

Agenda

Underground Transmission Line & Substation Working Group Meeting #1

Date: September 11, 2014

Time: 7:00 PM to 9:30 PM

Location: City Hall Room 1101 (Sister Cities)

Purpose of the Meeting: Convene the first meeting of the Underground Transmission Line & Substation Working Group (UTLWG), discuss the UTLWG role and goals, and provide an overview of the proposed Dominion project.

Agenda

- | | |
|--|----------------|
| A. Working Group Framework | 7:00 – 7:30 PM |
| <ul style="list-style-type: none">• Welcome and introductions• Overview of the Project• Working group role, responsibilities, and goal | |
| B. Dominion presentation of project need, alternatives, SCC Process | 7:30 - 8:30 pm |
| <ul style="list-style-type: none">• Upcoming public information meeting – Dominion• Proposed Alignments | |
| C. Working Group Identification of Future Issues to Address | 8:30 – 9:00 pm |
| D. Wrap Up and Adjournment | 9:00 - 9:30 pm |

City of Alexandria, Virginia

UNDERGROUND TRANSMISSION LINE & SUBSTATION WORKING GROUP

SEPTEMBER 11, 2014

7 PM TO 9:30 PM

CITY HALL ROOM 1101



WORK GROUP MEETING #1



- WELCOME
- WORKING GROUP MEMBERS:
 - Jason Nestlerode, Chair
 - Wendy Adams
 - Nancy J. Appleby
 - Elizabeth Chimento
 - Rick Cooper
 - Patrick Harenburg
 - Judy Noritake
 - Catherine Glocker Poulin
 - Nathalie Simon
 - Ben Sylla

WORK GROUP MEETING #1



- TONIGHT'S AGENDA
 - Welcome and Introductions
 - Overview of Project
 - Background Material
 - Dominion Presentation
 - Future Issues to Address

WORK GROUP MEETING #1



- PROJECT OVERVIEW
- WHERE WE ARE NOW
- SCHEDULE

WORK GROUP MEETING #1



■ OVERVIEW

- Project need is to meet reliability issues.
- Connect Dominion's Glebe Substation to Pepco's Station C Substation Site with an underground 230 kV line.
- The transmission line consists of a 3'x5' concrete encased duct bank with 8'high x 8'wide x 24' long manholes approximately every 1000 feet in a 30' wide easement.
- Enlarge Pepco Station C Substation Site.

WORK GROUP MEETING #1



- PROCESS & STATE CORPORATION SCHEDULE
 - SCC Process
 - City Participation

WORK GROUP MEETING #1



- **MISSION**

- Examine impacts of routes
- Identify pros, cons and challenges
- Consider other additional routes
- Review PEPCO substation siting options

- **GOAL**

- Provide staff with information needed for a memo to answer the four mission points outlined by early November.
- The role of the Work Group will change after November.

WORK GROUP MEETING #1



- REVIEW GROUP GOALS & ANSWER QUESTIONS
 - Revisit September 25th Schedule
 - Possibility for two meetings in October

Glebe to Potomac River

Proposed 230kV Line & Substation Project

Project Need: Complying With Federal Standards

The Federal Energy Regulatory Commission (FERC) has designated the North American Electric Reliability Corporation (NERC) as the governing body which establishes and enforces reliability standards for the bulk power system.

- NERC reliability standards establish minimum criteria with which all public utilities must comply.
- FERC Order 1000 requires regional and interregional transmission planning between utilities.

North American Electric Reliability Corporation (NERC)

Transmission Reliability Criteria

- With no lines out, grid must remain stable with normal voltage and no loss of load.
- With the loss of one transmission element, grid must remain stable without overloading any other lines, and no additional loss of load other than the line that is out.
- With the loss of two or more lines, loss of load must be controlled without cascading outages.

Mandatory Compliance

- Third party audits – South East Reliability Council (SERC)
- Violations subject to fines up to \$1M per day, per event

Growing Energy Demand

Energy Use



1970

1980

1990

2000

2010

Demand – Side Management Program

Demand-Side Management (DSM) programs are already included in the load forecast, but do not resolve the overloads.

Time-of-Usage Metering

- Time-of-Usage (TOU) meters provide price incentives to reduce electric consumption during peak times.

Load Curtailment Rates

- Lower rates for customers who agree to have their load curtailed for a fixed number of days each year.

