

**FAIRFAX COUNTY PLANNING COMMISSION
TELECOMMUNICATIONS COMMITTEE
WEDNESDAY, OCTOBER 17, 2018**

PRESENT: Peter F. Murphy, Springfield District, Chairman
John C. Ulfelder, Dranesville District, Vice Chairman
Ellen J. Hurley, Braddock District
James T. Migliaccio, Lee District

ABSENT: James R. Hart, Commissioner At-Large

OTHERS: John A. Carter, Hunter Mill District
Julie M. Strandlie, Mason District
Philip A. Niedzielski-Eichner, Providence
Mary D. Cortina, Commissioner At-Large
Jacob Caporaletti, Clerk, Planning Commission
Jill G. Cooper, Director, Planning Commission
Steve Chafin, Director of Electrical Planning, Dominion Energy
Brandon Shaw, External Relations, Dominion Energy
Scott Reanny, External Affairs Manager, Dominion Energy
Deborah Johnson, Regional Policy Director, Dominion Energy
Sheri Atkin, Land Use Planner, McGuireWoods, LLP
Michelle Stahlhut, Planning Division (PD), Department of Planning and Zoning (DPZ)
David Stinson, PD, DPZ

ATTACHMENTS:

- A. Dominion Energy PowerPoint Presentation
- B. Letter from Dominion Energy – May 22, 2018
- C. Dominion Energy Electric Transmission
- D. Dominion Energy Electric Transmission Line SCC Application Review Process

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Chairman Peter F. Murphy called the meeting to order at 8:41 p.m. Board Conference Room, 12000 Government Center Parkway, Fairfax, Virginia, 22035, pursuant to Section 4-102 of the Commission's *Bylaws & Procedures*.

Chairman Murphy announced that the purpose of the meeting was to discuss electric transmission infrastructure. He then indicated that the discussion would require multiple meetings and the next Committee meeting was tentatively scheduled for Wednesday, November 7, 2018 at 7:30 p.m.

Steve Chafin, Director of Electrical Planning, Dominion Energy, and Sheri Atkin, Land Use Planner, McGuireWoods, LLP, gave a PowerPoint Presentation on electric transmission infrastructure, which is included in Attachment A, with comments from multiple Committee members wherein the following topics were discussed:

- The standards, regulatory framework, and planning process for electric transmission infrastructure throughout the County;
- The existing functionality, overall design, components, scope, and use of alternative energy sources of the County's electric transmission infrastructure;
- The mechanisms for managing the County's electric grid, meeting rising demand, and resolving outages;
- The growth in demand for electricity in the County and the Northern Virginia region;
- The factors that contributed to previous mass outages in the Northern Virginia region and the reforms that were implemented after such incidents;
- The process for determining the need for infrastructure to accommodate future development;
- The impact of data centers on electric transmission infrastructure and the unique needs of such facilities;
- The coordination efforts between utility providers and local jurisdictions to provide adequate infrastructure;
- The impact of economic growth on electric transmission infrastructure and the ability of the existing infrastructure to accommodate that growth;
- The age and lifespan of electric transmission infrastructure facilities;
- The extent to which the design of electric transmission infrastructure had changed;
- The mechanisms for responding to increased demand for electricity and installing the necessary facilities to meet that demand;
- The various designs and types of electric transmission infrastructure facilities;
- The approval process for obtaining the necessary state, local, and federal permits for electric transmission infrastructure;
- The visual impact of electric transmission infrastructure, the public opposition to such impacts, and the mechanisms for minimizing those impacts;
- The public outreach efforts to inform citizens about issues regarding electric transmission infrastructure;
- The process for obtaining approval for electric transmission infrastructure facilities from the Virginia State Corporation Commission (SCC), as outlined in Attachment D;
- The opportunities for public input during the SCC review process;
- The instances in which obtaining approval from the SCC had been subject to significant constraints and the solutions that had been implemented in such instances;
- The importance of maintaining effective electric transmission infrastructure for public welfare and economic viability;
- The role of the County and the Planning Commission in permitting the installation of electric transmission infrastructure;
- The benefits of co-locating electric transmission infrastructure with other existing infrastructure;
- The efforts to integrate alternative energy into the County's electric transmission infrastructure;
- The trends and innovations within the alternative energy market;
- The economic impact of adequately maintaining the County's electric transmission infrastructure;

- The process for determining the most feasible development option for electric transmission infrastructure;
- The issues associated with electrical substations compared to those with electrical transmission lines and methods for addressing those issues;
- The instances in which the construction of electric transmission facilities had incurred unexpected impacts that required additional modifications to a site and the process for implementing such modifications;
- The pending applications for electric transmission infrastructure facilities that had the potential to raise concerns from the public; and
- The impact of green building standards and electric vehicle charging stations on the demand for electricity in the County.

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The meeting was adjourned at 9:53 p.m.
Peter F. Murphy, Chairman

An audio recording of this meeting is available in the Planning Commission Office, 12000 Government Center Parkway, Suite 330, Fairfax, Virginia 22035.

Minutes by: Jacob Caporaletti

Approved: May 9, 2024



Jacob L. Caporaletti, Clerk to the
Fairfax County Planning Commission

County of Fairfax
Commonwealth of Virginia

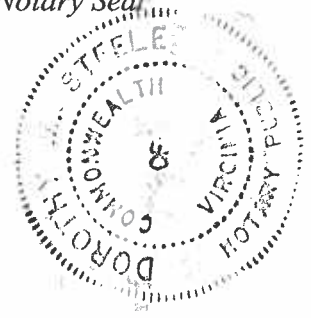
The foregoing instrument was acknowledged before me this 14 day of May 2024, by Jacobs Caporale

Doreen M. Steele
Signature of Notary

Notary registration number: 7114113

Commission expiration: January 31, 2028

Notary Seal





500kV lattice structure with 230kV underbuild

Dominion Energy Electric Transmission

October 2017

MEETING THE DEMAND

Highly Regulated, Continually Monitored

Dominion Energy operates and builds new electric transmission infrastructure in a highly regulated and continually monitored environment.

The Northeast blackout of 2003 placed a renewed focus on the nation's energy infrastructure, and heightened regulations and mandatory fines. Cascading outages originating in Ohio affected 10 million people in Ontario and 45 million people in eight U.S. states. At the time, it was the world's second most widespread blackout in history.

Key Regulatory Bodies

Several regulatory bodies develop and enforce mandatory reliability standards, which dictate what Dominion Energy and other energy providers can and cannot do.

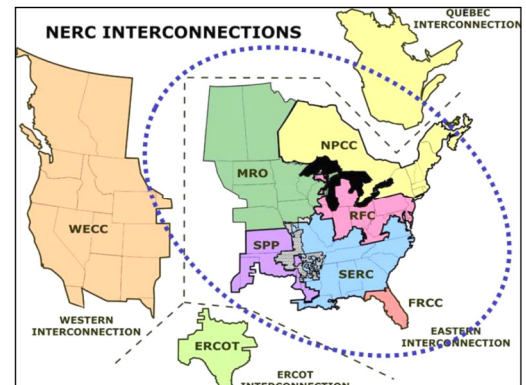
- **Federal Energy Regulatory Commission (FERC)** – Exclusive jurisdiction to determine and regulate reliability of the power grid.
- **North American Electric Reliability Corporation (NERC)** – Regulatory authority to develop and enforce mandatory reliability standards as well as criteria, data and methodology to evaluate and ensure

reliability of the bulk power system in North America.

- **PJM** – Regional transmission organization (RTO) that coordinates the movement of wholesale energy in all or parts of 13 states and the District of Columbia. Virginia law mandates Dominion Energy's membership.
- **State Corporation Commission (SCC)** – Regulates Virginia public utility facilities, retail rates and service, including transmission line need and routing. Issues certificates of public convenience and necessity for electric transmission lines greater than 138 kilovolt (kV).
- **Local Government** – Regulates local land use necessary for substations and most electric transmission lines equal to or less than 138kV.

