Welcome

Wes Keck, Project Manager



Project Communications and Outreach

Tiffany Taylor-Minor Communications Consultant



Build trust through **proactive, sustained outreach** that simultaneously informs stakeholders about a project or issue while soliciting their input – **early and often**. Stakeholder engagement should aim to be to build authentic and productive relationships with people affected by a project.

Effectively engaging stakeholders with integrity, transparency and authenticity can improve relationships, create acceptance and mitigate risks. This approach also can defuse criticism and correct misinformation, ultimately avoiding project delays and added costs.

~ERM





Outreach & Engagement Plan

- Outreach communication with legislators, homeowner associations and other identified stakeholders;
- Energy Infrastructure Focus Group facilitated, invitationonly, small group meetings with identified stakeholders with technical expertise;
- Open houses large group meetings with property owners, homeowners associations and the public; and
- Communications informational materials, mailings, email updates and a project website.

Community Outreach & Engagement



- ✓ Project Website✓ Fact Sheets
- ✓ Frequently Asked Questions✓ Open House Meetings
- ✓ Media and Legislative Officials✓ Notification Letters
- ✓ Landowner Meetings
- ✓ Home Owners Associations
- ✓ Structure Simulations



The Transmission Line Approval Process

Virginia's State Corporation Commission (SCC) has regulatory authority over all electric utilities and requires that all transmission facilities at or above 138 kV be certified by the SCC.

The SCC determines the need for a proposed line and the route. Among other elements considered, the SCC must determine that the selected route reasonably minimizes the impact on scenic assets, historic districts, and the environment.



Project Need and Background Mark Gill, Transmission Planning



Key Regulatory Bodies







FERC – Exclusive jurisdiction to determine and regulate the reliability of the electric transmission grid

NERC – Regulatory authority to develop and enforce the mandatory reliability standards -- criteria, data and methodology to evaluate and ensure the reliability of the bulk power system in North America

PJM –Regional Transmission Organization (RTO) that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia



SCC – Regulates Virginia public utility facilities, retail rates and service including transmission line need and routing; issues certificates of public convenience and necessity (Typically transmission lines greater than 138kV)



A defining moment for the industry

- 2003 Blackout resulted in heightened regulations, mandatory fines and a renewed focus on our nation's energy infrastructure:
- NERC's role as a voluntary member organization changed as a result of Energy Policy Act of 2005 and its FERC approval to become the Electric Reliability Organization for the US
- Pre-2007 reliability standards were voluntary
- 2007 Compliance with approved NERC Reliability Standards becomes mandatory and enforceable



*For illustration purposes only.



Mandatory Compliance with NERC Standards

TPL-001 Category A Criteria (Normal)	All lines in (N-o)	
TPL-002 Category B Criteria (N-1)	Single contingency (N-1)	
TPL-003 Category C Criteria (N-1-1)	Multiple contingency (N-2, N-1-1)	
TPL-004 Category D Criteria (Extreme)	Extreme events to evaluate impacts: • Loss of entire ROW • Loss of substation (one voltage level & Tx's) • 3 phase faults w/ delayed clearing	



Regional Reliability Need

- By 2021, load on existing transmission lines serving the Tysons and McLean areas are projected to exceed 300 Mega-Watts (MW)
- Could result in a violation of mandatory North American Electric Reliability Corporation (NERC) Reliability standards
- Potential to impact service

Project Overview and Regulatory Amanda Mayhew, Routing/Siting





- All proposed project solutions must:
 - Satisfy NERC Planning Criteria
 - Follow Siting & Permitting Considerations

Permitting Process



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Local Governments – Regulate local land use (substations); typically electric transmission lines less than 138kV

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*DEQ coordinated agency review includes: Viginia Marine Resources Commission, Department of Conservation & Recreation, Department of Game & Inland Fisheries, Department of Historic Resources and others.

Dominion	
Public Participation	
SCC	

Average SCC Review Process: One year to 2+ years

How to comment to the SCC: Public commented related to Commission cases are accepted for a limited time. Cases for which comments are currently being accepted by the SCC are listed in the Public Comments/Notices page.

http://www.scc.virginia.gove/case/publicComments.aspx

This is a conceptual diagram to illustrate the certification process and is not intended to be a legal description.



Where to site the facility?





Determining Start & End Points



Dominion began analysis in 2014*

Starting Point: Existing Idylwood Substation

Ending Point Options:

- Existing Tysons Substation
- Transit Station
- Scotts Run
- Cloverleaf
- Chain Bridge
- Old Meadow Road
- Jones Branch

Site Selection Include:

- Property size
- Ability to connect to distribution circuits
- Permitting requirements
- Environmental Constraints

Sites Examined

Selected Site

Tysons Substation

Alternate Sites Considered

- Jones Branch Road
- Chain Bridge Road*
- Scotts Run Road
- Cloverleaf

Eliminated Sites

- Liberty Crossing
- Transit Depot*
- Old Meadow Road



*Sites identified by Fairfax DOT

Selected Site: Tyson Substation (Expansion)

Advantages

- Site owned by Dominion
- Current industrial zoning permits intended use
- No physical constraints preventing expansion within current property boundary
- Existing station site supports project timeline
- Comparatively least complicated connection to existing transmission line (New circuit from Idylwood still required)

Disadvantages

- Property dimensions require complete rebuild of existing substation to Gas Insulated Substation (GIS)
- Outage requirements to support construction could affect area reliability and could increase construction time
- Separate substation off Jones Branch Road still required _ Tysons Substation cannot accommodate additional distribution capacity



Tyson Substation (substation expansion)



Finding a Solution



Overhead and Underground Elizabeth Gatlin, Electric Transmission Overhead Line Engineering Matt Rudd, Electric Transmission Underground Engineering



Overhead Transmission Line Design Horizontal vs. Vertical

- Fixed:
 - Structure geometry
 - Ground clearances

- Variable:
 - Span length
 - Conductor sag







Location...Location...Location















Just over 1% of Dominion's approximately 6,600 miles of transmission lines are underground

- Primarily used where overhead routes may not be practical
 No feasible and/or cost effective overhead alternatives available
 - Built for direct delivery to a customer that incurred the cost



The Pros & Cons of Going Underground

- Benefit: Reduced Visual Impact
 - Typically less clearing for right of way
- Cons: Substantial Cost Differential, Reduced Operability and Reliability
 - Significantly more expensive than overhead
 - More invasive
 - Longer construction
 - Exposure to longer outages
 - Limited capacity and voltage fluctuations
 - Life expectancy cut in half



Overhead vs. Underground

	Reliability: Line Outage Duration	Typical Life Expectancy	Construction Time	Construction Personnel Required
ОН	Hours	6o years	6-8 months	20
UG	Weeks	35 years	18-24 months	150

*Figures are project dependent



Underground Transmission Lines *Open Trench Construction*

230kV XLPE Cable System Open Trench (Horizontal Install)



2 INCH PVC CONDUIT FOR SHEATH BONDING CABLE
 2 INCH PVC CONDUIT FOR PROTECTIVE RELAYING
 8 INCH PVC CONDUIT FOR ENERGIZED 230KV CABLE WITH PHASE POSITION
 SPARE 8 INCH PVC CONDUIT

















Evaluation of Construction Operations *Day vs. Night*







Work Operations/Restoration



