

J. Kevin Curtis, PE
Vice President - Technical Solutions
Dominion Virginia Power



An operating segment of
Dominion Resources, Inc.
120 Tredegar Street, Richmond, VA 23219
dom.com

December 15, 2015

Pamela Goddard
Director, Chesapeake & Virginia Program
National Parks Conservation Association
777 6th Street, N.W., Suite 700
Washington D.C. 20001-3723

Dear Ms. Goddard:

At the request of Ann Loomis, I am writing to provide the following responses on behalf of Dominion Virginia Power (“DVP” or “Dominion”) to the questions presented in your November 5 letter to her.

Question 1: We understand that the 1676 MW Surry nuclear plant is off line for refueling and repairs for the next month or so. Assuming you do not anticipate brown-outs to result, why is the new power line needed to prevent black-outs resulting from decommissioning the smaller Yorktown plant with its severely restricted operations?

Response: When assessing the reliability of the transmission system, key factors that must be recognized include the location and magnitude of generation, the strength and accessibility of the transmission lines with which generation is interconnected, and the size and proximity of the load in the geographic vicinity of the generation and transmission system.

In the case of Surry, the robust nature of the 500kV transmission network that is present at Surry is the key factor that enables Dominion to take both units out of service at Surry, at certain load levels, and still maintain the reliability of the transmission grid without these units in service. This same 500kV network is interconnected across Virginia and provides efficient and reliable access to other generation sources across the Dominion and PJM system. Having that transmission access to other generation sources provides the power needed to maintain reliability for the system as a whole, and eastern Virginia specifically, when one or both units at Surry are out of service. This is not the case for the Yorktown power station and the transmission system serving the Peninsula, which is a weak link in the grid.

In the case of Yorktown, that facility is located in a different geographic area of the grid than Surry, being the Peninsula within the North Hampton Roads Load Area

("NHRLA"), that has no current access to the robust 500kV network. In addition, the existing 230kV transmission serving the Peninsula is currently limited to only four transmission lines and is not strong enough to bring in enough power from distant generation sources to maintain the reliability of the grid in the geographic vicinity of Yorktown Power Station. Evidence in the State Corporation Commission ("SCC") proceeding showed that the NHRLA is so generation-deficient that, even under normal operating conditions, 86.6% of its capacity needs in 2015 must come from distant generators located west of Richmond and that, with the retirement of Yorktown Units 1 and 2, 98% of NHRLA requirements must come from these distant generators. Thus, without Yorktown running, the existing transmission grid on the Peninsula cannot serve the entire existing load there under certain operating contingencies or at peak conditions. When the Skiffes Creek project is constructed, the Peninsula will have a strong 500kV source that will allow the transmission system on the Peninsula to perform reliably without Yorktown in service, similar to the ability of the transmission system at Surry with one or both of the Surry units out of service. The massive adverse impacts of the Yorktown retirements on reliability within the Peninsula and larger NRHLA are reflected in the power flow studies performed by PJM and DVP, and verified in the SCC proceeding by the SCC's independent expert consultant, GDS, as discussed elsewhere in these responses.

Thus, the transmission system is interconnected across Virginia, but weak links in that grid can cause some areas to be at risk under certain scenarios, e.g. the Peninsula with the Yorktown retirements, while other areas with robust access to generation through the 500 kV system, e.g. Surry with units out of service, are not at risk.

If your question assumes that the Proposed Project will cause the NHRLA to be fed only from the Surry nuclear generating plant, that assumption is incorrect. The Proposed Project will resolve the identified NERC reliability violations by constructing a new 500 kV source into the NHRLA from Dominion's 500 kV transmission system, which is fed by a portfolio of large and diverse generating plants in addition to the Surry plant. These include the 1550 MW Mt. Storm Power Station in West Virginia and in Virginia the 3100 MW Bath County Pumped Storage Station, the 1345 MW Warren County Power Station, the 1800 MW North Anna Power Station and, by mid-2016, the 1345 MW Brunswick County Power Station, currently under construction. The 500 kV system will continue to function as designed while the Surry generating plant is off-line for refueling and repairs; however, power flow studies performed by PJM, and by DVP as verified by the SCC's independent expert, show that the 230 kV and 115 kV systems in the NHRLA are already so generation-deficient that a direct interconnection with the 500 kV system at Surry will be required to avoid numerous violations of NERC Reliability Standards.

