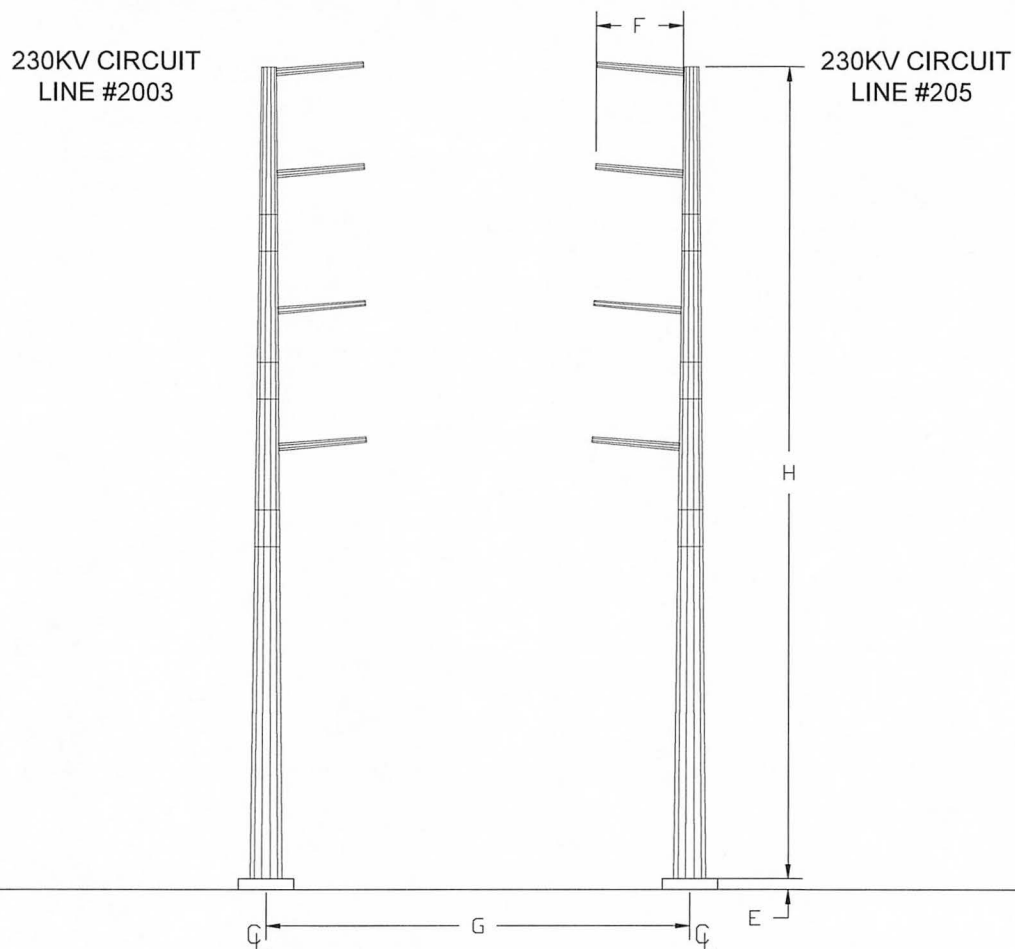


CHESTERFIELD - STRUCTURE 205/19A, 2003/25  
STRUCTURES #205/16, 2003/21 - #205/19, 2003/25



DOUBLE CIRCUIT 2-POLE STRUCTURE

- |                                   |  |
|-----------------------------------|--|
| A. MAPPING OF THE ROUTE:          | SEE ATTACHMENT II.B.5  |
| B. RATIONALE FOR STRUCTURE TYPE:  | MAINTAINS THE EXISTING CIRCUITS VERTICAL CONFIGURATION.                                      |
| C. LENGTH OF R/W (STRUCTURE QTY): | 0.74 MILES (1)   |
| D. STRUCTURE MATERIAL:            | WEATHERING STEEL   |
| RATIONALE FOR MATERIAL:           | WEATHERING STEEL WAS SELECTED TO MATCH THE STEEL POLE STRUCTURES CARRYING LINES #100 & #2049 |
| E. FOUNDATION MATERIAL:           | CONCRETE   |
| AVERAGE FOUNDATION REVEAL:        | SEE NOTE 2   |
| F. AVERAGE WIDTH AT CROSS ARM:    | 12'  |
| G. AVERAGE WIDTH AT BASE:         | 57' BETWEEN POLES, 6.5' DIAMETER FOUNDATION (SEE NOTE 3)                                     |
| H. MINIMUM STRUCTURE HEIGHT:      | 160'   |
| MAXIMUM STRUCTURE HEIGHT:         | 160'   |
| AVERAGE STRUCTURE HEIGHT:         | 160'   |
| I. AVERAGE SPAN LENGTH (RANGE):   | 633' (173' - 1073')  |
| J. MINIMUM CONDUCTOR-TO-GROUND:   | 22.5' (AT MAXIMUM OPERATING TEMPERATURE)   |

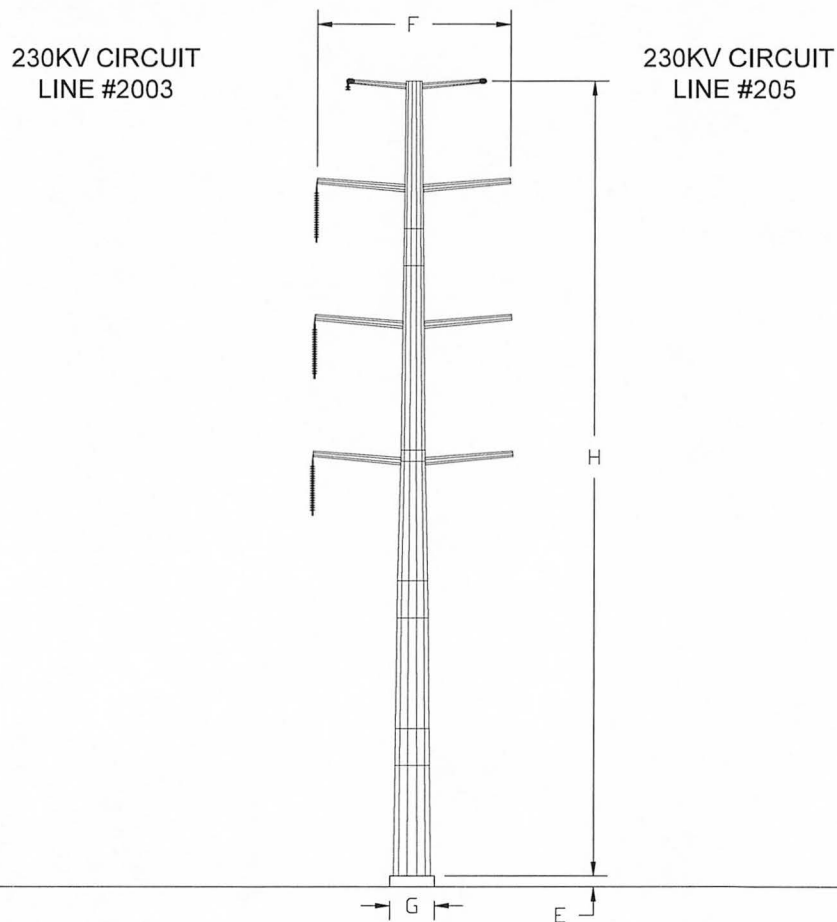
NOTE: 1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.

2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'.

3. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING.

4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE.

CHESTERFIELD - STRUCTURE 205/19A, 2003/25  
STRUCTURES #205/16, 2003/21 - #205/19, 2003/25



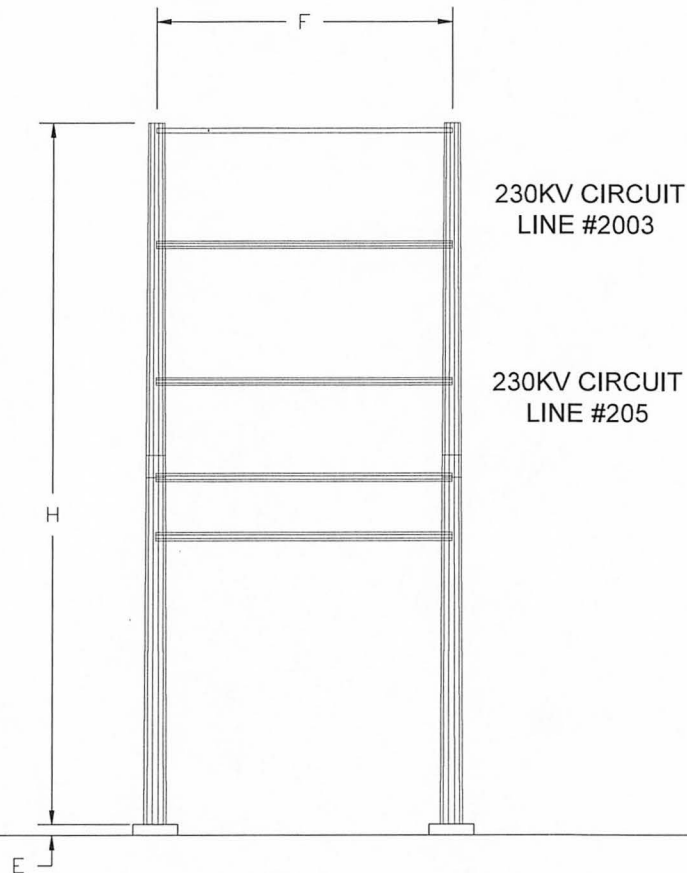
DOUBLE CIRCUIT 1-POLE STRUCTURE

- |                                   |  |
|-----------------------------------|--|
| A. MAPPING OF THE ROUTE:          | SEE ATTACHMENT II.B.5  |
| B. RATIONALE FOR STRUCTURE TYPE:  | MAINTAINS THE EXISTING CIRCUITS VERTICAL CONFIGURATION.                                      |
| C. LENGTH OF R/W (STRUCTURE QTY): | 0.74 MILES (1)   |
| D. STRUCTURE MATERIAL:            | WEATHERING STEEL   |
| RATIONALE FOR MATERIAL:           | WEATHERING STEEL WAS SELECTED TO MATCH THE STEEL POLE STRUCTURES CARRYING LINES #100 & #2049 |
| E. FOUNDATION MATERIAL:           | CONCRETE   |
| AVERAGE FOUNDATION REVEAL:        | SEE NOTE 2   |
| F. AVERAGE WIDTH AT CROSS ARM:    | 26'  |
| G. AVERAGE WIDTH AT BASE:         | 7.5' DIAMETER FOUNDATION (SEE NOTE 3)  |
| H. MINIMUM STRUCTURE HEIGHT:      | 130'   |
| MAXIMUM STRUCTURE HEIGHT:         | 130'   |
| AVERAGE STRUCTURE HEIGHT:         | 130'   |
| I. AVERAGE SPAN LENGTH (RANGE):   | 633' (173' - 1073')  |
| J. MINIMUM CONDUCTOR-TO-GROUND:   | 22.5' (AT MAXIMUM OPERATING TEMPERATURE)   |

- NOTE: 1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'.
3. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING.
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE.



CHESTERFIELD - STRUCTURE 205/19A, 2003/25  
STRUCTURES #205/16, 2003/21 - #205/19, 2003/25

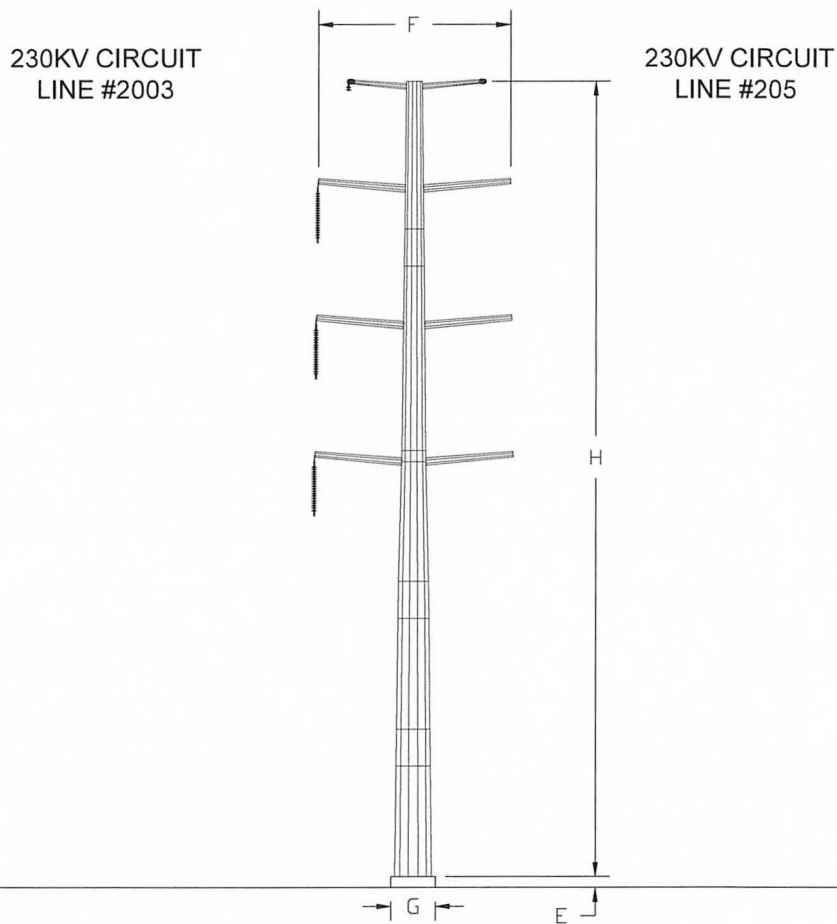


DOUBLE CIRCUIT H-FRAME SWITCH STRUCTURE

- |                                   |  |
|-----------------------------------|--|
| A. MAPPING OF THE ROUTE:          | SEE ATTACHMENT II.B.5  |
| B. RATIONALE FOR STRUCTURE TYPE:  | TO ROLL THE CONDUCTORS INTO A HORIZONTAL CONFIGURATION FOR SWITCH INSTALLATION.              |
| C. LENGTH OF R/W (STRUCTURE QTY): | 0.74 MILES (2)   |
| D. STRUCTURE MATERIAL:            | WEATHERING STEEL   |
| RATIONALE FOR MATERIAL:           | WEATHERING STEEL WAS SELECTED TO MATCH THE STEEL POLE STRUCTURES CARRYING LINES #100 & #2049 |
| E. FOUNDATION MATERIAL:           | CONCRETE   |
| TYPICAL FOUNDATION REVEAL:        | SEE NOTE 2   |
| F. AVERAGE WIDTH AT CROSS ARM:    | 40'  |
| G. AVERAGE WIDTH AT BASE:         | 40' BETWEEN LEGS OF H-FRAME, 6' DIAMETER FOUNDATION (SEE NOTE 3)                             |
| H. MINIMUM STRUCTURE HEIGHT:      | 95'  |
| MAXIMUM STRUCTURE HEIGHT:         | 105'   |
| AVERAGE STRUCTURE HEIGHT:         | 100'   |
| I. AVERAGE SPAN LENGTH (RANGE):   | 633' (173' - 1073')  |
| J. MINIMUM CONDUCTOR-TO-GROUND:   | 22.5' (AT MAXIMUM OPERATING TEMPERATURE)   |

- NOTE: 1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'.
3. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING.
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE.

## STRUCTURE #205/19A, 2003/25

DOUBLE CIRCUIT 1-POLE STRUCTURE

- |                                   |  |
|-----------------------------------|--|
| A. MAPPING OF THE ROUTE:          | SEE ATTACHMENT II.B.5  |
| B. RATIONALE FOR STRUCTURE TYPE:  | MAINTAINS THE EXISTING CIRCUITS VERTICAL CONFIGURATION.                          |
| C. LENGTH OF R/W (STRUCTURE QTY): | 0.13 MILES (1)   |
| D. STRUCTURE MATERIAL:            | WEATHERING STEEL   |
| RATIONALE FOR MATERIAL:           | WEATHERING STEEL WAS SELECTED TO MATCH THE ADJACENT WEATHERING STEEL STRUCTURES. |
| E. FOUNDATION MATERIAL:           | CONCRETE   |
| TYPICAL FOUNDATION REVEAL:        | SEE NOTE 2   |
| F. AVERAGE WIDTH AT CROSS ARM:    | 26'  |
| G. AVERAGE WIDTH AT BASE:         | 8' DIAMETER FOUNDATION (SEE NOTE 3)  |
| H. MINIMUM STRUCTURE HEIGHT:      | 140'   |
| MAXIMUM STRUCTURE HEIGHT:         | 140'   |
| AVERAGE STRUCTURE HEIGHT:         | 140'   |
| I. AVERAGE SPAN LENGTH (RANGE):   | 661'   |
| J. MINIMUM CONDUCTOR-TO-GROUND:   | 22.5' (AT MAXIMUM OPERATING TEMPERATURE)   |

- NOTE: 1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'.
3. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING.
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE.

## **II. DESCRIPTION OF THE PROPOSED PROJECT**

### **B. Line Design and Operational Features**

- 4. With regard to the proposed supporting structures for all feasible alternate routes, provide the maximum, minimum and average structure heights with respect to the whole route.**

Response: Not applicable.

## II. DESCRIPTION OF THE PROPOSED PROJECT

### B. Line Design and Operational Features

5. For lines being rebuilt, provide mapping showing existing and proposed structure heights for each individual structure within the ROW, as proposed in the application.

Response: See Attachment II.B.5 for structure locations.

See the table below for the existing and proposed heights of permanent structures related to the Rebuild Project. The proposed approximate structure heights are from the conceptual design created to estimate the cost of the Rebuild Project and are subject to change based on final engineering design. The approximate structure heights do not include foundation reveal and existing structures to remain are in bold with heights not included in proposed minimum, maximum and average.

Row #	Section	Existing Circuit#/ Structure #	Existing Structure Height (Feet)	Proposed Circuit # / Structure #	Proposed Structure Height (Feet)
1	Chesterfield Substation	205/1B & 2003/1A	65	205/1B & 2003/1A	65
2	Chesterfield Power Station	205/1A, 208/97	105	205/1A, 208/97	105
3		205/1C, 211/1	100	205/1C, 211/1	100
4		2003/1	57	2003/1	65
5		2003/2	57	2003/2	65
6		2003/3	61	2003/3	60
7		2003/4	42	2003/4	50
8		2003/5	61	2003/5	75
9		205/1, 2003/6	105	205/1, 2003/6	110
11		205/2, 2003/7	119	205/2, 2003/7	116
12		205/3, 2003/8	116	205/3, 2003/8	120
13		205/4, 2003/9	124	205/4, 2003/9	128
14		Chesterfield Power Station - Tyler Substation	205/5, 2003/10	109	205/5, 2003/10
15	205/6, 2003/11		111	205/6, 2003/11	115
16	205/7, 2003/12		116	205/7, 2003/12	120
17	205/8, 2003/13		106	205/8, 2003/13	110
18	205/9, 2003/14		106	205/9, 2003/14	110
19	205/10, 2003/15		131	205/10, 2003/15	130
20	205/11, 2003/16		134	205/11, 2003/16	135
21	205/12, 2003/17		126	205/12, 2003/17	130
22	205/13, 2003/18		116	205/13, 2003/18	125
23	205/14, 2003/19		131	205/14, 2003/19	135
24	205/15, 2003/20		131	205/15, 2003/20	135
25	205/16, 2003/21		131	205/15A, 2003/20A	130
26	-	-	205/16, 2003/21	95	
27	Tyler Substation	228/16A	110	228/16A, 211/16A	110
28		2003/21A, 211/16A	95	2003/21A	95
29		205/16A	52	205/16A	52
30	Tyler Substation - Structure #205/19A, #2003/25	205/17, 2003/22	131	205/17, 2003/22	130
31		205/18, 2003/23	116	205/18, 2003/23	105
32		205/19, 2003/24	160	2003/24, 205/19	160
33		205/19A, 2003/25	140	205/19A, 2003/25	140
Minimum		Existing	42.0	Proposed	50.0
Maximum			160.0		160.0
Average			109.4		111.7



