

**APPLICATION OF VIRGINIA ELEC. & POWER COMPANY
D/B/A DOMINION VIRGINIA POWER**

**FOR APPROVAL AND CERTIFICATION OF ELECTRIC
FACILITIES: SURRY-SKIFFES CREEK 500 KV
TRANSMISSION LINE, SKIFFES CREEK-WHEALTON 230 KV
TRANSMISSION LINE, AND SKIFFES CREEK 500 KV-230-KV-
115 KV SWITCHING STATION**

CASE NO. PUE-2012-00029

**REPORT OF ALEXANDER P. SKIRPAN, JR.
SENIOR HEARING EXAMINER**

AUGUST 2, 2013

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY
d/b/a DOMINION VIRGINIA POWER

CASE NO. PUE-2012-00029

For approval and certification of electric facilities:
Surry-Skiffes Creek 500 kV Transmission Line,
Skiffes Creek-Whealton 230 kV Transmission Line, and
Skiffes Creek 500 kV-230 kV-115 kV Switching Station

REPORT OF ALEXANDER F. SKIRPAN, JR., SENIOR HEARING EXAMINER

August 2, 2013

Dominion Virginia Power seeks authority to construct: (i) a new 500 kV transmission line of approximately 8.0 miles, beginning at the Surry Switching Station in Surry County, crossing the James River, to a new Skiffes Creek Switching Station in James City County; (ii) the Skiffes Creek Switching Station; (iii) a new 230 kV transmission line of approximately 20.2 miles beginning at the Skiffes Creek Switching Station through York County and the City of Newport News, to the existing Whealton Substation in the City of Hampton; and (iv) additional facilities at the Surry Switching Station and Whealton Substation. Based on the record developed in these proceedings and as further explained herein, I find the Company established the need for the Proposed Project and that the Proposed Project reasonably minimizes the adverse impacts on scenic assets, historic districts, and the environment.

Table of Contents

Table of Contents	1
HISTORY OF THE CASE.....	5
SUMMARY OF THE RECORD	11
Dominion Virginia Power's Direct Testimony.....	13
Scot C. Hathaway	13
Peter Nedwick	14
Mark S. Allen	18
Robert J. Garrett	20
Elizabeth P. Harper.....	21
Douglas J. Lake	31
DEQ Report.....	31
Dominion Virginia Power Supplemental Direct Testimony.....	35
Elizabeth P. Harper.....	35
Public Witness Testimony – Williamsburg Hearing	36
John McGlenon	36
Mary Jones	36

Alan Lutz.....	37
John Bacon	38
Robin Carson.....	39
Stanley Samorajczyk.....	39
Ivana Basnight.....	40
Sally Thomas.....	41
Don Tharpe.....	42
George Blow	42
Anne Rogers	42
Judith Fuss	43
Danny Schmidt.....	43
Louis Malon	44
Ellen Smith Gajda	44
Joan Nancoz	45
Hank Denning.....	45
Caroline Coles Merrick	46
Michael Maher	46
Jackson Tuttle.....	47
Betty Ann Davis	47
Faye Trevelino.....	48
Jim Brown	48
Alain Rigal	49
Lisa Evans	49
Charles Harwood.....	49
Joe Burkart	49
Fred Blackmon	50
Jefferson Davis.....	51
John Rogers	51
Susan Biel.....	51
Sasha Digges	52
Mary Catherine Digges.....	52
Edward Ryan	52
Helene Kriner	53
Lon Kriner	53
Peggy Mason	54
Melvin Davis	54
David and Judith Ledbetter's Direct Testimony.....	54
David O. Ledbetter	54
Judith F. Ledbetter.....	56

BASF Corporation's Direct Testimony	56
Charles R. Waltz.....	57
Vernon C. Burrows.....	58
Chris Henderson	63
Dennis W. Gruelle.....	64
Stephen A. Romeo.....	65
James City County's Direct Testimony	66
Robert Middaugh.....	66
Dr. William Kelso	68
Colin Campbell.....	69
James Horn.....	70
Richard Schreiber	71
Edward Chappell	72
William "Bill" Street	73
Leanne Ridenbach	74
Waine Whittier	76
Kurt Westergard	79
Charles City County's Direct Testimony	82
Matthew D. Rowe.....	82
Judith F. Ledbetter.....	84
Lennar Corporation's Direct Testimony.....	85
Andrea Berenfeld	85
Patricia Davis	86
Brian E. Gordineer's Direct Testimony.....	87
Brian E. Gordineer	87
Staff's Direct Testimony	88
John W. Chiles	89
Wayne D. McCoy.....	91
Public Witness Testimony – Richmond Hearing.....	91
Stephen R. Adkins.....	91
Thomas D. Fenton	92
JoAnn McGrew	92
Honorable Sherri Bowman	93
Valerie Adkins.....	93
Sylvia Williams	94
Silas E. Marrow	94
Clarence L. Williams.....	94
C. Douglas Harwood	94
C. D. Harwood, Jr.....	95

Bonnie Whittaker	95
Victoria Gussman	95
Otway P. Harwood, II,	96
Elva B. Yates	96
Stephen James Binns	96
Jack Miniclier	97
Marinda Hall	97
Mark Perreault	98
Margaret Nelson Fowler	98
Joe Boggan	99
Jack Baer	99
Leonard Calabrese	99
George Major	100
Page Sutton	100
John H. Roberts	100
Natalie Joshi	101
Elizabeth Kostelny	101
Dominion Virginia Power's Rebuttal Testimony	101
Scot C. Hathaway	102
Peter Nedwick	103
Steven R. Herling	110
Mark S. Allen	112
Walter R. Thomasson, III	116
Pamela Faggert	117
Glenn A. Kelly	117
Kurt W. Swanson	119
Elizabeth P. Harper	119
Edward Twiss	121
Douglas J. Lake	122
Marvin L. Wolverton, Ph.D.	123
Cathy Taylor	123
Michael Brucato	124
Linda S. Erdreich, Ph.D.	124
DISCUSSION	125
STATUTORY REQUIREMENTS	126
AREAS OF CONTENTION	127
Reasonably Mitigated	127
Skiffes Creek	128
BASF Routing	128

NEED	129
NERC Standards.....	129
Load Flow Forecasts	131
Proposed Project.....	133
Proposed Alternative Project.....	141
230 kV Transmission Options	143
Generation Options.....	146
Combinations of 230 kV Transmission and Generation.....	147
Whittier's Variations	148
Cost Considerations.....	152
Construction Times	153
Recommendations to Address Need.....	155
SKIFFES CREEK	157
BASF ROUTING	164
Remediation	166
Future Development.....	169
Visual Impacts.....	170
Easement from the Authority	171
BASF Routing Recommendation	171
BASF Requested Mitigation Measures	172
FINDINGS AND RECOMMENDATIONS	175
COMMENTS	177

HISTORY OF THE CASE

On June 11, 2012, Virginia Electric and Power Company d/b/a Dominion Virginia Power (“Dominion Virginia Power” or the “Company”) filed with the State Corporation Commission (“Commission”) an Application for Approval and Certification of Electric Facilities: Surry-Skiffes Creek 500 kV Transmission Line, Skiffes Creek-Wheaton 230 kV Transmission Line, and Skiffes Creek 500 kV-230 kV-115 kV Switching Station (“Application”).

On July 11, 2012, the Commission issued its Order for Notice and Hearing. Among other things, the Commission (i) scheduled public hearings on October 24, 2012, in Williamsburg, and January 10, 2013, in Richmond; and (ii) appointed a hearing examiner to conduct further proceedings on behalf of the Commission.

On August 31, 2012, the Virginia Department of Environmental Quality (“DEQ”) filed its coordinated review of the potential impacts to natural and cultural resources associated with the proposed project (“DEQ Report”). The DEQ Report includes DEQ’s summary of findings, recommendations, and potential permits concerning the proposed project. DEQ stated that the following agencies and planning district commissions joined in the review: DEQ; Department of Game and Inland Fisheries (“DGIF”); Department of Agriculture and Consumer Services

("DACS"); Department of Conservation and Recreation ("DCR"); Department of Health ("DOH"); Department of Historic Resources ("DHR"); Department of Forestry ("DOF"); Department of Transportation ("VDOT"); Department of Aviation ("DOA"); Marine Resource Commission ("MRC"); Crater Planning District Commission ("CPDC"); and Hampton Roads Planning District Commission ("HRPDC"). In addition, DEQ reported that the following were invited to comment on the proposal: Department of Mines, Minerals and Energy ("DOMME"); Surry County, James City County, York County, City of Newport News, and the City of Hampton. The DEQ Report provided a list of permits or approvals likely to be necessary as prerequisites to construction of the project and a list of agency recommendations.

On September 6, 2012, Dominion Virginia Power filed a Motion for Entry of a Protective Ruling and Additional Protective Treatment, in which it proposed procedures for the handling of confidential or proprietary information and documents, as well as extraordinarily sensitive information and documents that may require a higher level of protection. A Hearing Examiner's Protective Ruling and Additional Protective Treatment for Extraordinarily Sensitive Information was entered in this proceeding on September 12, 2012.

On September 14, 2012, James City County filed a Motion for Continuance and Alteration of Procedural Schedule in which it requested that the hearing scheduled for January 10, 2013, be continued for four months or more, and that the current procedural schedule be adjusted accordingly. On September 28, 2012, Staff filed a response stating that it neither supported nor objected to the motion, and requested that Staff and all the parties be consulted if there were a change in the procedural schedule. On September 28, 2012, BASF Corporation ("BASF") and Save the James Alliance Trust filed responses in support of the motion. On September 28, 2012, Dominion Virginia Power filed a response in opposition to the motion. On October 3, 2012, James City County filed its reply. A three-week extension of the procedural schedule was granted in a Hearing Examiner's Ruling dated October 5, 2012. Among other things, the hearing scheduled for January 10, 2013, was retained for the purpose of receiving testimony from public witnesses, and a hearing was scheduled to commence on January 29, 2013.

On September 18, 2012, the Company filed proof that it had provided notice of the Application as provided by Paragraphs Nos. 13, 14, and 15 of the Commission's Order for Notice and Hearing in this proceeding.

By October 1, 2012, Notices of Participation were received from the following: James City County; Charles City County; BASF; Old Dominion Electric Cooperative ("ODEC"); US Home Corporation d/b/a Lennar Corporation ("Lennar"); Alliance; James River Association ("JRA"); Kingsmill Community Services Association ("Kingsmill"); River Bluffs Condominium Association ("River Bluffs"); James City County Citizens' Coalition, Inc. ("JC Citizens"); David and Judith Ledbetter ("the Ledbetters"); and Brian E. Gordineer ("Brian Gordineer").

On October 24, 2012, a public hearing was held at the Warhill High School Auditorium in Williamsburg, Virginia, as scheduled, to receive the testimony of public witnesses concerning the Application. In addition to Hearing Examiner Michael D. Thomas, who presided, Commissioners Mark C. Christie, James C. Dimitri, and Judith Williams Jagdmann were present

to hear the testimony of the public witnesses. Stephen H. Watts, II, Esquire, appeared on behalf of Dominion Virginia Power. Andrew McRoberts, Esquire, appeared on behalf of James City County. William H. Chambliss, Esquire; Wayne N. Smith, Esquire; and Matt Roussy, Esquire, appeared on behalf of Staff.

On November 30, 2012, Dominion Virginia Power filed its Second Motion for Additional Protective Treatment in which it sought additional treatment for information related to the Company's competitive procurement of natural gas pipelines and natural gas supply. The motion was granted in a Hearing Examiner's Ruling dated December 12, 2012.

On December 10, 2012, James City County filed a Motion for Leave to File Out of Time. James City County stated that it electronically filed the direct testimony of its witnesses with the Clerk of the Commission on December 7, 2012, but because the filing exceeded 100 pages, portions of the direct testimony of James City County were rejected. James City County filed the original of its direct testimony, by hand, on December 10, 2012. The motion was granted in a Hearing Examiner's Ruling dated December 12, 2012.

On December 11, 2012, James City County filed a Motion for Leave to File Photo Simulation Testimony Out of Time in which it requested an extension from December 7, 2012, to December 14, 2012, to file the testimony and exhibits of its photo simulation expert. The motion was granted in a Hearing Examiner's Ruling dated December 12, 2012.

On December 20, 2012, Staff filed a Motion for Extension of Filing Dates and Hearing, and Request for Expedited Consideration. Among other things, Staff requested that the hearing scheduled to begin on January 29, 2013, be rescheduled to February 26, 2013. The motion was granted in a Hearing Examiner's Ruling dated December 20, 2012.

On January 2, 2013, Dominion Virginia Power filed its Third Motion for Additional Protective Treatment in which it sought additional treatment for information related to the Company's site selection process for new generation. The motion was granted in a Hearing Examiner's Ruling dated January 14, 2013.

On January 10, 2013, a public hearing was held in the Commission Courtroom in Richmond, Virginia, to receive the testimony of public witnesses concerning the Application, with Hearing Examiner, Michael D. Thomas, presiding. Stephen H. Watts, II, Esquire, appeared on behalf of Dominion Virginia Power. Andrew McRoberts, Esquire, appeared on behalf of James City County. David O. Ledbetter appeared *pro se*. William H. Chambliss, Esquire; Wayne N. Smith, Esquire; and Matt Roussy, Esquire, appeared on behalf of Staff.