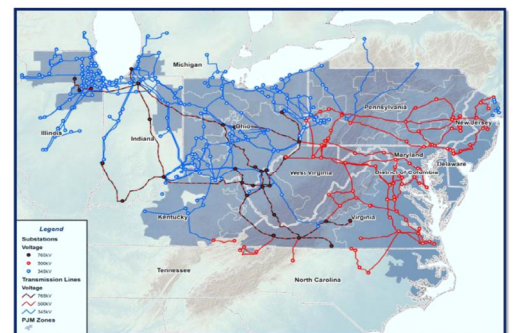
Dominion Energy seeks to provide the highest reliability at the lowest cost to its customers, and the least impact to communities and the environment. Projects requiring new infrastructure are evaluated with this goal in mind.

Unlike other service providers, Dominion Energy cannot build new infrastructure until a definitive need exists and all necessary permits are acquired.



Eastern Interconnection

The power grid is interconnected between zones in North America. Dominion Energy's performance can have far reaching consequences on the system.



PJM Interconnection

Regional Transmission Organization (RTO) that coordinates the movement of wholesale energy and ensures reliability and economic benefits on a system-wide basis.

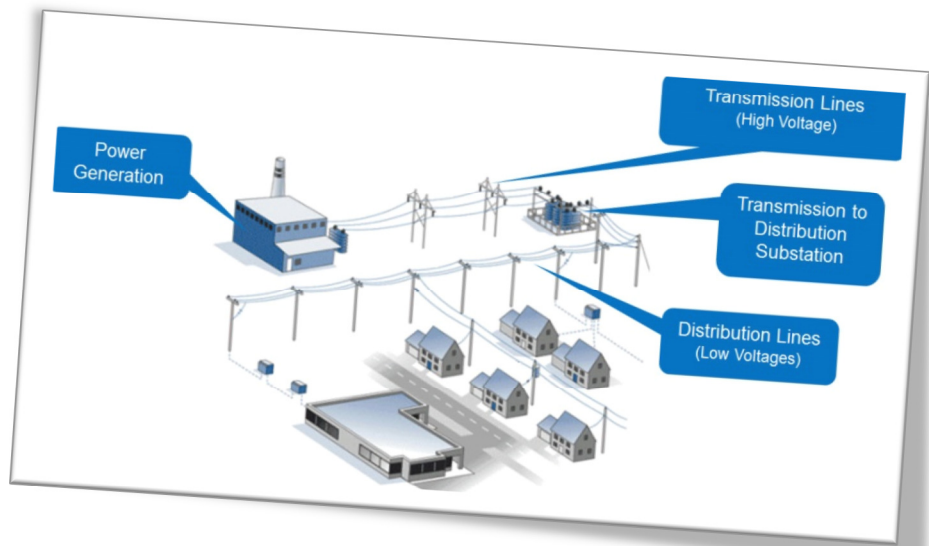
Building New Infrastructure

Forces driving the need for new electric transmission infrastructure include:

- **Economic growth** – Dominion Energy has one of the highest projected peak load growth rates in the latest PJM Load Forecast (2017-2027).
- **Aging power grid assets** – Dominion Energy must replace equipment and structures nearing the end of their useful life.
- **Addressing mandatory NERC Criteria Standards** – Dominion Energy must comply with all regulations or face heavy fines. Continuous power-flow modeling ensures full compliance.

Not all new service requests are connected directly to the electric transmission system. Distribution facilities can often adequately serve the need. Several factors determine whether or not a transmission interconnection is necessary, including the amount of new load, location of available distribution facilities and specific voltage requirements.

New large load service requests are vetted through a thorough planning review process. Multiple power-flow models are created to analyze how



various options would impact the reliability of the system. New and existing substation and line locations are driven by load and NERC Criteria Standards.

Electric Transmission and Distribution System

Energy produced at a power station flows to homes and businesses via transmission and distribution lines.

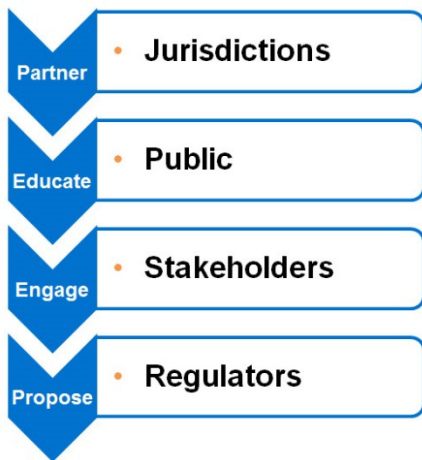
Planning Considerations

As Dominion Energy explores options to serve new load, it is important to ask if the proposed solution:

- **Meets the need requirement?**
- **Resolves all potential NERC reliability violations?**
- **Uses existing, proven technology?**
- **Provides long-term reliability?**

DOMINION ENERGY'S SYSTEM

- 6,600 miles of electric transmission lines serving 2.5 million customer accounts in Virginia and North Carolina
- 800 substations
- 45,000 transmission structures



Partnerships to Meet Future Demand

Dominion Energy is committed to working openly with local jurisdictions on projects requiring new infrastructure to find the best possible solution.

Routing Principles

Dominion Energy always begins its assessment of routing options by reviewing existing rights of way. Finding a viable solution without expanding or securing new land streamlines the process.

When necessary, new rights of way are selected after careful consideration with the purpose of minimizing impact on private property, and natural, historic and recreational resources. Co-locating facilities with other utility infrastructure can help mitigate such impact.

In addition, proposed routes undergo extensive quantitative analysis to measure and compare how each route will impact community resources.

Generally speaking, proposed sites located near an existing transmission line can make the routing and siting process easier. However, additional infrastructure may still be needed based on load requirements.

Required Permitting

Once a route is selected, Dominion Energy must secure all required permits before construction can begin. This can be a challenging and lengthy process.

The SCC has regulatory authority over all electric utilities and requires certification for all transmission facilities that are found to be out of the ordinary course of doing business or are at or above 138kV. A final order can take eight to 18 months from start to finish.



May 22, 2018

Dear Chairman Murphy:



We at Dominion Energy are committed to open communications with Fairfax County, not only regarding ongoing and day-to-day service provision, but also particularly with respect to planning, engineering, approval and construction of large infrastructure projects.

I have been told many times the subject of an in-depth overview of our large project implementation process is of interest to Fairfax County planning commissioners and board members. Myself and other team members had a conversation on this topic with Supervisor Linda Smyth and Commissioner Phillip Niedzielski-Eichner last summer and earlier this year with Commissioner Niedzielski-Eichner.

Additionally, you may recall a follow-on motion made when the Commission approved the Idylwood Substation Special Exception Amendment. Generally, the motion called on the County to work proactively with Dominion to have discussions regarding substation placement and construction as well as transmission line siting in the County, understanding the approval of 230kV and 500kV transmission lines rests with the State Corporation Commission.

Dominion Energy would welcome the opportunity to provide overview presentations to the Commissioners, Committees and/or the County Board. Please let me know if there is continuing interest in beginning a dialogue on major electric infrastructure topics.

I look forward to hearing back from the County on this topic and scheduling a discussion to further plan.

Respectfully,

A handwritten signature in black ink, appearing to read "Deborah Tompkins Johnson".

