

Dominion Virginia Power
701 East Cary Street, Richmond, VA 23219
Mailing Address: P.O. Box 26666
Richmond, VA 23261
Web Address: www.dom.com



March 10, 2012

Mr. Paul McGlynn
PJM
955 Jefferson Avenue
Norristown, Pennsylvania 19403

Subject: Update to Chesapeake units 1, 2, 3, 4 & Yorktown 1 Retirement Study Results - Dominion

Dear Paul:

This is an update to proposed project alternatives submitted to PJM in December 2011 to respond to proposed generation retirements in Dominion's eastern region. As you are aware, DVP has been continuing with its efforts to ensure continued reliable service to its customers and has been continuing to work since last summer on projects to address the reliability issues identified in this email and associated attachments. These issues were also discussed at the Southern Sub-regional Meeting on February 9, 2012. As part of the discussion that day DVP advised all stakeholders that it planned to file a CPCN Application with the VA SCC in the next couple of months to obtain the required regulatory approval to build 500 kV and 230 kV lines and associated substation improvements. It is a critical path to file this application in April 2012 in order to meet the tight construction schedule required as a result of the announced retirement dates.

The Virginia CPCN process requires the Company to identify feasible alternatives to proposed transmission facilities. The Company has been working with impacted communities, various state agencies (like DEQ) and the Army Corps of Engineers on potential proposed and alternate routes for the new 500 kV line and, as I mentioned to you several weeks ago, one of the alternate routes has potentially come to the front as the proposed project. As currently planned (subject to revision), this new route would emanate from and traverse Company property at its Surry Power Station, cross state-owned Hog Island Wild Life management area and span the James River for approximately 2.8 miles to join up with an existing Company 115 kV line located on the north side of the James River in the vicinity of the Company's existing Dow Substation. From there the 500 kV line will be built on existing right-of-way to the 40-acre Skiffes Creek Site that the Company already owns. This new route will be about 7.7 miles, of which about 3 miles would utilize Company property or existing right-of-way, and lower the overall project cost by \$ 60 M. The Company will be making a final decision on which of the alternatives to submit as the proposed route and which to possibly submit as an alternate route in the next couple of weeks to support a CPCN Filing scheduled to be done in early April 2012. Either route will allow the Company to complete the project by May 2015 as needed to support the proposed generation retirements.

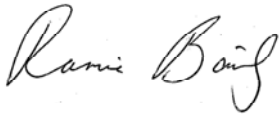
Not all the required state and federal agencies have agreed to the Surry route yet, but it appears that the required agencies may view this alternative, which is described in the attached analyses, as a better option than the route from Chickahominy to Skiffes Creek. The Company will notify PJM which route is being proposed prior to filing the CPCN Application with the Virginia SCC.

The Company is also evaluating a 230 kV option from Surry which from a cost estimate standpoint is similar to the 500 kV project option. However, the 230 kV option requires additional expansion at Surry to install a second 500 – 230 kV transformer along with other equipment. Due to expansion limitations at Surry, this would preclude the ability to expand the Surry 500 kV facilities any further without moving to GIS. Dominion sees this as a fatal flaw of this option, because with the proposed generation retirements in this area we expect that a new 500 kV source from Surry will be needed in the 2019 timeframe to support compliance with mandatory NERC Reliability Criteria.

The two attached revised generation retirement documents update the ITO Analysis that the Company completed in December 2011 to highlight the various components of the two alternatives. They are split out in such a manner as to support the way PJM will break the costs down for the subcomponents of the project numbers.

We are available anytime to answer any questions and to assist PJM in its final analysis in order to move this project forward and obtain PJM RTEP approval.

Regards,

A handwritten signature in cursive script that reads "Ronnie Bailey".