Question 2: Why is the new 500 kilovolt line needed instead of reinforcing line feeds to the Peninsula?

Answer: The purpose of the transmission system is to deliver bulk power from generation facilities to load centers in a reliable manner as prescribed by the NERC standards. Location of the capacity also makes a difference. The greater the distance from which generation must be delivered to load can be quite long. The greater the distance from generation to load centers, the higher the voltage and capacity that is required to reliably deliver the power. The Yorktown units have the ability to generate and deliver power directly into the NHRLA. Because this generation is physically located in the NHRLA, the local 230 kV and 115 kV transmission system provides the means to deliver that power directly to serve that local load area.

With the retirement of Yorktown generation, however, a new source of power must come from distant generation facilities outside the NHRLA, which is the function of the 500 kV system. Distant generation facilities on Dominion's 500 kV system from which this power must be transmitted to the NHRLA include those referenced in the Response to Question No. 1, above. The existing 230 kV connections do not provide the necessary strength or capacity to gain access to that remote generation and carry power from the transmission grid that a 500 kV interconnection provides, thus a new 230 kV line cannot resolve the near term and long term NERC Reliability Standard violations. Only a 500 kV line can do so, as has been determined by DVP, PJM, the SCC's independent expert and most recently by the Corps in its Preliminary Alternatives Analysis White Paper.

The loss of generation at Yorktown significantly increases the generation deficit on the Peninsula and requires the strong and efficient interconnection that only a 500 kV source provides, not only to replace that lost power but also to address the increased flows that occur during the loss of other lines under possible contingency outages of the other sources serving the area. The inherent strength of a 500 kV line is required to bring from distant generation sources the power needed to serve the NHRLA reliably in accordance with NERC Reliability Standards, under a wide range of system operating conditions over both the short term and long term. The need for a new 500 kV line, as opposed to reinforcing existing line feeds to the Peninsula, has been shown by the power flow studies conducted as required by the NERC Reliability Standards, as discussed below.

Question 3: Can you provide us with a report or reference source for the load flow studies on the existing power lines and on possible reinforcement options?

Response: The power flow studies (also called load flow studies) supporting the need for the Proposed Project were conducted in accordance with NERC's Transmission Planning Standards and Modeling Standards. An explanation of these Standards is provided as Attachment 1. The results of these studies are confirmed in the excerpts from the SCC Hearing Examiner's Report issued August 12, 2013, provided as Attachment 2, and from the SCC's Order issued November 26, 2013 approving the 500 kV overhead river crossing, provided as Attachment 3.

Question 4: Much of the project justification seems to be to reduce NERC reliability violations. Can you provide us with a record of these violations for the past five years and your projections for the future under various scenarios?

Response: The Proposed Project is required to comply with NERC's Transmission Planning Standards by constructing the facilities needed to resolve projected violations of those standards in the near term (Years 1 through 5) and long term (years 6 through 10) determined through power flow studies conducted in accordance with NERC's Modeling Standards, as discussed in the responses above. Although it has been fined in the past five years for violations of NERC operating standards unrelated to transmission planning or modeling, such as the vegetation management violation mentioned at our October 29 meeting, DVP has had no violations of the NERC Transmission Planning or Modeling Standards for the past five years. See Attachment 1 for a discussion of the process by which DVP, in concert with PJM and the other transmission-owning members of PJM, develops PJM's annual Regional Transmission Expansion Plan (RTEP), the goal of which is to prevent NERC reliability violations from actually occurring. The currently effective 2014 RTEP, issued in February of 2015, can be found at <http://pjm.com/documents/reports/rtep-documents/2014-rtep.aspxobtained>.

