

Dominion Energy Virginia Glebe-Potomac River Project – Potomac Avenue Route

The responses below are a follow-up to questions that came out of the Working Group meeting on February 21, 2018, and are provided in a good faith effort to continue fostering transparent and open dialogue with the City, Working Group and the public regarding the proposed Potomac Avenue Route for the Glebe-Potomac River Project.

For reference, the following terms are used throughout these responses:

- **Company:** refers to Virginia Electric and Power Company (also known as “Dominion Energy Virginia”).
- **Pepco:** refers to Potomac Electric Power Company.
- **PJM:** refers to PJM Interconnection, L.L.C., which is a regional transmission organization providing service to a large portion of the eastern United States.
- **Glebe-Potomac River Project:** the Company’s preferred project to solve the identified need.
- **Rebuild Alternative:** an alternative project to the Glebe-Potomac River Project involving various project components, including reconductoring existing underground transmission lines along Route 1 between Carlyle South Terminal Station and the Potomac Yards North Terminal Station.
- **Potomac Avenue Route:** the proposed route of the new 230 kV underground transmission line for the Glebe-Potomac River Project, which includes the entire approximately 2.0-mile route of the proposed new 230 kV underground transmission line extending from Pepco’s Potomac River Substation to the Company’s Glebe Substation.
- **Potomac Avenue:** refers only to the Potomac Avenue portion of the Potomac Avenue Route. Responses regarding work conducted *along or within Potomac Avenue* are limited to the Potomac Avenue right-of-way extending from the northern end of the route where the duct bank enters Potomac Avenue and terminating at the southern end of the route where the duct bank enters the CSX railway property.
- **Railroad Route:** an alternative route to the new 230 kV underground transmission line for the Glebe-Potomac River Project extending approximately 2.0 miles between Pepco’s Potomac River Substation and the Company’s Glebe Substation, primarily along an existing railroad corridor.

Working Group Questions (February 21, 2018 Meeting)

1. What will happen to the manhole near tennis courts?

This manhole was located in the vicinity of the tennis courts to accommodate construction of the Glebe-Potomac River underground line along Potomac Avenue. Based on feedback received during the Working Group meeting in February, the

Company plans to install the manhole in the street and not in the grassy area next to the tennis courts, subject to final engineering and design.

2. Concerned about tripping safety hazard at manhole and location in tennis courts.

See the response to Question No. 1.

3. Can a temporary play area be set up for public use at another location, while under construction?

If the Potomac Avenue Route of the Glebe-Potomac River Project is approved by both the City and the SCC, the Company will work with the City to determine if temporary recreation areas are available and, if so, to determine whether they are required based on seasonal usage, taking into account temporary impacts and timing of construction, and subject to final engineering and design.

4. There is a lot of human traffic through the basketball and tennis courts. The plan should note that the construction will not impinge on the recreation area.

The Company will make every effort to limit construction impacts to the recreation area along Potomac Avenue, to the extent possible and subject to final engineering and design of the Glebe-Potomac River Project. If the Potomac Avenue Route is approved by the City, a route map will be presented at open houses for discussion indicating the location of the launching pit with temporary laydown yards in relation to the recreation area. Regardless of which project or route is ultimately approved by the City and the SCC, safety is the Company's highest priority and proper precautions will be followed during construction to ensure the safety of pedestrian and recreation area traffic along the approved route.

5. Is there a drainage area near the launching pit?

Located in the southeast corner of the temporary laydown yard area, which is required for construction of the launching pit needed to microtunnel under the existing railroad corridor, there are existing storm drains and stormwater containment features. However, there are no such drainage features inside the launching pit. As discussed more fully in the previous set of Working Group responses, underground utility mapping is part of any underground line design process, which includes field surveys and mapping of all known utilities. After all of the surveys are completed and noted on drawings, the line is engineered around these underground facilities.