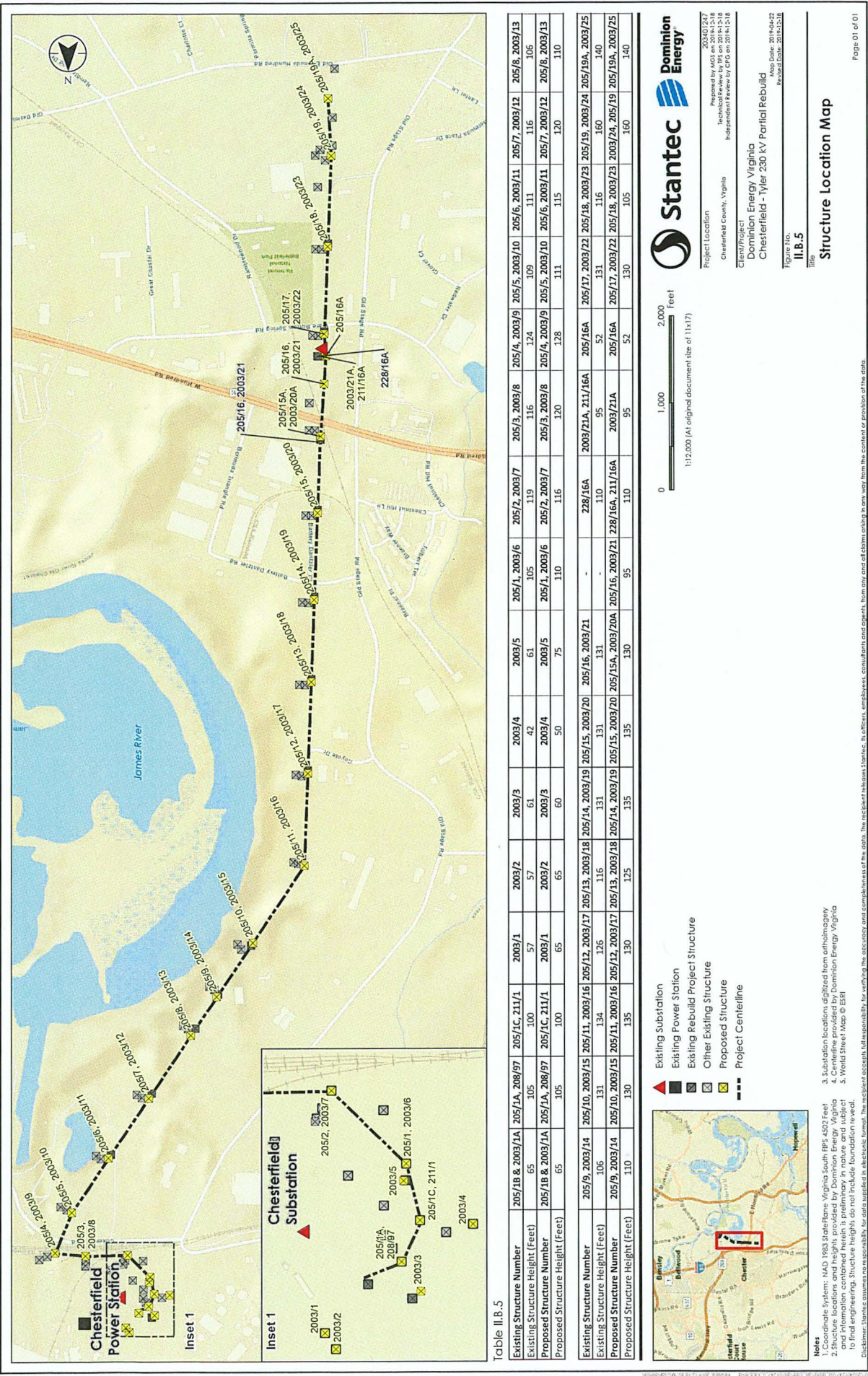


Table II.B.5

Existing Structure Number	205/18 & 2003/14	205/1A, 208/97	205/1C, 211/1	2003/1	2003/2	2003/3	2003/4	2003/5	205/1, 2003/6	205/2, 2003/7	205/3, 2003/8	205/4, 2003/9	205/5, 2003/10	205/6, 2003/11	205/7, 2003/12	205/8, 2003/13
Existing Structure Height (Feet)	65	105	100	57	57	61	42	61	105	119	116	124	109	111	116	106
Proposed Structure Number	205/18 & 2003/14	205/1A, 208/97	205/1C, 211/1	2003/1	2003/2	2003/3	2003/4	2003/5	205/1, 2003/6	205/2, 2003/7	205/3, 2003/8	205/4, 2003/9	205/5, 2003/10	205/6, 2003/11	205/7, 2003/12	205/8, 2003/13
Proposed Structure Height (Feet)	65	105	100	65	65	60	50	75	110	116	120	128	111	115	120	110
Existing Structure Number	205/9, 2003/14	205/10, 2003/15	205/11, 2003/16	205/12, 2003/17	205/13, 2003/18	205/14, 2003/19	205/15, 2003/20	205/16, 2003/21	-	228/16A	2003/21A, 211/16A	205/16A	205/17, 2003/22	205/18, 2003/23	205/19, 2003/24	205/19A, 2003/25
Existing Structure Height (Feet)	106	131	134	136	116	131	131	131	-	110	95	52	131	116	160	140
Proposed Structure Number	205/9, 2003/14	205/10, 2003/15	205/11, 2003/16	205/12, 2003/17	205/13, 2003/18	205/14, 2003/19	205/15, 2003/20	205/16, 2003/21	205/16, 2003/22	228/16A, 211/16A	2003/21A	205/16A	205/17, 2003/22	205/18, 2003/23	2003/24, 205/19	205/19A, 2003/25
Proposed Structure Height (Feet)	110	130	135	130	125	135	135	130	95	110	95	52	130	105	160	140

Project Location  
Chesterfield County, Virginia

Client/Project  
Dominion Energy Virginia  
Chesterfield - Tyler 230 KV Partial Rebuild

Figure No.  
II.B.5

Title  
Structure Location Map

0 1,000 2,000 Feet

1:12,000 (At original document size of 11x17)

Existing Substation  
Existing Power Station  
Existing Rebuild Project Structure  
Other Existing Structure  
Proposed Structure  
Project Centerline

**Notes**

1. Coordinate System: NAD 1983 StatePlane Virginia South IPSS 4507 Feet  
2. Structure locations and heights provided by Dominion Energy, Virginia  
3. Substation locations digitized from orthoregistry  
4. Centerline provided by Dominion Energy, Virginia  
5. World Street Map © ESRI

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

## II. DESCRIPTION OF THE PROPOSED PROJECT

### B. Line Design and Operational Features

6. Provide photographs for typical existing facilities to be removed, comparable photographs or representations for proposed structures, and visual simulations showing the appearance of all planned transmission structures at identified historic locations within one mile of the proposed centerline and in key locations identified by the Applicant.

Response: (a) *Photographs for typical existing facilities to be removed*

See Attachments II.B.6.a.i-ii for representative photographs of typical existing structures.

(b) *Comparable photographs or representations for proposed structures*

See Attachments II.B.6.b.i-iii for representative photographs of proposed structures.

(c) *Visual simulations from historic and other key locations*

Visual simulations showing the appearance of proposed transmission structures are provided for historic properties where the Rebuild Project will be visible. These simulations were created using GIS modeling to depict whether the existing and proposed structures are or will be visible from historic properties. Observation Points (“OPs”) used for the simulations are indicated on the map provided as Attachment II.B.6.c.i. Attachments II.B.6.c.ii-xiv provide existing photographs and simulations of the proposed structures from the selected OPs, where visible. The below table identifies the historic properties evaluated.

Historic Property	OP	Comments
Osborne’s Naval Battle Site	1	No Visibility of Existing or Proposed Structures / No Access within 1 Mile of Line
Howlett Line/Parker’s Battery/Parker’s Battery Earthworks	5	Tyler Substation
Ware Bottom Church Battlefield	2-7	Situated Throughout Existing Line
Proctor’s Creek Battlefield/ Drewry’s Bluff (2nd) Battlefield/ Fort Darling/ Fort Drewry	6,7	Located at Southern End of Line
Battle of Chaffin’s Farm/New Market Heights Battlefield	1	No Visibility of Existing or Proposed Structures / No Access within 1 Mile of Line

Historic Property	OP	Comments
Assault on Petersburg/Petersburg Battlefield II	4	Situated along West Hundred Road
Richmond National Battlefield Park	5	Tyler Substation
Battery Dantzler Park	3	Not Eligible or Listed / No Visibility
Port Walthall Junction Battlefield, Indian Hills Road	8	Includes Simulation of Proposed Chesterfield-Hopewell Structure
Swift Creek Battlefield/Arrowfield Church	8	Includes Simulation of Proposed Chesterfield-Hopewell Structure

See Attachment III.B.3 for visual simulations of key locations evaluated.



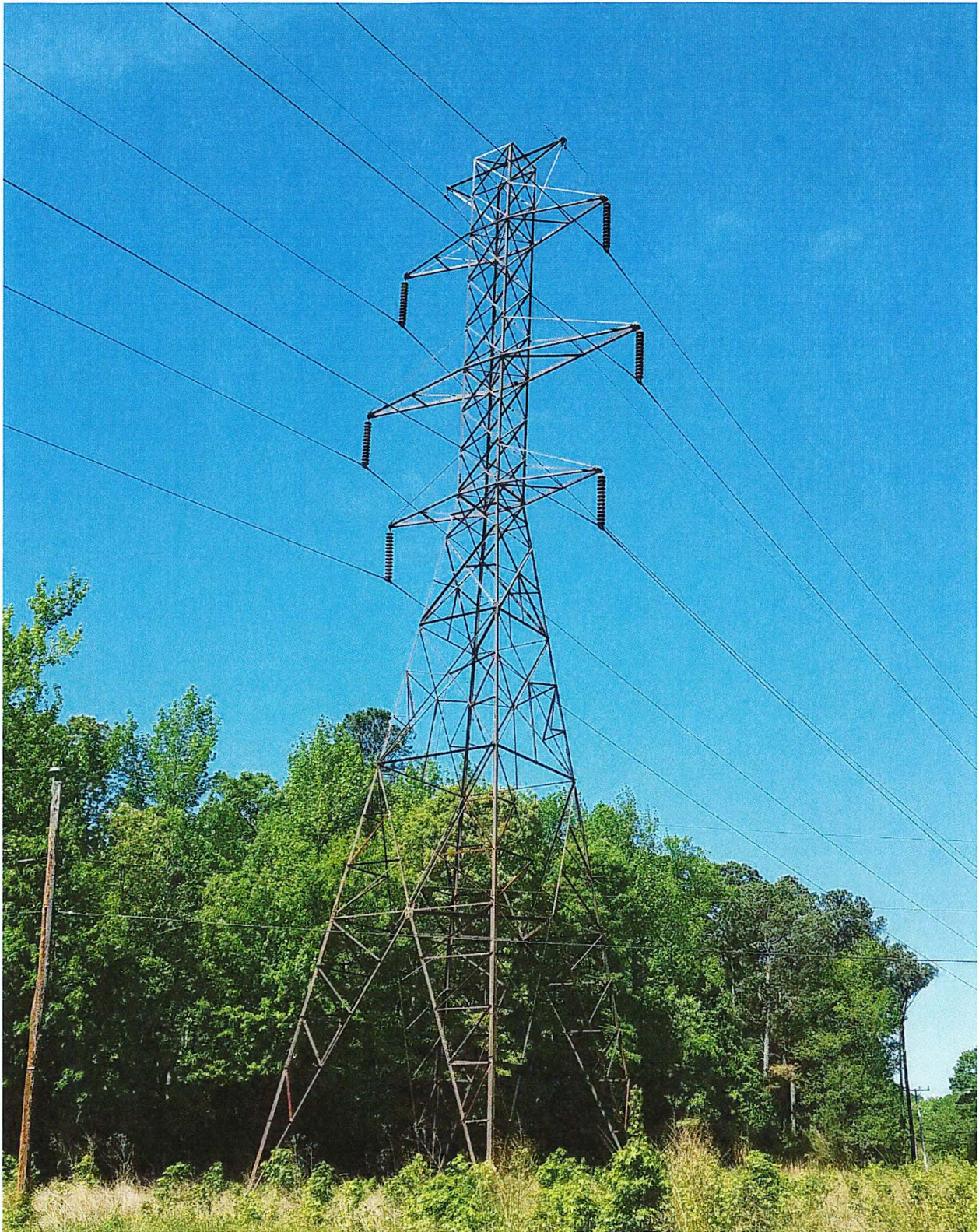


Photograph provided by Stantec

**Existing Angle Structure Type:  
Weathering Steel Lattice Tower**

Attachment II.B.6.a.i





Photograph provided by Stantec

**Existing Tangent Structure Type:  
Weathering Steel Lattice Tower**

Attachment II.B.6.a.ii





Representation Provided by Dominion Energy

**Proposed Angle Structure Type:  
Weathering Steel 2-Pole Double Deadend**

*\*Refer to Attachment II.b.3.vii for proposed orientation.*

Attachment II.B.6.b.i





Representation Provided by Dominion Energy

**Proposed Tangent Structure Type: Weathering  
Steel Monopole Tangent V-String**

*\*Refer to Attachment II.b.3.vii for proposed orientation.*

Attachment II.B.6.b.ii





Representation Provided by Dominion Energy

**Proposed Tangent Structure Type:  
Weathering Steel Monopole Tangent Double Deadend**

*\*Refer to Attachment II.b.3.vii for proposed orientation.*

Attachment II.B.6.b.iii









**OP 1: Existing (No Visibility)**  
**No Access within 1 mile of Line**  
**Battle of Chaffin's Farm, New Market Road, New**  
**Market Heights Battlefield (DHR #043-0307), Osborne's**  
**Naval Battle (DHR #020-0121)**

Attachment II.B.6.c.ii

Representation Provided by Stantec  
 \*Subject to final engineering







Representation Provided by Stantec  
\*Subject to final engineering

**OP 2: Existing (No Visibility)**  
**Henricus Historical Park, Ware Bottom Church**  
**Battlefield (DHR #020-5319)**



Attachment II.B.6.c.iii





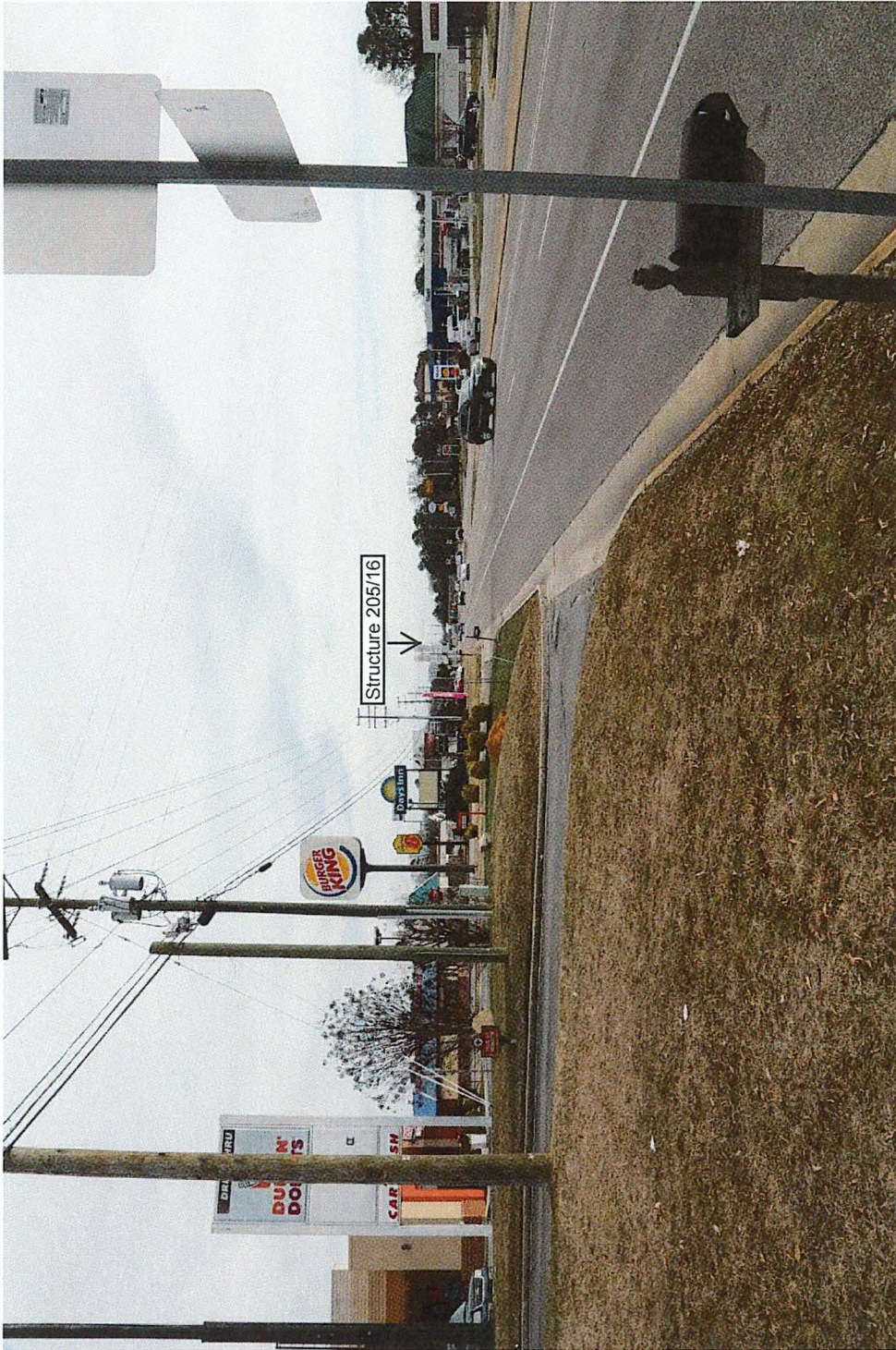
**OP 3: Existing (No Visibility)  
Battery Dantzler Park**

Attachment II.B.6.c.iv

Representation Provided by Stantec  
Subject to final engineering







Representation Provided by Stantec  
 \*Subject to final engineering

**OP 4: Existing**  
**Drewry's Bluff Battlefield, Fort Darling, Fort Drewry,**  
**Proctor's Creek Battlefield (DHR #020-5320); Assault on**  
**Petersburg, Petersburg Battlefield II (DHR #123-5025);**  
**Ware Bottom Church Battlefield (DHR #020-5319)**

Attachment II.B.6.c.v



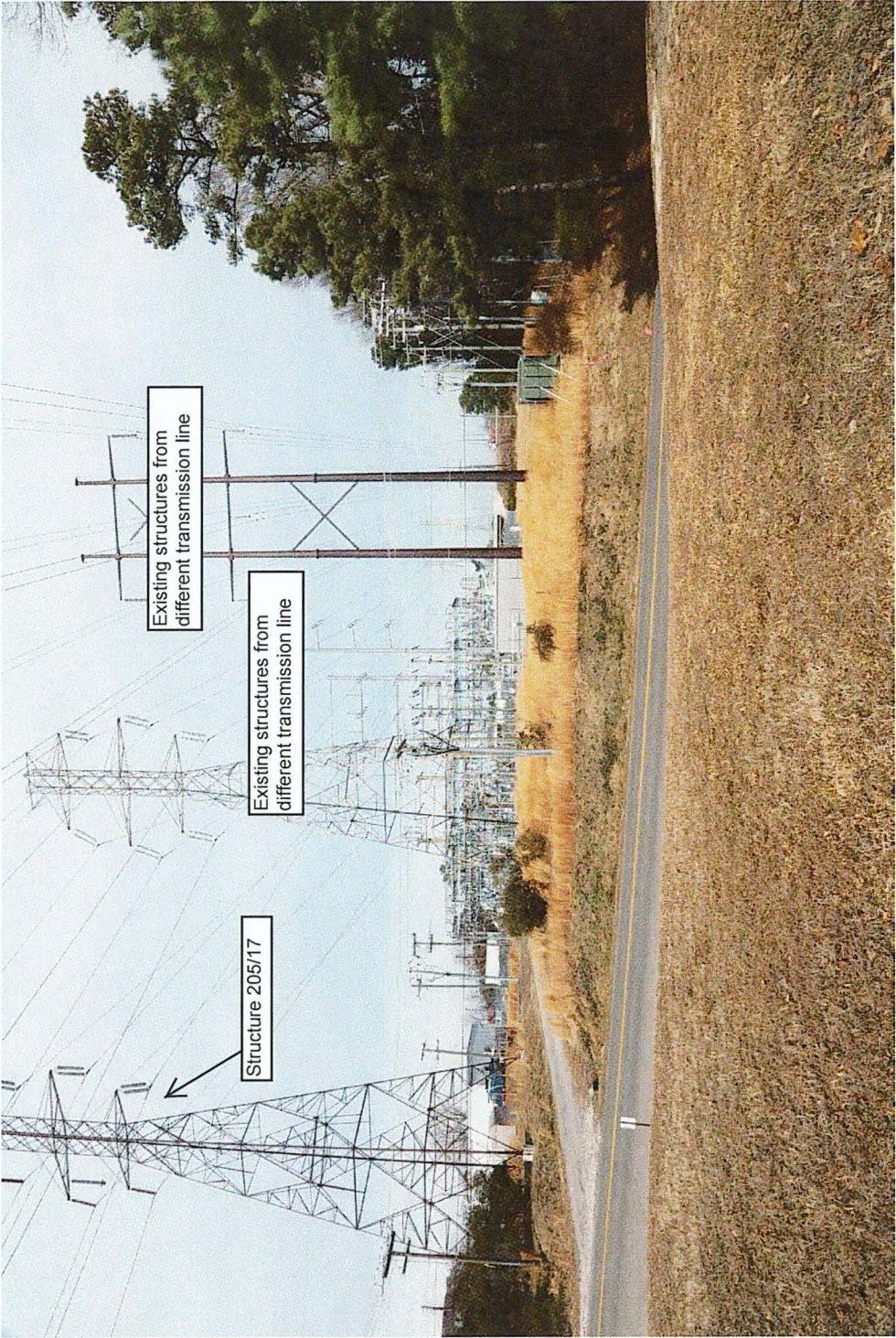


Representation Provided by Stantec  
 \*Subject to final engineering

**OP 4: Proposed**  
**Drewry's Bluff Battlefield, Fort Darling, Fort Drewry,**  
**Proctor's Creek Battlefield (DHR #020-5320); Assault on**  
**Petersburg, Petersburg Battlefield II (DHR #123-5025);**  
**Ware Bottom Church Battlefield (DHR #020-5319)**