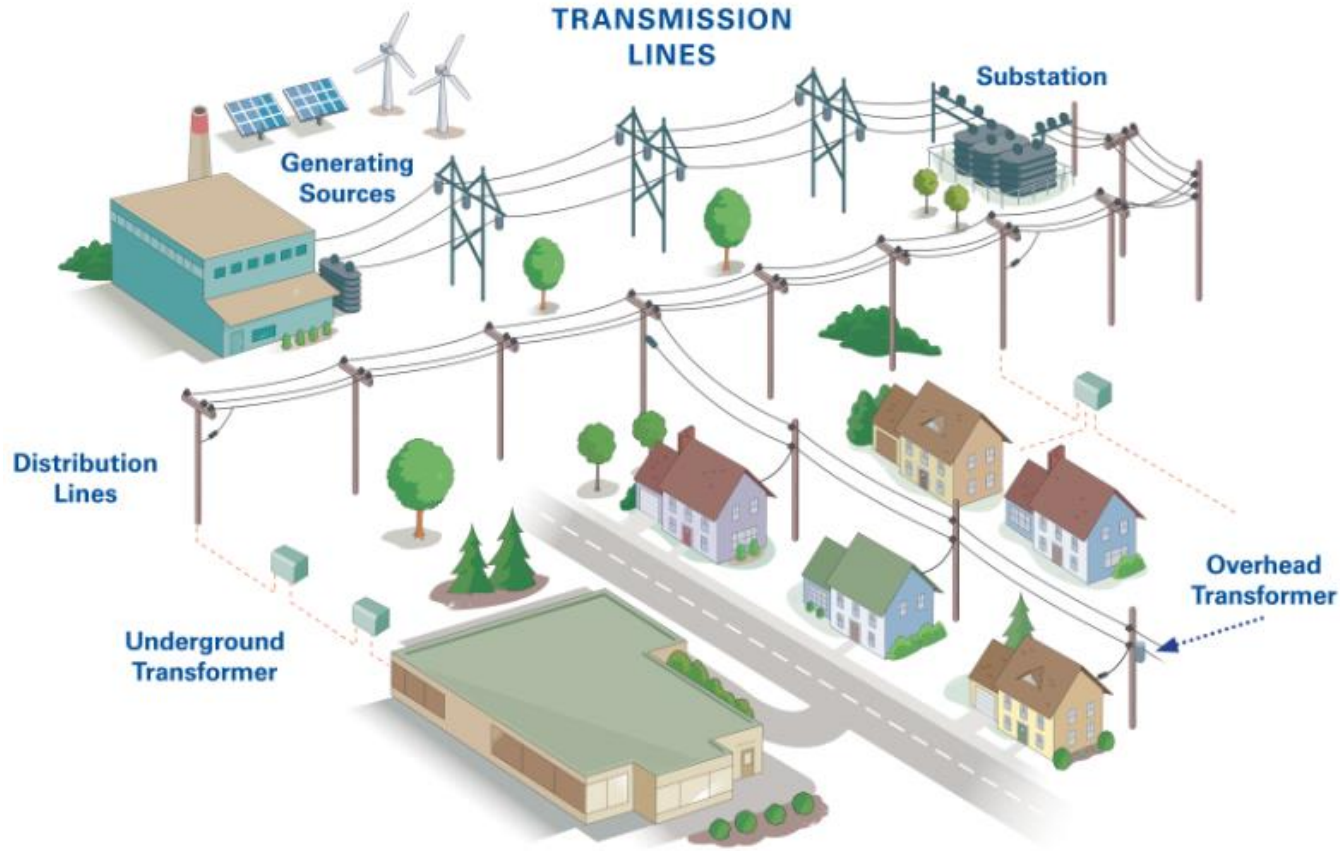
Deborah Tompkins Johnson
Regional Director
NVa State & Local Affairs

c: The Honorable Sharon Bulova
Mr. Bryan Hill
The Honorable Linda Smyth (By E-Mail)
Mr. Phillip Niedzielski-Eichner (By E-Mail)

Dominion Energy® Electric Transmission Overview

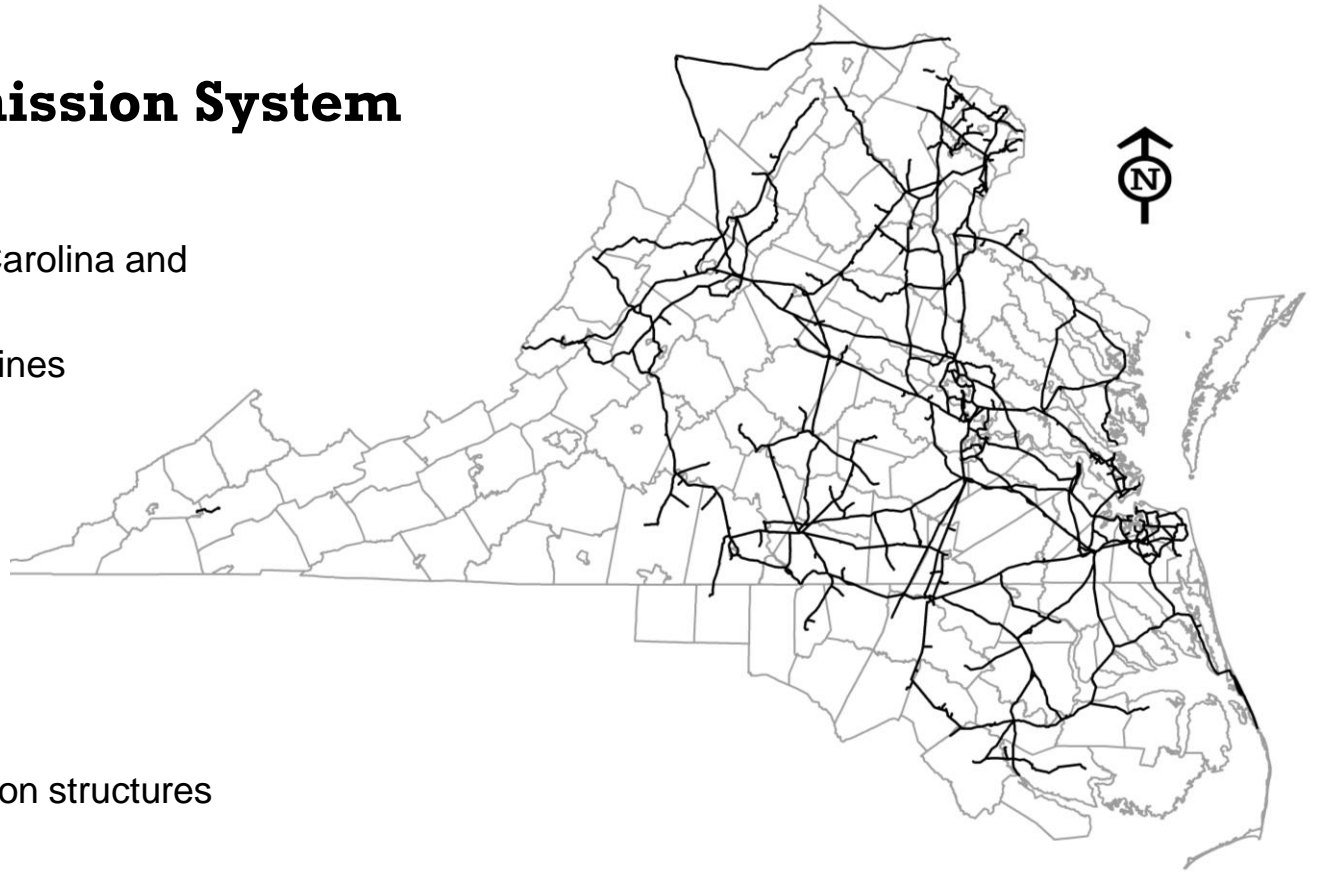


Electric Transmission and Distribution System



Electric Transmission System at a Glance

- Operates in Virginia, North Carolina and West Virginia
- 6,600 miles of transmission lines
 - **500 kV** – 1,299 miles
 - **230 kV** – 2,871 miles
 - **138 kV** – 63 miles
 - **115 kV** – 2,293 miles
 - **69 kV** – 78 miles
- More than 800 substations
- More than 45,000 transmission structures



Electric Transmission is responsible for delivering electricity to Electric Distribution and large industrial customers.