6. Trees were placed for a reason and they are mature. Removing the trees are concerning.

Following the last Working Group meeting, the Company re-reviewed the location of its

proposed route in Potomac Avenue, as well as its right-of-way needs based on the Working Group's comments and concerns. In doing so, the Company also visited Potomac Avenue to assess further the route, and the location and type of trees in certain areas. Based on this additional work, the Company is proposing a variable width right-of-way, which narrows at certain points to avoid impacts to trees, where possible, and does not impact the ability of the line to operate at full capacity, as designed. With this configuration, however, in certain places there still are trees at the edge of, but technically within, the proposed right-of-way. Our site visit, however, confirmed that based on the location and types of those trees (and their associated root systems), as compared to the location and depth of the Company's proposed underground facilities, those trees will not need to be removed and can co-exist with the Project.

As a result of this additional work, the Company's revised, proposed right-of-way results in no trees being removed along Potomac Avenue, except on the southern end of that road where the launch pit for the microtunneling will be located. The Company previously committed to the City that it would provide one-for-one replacement trees taken with a type of tree and in a location(s) to be determined by the City.

- 7. Does not have a problem with the ROW if it is not affecting trees. However, removing trees along Potomac Avenue was not discussed before. Dominion Energy Virginia was told to save trees.**

See the response to Question No. 6.

- 8. What are the tradeoffs for reducing ROW?**

The Company strives to balance its need to protect, operate and maintain its facilities with the concerns of the community and the route constraints unique to each project. For the Glebe-Potomac River line along Potomac Avenue, narrowing the right-of-way could potentially lead to the installation of future infrastructure adjacent to the Company's underground facilities, which could negatively impact the designed operating capacity of the underground transmission line. See the response to Question No. 6.

- 9. What is the mitigation measure to replace the trees taken?**

See the response to Question No. 6.

- 10. How much space does each portion take?**

The Company anticipates that construction of the Glebe-Potomac River line along Potomac Avenue will be segmented into 2 blocks at a time. The Company plans to isolate work zones during construction so that primarily the road is affected. The Company will work with the City to determine the timing, actual segment lengths and segment locations during construction.

11. Construction would start where?

The Company will work with the City to determine timing, actual segment lengths and segment locations along Potomac Avenue, as discussed in the response to Question No. 10, including where to start segments of construction.

12. When will metro construction start?

The Company defers to the City as to the timing of construction commencement on the Metro project. The Company is mindful of the importance of the Metro construction project and will coordinate our work with the City to minimize or if possible, eliminate, impacts to the Metro construction.

13. Has concern of the length of the project: 3-4 years, which assumes 5-8 hour days.

The Company anticipates that actual construction of the Glebe-Potomac River line along Potomac Avenue will take approximately 1 year to complete, depending on the location and timing of segment construction negotiated with the City. See the responses to Question Nos. 10-11. If multiple construction crews work at multiple locations, the construction timeframe could be shortened in duration. The Company's estimated construction durations were based on five 8-hour workdays with minimal activity overlap to develop a conservative (i.e., longest duration) assumption. The initial work along Potomac Avenue will involve establishing the launch pit work area located at the southern end of the route along Potomac Avenue and constructing manholes in Potomac Avenue prior to trenching and ductbank installation in the street. Cable pulling would start months later once the majority of the ductbank is in place. The last major step of cable splicing would follow the pulling once the majority of the cables are in place.

The estimated construction time for the entire Project, which includes rebuilding the Glebe and Potomac River Substations, is approximately 3-4 years.

14. How long does it take to complete a one block section with open trenching? Will there be monetary damages for delays? Is there any other type of construction?