On January 17, 2013, a ruling was entered scheduling a prehearing conference for January 24, 2013, to discuss, among other things, whether the Company should be required to provide additional information as part of its Application. On January 23, 2013, the prehearing conference was rescheduled to January 30, 2013.

On January 29, 2013, Dominion Virginia Power filed its Motion For Leave to Extend Procedural Schedule in Order to Conduct Studies Requested by Staff and Request for Expedited

Treatment. The Company advised that it was able to reach agreement with Staff on a specific list of additional studies for the Company to conduct as part of its Application in this proceeding. To accommodate the additional time required to conduct the additional studies, Dominion Virginia Power requested that the procedural schedule be extended by approximately one month.

On January 30, 2013, the prehearing conference was held as scheduled. Stephen H. Watts, II, Esquire; Vishwa B. Link, Esquire; Lisa S. Booth, Esquire; and Charlotte P. McAfee, Esquire, appeared on behalf of Dominion Virginia Power. Andrew McRoberts, Esquire, and M. Ann Neil Cosby, Esquire, appeared on behalf of James City County. B. Randolph Boyd, Esquire, appeared on behalf of Charles City County. David O. Ledbetter appeared *pro se*. Michael J. Quinan, Esquire, appeared on behalf of BASF. Patrick A. Cushing, Esquire, appeared on behalf of Lennar. Wayne N. Smith, Esquire, and D. Mathias Roussy, Jr., Esquire, appeared on behalf of Staff. Based on the discussions held during the prehearing conference, additional studies were directed in a Hearing Examiner's Ruling dated January 30, 2013. Because the scope of the additional studies was increased to include an alternative proposed by James City County witness Whittier, the procedural schedule was adjusted to extend the date for the Company's rebuttal testimony and exhibits from February 7, 2013, to March 14, 2013, and to extend the date for the beginning the evidentiary hearing from February 26, 2013, to April 9, 2013.

On March 1, 2013, Appalachian Voices, Chesapeake Climate Action Network, and the Virginia Chapter of the Sierra Club (collectively, "Environmental Respondents") filed a Motion Seeking Leave to File a Notice of Participation Out of Time. On March 8, 2013, Staff filed a response in opposition to the Motion. The Notice of Participation filed by the Environmental Respondents was accepted out of time in a Hearing Examiner's Ruling dated March 11, 2013.

On March 15, 2013, Environmental Respondents filed a Motion for Admission *Pro Hac Vice* for Angela L. Navarro, a member in good standing of the bar of the state of Maryland. The motion was granted in a Hearing Examiner's Ruling dated April 4, 2013.

On March 28, 2013, James City County filed a Motion for Modification of Protective Agreement to allow its outside consultants access to extraordinarily sensitive information. James City County represented that Dominion Virginia Power and Staff did not object. The motion was granted in a Hearing Examiner's Ruling dated March 29, 2013.

On April 9, 2013, through April 12, 2013, and April 15, 2013, through April 18, 2013, public hearings were held in the Commission Courtroom in Richmond, Virginia ("April Hearing"). Stephen H. Watts, II, Esquire; Vishwa B. Link, Esquire; Jennifer D. Valaika, Esquire; Richard D. Gary, Esquire; Timothy E. Biller, Esquire; Lisa S. Booth, Esquire; and Charlotte P. McAfee, Esquire, appeared on behalf of Dominion Virginia Power. Andrew McRoberts, Esquire; M. Ann Neil Cosby, Esquire; and Leo P. Rogers, Jr., Esquire, appeared on behalf of James City County. B. Randolph Boyd, Esquire, appeared on behalf of Charles City County. David O. Ledbetter appeared *pro se*. Michael J. Quinan, Esquire, appeared on behalf of BASF. Ralph L. "Bill" Axselle, Jr., Esquire, and Patrick A. Cushing, Esquire, appeared on behalf of Lennar. John A. Pirko, Esquire, and Edward Tatum, Esquire, appeared on behalf of ODEC. Caleb Jaffe, Esquire; Frank Rambo, Esquire; and Angela Navarro, Esquire, appeared on

behalf of Environmental Respondents. William Chambliss, Esquire; Wayne N. Smith, Esquire; and D. Mathias Roussy, Jr., Esquire, appeared on behalf of Staff.

During the hearing for this matter on April 18, 2013, Exhibit No. 134 was reserved for the Company and James City County to report on their negotiations concerning a right-of-way on property owned by the James City County Economic Development Authority. On May 17, 2013, counsel for Dominion Virginia Power filed an update of the parties' negotiations. The May 17th filing was admitted to the record as Exhibit No. 134 in a Hearing Examiner's Ruling dated May 21, 2013.

Through May 8, 2013, the Commission received written comments from the following: Joseph D. Morrissey, Member, House of Delegates, and A. Donald McEachin, Member, Senate of Virginia, in support of the Surry-Skiffes Creek route; The Colonial Williamsburg Foundation, Preservation Virginia, and The College of William and Mary; the City of Williamsburg; the Chapter 11 Trustee for Carter's Grove; Greater Williamsburg Chamber & Tourism Alliance; and the National Trust for Historic Preservation in opposition to the Surry-Skiffes Creek route; the Charles City County Board of Supervisors in opposition to the Chickahominy Alternative route; the Scenic Virginia Public Policy Committee in support of submerged lines; and the York County Board of Supervisors in opposition to overhead lines.

In addition, 563 petition signatures and public comments were filed in support of the Surry-Skiffes Creek route and four public comments were filed in opposition.¹ Forty-five public comments were filed in opposition to the Chickahominy Alternative route.² Ninety-five public

¹ A Petition to the James City County Board of Supervisors to approve/support the proposed Surry-Skiffes Creek Route included 505 signatures. The fifty-eight public comments received by the Commission supporting the Surry-Skiffes Creek Route were filed by the following individuals: I. Carlyle Campbell, Byron Bishop, Lon S. & Helene B. Kriner, Robert E. Quinlan, Margaret M. Quinlan, John McSorley, Jack E. Baer, Susan C. Baer, Drea & Bill Bogart, Sally Pittman-Smith, Rose Marie Crocco, Anthony Crocco, Susan D. Murphy, Ed Bryant, Roger M. Jarmon, Charles A. Williams, Rita Muncy, Jim & Betsy Edwards, William J. Harkins, George Major, Page W. Sutton, David F. Clark, James A. Scott, Gene Fechhelm, Linda Ligas, Barbara J. Giffin, John H. Roberts, Donald LaRuffa, Sylvia E. Mosser, Bruce T. Mosser, Ann & Larry Barker, John E. Greenhalgh, Charles R. Williams, Maurine A. Williams, Edmund C. Hyland, James B. Knapp, Wayne Ligas, David E. Symanski, Rich Moser, Elaine Moser, Sarah Lynn, Moira C. Symanski, Sarah Lynn, Joanne Sheffield, Sara Norment, Jean Scott, Liz Channel, Marsha P. Kalison, Warren H. Withrow, Alfonso M. Quintans, David F. Clark, Lawrence F. King, Richard W. Brown, Robert J. Pulaski, Iris Noonan, Richard B. Bishop, Vila R. Zverina, and Sandy L. Bishop. The four public comments received by the Commission opposing the Surry-Skiffes Creek Route were filed by the following individuals: Craig Clarke, William K. Hoffman, Carolyn Hoffman, and William J. Amos.

² The forty-five public comments received by the Commission opposing the Chickahominy Alternative Route were filed by the following individuals: Brian E. Gordineer, Thomas D. Fenton, Peter J. Coughlin, Larry N. Muncy, Sondra Sutton, Julia G. Shoup, Marcia M. Clark, Paul & Patricia Tomiczek, Richard L. Hasson, William M. Ellsworth, Lisa Woo, Marguerite Boggan, Sandra M. Rojakovick, Robert J. Rojakovick, Sally Pittman-Smith, Edgar F. Norment, Henry F. Denning, Loren W. Pratt, Sandra Martin, Donne Eugenie Poole, Peter M. Kalison,

comments were filed in support of submerged lines³ and four public comments were filed in opposition to overhead lines.⁴ Also, 741 public comments in the form of a Change.org online petition to stop the overheading of the Surry-Skiffes Creek 500 kV transmission line were filed, with 492 of the public comments from Williamsburg, 108 of the public comments from fifty-two other Virginia locations,⁵ 117 of the public comments from thirty other states and the District of Columbia,⁶ and twenty-four of the public comments from seventeen foreign countries.⁷ Other

Irene Babian, William R. Hux Jr., Elva Hudson, Robert P. Hudson, Barbara A. W. Hood, Lucille A. Cassidy, James T. Boden, Betty A. Bereskie, James E. Bereskie, Dennis Tibbs, Richard A. Clark, Carol I. Clark, Jane Brennan, Donald LaRuffa, Kevin Woodrum, Lisa B. Bishop, Marinda Hall, Robert E. Harris, Steven D. Fuhrmann, David W. Wood, Kevin Slattum, M.D. Grogan, Charles Douglas Harwood, and Steve Rula, Jr.

³ The ninety-five public comments received by the Commission supporting submerged lines were filed by the following individuals: Mary L. Doerflein, Walt Boulden, Ray Nugent, Betty Ann Davis, John R. Stokes, Janice S. Woods, Margaret Nelson Fowler, Daniel Schmidt, Ivana Basnight, W. Brantley Basnight, III, Ruth Ann Wilson, Diane K. Cavazos, Walter Phelp, Jr., Mary Williamson, C. Wayne Williamson, L. White, Nanette Opperman, Arlan Young, Peter P. Sweet, Pete Armour, Janie Glenry, Larkin Schmidt, Cecil B. Smith, Alan G. Lutz, Diane Lutz, Mike & Amy Jones, Michael D. Lavin, S. K. Map, Merry A. Outlaw, Ralph R. Wolfe, Jacqueline H. Booth, Sheila K. Germain, Jean Poff, Madeline Markwood, Lloyd S. Woods, Pete Kamariotis, Rebecca Keeney, Rella Tolier, Irene Querlas, Shirley J. Conner, Deborah Barsden, Tonya C. Thornton, Rosemary G. Marrero, Barbara M. Martin, Colin & June Penny, C. Whitney & Barbara Andrus, Thomas M. Boyle, Mr. & Mrs. Ben Smethurst, R. & Mary Buenting, John C. Vaughan III, Marilyn M. Schmid, Walter Schmid, Susan Lind, Tom & Ellen Gorde, Steph Ball, Ronald A. Daniel, Mike Bowers, Barbara Bowers, Ivana Basnight, W. Basnight III, Sara Nugent, Walt Boulden, Roy Nugent, Elizabeth M. Collins, Henry K. Mook, Fran McDonough, Patricia Vaughan, Thomas & Rosann Gatski, Michael McDonough, J & Joyce Olsen, J. Jacoby, C. R. Smith, Ursula Venue, Cathleen A. Pake, Jeffrey & Melanie Platte, James & Judith Adams, Lauren B. Fleishman, Robert T. Ritter, Michael Jackson, Ronald Lynde, and 15 illegible signatures.

⁴ The four public comments received by the Commission opposing overheading lines were filed by the following individuals: Nancy E. Brown, Joseph A. Ross, Bonnie Biddle Sheppard, and William A. Fox.

⁵ The other locations were: Alexandria (5), Arlington (3), Centreville (2), Charlottesville (4), Chesapeake (2), Christiansburg (2), Coles Point (1), Crozet (2), Dunn Loring (1), Fairfax (2), Fairfax Station (1), Glen Allen (1), Gloucester (1), Hallieford (1), Hampton (1), Hayes (1), James City County (1), Jamestown (2), Keswick (1), Lanexa (2), Leesburg (1), Lexington (1), Lynchburg (4), Manakin Sabot (1), Mechanicsville (1), Midlothian (2), Natural Bridge (1), Newport News (12), Norfolk (3), Norge (1), Penn Laird (1), Petersburg (1), Portsmouth (2), Powhatan (1), Quinton (3), Reston (1), Richmond (7), Roanoke (1), Rocky Mount (1), Salem (1), Saltville (1), Smithfield (1), Spotsylvania (1), Spring Grove (1), Stafford (2), Stephens City (1), Suffolk (1), Surry (1), Toano (9), White Marsh (1), Wise (2), and Yorktown (5).

⁶ The other states were: Alabama (1), Arizona (1), California (9), Colorado (5), Connecticut (4), Florida (10), Georgia (5), Illinois (2), Iowa (1), Kansas (1), Kentucky (2), Louisiana (2), Maine (1), Maryland (7), Massachusetts (8), Michigan (1), Nevada (2), New Hampshire (2), New Jersey (6), New Mexico (1), New York (10), North Carolina (7), Ohio (1), Pennsylvania (9), Rhode

comments received include the following: National Parks Conservation Association supporting the SCC requiring Dominion to explore all reasonable alternatives to avoid building the proposed line; Chesapeake Bay Office of the National Park Service requesting that Dominion minimize the visual impacts with the river crossings; Chesapeake Conservancy requesting that Dominion find less impactful alternatives that maintain the integrity of the sites along the James River; and Michael B. Watson, Member, House of Delegates, reminding the SCC of potential negative impacts of overheading lines across the James River. Finally, eighteen other public comments were filed and included support for using existing power lines, limiting residential impact, conserving energy, and retrofitting coal plants to gas plants. Also, these public comments included opposition to high towers on the James River and the increased price tag for the Chickahominy Alternative route.