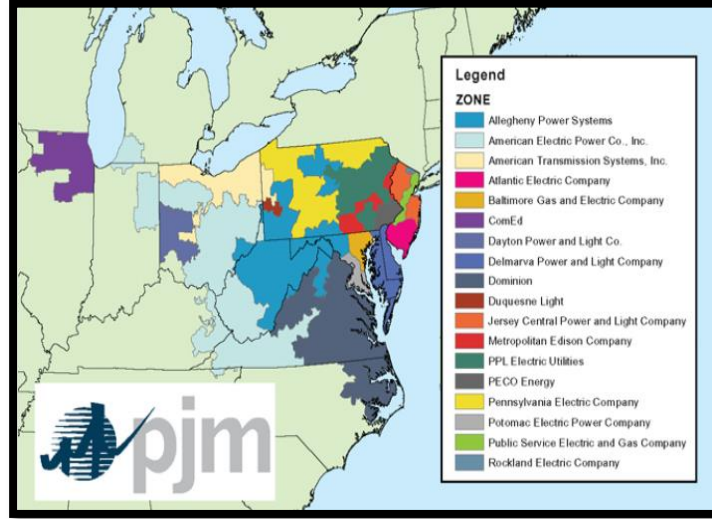
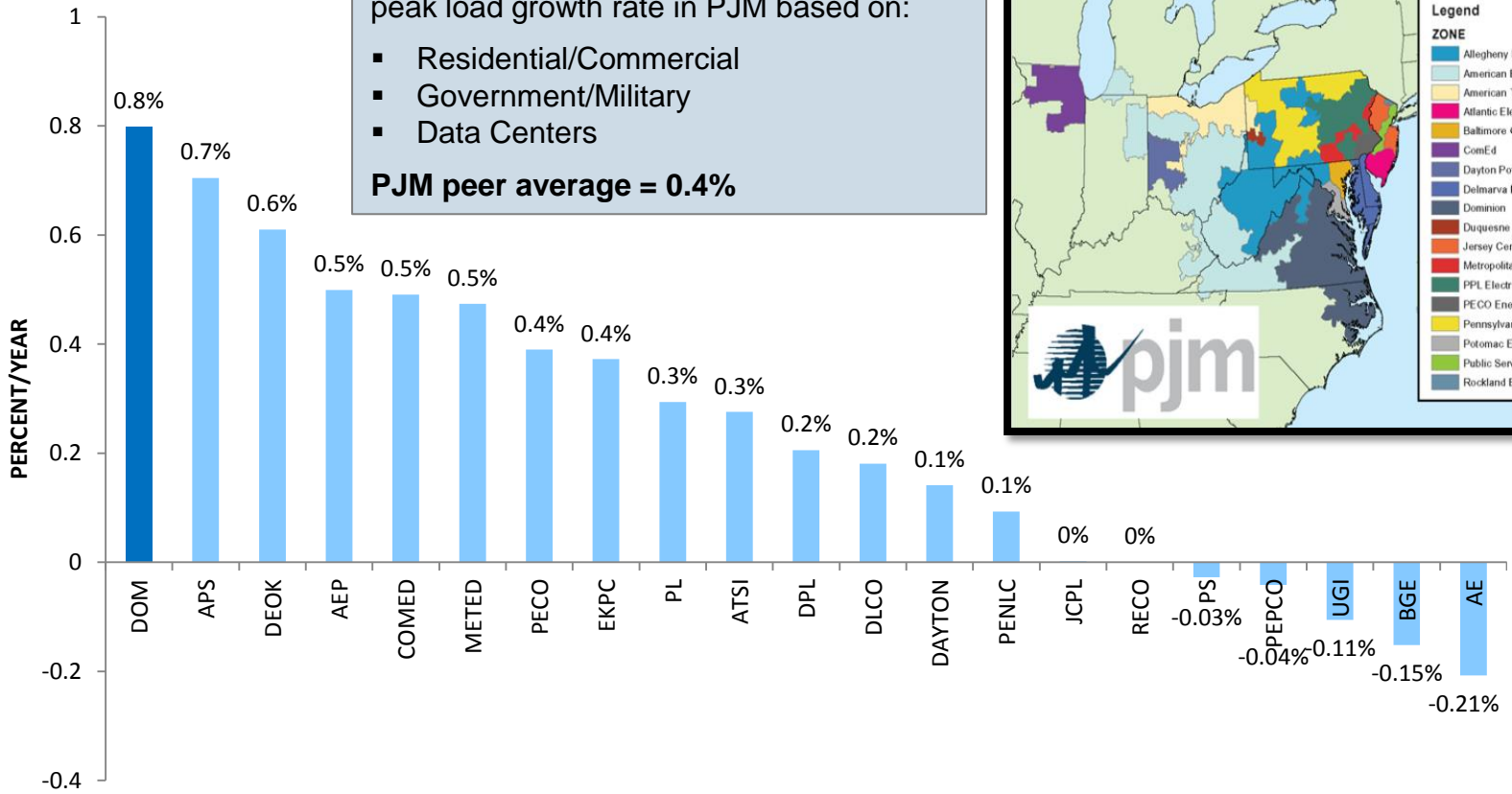
Fastest Growing Service Area in PJM

PJM Summer Peak Load Growth Rate (2018 – 2028)

Dominion Energy has the highest projected peak load growth rate in PJM based on:

- Residential/Commercial
- Government/Military
- Data Centers

PJM peer average = 0.4%



A Defining Moment for the Industry

2003 Blackout resulted in:

- Heightened regulations
- Mandatory fines
- Renewed focus on our nation's energy infrastructure

Note: This is a depiction not an actual satellite image of the 2003 Blackout.

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; Virginia law mandates Dominion Energy's membership



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

**Cities
and Counties**

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

At Dominion Energy, we are committed to identifying and resolving reliability concerns in the areas we serve.