Utilizing the open trench construction method to install the Glebe-Potomac River line within Potomac Avenue should take approximately one year. It is difficult at this stage, prior to obtaining a detailed underground designation and utility survey to determine a block-by-block construction duration. The open trench construction process starts by excavating a stretch of trench, followed by installation of the conduit and spacers that hold the ducts in the proper geometry. Once the conduit is properly installed, concrete is poured into the trench to a level just above the upper ducts. This concrete needs to sufficiently cured before a fluidized thermal backfill ("FTB") is poured up to the bottom of the replace-in-kind typical roadway asphalt section. Permitted reduced work-hours, seasonal weather restrictions, along with the number of utility crossings that will need to be avoided all can affect the block-by-block duration. The Company does not pay

liquidated damages for extended construction duration of a project. We are committed to completion of the Project as quickly and as feasibly as it can be accomplished to resolve the identified violations of NERC Reliability Standards. There are other construction methods, such as horizontal directional drilling and microtunneling that could be considered, but they are normally used to bore beneath large obstacles like highways and water crossings. These construction methods are not appropriate for this application and would unnecessarily increase costs.

15. Concerns of Four Mile Run Park.

The Company commits to work closely with the City and Arlington County to minimize impacts to the Four Mile Run Park.

16. Quality of infrastructure: How long does infrastructure last?

The existing circuits in Route 1, the reconductoring of which are a component of the Company's Rebuild Alternative, are robust cable systems with a useful service life of approximately 45-60 years.

17. When would construction start on Potomac Avenue?

Pending a decision in support of the Potomac Avenue Route for the Glebe-Potomac River Project by the City in the 2nd Quarter of 2018, the Company plans to file its application with the SCC in the 3rd Quarter of 2018. Assuming SCC approval of the Glebe-Potomac River Project along the Potomac Avenue Route by late summer 2019, the Company anticipates construction could begin in late 2019 or early 2020.

18. Has coordination been done with signal timing and Arlington?

The Company will work with the City to determine the appropriate traffic control measures to reduce impacts to motorists along both Potomac Avenue and Route 1. Additionally, the Company has met with Arlington County officials and they are aware of the potential impacts to Route 1 and Potomac Avenue. The Company will work in coordination with the County of Arlington and City of Alexandria to address impacts to motorists, as well as keep VDOT apprised.

19. Can we look at real time backups?

As noted during the February 21, 2018 Work Group meeting, it is the Company's understanding that the City does not allow work on primary roads during peak hours, meaning work hours for construction will likely occur between 9:00 am-3:00 pm or at nighttime. As part of the traffic review being prepared for the Company, 24-hour traffic counts were taken on January 30th, which identified the peak hours for travel along Route 1 and Potomac Avenue. In order to compare impacts to these two roadways based solely on traffic, the peak hours were used as a baseline. From there, the levels of service and delays were calculated for existing conditions as well as if a lane were closed during

construction.

The Company understands the City's requirements for non-working hours during peak times along primary routes and will work with the City during the design and permitting to determine the lane closures and working hours that minimize impacts to the greatest extent possible.

Additionally note as to the reconductoring component of the Rebuild Alternative along Route 1, for this particular type of cable replacement the splicing operation is a multi-day, continuous, around-the-clock operation requiring lane closure for this continuous duration. With the locations of the two splice manholes (4 and 5) being within both lanes of northbound Route 1, this will in turn mean that the northbound traffic will have to be detoured over to Potomac Avenue or another street for the affected block for the duration of the splice. The Company will work with the City to determine the least impactful time to conduct this operation.

20. Do crews work on Saturdays?

The Company will work with the City to determine if weekend work is permitted.

21. Route 1 analysis: What are the delays now and during construction on NB and SB lanes?

See the response to Question No. 19.

The existing travel times along the length of Route 1 (northbound) between Potomac Avenue and Four Mile Run is estimated to be 6 minutes. After closing one lane of Route 1 to allow for construction of that reconductoring component of the Rebuild Alternative, the travel time is estimated to increase to 24 minutes. For the Route 1 component of the Rebuild Alternative, this lane closure would only occur during off-peak hours; however, it should be noted that additional traffic impacts would occur during the continuous splicing operation, which would continue through peak hours.