On May 24, 2013, Dominion Virginia Power filed a motion to provide an additional update on the easement negotiations. On June 7, 2013, James City County and BASF filed responses that, among other things, objected to the Company's characterization of the negotiations. On June 17, 2013, Dominion Virginia Power filed its reply which questioned the respondents' characterization of the negotiations and provided a further update on the negotiations. Because Exhibit No. 134 was not intended to be an open-ended continuing request or a forum for further argument, the motion was denied in a Hearing Examiner's Ruling dated June 25, 2013.

SUMMARY OF THE RECORD

In its Application, Dominion Virginia Power stated that electric power flow studies conducted with PJM Interconnection, L.L.C. ("PJM"), projected that by the summer of 2015, the Company's transmission facilities will violate mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards and that the failure to address these projected violations could lead to loss of service and potential damage to the Company's electrical facilities in the following load areas: (i) Charles City County, James City County, York County, Williamsburg, Yorktown, Newport News, Poquoson, and Hampton (collectively, the "Peninsula"); (ii) Essex County, King William County, King and Queen County, Middlesex County, Mathews County, Gloucester County, and the City of West Point (collectively, the "Middle Peninsula"); and (iii) King George County, Westmoreland County, Northumberland County, Richmond County, Lancaster County, and the City of Colonial Beach (collectively, the "Northern Neck").⁸ Dominion Virginia Power acknowledged that its planned December 31, 2014, retirements of Chesapeake Power Station Units No. 1 and 2, and Yorktown Power Station Unit No. 1, accelerate the projected NERC violations from the summer of 2019 to the summer of 2015.⁹

Island (1), South Carolina (3), Tennessee (3), Texas (5), Vermont (2), Wisconsin (1), and Washington, D.C. (4).

⁷ The foreign countries were: Austria (1), Belgium (1), Bermuda (1), Canada (1), Costa Rica (1), Croatia (1), Czech Republic (1), Finland (1), Germany (3), Greece (1), Ireland (1), Netherlands (1), Portugal (1), Serbia (1), Singapore (1), Sweden (3), and United Kingdom (4).

⁸ Exhibit No. 23, at 2-4.

⁹ *Id.* at 4.

To address the projected NERC violations, Dominion Virginia Power proposed to construct the following:

- approximately 7.4 miles of new 500 kV transmission line from the Company's existing 500 kV-230 kV Surry Switching Station in Surry County to a new 500 kV-230 kV-115 kV Skiffes Creek Switching Station in James City County ("Surry-Skiffes Creek Line");
- the Skiffes Creek Switching Station;
- approximately 20.2 miles of new 230 kV transmission line from the proposed Skiffes Creek Switching Station in James City County, through York County and the City of Newport News, to the Company's Whealton Substation located in the City of Hampton ("Skiffes Creek-Whealton Line"); and
- additional facilities at the Surry Switching Station and Whealton Substation. The Surry-Skiffes Creek Line, the Skiffes Creek Switching Station, the Skiffes Creek-Whealton Line, and the additional proposed facilities are referred to collectively as the "Proposed Project."¹⁰

Dominion Virginia Power provided an alternative project for the Commission's consideration.¹¹ Rather than constructing the Surry-Skiffes Creek Line, the Company would construct a 500 kV line approximately 37.9 miles in length from its Chickahominy Substation in Charles City County, through York County and the City of Williamsburg, to the proposed Skiffes Creek Switching Station in James City County ("Chickahominy-Skiffes Creek Line").¹² The Chickahominy-Skiffes Creek Line, the Skiffes Creek Switching Station, the Skiffes Creek-Whealton Line, and additional facilities at the existing Chickahominy and Whealton Substations are referred to collectively as the "Proposed Alternative Project."¹³

The estimated cost of the Proposed Project, using the Company's recommended route for the Surry-Skiffes Creek Line, is approximately \$150.6 million, including: approximately \$56.3 million for the Surry-Skiffes Creek Line; approximately \$46.4 million for the Skiffes Creek-Whealton Line; and approximately \$47.9 million for the Skiffes Creek Switching Station and other substation work.¹⁴ The estimated cost for the Proposed Alternative Project is approximately \$213.2 million, including: approximately \$115.5 million for the Chickahominy-Skiffes Creek Line; approximately \$46.4 million for the Skiffes Creek-Whealton Line; and approximately \$51.3 million for construction of the Skiffes Creek Switching Station and other substation work.¹⁵

¹⁰ *Id.* at 2.

¹¹ *Id.* at 5-6.

¹² *Id.*

¹³ *Id.* at 6.

¹⁴ *Id.*

¹⁵ *Id.* at 6-7.

Dominion Virginia Power's Direct Testimony

In support of its Application, on June 11, 2012, Dominion Virginia Power filed the direct testimony of the following six witnesses: Scot C. Hathaway, vice president of electric transmission for the Company; Peter Nedwick, consulting engineer in electric transmission planning strategic initiatives for the Dominion Technical Solutions, Inc.; James Cox, transmission project engineer in electric transmission engineering for the Company; Anthony J. Spears, consulting engineer in substation engineering for the Company; Elizabeth Harper, coordinator, siting and permitting in electric transmission right-of-way for the Company; and Douglas J. Lake, technical director and senior vice president with Natural Resources Group, LLC ("NRG"). At the April Hearing, the prefiled direct testimony of James Cox was adopted by Mark S. Allen, manager, electric transmission line engineering for the Company;¹⁶ and the prefiled direct testimony of Anthony J. Spears was adopted by Robert J. Garrett, substation standards and conceptual manager for the Company.¹⁷ A summary of the prefiled direct testimony of each witness is presented below.

Scot C. Hathaway provided an overview of the Proposed Project and introduced the Company's witnesses who submitted direct testimony on need, routing, and other information included in the Application.¹⁸

Mr. Hathaway advised that the Company determined the Proposed Project needs to be in service by the summer 2015, to maintain reliable service to approximately 280,000 customers in the Peninsula, Middle Peninsula, and Northern Neck (collectively, "North Hampton Roads Load Area").¹⁹ Mr. Hathaway stated that the area includes numerous military and industrial installations that are essential to national defense, as well as many high technology manufacturing facilities that support the economy by providing thousands of jobs.²⁰

Mr. Hathaway highlighted the testimony of Company witness Nedwick concerning the need for the Proposed Project, and on the alternatives for meeting that need considered by the Company.²¹ Mr. Hathaway identified Company witness Harper as the witness supporting the Company's Proposed Route and on the routing alternatives considered by the Company.²² Mr. Hathaway advised that Company witness Lake presents NRG's Environmental Routing Study.²³ Mr. Hathaway stated that Company witness Cox will present testimony on the design and construction of the new transmission facilities, while Company witness Spears will explain the work that will be required at the Surry Switching Station, Skiffes Creek Switching Station, and the Whealton Substation.²⁴

¹⁶ Exhibit No. 34; Allen, Tr. at 290-92.

¹⁷ Exhibit No. 36; Garrett, Tr. at 329-31.

¹⁸ Exhibit No. 30, at 2.

¹⁹ *Id.* at 3.

²⁰ *Id.*

²¹ *Id.* at 3-6, 11.

²² *Id.* at 6-9.

²³ *Id.* at 6.

²⁴ *Id.* at 9-10.

Peter Nedwick presented the need for, and benefits of, the Proposed Project.²⁵

Mr. Nedwick provided an overview of the Company's transmission system and transmission planning process.²⁶ Mr. Nedwick confirmed that PJM's regional transmission expansion planning process ("RTEPP"), used to produce PJM's 2012 Regional Transmission Expansion Plan ("RTEP"), determined that the Proposed Project is needed by the summer of 2015 to relieve violations of mandatory NERC Reliability Standards.²⁷

Mr. Nedwick testified that the North Hampton Roads Load Area is primarily served by two 230 kV transmission corridors and the generation facilities located at Yorktown Power Station.²⁸ Mr. Nedwick stated that one corridor is the 230 kV double-circuit crossing the James River at the James River Bridge, which includes Surry-Winchester Line #214 and Chuckatuck-Newport News Line #263.²⁹ Mr. Nedwick advised that the other corridor is the Chickahominy to Yorktown corridor which contains two 230 kV circuits, Chickahominy-Waller Line #2102, and Lanexa-Waller Line #2113.³⁰ Mr. Nedwick asserted that the North Hampton Roads Load Area has approximately 280,000 customers, including several military bases, defense contractors, and large industrial customers.³¹

Mr. Nedwick confirmed that the Company's power flow studies incorporating the 2012 PJM Load Forecast show the Company's transmission facilities will not meet NERC Reliability Standards if the Project is not in service by June 1, 2015.³² Mr. Nedwick warned that failure to address the projected NERC violations could lead to loss of service and damage the Company's electrical facilities in the area, significantly impacting the region's economy.³³ Mr. Nedwick contended that the Proposed Project addresses all of the potential NERC violations and enables the Company to maintain the long-term reliability of its transmission system.³⁴

Mr. Nedwick testified that pursuant to the NERC Reliability Standards, the Company must evaluate its transmission system for compliance with those standards in the near-term (1-5 years) and long-term (6-10 years).³⁵ Mr. Nedwick stated that the NERC Reliability Standards require the identification of critical system conditions and assessment of system performance for various events.³⁶ Mr. Nedwick advised that the various system events fall into four basic categories (*i.e.*, Categories A, B, C, or D) and that different system responses are permitted based on the severity of the test.³⁷ Mr. Nedwick specified the four categories as follows:

²⁵ Exhibit No. 31, at 3.

²⁶ *Id.* at 4.

²⁷ *Id.* at 5.

²⁸ *Id.* at 6.

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² *Id.* at 7.

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.*

Category A – No Contingencies;

Category B – Event resulting in the loss of a single element;

Category C – Event(s) resulting in the loss of two or more (multiple) elements;
and

Category D – Extreme event resulting in two or more (multiple) elements
removed or cascading out of service.³⁸

Mr. Nedwick stated that for Category A, B, and C events, “it is expected that the system will remain stable and that both thermal and voltage limits will remain within applicable ratings.”³⁹

Mr. Nedwick testified that for Category B, the Company under Critical System Conditions (*i.e.*, where the largest generating unit which has the greatest effect in the area being studied is unavailable), the loss of any transmission facility should not cause any of the remaining transmission facilities to exceed 94% of its emergency rating, and the voltage of the transmission system should not drop below 93%.⁴⁰ Mr. Nedwick advised that the loss of Yorktown Unit No. 2 constitutes the Critical System Condition for the North Hampton Roads Load Area.⁴¹ Mr. Nedwick reported that under these conditions, by the summer of 2015, overloading would occur on the following 230 kV transmission lines: (i) Lanexa-Lightfoot-Waller Line No. 2113; (ii) Chuckatuck-Benns Creek-Newport News Line No. 263; and (iii) Surry-Poolesville-Winchester Line No. 214.⁴²

Mr. Nedwick testified that for Category C, several power flow studies showed thermal overloads (above 100% of its emergency rating) including: (i) the Tower Line loss of 230 kV James River Crossing Lines No. 214 and Line No. 263 would create an overload of the 230 kV Lanexa-Lightfoot-Waller Line No. 2113, and the Waller-Penniman-Kingsmill-Yorktown Line No. 209; (ii) retirement of Yorktown Unit No. 2 would produce overloads on the following 230 kV lines: Chickahominy-Waller Line No. 2012, Waller-Denbeigh-Yorktown Line No. 285, Yorktown-Tabb-Peninsula Line No. 288, and Yorktown-Rock Landing-Warwick-Wheaton Line No. 292.⁴³

Mr. Nedwick reported that for Category D, by the summer of 2015, an outage of the right-of-way between Chickahominy and Lanexa Substations would create a cascading outage impacting customers in the North Hampton Roads study area, and in Northern Virginia, the City of Richmond, and North Carolina.⁴⁴ Mr. Nedwick advised that when analyzing potential solutions to the reliability deficiencies identified, a solution placing a new line in the existing

³⁸ *Id.* at 8.

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.* at 8-9.

⁴² *Id.* at 9.

⁴³ *Id.* at 9-10.

