
Dominion Virginia Power

PROJECT PROPOSAL

Project ID 2015_1-1C Carson-Rogers Rd 500kV
Line

for:

2015 RTEP Proposal Window 1

August 4, 2015

PUBLIC VERSION

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A. Executive Summary

A.1. Name of proposing entity

This proposal is submitted by Dominion Virginia Power (Dominion).

A.2. Proposal window and associated violations/issues addressed

2015 RTEP Proposal Window 1

A.2.a. Reliability violation(s) addressed by project

This solution addresses the following violation that was identified by PJM as a result of generator deliverability analysis and posted at the opening of this window.

- Flowgate NEW-52: Rogers Rd – Carson 500kV Line overloaded for the loss of LN 511.

A.2.b. Violations caused by proposal/nearby violations not addressed by this proposal

There are no new violations caused by this proposal and no nearby violations not addressed by this proposal.

A.3. Project interrelation with other entities

This project does not span between two PJM Transmission Owner zones or between PJM and a neighboring Balancing Authority.

A.4. Intention to construct/own/operate/maintain

For this proposal, Dominion seeks to be the designated entity to construct, own, operate, maintain and finance the Project.

A.5. Description of the proposed solution and corresponding violation(s) it resolves

To resolve the violations noted in section A.2. above, Dominion proposes to construct **Project ID 2015_1-1C Carson-Rogers Rd 500kV Line** (the "Project") in Virginia. The Project includes the following facilities:

- **New Greenfield Transmission Line:** Carson Substation to Rogers Road Substation, 500kV, 32 miles, parallel to the existing Carson to Rogers Rd 500kV line (Line 585).
- **Carson Substation Modification:** Add (2) 500kV breakers and associated fiber.
- **Rogers Road Substation Modification:** Add (1) 500kV breaker and associated fiber.

For the purpose of this proposal, Dominion developed a feasible route (the "Conceptual Route") based on a desktop review of publicly available data. The Conceptual Route was used as the basis for the designs and estimates contained in this proposal. However, the Conceptual Route is not intended to represent a preferred, alternate or final route for purposes of the applicable siting, permitting and other regulatory approval processes.

A.6. How this project should be considered

This project should be considered as a whole.

A.7. Cost and cost commitment overview

The estimated total capital cost in today's dollars for all components of the Project, including components that PJM may consider as upgrades, is approximately \$82 million.

For competitive comparison purposes, the total cost excludes costs for Matting/Access related to environmental controls employed during construction activity. Dominion believes that all similar proposals should include such costs. Accordingly, we have identified the estimated costs for Matting/Access in section E of this document.

PJM can have confidence in the reasonableness of this cost estimate. Dominion, the incumbent Transmission Owner in the PJM Southern region of the Project, has extensive knowledge and experience developing, constructing, operating and maintaining similar facilities in Virginia. These estimates were derived using actual cost from recent projects.

A.8. Additional benefits

In addition to resolving the above stated violation, this proposal is very robust, and yields the following additional benefits:

- **500kV advantage:** This 500kV line proposal reduces the loading on the violated facility to less than fifty percent, whereas any 230kV line solutions would reduce the loading on the violated facility to just below the violation.
- **Additional 500kV path eliminates market congestion:** Having a new 500kV line in parallel to the existing overloaded facility provides an additional path for the large amount of generation at the Brunswick and Greenville (Z1-086) power plants and eliminates market congestion.
- **Removes stability restrictions:** For Z1-086, the Impact study identified stability restrictions for specific N-1 outages in the area. Specifically, item 2 on page 9 of *Generation Interconnection System Impact Study Report* for Z1-086 states:

Construction of Z1-086-Carson #2 500kV line: For N-1-1 operating conditions (such as maintenance outage), the combination of Z1-086 and the existing Brunswick generating facility results in transient instability for a number of contingencies. These operating conditions can occur during times of maintenance and forced outage. Specifically, generation remaining connected to the grid solely through Brunswick-Wake 500kV line results in insufficient synchronizing torque to maintain stability. To mitigate this potentially unstable condition, and also to maintain voltage stability in the Clover area, the addition of Z1-086-Carson #2 500kV line provides a sufficiently strong connection to the grid at a low cost relative to other transmission infrastructure solutions.

This proposed new Carson to Rogers Road 500 kV line would remove the restrictions identified in the Z1-086 Impact Study.

- **Minimal outages:** Constructing this proposal will not require any extended outages of any transmission or generation facilities.
- **Utilizes existing substations:** Line terminal substations (Carson and Rogers Rd) already exist, minimizing the impact to the environment by requiring minimal substation work. There is no need to expand the existing stations since they have enough room to accommodate new equipment.