Along Potomac Avenue between Four Mile Run and the Route 1 intersection, the existing travel time is estimated at 3 minutes. After closing one lane in each direction and in the existing Southbound lanes (to maintain two-way travel) to allow for construction of the Glebe-Potomac River line along Potomac Avenue, the travel time is estimated to increase to 5 minutes. For the Potomac Avenue segment of the Glebe-Potomac River Project, this would only occur if the City allowed for work during peak hours.

22. What about MOT and controlling traffic during construction? Can work be steel plated during non-work hours?

The Company will work with the City to determine the appropriate traffic control measures to reduce impacts to motorists. Steel plates can be used to cover excavation areas, as permitted.

23. Will the City allow night work on Potomac Avenue?

The Company defers to the City and its permitting process as to whether night work will be allowed on Potomac Avenue. The Company will work with the City to determine the appropriate work hours for all construction.

24. How many days of continuous lane closures in 2021?

The lane closures will be based on what the City will allow. Work can be done more efficiently if lane closures are continuous, meaning a portion of each work day is not consumed by establishing the work area (e.g., setting up signs, cones, and barricades) and re-routing traffic. If a segment of roadway can be set up for work and traffic re-routed for a continuous period of time long enough to install the ductbank, the work should be completed much faster in the segment. The normal traffic patterns would then be restored until much smaller and shorter duration lane closures are needed for cable pulling and splicing activities.

25. How deep is conduit?

An underground transmission line has to be installed at a minimum depth of 42 inches as measured from the top of the top power cable to the grade of the road or existing ground surface when installed under streets or land.

26. Can plates be placed over excavation?

Yes. See the response to Question No. 22.

27. How much cable can be pulled?

For the new circuit installed as part of the Glebe-Potomac River line along Potomac Avenue, cable pulling equipment can be placed to pull two cable sections (each approximately 2000 feet long between manholes) per day.

28. Route 1 reconductor project:

The Company anticipates the following work activities associated with the Route 1 reconductoring component of the Rebuild Alternative:

- Can only remove one transmission circuit from service at a time*
- Requires the removal of dielectric fluid*
- Requires inspection of the steel pipe using a smart pig/camera after the cables are removed; if issues are seen they must be repaired*
- Install cable between 11 existing manholes*
- Cable splicing 24-7 operation at all 11 existing manholes*
- Rebuild Alternative will require reconductoring of three separate transmission circuits, which will require significant outages*

29. If Potomac Avenue is chosen, will all 3 alignments be submitted?

Yes. If the City approves the Potomac Avenue Route, the Company anticipates submitting its application in support of the proposed Glebe-Potomac River Project along the Potomac Avenue Route, with the Railroad Route offered as an alternative route to that Project. The Company will also offer the Rebuild Alternative as an alternative to the Glebe-Potomac River Project, for the SCC's consideration.

30. Condition of infrastructure- can this be checked before construction?

No. As noted in the response to Question No. 28 regarding the Route 1 reconductoring component of the Rebuild Alternative, inspection of the steel pipe requires use of a smart pig/camera, which is not conducted until the cables are removed.

31. How much longer does pipe have? Is there damage? Can you find out now?

See the responses to Question Nos. 16, 28, and 30. The existing steel pipes along Route 1 are cathodically protected against corrosion and the maintenance/inspections of cathodic protection that have been periodically conducted have not indicated that there are any issues. While cathodic corrosion is the #1 cause of pipe failure, various third parties excavate along Route 1 and have potentially damaged or deformed the steel pipes, which would not be detectable without removal of the cables and internal inspection using a smart pig/camera.

32. Will you consider not working in Potomac Ave from Memorial Day to Labor Day?

See the responses to Question Nos. 10-11. If the City determines that construction of the Glebe-Potomac River line along Potomac Avenue is prohibited in the summer months, the Company will comply. However, this could add additional time to the project duration.

33. Work before May and after September?

See the response to Question No. 32.

34. Two Options: Potomac Avenue and Rebuild

See the attached Route Segment Comparison Chart for an overview of the Route 1 component of the Rebuild Alternative and the Potomac Avenue segment of the Glebe-Potomac River Project, which was previously provided with the Company's responses to the questions arising from the January 31, 2018 Working Group meeting.