⁴⁴ *Id.* at 10.

right-of-way corridor located between the Chickahominy and Lanexa Substations “is not an electrically acceptable solution to this Category D violation.”⁴⁵

Mr. Nedwick pointed out that the Company’s announced retirement of Yorktown Power Station Unit No. 1 and Chesapeake Power Station Units No. 1 and No. 2 by December 31, 2014, accelerated the need for the Proposed Project from summer 2019 to summer 2015.⁴⁶ Mr. Nedwick testified that the Company’s load flow studies for the Proposed Project do not take into account that the Company “has tentatively determined” that it will retire Yorktown Unit No. 2 at the end of 2014, and announced on November 7, 2011, that it will retire Chesapeake Power Station Units No. 3 and No. 4 by December 31, 2015.⁴⁷ Mr. Nedwick asserted that with the additional retirements, the North Hampton Roads Load Area and the South Hampton Roads Load Area⁴⁸ will be generation deficient and the ability to transfer bulk power between the two 230 kV systems will be impacted.⁴⁹ Thus, Mr. Nedwick argued that “expansion of the 500 kV system in this area (east of Richmond) is needed to maintain reliable service, for both the near term and long term”⁵⁰ Nonetheless, Mr. Nedwick warned that the “at-risk” status of additional generation capacity east of the City of Richmond means that “even with the construction of the Project by the summer of 2015, additional relief for the 230 kV system east of Richmond will be required by the summer of 2016.”⁵¹

Mr. Nedwick testified that the need for the Proposed Project is also being driven by load growth in the North Hampton Roads Load Area over the past ten years.⁵² Mr. Nedwick reported that from 2002 to 2011, peak electrical demand grew from 1,767 MW to 1,969 MW, an increase of 11.4%.⁵³ Mr. Nedwick advised that peak electrical demand for the area is expected to continue to grow at an average annual (compound) rate of approximately 1.8% based on the 2012 PJM Load Forecast.⁵⁴

Mr. Nedwick confirmed the Company and PJM’s Transmission Expansion Advisory Committee (“TEAC”) considered, and ultimately rejected, a number of transmission alternatives to the Project.⁵⁵ Mr. Nedwick advised that both the PJM TEAC and the PJM Board determined that the Proposed Project was the best solution to address the identified NERC violations.⁵⁶ Mr. Nedwick also pointed out that as part of its 2011 Integrated Resource Plan, the Company

⁴⁵ *Id.* at 10-11.

⁴⁶ *Id.* at 11.

⁴⁷ *Id.* at 11-12.

⁴⁸ The South Hampton Roads Load Area includes the Virginia Counties of Southampton and Isle of Wight, the Virginia Cities of Suffolk, Chesapeake, Virginia Beach, Portsmouth, and Norfolk, and the North Carolina Counties of Camden, Gates, Currituck, Pasquotank, and Perquimans.

⁴⁹ Exhibit No. 31, at 12-13.

⁵⁰ *Id.* at 14.

⁵¹ *Id.* at 14-15.

⁵² *Id.* at 15.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.* at 16.

⁵⁶ *Id.*

considered, but rejected, several feasible generation alternatives in favor of the Proposed Project.⁵⁷

Mr. Nedwick maintained that because the 230 kV Skiffes Creek-Whealton Line will be built entirely within an existing right-of-way, and because any alternative to this portion of the Proposed Project would require the acquisition of new right-of-way at significant expense, “there is no feasible transmission alternative for meeting the need for the new 230 kV line.”⁵⁸

Mr. Nedwick testified that the Company considered and rejected three different overhead transmission alternatives to the 500 kV Surry-Skiffes Creek Line, including: (i) a double-circuit 230 kV tower line from the Surry 230 kV Switching Station to the proposed Skiffes Creek Switching Station (“230 kV Tower Option”);⁵⁹ (ii) a double-circuit 230 kV line from the Chickahominy Substation to the Skiffes Creek Switching Station along the route of the Proposed Alternative Project (“230 kV Chickahominy Option”);⁶⁰ and (iii) a 500 kV line from the Chickahominy Substation to the Lexana Substation using the Company’s existing improved right-of-way between the Chickahominy Substation and Lightfoot Junction (“Chickahominy ROW Option”).⁶¹

Mr. Nedwick confirmed that the Company considered an underground alternative to the 500 kV Surry-Skiffes Creek Line.⁶² Mr. Nedwick stated an underground double-circuit 230 kV transmission line would have the same deficiencies as the 230 kV Tower Option.⁶³ Mr. Nedwick estimated the total cost of the Proposed Project with an underground double-circuit 230 kV transmission line from the Surry Power Station to the shore of James City County would be \$382.6 million, \$462.6 million if the double-circuit 230 kV transmission line were constructed underground all the way to the Skiffes Creek Switching Station.⁶⁴ Mr. Nedwick noted that the only 500 kV underground transmission line in the United States is a short power station connector line installed between a hydroelectric dam and an adjacent switchyard.⁶⁵

Mr. Nedwick testified that the PJM TEAC chose the Proposed Project over three other transmission alternatives.⁶⁶ Mr. Nedwick stated that the PJM TEAC chose the Proposed Project over the Proposed Alternative Project based on the estimated \$50 million lower cost of the Proposed Project.⁶⁷ Mr. Nedwick acknowledged that a merchant developer proposed a new single-circuit 230 kV Surry-Skiffes Creek Line built along the proposed route along with a Phase Angle Regulator (“PAR”) at the Surry Switching Station in series with the new 230 kV line

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.* at 17-18.

⁶⁰ *Id.* at 18-19.

⁶¹ *Id.* at 19-20.

⁶² *Id.* at 20.

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.* at 21.

⁶⁶ *Id.*

⁶⁷ *Id.*

("Merchant PAR Option").⁶⁸ Mr. Nedwick advised that the PJM TEAC selected the Proposed Project as more robust and lower in cost by \$11 million.⁶⁹ Mr. Nedwick testified that the third alternative involved a merchant developer proposal to build new 500 kV and 115 kV substations at Great Bridge with a 500-115 kV transformer and build a new single-circuit 230 kV Surry-Skiffes Creek Line with a PAR at Surry Switching Station ("Merchant Great Bridge Option").⁷⁰ Mr. Nedwick confirmed that the PJM TEAC rejected this proposal because it failed to resolve all of the identified NERC criteria violations.⁷¹

Mr. Nedwick affirmed that the Company considered generation alternatives to the Proposed Project, including: (i) retrofitting existing generating units with new environmental control equipment; and (ii) repowering the existing generating units with an alternative fuel source.⁷² Mr. Nedwick contended that retrofitted, repowered, or new generation in the North Hampton Roads Load Area is an uneconomical alternative to the Proposed Project.⁷³

Finally, Mr. Nedwick stated the Proposed Project will assure the future reliability of the Company's transmission system serving the North Hampton Roads Load Area, taking into consideration future load growth and the planned retirement of its generation units serving the area.⁷⁴ Mr. Nedwick argued that "[o]ur economy needs reliable electric energy and many businesses make expansion decisions on the basis of energy availability."⁷⁵

Mark S. Allen presented the design characteristics of the 500 kV and the 230 kV transmission lines proposed in the Application, and provided electric and magnetic field ("EMF") data for the proposed facilities.⁷⁶

Mr. Allen testified that generally, the proposed new 500 kV transmission lines will be a combination of 500 kV single-circuit galvanized steel lattice towers and galvanized steel monopoles supporting 3-1351.5 ACSR bundled conductors, with a transfer capability of 4325 MVA, and two fiber optic shield wires.⁷⁷ Mr. Allen stated that the new 230 kV Skiffes Creek-Wheaton Line will be constructed using weathering steel monopoles, together with several steel H-frame structures in the vicinity of Newport News/Williamsburg International Airport, supporting 2-636 ACSR bundled conductors, with a transfer capability of 1047 MVA, and two fiber optic shield wires.⁷⁸

Mr. Allen listed the existing facilities that will have to be removed or replaced to install the proposed 500 kV Surry-Skiffes Creek Line; the existing facilities that will have to be

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ *Id.* at 22.

⁷¹ *Id.*

⁷² *Id.* at 23.

⁷³ *Id.* at 23-24.

⁷⁴ *Id.* at 24.

⁷⁵ *Id.*

⁷⁶ Exhibit No. 33, at 3.

⁷⁷ *Id.* at 3-4.

⁷⁸ *Id.* at 4.

modified to install the alternative 500 kV Chickahominy-Skiffes Creek Line; and the facilities that will have to be modified to install the 230 kV Skiffes Creek-Wheaton Line.⁷⁹

Mr. Allen asserted that the Company complied with the requirements of Section 10 of House Bill 1319 by implementing low cost and effective means to improve the aesthetics of the proposed overhead transmission lines.⁸⁰ More specifically, Mr. Allen stated that for the proposed 500 kV Surry-Skiffes Creek Line, the Company plans to use double-circuit galvanized steel monopoles from the Surry Switching Station eastward to the last angle before the James River to minimize the footprint of the line and to accommodate a future 500 kV transmission line to the south using the same structures.⁸¹ Mr. Allen advised that the Company plans to use single-circuit galvanized lattice towers to cross the James River because they are the most economical structure for 500 kV line construction and will require less impacting foundation installation for the river crossing compared to other structure types.⁸² Mr. Allen reported that from the James River to the Skiffes Creek Switching Station, the Company plans to use double-circuit galvanized steel lattice towers with the ability to underbuild 115 kV Line #34, which minimizes the expansion and clearing of the right-of-way.⁸³

Mr. Allen testified that for the alternative 500 kV Chickahominy-Skiffes Creek Line, the Company proposes to use galvanized steel lattice towers from the Chickahominy Substation to the first angle past Jolly Pond Road, which allows the Company to use pipe pile foundations to minimize land disturbance in wetlands.⁸⁴ Mr. Allen stated that at the Chickahominy River crossing the Company will use two 195-foot steel H-frames, one on shore and one within the river, with a horizontal configuration to keep their height below 200 feet above existing grade so no FAA day/night lighting will be required.⁸⁵ Mr. Allen advised that from the first angle past Jolly Pond Road to Lightfoot Junction, the Company proposes to use galvanized steel monopoles to minimize the footprint of the line as it traverses an extensive landfill area and to minimize visual impacts on James City County's Freedom Park.⁸⁶ Mr. Allen affirmed that from Lightfoot Junction to the Skiffes Creek Switching Station, the Company will continue using single-circuit galvanized steel monopoles to fit within the existing improved right-of-way and to be visually compatible with the existing painted steel monopoles in the right-of-way.⁸⁷

Mr. Allen testified that for the 230 kV Skiffes Creek-Wheaton Line, the Company will: (i) replace approximately 3.80 miles of existing double-circuit weathering steel lattice towers with new double-circuit weathering steel monopoles, one side of which will support the new 230 kV line; and (ii) install the new line on the empty side of approximately 3.65 miles of existing double-circuit painted steel monopoles.⁸⁸ Mr. Allen stated that in the vicinity of Newport

⁷⁹ *Id.* at 4-9.

⁸⁰ *Id.* at 10.

⁸¹ *Id.*

⁸² *Id.*

⁸³ *Id.* at 11.

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.* at 11-12.

⁸⁸ *Id.* at 12.

News/Williamsburg International Airport, the Company will install several new steel H-frames due to height limitations, and from C&O Junction to Whealton Substation the Company will install the line on new double-circuit weathering steel monopoles, which will replace existing lattice towers and steel/wood H-frames.⁸⁹

Mr. Allen estimated that the cost of the Proposed Project using the Proposed Route is approximately \$150.6 million.⁹⁰ Mr. Allen reported that the estimated total cost for the Proposed Project using the three James River crossing variations would be: (i) \$155.4 million for Variation 1; (ii) \$153.0 million for Variation 2; and (iii) \$154.5 million for Variation 3.⁹¹ Mr. Allen estimated that the total cost of the Proposed Alternative Project is approximately \$213.2 million.⁹²

Mr. Allen advised that the projected in-service date for either the Proposed Project or the Proposed Alternative Project is May of 2015.⁹³ Mr. Allen estimated construction time for the Proposed Project to be eighteen months, with a period of twelve months required for engineering, material procurement, right-of-way acquisition, and construction permitting.⁹⁴

Mr. Allen calculated EMF levels associated with the Proposed Project expected to occur at the edges of the right-of-way to range from 3.532 milligauss ("mG") to 57.615 mG for the proposed 500 kV line using the Proposed Route based on average and peak loading expected to occur in 2016 when the Proposed Project goes into service.⁹⁵ In addition, Mr. Allen calculated EMF levels for the proposed 500 kV line for the Proposed Alternative Project to range from 2.972 mG to 68.753 mG, and calculated EMF levels for the 230 kV Skiffes Creek-Whealton Line range from 0.801 mG to 39.062 mG.⁹⁶ For comparison purposes, Mr. Allen noted that a hair dryer produces 300 mG or more, a copy machine can produce 90 mG or more, and an electric saw can produce 40 mG or more, depending on the circumstances and operation of these devices.⁹⁷ Mr. Allen maintained that EMF strength decreases rapidly as the distance from the source increases as the decrease is proportional to the inverse square of the distance.⁹⁸

Robert J. Garrett presented the design and estimated cost of the proposed Skiffes Creek Switching Station and the other substation work required by the Proposed Project.⁹⁹ Mr. Garrett estimated the cost of the Skiffes Creek Switching Station and the other substation work required for the Proposed Project to be approximately \$47.9 million.¹⁰⁰ Mr. Garrett estimated the cost of

⁸⁹ *Id.*

⁹⁰ *Id.* at 13.

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ *Id.* at 13-14.

⁹⁷ *Id.* at 14.

⁹⁸ *Id.*

⁹⁹ Exhibit No. 35, at 4.