Forces Driving Infrastructure Need



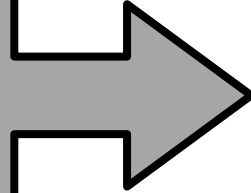
**Economic
Growth**



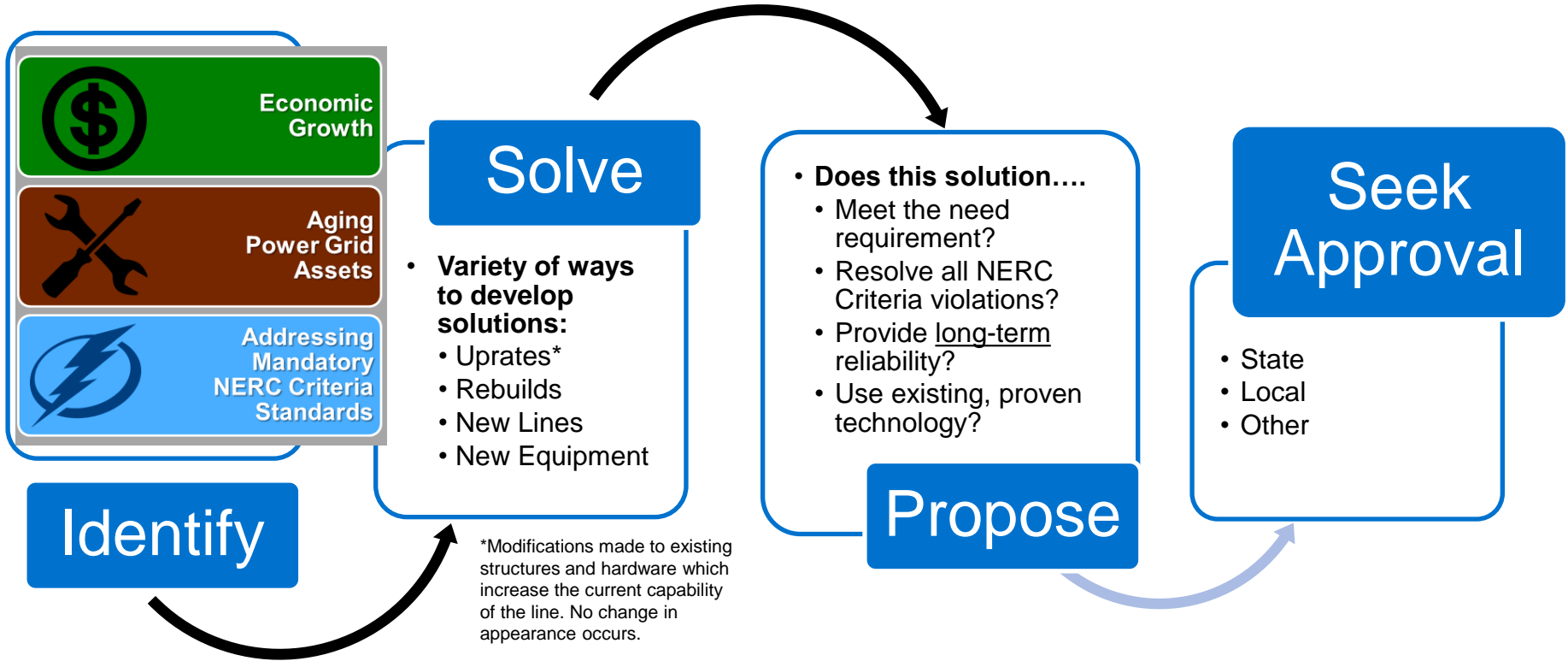
**Aging
Power Grid
Assets**



**Addressing
Mandatory
NERC Criteria
Standards**



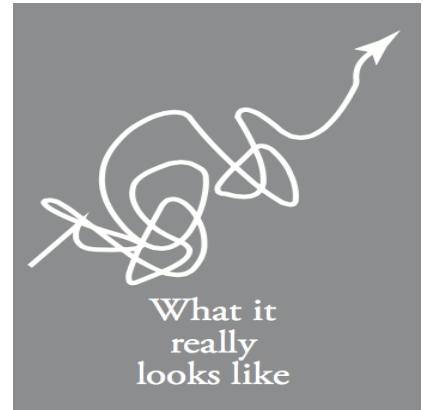
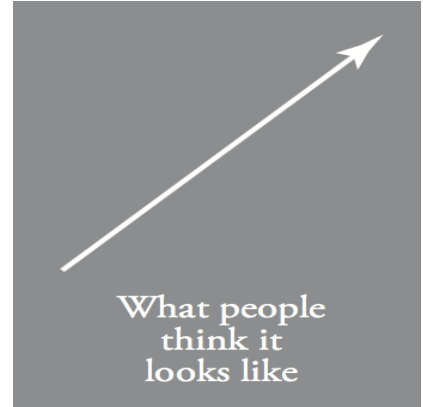
Modeling Required for System Reliability



Project Development and Approval

High-level Steps

- **Step 1:** Determine need and potentially impacted communities
- **Step 2:** Review existing conditions – routing and siting
- **Step 3:** Develop conceptual project scope and engineering
- **Step 4:** Public engagement process (pre-SCC) to include open house(s), project website, detailed mailers
- **Step 5:** SCC review of Dominion Energy project scope and feedback from participating parties to the case
- **Step 6:** SCC-approved configuration



Electric Transmission Line SCC Application Review Process

The Virginia State Corporation Commission (SCC) has regulatory authority over all energy providers in Virginia and requires certification for all transmission lines out of the ordinary course of doing business or are at or above 138 kilovolts (kV). Among other responsibilities, the

SCC validates the need for a proposed line and approves the route and structures. In reviewing a proposed project, the SCC must consider whether potential impacts on scenic assets, historic districts and the environment have been reasonably minimized.



Dominion Energy notifies county and city officials of intent to file
Required pursuant Code of Virginia § 15.2-2202

Dominion Energy submits application to SCC
Includes full project details, including need, cost, routing options, potential impacts, etc.

Dominion Energy notifies electric cooperatives



SCC posts application for public review
Available at scc.virginia.gov

SCC issues procedural order
Case schedule is set; SCC invites public comments and formal participation in the case as a respondent

Department of Environmental Quality (DEQ) issues first report
Due within 60 days of application filing

SCC conducts public hearings
Held in selected areas near the project

DEQ issues coordinated comments
Summary of recommendations from multiple state resource agencies to minimize impacts and for compliance with legal requirements



Public comment period opens
Submitted online or via mail

Discovery begins
SCC Staff starts its review; SCC Staff, Dominion Energy and respondents may serve discovery

Interested parties can join case as respondents
Formal mechanism to join proceedings

Dominion Energy issues public notice
Notifies local officials, impacted landowners and the public

Respondents submit testimony

SCC Staff submits its report about the project

Dominion Energy submits rebuttal testimony
In response to DEQ summary, staff report and respondent testimony



Public comment period closes

SCC conducts formal evidentiary hearing
Testimony submitted and subject to cross examination by SCC Staff, Dominion Energy and respondents

SCC hearing examiner issues report of recommendation

Participants issue response
SCC Staff, Dominion Energy and respondents comment to hearing examiner's report

Process could take as little as eight months to complete if uncontested, with more complex proceedings ranging from 12–24 months from start to finish



Dominion Energy begins construction of facilities

Dominion Energy pursues additional permits as needed
Local permits, U.S. Army Corps of Engineers, Federal Aviation Administration (FAA), etc.

SCC issues final order
If approved, SCC issues a Certificate of Public Convenience and Necessity (CPCN) authorizing Dominion Energy to construct and operate the facilities

- Dominion Energy's Responsibility
- Public Involvement Touchpoints
- Procedural Steps
- Optional Step Determined by SCC

Electric Transmission Line Planning and Public Engagement Process



Routing Considerations

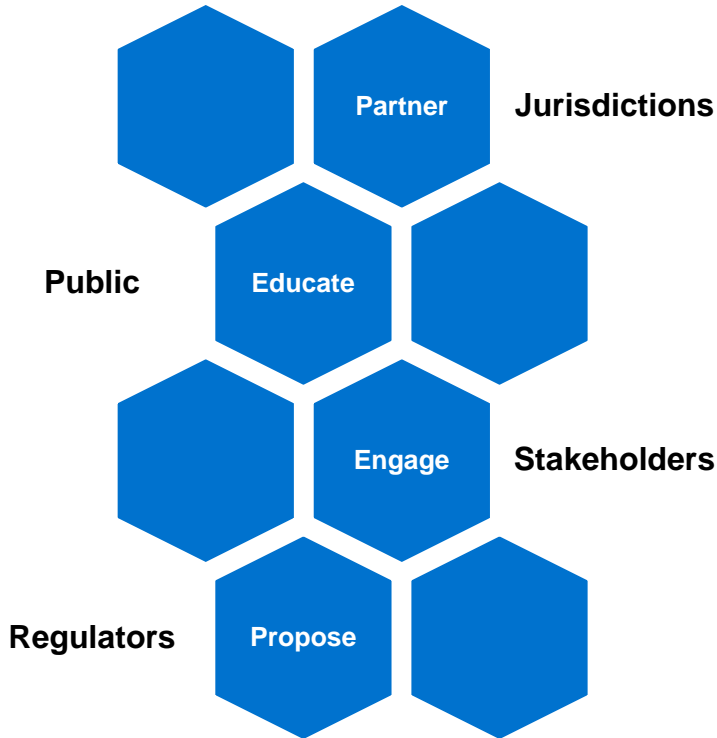
Foundational Principles

- Process always begins with review of existing rights of way and facilities
- Review land use of the property owners
- Colocate with other infrastructure, where appropriate
- Adhere to property boundaries if possible
- Minimize impacts to agricultural, human, environmental, cultural and historical concerns



Partnerships to Meet Future Demand

Modern Grid Infrastructure Improvements = Win-Win



Local Economy

- Creates jobs during construction
- Provides long-term tax revenues

Economic Development

- Supports local businesses with more reliable energy
- Provides flexibility for future economic growth

Reliable, Diverse Energy

- Improves service for customers by preventing power outages or speeding response to outages
- Diversifies energy supply by bringing renewables like solar and wind to the electric grid

Key Takeaways

Substantial new load associated with development will require new or modified electric transmission infrastructure.