Attachment II.B.6.c.vi





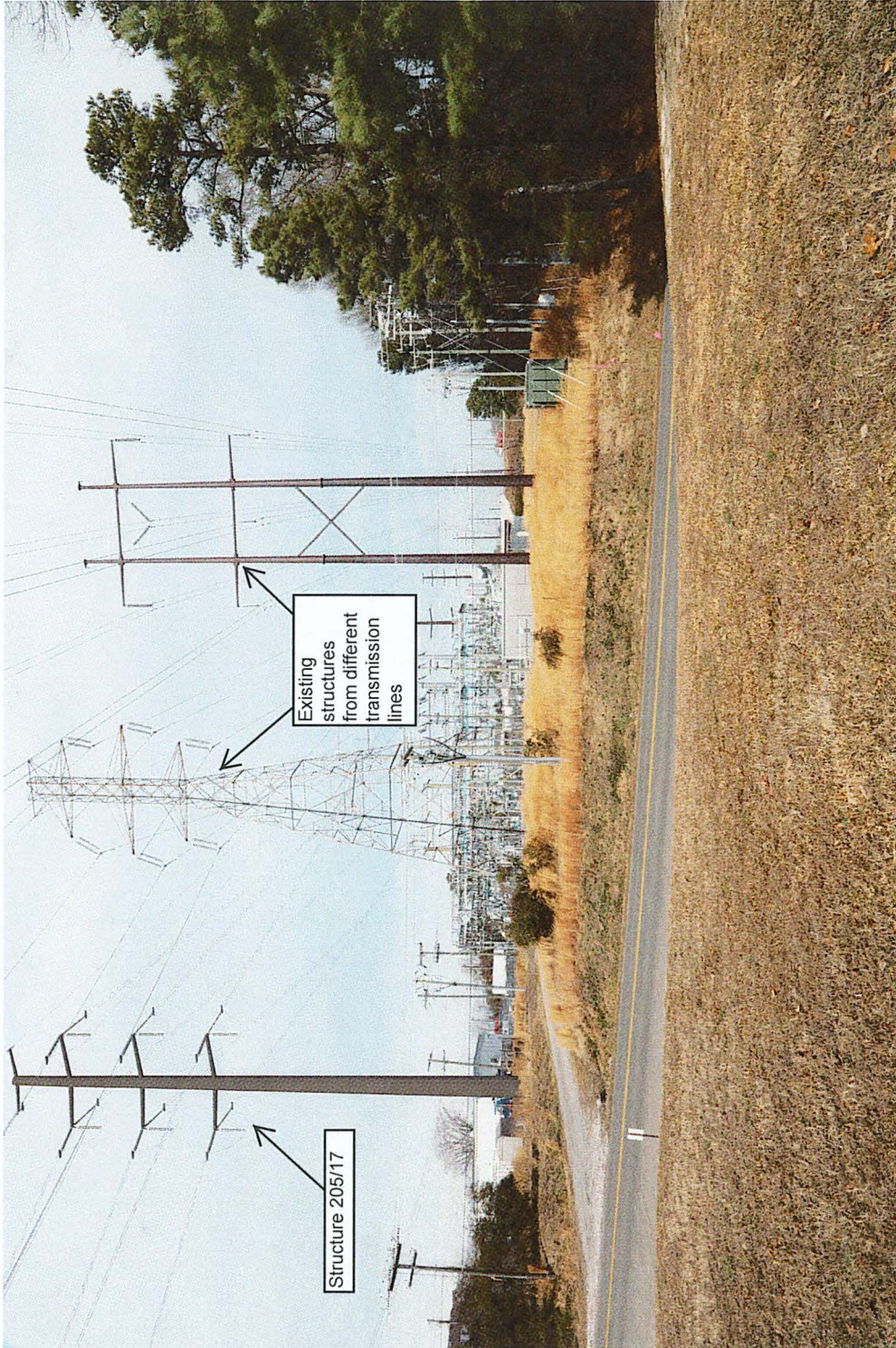
**OP 5: Existing  
Howlett Line, Parker's Battery, Parker's Battery  
Earthworks (DHR #020-0232); Richmond National  
Battlefield Park (DHR #020-0033)**

Attachment II.B.6.c.vii

Representation Provided by Stantec  
\*Subject to final engineering







**OP 5: Proposed  
Howlett Line, Parker's Battery, Parker's Battery  
Earthworks (DHR #020-0232); Richmond National  
Battlefield Park (DHR #020-0033)**

Attachment II.B.6.c.viii

Representation Provided by Stantec  
\*Subject to final engineering







Representation Provided by Stantec  
\*Subject to final engineering

**OP 6: Existing  
Drewry's Bluff Battlefield, Fort Darling, Fort Drewry,  
Proctor's Creek Battlefield (DHR #020-5320); Ware  
Bottom Church Battlefield (DHR #020-5319)**





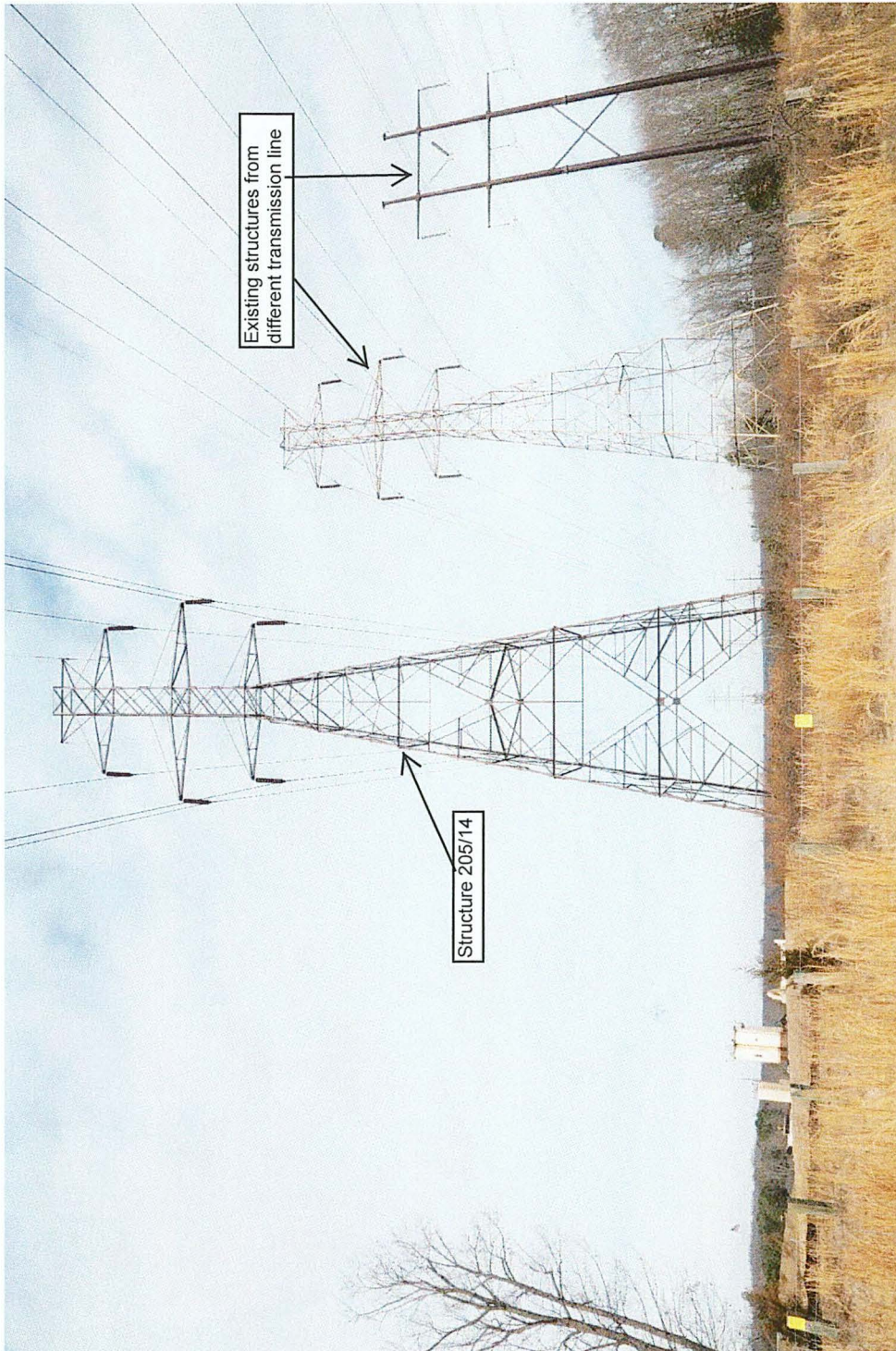
**OP 6: Proposed  
Drewry's Bluff Battlefield, Fort Darling, Fort Drewry,  
Proctor's Creek Battlefield (DHR #020-5320); Ware  
Bottom Church Battlefield (DHR #020-5319)**

Attachment II.B.6.c.x

Representation Provided by Stantec  
\*Subject to final engineering





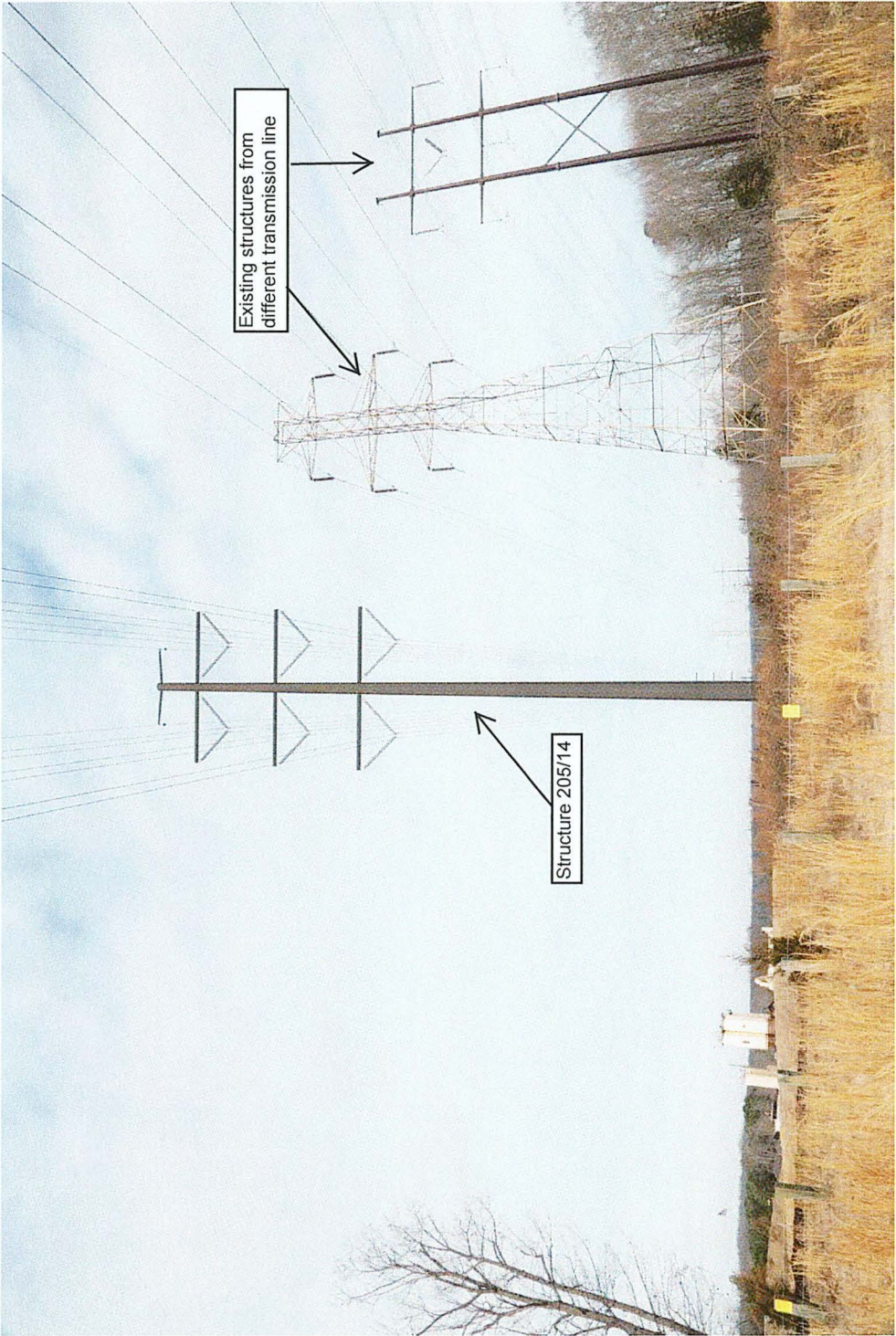


**OP 7: Existing  
Drewry's Bluff Battlefield, Fort Darling, Fort Drewry,  
Proctor's Creek Battlefield (DHR #020-5320); Ware  
Bottom Church Battlefield (DHR #020-5319)**

Representation Provided by Stantec  
\*Subject to final engineering

Attachment II.B.6.c.xi





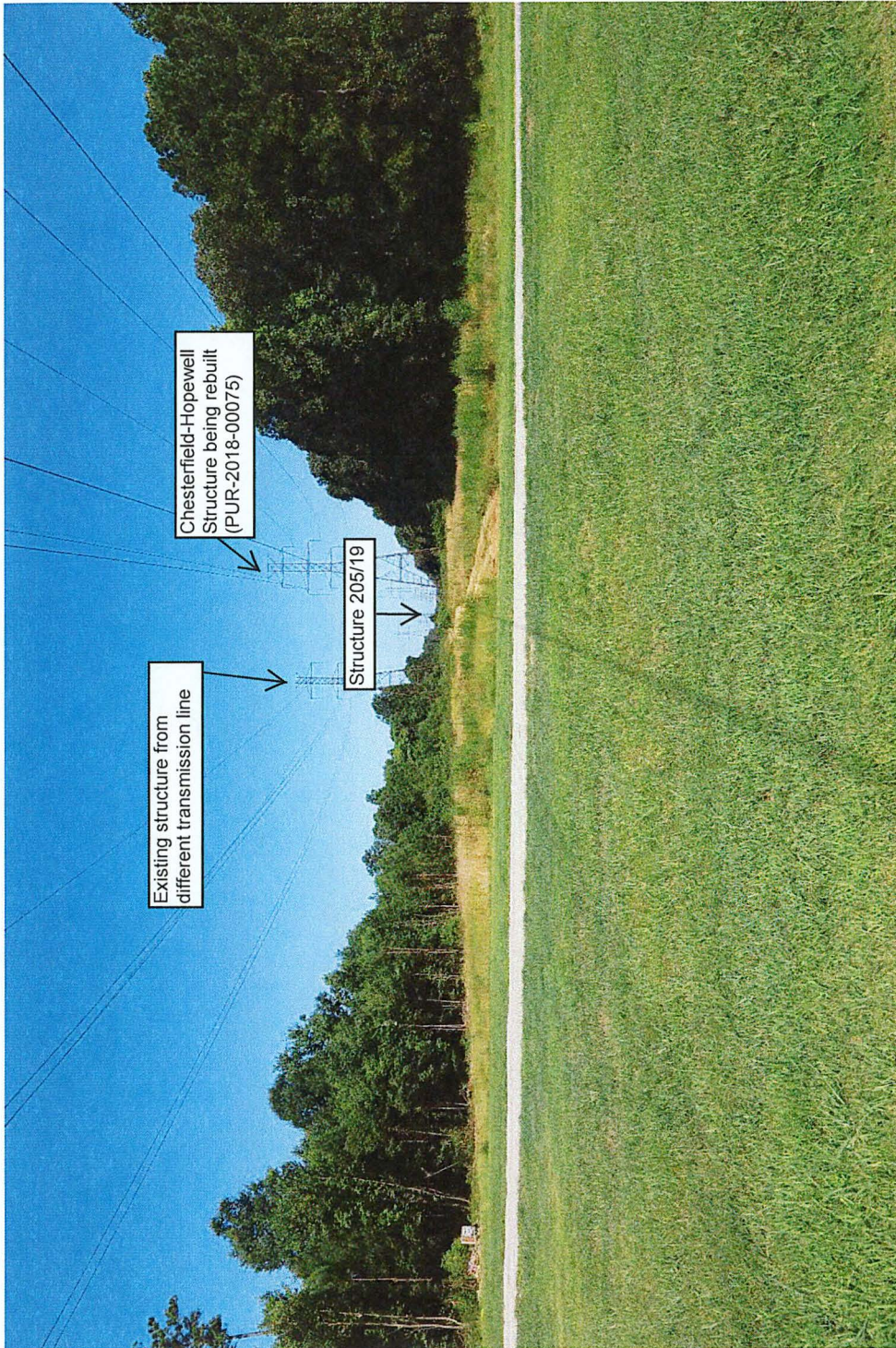
**OP 7: Proposed  
Drewry's Bluff Battlefield, Fort Darling, Fort Drewry,  
Proctor's Creek Battlefield (DHR #020-5320); Ware  
Bottom Church Battlefield (DHR #020-5319)**

Attachment II.B.6.c.xii

Representation Provided by Stantec  
\*Subject to final engineering







Representation Provided by Stantec  
\*Subject to final engineering

**OP 8: Existing**  
**Port Walthall Junction Battlefield, Indian Hills Road**  
**(DHR #020-5317); Swift Creek Battlefield, Arrowfield**  
**Church (DHR #020-5318)**





Representation Provided by Stantec  
\*Subject to final engineering



**OP 8: Proposed**  
**Port Walthall Junction Battlefield, Indian Hills Road**  
**(DHR #020-5317); Swift Creek Battlefield, Arrowfield**  
**Church (DHR #020-5318**

Attachment II.B.6.c.xiv

## II. DESCRIPTION OF THE PROPOSED PROJECT

- C. Describe and furnish plan drawings of all new substations, switching stations, and other ground facilities associated with the proposed project. Include size, acreage, and bus configurations. Describe substation expansion capability and plans. Provide one-line diagrams for each.**

Response: The Rebuild Project will require minor work at both Chesterfield Substation and Tyler Substation.

The existing Line #205 switches at Tyler Substation are currently rated for 1200A. These switches will be removed from the substation and replaced with 3000A switches relocated on the right-of-way.

At Chesterfield Substation and Tyler Substation, minor conduit work will be required to route the new fiber optic cable into the control enclosure.

Because the work required at both Chesterfield Substation and Tyler Substation does not create any rearrangement of the existing substations, the Company has not included one-line diagrams.



### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES**

- A. Describe the character of the area that will be traversed by this line, including land use, wetlands, etc. Provide the number of dwellings within 500 feet, 250 feet and 100 feet of the centerline, and within the ROW for each route considered. Provide the estimated amount of farmland and forestland within the ROW that the proposed project would impact.**

Response: **Land Use**

Based on a review of local land use maps, the Rebuild Project traverses approximately 3.2 miles through Chesterfield County in an area that is largely characterized as industrial, light residential, and business/commercial land use.

#### **Dwellings**

According to the Chesterfield County GIS parcel and zoning data and aerial interpretation, there are eight dwellings located within 500 feet of the centerline, one dwelling located within 250 feet of the centerline, and zero dwellings located within 100 feet of the centerline or within the right-of-way. This count is based on desktop data and has not been field verified.

#### **Farmland/Forests**

A total of 23.03 acres of prime farmland is located within the Rebuild Project right-of-way. See Attachment III.A.1. No portion of the existing right-of-way for the Rebuild Project is currently in agricultural use. Based upon a review of the Chesterfield County Comprehensive Plan, Chesterfield County does not have designated farmlands of local importance.

The transmission line right-of-way is regularly maintained to keep vegetation at the emergent and scrub-shrub level for the safe operation of the existing facilities. Because the proposed Rebuild Project is to take place within the existing right-of-way, no impact to forestland is expected.

#### **Wetlands**

The U.S. Geological Survey ("USGS") topographic quadrangles for Drewry's Bluff (1994) and Chester (1994) depict the study area as existing, cleared transmission line traversing through nearly level to steeply sloping terrain. Several drainages are depicted crossing the study area.

Within the Rebuild Project right-of-way, the Company delineated wetlands and other waters of the United States using the *Routine Determination Method* as outlined in the *1987 Corps of Engineers Wetland Delineation Manual* and methods described in the *2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (Version 2.0). This delineation of wetlands and other waters of the U.S. was performed for the

Chesterfield-Hopewell 230 kV Transmission Line Rebuild, which overlaps with the proposed Rebuild Project. The Company submitted the results of this delineation to the U.S. Army Corps of Engineers (“Corps”) in October 2018 for confirmation. See Attachment 2.D.1 of the DEQ Supplement. An additional 1,000 feet of right-of-way included in the Rebuild Project was not part of the Chesterfield-Hopewell 230 kV Transmission Line Rebuild project delineation. Therefore, the Company delineated wetlands with the additional right-of-way in March 2019. The results of the delineation were submitted to the Corps for confirmation in December 2019 (Attachment 2.D.2 of the DEQ Supplement). Total jurisdictional resources within the proposed Rebuild Project right-of-way are provided in the table below:

#### **Jurisdictional Resources within Rebuild Project Right-of-Way**

<b>Resource</b>	<b>Acreage (±)</b>
Palustrine Emergent Wetland	0.53
Palustrine Scrub-shrub Wetland	1.12
Open water	0.14
Jurisdictional Ditches	0.003 (64 linear feet)
Upper Perennial Streams	0.14 (1,496 linear feet)
Intermittent Streams	0.01 (346 linear feet)

Prior to construction, the Company will obtain any necessary permits to impact jurisdictional resources.

#### **Historic Features**

In accordance with the *Guidelines for Assessing Impacts of Proposed Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (2008)*, a Stage I Pre-Application Analysis was conducted by Stantec. This report was forwarded to VDHR on December 20, 2019, and is included as Attachment 2.H.1 of the DEQ Supplement.

No National Historic Landmark (“NHL”)-listed architectural resources are located within the 1.5-mile radius. One NRHP-listed resource and eight battlefields were identified in the 1.0-mile radius of the Rebuild Project. One of the battlefield resources, the Howlett Line, determined potentially eligible by VDHR, was evaluated during the current project as the resource is contributing to the Richmond National Battlefield Park.

Based upon the proposed changes to structure heights and design, it is anticipated that the Rebuild Project will have no impact to historic properties with no view of the project and a minimal impact to those historic properties that will view the

Rebuild Project, as shown in the table below. Consistent with its customary practice, the Company will coordinate with VDHR regarding the findings of the Stage I Pre-Application Analysis.

**Architectural Resources within or adjacent to the Rebuild Project Right-of-Way**

VDHR #	Resource Name	VDHR/NRHP Status	Distance to Centerline (Feet)	Impact
020-0121	Osborne's Naval Battle Site	NRHP-Eligible	1,512	None
020-0232/ 043-0033- 0059	Howlett Line/Parker's Battery/Parker's Battery Earthworks	Potentially Eligible	24	Minimal
020-5317/ VA 047	Port Walthall Junction Battlefield, Indian Hills Road	NRHP-Eligible	3,808	Minimal
020-5318/ VA 050	Swift Creek Battlefield/ Arrowfield Church	Potentially Eligible	3,716	Minimal
020-5319/ VA 054	Ware Bottom Church Battlefield	Potentially Eligible	0	Minimal
020-5320/ VA 053	Proctor's Creek Battlefield/ Drewry's Bluff (2nd) Battlefield/ Fort Darling/ Fort Drewry	Potentially Eligible	0	Minimal
043-0307/ VA 075	Battle of Chaffin's Farm/New Market Heights Battlefield	Potentially Eligible	3,755	None
123-5025/ VA 063	Assault on Petersburg/ Petersburg Battlefield II	Potentially Eligible	3,336	Minimal
043-0033	Richmond National Battlefield	NRHP Listing, VLR Listing	16	Minimal

A total of eight previously recorded archaeological sites were identified either within or immediately adjacent to the existing right-of-way. One of these archaeological sites is "eligible" and one other is considered "potentially eligible" for listing on the on the NRHP by VDHR. The remaining six archaeological sites have not been evaluated for NRHP eligibility. See also Section III.K of this Appendix.