Ronnie Bailey
Manager, Electric Transmission Planning

cc: Kevin Curtis
Peter Nedwick
Mark Simms

Attachments

ITO 2015 Analysis Yorktown Unit #1 and Chesapeake Unit #1 & #2 Retirements

Dominion Transmission Planning assessed the impact of the proposed Retirement of Yorktown Unit #1 and Chesapeake Units #1 & #2 for Summer 2015 Peak Loading Conditions on the Dominion Transmission System. The system was assessed using the Summer 2016 RTEP case provided to Dominion by PJM and modified to include previously discussed RTEP Projects, 2015 DVP Loads, currently retired generation units on the Dominion System and included generation retirements as discussed in the Virginia and North Carolina Integrated Resource Plan's filed with the appropriate state agencies in September of 2011. When performing a reliability analysis, Dominion's main analysis will be load flow study results under single contingency (both normal and stressed system conditions), tower line and N-1-1 scenarios. Dominion Criteria considers a transmission facility overloaded if it exceeds 94% of its emergency rating under normal and stressed system conditions. For tower line and N-1-1 studies, Dominion considers a transmission facility overloaded if it exceeded 130% of its emergency rating, or consequential and non-consequential load loss exceeds 300 MW or if voltage violations occur. A full listing of Dominion's Planning Criteria and interconnection requirements can be found in the Company's Facility Connection Requirements which are publicly available at: www.dom.com.

The results of these studies are summarized below.

1. Single contingency analysis:
2. System Condition (No Yorktown #3)

Outage of Line #548 (Bath – Valley) overloads Line #555 (Dooms – Lexington) by 0.3% of its STE Rating of 2913 MVA.

Outage of Line #214 (Surry – Winchester) overloads Line #263 (Chuckatuck – Newport News) by 8.9% of its STE Rating of 583 MVA

Outage of Line #263 (Chuckatuck – Newport News) overloads Line #214 (Surry – Winchester) by 5.8% of its STE Rating of 583 MVA

Outage of Line #263 (Chuckatuck – Newport News) overloads Line #282 (Wheaton – Winchester) by 2.6% of its STE Rating of 470 MVA

Outage of Line #2102 (Chickahominy – Waller) overloads Line #2113 (Lanexa – Waller) by 2.0% of its STE Rating of 470 MVA.

Outage of Line #2102 (Lanexa – Waller) and Line #2112 (Chickahominy – Waller) overloads Line #263 (Chuckatuck-Newport News) by 32% of its STE Rating of 583 MVA.

Outage of Line #579 (Septa-Fentress) and Line #565 (Yadkin- Suffolk) overloads Line #2110 by 41% of its STE Rating

Outage Of Line #2122(Chickahominy –Waller) and Line #261(Newport News –Shellbank) overloads Line #2102 (Lanexa – Waller) by 37% of its STE Rating of 470 MVA. Voltages less than 90% of nominal in Northampton Roads.

Tower Line #214ć (James River Crossing) overloads Line #285 (Chickahominy – Waller) by 86% of its STE Rating of 622 MVA and Line #2102 (Lanexa – Waller) by 69% of its STE Rating of 470 MVA and Line #292 (Yorktown – Whealton) by 33% of its STE Rating of 470 MVA and Line #2112 (Chickahominy – Waller) by 85% of its STE Rating of 633 MVA. Also identified voltage collapse in North and South Hampton Roads area.

3. Critical System Condition (No Surry #2(230 kV))

Outage of Line #548 (Bath – Valley) overloads Line #555 (Dooms – Lexington) by 0.2% of its STE Rating of 2913 MVA.

4. Critical System Condition (No Chesapeake #4)

Outage of Line #262(Yadkin – Chesapeake - Greenwich) overloads Line #46(Yadkin – Chesapeake) by 1.5% of its STE Rating of 239 MVA.

Estimated Solutions to resolve Reliability Deficiencies:

Skiffes Creek 500 kV Line and 500 -230 kV Switching Station – Construct a 38 mile long 500 kV line from Chickahominy Substation and install two 500-230 kV Transformer at Skiffes Creek Switching Station and one 230-115 kV Tx at Skiffes Creek Switching Station. Install three 500 kV breakers at Chickahominy Substation and six 230 kV Breakers at Skiffes Creek and four 115 kV Breakers at Skiffes Creek Switching Station. Construction of the Skiffes Creek to Whealton 230 kV Line. Estimated cost \$215 million estimated IS Date May 2015.