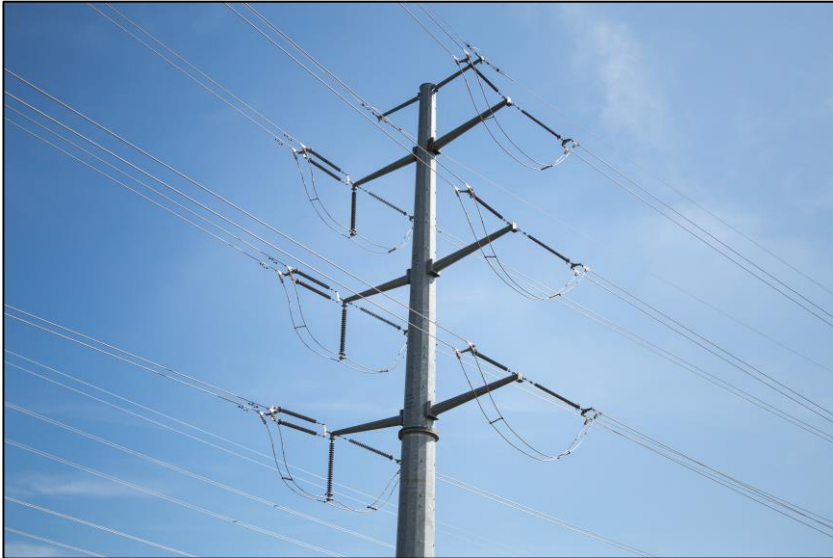
Key Takeaways

Generally speaking, proposed large loads at a site located near existing electric transmission lines can make the routing and siting process easier.



Key Takeaways

Colocating electric transmission facilities with other utilities (highways, railroads, etc.) can help mitigate impact on private property, and environmental, historic and scenic resources.



Key Takeaways

The approval and permitting process is lengthy for new electric transmission infrastructure; communicate early and often with appropriate energy providers to ensure timely completion.



Our company is built on a proud legacy of public service, innovation and community involvement.

Extra Slides if Needed

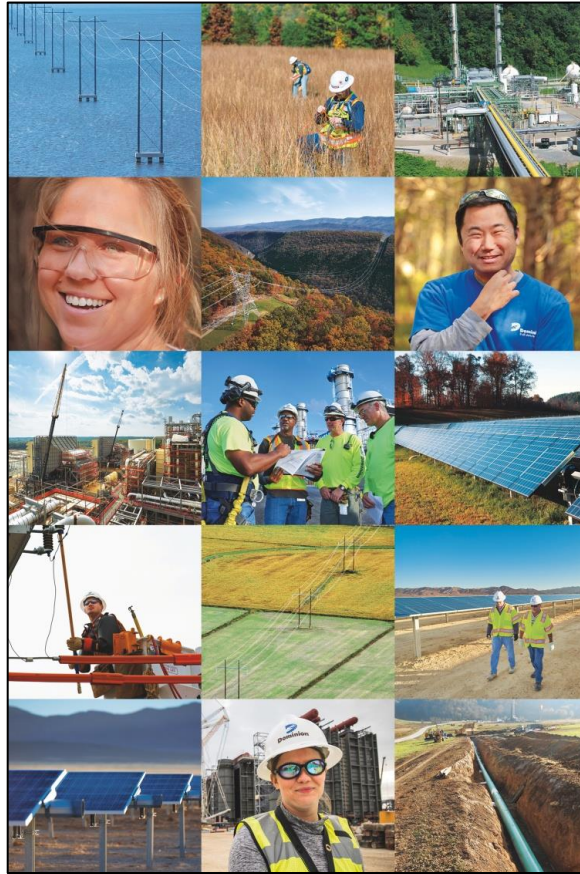
Core Values

Safety:

Safety is our **highest priority** – in the workplace and in the community.

Excellence:

We set high performance standards and are committed to **continuous improvement** in all areas of our business. The odds of long-term success improve when we **go beyond “good”** and **strive for “great.”**



Ethics:

Ethical behavior matters, and our **reputation depends on it.**

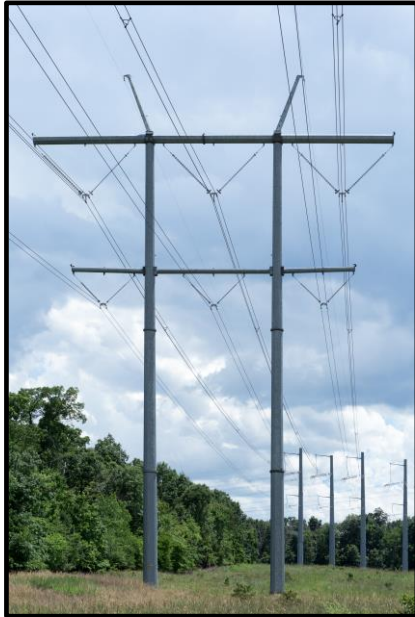
Teamwork:

“One Dominion Energy” – We know that **strong, sustainable performance** depends on how well we **support each other** in executing our business plan.