Demand Response Program

- Direct customer payments for reducing electric consumption when either wholesale prices are high or the reliability of the electric grid is in jeopardy.

Industry Solutions to Capacity Strains

Possible Generation Solutions

- Requires construction of new power station(s) in affected areas; Will still require new transmission infrastructure to support power station
- Neither Virginia SCC or PJM can mandate construction

Possible Energy Conservation Solutions

- Voluntary participation
- Requires approval from Virginia SCC

Transmission Solutions

- Compliance with reliability criteria is mandatory
- Requires approval from Virginia SCC

Managing the Grid – Utilities & RTO's

PJM is a regional transmission organization (RTO) that coordinates the movement of electricity in 13 states, including Virginia and Washington, DC.

Acting as a neutral, independent party, PJM manages the high-voltage electricity grid to ensure reliability.

PJM's long-term regional planning process identifies the most effective improvements, while considering cost, feasibility, and a variety of other aspects to ensure reliability.

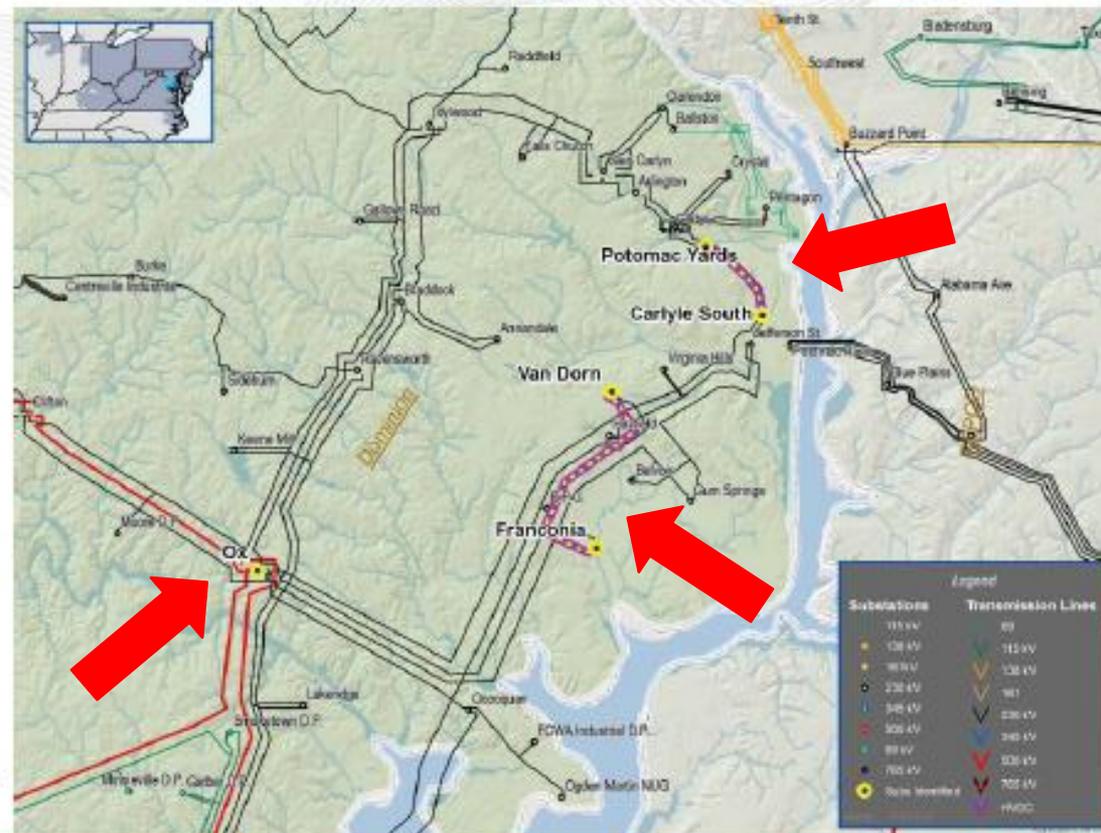
PJM Slide Identifying Criteria Violations