A. 500 kV Work

Chickahominy to Skiffes Creek 500 kV Line \$116 M

Chickahominy 500 kV Station 500 kV Breakers \$4.6 M

B. 230 kV Work

Skiffes Creek 500-230 kV Tx and Switching Station \$42.4 M

Whealton 230 kV Line \$46.4 M

Whealton 230 kV Breakers \$2.1 M

Yorktown 230 kV Work \$0.2 M

Lanexa 115 kV Work \$0.13M

Surry 230 kV Work \$0.13 M

Kings Mill, Peninmen, Toano, Waller, Warwick \$ 0.03 M

Revised Total Project Cost \$ 211.6 M

Alternate 500 kV Solution: Surry to Skiffes Creek 500 kV Line & Skiffes Creek 500-230-115 kV Switching Station

A. 500 kV Work

Surry to Skiffes Creek 50 kV Line \$58.3 M

Surry 500 kV Station Work \$1.5 M

B. 230 kV Work

Skiffes Creek 500-230 kV Tx and Switching Station \$42.4 M

Whealton 230 kV Line \$46.4 M

Whealton 230 kV Breakers \$2.1 M

Yorktown 230 kV Work \$0.2 M

Lanexa 115 kV Work \$0.13M

Surry 230 kV Work \$0.13 M

Kings Mill, Peninmen, Toano, Waller, Warwick \$ 0.03 M

Revised Total Project Cost \$ 151.2 M

Install 2nd 230-115 kV Tx(s) and Yadkin & Chesapeake Substations uprate Line #46 Estimated cost \$20 million expected IS Date May 2016.

Build Suffolk – Yadkin 230 kV Line - Construct a 14 mile long 230 kV line from Suffolk to Yadkin Substation along existing right-of-way and primarily existing towers. Install two 230 kV breakers at both Suffolk and Yadkin Substation to interconnect. Estimated cost \$40 million, estimated IS Date May 2015 a Va CPCN will be required.

Rebuild Line #555 – Rebuild the 40 mile long Line # 555 with a 5-2 Tower design. Estimated cost \$120 million expected IS Date May 2015.

PJM Noted Deficiencies

FG #	Fr Bus	Fr Name	To Bus	To Name	C K T	KVs	Area s	Rati ng	PreF low	Cont Flow	DC Ld(%)	AC Ld(%)	Contingency 1
1	314 817	6VAL LEY	314 926	8VAL LEY	1	230/ 500	345/ 345	982 .5	781. 6	1322. 5	135.4 6	134.6	'8DOOMS _8VALLEY_052'
1	314 817	6VAL LEY	314 926	8VAL LEY	1	230/ 500	345/ 345	982 .5	663. 4	1322. 6	135.6 8	134.6	'8DOOMS _8LEXNGTN _051'

N-1-1 Thermal violations:

The overload of the Valley 500-230 kV Tx will be resolved by adding a second bank at the existing substation. This is primarily a base line issues since the rating of the transformer dropped from 1100 MVA to the current 952MVA when they replaced the existing unit in May 2011. The estimated cost for this work is \$16 million with a project IS date of May 2016 and can be accelerated to May 2015.

ITO 2016 Analysis Yorktown Unit #1 and Chesapeake Unit #1, #2, #3 & #4 Retirements

Dominion Transmission Planning assessed the impact of the proposed Retirement of Yorktown Unit #1 and Chesapeake Units #1, #2, #3 & #4 for Summer 2016 Peak Loading Conditions on the Dominion Transmission System. The system was assessed using the Summer 2016 RTEP case provided to Dominion by PJM and modified to include previously discussed RTEP Projects, currently retired generation units on the Dominion System and included generation retirements as discussed in the Virginia and North Carolina Integrated Resource Plan's filed with the appropriate state agencies in September of 2011. When performing a reliability analysis, Dominion's main analysis will be load flow study results under single contingency (both normal and stressed system conditions), tower line and N-1-1 scenarios. Dominion Criteria considers a transmission facility overloaded if it exceeds 94% of its emergency rating under normal and stressed system conditions. For tower line and N-1-1 studies, Dominion considers a transmission facility overloaded if it exceeded 130% of its emergency rating, or consequential and non-consequential load loss exceeds 300 MW or if voltage violations occur. A full listing of Dominion's Planning Criteria and interconnection requirements can be found in the Company's Facility Connection Requirements which are publicly available at: www.dom.com.