¹⁰⁰ *Id.* at 6.

the Skiffes Creek Switching Station and the other substation work required for the Proposed Alternative Project to be approximately \$51.3 million.¹⁰¹

Elizabeth P. Harper discussed the selection and impacts of the 500 kV Proposed Route, the Proposed Route with James River Crossing Variations, the Proposed Alternative Route, and the 230 kV Skiffes Creek-Whealton Line.¹⁰²

Ms. Harper testified that the process by which the 230 kV and 500 kV routes were selected begins with the designation of the project's "origin" and "termination" points and the creation of a study area for the project.¹⁰³ Ms. Harper confirmed that the Company's Transmission Planning Department determined that a new 500 kV line was required to a new Skiffes Creek Switching Station and a new 230 kV line was required from Skiffes Creek Switching Station to the Whealton Substation.¹⁰⁴ Ms. Harper advised that two feasible electrical alternatives were identified for the 500 kV line terminating at the proposed new Skiffes Creek Switching Station: (i) a 500 kV line from the existing Surry Switching Station at the Surry Power Station; and (ii) a 500 kV line from the Company's existing Chickahominy Substation.¹⁰⁵ By contrast, Ms. Harper asserted that for the 230 kV Skiffes Creek-Whealton Line, because an existing right-of-way could accommodate the line, no other alternatives were considered.¹⁰⁶ Ms. Harper affirmed that based on its analysis of the 500 kV routing options, the Company selected the Surry-Skiffes Creek as its Proposed Route and identified three James River Crossing Variations as alternatives for crossing the James River.¹⁰⁷ Ms. Harper stated that the Company also identified an Alternative Route for the 500 kV line from the Chickahominy Substation to Skiffes Creek.¹⁰⁸

Ms. Harper identified all of the public utility rights-of-way considered by the Company for the 500 kV transmission line.¹⁰⁹ Ms. Harper pointed out that some of the rights-of-way are Company-owned, and others are owned by other public utilities.¹¹⁰

Ms. Harper testified that during the process of selecting the route for the 500 kV transmission line, the Company considered multiple rights-of-way for the routes, but rejected them for a variety of reasons including: (i) not electrically feasible; (ii) the impact on other utility facilities; (iii) additional land purchases and clearing required to widen the right-of-way to accommodate the line; and (iv) the purchase and removal of a number of homes required to widen the right-of-way.¹¹¹

¹⁰¹ *Id.*

¹⁰² Exhibit No. 37, at 3.

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ *Id.* at 3-4.

¹⁰⁶ *Id.* at 4.

¹⁰⁷ *Id.* at 5.

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* at 5-9.

¹¹⁰ *Id.*

¹¹¹ *Id.* at 9-13.

Ms. Harper stated that the Proposed Route is 7.4 miles long with a James River crossing that is 3.5 miles.¹¹² Ms. Harper listed the advantages of the Proposed Route to include that this route: (i) is the most direct and constructible alignment across the James River to the Dow Chemical Substation; (ii) allows the use of existing right-of-way between the Dow Chemical Substation and the new Skiffes Creek Switching Station; (iii) enters James City County between a capped landfill area to the south and an industrial area to the north; and (iv) provides the greatest distance from Hog Island WMA, Carter's Grove, Kingsmill on the James, and the Kingsmill Resort.¹¹³ Ms. Harper acknowledged that the Proposed Route would have these impacts: (i) require four of the transmission line structures, each 295 feet tall, to cross the James River and maintain appropriate clearances to the river's navigation channels; (ii) require the four transmission structures crossing the James River to have day and night lighting per Federal Aviation Administration ("FAA") regulations and would impact leased oyster grounds; (iii) this section of the James River has been designated a Virginia Scenic River and is also included in the Captain John Smith Chesapeake National Historic Trail ("Captain Smith Trail"); (iv) the line would be visible from Carter's Grove, a National Historic Landmark, and the Kingsmill properties; (v) there are four known archaeological sites within the right-of-way, and two architectural sites within 1.5 miles of the route; (vi) there is a bald eagle nest site within 750 feet of the route; (vii) approximately 20.1 acres of trees (including 0.6 acre of forested wetlands) would need to be removed to improve the right-of-way; (viii) approximately 18.3 acres of additional right-of-way easements would need to be acquired, along with the purchase and removal of one single-family dwelling; (ix) approximately 160 residences are within 500 feet of the proposed right-of-way.¹¹⁴ Ms. Harper estimated that the cost of the Proposed Project using the Proposed Route would be approximately \$150.6 million.¹¹⁵

Ms. Harper advised that the Proposed Project with James River Crossing Variation 1 is similar on land to the Proposed Route, but is 8.0 miles long with a river crossing of 4.1 miles.¹¹⁶ Ms. Harper stated that James River Crossing Variation 1 turns north in the river to place the channel crossing structures outside the terminal instrument procedures ("TERPS") non-precision approach to Felker Airfield on Fort Eustis.¹¹⁷ Ms. Harper testified that this river crossing: (i) impacts a larger area of privately leased oyster grounds; (ii) has two bald eagle nests, one within 750 feet and another between 750 and 1,320 feet; (iii) requires 18.2 acres of new or additional easement; and (iv) places the western side of the river crossing closer to Carter's Grove and Kingsmill visually.¹¹⁸ Ms. Harper calculated the cost of the Proposed Project using James River Crossing Variation 1 would be approximately \$155.4 million.¹¹⁹

Ms. Harper described James River Crossing Variation 2 as paralleling the southern edge of an existing pipeline corridor crossing the James River.¹²⁰ Ms. Harper maintained that this

¹¹² *Id.* at 13.

¹¹³ *Id.*

¹¹⁴ *Id.* at 13-14.

¹¹⁵ *Id.* at 14-15.

¹¹⁶ *Id.* at 15.

¹¹⁷ *Id.*

¹¹⁸ *Id.*

¹¹⁹ *Id.*

¹²⁰ *Id.*

river crossing will not impact any oyster grounds, but it will have a structure within the TERPS non-precision approach at Felker Airfield.¹²¹ Ms. Harper testified that this route is designed to address concerns expressed by BASF and the James City County Planning Staff that the Proposed Route would divide the BASF property and impact future development.¹²² Ms. Harper stated that James River Crossing Variation 2 would enter the northern side of the BASF property, paralleling the southern side of the Colonial pipeline easement, picking its way between the pipeline easement and a warehouse building until it reaches the existing 115 kV Line # 34 right-of-way.¹²³ Ms. Harper advised that this route requires 18.4 acres of new easement, and crosses several parcels that are zoned for industrial use, including one parcel that belongs to the James City County Economic Development Authority (the "Authority").¹²⁴ Ms. Harper stated the Company's ability to negotiate an easement with the Authority, which is essential for James River Crossing Variations 2 and 3 is unknown.¹²⁵ Ms. Harper confirmed that this route has the same environmental, archaeological, and architectural impacts as the other routes; is 0.5 mile closer to Carter's Grove than the other crossing variations; and would produce a total cost for the Proposed Project of approximately \$153.0 million.¹²⁶

Ms. Harper stated that James River Crossing Variation 3 would enter the northern edge of the BASF property in the same general location as James River Crossing Variation 2 to address the concerns for future development of the property, but has been configured to avoid any obstruction with the TERPS non-precision approach at Felker Airfield.¹²⁷ Ms. Harper advised that this route: (i) requires approximately 18.7 acres of additional easement and crosses the same properties as James River Crossing Variation 2; (ii) impacts forested land, forested wetlands, archaeological and architectural resources similar to the other crossing variations; (iii) has two bald eagle nests, one within 750 feet and one within 750 and 1,320 feet; and (iv) passes 0.5 mile closer to Carter's Grove and requires an angle structure in the direct view of Carter's Grove, approximately 0.8 mile from its river entrance.¹²⁸ Ms. Harper estimated that the cost of the Proposed Project using James River Crossing Variation 3 would be approximately \$154.5 million.¹²⁹

In regard to the proposed route for the Proposed Alternative Project, Ms. Harper stated that this route is 37.9 miles long, of which 24.9 miles would be located on unimproved right-of-way that was purchased in the 1970s, and the remaining 13.0 miles would be located on improved right-of-way already occupied by transmission facilities.¹³⁰ Ms. Harper acknowledged that the route: (i) crosses the Chickahominy Wildlife Management Area ("WMA"); (ii) crosses the Chickahominy River, which requires two structures approximately 195 feet tall; (iii) impacts ten known archaeological sites within the proposed right-of-way, eleven architectural sites within

¹²¹ *Id.*

¹²² *Id.*

¹²³ *Id.* at 15-16.

¹²⁴ *Id.* at 16.

¹²⁵ *Id.*

¹²⁶ *Id.*

¹²⁷ *Id.* at 16.

¹²⁸ *Id.* at 16-17.

¹²⁹ *Id.* at 17.

¹³⁰ *Id.*

0.5 mile of the proposed right-of-way, and seven architectural sites within 1.5 miles of the proposed right-of-way; (iv) passes near three bald eagle nests, one within 750 feet and two within 750 and 1,320 feet; (v) requires the removal of 420.5 acres of trees, of which 106.9 acres are forested wetlands and would require mitigation for their removal; (vi) requires the acquisition of approximately 4.0 acres of additional right-of-way easement around the Kingsmill Substation; (vii) impacts 1,129 homes within 500 feet of the right-of-way; and (viii) crosses a number of public properties, including Freedom Park, Warhill Sports Complex, Waller Mill Park, the Colonial Parkway, and the Williamsburg Country Club.¹³¹ Ms. Harper noted that the Chickahominy Indian Tribe considers the Chickahominy River to be important to their heritage and sacred to the tribe and that the portion of the Chickahominy River impacted by the proposed route for the Proposed Alternative Project is also included in the Captain Smith Trail.¹³² Ms. Harper estimated the cost for the proposed route for the Proposed Alternative Project to be approximately \$213.2 million.¹³³

Ms. Harper testified that based on NRG's Environmental routing study, the Proposed Alternative Project would have a much greater impact on the environment and adjoining landowners.¹³⁴ Ms. Harper maintained that the greater impacts of the Proposed Alternative Project are driven by its longer length, the differences in the geography, and the state of development of the areas crossed.¹³⁵ Ms. Harper stated that based on the greater overall impacts of the Proposed Alternative Project, and its higher estimated cost, the Company selected the Proposed Project as the 500 kV route.¹³⁶

Ms. Harper summarized the positive attributes of the Proposed Project: shorter more direct route, less cost, and less impact on the environment and adjoining landowners.¹³⁷

Ms. Harper described in detail the routes for the Proposed Project, including the James River Crossing Variations, the Proposed Alternative Project, and the 230 kV Skiffes Creek-Whealton Line.

Proposed Route 500 kV Surry-Skiffes Creek Line:

The Proposed Route for the new 500 kV line from the Surry Switching Station to the proposed Skiffes Creek Switching Station is approximately 7.4 miles long and includes a crossing of the James River approximately 3.5 miles in length. The route originates at the Surry Switching Station and continues east for a distance of 1.4 miles paralleling an unnamed service road and a canal associated with the Surry Power Station. Before leaving the shoreline in Surry County, the route turns southeast for 0.2 mile to a point in the river,

¹³¹ *Id.* at 17-19.

¹³² *Id.* at 17.

¹³³ *Id.* at 19.

¹³⁴ *Id.*

¹³⁵ *Id.* at 19-20.

¹³⁶ *Id.* at 20.

¹³⁷ *Id.* at 20-22.

and then pivots northeast and crosses the James River for approximately 3.5 miles. There are two navigation channels within the James River at this location; the western channel is used primarily for barge traffic, and the eastern channel is the federal channel maintained by the [U.S. Army Corps of Engineers (“COE”)]. Adjacent to the eastern channel on the land side is a spoils area associated with the channel’s maintenance. Dominion Virginia Power estimates that there will be approximately 16 structures required in the river, of which four structures will be up to approximately 295 feet tall (height to be determined pending final engineering) to maintain the required clearance of 180 feet between mean high water and the lowest sag of the conductor. The U.S. Coast Guard has based this clearance on the vertical clearance of the U.S. Route 17 James River Bridge plus the additional clearance required for a 500 kV line. There are privately leased oyster grounds in the James River at this location that will require easements or encroachment agreements from the lessees for the structure foundations. There is an eagle nest in close proximity to the route in Surry County. After coming onshore in James City County, the route continues for approximately 0.4 mile crossing a thin strip of beach, forested land, Baseline Road and a tidal stream channel feeding Wood Creek. The route then turns to the north for approximately 0.3 mile, crossing Utility Street, to reach the Dow Chemical Substation. From the substation location to the proposed Skiffes Creek Switching Station, the route would continue for approximately 1.5 miles to the north, crossing U.S. Route 60. Then the route pivots to the northwest for approximately 0.2 mile to its terminus at the proposed Skiffes Creek Switching Station. This last 1.7 miles would utilize an existing Dominion Virginia Power right-of-way that currently contains a portion of 115 kV Line #34 and ranges from 80 to 130 feet in width. This existing right-of-way would need to be expanded by 20-70 feet to attain a width of 150 feet to accommodate the 500 kV line. The new 500 kV line will be installed on double circuit structures to also carry the existing 115 kV line as an underbuild. Where the route crosses U.S. Route 60, there is a single family home that will need to be acquired and removed due to the expanded right-of-way.¹³⁸

Proposed Route 500 kV Surry-Skiffes Creek Line with James River Crossing Variation 1:

Dominion Virginia Power is in the process of consulting with the [Department of Defense (“DOD”)] through the Manager of Felker Airfield, who is requesting comments regarding one structure of the proposed crossing of the James River that penetrates the TERPS

¹³⁸ *Id.* at 22-23.

non-precision approach of the Felker Airfield at Fort Eustis. To address the possibility that the DOD may determine that the Proposed Route cannot be mitigated and should not be constructed, Dominion Virginia Power has developed a Proposed Route with the James River Crossing Variation 1. The Proposed Route using the James River Crossing Variation 1 is approximately 8.0 miles long with a river crossing approximately 4.1 miles long that would require 17 structures in the James River.