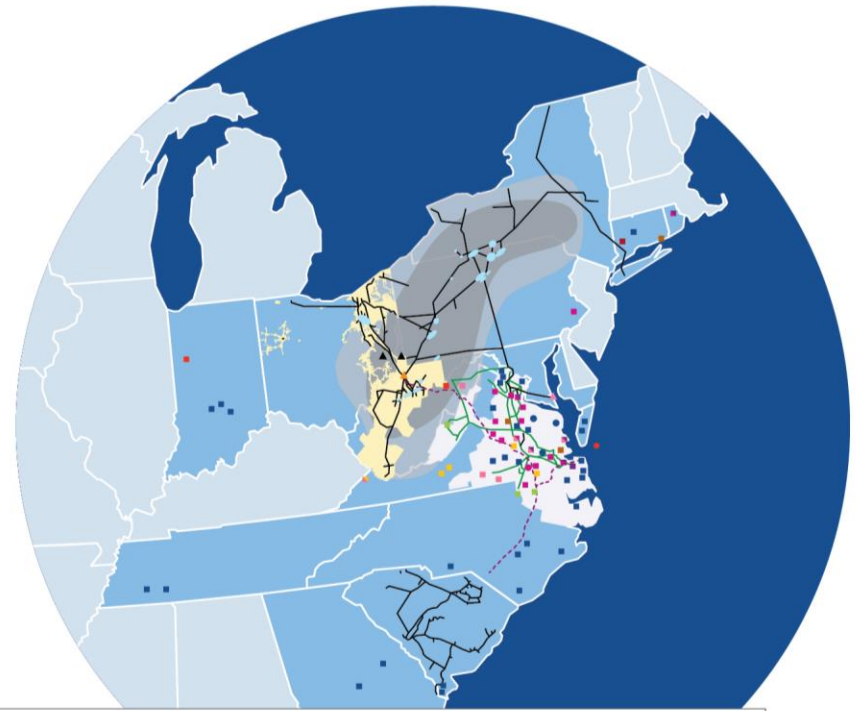
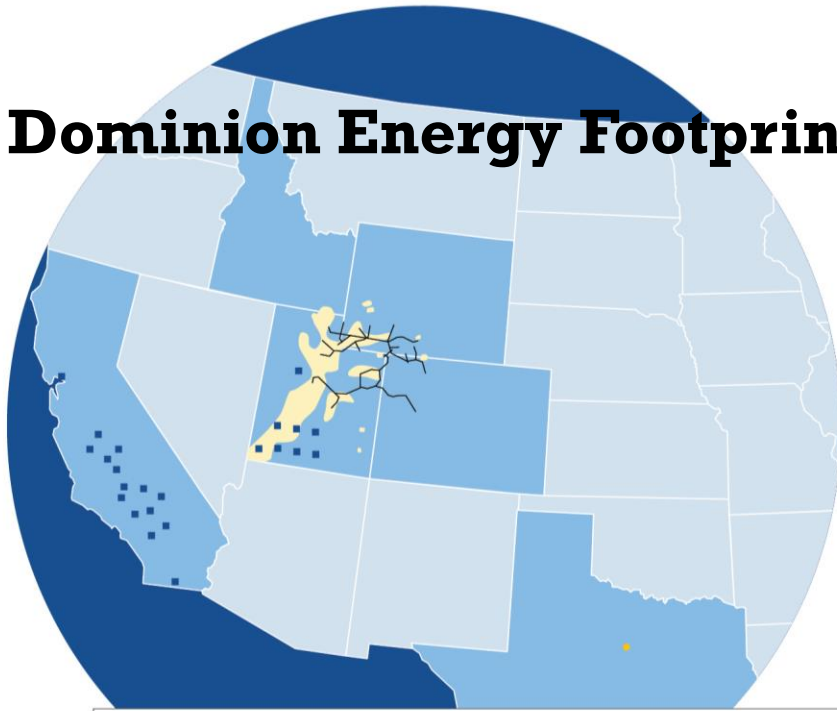
Electric Transmission vs. Electric Distribution

**Transmission Lines:
Lattice, H-frame and Monopole Structures**

**Distribution Line:
Overhead Structures**

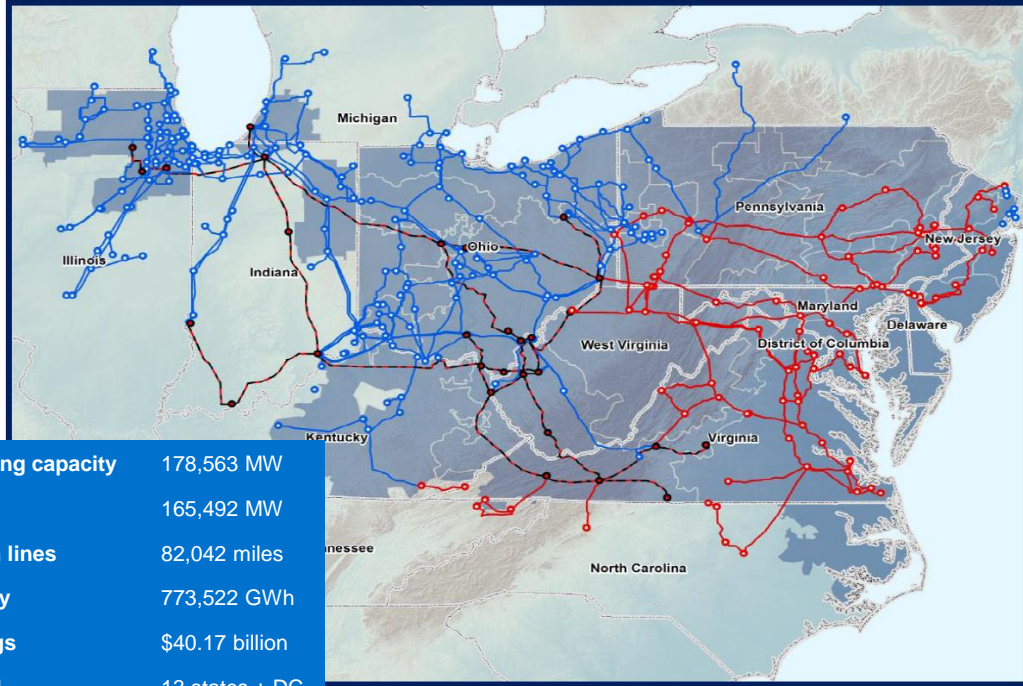


Dominion Energy Footprint



PJM Interconnection

One of the largest centrally dispatched control areas in North America

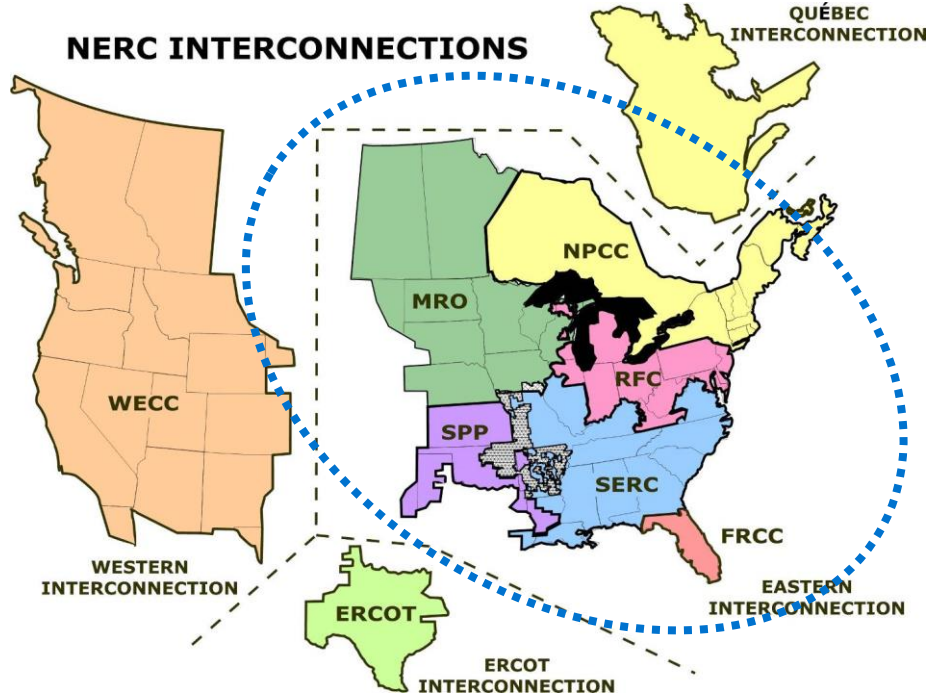


2017 generating capacity	178,563 MW
Peak demand	165,492 MW
Transmission lines	82,042 miles
Annual energy	773,522 GWh
Annual billings	\$40.17 billion
States served	13 states + DC
Territory	243,417 miles
Population	65 million

- PJM Interconnection is a regional transmission organization (RTO) that coordinates the movement of wholesale electricity
- Neutral, independent party – operates a competitive wholesale electric market and manages the high-voltage electric grid
- PJM’s long-term regional planning process provides a broad, interstate perspective that identifies the most effective and cost-efficient improvements to the grid
- Ensures reliability and economic benefits on a system-wide basis