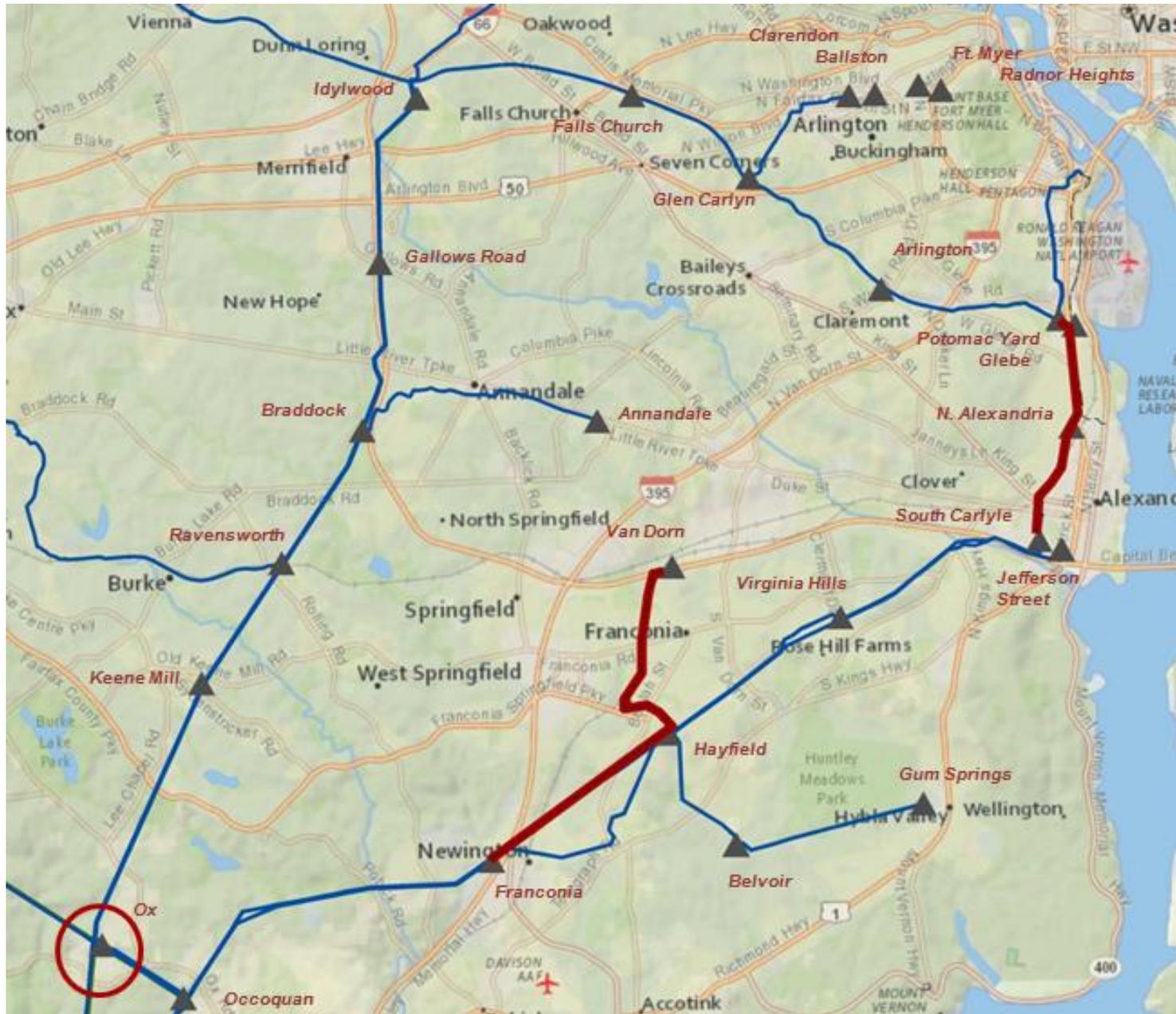
NERC and Dominion Criteria Violations:

- NERC Category B single contingency overloads:
 - Franconia 230kV to Van Dorn 230kV overloads for the outage of Possum Point 230kV to Woodbridge A 230kV
 - Ox 500/230kV Tx #1 overloads for the outage of Tx #2 and vice versa under stressed conditions with Possum Point #6 off
- NERC Category C "N-1-1" overloads:
 - Franconia to Van Dorn 230kV overloads for the N-1-1 outage of N Potomac Yards A 230 kV to S Carlyle 230kV and Possum Point to Woodbridge A 230 kV
 - Ox 500/230kV Tx #1 overloads for the N-1-1 outage of Loudoun 500kV to Ox 500kV and Ox 500/230 kV Tx#2 or Tx#2 for Tx#1.
 - Lines 2023 & 2112 N. Potomac Yards to N. Alexandria to S Carlyle 230 kV overloads for the N-1-1 outage of Line 248 N Potomac Yards to S Carlyle 230 kV and Falls C 230 kV to Idylewood 230 kV.
 - Line 248 N Potomac Yards 230kV to S Carlyle 230 kV overloads for the N-1-1 outage of line 241 Hayfield 230 kV to Jefferson St. 230 kV and Franconia A to Ox 230 kV

Dominion Transmission Zone



Infrastructure Overloads



Local Reliability Concerns

Demand on existing infrastructure is forecasted to exceed 100% capacity by summer 2018 – which will negatively impact service reliability to customers in the City of Alexandria and County of Arlington and violate federal requirements.

The following lines and transformers are forecasted to exceed 100% of capacity:

- Two existing underground transmission lines between North Potomac Yard, North Alexandria and South Carlyle
- Existing line between Franconia and Van Dorn
- Ox 500-230 kV transformers

Local Reliability Concerns at a Glance

IF Outage on	THEN Overload on
Possum Point – Woodbridge	Franconia – Van Dorn
N. Potomac Yard – S. Carlyle & Possum Point – Woodbridge	Franconia – Van Dorn
N. Potomac Yard – S. Carlyle & Franconia – Idylwood	N. Potomac Yard – N. Alexandria to S. Carlyle
Hayfield – Jefferson St & Franconia – Ox	N. Potomac Yard – S. Carlyle

Resolving Reliability Deficiencies: Alternatives Evaluated

- A. Build a 230 kV Line between Glebe & Potomac River.
 - Two miles of new 230 kV construction
- B. Loop two existing underground lines(located on Route 1) into Potomac River Substation and build a 230 kV Line between Glebe & Potomac River.
 - Four miles of new 230 kV construction
- C. Loop existing Arlington to Glebe 230 kV Line approximately two-miles into Potomac River Substation.
 - Four miles of new 230 kV construction

Alternatives Evaluated (cont'd)

- D. Build a 230 kV Line from Clark to Arlington along the W&OD Trail, reconductor existing underground lines located in Rte. 1, add a third 500-230 kV transformer at Ox Substation. **Still requires Glebe to Potomac River Substation to be built in two or three years.**
 - Thirteen miles of new 230 kV construction
- E. Build a 6.3-mile, 230 kV Line between Van Dorn and Arlington, add third 500-230 kV transformer at Ox, improvements to one additional 230 kV Line.
 - Six plus miles of new 230 kV construction

Alternatives Evaluated (cont'd)

- F. Build a 230 kV line between Annandale and Arlington, add third 500-230 kV transformer at Ox, improvements to one additional 230 kV Line.
- Five miles of new 230 kV construction

Generation alternative(s) will be considered as part of the SCC application process.