35. Clarify reliability benefits

See the responses to Question Nos. 39 and Post-Meeting Question No. 6, below. In addition, see the Company's responses to Question Nos. 5 and 20, which were previously

provided in response to questions arising from the January 31, 2018 Working Group meeting.

36. Dominion Energy Virginia took years to move forward and we are being asked to make decision in 45 days. We need more time.

The Working Group and general public will continue to have the opportunity to ask questions and participate in the process through open houses, which are being scheduled for this spring, and through the SCC process.

37. Would like to see Dominion Energy Virginia limit impacts. This is doable and we can work through this. What is the driver?

See the responses to Question No. 6 as to tree impacts and Question No. 8 as to impacts resulting from reducing the right-of-way. As to the need driving this Project, see the responses to Question No. 39, as well as Post-Meeting Question No. 6, below.

38. Would like to see 25' ROW.

See the responses to Question Nos. 6 and 8.

39. What is driving schedule?

Power flow analyses based on PJM's 2016 Load Forecast support that the Company's transmission facilities are not projected to meet NERC Reliability Standards unless the Project is in service by June 1, 2020. While these analyses are currently being updated to reflect PJM's 2018 Load Forecast and to take into account recent cold storage announcements, the failure to address the identified deficiencies will limit the Company's ability to maintain reliable transmission service to its existing and future customers located in the identified load area. To be clear, the identified need is not going away. To address this need, the Company is proposing the Glebe-Potomac River Project, as well as the Rebuild Alternative, both of which will equally resolve the identified violations of NERC Reliability Standards.

See the response to Question No. 17 regarding timing of required approvals.

40. City Council (CC) takes breaks in summer.

See the response to Question No. 17 regarding timing of required approvals.

41. WG would like more time to review and make decisions. Will a 2-month delay, delay project construction. Can we go to CC in September?

See the responses to Question Nos. 17, 36 and 39.

42. We need another meeting to get more information.

See the response to Question No. 36.

43. Potomac Yard residents need adequate time to provide input:6-8 weeks.

See the response to Question No. 36.

44. Can we push open house to later date? There is not enough time for WG to process information

See the response to Question No. 36.

Working Group Questions Received After February 21, 2018 Meeting
(Post-Meeting Questions)

1. How much longer (in minutes) would it take to drive northbound on Route 1 from Slaters Lane to Four Mile Run at 8:00 AM during lane closures?

It is unlikely that the City would allow the Company to close a lane of traffic on Route 1 at 8:00 am or any rush hour time frame (except during cable splicing operations, further defined in the response to Question 19 above) for the Route 1 reductoring component of the Rebuild Alternative. As stated previously, the Company would request permits to do this work and would be told the approved hours of work. In addition, the Company and the City will develop a work plan that minimizes each work zone and impact to traffic. There are several locations that splicing would need to occur and that operation is a continuous operation; however, these areas can be isolated at the manhole location only.

See response to Question No. 19 above for travel times along Route 1 and Potomac Avenue in respect to existing conditions and under lane closures. It is the Company's understanding that the City will not allow lane closures along Route 1 to occur during peak hours, but these travel times during peak hours were provided as a base condition for reference at the request of the Working Group. Further review of traffic conditions will be included in a summary of the overall traffic review conducted for the traffic impact comparison between these two routing options (the Rebuild Alternative - Route 1 circuit, or the Potomac Avenue new duct bank construction under the Glebe-Potomac River Project).

As noted in the response to Question No. 19 above, the peak hour counts were used as a baseline to be able to compare the level of impacts between Route 1 and Potomac Avenue. See also the response to Question No. 21 above regarding additional travel times, in minutes.

2. How much longer (in minutes) would it take to drive southbound on Route 1 from Four Mile Run to Slaters Lane at 5:30 PM during lane closures?

See response to Post-Meeting Question No. 1 above.