The results of these studies are summarized below.

5. Single contingency analysis:

Outage of Line #262 (Yadkin – Chesapeake – Greenwich) overloads Line #46 (Yadkin – Chesapeake) by 20% of its STE Rating of 239 MVA and the Yadkin 230-115 kV Tx by 17.7% of its STE Rating of 249.9 MVA.

Outage of Line #2038 (Greenwich – Reeves Ave) overloads Reeves Ave 230-115 kV Tx #2 by 11.7% of its STE Rating of 200.8 MVA.

Outage of Line #46 (Yadkin – Chesapeake) overloads the Chesapeake 230-115 kV Tx (PS) by 7.4% of its STE Rating of 278.6 MVA.

Outage of Chesapeake 230-115 kV Tx (PS) overloads Line #46 (Yadkin – Chesapeake) by 14.6% of its STE Rating of 239 MVA and the Yadkin 230-115 kV Tx by 14.6% of its STE Rating of 239 MVA.

Outage of Reeves Ave 230-115 kV Tx#1 overloads Reeves Ave 230-115 kV Tx#2 by 8.9% of its STE Rating.

Outage of Yadkin 230-115 kV Tx31 overloads the Chesapeake 230-115 kV Tx#1 (PS) by 11.4% of its STE Rating of 278.6 MVA.

6. Critical System Condition (No Yorktown #3)

Outage of Line #262 (Yadkin – Chesapeake – Greenwich) overloads Line #46 (Yadkin – Chesapeake) by 20.6% of its STE Rating of 239 MVA and the Yadkin 230-115 kV Tx by 18% of its STE Rating of 249.9 MVA.

Outage of Line #2038 (Greenwich – Reeves Ave) overloads Reeves Ave 230-115 kV Tx #2 by 12.1% of its STE Rating of 200.8 MVA.

Outage of Line #46 (Yadkin – Chesapeake) overloads the Chesapeake 230-115 kV Tx (PS) by 7.9% of its STE Rating of 278.6 MVA.

Outage of Chesapeake 230-115 kV Tx (PS) overloads Line #46 (Yadkin – Chesapeake) by 15.1% of its STE Rating of 239 MVA and the Yadkin 230-115 kV Tx by 12.7% of its STE Rating of 239 MVA.

Outage of Reeves Ave 230-115 kV Tx#1 overloads Reeves Ave 230-115 kV Tx#2 by 9.1% of its STE Rating.

Outage of Yadkin 230-115 kV Tx31 overloads the Chesapeake 230-115 kV Tx#1 (PS) by 11.9% of its STE Rating of 278.6 MVA.

Outage of Line #553(Elmont – Cunningham) overloads Line #2027(Bremo – Midlothian) by 1.8% of its STE Rating of 792 MVA.

Outage of Clover 500-230 kV Tx #2 overloads Clover 500-230 kV Tx#1 by 1.9%

Outage of Line #548 (Bath – Valley) overloads Line #555 (Dooms – Lexington) by 3.7% of its STE Rating of 2913 MVA.

Outage of Line #214 (Surry – Winchester) overloads Line #263(Chuckatuck – Newport News) by 5.1% of its STE Rating of 583 MVA

Outage of Line #263 (Chuckatuck – Newport News) overloads Line #214(Surry – Winchester) by 1.8% of its STE Rating of 583 MVA

Outage of Line #2102 (Chickahominy – Waller) overloads Line #2113 (Lanexa – Waller) by 5.7% of its STE Rating of 470 MVA.