Figure No.  
**Attachment III.A.1**

**Prime Farmland Map**

**Client/Project**  
Dominion Energy Virginia  
Chesterfield - Tyler 230 kV Partial Rebuild

**Project Location**  
Chesterfield County, Virginia

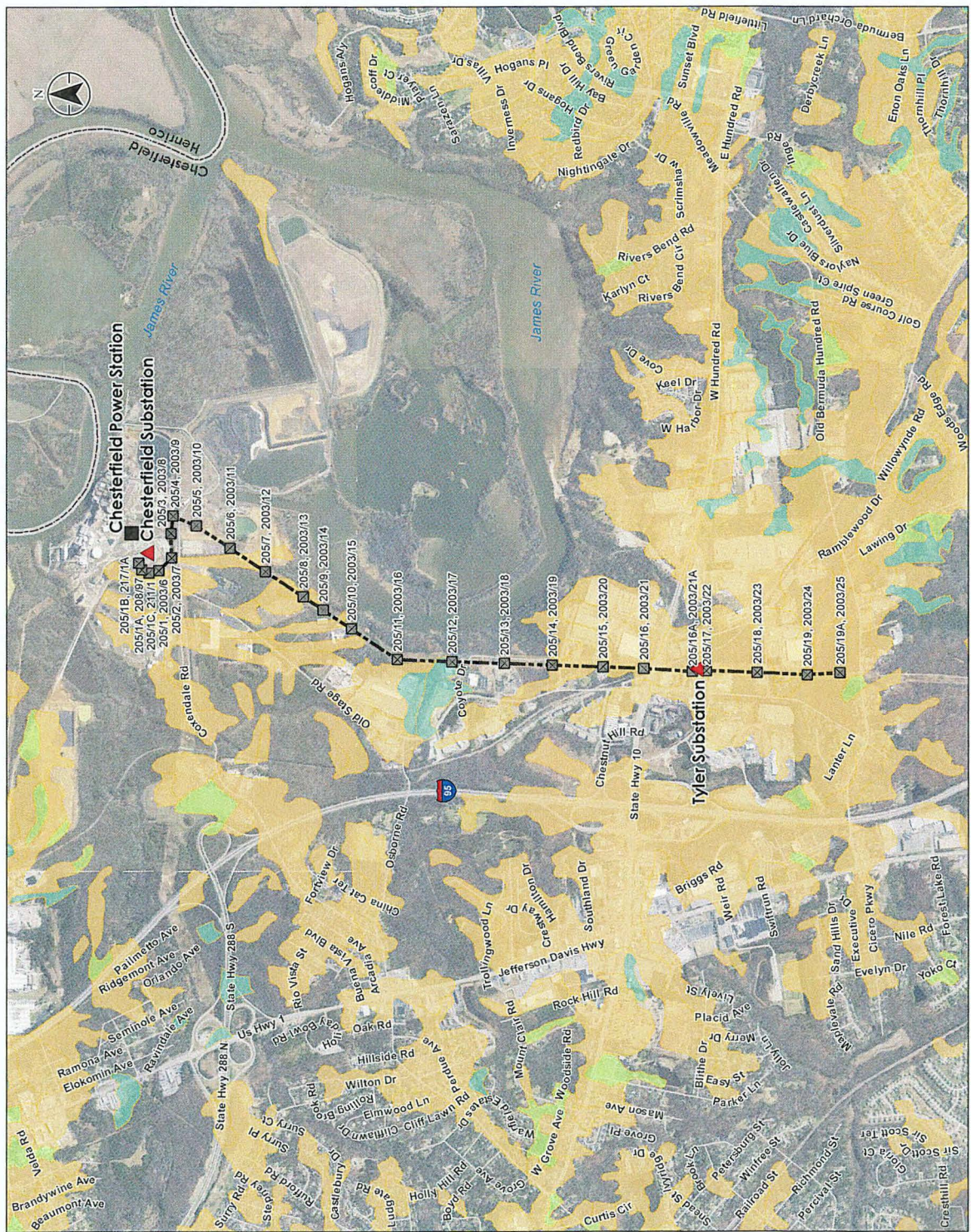
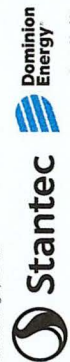
203401.247  
Prepared by L&E on 10/16/10  
Technical Review by CPG on 10/16/10  
Independent Review by CPG on 10/16/10



- Existing Substation
- Existing Power Station
- Existing Structure
- Project Centerline
- Prime Farmland
- Farmland of Statewide Importance
- Prime Farmland if Drained



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
  2. Base features provided by Dominion Energy Virginia
  3. Substation locations digitized from orthomage
  4. County boundaries provided by DCE
  5. County boundaries provided by DCE
  6. Soil data provided by Chesterfield County GIS
  7. Orthomage © VGN



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### III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

**B. Describe any public meetings the Applicant has had with neighborhood associations and/or officials of local, state or federal governments that would have an interest or responsibility with respect to the affected area or areas.**

Response: In accordance with Va. Code § 15.2-2202 E, a letter was delivered to the County Manager in Chesterfield County, Virginia, where the Rebuild Project is located. This letter is included as Attachment V.D.1. See Section V.D of this Appendix.

The project team discussed the details of the Rebuild Project with Chesterfield County Board of Supervisors and staff on several occasions leading up to publicly launching the project.

Information is provided to the public through an internet website dedicated to the Rebuild Project:

[www.dominionenergy.com/chesterfieldtyler](http://www.dominionenergy.com/chesterfieldtyler)

The website includes route maps, an explanation of need, a description of the Rebuild Project and its benefits, an overview video, information on the Commission review process, structure diagrams and simulations and answers to frequently asked questions.

Save the date postcards and letters were sent to more than 150 property owners and residents inviting them to attend a community open house event to learn details relating to project construction and the Commission process, and to answer any questions. Exemplars of the postcards and letters are included as Attachments III.B.1 and III.B.2, respectively.

A variety of graphics were presented to the public at the open houses, including simulations of the proposed Rebuild Project from key locations. These key location simulations are included as Attachment III.B.3.

The letter sent to property owners outlined the scope of the Rebuild Project, provided an overview map of the line, and invited recipients to visit [www.dominionenergy.com/chesterfieldtyler](http://www.dominionenergy.com/chesterfieldtyler) for more information regarding the Rebuild Project. See Attachment III.J.1 for a copy of the letter template. The open house was held on January 7, 2020 from 5 p.m. to 7 p.m. at Homewood Suites in Chester, Virginia. Six people attended the open house, including Chesterfield Board of Supervisor Jim Ingle.

In addition to the postcards and letters, advertisements for the open house were placed in the Chesterfield Observer and the Village News online and print newspapers prior to the event. Digital ads also ran in the Fairfax County Times, Loudoun Times Mirror and Sun Gazette. A copy of the advertisement placed in the Chesterfield Observer is provided in Attachment III.B.4; the same

advertisement was placed in the Village News. On January 1, 2020, the Chesterfield Observer published a news article providing details regarding the Rebuild Project. A copy of that article is attached as Attachment III.B.5.

All of the open house materials, including photograph renderings and an overview video, have been posted on the website for the Chesterfield-Tyler Partial Rebuild Project.

As part of preparing for this project, the Company researched the demographics of the surrounding communities using 2010 U.S. Census data. This information revealed that there are five Census Tracts within the Rebuild Project area that fall within a mile of the existing transmission line to be rebuilt. A review of ethnicity, income, age, and education census data identified populations within the study area that meet the U.S. Environmental Protection Agency threshold to be defined as Environmental Justice communities (“EJ Communities”).

Pursuant to Va. Code §§ 56-46.1 and 56-259 C, as well as Attachment 1 to these Guidelines, there is a strong preference for the use of existing rights-of-way whenever feasible. The Rebuild Project is within the existing right-of-way and will not require an increase in operating voltage or a significant average increase in structure heights. The Rebuild Project will include construction of a temporary line described in Section II.A.10 of this Appendix. Based on the analysis of the Rebuild Project, the Company does not anticipate disproportionately high or adverse impacts to the surrounding community and the EJ Communities located within the study area, consistent with the Rebuild Project design to reasonably minimize impacts.

In addition to its evaluation of impacts, the Company will engage the EJ Communities and others affected by the Rebuild Project in a manner that allows them to meaningfully participate in the project development and approval process so that their views and input can be taken into consideration.

Electric Transmission  
P.O. Box 26666  
Richmond, VA 23261



# Investing in Our Communities



**Local Power Line  
Project Information  
Enclosed**

Dominion Energy image. Not project specific.





## IMPORTANT

# Local Power Line Project Information

## Chesterfield-Tyler Electric Transmission Partial Rebuild Project

AT DOMINION ENERGY, we are committed to providing safe and reliable electricity to our neighbors. You are receiving this postcard because your property is near an electric transmission line currently being proposed for partial rebuild in Chesterfield County.

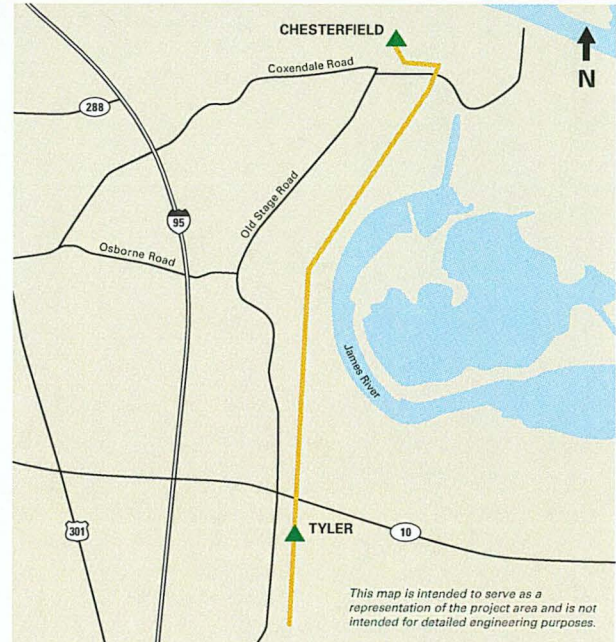
After more than five decades of service, the 3-mile double-circuit line is at the end of its service life and needs to be rebuilt to bring facilities up to current reliability and safety standards. Our plan is to replace the current lattice structures with new monopole structures. As we rebuild the line to current safety standards, we will also replace the conductor, fiber, and four structures south of our Tyler Substation.

We would like to invite neighbors to attend an informational meeting to learn more about the construction process. There will be no formal presentation at this meeting, but our subject matter experts will be on hand to answer any questions you may have about the project.

Please know that we are dedicated to working safely and courteously in your community. We will continue to keep you updated on our progress.

### CONTACT US

Visit our website at [DominionEnergy.com/chesterfieldtyler](https://www.dominionenergy.com/chesterfieldtyler) for project updates. Or contact us by calling 888-291-0190 or sending an email to [powerline@dominionenergy.com](mailto:powerline@dominionenergy.com).



### WHAT:

This proposed project is to rebuild a portion of an existing double-circuit 230 kV electric transmission line which is co-located with other transmission lines in an existing corridor. No new right of way will be needed as we replace lattice structures with monopole structures. Upon approval from the Virginia State Corporation Commission (SCC), construction is scheduled to begin in early 2022 and completed by late 2022.

### WHY:

The existing infrastructure has reached the end of its service life and needs to be replaced to maintain reliable service and comply with current safety standards. New monopole structures will be built in the same general location as the existing structures.

### WHERE:

The 3-mile transmission line is predominantly located between Dominion Energy's Chesterfield and Tyler Substations in Chesterfield County.

## INFORMATIONAL OPEN HOUSE

Tuesday, Jan. 7, 2020

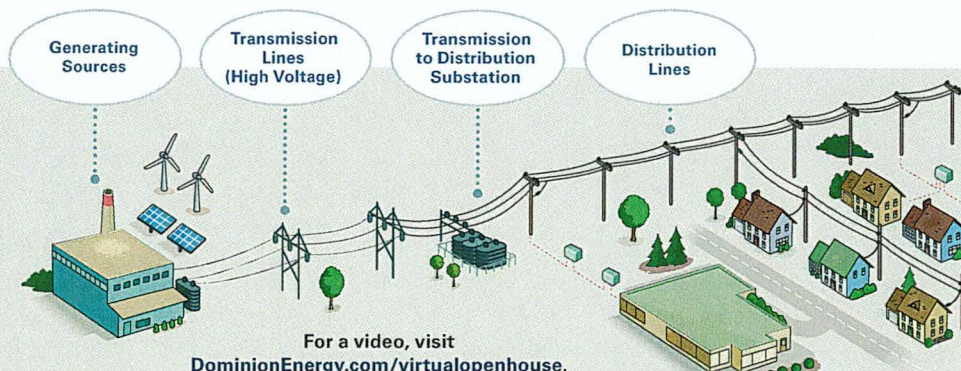
5 – 7 p.m.

Homewood Suites  
12810 Old Stage Road  
Chester, VA 23836

(drop by anytime during these hours)

### Delivering Clean, Safe, Affordable and Sustainable Energy

Transmission lines are the tall, high-voltage lines that carry electricity over long distances from power generation facilities to substations.



Dec. 19, 2019

**Chesterfield-Tyler Electric Transmission Partial Rebuild Project**

Dear Neighbor:

At Dominion Energy, we are committed to continually reviewing and analyzing our energy infrastructure to provide safe and reliable electric service to our neighbors. We are currently proposing to rebuild a portion of an aging double-circuit electric transmission line located near your property in Chesterfield County. The lines were built in 1962 and are nearing the end of their service life. The rebuild is necessary to bring facilities up to current reliability and safety standards.

The section of lines proposed for rebuild are approximately 3 miles in length and run parallel to other transmission lines within an existing corridor. As we rebuild the lines to current safety standards, we will also replace conductor, fiber, and four additional structures south of our Tyler Substation.

Prior to filing an application with the Virginia State Corporation Commission (SCC), we would like to take the opportunity to share more information about the project and gather feedback from the community. We invite you to attend our informational open house to learn more about the project. There will be no formal presentations at this event. However, our subject matter experts will be on hand to answer any questions you may have. We hope you can join us.

**Tuesday, Jan. 7, 2020  
Homewood Suites  
12810 Old Stage Road  
Chester, VA 23836  
5-7 p.m.  
(drop by anytime during these hours)**

*For quicker check-in, please complete the form enclosed and present it at the registration table.*

If you would like additional project details and updates, please visit our website at [DominionEnergy.com/chesterfieldtyler](http://DominionEnergy.com/chesterfieldtyler). You may also contact us by sending an email to [powerline@dominionenergy.com](mailto:powerline@dominionenergy.com) or calling 888-291-0190.

*Please note: This transmission rebuild project is not associated with Dominion Energy's coal ash closure activities at Chesterfield Power Station. To learn more about our coal ash closure plans, please visit [DominionEnergy.com/coalash](http://DominionEnergy.com/coalash).*

Sincerely,

The Electric Transmission Project Team

Enclosure



Please complete in print and bring this form to registration table.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Email: \_\_\_\_\_



# CHESTERFIELD

TRANSMISSION LINE PROJECT

## OVERVIEW MAP



① PHOTO VIEWPOINT

— TRANSMISSION LINE

Attachment III.B.3





# CHESTERFIELD

## TRANSMISSION LINE PROJECT

### PHOTO VIEWPOINT 1

DATE: 06/27/2019

TIME: 8:20 AM

DIRECTION: SOUTH



① PHOTO VIEWPOINT

— TRANSMISSION LINE



PHOTO SIMULATIONS ARE FOR DEMONSTRATION PURPOSES ONLY. FINAL DESIGN IS SUBJECT TO CHANGE PENDING PUBLIC UTILITY AND REGULATORY REVIEW.



# CHESTERFIELD

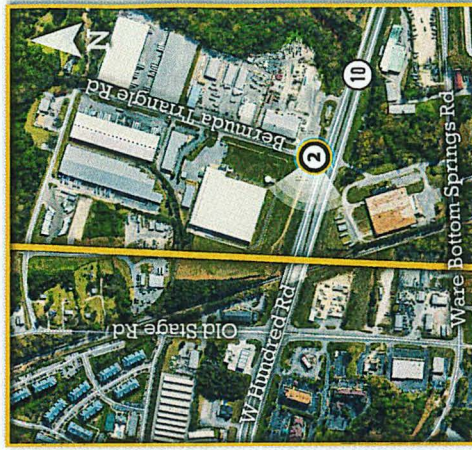
## TRANSMISSION LINE PROJECT

### PHOTO VIEWPOINT 2

DATE: 06/27/2019

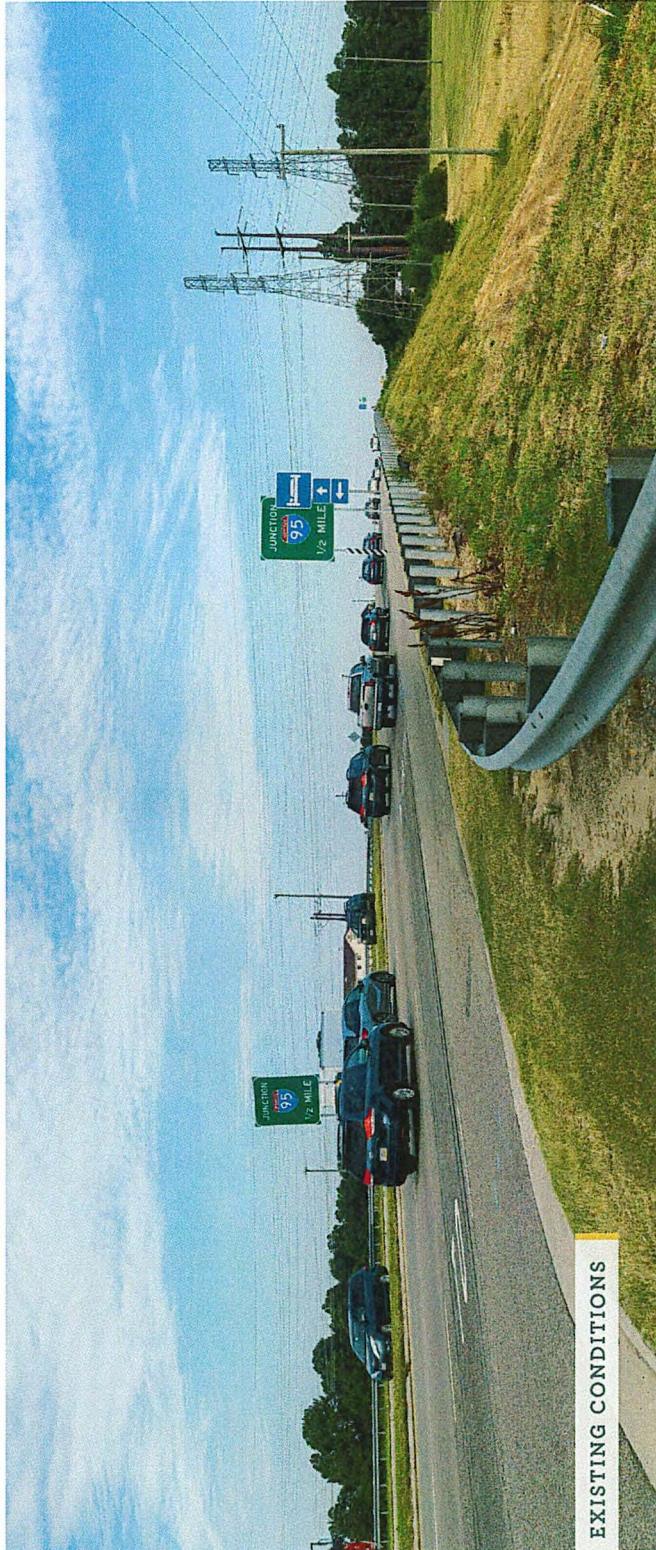
TIME: 8:34 AM

DIRECTION: WEST

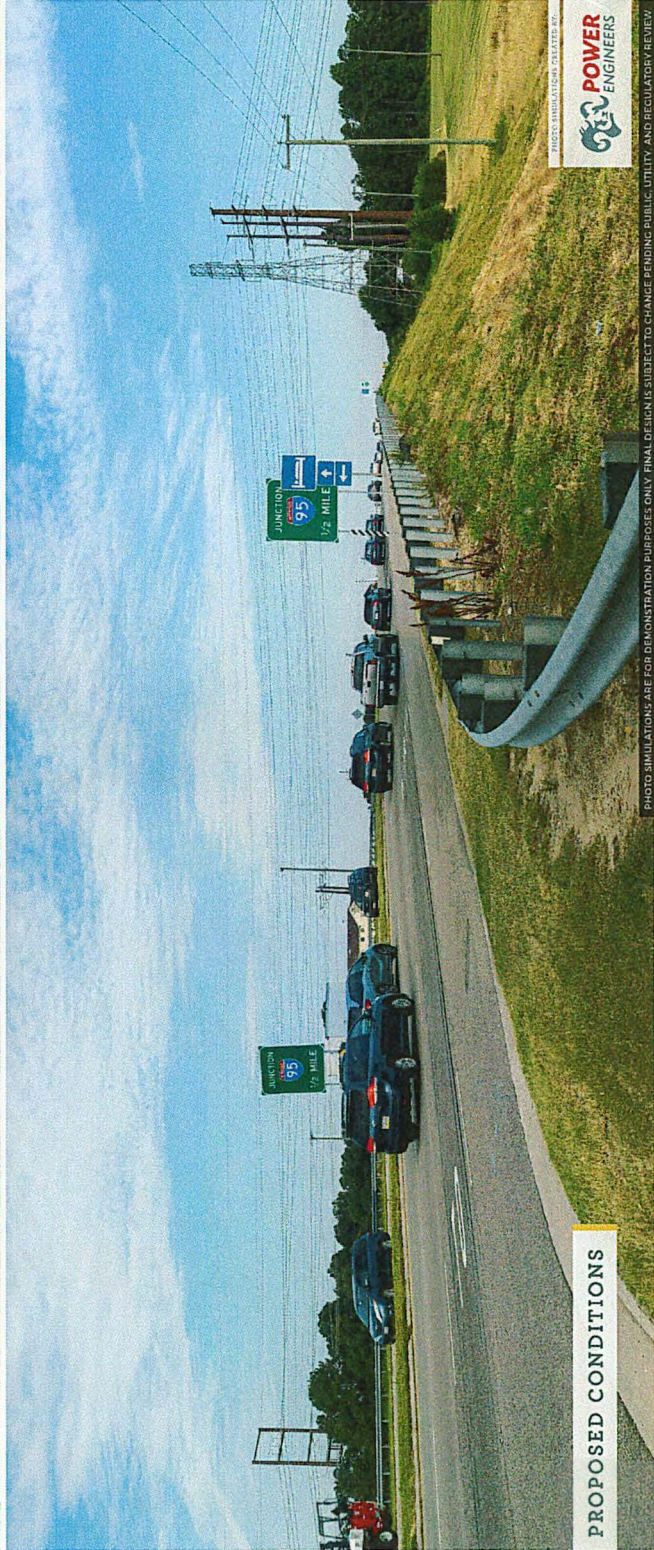


② PHOTO VIEWPOINT

— TRANSMISSION LINE



EXISTING CONDITIONS



PROPOSED CONDITIONS



PHOTO SIMULATIONS ARE FOR DEMONSTRATION PURPOSES ONLY. FINAL DESIGN IS SUBJECT TO CHANGE PENDING PUBLIC UTILITY AND REGULATORY REVIEW.