Question 5: Dominion is now installing solar photovoltaic plants. Why not install 100 MW PV plants that provide power year round and especially during the critical period of peak demand for electricity for air conditioning in summer months?

Answer: Solar PV is not a practicable alternative to the Proposed Project. While solar has important attributes, the fact that it is both intermittent and non-dispatchable means that it cannot reliably be turned on to meet critical needs during periods of peak demand, such as the 7:00 am daily peak during the winter. This is why for planning purposes PJM treats a MW of solar capacity as equal to 38% of a fossil-fueled MW. It was determined in the SCC proceeding that, if the Proposed Project were not built, 620 MW of new gas-fired generation would be required at Yorktown Power Station for the transmission system to comply with NERC standards. Using PJM's conversion factor, this would equate to construction of approximately 1,630 MW of solar PV at Yorktown. Applying DVP's experience that 8-10 acres of land is required for each MW of new solar PV, this would require the acquisition of at least 13,040 acres in proximity to Yorktown Power Station. This is an area only a bit smaller than the City of Petersburg (14,675 acres), or almost 10,000 football fields. Even if it were possible to develop this amount of solar PV in the right location, construction of backup dispatchable generation in proximity to Yorktown (such as combustion turbines) would also be required because of the intermittent and non-dispatchable nature of solar.

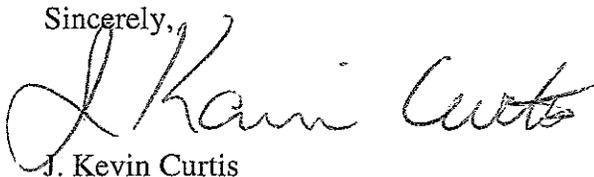
Question 6: Have you factored in the reduced demand for electricity from the many local military and other Federal installations? Do you have a report or summary of impacts from two key White House Executive Orders on this? Specifically, in 2007, government agencies were ordered to reduce energy use by 30% by 2015 and in March of this year a new Executive Order requires at least 25% of building electricity to come from renewable sources by 2025.

Answer: As noted on page 5 of the Corps' Preliminary Alternatives Conclusions White Paper, the results of demand-side management resources, such as the 2007 load reduction initiative you reference, are already accounted for in the transmission planning process that produced the Proposed Project. The 2015 Executive Order promoting the use of electricity from renewable resources does not require the renewable resources to be on site and permits the standard to be achieved through purchases of renewable power from off-site sources or from purchases of renewable energy certificates. The 2015 Executive Order also seeks reductions in total amount of energy consumed, as opposed to peak load, and provides for a range of exemptions, including where it is in the interest of "national security." Accordingly, there is no basis at this time for assuming or predicting a particular level of reduction in future electricity load in the NHRLA as a result of the 2015 Executive Order, particularly in view of the fact that the transmission system must be planned to address peak loading, as opposed to annual energy usage.

Question 7: Why is Dominion using projections that show annual growth in summer peak load of 1.8% (from the 2012 Load Forecast Report) when it has been dropping for the last four years in a row?

Answer: As stated in Section 3.1.3 of the Stantec Alternatives Analysis (filed January 8, 2015), without the proposed Skiffes Creek Project in-service during 2015, actual system loads have required PJM and DVP System Operators to run the generation at Yorktown to avoid identified NERC Reliability violations in real time operations in the NHRLA. Therefore, the current base system load in the NHRLA is already at a level that, once the generation at Yorktown Power Station retires in either April of 2016 or April of 2017, the transmission system will not be able to serve existing customer demand under certain conditions absent load shedding. The Proposed Project will resolve these reliability issues. Moreover, the fact is that existing system load in the NHRLA in 2015 already exceeds the capability of the transmission system without Yorktown generation.

Sincerely,



J. Kevin Curtis