The terrestrial portion of this route in Surry County is the same as that of the Proposed Route. After turning southeast for 0.2 mile to a point in the river, this route turns northeast for 0.6 mile, pivots north for approximately 1.0 mile offshore from the eastern side of the Hog Island WMA, and turns east for 2.5 miles to the shoreline of James City County. With only a minor deviation of the route as it comes onshore, the terrestrial portion of this route in James City County is substantially the same as the Proposed Route.¹³⁹

Proposed Route 500 kV Surry-Skiffes Creek Line with James River Crossing Variation 2:

The terrestrial portion of this route in Surry County is the same as that of the Proposed Route. After turning southeast for 0.2 mile to a point in the river, this route then pivots northeast 3.7 miles across the James River, paralleling the southern edge of an existing pipeline corridor that extends between the general area of Surry Power Station and the same industrial area that the previous routes cross and includes two natural gas pipelines and one refined petroleum products pipeline. Upon coming onshore in James City County, the route continues 0.8 mile to follow the southern edge of the southernmost pipeline, picking its way between the pipeline easement and a warehouse building until it intersects with the existing 115 kV Line #34 right-of-way. From this point, the route is the same as the Proposed Route, continuing 0.9 mile to the north and crossing U.S. Route 60, then pivoting northwest 0.2 mile to its terminus at the proposed Skiffes Creek Switching Station site. The total length of this route is 7.2 miles long with a river crossing approximately 3.8 miles long that would require 15 structures in the James River.¹⁴⁰

Proposed Route 500 kV Surry-Skiffes Creek Line with James River Crossing Variation 3:

¹³⁹ *Id.* at 23-24.

¹⁴⁰ *Id.* at 24-25.

This route is similar to Variation 2, but the river crossing is positioned to avoid the TERPS non-precision approach of the Felker Airfield at Fort Eustis.

The terrestrial portion of this route in Surry County is the same as that of the Proposed Route. After turning southeast for 0.2 mile to a point in the river, this route then pivots northeast 0.6 mile to follow the existing pipeline corridor, turns north for 0.6 mile offshore adjacent to the shoreline of the eastern side of Hog Island WMA, turns northeast 2.4 miles crossing the James River, and then pivots to the southeast for 0.5 mile to the shoreline of James City County. The route continues for 0.1 mile crossing the thin strip of beach and the pipeline corridor, to a point just south of the Colonial Pipeline Company refined petroleum products pipeline, from where it follows the same route as that described in Variation 2. The total length of this route is 7.5 miles long with a river crossing approximately 4.1 miles long that would require 16 structures in the James River.¹⁴¹

Proposed Alternate Route 500 kV line:

The Alternate Route from Chickahominy to Skiffes Creek is approximately 37.9 miles long. It consists of two sections. The first section begins at the Chickahominy Substation in Charles City County and extends approximately 24.9 miles to Lightfoot Junction in James City County. . . . The second section of the Alternate Route would be constructed within [an] . . . existing right-of-way for approximately 13.0 miles to the proposed Skiffes Creek Switching Station in southern James City County.

The Alternate Route between Chickahominy Substation to Lightfoot Junction would utilize an easement Dominion Virginia Power obtained in the 1970s and ranges in width between 150 and 250 feet wide, but was never cleared of vegetation or developed. In Charles City County, the existing easement crosses some pasture or farm land, but the majority of the land is used for timber production. There are a number of historic resources within one-half mile of the existing right-of-way. Most of the land is owned by private owners until it enters the Chickahominy WMA on the west side of the Chickahominy River and crosses the Chickahominy River. The Chickahominy WMA is maintained by [DGIF] and is used for hunting and recreation.

Starting at the Chickahominy Substation on Chambers Road in Charles City County, this section of the Alternate Route parallels the existing 500 kV Line #567 south for approximately 0.8 mile,

¹⁴¹ *Id.* at 25.

crossing Old Union Road (Route 603) before turning southeast for approximately 2.4 miles across forested and agricultural land, crossing Barnetts Road (Route 609). The route pivots southeast for approximately 8.1 miles, across an area that consists predominately of undeveloped forest with some open pasture and a few agricultural tracts, crossing Samaria Lane (Route 630), Adkins Road (Route 618), Greenyard Estate Way and Greenyard Estate Lane near their intersection, Courthouse Road (Route 155), Sturgeon Point Road (Route 614), and Cypress Bank Road. The route then turns southeast for approximately 1.5 miles, crossing The Glebe Lane (Route 615), which is generally an open area of agricultural land and an area of local historic significance. Turning southeast, the route continues approximately 5.4 miles across Willow Bank Road and Wilcox Neck Road (Route 623) and enters the Chickahominy WMA before crossing the Chickahominy River.

The Chickahominy River crossing is approximately 0.3 mile long and would require one structure within the eastern side of the river to maintain the required clearances between mean high water and the lowest point in the sag of the conductors, and to avoid constructing a structure over 200 feet tall that the FAA would require to be lighted. The clearance height is based on the Route 5 Bridge (John Tyler Memorial Highway) approximately 4.4 miles downriver and the additional clearances required for a 500 kV line.

Entering James City County, the Alternate Route within the unimproved right-of-way continues 6.4 miles, crossing Yarmouth Island, which is comprised of tidal marsh and forest, some of which is forested wetlands. The Alternate Route crosses private properties and Jolly Pond Road (Route 611) before turning northeast to cross a James City County landfill that is no longer in use, and the other James City County property where Freedom Park is located. This portion of Freedom Park is an area of trails built mainly for mountain bike use at the time. Crossing Jolly Pond Road a second time, the route continues through the Colonial Heritage residential development that has occupied residences and future residences under several stages of construction and planning.

The route then joins the improved and occupied right-of-way at Lightfoot Junction and turns southeast approximately 13.0 miles to continue to the proposed Skiffes Creek Switching Station in James City County. In this occupied right-of-way, two existing 115 kV lines will be removed and an existing 230 kV line moved to an existing double circuit transmission line structure. The transmission line structures that currently carry both the 230 kV line to be relocated and one of the 115 kV lines will be removed and replaced

with the proposed 500 kV line to Skiffes Creek. This portion of the route crosses portions of James City County, York County, and the City of Williamsburg, ending at the site of the proposed Skiffes Creek Switching. This portion of the route has experienced commercial and residential growth around the existing right-of-way.

From Lightfoot Junction, the Alternate Route initially proceeds approximately 3.4 miles to the southeast, crossing Centerville Road, Stadium Road, Route 199, Old Towne Road (Route 658) Chisel Run Road, and Waltz Farm Drive at its intersection with Meredith Way. The route then turns to the southeast for approximately 5.5 miles and crosses Richmond Road (Route 60) and Mooretown Road (Route 603), enters York County and crosses Waller Mill Road (Route 713) and Route 132 before entering the City of Williamsburg. The route then crosses Capital Landing Road (Route 5) and Merrimac Trail (Route 143) and reenters York County. In York County it crosses the Colonial Parkway, Hubbard Lane (Route 716), Queens Creek Road (Route 642), Wilkins Drive (Route 720) and Pinetree Road before reaching Interstate 64. The route then pivots slightly to the southeast and proceeds adjacent to Interstate 64 for approximately 2.0 miles, crossing Penniman Road (Route 641) and Route 199, before continuing behind the Williamsburg Country Club and across an Interstate 64 interchange for U.S. Route 60 and Route 143. Before entering James City County for a second time and crossing the Merrimac Trail (Route 143) and Pocahontas Trail (U.S. Route 60) to the existing Kingsmill Substation, the route splits into two separate, existing rights-of-way with each section following an existing right-of-way. To the north, the existing right-of-way is 150 feet wide and currently contains a line of 230/115 kV wood pole structures (Lines #209 and #58). The existing structures would be removed and replaced with metal poles carrying a single circuit 500 kV line that would be placed in the center of the right-of-way. To the south, the existing right-of-way is 100 feet wide and contains a line of steel pole structures with 230 and 115 kV Lines (Lines #285 and #34). The 115 kV line would be replaced with a second 230 kV line, turning the structures into a double circuit 230 kV line. The route of the new double circuit 230 kV line would also include a tie-in to the Kingsmill Substation, which would require approximately 4.0 acres of new right-of-way.

From the Kingsmill Substation, the two routes continue to the southeast for approximately 1.8 miles, cross U.S. Route 60 again, and parallel Interstate 64 before converging at Tadich Drive after crossing a mobile home development. The route then continues for

an additional 0.3 mile and terminates at the site of the proposed Skiffes Creek Switching Station.¹⁴²

Proposed 230 kV Skiffes Creek – Whealton Line # 2138:

The proposed Skiffes Creek-Whealton 230 kV Transmission Line will consist of a new, approximately 20.2-mile-long 230 kV transmission line between the proposed Skiffes Creek Switching Station and the existing Whealton Substation. This new transmission line will be constructed within Dominion Power's existing right-of-way and will cross parts of James City County, York County, the City of Newport News, and the City of Hampton. From the proposed Skiffes Creek Switching Station, the line will proceed in a southeasterly direction for 3.7 miles, crossing U.S. Route 60, Green Mount Industrial Park, and Skiffes Creek to enter the City of Newport News, before crossing U.S. Route 60 again near the Newport News Fire Training Facility, and a CSX railroad track. After crossing the railroad, the route turns to the southeast to parallel the CSX corridor for a distance of 1.9 miles across the Lee Hall Reservoir and Fort Eustis Boulevard (Route 105) and Industrial Park Drive. The route then Pivots northeast for 1.9 miles, crossing Industrial Park Drive again, Interstate 64 to parallel another CSX railroad corridor across Jefferson Avenue (Route 143) and Shields Road, entering York County before crossing Richneck Road (Route 636). The route then turns in a southeasterly direction for a distance of 7.3 miles to travel around the eastern perimeter of the Newport News/Williamsburg international Airport, crossing Denbigh Boulevard (Route 173), the Harwoods Mill Reservoir, Oriana Road (Route 620), hardwoods Mill Reservoir again, and through the Villages of Kiln Creek Residential Golf Community, crossing Talleyho Drive and Kiln Creek Parkway twice as it enters the City of Newport News. The existing right-of-way continues around the eastern side of Interstate 64 and Victory Boulevard, and crosses Victory Boulevard, Lake View Drive, Old Oyster Point Road, and Interstate 64. The route then continues in a southeasterly direction for 5.5 miles through commercial and residential areas; it enters the eastern side of Oyster Point of Newport News crossing Omni Way, Diligence Drive and J. Clyde Morris Boulevard (U.S. Route 17). The existing right-of-way then enters a more residential area, crossing Rumson Avenue, Courtney Avenue, Burton Avenue, Harpersville Road, Benns Road, Robinson Drive and Hampton Roads Center Parkway before entering the City of Hampton Roads. The remainder of the existing right-of-way passes through residential development and crosses the following subdivision roads: Tripp Terrace, Devore Avenue, Michael Woods Drive, Dunn Circle,

¹⁴² *Id.* at 25-29.

Castle Haven Road, Whetstone Drive, Ridgecrest Drive and Sherry Dell Drive, Todds Lane (Route 152), Lundy Lane, the intersection of Cordova and Whealton Road, Albany Drive and Hazelwood Road into Dominion Virginia Power's existing Whealton Substation located between Hazelwood Road and Threechopt Road, one block north of Mercury Boulevard (U.S. Route 258).¹⁴³

Ms. Harper maintained that the Proposed Route was chosen because, compared to the Alternative Route, it requires less forest to be cleared, impacts less wetlands and requires less conversion of forested wetlands to a scrub shrub community, has fewer archaeological impacts, fewer homes within 500 feet, and generally has fewer visual impacts than the Alternative Route.¹⁴⁴ Ms. Harper testified that the Company chose the James River Crossing Variations that is the most direct and constructible route and is the farthest from Carters Grove, Jamestown Island, and Kingsmill.¹⁴⁵ Ms. Harper noted that the Company will continue to work with other federal, state, and local agencies to determine the permitting requirements and associated mitigation measures deemed necessary to construct the Proposed Project.¹⁴⁶

Ms. Harper stated that the Company developed the DEQ Supplement to address: air quality; water withdrawals and discharges; wetlands; solid and hazardous waste; natural heritage and endangered species; erosion and sediment control; archeological, historic, scenic, cultural, and architectural resources; use of pesticides and herbicides; geology and mineral resources; wildlife resources; recreation, agricultural, and forested resources; and transportation infrastructure.¹⁴⁷ Ms. Harper provided a list of contacts between the Company and the local communities impacted by the Proposed Project and the Proposed Alternative Project.¹⁴⁸ Finally, Ms. Harper affirmed that the Company complied with the notice requirements of § 15.2-2202 D of the Virginia Code ("Code").¹⁴⁹

Douglas J. Lake testified that NRG was engaged by the Company to assist it in the identification and evaluation of route alternatives for the 500 kV and 230 kV transmission lines that would meet the applicable criteria of Virginia law and the Company's operating needs.¹⁵⁰ Mr. Lake sponsored the Environmental Routing Study prepared by NRG.¹⁵¹

DEQ Report

On August 31, 2012, the DEQ Report for this case was filed. DEQ advised that the proposed transmission line would likely require the following permits and approvals:¹⁵²

¹⁴³ *Id.* at 29-31.