Tower Line #214ć (James River Crossing) overloads Line #285 (Chickahominy – Waller) by 53.8% of its STE Rating of 622 MVA and Line #2102 (Lanexa – Waller) by 82% of its STE Rating of 470 MVA and Line #292 (Yorktown – Whealton) by 2% of its STE Rating of 470 MVA. Also identified voltage collapse in North and South Hampton Roads area.

7. Critical System Condition (No Surry #2(230 kV))

Outage of Line #262 (Yadkin – Chesapeake – Greenwich) overloads Line #46 (Yadkin – Chesapeake) by 20.5% of its STE Rating of 239 MVA and the Yadkin 230-115 kV Tx by 18% of its STE Rating of 249.9 MVA.

Outage of Line #2038 (Greenwich – Reeves Ave) overloads Reeves Ave 230-115 kV Tx #2 by 12.1% of its STE Rating of 200.8 MVA.

Outage of Line #46 (Yadkin – Chesapeake) overloads the Chesapeake 230-115 kV Tx (PS) by 8.7% of its STE Rating of 278.6 MVA.

Outage of Chesapeake 230-115 kV Tx (PS) overloads Line #46 (Yadkin – Chesapeake) by 15.4% of its STE Rating of 239 MVA and the Yadkin 230-115 kV Tx by 13% of its STE Rating of 239 MVA.

Outage of Reeves Ave 230-115 kV Tx#1 overloads Reeves Ave 230-115 kV Tx#2 by 9.0% of its STE Rating.

Outage of Yadkin 230-115 kV Tx#1 overloads the Chesapeake 230-115 kV Tx#1 (PS) by 12.4% of its STE Rating of 278.6 MVA.

Outage of Line #553(Elmont – Cunningham) overloads Line #2027(Bremo – Midlothian) by 2.4% of its STE Rating of 792 MVA.

Outage of Clover 500-230 kV Tx #2 overloads Clover 500-230 kV Tx#1 by 2.7%

Outage of Line #548 (Bath – Valley) overloads Line #555 (Dooms – Lexington) by 3.7% of its STE Rating of 2913 MVA.

Outage of Yadkin 500-230 kV Tx#1 overloads Yadkin 500-230 kV Tx#2 by 9.5% of its STE Rating of 919.5 MVA.

Outage of Yadkin 500-230 kV Tx#2 overloads Yadkin 500-230 kV Tx#1 by 2.8% of its STE Rating of 1010 MVA.

Estimated Solutions to resolve Reliability Deficiencies:

Skiffes Creek 500 kV Line and 500 -230 kV Switching Station – Construct a 38 mile long 500 kV line from Chickahominy Substation and install two 500-230 kV Transformer at Skiffes Creek Switching Station and one 230-115 kV Tx at Skiffes Creek Switching Station. Install three 500 kV breakers at Chickahominy Substation and six 230 kV Breakers at Skiffes Creek and four 115 kV Breakers at Skiffes Creek Switching Station. Estimated cost \$215 million estimated IS Date May 2015.

C. 500 kV Work

Chickahominy to Skiffes Creek 500 kV Line \$116 M

Chickahominy 500 kV Station 500 kV Breakers \$4.6 M

D. 230 kV Work

Skiffes Creek 500-230 kV Tx and Switching Station \$42.4 M

Whealton 230 kV Line \$46.4 M

Whealton 230 kV Breakers \$2.1 M

Yorktown 230 kV Work \$0.2 M

Lanexa 115 kV Work \$0.13M

Surry 230 kV Work \$0.13 M

Kings Mill, Peninmen, Toano, Waller, Warwick \$ 0.03 M

Revised Total Project Cost \$ 211.6 M

Alternate 500 kV Solution: Surry to Skiffes Creek 500 kV Line & Skiffes Creek 500-230-115 kV Switching Station