# CHESTERFIELD

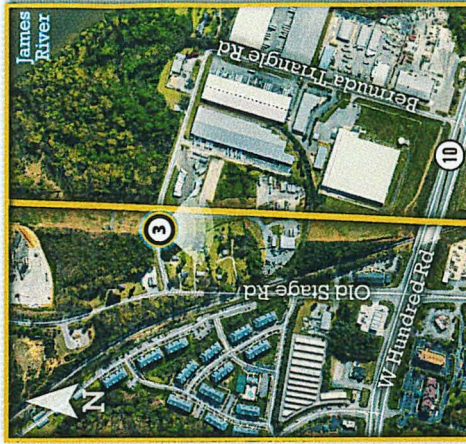
## TRANSMISSION LINE PROJECT

### PHOTO VIEWPOINT 3

DATE: 06/27/2019

TIME: 8:52 AM

DIRECTION: SOUTH



③ PHOTO VIEWPOINT

— TRANSMISSION LINE



EXISTING CONDITIONS



PROPOSED CONDITIONS



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# CHESTERFIELD

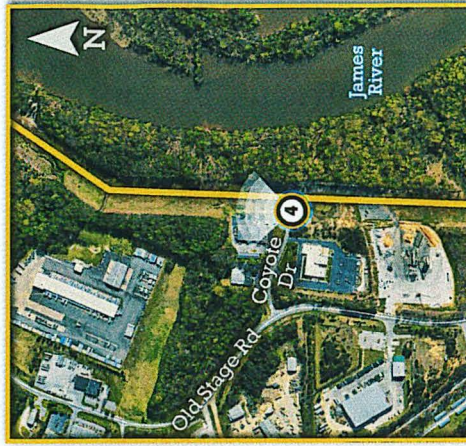
## TRANSMISSION LINE PROJECT

### PHOTO VIEWPOINT 4

DATE: 06/27/2019

TIME: 8:59 AM

DIRECTION: NORTH



④ PHOTO VIEWPOINT

— TRANSMISSION LINE

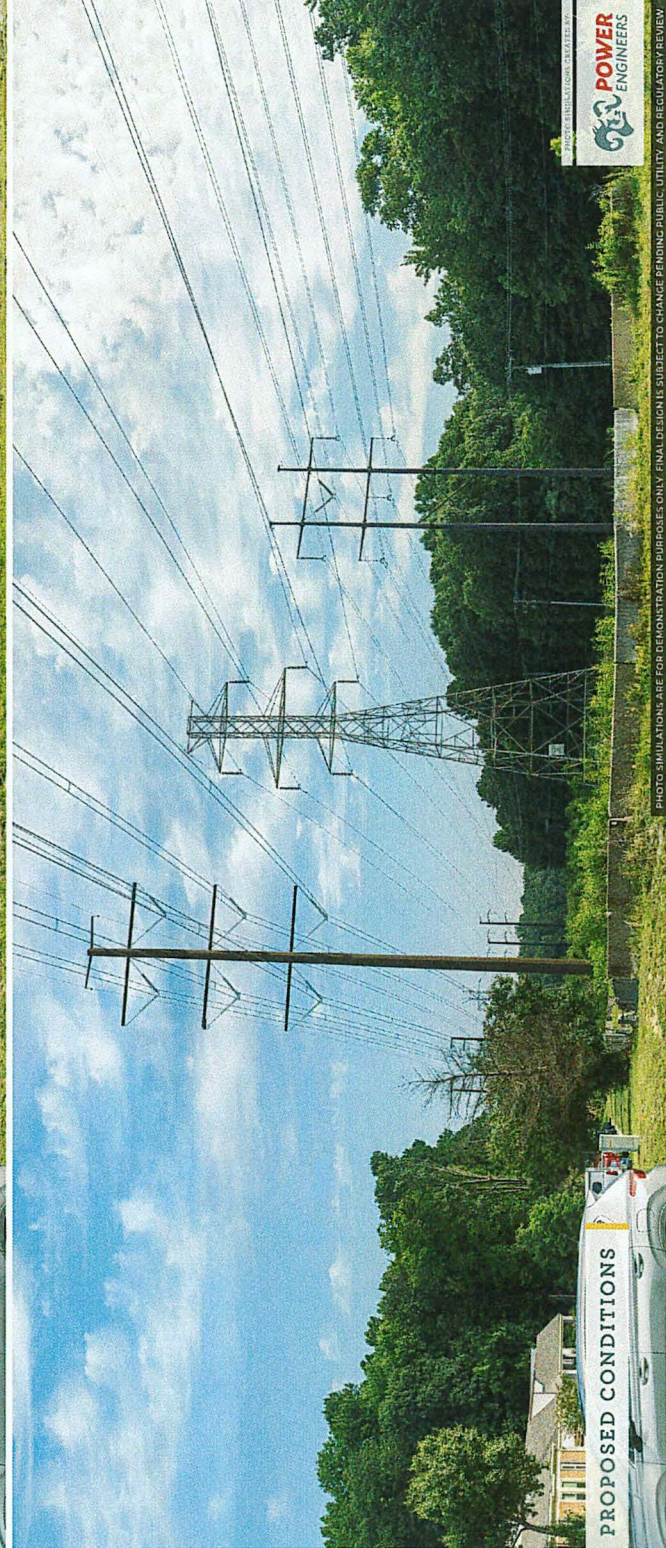


PHOTO SIMULATIONS ARE FOR DEMONSTRATION PURPOSES ONLY. FINAL DESIGN IS SUBJECT TO CHANGE PENDING PUBLIC UTILITY AND REGULATORY REVIEW.





# INFORMATIONAL OPEN HOUSE

## FOR THE CHESTERFIELD-TYLER 230 KILOVOLT PARTIAL REBUILD PROJECT

*Dominion Energy proposes to rebuild a 3-mile portion  
of transmission line in Chesterfield County*

At Dominion Energy, we are committed to keeping our neighbors informed about energy needs where they live and work. We are currently proposing a project to rebuild a portion of electric transmission line which is nearing the end of its service life.

We invite the community to an informational open house to learn more about the project and talk to subject matter experts.

There will be no formal presentations at the event, so please drop in at your convenience between 5–7 p.m.

Please visit our project website at [DominionEnergy.com/chesterfieldtyler](http://DominionEnergy.com/chesterfieldtyler) for more information. If you have questions or concerns, please contact us by sending an email to [powerline@dominionenergy.com](mailto:powerline@dominionenergy.com) or calling 888-291-0190.

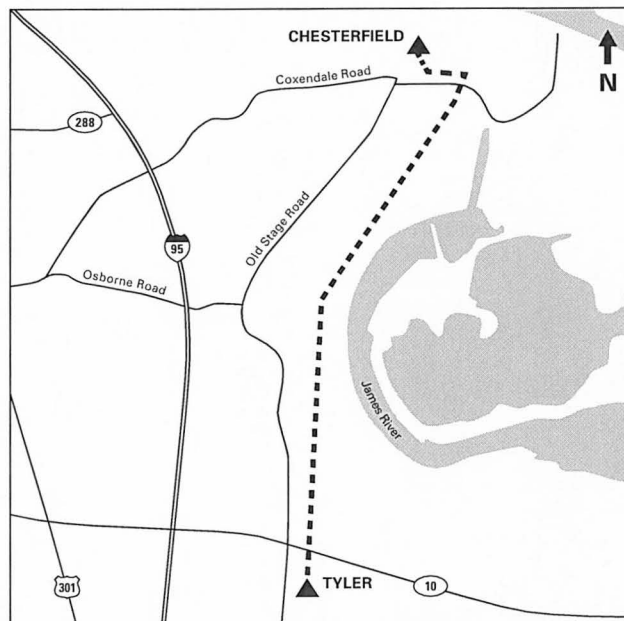
## OPEN HOUSE

Tuesday, Jan. 7, 2020  
5–7 p.m.

Homewood Suites  
12810 Old Stage Road  
Chester, VA 23836

*(drop by anytime  
during these hours)*

*Note: This transmission rebuild project is not associated with Dominion Energy's coal ash closure activities at Chesterfield Power Station. To learn more about our coal ash closure plans, please visit: [DominionEnergy.com/coalash](http://DominionEnergy.com/coalash).*



This map is intended to serve as a representation of the project area and is not intended for detailed engineering purposes.

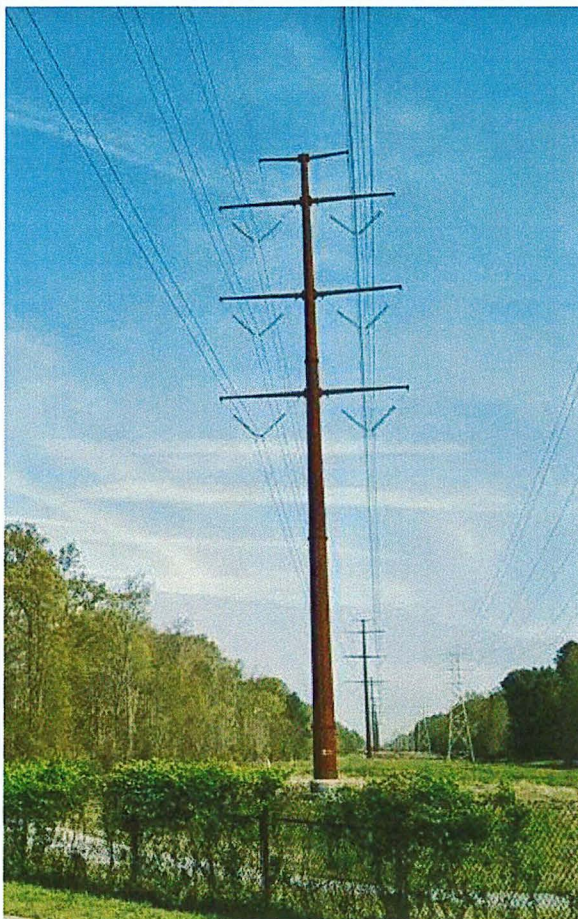


# *C H E S T E R F I E L D* **Observer**

## Dominion seeks to rebuild power line in Chester

JANUARY 01, 2020

BY RICH GRISET STAFF WRITER



Dominion Energy is looking to rebuild 3 miles of an aging 230 kilovolt transmission line in Chester.

If approved by the Virginia State Corporation Commission, the \$11 million project would replace an existing transmission line that was originally installed in



Dominion Energy wants to replace its existing "lattice-type" towers along three miles of right-of-way in Chester with monopoles, like the one pictured here.  
COURTESY OF DOMINION ENERGY

1962. The new line would use existing right-of-way, and

run from the utility's Chesterfield Substation near Dutch Gap to just past its Tyler Substation, which is located near the intersection of Old Stage and Ware Bottom Spring roads. Dominion has a target completion date of late 2022 for the project.

Dominion officials say the rebuild is necessary out of concern that the towers themselves are beginning to deteriorate. With the rebuild, the utility will replace existing COR-TEN weathering steel towers – also known as traditional "lattice-type" towers – along the electric transmission corridor in favor of slimmer monopole structures. According to the utility, they've experienced aging issues across the system with their COR-TEN towers, necessitating their replacement. COR-TEN is a group of steel alloys that is intended to appear rusty, eliminating the need for painting.

"Projects that have reached the end of their service life ... are beginning to show signs of deterioration, and they're showing their age," says Tiffany Taylor-Minor, an electric transmission communications consultant for Dominion. "It's time to replace those structures, and as we come in to replace them, we want to build them to current safety and reliability standards."

Dominion says the new transmission line will have a minimal impact on the view for most in the area, with the longest section of line seeing a height increase of 3 feet on average. For a more detailed explanation of what the line will look like, Dominion recommends that residents visit their Jan. 7 open house or review their SCC application once it's been filed.

"In terms of viewshed, it should be very similar in terms of height, but what will look different is the structure," Taylor-Minor says.

In transitioning from a lattice-type structure to a monopole, Dominion officials say a number of factors impacted the decision.

"The lead component in this particular case that drove our direction towards monopole structures was constructability," says Elizabeth Gatlin, conceptual project engineer for Dominion. "It gives us a cost-effective means by which to



maintain the circuits in their current configuration and meet all of the design and safety and reliability considerations that come into play.”

Dominion officials say that they've received positive feedback from residents in other localities regarding the more streamlined design of monopoles.

“This monopole look for some is just much cleaner,” Gatlin says. “[It] often is a more desirable option for neighbors who live in close proximity.”

Taylor-Minor says the same holds true of early designs for the Chesterfield-Tyler transmission line update.

“Anecdotally we are hearing back from folks who see these designs in the conceptual stage that it is a cleaner look and feel,” she says. “There’s really modest height changes here, and in that exchange, a cleaner profile along the corridor.”

In addition to the towers, the line’s conductors and shield wires will be replaced, all of which are nearly six decades old.

“There is an advantage to a wholesale rebuild versus piecemeal,” Taylor-Minor says. “It’s more economic to do so. It’s almost like a restart.”

On Jan. 7, Dominion will host an open house in Chester to solicit feedback. The utility plans to file its application with the SCC for the project in early February.

*Dominion Energy’s open house for the replacement of its Chesterfield-Tyler transmission line will take place on Jan. 7 from 5-7 p.m. at the Homewood Suites located at 12810 Old Stage Road, 23836.*

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### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES**

#### **C. Detail the nature, location, and ownership of each building that would have to be demolished or relocated if the project is built as proposed.**

Response: During the Company's review of the existing corridor, it identified a number of unauthorized obstructions, materials, and items in the Rebuild Project right-of-way; however, none of these encroachments is a building that would have to be demolished or relocated. In support of the Rebuild Project, the Company will continue to review the corridor width prior to construction and plans to address unauthorized encroachments and easement violations as appropriate.

In support of the Rebuild Project, the Company will be reviewing the entire corridor width prior to construction and plans to address unauthorized encroachments and easement violations, as appropriate.



### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES**

- D. Identify existing physical facilities that the line will parallel, if any, such as existing transmission lines, railroad tracks, highways, pipelines, etc. Describe the current use and physical appearance and characteristics of the existing ROW that would be paralleled, as well as the length of time the transmission ROW has been in use.**

Response: Lines #205 and #2003 are located within a shared right-of-way with four other transmission lines. Specifically, this includes Chesterfield-Locks 115 kV Line #100, Chesterfield-Hopewell 230 kV Lines #211 and #228, and Allied-Chesterfield 230 kV Line #2049. The right-of-way for the transmission lines has been continuously maintained for electrical transmission operation for over 50 years.



### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES**

- E. Indicate whether the Applicant has investigated land use plans in the areas of the proposed route and indicate how the building of the proposed line would affect any proposed land use.**

Response: The Comprehensive Plan for Chesterfield County was reviewed to evaluate the potential effect the Rebuild Project could have on future development. The placement and construction of electric transmission lines are not addressed within the Plan. Instead, the Comprehensive Plan addresses the organized development of the County, and the preservation of the defining characteristics of individual communities and important features such as the natural environment. The Rebuild Project is within existing easement and would not affect land use. See also Section II.A.6. The Rebuild Project is not expected to impact the character of this locality as the transmission corridor has been in use for over 50 years.



### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES**

#### **F. Government Bodies**

- 1. Indicate if the Applicant determined from the governing bodies of each county, city and town in which the proposed facilities will be located whether those bodies have designated the important farmlands within their jurisdictions, as required by § 3.2-205 B of the Code.**
- 2. If so, and if any portion of the proposed facilities will be located on any such important farmland:**
  - a. Include maps and other evidence showing the nature and extent of the impact on such farmlands;**
  - b. Describe what alternatives exist to locating the proposed facilities on the affected farmlands, and why those alternatives are not suitable; and**
  - c. Describe the Applicant's proposals to minimize the impact of the facilities on the affected farmland.**

- Response:
1. Chesterfield County does not have locally designated important farmland within its jurisdiction.
  2. Not applicable.



### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES**

#### **G. Identify the following that lie within or adjacent to the proposed ROW:**

- 1. Any district, site, building, structure, or other object included in the National Register of Historic Places maintained by the U.S. Secretary of the Interior;**
- 2. Any historic architectural, archeological, and cultural resources, such as historic landmarks, battlefields, sites, buildings, structures, districts or objects listed or determined eligible by the Virginia Department of Historic Resources (“DHR”);**
- 3. Any historic district designated by the governing body of any city or county;**
- 4. Any state archaeological site or zone designated by the Director of the DHR, or its predecessor, and any site designated by a local archaeological commission, or similar body;**
- 5. Any underwater historic assets designated by the DHR, or predecessor agency or board;**
- 6. Any National Natural Landmark designated by the U.S. Secretary of the Interior;**
- 7. Any area or feature included in the Virginia Registry of Natural Areas maintained by the Virginia Department of Conservation and Recreation (“DCR”);**
- 8. Any area accepted by the Director of the DCR for the Virginia Natural Area Preserves System;**
- 9. Any conservation easement or open space easement qualifying under §§ 10.1-1009 – 1016, or §§ 10.1-1700 – 1705, of the Code (or a comparable prior or subsequent provision of the Code);**
- 10. Any state scenic river;**
- 11. Any lands owned by a municipality or school district; and**
- 12. Any federal, state or local battlefield, park, forest, game or wildlife preserve, recreational area, or similar facility. Features, sites, and the like listed in 1 through 11 above need not be identified again.**



- Response:
1. Richmond National Battlefield Park (VDHR ID 043-0033) is listed on the NRHP. The portion of the Richmond National Battlefield Park resource within the 1.0-mile Stage I Pre-Application Analysis project area radius consists of the Howlett Line/Parker's Battery Earthworks (VDHR ID 020-0232/043-0033-0059). A majority of this resource is within a heavily wooded area east of the existing right-of-way, with the exception of approximately 1 acre that is within the existing right-of-way.
  2. Historic properties listed on the NRHP were provided in the response above. Port Walthall Junction Battlefield, Indian Hills Road (VDHR ID 020-5317/VA 047) is eligible for listing on the NRHP. Approximately 118 acres of the 3,296-acre battlefield resource is located within 1.0 mile of the existing right-of-way. Osborne's Naval Battle Site (VDHR ID 020-0121) is a NRHP-eligible resource but is identified as significant as an archaeological site and is not within or adjacent to the existing right-of-way. Six additional battlefield resources were identified within the 1.0-mile radius. The table in Section III.A provides the distance of each resource to the project centerline.

Eight previously recorded archaeological resources were identified either within or immediately adjacent to the Rebuild Project right-of-way. One resource, Site 44CF0578, Civil War earthworks, has been determined potentially eligible and one resource, Site 44CF0102, Osbornes Town Site, has been determined eligible for listing on the NRHP by VDHR. The remaining six sites are currently unevaluated. See also Section III.K of this Appendix.
  3. None.
  4. None.
  5. None.
  6. None.
  7. None.
  8. None.
  9. Battery Dantzler Park, which is adjacent to the existing right-of-way, is owned and managed by Chesterfield County Department of Parks and Recreation. Richmond National Battlefield Park, which is partially located within the existing right-of-way, is owned and managed by the National Park Service.
  10. Although not adjacent to the right-of-way, the James River is approximately 250 feet from the right-of-way.
  11. Battery Dantzler Park, which is adjacent to the existing right-of-way, is owned and managed by Chesterfield County Department of Parks and Recreation.
  12. Other than those listed in items 1 through 11, the existing right-of-way does not cross any federal or state parks or forests, game preserves, Wildlife Management Areas, Conservation Sites, or Managed Conservation Lands.



### III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

- H. List any registered aeronautical facilities (airports, helipads) where the proposed route would place a structure or conductor within the federally-defined airspace of the facilities. Advise of contacts, and results of contacts, made with appropriate officials regarding the effect on the facilities' operations.**

Response: The Federal Aviation Administration ("FAA") is responsible for overseeing air transportation in the United States. The FAA manages air traffic in the United States and evaluates physical objects that may affect the safety of aeronautical operations through an obstruction evaluation. The prime objective of the FAA in conducting an obstruction evaluation is to ensure the safety of air navigation and the efficient utilization of navigable airspace by aircraft.

The FAA's website (<https://oeaaa.faa.gov/oeaaa/external/portal.jsp>) was reviewed to identify airports within 10 nautical miles of the proposed Rebuild Project. The following airports were identified:

- Richmond International Airport, approximately 9.4 miles northeast of Chesterfield Power Station
- Defense Supply Center Richmond Heliport, approximately 4.5 miles northwest of Chesterfield Power Station
- Richmond Executive-Chesterfield County Airport, approximately 7.8 miles northwest of Chesterfield Power Station
- Fort Lee AHP 3, approximately 6.6 miles southeast from the southern terminus of the Rebuild Project
- Fort Lee NR 1, approximately 7.0 miles southeast from the southern terminus of the Rebuild Project

Several private airports/helipads are located within 10 miles of the line and the Company will work with private entities, as appropriate.

In a letter dated December 6, 2019, the Virginia Department of Aviation (the "DOAv") stated that the proposed project limits for the Rebuild Project do not lie within 20,000 linear feet of any public use airport. The DOAv stated the requirement for the Company to submit Form 7460 to the FAA for any structures that reach 200 feet in height above ground level. This letter is provided as Attachment 2.N.1 of the DEQ Supplement.



### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES**

- I. Advise of any scenic byways that are in close proximity to or that will be crossed by the proposed transmission line and describe what steps will be taken to mitigate any visual impacts on such byways. Describe typical mitigation techniques for other highways' crossings.**

Response: The existing right-of-way to be used for the Rebuild Project does not cross any scenic Virginia byways. Use of the existing right-of-way minimizes or eliminates permanent incremental impacts at road crossings.



### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES**

#### **J. Identify coordination with appropriate municipal, state, and federal agencies.**

Response: As described in detail in Section III.B, the Company solicited feedback from Chesterfield County regarding the proposed Rebuild Project. Below is a list of coordination that has occurred with other municipal, state and federal agencies:

- Coordination with the Corps, DEQ, and the Virginia Department of Transportation (“VDOT”) will take place as appropriate to obtain necessary approvals for the Rebuild Project.
- A letter dated December 3, 2019, was submitted to Chesterfield County to describe the Rebuild Project and request comment. See Section V.D.
- A letter was submitted to agencies listed in Section V.C on December 3, 2019, describing the Rebuild Project and requesting comment (Attachment 2 to the DEQ Supplement).
- A Stage I Pre-Application Analysis has been prepared and was submitted to VDHR on December 20, 2019 (Attachment 2.H.1 to the DEQ Supplement).
- As part of the Rebuild Project, the Company solicited comments via letter (see Attachment III.J.1 for a template) from several federally-recognized Native American tribes, including:

Cheroenhaka (Nottoway) Indian Tribe  
Chickahominy Indian Tribe  
Chickahominy Indian Tribe Eastern Division  
Mattaponi Tribe  
Monacan Nation  
Nansemond Indian Nation  
Nottoway Indian Tribe of Virginia  
Pamunkey Indian Tribe  
Pamunkey Indian Museum and Cultural Center  
Patawomeck Indian Tribe of Virginia  
Rappahannock Tribe  
Upper Mattaponi Indian Tribe

See also Sections III.B, III.K and V.D of this Appendix, and the DEQ Supplement.



Dec. 17, 2019

### **Proposed Chesterfield-Tyler Electric Transmission Partial Rebuild Project**

At Dominion Energy, we are dedicated to finding the best solution for our long-term needs in the communities we serve. As a valued stakeholder with a vested interest in the community, we invite you to participate in the development of an electric transmission partial rebuild project along an existing transmission corridor.

After more than five decades of operation, lattice structures located between our Chesterfield and Tyler substations in Chesterfield County need to be replaced in order to maintain reliability for our customers and bring facilities up to current standards. The portion of lines proposed for rebuild are predominately on the same transmission structures and run approximately 3 miles in length parallel with other transmission lines within an existing corridor. As we rebuild the lines to current safety standards, we will also replace conductor, fiber and four additional structures south of our Tyler Substation.

We are currently in the conceptual phase and are seeking input prior to submitting an application with the Virginia State Corporation Commission (SCC) in early 2020. Doing so allows us to hear any concerns you may have as we work to meet the project's needs. Attached is a project overview map to help in your review. Please feel free to notify other relevant organizations that may have an interest in the project area. For reference, other recipients of this letter include countywide and statewide historic, cultural, and scenic organizations, as well as Native American tribes.

Please provide your comments by Jan.8, 2020, so we have adequate time to review and consider your comments in our project design and as part of our SCC application. We appreciate your assistance as we move through the planning process.

We also invite you to attend our open house. There will be no formal presentation, but you will have the opportunity to speak with our electric transmission experts about the project. Please feel free to drop by at your convenience between 5-7 p.m.

**Tuesday, Jan. 7, 2020  
Homewood Suites  
12810 Old Stage Road  
Chester, VA 23836**



Dec. 17, 2019

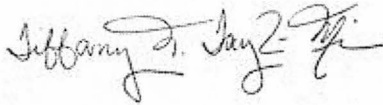
Proposed Chesterfield-Tyler Electric Transmission Partial Rebuild Project

Page 2

If you would like any additional information, have any questions or would like to set up a meeting to discuss the project, please do not hesitate to contact me by sending an email to [T.Taylor-Minor@dominionenergy.com](mailto:T.Taylor-Minor@dominionenergy.com) or calling 804-771-4936.

For additional information and project updates, please visit [DominionEnergy.com/chesterfieldtyler](http://DominionEnergy.com/chesterfieldtyler).

Sincerely,

A handwritten signature in cursive script, appearing to read "Tiffany Taylor-Minor".

Tiffany Taylor-Minor  
Communications Consultant  
The Electric Transmission Project Team

Enclosure: Project Overview Map

Figure No.  
V.A

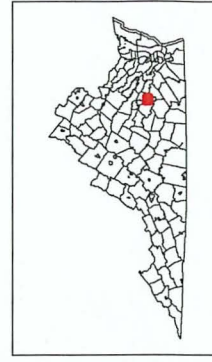
# Title **Notification Map**

Client/Project  
Dominion Energy Virginia  
Chesterfield - Tyler 230 kV Partial Rebuild

Project Location  
Chesterfield County, Virginia  
203401747  
Project No. (JIS)  
Technical Review by AGS on 2016-12-18  
Independent Review by CPG on 2016-12-18

0 3,500 7,000 Feet  
1:42,000 (At original document size of 11x17)

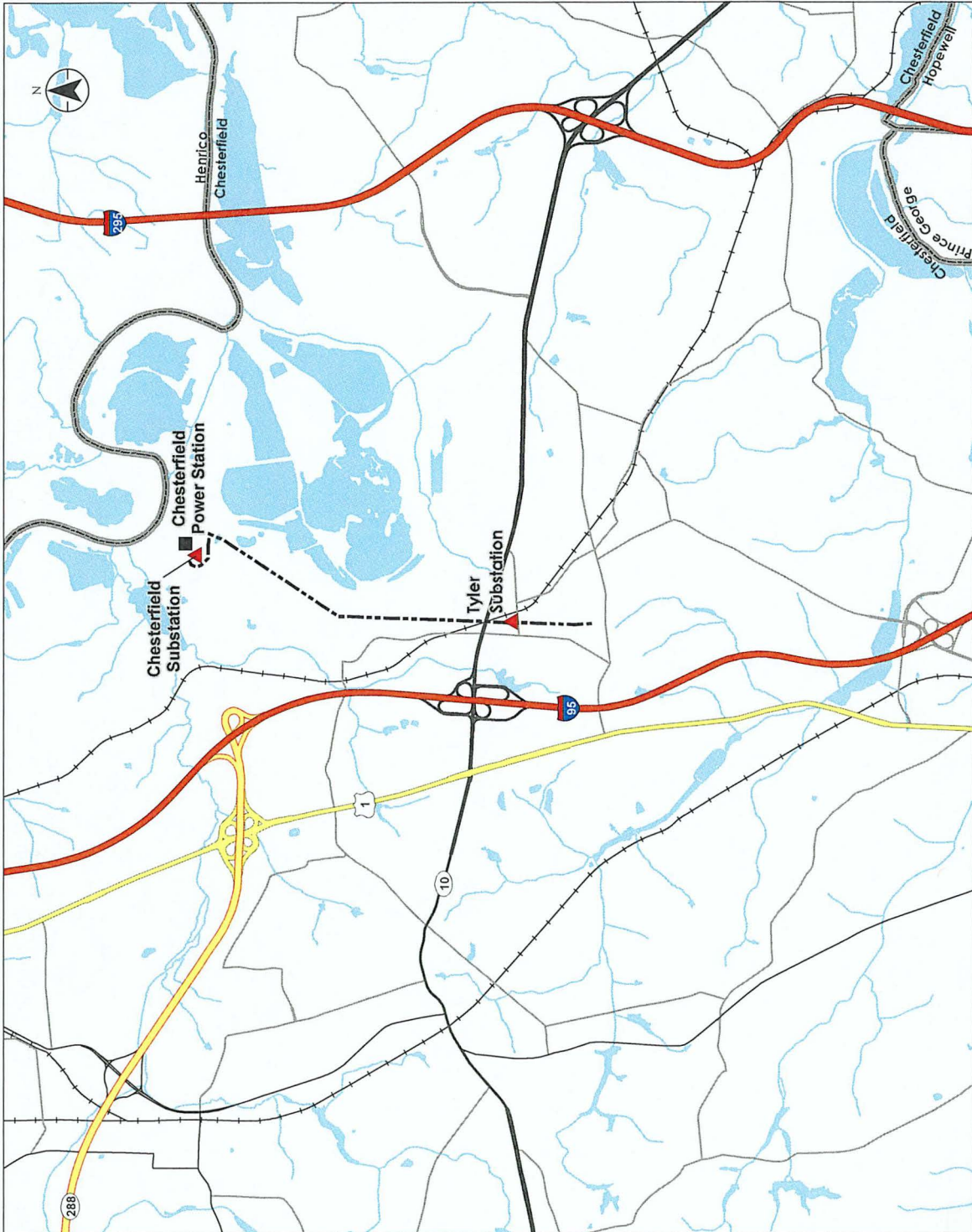
- Existing Substation
- Existing Power Station
- Line 205 and 203
- Railroad



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4202 Feet
  2. Base features provided by Dominion Energy - Virginia
  3. Road data provided by ESRI
  4. Road data provided by ESRI
  5. Railroad data provided by Chesterfield County GIS 2017
  6. Wetland and water data provided by USGS National Hydrography Dataset (NHD)

**Stantec** **Dominion Energy**

Page 01 of 01



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### III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

#### K. Identify coordination with any non-governmental organizations or private citizen groups.

Response: Below is a list of coordination that has occurred with non-governmental organizations and private citizen groups. A copy of the letter template is included as Attachment III.J.1.

Name	Organization
Ms. Elizabeth S. Kostelny	Preservation Virginia
Mr. Thomas Gilmore	Civil War Trust
Mr. Jim Campi	Civil War Trust
Mr. Adam Gillenwater	Civil War Trust
Ms. Kym Hall	Colonial National Historical Park
Mr. Jack Gary	Council of Virginia Archaeologists
Ms. Leighton Powell	Scenic Virginia
Mr. Alexander Macaulay	Macaulay & Jamerson
Ms. Sharee Williamson	National Trust for Historic Preservation
Mr. Dan Holmes	Piedmont Environmental Council
Dr. Newby- Alexander, Dean	Norfolk State University
Mr. Roger Kirchen, Archaeologist	Virginia Department of Historic Resources
Ms. Adrienne Birge-Wilson	Virginia Department of Historic Resources
Mr. Dave Dutton	Dutton + Associates, LLC

A discussion was held with a private resident during the January 7, 2020, Open House regarding a small area north of one of the listed archaeological sites identified in the Stage I Pre-Application Analysis (ID# 44CF102). The resident has self-identified the small area as potentially containing valuable archaeological resources. This area is not included in VDHR's Virginia Cultural Resource Information System ("VCRIS") database and impacts from the Rebuild Project are not anticipated in the self-identified area. If construction activities or impacts may occur in this area, the area will be included in any future Phase II archaeological investigations.

### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES**

#### **L. Identify any environmental permits or special permissions anticipated to be needed.**

Response: See table below for potential permits anticipated for the proposed Rebuild Project.

**Potential Permits**

<b>Activity</b>	<b>Permit</b>	<b>Agency</b>
Impacts to wetlands and waters of the U.S.	Nationwide Permit 12	U.S. Army Corps of Engineers
Impacts to wetlands and waters of the U.S.	Virginia Water Protection Permit	Virginia Department of Environmental Quality
Discharge of Stormwater from Construction	Construction General Permit	Virginia Department of Environmental Quality
Work within VDOT right-of-way	Land Use Permit	Virginia Department of Transportation
Work within CSXT railroad right-of-way	Encroachment Permit	CSX Transportation



#### IV. HEALTH ASPECTS OF ELECTROMAGNETIC FIELDS (“EMF”)

- A. Provide the calculated maximum electric and magnetic field levels that are expected to occur at the edge of the ROW. If the new transmission line is to be constructed on an existing electric transmission line ROW, provide the present levels as well as the maximum levels calculated at the edge of ROW after the new line is operational.

Response: Public exposure to magnetic fields is best estimated by field levels from power lines calculated at annual average loading. For any day of the year, the EMF levels associated with average conditions provide the best estimate of potential exposure. Maximum (peak) values are less relevant as they may occur for only a few minutes or hours each year.

This section describes the levels of EMF associated with the existing and proposed transmission line. EMF levels are provided for both historical (2019) and future (2024) annual average and maximum (peak) loading conditions.

##### Existing lines – Historical average loading

EMF levels were calculated for the existing lines at the *historical average* load condition (213.5 amps for Line #100, 188.1 amps for Line #205, 229.9 amps for Line #211, 183.6 amps for Line #228, 150.6 amps for Line #2003, and 347.6 amps for Line #2049) and at an operating voltage of 120.75 kV and 241.5 kV for the 115 kV and 230 kV transmission lines when supported on the existing structures – see Attachments II.A.5.a, c, and g.

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a historical average load operating temperature. EMF levels at the edge of the rights-of-way for the existing lines at the historical average loading:

Existing Lines - Historic Average Loading				
Attachment	Left Edge Looking Towards Str 205/19A, 2003/25		Right Edge Looking Towards Str 205/19A, 2003/25	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.a	1.948	16.851	0.425	12.205
II.A.5.c	2.052	18.303	0.148	10.621
II.A.5.g	0.703	14.766	0.464	14.528

### Proposed Rebuild Project – Historical Average Loading

EMF levels were calculated for the proposed Rebuild Project at the **historical average** load condition (213.5 amps for Line #100, 188.1 amps for Line #205, 229.9 amps for Line #211, 183.6 amps for Line #228, 150.6 amps for Line #2003, and 347.6 amps for Line #2049) and at an operating voltage of 120.75 kV and 241.5 kV for the 115 kV and 230 kV transmission lines when supported on the proposed Rebuild Project structures – see Attachments II.A.5.b, d, and h.

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a historical average load operating temperature.

EMF levels at the edge of the rights-of-way for the proposed Rebuild Project at the historical average loading:

Proposed Lines - Historic Average Loading				
Attachment	Left Edge Looking Towards Str 205/19A, 2003/25		Right Edge Looking Towards Str 205/19A, 2003/25	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.b	2.015	17.333	0.508	9.025
II.A.5.d	2.035	17.399	1.724	9.699
II.A.5.h	0.568	6.204	0.446	13.561

### Existing lines – Historical Peak loading

EMF levels were calculated for the existing lines at the **historical peak** load condition (568.1 amps for Line #100, 713.7 amps for Line #205, 825.1 amps for Line #211, 781.2 amps for Line #228, 507.6 amps for Line #2003, and 1014.0 amps for Line #2049) and at an operating voltage of 120.75 kV and 241.5 kV for the 115 kV and 230 kV transmission lines when supported on the existing structures – see Attachments II.A.5.a, c, and g.

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a historical average load operating temperature.

EMF levels at the edge of the rights-of-way for the existing lines at the historical average loading:



Existing Lines - Historic Peak Loading				
Attachment	Left Edge Looking Towards Str 205/19A, 2003/25		Right Edge Looking Towards Str 205/19A, 2003/25	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.a	1.959	49.265	0.428	48.821
II.A.5.c	2.056	53.395	0.144	42.186
II.A.5.g	0.701	50.694	0.462	40.843

### Proposed Rebuild Project – Historical Peak Loading

EMF levels were calculated for the proposed Rebuild Project at the *historical peak* load condition (568.1 amps for Line #100, 713.7 amps for Line #205, 825.1 amps for Line #211, 781.2 amps for Line #228, 507.6 amps for Line #2003, and 1014.0 amps for Line #2049) and at an operating voltage of 120.75 kV and 241.5 kV for the 115 kV and 230 kV transmission lines when supported on the proposed Rebuild Project structures – see Attachments II.A.5.b, d, and h.

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a historical peak load operating temperature. EMF levels at the edge of the rights-of-way for the proposed Rebuild Project at the historical peak loading:

Proposed Lines - Historic Peak Loading				
Attachment	Left Edge Looking Towards Str 205/19A, 2003/25		Right Edge Looking Towards Str 205/19A, 2003/25	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.b	2.028	50.970	0.495	32.613
II.A.5.d	2.039	50.146	1.692	36.232
II.A.5.h	0.565	20.465	0.444	36.638

### Proposed Rebuild Project – Projected Average Loading in 2024

EMF levels were calculated for the proposed Rebuild Project at the *projected average* load condition (226.8 amps for Line #100, 199.9 amps for Line #205, 244.3 amps for Line #211, 195.1 amps for Line #228, 160.0 amps for Line #2003, and 369.3 amps for Line #2049) and at an operating voltage of 120.75 kV and 241.5 kV for the 115 kV and 230 kV transmission lines when supported on the proposed Rebuild Project structures – see Attachments II.A.5.b, d, and h.

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a projected average load operating temperature.

EMF levels at the edge of the rights-of-way for the proposed project at the projected average loading:

<b>Proposed Lines - Projected Average Loading</b>				
<b>Attachment</b>	<b>Left Edge Looking Towards Str 205/19A, 2003/25</b>		<b>Right Edge Looking Towards Str 205/19A, 2003/25</b>	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
II.A.5.b	2.016	18.420	0.508	9.590
II.A.5.d	2.035	18.485	1.728	10.312
II.A.5.h	0.567	6.595	0.445	14.423

#### **Proposed Rebuild Project – Projected Peak Loading in 2024**

EMF levels were calculated for the proposed Rebuild Project at the *projected peak* load condition (603.6 amps for Line #100, 758.2 amps for Line #205, 876.6 amps for Line #211, 830.0 amps for Line #228, 539.3 amps for Line #2003, and 1077.3 amps for Line #2049) and at an operating voltage of 120.75 kV and 241.5 kV for the 115 kV and 230 kV transmission lines when supported on the proposed Rebuild Project structures – see Attachments II.A.5.b, d, and h.

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a projected peak load operating temperature.

EMF levels at the edge of the rights-of-way for the proposed project at the projected peak loading:

<b>Proposed Lines - Projected Peak Loading</b>				
<b>Attachment</b>	<b>Left Edge Looking Towards Str 205/19A, 2003/25</b>		<b>Right Edge Looking Towards Str 205/19A, 2003/25</b>	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
II.A.5.b	2.037	49.401	0.493	34.409
II.A.5.d	2.046	48.302	1.683	38.670
II.A.5.h	0.564	21.742	0.444	38.949



#### IV. HEALTH ASPECTS OF ELECTROMAGNETIC FIELDS (“EMF”)

- B. If the Applicant is of the opinion that no significant health effects will result from the construction and operation of the line, describe in detail the reasons for that opinion and provide references or citations to supporting documentation.**

Response: The conclusions of multidisciplinary scientific review panels assembled by national and international scientific agencies during the past two decades are the foundation of the Company’s opinion that no adverse health effects will result from the operation of the proposed Rebuild Project. Each of these panels has evaluated the scientific research related to health and power-frequency EMF and provided conclusions that form the basis of guidance to governments and industries. The Company regularly monitors the recommendations of these expert panels to guide their approach to EMF.

The most recent major reviews on this topic include the report of the Scientific Committee on Emerging and Newly Identified Health Risks (“SCENIHR”) of the European Commission, which was published in 2015. The SCENIHR report, similar to previous reviews, found that the scientific evidence does not confirm the existence of any adverse health effects of environmental or community exposures. This conclusion is consistent with conclusions of previous reviews conducted for other agencies, including the European Health Risk Assessment Network on Electromagnetic Fields Exposure (“EFHRAN”), the International Commission on Non-Ionizing Radiation Protection (“ICNIRP”), the World Health Organization (“WHO”), and the International Committee on Electromagnetic Safety (“ICES”) (EFHRAN, 2010, 2012; ICNIRP, 2010; WHO, 2007; ICES, 2002).

Research on this topic varies widely in approach. Some studies evaluate the effects of high EMF exposures not typically found in people’s day-to-day lives, while others evaluate the effects of common, weaker EMF exposures. Studies have evaluated the possibility of long-term effects (e.g., cancer, neurodegenerative diseases, reproductive effects) and others investigated short-term biological responses. Altogether, this research includes hundreds of epidemiologic studies of people in their natural environment and many more laboratory studies of animals (*in vivo*) and isolated cells and tissues (*in vitro*). Standard scientific procedures, such as the weight-of-evidence methods, were used by the expert panels to identify, review, and summarize the results of this large and diverse research.

The general scientific consensus of the health agencies that have reviewed this research is that the scientific evidence does not show that common sources of EMF in the environment, including transmission lines and other parts of the electric system, appliances, etc., are a cause of any adverse health effects. The WHO, for example, states on their website: “Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields” (WHO, 2018).

Thus, based on the conclusions of scientific reviews and the levels of EMF associated with the Rebuild Project, the Company has determined that no adverse health effects will result from the operation of the Rebuild Project.

## References

European Health Risk Assessment Network on Electromagnetic Fields Exposure (EFHRAN). Report on the Analysis of Risks Associated to Exposure to EMF: *In Vitro* and *In Vivo* (Animals) Studies. Milan, Italy: EFHRAN, 2010.

European Health Risk Assessment Network on Electromagnetic Fields Exposure (EFHRAN). Risk Analysis of Human Exposure to Electromagnetic Fields (Revised). Report D2 of the EFHRAN Project. Milan, Italy: EFHRAN, 2012.

International Commission on Non-ionizing Radiation Protection (ICNIRP). Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz). Health Phys 99: 818-36, 2010.

International Committee on Electromagnetic Safety (ICES). IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields 0 to 3 kHz. Piscataway, NJ: IEEE, 2002; Reaffirmed 2007.

Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). Opinion on Potential Health Effects of Exposure to Electromagnetic Fields (EMF). Brussels, Belgium: European Commission, 2015.

World Health Organization (WHO). Environmental Health Criteria 238: Extremely Low Frequency (ELF) Fields. Geneva, Switzerland: World Health Organization, 2007.

World Health Organization (WHO). Electromagnetic fields (EMF). World Health Organization, 2018.

<http://www.who.int/peh-emf/about/WhatIsEMF/en/index1.html> (last accessed May 10, 2018).