¹⁴⁴ *Id.* at 31.

¹⁴⁵ *Id.* at 31-32.

¹⁴⁶ *Id.* at 32.

¹⁴⁷ *Id.* at 32-33.

¹⁴⁸ *Id.* at 33-37.

¹⁴⁹ *Id.* at 38.

¹⁵⁰ Exhibit No. 45, at 3-5.

¹⁵¹ *Id.* at 5.

¹⁵² Exhibit No. 12, at 4-6.

1. Water Permits:

- a. Section 404 permit (e.g. Nationwide Permit 12, if appropriate). Required pursuant to the federal Clean Water Act and issued by the U.S. Army Corps of Engineers ("COE") for impacts to jurisdictional wetlands and/or waters of the United States.
- b. Virginia Water Protection Permit (9 VAC 25-210 *et seq.*) issued by DEQ for impacts to waters and jurisdictional wetlands, including isolated wetlands.

2. Subaqueous Lands Management:

Subaqueous Lands Permit pursuant to § 28.2-1204 of the Code. Issued by the MRC for encroachments in, on or over state-owned subaqueous beds.

3. Erosion and Sediment Control, and Stormwater Management Plans:

- a. General erosion and sediment control specifications pursuant to § 10.1-563 D of the Code. General erosion and sediment control specifications are subject to annual approval by the DCR.
- b. Erosion and Sediment Control Plans for construction of facilities not covered under § 10.1-563 D of the Code that are subject to approval by the appropriate plan approving authority.

4. Stormwater Management Permit:

Virginia Stormwater Management Program General Permit for Discharges of Stormwater from Construction Activities (4 VAC 50-60-1170 *et seq.*) of the Virginia Stormwater Management Program Permit Regulations (4 VAC 50-60 *et seq.*) involving land disturbance of 2,500 square feet or more. Coverage under this general permit is approved by DCR.

5. Air Quality Permits or Approvals:

- a. Open Burning Permit (9 VAC 5-130 *et seq.*). For open burning involving vegetative and demolition debris.
- b. Fugitive dust emissions (9 VAC 5-50-60 *et seq.*). Governs abatement of visible emissions.

6. Solid and Hazardous Waste Management:

- a. Applicable state laws and regulations include:
 - Virginia Waste Management Act (§ 10.1-1400 *et seq.* of the Code);

- Virginia Hazardous Waste Management Regulations (9 VAC 20-60);
- Virginia Solid Waste Management Regulations (9 VAC 20-81); and
- Virginia Regulations for the Transportation of Hazardous Materials (9 VAC 20-110).

b. Applicable Federal laws and regulations include:

- Resource Conservation and Recovery Act – 42 U.S.C. § 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations; and
- U.S. Department of Transportation Rules for Transportation of Hazardous Materials (49 CFR Part 107).

7. Protected Species Legislation:

The Federal Endangered Species Act and Virginia protected species legislation may apply if there is any taking of protected species. The applicant must comply with the Federal Endangered Species Act (16 U.S.C. § 1531 *et seq.*), Virginia protected species legislation (§ 29.1-563 *et seq.* of the Code), and the Virginia Endangered Plant and Insect Species Act of 1979 as amended (Chapter 39 of § 3.1-1020 through 1030 of the Code).

8. Chesapeake Bay Preservation Act Compliance:

The conditions set out in 9 VAC 10-20-150 B apply to the exemption of transmission lines.

9. Historic Preservation:

Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulation (36 CFR 800) requires that federally licensed and permitted projects consider its effects on properties that are listed or eligible for listing on the National Register of Historic Places. Section 106 applies if there is federal involvement, such as the issuance of a Section 404 Clean Water Act permit, including Nationwide Permits. The applicability of Section 106 to the entire project or any portion thereof must be determined by the responsible federal agency.

10. VDOT Right-of-Way Permit:

The General Rules and Regulations of the Commonwealth Transportation Board (24 VAC 30-151) are adopted pursuant to the authority of § 33.1-12 of the Code. These rules and regulations provide that no work of any nature shall be performed on any real property under the ownership, control or jurisdiction of VDOT until written permission has been obtained from VDOT.

11. Aviation:

Form 7460-1 should be submitted to the FAA if a proposed development is 200 feet above ground level or within 20,000 linear feet of a public use airport pursuant to Title 14 CFR Part 77.

12. Federal Coastal Zone Management Act:

This project must comply with the federal Coastal Zone Management Act of 1972 (16 U.S.C.A. § 307 (c)(3)(A)) as amended, and its implementing federal consistency regulations (15 CFR Part 930, Subpart D, § 930.50 *et. seq.*) and the Virginia Coastal Zone Management Program.

In regard to the overall route recommendations, DEQ recommended that one of the Proposed Surry-Skiffes Creek routes be used as opposed to the Proposed Alternative Chickahominy-Skiffes Creek route.¹⁵³ DCR and HRPDC recommended the Surry-Skiffes Creek route with an underwater crossing of the James River.¹⁵⁴ DHR supported underwater crossing of either the Chickahominy or James Rivers.¹⁵⁵ The Virginia Outdoors Foundation and Virginia Board of Historic Resources recommended that full consideration be given to the importance of Carter's Grove and its extensive conservation values.¹⁵⁶

DEQ provided the following summary of other recommendations:

- Conduct an on-site delineation of all wetlands and streams within the project area with verification by the COE, using accepted methods and procedures, and follow DEQ's recommendations to avoid and minimize impacts to wetlands and streams.¹⁵⁷
- Follow DEQ's recommendations regarding air quality protection, as applicable.¹⁵⁸
- Reduce solid waste at the source, reuse it and recycle it to the maximum extent practicable, and follow DEQ's recommendations to manage waste, as applicable.¹⁵⁹
- Coordinate with DCR regarding recommended inventories of natural heritage species and for updates to the Biotics Data System database (if a significant amount of time passes before the project is implemented).¹⁶⁰
- Coordinate with DGIF regarding its recommendations for instream work, the protection of wildlife resources and potential impact to the Game Farm Marsh WMA.¹⁶¹

¹⁵³ *Id.* at 7.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

¹⁵⁷ *Id.* at 7, 12.

¹⁵⁸ *Id.* at 7, 16.

¹⁵⁹ *Id.* at 8, 18-19.

¹⁶⁰ *Id.* at 8, 27-28.

- Coordinate with DOF regarding its recommendations for mitigation of the loss of forest lands.¹⁶²
- Coordinate with DCR regarding its recommendations to protect recreational resources.¹⁶³
- Coordinate with DHR regarding recommendations addressing visual impacts, consultations with the agency's Easement Program, National Park Service and affected localities, archaeological and architectural surveys, and evaluations and assessments to Virginia landmarks Register – and National Register of Historic Places – eligible resources.¹⁶⁴
- Coordinate with the Newport News-Williamsburg Airport as recommended by the DOA to prevent potential hazards to aviation and impacts to airport development.¹⁶⁵
- Follow the principles and practices of pollution prevention to the extent practicable.¹⁶⁶
- Limit the use of pesticides and herbicides to the extent practicable.¹⁶⁷

On September 7, 2012, DEQ filed additional comments related to the response of DHR to a Phase I Cultural Resources Survey performed for the proposed Skiffes Creek-Whealton Line.¹⁶⁸ DHR concurred with most of the consultant's eligibility recommendations, but highlighted a few sites that warranted additional consideration.¹⁶⁹

Dominion Virginia Power Supplemental Direct Testimony

On September 19, 2012, Dominion Virginia Power filed the Supplemental Direct Testimony of Elizabeth P. Harper. A summary of Ms. Harper's supplemental testimony is provided below:

Elizabeth P. Harper testified that after discussions with the Department of Defense, the Company's Proposed James River Crossing and James River Crossing Variation 2 are no longer viable alternatives because of their impact on the TERPS non-precision approach to Felker Airfield on Fort Eustis.¹⁷⁰ Ms. Harper advised that as a result, the Company has adopted James River Crossing Variation 1 as its preferred river crossing, but also continues to include James

¹⁶¹ *Id.* at 8, 29-30.

¹⁶² *Id.* at 8, 31-32.

¹⁶³ *Id.* at 8, 33.

¹⁶⁴ *Id.* at 8, 38.

¹⁶⁵ *Id.* at 8, 41.

¹⁶⁶ *Id.* at 8, 43-44.

¹⁶⁷ *Id.* at 8, 44.

¹⁶⁸ Exhibit No. 13.

¹⁶⁹ *Id.*

¹⁷⁰ Exhibit No. 38, at 3-4.

River Crossing Variation 3 for the Commission's consideration.¹⁷¹ Ms. Harper testified that the Company is not recommending James River Crossing Variation 3 because it places an angle structure in direct view from the river entrance of Carter's Grove and crosses several parcels that are zoned for industrial use, including one parcel that belongs to the Authority.¹⁷²

Public Witness Testimony – Williamsburg Hearing

On October 24, 2012, a public hearing was held at the Warhill High School Auditorium in Williamsburg, Virginia, to receive the testimony of public witnesses. Thirty-seven public witnesses presented testimony. Their testimony is summarized below.

John McGlenon, a resident of Williamsburg and a member of the James City County Board of Supervisors representing the Roberts District, testified as a private citizen and as the elected official representing the Roberts District where the Project would reach landfall after crossing the James River.¹⁷³ Mr. McGlenon cautioned that the residents of the Colonial Heritage subdivision may testify in support of the Proposed Project because the Proposed Alternative Project is routed through their neighborhood.¹⁷⁴ Mr. McGlenon accused Dominion Virginia Power of acting in bad faith by asserting that there are only two feasible routes.¹⁷⁵ Mr. McGlenon contended that the Proposed Alternative Route is so bad that Dominion Virginia Power had no intention of building that route and offered it only as a distraction.¹⁷⁶ Mr. McGlenon asserted that if the residents of Colonial Heritage knew there were other routes that would not impact their neighborhood or the historic resources of the region, they would support those routes.¹⁷⁷ Mr. McGlenon maintained that "[t]here are other options that have not been presented to the [Commission] that are less intrusive to the community and some of the routes actually cost less."¹⁷⁸ Mr. McGlenon recommended that the Commission consider the impact on natural and historic resources.¹⁷⁹ Mr. McGlenon outlined the impact the Proposed Route would have on religious institutions that hold annual baptisms in the James River, the National Park Service's properties in the area, and other historic and cultural resources that would have a view of the proposed transmission towers.¹⁸⁰

Mary Jones, a resident of Williamsburg and a member of the James City County Board of Supervisors, testified as a private citizen and as the elected official representing the Berkley District.¹⁸¹ Ms. Jones testified that both the Proposed Route and the Proposed Alternative Route

¹⁷¹ *Id.* at 4-5.

¹⁷² *Id.* at 5.

¹⁷³ McGlenon, PW-Tr. at 15. Because the page numbering of the transcripts restarts at 1 with the April 2013 hearings, the transcripts for the public witness testimony will be designated as "PW-Tr."

¹⁷⁴ *Id.* at 16.

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Id.* at 17.

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ *Id.* at 17-18.

¹⁸¹ Jones, PW-Tr. at 18.

"are unacceptable in terms of their impact on the county, its historic and cultural resources, its natural environment, and its business and residential communities."¹⁸² Ms. Jones noted that James City County is home to numerous above ground transmission lines and its citizens understand the need for reliable and affordable electric power.¹⁸³ Ms. Jones asserted that if Dominion Virginia Power were proposing a transmission line that could be properly mitigated, the citizens in the county would support such a project.¹⁸⁴ Ms. Jones pointed out that the Proposed Alternative Route: (i) crosses approximately forty-eight miles of previously undeveloped area in Charles City County and James City County; (ii) crosses through heavily forested areas in both counties; (iii) crosses the pristine and historic Chickahominy River; (iv) passes through a park known for its recreation resources and African-American historic sites; (v) passes immediately adjacent to two brand new schools; and (vi) passes through the Colonial Heritage subdivision.¹⁸⁵ Ms. Jones stated the Alternative Route is so bad PJM would not support its construction. As for the Proposed Route, Ms. Jones argued that the route adversely impacts one of the most historic areas in this country:

Our nation was essentially founded at Jamestown Island, and the first colonial government was located in Williamsburg, while the decisive Revolutionary War battle was fought in adjacent Yorktown. No place in the continental United States is able to boast this unique history. To impose multiple towers nearly three hundred feet tall in the James River has a severe adverse impact on the extraordinary history of this county and the vistas which are an integral part of our history.¹⁸⁶

Ms. Jones asserted that there are other options available that are affordable and will not have an impact on the extraordinary resources of James City County.¹⁸⁷

Alan Lutz, a resident of River Bluffs in Kingsmill, president of the River Bluffs Condominium Association Board of Directors, and a founding member of Save the James Alliance, testified in his capacity as a private citizen.¹⁸⁸ Mr. Lutz provided a nautical chart of the James River at the location of the proposed crossing, a map of the proposed James River Crossing Variations, and photographic simulations of the transmission towers proposed for the James River.¹⁸⁹ Referring to the nautical chart Mr. Lutz stated that the tallest towers will have to be erected on either side of the ship channel to allow clearance for ship traffic.¹⁹⁰ Mr. Lutz maintained that the point at which the proposed transmission line crosses the James River is where ship traffic must make a turn to stay within the channel.¹⁹¹ Mr. Lutz affirmed that on

¹⁸² *Id.* at 19.