The Interconnected Grids

Dominion Energy is in the Eastern Interconnection



Transmission System Projects

Maintaining reliability is becoming more complex

- Economic growth – regional and statewide
- Aging power grid assets
- Addressing mandatory NERC criteria standards
- PJM Load Forecast
- Large load additions – such as data centers
- Generation retirements and additions
- Growth of intermittent renewables



Local Zoning, Siting, Approval Steps

- Inform state and local officials
- Details to local officials
- Local public outreach and engagement
- Land use committee
- Planning commission
- Board of supervisors

Routing Considerations

Physical Constraints

- Wetlands and waterway crossings
- Conservation lands such as those owned by the Virginia Outdoor Foundation, National Park Service, Department of Conservation and Recreation, and counties
- Threatened and endangered species
- Cultural and historical resources
- Neighborhoods
- Public gathering spaces such as schools, churches and parks



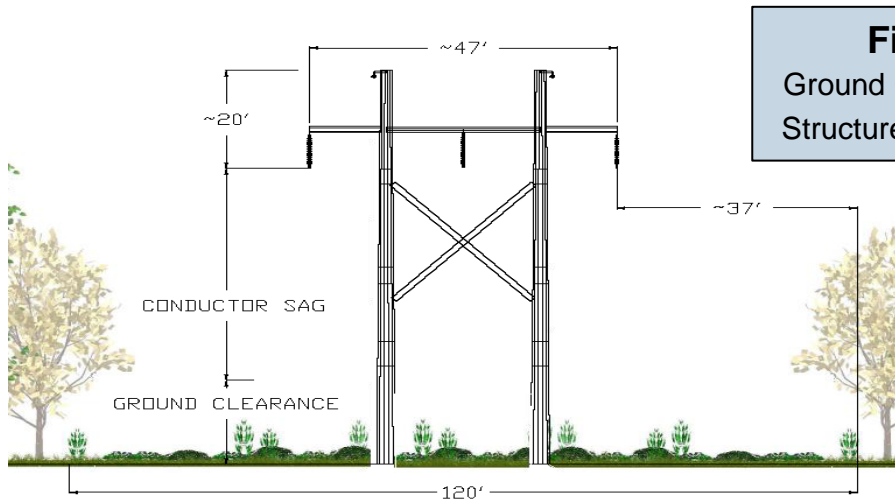
Additional Factors

- Ability to obtain permitting
- Public opinion
- Political dynamics
- Non-governmental organizations' perspectives
- Native American tribes
- Environmental justice

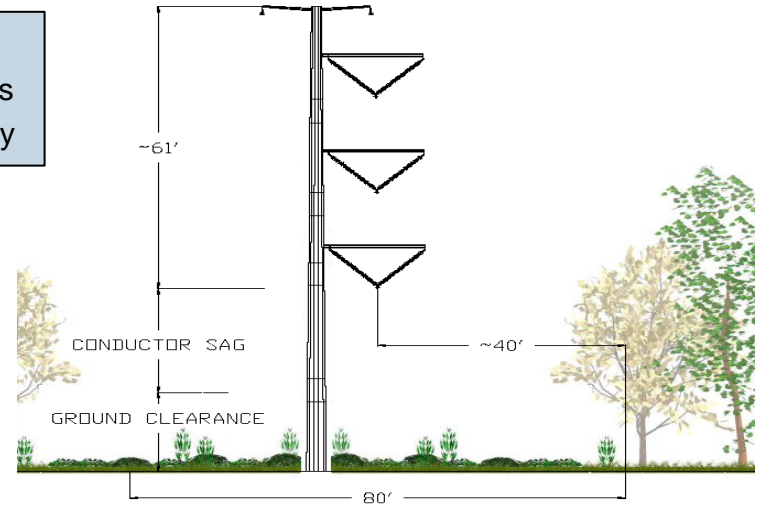
Structure Selection: Horizontal vs. Vertical

Structure selection has a direct correlation to:

- Structure height
- Width of the right of way
- Existing and future development
- Terrain, geology and environmental impacts



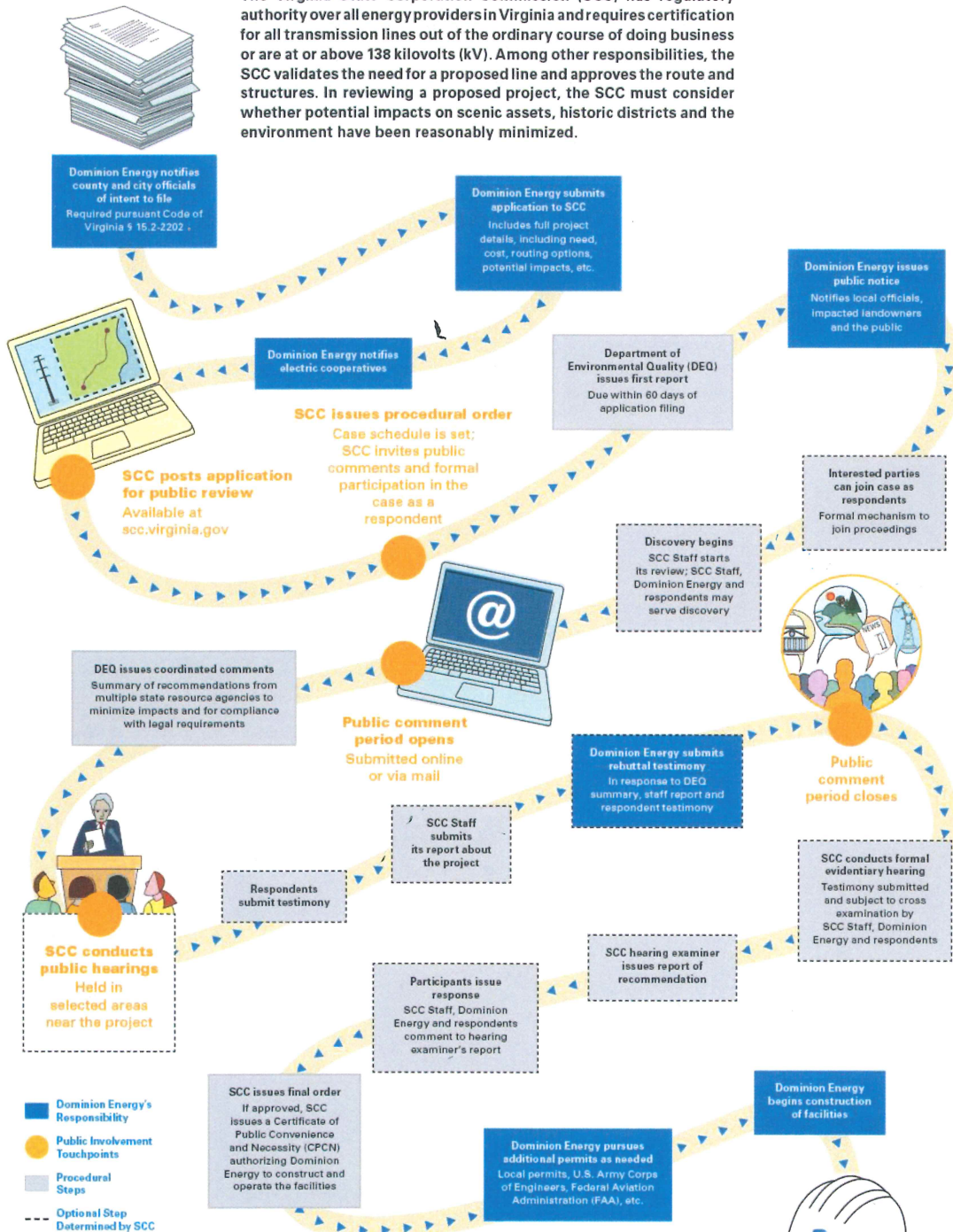
Fixed
Ground Clearances
Structure Geometry



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