3. How long would lanes on Route 1 be closed, and when?

Since there are two circuits located in Route 1 and only one can be worked on at a time, the lane closures described below will happen twice for the entire Route 1 reconductoring component of the Rebuild Alternative. The Company will work with the City during the design and permit phases of the project to minimize impacts. The first step involves removal of the existing cables requiring lane closures on the northbound side at both locations of manholes for each cable segment along Route 1. These lane closures would be for an approximately 8-hour work period for 2-3 consecutive days for each cable section. There are 5 cable sections involved in this portion of the existing circuits where lane closures would impact traffic on Route 1. Once the cable is removed, pipe inspection would begin requiring similar lane closures but generally for approximately only one 8-hour work period for each section. These days do not need to be consecutive. Assuming no damage to the pipe is found, cable pulling would be the next task requiring lane closures. Lane closures for approximately two 8-hour work periods on consecutive days are required for pulling cables in each segment. The next step involves splicing the cables together in each manhole. There are three manholes involved each requiring four consecutive 24-hour work periods that will involve a single lane in the immediate vicinity of the manhole being worked. All this work requires approximately 36 days of lane closures for each circuit or a total of 72 days for the entire Route 1 reconductoring component of the Rebuild Alternative. See the responses to Question Nos. 18 and 19 for further traffic impact clarifications.

4. Please describe the pattern of lane closures in terms of number of lanes, direction of travel, number of continuous days closed, and the span of time over which the closures would occur. For example: 1 northbound lane, 3 consecutive days in a week, 7 consecutive weeks.

Route 1 Reconductoring Component – Rebuild Alternative

For Route 1 and understanding that the City does not allow lane closures during peak times, the Company anticipates that work would typically take place at night (10:30 pm to 5:00 am) Sunday thru Thursday for the cable removals, cleaning, inspections of pipe and installation of new cable. These phases of work would generally occur concurrently at two consecutive manholes and closing both northbound lanes for the block at each manhole. Detours would be provided. During splicing of the cables, the lane closures and detours have to remain in place continuously and close coordination with the City will need to take place as to timing of the splicing to minimize impacts.

Potomac Avenue – Glebe-Potomac River Project

For Potomac Avenue, the Company anticipates this work could take place during the daytime or nighttime based on the impacts and in coordination with the City. It is currently anticipated that this line would be able to be open cut under lane closures, one in each direction, and with traffic moving on the existing southbound lanes. These closures would only be for the length necessary to complete those days' activities, which is anticipated to move along at roughly two blocks at a time.

5. What would the impact be to Four Mile Run and Four Mile Run Park in the rebuild option?

Under the Rebuild Alternative, there would be limited land disturbance impacts to the Four Mile Run and Four Mile Run Park. The main impacts would be the undergrounding of the existing overhead lines if it were approved by the SCC. The undergrounding of these lines would be directionally drilled and not open cut from the east side of Route 1 to the Glebe Substation. In cases where trees are located within the proposed right-of-way, the Company will evaluate the type, associated root system and location of the tree as compared to the depth of the Company's underground facilities to determine the potential impact to the operation of the line at its designed capacity rating.

6. Regarding the reliability need, please clarify that all three options (CSX, Potomac Ave, and rebuild) meet the reliability need, described by Dominion Energy Virginia as NERC Reliability Standards violations?

To address the need, the Company is proposing the Glebe-Potomac River Project, as well as the Rebuild Alternative, both of which will equally resolve the identified violations of NERC Reliability Standards. In terms of adding system resilience, the Company believes the proposed Glebe-Potomac River Project is the best solution to the identified reliability deficiencies, and the Potomac Avenue and Railway Routes offer the minimum acquisition of new rights-of-way. Ultimately, the Virginia SCC will determine if a need exists and what project is in the public interest as part of its CPCN process in accordance with Virginia law.