#### IV. HEALTH ASPECTS OF ELECTROMAGNETIC FIELDS (“EMF”)

**C. Describe and cite any research studies on EMF the Applicant is aware of that meet the following criteria:**

- 1. Became available for consideration since the completion of the Virginia Department of Health’s most recent review of studies on EMF and its subsequent report to the Virginia General Assembly in compliance with 1985 Senate Joint Resolution No. 126;**
- 2. Include findings regarding EMF that have not been reported previously and/or provide substantial additional insight into findings; and**
- 3. Have been subjected to peer review.**

Response: The Virginia Department of Health (“VDH”) conducted its most recent review and issued its report on the scientific evidence on potential health effects of extremely low frequency (“ELF”) EMF in 2000: “[T]he Virginia Department of Health is of the opinion that there is no conclusive and convincing evidence that exposure to extremely low frequency EMF emanated from nearby high voltage transmission lines is causally associated with an increased incidence of cancer or other detrimental health effects in humans.”<sup>11</sup>

The continuing scientific research on EMF exposure and health has resulted in a number of peer-reviewed publications since 2000. The accumulating research results have been regularly and repeatedly reviewed and evaluated by national and international health, scientific, and government agencies. One of the most comprehensive and detailed reviews of the relevant scientific peer-reviewed literature was published by the WHO in 2007. The conclusion of the WHO, as currently expressed on its website, is consistent with the earlier VDH conclusions: "Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields."<sup>12</sup>

Research published in the peer-reviewed literature subsequent to the WHO report has been reviewed by several scientific organizations, including most notably:

- SCENIHR, a committee of the European Commission, that published its assessments in 2009 and 2015;
- The Swedish Radiation Safety Authority (“SSM”), formerly the Swedish Radiation Protection Authority (“SSI”), that has published annual reviews of the relevant peer-reviewed scientific literature since 2003, with its most recent review published in 2016; and,

<sup>11</sup> See <http://www.vdh.virginia.gov/content/uploads/sites/12/2016/02/highfinal.pdf>.

<sup>12</sup> See <http://www.who.int/peh-emf/about/WhatIsEMF/en/index1.html>.

- EFHRAN, that published its reviews in 2010 and 2012.

The above reviews provide detailed analyses and summaries of relevant recent peer-reviewed scientific publications. The conclusions of these reviews that the evidence overall does not confirm the existence of any adverse health effects due to exposure to EMF are consistent with the conclusions of the VDH and the WHO reports. With respect to the statistical association observed in some of the childhood leukemia epidemiologic studies, the most recent comprehensive review of the literature by SCENIHR, published in 2015, concluded that “no mechanisms have been identified and no support is existing [sic] from experimental studies that could explain these findings, which, together with shortcomings of the epidemiological studies prevent a causal interpretation” (SCENIHR, 2015, p. 16).

While research is continuing on various aspects of EMF exposure and health, many of the recent publications have focused on an epidemiologic assessment of EMF exposure and childhood leukemia and neurodegenerative diseases. Of these, the following recent publications provided additional evidence and contributed to clarification of previous findings. Overall, new research results have not provided evidence to alter the previous conclusions of scientific and health organizations.

#### Recent epidemiologic studies of EMF and childhood leukemia:

- Sermage-Faure et al. (2013) used geocoded information on residential addresses and power line locations in France to evaluate distance of residence to high-voltage power lines and the risk of childhood leukemia. The study included 2,779 cases of childhood leukemia diagnosed between 2002 and 2007, and 30,000 control children. Overall, no statistically significant associations were reported between childhood leukemia risk and residential distance to high-voltage power lines.
- Bunch et al. (2014) included over 53,000 childhood cancer cases, diagnosed between 1962 and 2008, and over 66,000 healthy children as controls, in their case-control epidemiologic study in the United Kingdom. The study provided an update and extension of an earlier study (Draper et al., 2005). The update extended the study period by 13 years, included Scotland in addition to England and Wales, and included 132-kilovolt (kV) transmission lines in addition to 275-kV and 400-kV transmission lines. Unlike the earlier study (Draper et al., 2005) that relied on a smaller sample, the updated study by Bunch et al. (2014) reported no overall association between residential proximity to power lines and childhood cancer development. Data were also analyzed from the same case-control study in the United Kingdom to assess the potential association between residential proximity to high-voltage underground cables and childhood cancer development (Bunch et al., 2015). No statistically significant associations or trends were reported with either distance to underground cables or calculated magnetic fields from underground cables for any type of childhood cancers.
- Pedersen et al. (2014, 2015) published two case-control studies that investigated



the potential association between residential proximity to power lines and childhood cancer in Denmark. One of the studies included 1,698 childhood leukemia cases and twice as many controls; no statistical association with residential distance to power lines was reported (Pedersen et al., 2014). The other study included all cases of leukemia (n=1,536), central nervous system tumor, and malignant lymphoma (n=417) diagnosed before the age of 15 between 1968 and 2003 in Denmark, along with 9,129 healthy control children matched on sex and year of birth (Pedersen et al., 2015). Considering the entire study period, no statistically significant increases were reported for any of the childhood cancer types.

- Salvan et al. (2015) compared measured magnetic-field levels in the bedroom for 412 cases of childhood leukemia under the age of 10 and 587 healthy control children in Italy. Although the statistical power of the study was limited because of the small number of highly exposed subjects, no consistent statistical associations or trends were reported between measured magnetic-field levels and the occurrence of leukemia among children in the study.
- Crespi et al. (2016) conducted a case-control epidemiologic study of childhood cancers and residential proximity to high-voltage power lines (60 kV to 500 kV) in California. Childhood cancer cases, including 5,788 cases of leukemia and 3,308 cases of brain tumor, diagnosed under the age of 16 between 1986 and 2008, were identified from the California Cancer Registry. Controls, matched on age and sex, were selected from the California Birth Registry. Overall, no consistent statistically significant associations were reported for leukemia or brain tumor with residential distance to power lines.

Recent epidemiologic studies of EMF and neurodegenerative diseases:

- Seelen et al. (2014) conducted a population-based case-control study in the Netherlands and included 1,139 cases diagnosed with amyotrophic lateral sclerosis (ALS) between 2006 and 2013 and 2,864 frequency-matched controls. The shortest distance from the cases' and controls' residence to the nearest high-voltage power line (50 kV to 380 kV) was determined by geocoding. No statistically significant associations between residential proximity to power lines with voltages of either 50 to 150 kV or 220 to 380 kV and ALS were reported.
- Sorahan and Mohammed (2014) analyzed mortality from neurodegenerative diseases in a cohort of approximately 73,000 electricity supply workers in the United Kingdom. Cumulative occupational exposure to magnetic-fields was calculated for each worker in the cohort based on their job titles and job locations. Death certificates were used to identify deaths from neurodegenerative diseases. No associations or trends for any of the included neurodegenerative diseases (Alzheimer's disease, Parkinson's disease, and ALS) were observed with various measures of calculated magnetic fields.
- Koeman et al. (2015, 2017) analyzed data from the Netherlands Cohort Study

of approximately 120,000 men and women who were enrolled in the cohort in 1986 and followed up until 2003. Lifetime occupational history, obtained through questionnaires, and job-exposure matrices on ELF magnetic fields and other occupational exposures were used to assign exposure to study subjects. Based on 1,552 deaths from vascular dementia, the researchers reported a statistically not significant association of vascular dementia with estimated exposure to metals, chlorinated solvents, and ELF magnetic fields. However, because no exposure-response relationship for cumulative exposure was observed and because magnetic fields and solvent exposures were highly correlated with exposure to metals, the authors attributed the association with ELF magnetic fields and solvents to confounding by exposure to metals (Koeman et al., 2015). Based on a total of 136 deaths from ALS among the cohort members, the authors reported a statistically significant, approximately two-fold association with ELF magnetic fields in the highest exposure category. This association, however, was no longer statistically significant when adjusted for exposure to insecticides (Koeman et al., 2017).

- Fischer et al. (2015) conducted a population-based case-control study that included 4,709 cases of ALS diagnosed between 1990 and 2010 in Sweden and 23,335 controls matched to cases on year of birth and sex. The study subjects' occupational exposures to ELF magnetic fields and electric shocks were classified based on their occupations, as recorded in the censuses and corresponding job-exposure matrices. Overall, neither magnetic fields nor electric shocks were related to ALS.
- Vergara et al. (2015) conducted a mortality case-control study of occupational exposure to electric shock and magnetic fields and ALS. They analyzed data on 5,886 deaths due to ALS and over 58,000 deaths from other causes in the United States between 1991 and 1999. Information on occupation was obtained from death certificates and job exposure matrices were used to categorize exposure to electric shocks and magnetic fields. Occupations classified as "electric occupations" were moderately associated with ALS. The authors reported no consistent associations for ALS, however, with either electric shocks or magnetic fields, and they concluded that their findings did not support the hypothesis that exposure to either electric shocks or magnetic fields explained the observed association of ALS with "electric occupations."
- Pedersen et al. (2017) investigated the occurrence of central nervous system diseases among approximately 32,000 male Danish electric power company workers. Cases were identified through the national patient registry between 1982 and 2010. Exposure to ELF magnetic fields was determined for each worker based on their job titles and area of work. A statistically significant increase was reported for dementia in the high exposure category when compared to the general population, but no exposure-response pattern was identified, and no similar increase was reported in the internal comparisons among the workers. No other statistically significant increases among workers were reported for the incidence of Alzheimer's disease, Parkinson's disease,



motor neuron disease, multiple sclerosis, or epilepsy, when compared to the general population, or when incidence among workers was analyzed across estimated exposure levels.

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Pedersen C, Poulsen AH, Rod NH, Frei P, Hansen J, Grell K, Raaschou-Nielsen O, Schuz J, Johansen C. Occupational exposure to extremely low-frequency magnetic fields and risk for central nervous system disease: an update of a Danish cohort study among utility workers. *Int Arch Occup Environ Health*, 2017 [Epub ahead of print].

Salvan A, Ranucci A, Lagorio S, Magnani C. Childhood leukemia and 50 Hz magnetic fields: findings from the Italian SETIL case-control study. *Int J Environ Res Public Health* 12: 2184-2204, 2015.

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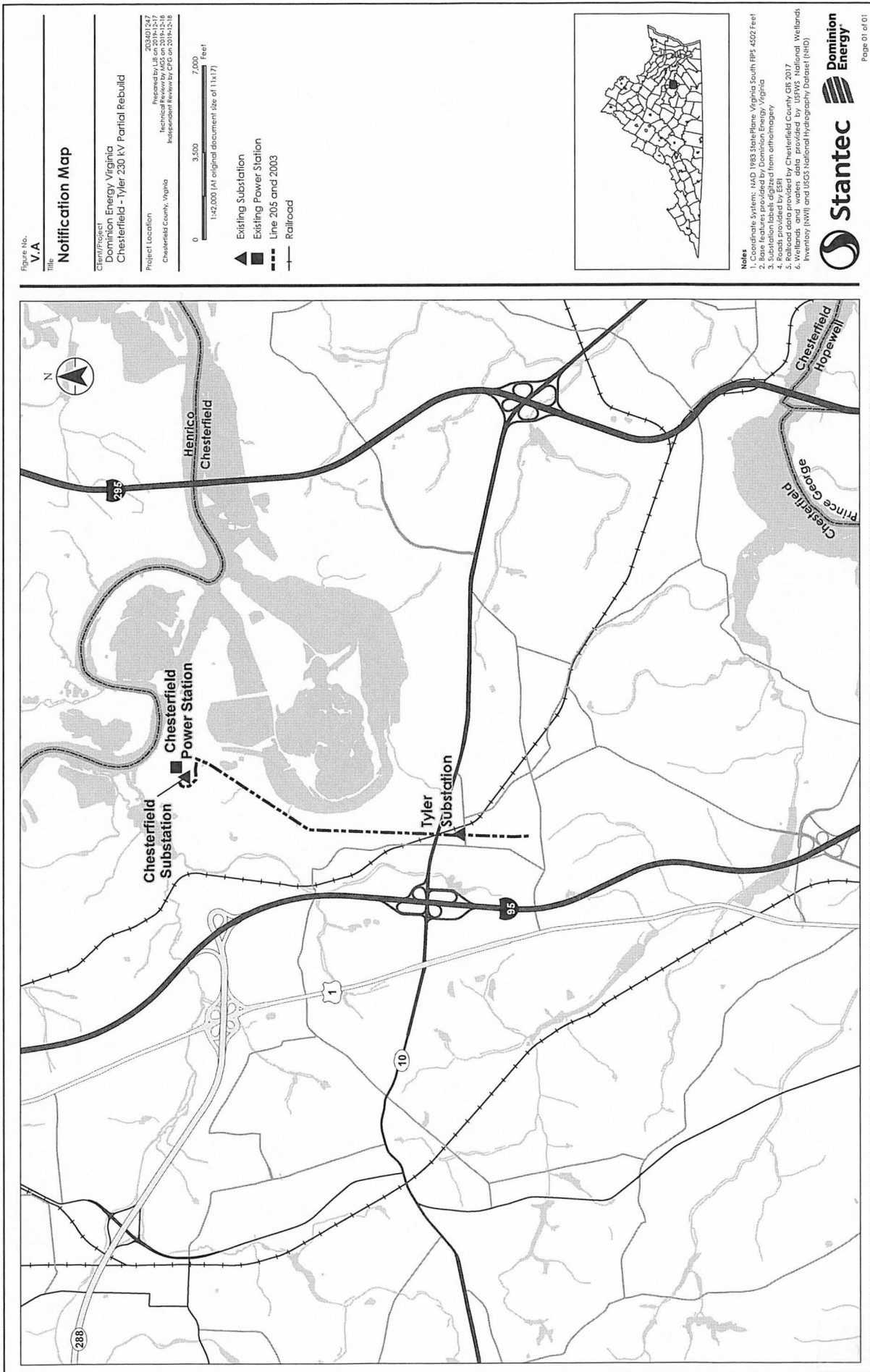


## V. NOTICE

- A. Furnish a proposed route description to be used for public notice purposes. Provide a map of suitable scale showing the route of the proposed project. For all routes that the Applicant proposed to be noticed, provide minimum, maximum and average structure heights.**

Response: A map showing the existing route to be used for the Rebuild Project is provided as Attachment V.A. A written description of the route is as follows:

The proposed route for the Rebuild Project is located within an approximately 3.2-mile right-of-way currently occupied by existing 115 kV and 230 kV transmission lines. The existing transmission line right-of-way for the proposed route, which varies between 160 and 235 feet wide, originates at the Company's existing Chesterfield Substation in Chesterfield County, Virginia, and heads south for approximately 2.6 miles crossing over Route 10 before entering the Company's existing Tyler Substation. The existing transmission line right-of-way for the proposed route then continues south for approximately 0.6 mile to the terminus of the Rebuild Project at Structure #205/19A, #2003/25, also located in Chesterfield County, Virginia. For the Rebuild Project, the minimum proposed structure height is approximately 50 feet, the maximum proposed structure height is approximately 160 feet, and the average proposed structure height is approximately 112 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.





## V. NOTICE

- B. List Applicant offices where members of the public may inspect the application. If applicable, provide a link to website(s) where the application may be found.**

Response: The Application is available at the following locations:

Dominion Energy Virginia  
10900 Nuckols Road, 4<sup>th</sup> Floor  
Glen Allen, Virginia 23060  
Attn: Lane Carr, Siting and Permitting Specialist

<https://www.dominionenergy.com/chesterfieldtyler>

Mr. Keith Tignor  
Endangered Species Coordinator  
Virginia Department of Agriculture and Consumer Affairs  
102 Governor Street  
Richmond, Virginia 23219

Mr. Todd Groh  
Forestland Conservation Division  
Virginia Department of Forestry  
900 Natural Resources Drive, Suite 800  
Charlottesville, Virginia 22903

Mr. Tony Watkinson  
Habitat Management Division  
Virginia Marine Resources Commission  
Building 96, 380 Fenwick Road  
Newport News, Virginia 23607

Mr. Troy Andersen  
US Fish and Wildlife Service  
Ecological Services Virginia Field Office  
6669 Short Lane  
Gloucester, Virginia 23061

Mr. Pete Kube  
US Army Corps of Engineers  
Norfolk District, Eastern Section  
803 Front Street  
Norfolk, Virginia 23510

Mr. James Golden  
Virginia Department of Environmental Quality  
Piedmont Regional Office  
4949-A Cox Road  
Glen Allen, Virginia 23060

Mr. Michael Dowd  
Department of Environmental Quality  
Air Division  
P.O. Box 1105  
Richmond, Virginia 23218



Mr. Doug Felix  
Obstruction Evaluation Group  
Federal Aviation Administration  
AJV-A520  
Tetra Tech AMT Support  
10101 Hillwood Parkway  
Fort Worth, Texas 76177

Mr. Scott Denny  
Airport Services Division  
Virginia Department of Aviation  
5702 Gulfstream Road  
Richmond, Virginia 23250

Mr. Bart Thrasher  
Richmond District Engineer  
Virginia Department of Transportation  
Richmond District Office  
2430 Pine Forest Drive  
Colonial Heights, Virginia 23834

Ms. Martha Little, Deputy Director  
Virginia Outdoors Foundation  
600 East Main Street, Suite 402  
Richmond, Virginia 23219

Dr. Joseph P. Casey  
Chesterfield County Administrator  
9901 Lori Road  
Chesterfield, Virginia 23832

Andrew Gillies  
Planning Director  
Chesterfield County  
9800 Government Center Parkway  
Chesterfield, Virginia 23832

## V. NOTICE

- D. If the application is for a transmission line with a voltage of 138 kV or greater, provide a statement and any associated correspondence indicating that prior to the filing of the application with the SCC the Applicant has notified the chief administrative officer of every locality in which it plans to undertake construction of the proposed line of its intention to file such an application, and that the Applicant gave the locality a reasonable opportunity for consultation about the proposed line (similar to the requirements of § 15.2-2202 of the Code for electric transmission lines of 150 kV or more).**

Response: In accordance with Va. Code § 15.2-2202 E, a letter was sent to the Chesterfield County Administrator, Dr. Joseph Casey, on December 3, 2019, advising of the Company's intention to file this Application and inviting the County to consult with the Company about the Rebuild Project. See Attachment V.D.1.



**Dominion Energy Virginia**  
10900 Nuckols Road, 4<sup>th</sup> Floor, Glen Allen, Virginia 23060



**December 3, 2019**

Dr. Joseph P. Casey  
Chesterfield County  
County Administration Office  
P.O. Box 40  
Chesterfield, Virginia 23832

**RE: Dominion Energy Virginia's Proposed Chesterfield to Tyler 230 kV Transmission Lines  
Partial Rebuild, Chesterfield County, Virginia  
Notice Pursuant to Va. Code § 15.2-2202 E**

Dear Dr. Casey:

Dominion Energy Virginia (the "Company") is proposing to rebuild approximately 2.6 miles of its double circuit 230 kV transmission lines, Lines #2003 and #205, which are located between the Chesterfield Power Station and 0.6 mile south of the Tyler Substation in Chesterfield County (collectively, the "Rebuild Project"). The Rebuild Project will replace aging infrastructure that is at the end of its service life, thereby continuing to enable the Company to maintain safe and reliable electric service to customers. The proposed route is entirely within existing transmission line right-of-way; however, the Company will be pursuing approximately 0.2 acres of additional right-of-way to maintain a buffer area to adequately protect, maintain, and provide safe clearances for the existing and proposed facilities located on the right-of-way and within the Company's Tyler Substation.

The Company is preparing an application for a Certificate of Public Convenience and Necessity ("CPCN") from the Virginia State Corporation Commission ("SCC"). Pursuant to Va. Code § 15.2-2202, the Company is writing to notify Chesterfield County of the proposed Rebuild Project in advance of this SCC filing. We respectfully request that you submit any comments or additional information you feel would have bearing on the Rebuild Project within 30 days of receipt of this letter. Enclosed is an overview map of the Rebuild Project. If you have any questions about this Rebuild Project, you may contact me directly at (804) 771-4061 or [lane.e.carr@dominionenergy.com](mailto:lane.e.carr@dominionenergy.com). Dominion Energy Virginia appreciates your assistance with this project review and looks forward to any additional information you may have to offer.

Sincerely,

A handwritten signature in black ink, appearing to read "Lane Carr", written over a horizontal line.

Lane Carr  
Siting and Permitting Specialist

Enclosed: Project Overview Map



Figure No.

