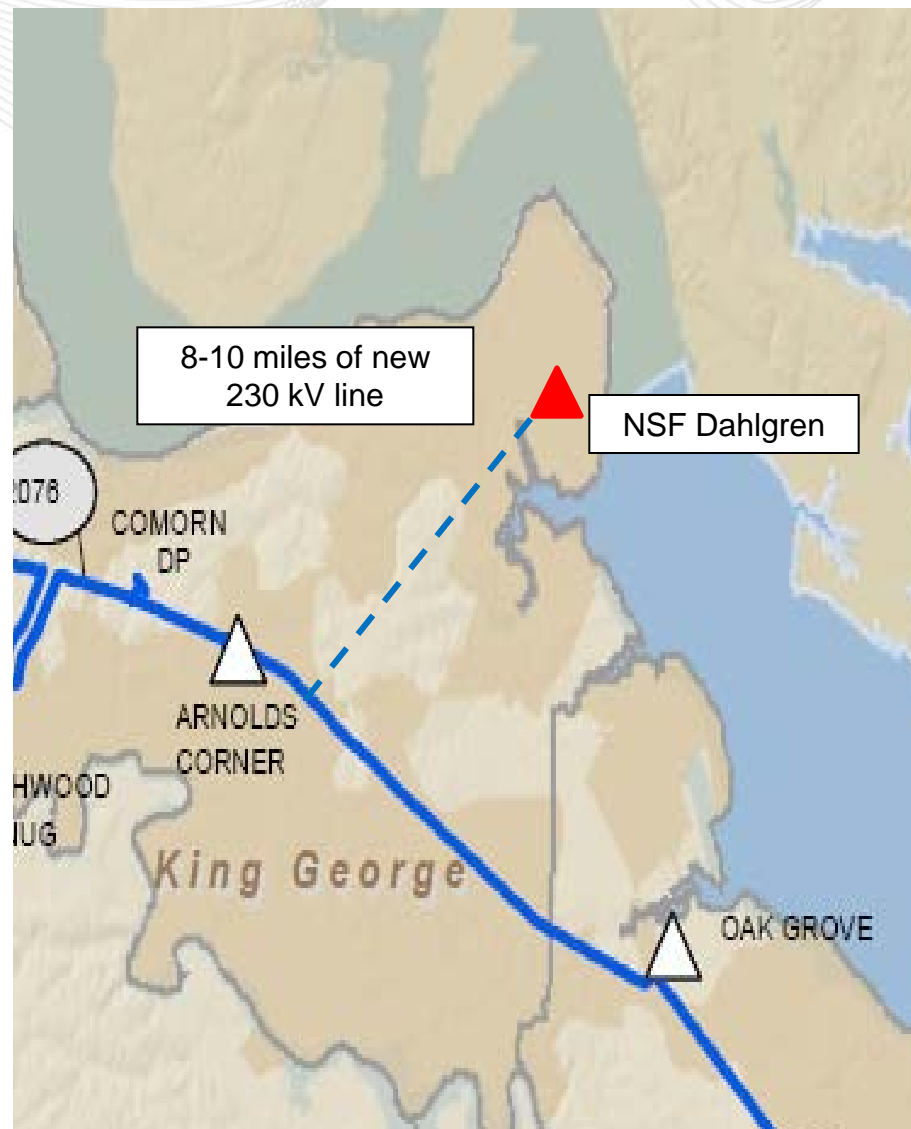
- New Altavista “2” - 69 kV delivery point.
- Estimated load is 8 MW(2013) and 10 MW in 10 years.
- Tap Line #35 (radial line to Altavista) and install two 69 kV line switches.
- Estimated project cost: \$0.5 M
- Projected IS Date: June 2013



- New Enterprise 230 kV delivery point.
- Estimated initial load will be 24.5 MW by summer 2014, growing to 51 MW by the end of 2016 and a total projected site load of 125-150 MW by approximately 2020.
- Potential Solution:
 - Tap Line #2095 (Brambleton - Beaumeade), install a 230 kV switch and extend 230 kV tap 500 feet to new substation.
 - Estimated Project Cost: \$1.5 M
- Recommended Solution:
 - Loop Line #2095 (Brambleton-Beaumeade) in-and-out (500 feet) of a new substation to be constructed on the customer's site.
 - Estimated Project Cost: \$1.3 M
- Projected IS Date: March 2014



- New transmission delivery point at NSF Dahlgren
- Will serve a projected load of 45 MW in 2014, growing to an expected 85 MW in 2017
- Note: revised analysis based on 2011 load projections delayed previous voltage violations from 2014 to 2017 which removed the 2014 need for reactive reinforcements.



Dahlgren 230 kV Delivery Point Supplemental Project

	Estimated Project Cost	Substation Cost	Transmission Cost (Includes ROW)	New ROW	Proposed Solution Meets Facility Connection Requirements
Solutions Considered:					
1. Establish a new 230 kV breaker station in the vicinity of Arnolds and build a radial 230 kV line to Dahlgren site. Estimated Project Cost \$ 31.2 M	\$ 31.2 M	\$ 4.9 M *	\$ 26.2 M	Yes	Yes
2. Split existing 230 kV line in the vicinity of Arnolds Corner and loop the 230 kV line in and out of the Dahlgren site.	\$ 30.9 M	\$2.7 M	\$ 28.2 M	Yes	Yes
3. Install 230-115 (or 69) kV Transformer and build 115 (or 69 kV) line to Dahlgren site	\$ 31.9 M	\$ 9.6 M	\$ 22.3 M	Yes	Yes
3. Build a radial 230 kV line from Morgantown PS to Dahlgren.	\$ 70.0 M	\$3.0 M	\$ 67.0 M	Yes	Yes

Recommended Solution:

Solution 2

Expected IS Date: 5/2014

***Note:** Tap line greater than 1-mile and circuit voltage greater than 138 kV therefore breaker station required per Facility Connection Requirements

- New Prince Edward delivery point
- Estimated load is 8 MW initially and 10 MW in 10 years.
- Tap line #235 (Farmville - Clover 230 kV), and install two 230 kV line switches.
- Estimated Project Cost: \$0.4 M
- Projected IS Date: Nov 2015