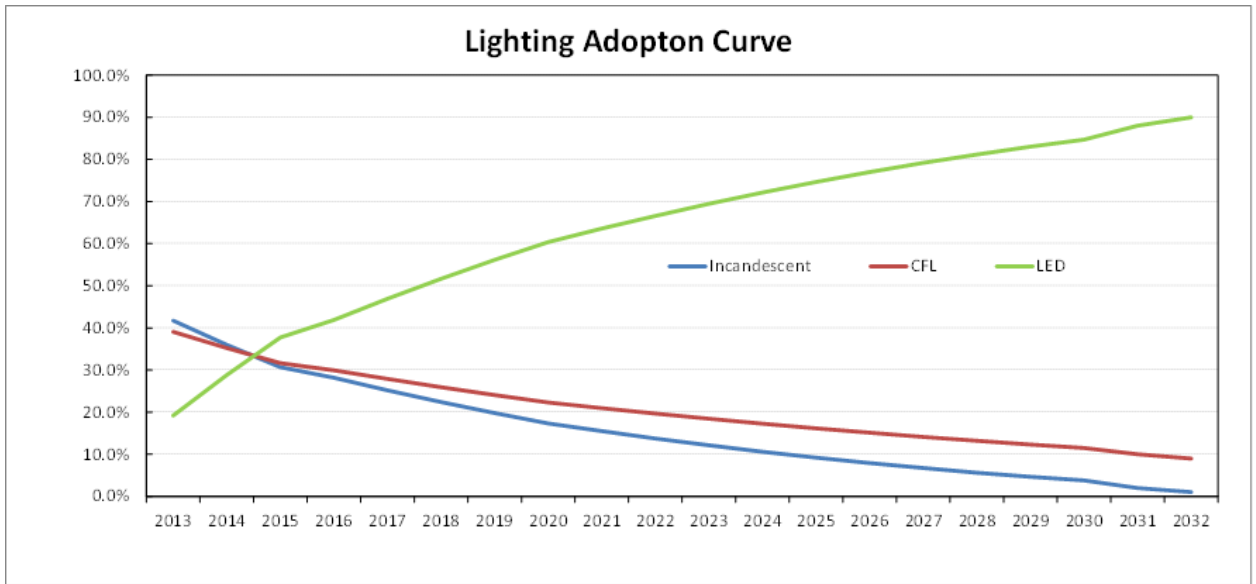
7. Dominion Energy Virginia has said that it is highly unlikely that a load reduction would negate or change the timing associated with the need for a line. Please describe the characteristics of a load reduction that would defer the need by two years, in terms of which months, days, hours, and how many megawatts.

As previously discussed, a reduction of 220 MW would be needed. The transmission system is operated 24 hours a day, seven days a week – not just at peak loading times. Any solution to the identified violations of NERC Reliability Standards will need to be available for use by system operators when the need arises for as long as required to maintain system reliability unlike generation reserve margin calculations. Off peak loading concerns can be more pronounced and of longer duration since any solution will need to be available to system operators for both unscheduled and scheduled operations during light load, shoulder load period and peak loading conditions. Often times during the spring and fall time periods the system is operating in a state significantly greater than an N-1-1 operation. Unlike the Rebuild Alternative, the proposed Glebe-Potomac River Project will have the ability to inject up 800 MW of capacity into the Company's system if it is deemed necessary by system operators for reliable system operations.

As previously discussed, PJM's Load Forecast already takes into account load reduction from EE and the use of DSM that has cleared RPM in appropriate reliability analysis.

8. In the 2018 PJM load forecast, what are the underlying assumptions about LED lighting adoption rates in 2018 and 2023? What are the underlying assumptions about the adoption rates of other natural occurring energy efficiency measures in 2018 and 2023?

The LED/CFL adoption curves that are shown below are being integrated into the Company's 2018 Integrated Resource Plan. These assumptions have already been incorporated into the 2018 Load Forecast.



The next chart compares the annual lighting consumption used in the Company's 2018 load forecast versus that used by PJM in its 2018 load forecast for the DOM Zone. Note that lighting load is typically 10-15% of a residential customer's typical energy usage.