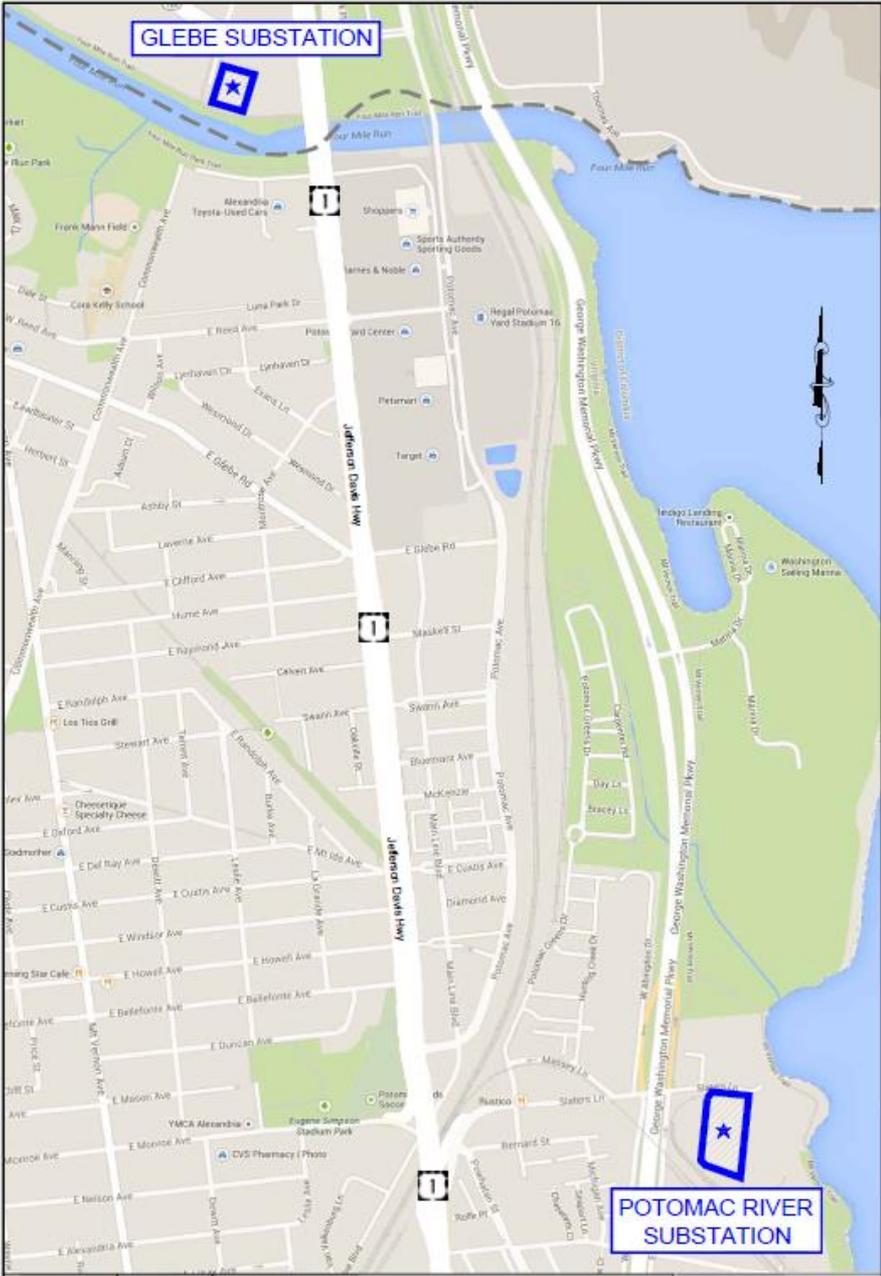
Analysis indicates Option A resolves identified deficiencies, is potentially least impacting and represents the least cost solution.

Benefits of Alternative 'A'

Analysis indicates Option A resolves identified deficiencies, and is potentially least impacting and least cost. Solution offers:

- Shortest route
- Lowest Cost
- Most robust solution, offering longest term relief
- Injection of new interconnection to region