C. 500 kV Work

Surry to Skiffes Creek 50 kV Line \$58.3 M

Surry 500 kV Station Work \$1.5 M

D. 230 kV Work

Skiffes Creek 500-230 kV Tx and Switching Station \$42.4 M

Whealton 230 kV Line \$46.4 M

Whealton 230 kV Breakers \$2.1 M

Yorktown 230 kV Work \$0.2 M

Lanexa 115 kV Work \$0.13M

Surry 230 kV Work \$0.13 M

Kings Mill, Peninmen, Toano, Waller, Warwick \$ 0.03 M

Revised Total Project Cost \$ 151.2 M

Yadkin 500 kV Switching Station and 3rd 500-230 kV Tx - Install six 500 kv breakers and a third 500-230 kV Tx at Yadkin. Estimated Cost \$25 million expected IS Date May 2016

Install 2nd 230-115 kV Tx(s) and Yadkin & Chesapeake Substations uprate Line #46 Estimated cost \$20 million expected IS Date May 2016.

Build Suffolk – Yadkin 230 kV Line - Construct a 14 mile long 230 kV line from Suffolk to Yadkin Substation along existing right-of-way and primarily existing towers. Install two 230 kV breakers at both Suffolk and Yadkin Substation to interconnect. Estimated cost \$40 million, estimated IS Date May 2016 a Va CPCN will be required.

Landstown SVC 500 MVAR - to resolve the voltage collapse associated with the N-1-1 (Line #579 & #565) install a 500 MVAR svc at Landstown Substation(may need to be split into two smaller units) Estimated cost \$60 million, expected IS Date May 2016.

Install 3rd 500-230 kV Tx at Clover - Estimated cost \$16 million, expected IS Date May 2016

Rebuild Line #555 – Rebuild the 40 mile long Line # 555 with a 5-2 Tower design. Estimated cost \$120 million expected IS Date May 2016.

Line #2027 Rebuild – Uprate Line #2027 to its maximum MOT. And obtain a rating of 862 MVA. Estimated cost \$10 million expected IS Date May 2016.

PJM Noted Deficiencies

N-1-1 Thermal violations:

Fr Bus	Fr Name	To Bus	To Name	CKT Rating	PreFlow	ContFlow	DC Ld(%)	AC Ld(%)	Contingency 1	Contingency 2
314480	6HUNTSMN	314508	6THRS279	2	788	468.8	1067.4	132.63	135.5	'LN 579A' '8FENTRES '8SEPTA '8DOOMS '8VALLEY '8SULFOLK '8YADKIN
314480	6HUNTSMN	314508	6THRS279	2	788	468.8	1067.4	132.63	135.5	'8SULFOLK '8YADKIN '8FENTRES '8SEPTA '8DOOMS '8VALLEY '8LEXNGTN
314817	6VALLEY	314926	8VALLEY	1	982.5	796.7	1356.8	139.19	138.1	'8SULFOLK '8YADKIN '8FENTRES '8SEPTA '8DOOMS '8VALLEY '8LEXNGTN
314480	6HUNTSMN	314508	6THRS279	2	788	570.2	1090.7	135.09	138.4	'LN 579A' '8FENTRES '8SEPTA '8DOOMS '8VALLEY '8SULFOLK '8YADKIN
314480	6HUNTSMN	314508	6THRS279	2	788	570.2	1090.7	135.09	138.4	'8SULFOLK '8YADKIN '8FENTRES '8SEPTA '8DOOMS '8VALLEY '8LEXNGTN
314817	6VALLEY	314926	8VALLEY	1	982.5	673.8	1357	139.41	138.1	'LN 579A' '8FENTRES '8SEPTA '8DOOMS '8VALLEY '8SULFOLK '8YADKIN

Dominion has reviewed the overloads and verified them as correct. The Thrasher to Huntsman overload (Line #2110) is conductor limited and will be resolved by the proposed Suffolk-Yadkin 230 kV 230 kV line noted above.

The overload of the Valley 500-230 kV Tx will be resolved by adding a second bank at the existing substation. This is primarily a base line issues since the rating of the transformer dropped from 1100 MVA to the current 952MVA when they replaced the existing unit in May 2011. The estimated cost for this work is \$16 million with a projects IS Date of May 2016.