

Route Feasibility



Dominion Energy studied the feasibility of undergrounding the proposed Daves Store 230 kV transmission line. Results of the study found that multiple challenges exist, which impact the feasibility to construct and operate an underground transmission line. Due to engineering constraints, the underground routes considered for the Project are a “hybrid” route in which a portion of the route would be constructed overhead in order to feasibly connect the proposed substations.

Therefore, the hybrid routes were rejected for some of the reasons noted below:

- Virginia Department of Transportation (VDOT) Right-of-Way and Wellington Road Widening
- Horizontal Directional Drill (HDD) and Workspaces
- Transition Stations
- Impacts to Other Existing Utilities
- Resource Protection Areas (RPA) and Wetlands
- Constructability and Operations
- Maintenance and Outages

Hybrid Route	Underground Length (miles)	Overhead Length (miles)	VDOT ROW Overlap (acres)	Pipeline Crossings	Roadway Crossings
High-temperature Superconducting (“HTS”) Cable Underground Routes					
1A	1.1	1.1	2.9	3	7
1B	1.4	0.8	3.5	4	10
Cross-linked Polyethylene (“XLPE”) Cable Underground Routes					
2A	1.1	1.1	8.6	6	6
2B	1.4	0.8	9.5	7	9
3D	1.2	0.9	11.4	7	7
4D	1.5	0.9	14.0	11	8

Hybrid Route Studies and Rejection Reasons



- **Virginia Department of Transportation (VDOT) Right-of-Way and Wellington Road Widening:** Underground routes would require in-road construction and operation within Wellington Branch Drive and Wellington Road. This in-road construction and operation impacts and potentially eliminates VDOT's future plans to widen Wellington Road. Additionally, underground routes cross VDOT-owned parcels, limited access highway, and overlap road right-of-way, all of which require VDOT approval and can be mitigated by overhead route alternatives.
- **Horizontal Directional Drill (HDD) and Workspaces:** An HDD with an expanded 200- to 250-foot-wide right-of-way is needed to cross Lee Highway, a railroad, and a gas pipeline. Crossing this infrastructure underground can impact the use of the highway and railroad significantly and can risk service interruptions related to the gas pipeline. Workspaces are required on either side of the HDD and would require removal of an existing building and impact commercial business operations significantly. Due to pipeline constraints in the area, the HDD alignment required would be a non-standard alignment, which is not preferred in an area with challenging subsurface conditions. Based on initial investigations and experience working with underground facilities near this area, the Company believes underground routing in this area is not feasible in light of likely subsurface conditions along potential underground routing corridors.
- **Transition Stations:** In order to convert the transmission line from underground to overhead, transition stations would be required for the Project. Given the densely developed area, there are limited locations to accommodate a transition station. The preliminary locations identified would impact viewshed, wetlands, planned development, and have limited site access.
- **Impacts to Other Existing Utilities:** Natural gas pipelines and electric distribution lines located along roadways impact the feasibility of constructing and operating the underground routes.
- **Resource Protection Areas (RPA) and Wetlands:** These natural resource areas are impacted significantly by open trench construction methods for underground routes. Such impacts can be mitigated by overhead routes being considered for the Project.
- **Constructability and Operations:** Multiple underground cable technologies were evaluated for the Project but are very costly and require significantly more time and resources to type-test one of the cable technologies considered for this Project.
- **Maintenance and Outages:** Underground lines are known to require substantially longer outages than that of overhead lines. This is attributed to prolonged time to identify/locate problems, material procurement, and prolonged repair times (can take weeks to months depending on the severity of the damage and the availability of certified repair crews).