1

Title

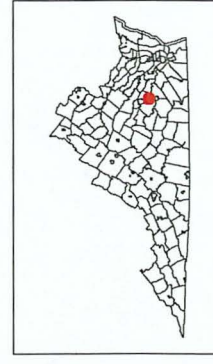
## Project Overview Map

Client/Project  
Dominion Energy Virginia  
Line 203 and Line 203  
Chesterfield - Tyler 230 KV Rebuild  
Project Location  
Chesterfield County, Virginia

203401247  
Prepared by LBS on 2018-09-09  
Technical Review by MDS on 2018-09-09  
Independent Review by CPO on 2018-09-24

0 2,000 4,000 Feet  
124,000 (at original document size of 11x17)

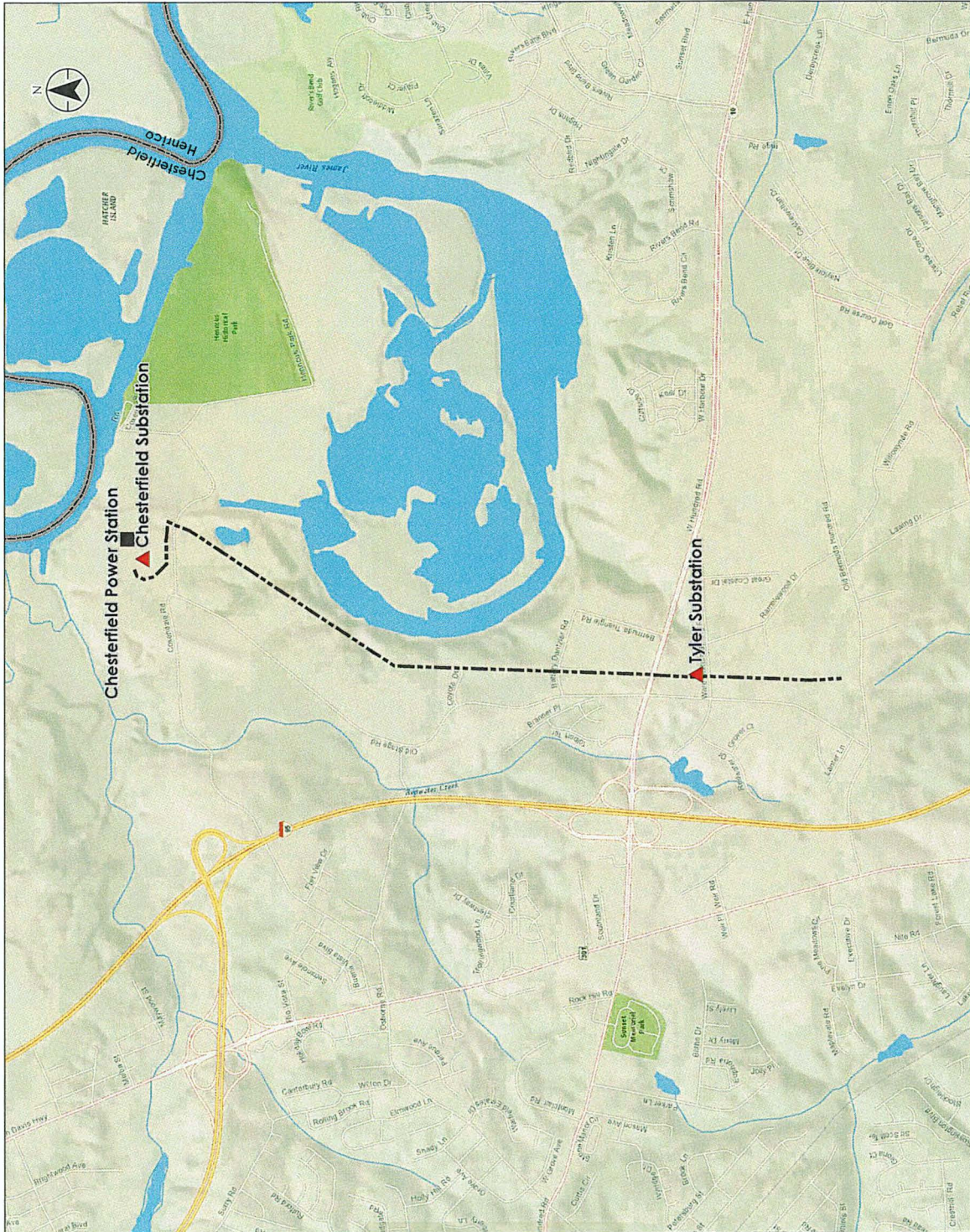
- Existing Substation
- Existing Power Station
- Project Centerline



- Notes
1. Coordinate System: NAD 1983 StatePlane, Virginia South FIPS 4502 Feet
  2. Substation locations digitized from official maps
  3. Substation locations digitized from official maps
  4. County boundary provided by DCR
  5. Base Map © National Geographic



Page 01 of 01



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COMMONWEALTH OF VIRGINIA  
STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2020-00014
	)	
For approval and certification of electric	)	
transmission facilities: Chesterfield-Tyler	)	
230 kV Transmission Lines #205 and #2003	)	
Partial Rebuild Projects	)	

**IDENTIFICATION, SUMMARIES AND TESTIMONY OF DIRECT WITNESSES OF  
VIRGINIA ELECTRIC AND POWER COMPANY**

**David C. Witt**

Witness Direct Testimony Summary  
Direct Testimony  
Appendix A: Background and Qualifications

**Elizabeth K. Gatlin**

Witness Direct Testimony Summary  
Direct Testimony  
Appendix A: Background and Qualifications

**Mohammad M. Othman**

Witness Direct Testimony Summary  
Direct Testimony  
Appendix A: Background and Qualifications

**Lane E. Carr**

Witness Direct Testimony Summary  
Direct Testimony  
Appendix A: Background and Qualifications



## WITNESS DIRECT TESTIMONY SUMMARY

Witness: David C. Witt

Title: Engineer III – Electric Transmission Planning

Summary:

Company Witness David C. Witt sponsors those portions of the Appendix describing the Company's transmission system and need for, and benefits of, the proposed Rebuild Project, as follows:

- Section I.B: This section details the engineering justifications for the proposed project.
- Section I.C: This section describes the present system and details how the proposed project will effectively satisfy present and projected future load demand requirements.
- Section I.D: This section describes critical contingencies and associated violations due to the inadequacy of the existing system.
- Section I.E: This section explains feasible project alternatives.
- Section I.H: This section provides the desired in-service date of the proposed project and the estimated construction time.
- Section I.J: This section provides information about the project if approved by the RTO.
- Section I.K: Although not applicable to the proposed project, this section provides outage history and maintenance history for existing transmission lines if the proposed project is a rebuild and is due in part to reliability issues.
- Section I.M: Although not applicable to the proposed project, this section contains information for transmission lines interconnecting a non-utility generator.
- Section I.N: Although not applicable to the proposed project, this section, when applicable, provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.
- Section II.A.10: This section provides details of the construction plans for the proposed project, including requested and approved line outage schedules.

Additionally, Company Witness Witt co-sponsors the following portions of the Appendix:

- Section I.A (co-sponsored with Company Witness Elizabeth K. Gatlin): This section details the primary justifications for the proposed project.
- Section I.F (co-sponsored with Company Witness Elizabeth K. Gatlin): This section describes any lines or facilities that will be removed, replaced or taken out of service upon completion of the proposed project and normal and emergency ratings of the facilities.
- Section I.G (co-sponsored with Company Witness Lane E. Carr): This section provides a system map for the affected area.
- Section II.A.3 (co-sponsored with Company Witness Lane E. Carr): This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed project.

A statement of Mr. Witt's background and qualifications is attached to his testimony as Appendix A.

**DIRECT TESTIMONY  
OF  
DAVID C. WITT  
ON BEHALF OF  
VIRGINIA ELECTRIC AND POWER COMPANY  
BEFORE THE  
STATE CORPORATION COMMISSION OF VIRGINIA  
CASE NO. PUR-2020-00014**

1   **Q.   Please state your name, business address and position with Virginia Electric and**  
2       **Power Company (“Dominion Energy Virginia” or the “Company”).**

3   A.   My name is David C. Witt, and I am an Engineer III in the Electric Transmission  
4       Planning Department of Dominion Energy Virginia. My office is located at 10900  
5       Nuckols Road, Glen Allen, Virginia 23060. A statement of my qualifications and  
6       background is provided as Appendix A.

7   **Q.   Please describe your areas of responsibility with the Company.**

8   A.   I am responsible for planning the Company’s electric transmission system for voltages of  
9       69 kilovolt (“kV”) through 500 kV.

10   **Q.   What is the purpose of your testimony in this proceeding?**

11   A.   In order to maintain the structural integrity and reliability of its transmission system in  
12       compliance with mandatory North American Electric Reliability Corporation (“NERC”)  
13       Reliability Standards, Dominion Energy Virginia proposes (i) to rebuild within an  
14       existing right-of-way or on Company-owned property, an approximately 3.2 mile section  
15       of existing 230 kV Chesterfield-Locks Line #205 and Chesterfield-Poe Line #2003  
16       between the Company’s existing Chesterfield Substation, which is located on the  
17       Company’s Chesterfield Power Station site, to Structure #205/19A, #2003/25, which is  
18       located approximately 0.6 mile south of the Company’s existing Tyler Substation, all



1 within Chesterfield County, Virginia; and (ii) to perform minor work at both the  
2 Chesterfield Substation and Tyler Substation (collectively, the “Rebuild Project”).

3 The purpose of my testimony is to describe the Company’s transmission system and the  
4 need for, and benefits of, the proposed Rebuild Project. I am sponsoring Sections I.B,  
5 I.C, I.D, I.E, I.H, I.J, I.K, I.M, I.N, and II.A.10 of the Appendix. Additionally, I also co-  
6 sponsor Sections I.A and I.F with Company Witness Elizabeth K. Gatlin; and Sections  
7 I.G and II.A.3 with Company Witness Lane E. Carr.

8 **Q. Does this conclude your pre-filed direct testimony?**

9 **A.** Yes, it does.

**BACKGROUND AND QUALIFICATIONS  
OF  
DAVID C. WITT**

Mr. David C. Witt received a Bachelor of Science Degree in Electrical Engineering from Virginia Polytechnic Institute and State University in 1988. He has 23 years of experience with the Company in both Electrical Transmission and Distribution. Beginning in 1984, Mr. Witt interned with the Company for three years. In 1988, he began working full time in the Transmission Engineering Department. From 1992 to 1997, he worked in the Permitting, Substation Engineering and Project Management groups. After working as a plant engineer at another company, Mr. Witt returned to the Company in 2007 to work in the Transmission Engineering group where he was involved in underground transmission line design and operation until June 2011. Since that time, Mr. Witt worked in the Transmission Planning department.

Mr. Witt has previously submitted pre-filed testimony to the Virginia State Corporation Commission.



## WITNESS DIRECT TESTIMONY SUMMARY

Witness: Elizabeth K. Gatlin

Title: Engineer III – Electric Transmission Line Engineering

Summary:

Company Witness Elizabeth K. Gatlin will sponsor those portions of the Appendix providing an overview of the design characteristics of the transmission facilities for the proposed Rebuild Project, and discussing electric and magnetic field levels, as follows:

- Section I.L: This section provides photographs illustrating the deterioration of structures and associated equipment as applicable.
- Section II.A.5: This section provides drawings of the right-of-way cross section showing typical transmission lines structure placements.
- Section II.B.1 to II.B.4: This section provides the line design and operational features of the proposed project.
- Section IV: This section provides analysis on the health aspects of electric and magnetic field levels.

Additionally, Company Witness Gatlin co-sponsors the following portions of the Appendix:

- Section I.A (co-sponsored with Company Witness David C. Witt): This section details the primary justifications for the proposed project.
- Section I.F (co-sponsored with Company Witness David C. Witt): This section describes any lines or facilities that will be removed, replaced or taken out of service upon completion of the proposed project and normal and emergency ratings of the facilities.
- Section I.I (co-sponsored with Company Witness Mohammad M. Othman): This section provides the estimated total cost of the proposed project.
- Section II.B.5 (co-sponsored with Company Witness Lane E. Carr): This section provides the mapping and structure heights for the existing overhead structures.

A statement of Ms. Gatlin's background and qualifications is attached to her testimony as Appendix A.

**DIRECT TESTIMONY  
OF  
ELIZABETH K. GATLIN  
ON BEHALF OF  
VIRGINIA ELECTRIC AND POWER COMPANY  
BEFORE THE  
STATE CORPORATION COMMISSION OF VIRGINIA  
CASE NO. PUR-2020-00014**

1   **Q.    Please state your name, business address and position with Virginia Electric and**  
2       **Power Company (“Dominion Energy Virginia” or the “Company”).**

3    A.   My name is Elizabeth K. Gatlin, and I am an Engineer III in the Electric Transmission  
4       Line Engineering Department of the Company. My business address is 10900 Nuckols  
5       Road, Glen Allen, Virginia 23060. A statement of my qualifications and background is  
6       provided as Appendix A.

7   **Q.    Please describe your areas of responsibility with the Company.**

8    A.   I am responsible for the estimating and conceptual design of high voltage transmission  
9       line projects from 69 kilovolt (“kV”) to 500 kV.

10   **Q.   What is the purpose of your testimony in this proceeding?**

11   A.   In order to maintain the structural integrity and reliability of its transmission system in  
12       compliance with mandatory North American Electric Reliability Corporation (“NERC”)   
13       Reliability Standards, Dominion Energy Virginia proposes (i) to rebuild within an  
14       existing right-of-way or on Company-owned property, an approximately 3.2 mile section  
15       of existing 230 kV Chesterfield-Locks Line #205 and Chesterfield-Poe Line #2003  
16       between the Company’s existing Chesterfield Substation, which is located on the  
17       Company’s Chesterfield Power Station site, to Structure #205/19A, #2003/25, which is  
18       located approximately 0.6 mile south of the Company’s existing Tyler Substation, all



1 within Chesterfield County, Virginia; and (ii) to perform minor work at both the  
2 Chesterfield Substation and Tyler Substation (collectively, the “Rebuild Project”).

3 The purpose of my testimony is to describe the design characteristics of the transmission  
4 facilities for the proposed Rebuild Project, and also to discuss electric and magnetic field  
5 (“EMF”) levels. I sponsor Sections I.L, II.A.5, II.B.1 to II.B.4, and IV of the Appendix.  
6 I also co-sponsor Section I.A and Section I.F of the Appendix with Company Witness  
7 David C. Witt; Section I.I of the Appendix with Company Witness Mohammad M.  
8 Othman; and Section II.B.5 with Company Witness Lane E. Carr.

9 **Q. Does this conclude your pre-filed direct testimony?**

10 **A.** Yes, it does.

**BACKGROUND AND QUALIFICATIONS  
OF  
ELIZABETH K. GATLIN**

Elizabeth K. Gatlin received a Bachelor of Science degree in Engineering Science and Mechanics from Virginia Polytechnic Institute and State University in 2003. From December 2003 to November 2009, she held various engineering titles at CHA Inc. (formerly Clough Harbour and Associates, LLP). From June 2010 to present, Ms. Gatlin has held various engineering titles with the Company in the Electric Transmission Engineering department. In December 2017, Ms. Gatlin received her license as a Professional Engineer in the Commonwealth of Virginia.

Ms. Gatlin previously has presented testimony before the State Corporation Commission of Virginia.



### WITNESS DIRECT TESTIMONY SUMMARY

Witness: Mohammad M. Othman

Title: Engineer III – Substation Engineering

Summary:

Company Witness Mohammad M. Othman sponsors or co-sponsors the following portions of the Appendix describing the work to be performed at the existing substation for the Rebuild Project, as follows:

- Section I.I (co-sponsored with Company Witness Elizabeth K. Gatlin): This section provides the estimated total cost of the proposed project.
- Section II.C: This section describes and furnishes a one-line diagram of the substation associated with the proposed project, if needed.

A statement of Mr. Othman's background and qualifications is attached to his testimony as Appendix A.

**DIRECT TESTIMONY  
OF  
MOHAMMAD M. OTHMAN  
ON BEHALF OF  
VIRGINIA ELECTRIC AND POWER COMPANY  
BEFORE THE  
STATE CORPORATION COMMISSION OF VIRGINIA  
CASE NO. PUR-2020-00014**

1   **Q.**    Please state your name, business address and position with Virginia Electric and  
2           Power Company (“Dominion Energy Virginia” or the “Company”).

3   A.    My name is Mohammad M. Othman, and I am an Engineer III in the Substation  
4           Engineering section of the Electric Transmission group of the Company. My business  
5           address is 2400 Grayland Avenue, Richmond, Virginia 23220. A statement of my  
6           qualifications and background is provided as Appendix A.

7   **Q.**    What are your responsibilities as an Engineer III?

8   A.    I am responsible for evaluation of the substation project requirements, conceptual  
9           physical design, scope development, preliminary engineering and cost estimating for high  
10          voltage transmission and distribution substations.

11   **Q.**    What is the purpose of your testimony in this proceeding?

12   A.    In order to maintain the structural integrity and reliability of its transmission system in  
13          compliance with mandatory North American Electric Reliability Corporation (“NERC”)  
14          Reliability Standards, Dominion Energy Virginia proposes (i) to rebuild within an  
15          existing right-of-way or on Company-owned property, an approximately 3.2 mile section  
16          of existing 230 kV Chesterfield-Locks Line #205 and Chesterfield-Poe Line #2003  
17          between the Company’s existing Chesterfield Substation, which is located on the  
18          Company’s Chesterfield Power Station site, to Structure #205/19A, #2003/25, which is



1 located approximately 0.6 mile south of the Company's existing Tyler Substation, all  
2 within Chesterfield County, Virginia; and (ii) to perform minor work at both the  
3 Chesterfield Substation and Tyler Substation (collectively, the "Rebuild Project").

4 The purpose of my testimony is to describe the work to be performed at the proposed  
5 Rebuild Project's various substations. I sponsor Section II.C of the Appendix.

6 Additionally, I co-sponsor Section I.I of the Appendix with Company Witness Elizabeth  
7 K. Gatlin, specifically, as it pertains to substation work.

8 **Q. Does this conclude your pre-filed direct testimony?**

9 **A.** Yes, it does.

**BACKGROUND AND QUALIFICATIONS  
OF  
MOHAMMAD M. OTHMAN**

Mohammad M. Othman received a Bachelor of Science degree in Electrical Engineering from Virginia Commonwealth University in 2008. Mr. Othman's responsibilities included the evaluation of the substation project requirements, development of scope documents and schedules, preparation of estimates and proposals, preparation of specifications and bid documents, material procurement, design substation physical layout, develop detailed physical drawings, bill of materials, electrical schematics and wiring diagrams. Mr. Othman joined the Dominion Energy Virginia Substation Engineering department in 2010 as an Engineer II then promoted to Engineer III, the title he currently holds.

Mr. Othman has previously submitted pre-filed testimony to the Virginia State Corporation Commission.



## WITNESS DIRECT TESTIMONY SUMMARY

Witness: Lane E. Carr

Title: Siting and Permitting Specialist I

Summary:

Company Witness Lane E. Carr will sponsor those portions of the Appendix providing an overview of the design of the route for the proposed Rebuild Project, and related permitting, as follows:

- Section II.A.1: This section provides the length of the proposed corridor and viable alternatives to the proposed project.
- Section II.A.2: This section provides a map showing the route of the proposed project in relation to notable points close to the proposed project.
- Section II.A.4: This section explains why the existing right-of-way is not adequate to serve the need, to the extent applicable.
- Sections II.A.6 to II.A.8: These sections provide detail regarding the right-of-way for the proposed project.
- Section II.A.9: This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11: This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Section II.A.12: This section identifies the counties and localities through which the proposed project will pass and provides General Highway Maps for these localities.
- Section II.B.6: This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III: This section details the impact of the proposed project on scenic, environmental, and historic features.
- Section V: This section provides information related to public notice of the proposed project.

Additionally, Ms. Carr co-sponsors the following portion of the Appendix:

- Section I.G (co-sponsored with Company Witness David C. Witt): This section provides a system map for the affected area.
- Section II.A.3 (co-sponsored with Company Witness David C. Witt): This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed project.
- Section II.B.5 (co-sponsored with Company Witness Elizabeth K. Gatlin): This section provides the mapping and structure heights for the existing overhead structures.

Finally, Ms. Carr sponsors the DEQ Supplement filed with the Application.

A statement of Ms. Carr's background and qualifications is attached to her testimony as Appendix A.

**DIRECT TESTIMONY  
OF  
LANE E. CARR  
ON BEHALF OF  
VIRGINIA ELECTRIC AND POWER COMPANY  
BEFORE THE  
STATE CORPORATION COMMISSION OF VIRGINIA  
CASE NO. PUR-2020-00014**

1   **Q.    Please state your name, business address and position with Virginia Electric and**  
2       **Power Company (“Dominion Energy Virginia” or the “Company”).**

3    A.   My name is Lane E. Carr, and I am a Siting and Permitting Specialist for Virginia  
4       Electric and Power Company (“Dominion Energy Virginia” or the “Company”). My  
5       business address is 10900 Nuckols Road, Glen Allen, Virginia 23060. A statement of my  
6       qualifications and background is provided as Appendix A.

7   **Q.    Please describe your areas of responsibility with the Company.**

8    A.   I am responsible for identifying appropriate routes for transmission lines and obtaining  
9       necessary federal, state, and local approvals and environmental permits for those  
10       facilities. In this position, I work closely with government officials, permitting agencies,  
11       property owners, and other interested parties, as well as with other Company personnel,  
12       to develop facilities needed by the public so as to reasonably minimize environmental  
13       and other impacts on the public in a reliable, cost-effective manner.

14   **Q.    What is the purpose of your testimony in this proceeding?**

15   A.   In order to maintain the structural integrity and reliability of its transmission system in  
16       compliance with mandatory North American Electric Reliability Corporation (“NERC”)  
17       Reliability Standards, Dominion Energy Virginia proposes (i) to rebuild within an  
18       existing right-of-way or on Company-owned property, an approximately 3.2 mile section



1 of existing 230 kV Chesterfield-Locks Line #205 and Chesterfield-Poe Line #2003  
2 between the Company's existing Chesterfield Substation, which is located on the  
3 Company's Chesterfield Power Station site, to Structure #205/19A, #2003/25, which is  
4 located approximately 0.6 mile south of the Company's existing Tyler Substation, all  
5 within Chesterfield County, Virginia; and (ii) to perform minor work at both the  
6 Chesterfield Substation and Tyler Substation (collectively, the "Rebuild Project").

7 The purpose of my testimony is to provide an overview of the route and permitting for  
8 the proposed Rebuild Project. As it pertains to routing and permitting, I sponsor Sections  
9 II.A.1, II.A.2, II.A.4, II.A.6, II.A.7, II.A.8, II.A.9, II.A.11, II.A.12, II.B.6, III, and V of  
10 the Appendix. I also sponsor the DEQ Supplement filed with the Application, and co-  
11 sponsor Sections I.G and II.A.3 with Company Witness David C. Witt, and Section II.B.5  
12 of the Appendix with Company Witness Elizabeth K. Gatlin.

13 **Q. Has the Company complied with Va. Code § 15.2-2202 E?**

14 A. In accordance with Va. Code § 15.2-2202 E, a letter was sent to the Chesterfield County  
15 Administrator, Dr. Joseph Casey, on December 3, 2019, advising of the Company's  
16 intention to file this Application and inviting the County to consult with the Company  
17 about the Rebuild Project. A copy of this letter is included as Appendix Attachment  
18 V.D.1.

19 **Q. Does this conclude your pre-filed direct testimony?**

20 A. Yes, it does.

**BACKGROUND AND QUALIFICATIONS  
OF  
LANE E. CARR**

Lane E. Carr graduated from California Polytechnic State University in 1992 with a Bachelor of Science in Agricultural Business. She also obtained a Master of Science from California Polytechnic State University, San Luis Obispo in 1997. Ms. Carr joined the Company's Transmission Right-of-Way group in January 2019 as a Siting and Permitting Specialist, the position she presently holds. Prior to working for the Company, Ms. Carr worked as an Environmental Inspector for the County of Henrico.

Ms. Carr has previously submitted pre-filed testimony to the Virginia State Corporation Commission.