Glebe – Potomac River Study Area





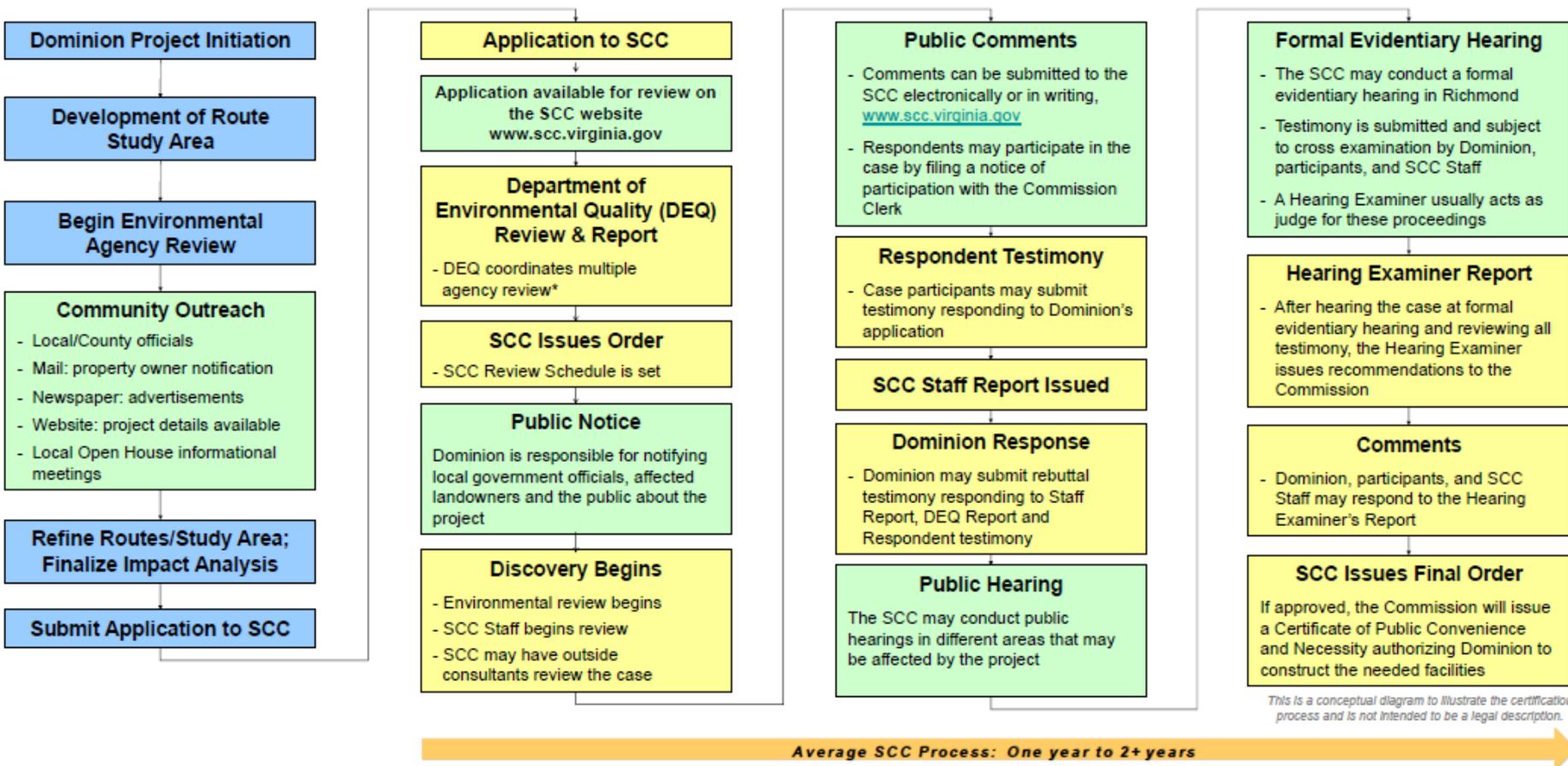
Mission Statement

The State Corporation Commission will:

- ❑ Strive to apply law and regulation to balance the interests of citizens, businesses, and customers in regulating Virginia's business and economic concerns, and
- ❑ Work continually to improve the regulatory and administrative processes.

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.



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



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

Community Outreach Pre-SCC Filing

Local, State and Federal Officials:

- Meetings with public officials, staff and administrative teams

Public Outreach To-Date:

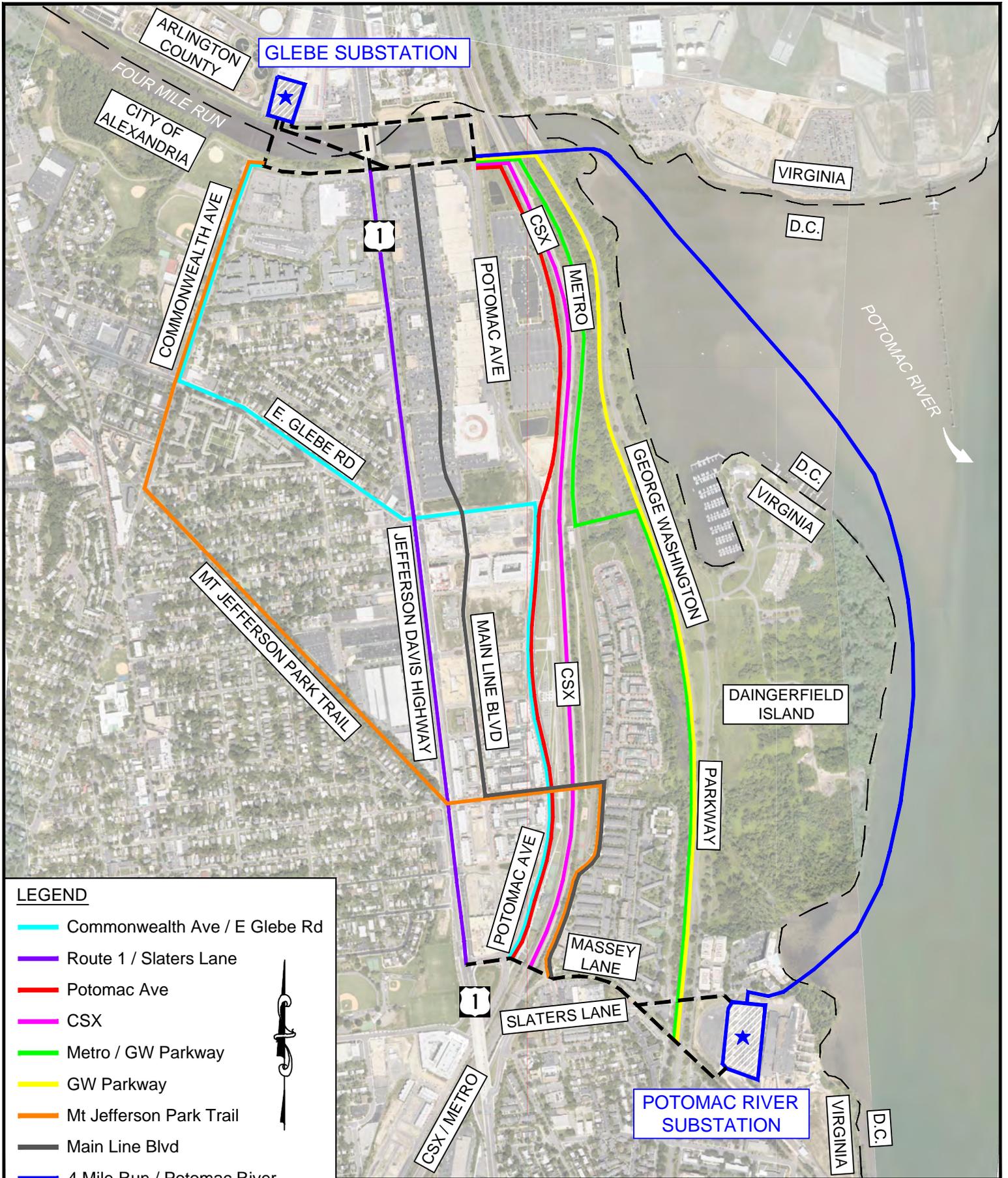
- Federation of Civic Associations, North Old Town Independent Civic Association, Alexandria Chamber of Commerce, Alexandria Economic Development Partnership, Federal and State Agencies, Other Key stakeholders

Ongoing Public Outreach:

- Website available at www.dom.com keyword: “*Glebe*” (launched)
- Open House event – Oct. 1, 2014, public notices mailed and placed in local papers
- Dedicated toll-free number: 1-888-291-0291, email address: powerline@dom.com
- Letters and fact sheets mailed to nearby landowners (Sept. 2014)

Target Schedule

April – June 2014	Initial outreach to state and local officials
June – Sept. 2014	Public outreach, letters, website, open house
Late Nov. 2014	Application submitted with the SCC for approval 12 months
Concurrent with SCC review	Secure necessary permits for construction
Winter 2015	Community outreach and notification of intent to construct
Spring 2016	Construction scheduled to begin, pending approvals
Spring 2018	Transmission line needed in service



LEGEND

- Commonwealth Ave / E Glebe Rd
- Route 1 / Slaters Lane
- Potomac Ave
- CSX
- Metro / GW Parkway
- GW Parkway
- Mt Jefferson Park Trail
- Main Line Blvd
- 4 Mile Run / Potomac River
- Possible Tie-In Routes
- Jurisdictional Boundaries

SCALE:
1"=1,000'

**GLEBE SUBSTATION TO
POTOMAC RIVER SUBSTATION
PRELIMINARY ROUTING STUDY
SEPTEMBER 2014**



Dominion®



ABINGDON

SLATERS

GEORGE WASHINGTON MEMORIAL
GEORGE WASHINGTON MEMORIAL

ABINGDON

DEVON

MICHIGAN

ABINGDON

PEPCO Station C Substation

Map prepared by the City of Alexandria