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ *Id.* at 19-20.

¹⁸⁶ *Id.* at 20.

¹⁸⁷ *Id.* at 21.

¹⁸⁸ Lutz, PW-Tr. at 21-22.

¹⁸⁹ *Id.* at 22-26; Exhibit No. PW-1.

¹⁹⁰ *Id.* at 23; *Id.* at 1.

¹⁹¹ *Id.* at 24; *Id.* at 2.

September 25, 2012, he photographed from his veranda the 530-foot bulk container ship *Northern Light* in the ship channel.¹⁹² Mr. Lutz superimposed a 295 foot tower next to the ship to provide some perspective of the height of the proposed transmission towers.¹⁹³ Mr. Lutz testified that depending on the lens, the proposed towers can be made to look very small or very large.¹⁹⁴ Mr. Lutz urged the Commissioners to view the James River from several vantage points to “to get an idea of what’s really being talked about.”¹⁹⁵ Mr. Lutz also superimposed electric transmission towers on a photo taken from the Kingsmill Resort and Marina, which he asserted represents accurately the impact the proposed overhead transmission line will have on the James River.¹⁹⁶

John Bacon, a resident of Williamsburg and senior vice president of external affairs for The Colonial Williamsburg Foundation (the “Foundation”), testified on behalf of the Foundation.¹⁹⁷ Mr. Bacon opposed the overhead transmission line crossing the James River.¹⁹⁸ Mr. Bacon outlined several factors that compelled the Foundation to oppose the Project including: (i) the leadership role the Foundation plays in the historic preservation community; (ii) the special relationship Colonial Williamsburg enjoys with Preservation Virginia and Historic Jamestowne; and (iii) Colonial Williamsburg’s role as a signature tourism and heritage destination in the Commonwealth of Virginia and the nation.¹⁹⁹ Mr. Bacon testified that Colonial Williamsburg seeks to present to national and international visitors an appreciation for 18th century American history and the democratic principles upon which our country was founded.²⁰⁰ Mr. Bacon noted the connected histories of Colonial Williamsburg and Historic Jamestown and asserted that such collaboration is intended to enhance the experience of visitors to the area.²⁰¹ Mr. Bacon stressed the national and international importance of Jamestown, Williamsburg, Yorktown, and the Colonial Parkway that connects all three historic sites (collectively, the “Historic Triangle”).²⁰² Mr. Bacon asserted that the parkway provides visitors views of the James River that are essentially unchanged since 1607.²⁰³ Mr. Bacon advised that because of the importance of the Historic Triangle to our nation, Colonial Williamsburg, Preservation Virginia, and the College of William and Mary have joined together to pursue designation of the area as a World Heritage Site.²⁰⁴ Mr. Bacon noted the Virginia Tourism Corporation estimates that the Historic Triangle attracts approximately 6 million visitors per year who contribute \$1 billion to the economy and generate approximately \$80 million annually in state and local tax revenue.²⁰⁵ Mr. Bacon argued that the proposed overhead transmission line

¹⁹² *Id.*; *Id.* at 3.

¹⁹³ *Id.* at 25; *Id.* at 6-7.

¹⁹⁴ Lutz, PW-Tr. at 25-26.

¹⁹⁵ *Id.* at 26.

¹⁹⁶ *Id.*; Exhibit No. PW-1, at 8.

¹⁹⁷ Bacon, PW-Tr. at 27.

¹⁹⁸ *Id.*

¹⁹⁹ *Id.* at 27-28.

²⁰⁰ *Id.* at 28.

²⁰¹ *Id.* at 29.

²⁰² *Id.* at 30.

²⁰³ *Id.*

²⁰⁴ *Id.*

²⁰⁵ *Id.* at 31.

across the James River could compromise the effort to obtain World Heritage designation.²⁰⁶ Finally, Mr. Bacon contended that the words of John D. Rockefeller are as important today as in 1926 when he undertook the restoration of Williamsburg: “Jamestown, Williamsburg, and Yorktown, the continuum of history that these sites represent in the founding of the nation, deserve our highest, best and ample efforts in preservation and protection.”²⁰⁷

Robin Carson, a resident of Kingsmill and manager of the Kingsmill Resort, testified in opposition to the Project.²⁰⁸ Ms. Carson stated that in 1969, Anheuser-Busch purchased from Colonial Williamsburg approximately 4,000 acres along the James River for the second planned community in the United States – Kingsmill on the James.²⁰⁹ Ms. Carson asserted that Anheuser-Busch made a significant investment in developing Kingsmill on the James, the Anheuser-Busch brewery, Busch Gardens, the Busch Corporate Center, and the Kingsmill Resort.²¹⁰ Ms. Carson maintained that those developments are “a huge economic engine for James [City] County and all of the Historic Triangle.”²¹¹ Ms. Carson contended that although the Kingsmill Community has grown since its inception, certain guiding principles have remained in place – protect and secure the heritage and historic legacy of the James River through the use of progressive planning techniques to reduce the impact of the community on its surroundings.²¹² Ms. Carson confirmed that the Kingsmill Resort was purchased in 2010 by Xanterra Parks and Resorts (“Xanterra”), the nation’s largest park management company.²¹³

Ms. Carson argued that because the James River anchors America’s Historic Triangle, it deserves to be protected as a national treasure.²¹⁴ Ms. Carson contended that there are other reasonable alternatives to providing electricity to the region without destroying the viewshed of the historic and majestic James River.²¹⁵ Ms. Carson testified in favor of burying the transmission lines under the river.²¹⁶

Stanley Samorajcyk, a resident of Annapolis, Maryland, and the court-appointed trustee for Carter’s Grove, LLC, testified in opposition to the Proposed Project.²¹⁷ Mr. Samorajcyk affirmed that Carter’s Grove, LLC owns Carter’s Grove, a historic James River plantation house constructed in 1755, and 475 acres surrounding the house, with over a mile of river frontage on the James River.²¹⁸ Mr. Samorajcyk maintained that Carter’s Grove is recognized as one of colonial America’s most impressive examples of Georgian architecture for its exterior brickwork

²⁰⁶ *Id.*

²⁰⁷ *Id.*

²⁰⁸ Carson, PW-Tr. at 32.

²⁰⁹ *Id.* at 32-33.

²¹⁰ *Id.* at 33.

²¹¹ *Id.*

²¹² *Id.* at 33-34.

²¹³ *Id.* at 34.

²¹⁴ *Id.*

²¹⁵ *Id.* at 34-35.

²¹⁶ *Id.* at 35.

²¹⁷ Samorajcyk, PW-Tr. at 35-36.

²¹⁸ *Id.* at 36.

and its fully paneled interior.²¹⁹ Mr. Samorajcyk advised that Carter's Grove is included on the National Register of Historic Places as well as the Virginia Landmark Registry.²²⁰

Mr. Samorajcyk pointed out that the property includes the site of Wolstenholme Towne, a settlement founded in 1620 by investors in the London Company of Virginia.²²¹ Mr. Samorajcyk noted that DHR holds a historic resources easement over the property, and the Virginia Outdoors Foundation ("VOF") holds a conservation easement over the property.²²² Mr. Samorajcyk contended that "[t]he proposed power line will adversely affect the enjoyment of these resources by Virginians and by the many visitors who come here from around the world to savor our colonial heritage."²²³ Mr. Samorajcyk expressed hope that Dominion Virginia Power and the Commission will consider the historical significance and importance of Carter's Grove when evaluating the Proposed Project and other reasonable alternatives.²²⁴ Mr. Samorajcyk argued:

If the transmission lines are erected as proposed, the unique historical vistas will be lost forever. Preserving them justifies any additional cost because the value of these historic vistas, both for the citizens of the Commonwealth and of the nation, is only going to increase with the passage of time.²²⁵

Ivana Basnight, a resident of River Bluffs in Kingsmill and a full-time realtor with Prudential Town Realty, testified in opposition to the Project.²²⁶ Ms. Basnight advised that she has worked as a full-time realtor for 35 years and, with her husband, has owned a condominium in River Bluffs directly overlooking the James River since 2005.²²⁷ Ms. Basnight stated that the River Bluffs condominium was purchased for the Kingsmill amenities and as an investment.²²⁸

Waterfront property has always been sought after, perhaps until now.

Ms. Basnight testified that she and her husband continue to work and commute daily through the Hampton Roads Tunnel.²²⁹ Ms. Basnight stated that "no matter what the workday would bring, it was paradise to return home to the serenity and the expansive views of the James."²³⁰

Ms. Basnight asserted that the Proposed Project would substantially diminish the value of any property with a view of the overhead transmission line, which she described as "unsightly

²¹⁹ *Id.* at 36-37.

²²⁰ *Id.* at 37.

²²¹ *Id.*

²²² *Id.* at 38.

²²³ *Id.*

²²⁴ *Id.*

²²⁵ *Id.* at 39.

²²⁶ Basnight, PW-Tr. at 39-40.

²²⁷ *Id.* at 40.

²²⁸ *Id.*

²²⁹ *Id.*

²³⁰ *Id.*

and obtrusive.”²³¹ Ms. Basnight recommending burying the line to eliminate the visual blight.²³² Finally, Ms. Basnight stated “[l]et’s not perform plastic surgery on the face of the county and leave a permanent scar on its forehead.”²³³

Sally Thomas, a resident of Charlottesville, Virginia, and secretary of the Board of Scenic Virginia, testified on her own behalf in opposition of the Proposed Project.²³⁴ Ms. Thomas expressed concern “about the significant adverse effects this project will have on the scenic beauty of one of Virginia’s most historic and hallowed landscapes.”²³⁵ Ms. Thomas maintained that approximately six million people visit the Historic Triangle and its attractions annually, contributing \$1 billion to the economy, and generating approximately \$80 million in state and local tax revenues.²³⁶ Ms. Thomas asserted that the tourists that visit the Historic Triangle are known as “cultural heritage tourists,” and on average, they spend more time and money than ordinary tourists.²³⁷ Ms. Thomas contended that cultural heritage tourists are influenced by the reports of previous visitors.²³⁸ Ms. Thomas supported the comments of the DHR that the transmission line should be buried under the James River to minimize the impact to Carter’s Grove and the Captain Smith Trail.²³⁹ In addition, Ms. Thomas endorsed comments filed by the DCR that the James River was designated a scenic river for its rich history, scenic beauty, and value as a recreation resource and the overhead transmission line would degrade those attributes.²⁴⁰

Ms. Thomas testified that there have been significant infrastructure investments made to promote cultural heritage tourism such as the Colonial Parkway.²⁴¹ Ms. Thomas noted that the Colonial Parkway has retained its original scenic and historic integrity, including dramatic vistas of the James River.²⁴² Indeed, Ms. Thomas pointed out that the Colonial Parkway was designed to avoid “modern intrusions and other visual junk.”²⁴³ Ms. Thomas referred to other investments made to promote cultural heritage tourism, including Colonial Williamsburg and other property placed under conservation easements.²⁴⁴ Ms. Thomas contended that money, time, and skill were used to protect the Historic Triangle.²⁴⁵ Ms. Thomas asked Dominion Virginia Power to join the effort to protect the area and make its infrastructure investment by burying the transmission line under the James River.²⁴⁶ Ms. Thomas maintained that by protecting the James

²³¹ *Id.* at 41.

²³² *Id.*

²³³ *Id.*

²³⁴ Thomas, PW-Tr. at 42.

²³⁵ *Id.*

²³⁶ *Id.* at 43-44.

²³⁷ *Id.* at 44.

²³⁸ *Id.*

²³⁹ *Id.* at 44-45.

²⁴⁰ *Id.* at 46.

²⁴¹ *Id.*

²⁴² *Id.* at 46-47.

²⁴³ *Id.* at 47.

²⁴⁴ *Id.*

²⁴⁵ *Id.* at 48.

²⁴⁶ *Id.*

River from visually intrusive power lines and towers, the Company would show would allow for continued cultural heritage tourism, and would protect the public and private investments made over the years to protect the birthplace of the nation.²⁴⁷

Don Tharpe, a resident of Lake Marston, Virginia, owns property in River Bluffs in Kingsmill.²⁴⁸ Mr. Tharpe expressed his concern over the potential obsolescence of a 500 kV transmission line over the James River, and what if in ten years, there is a better technology that does not destroy the scenic views.²⁴⁹ Mr. Tharpe observed that the overhead transmission line option is estimated to cost \$60 million, and for additional \$250 million the line could be buried under the James River.²⁵⁰ Mr. Tharpe stated that the transmission line is intended to serve approximately 1.7 million customers in the greater Hampton Roads area, and estimated that the extra undergrounding cost of \$250 million would amount to only an annual cost of \$1.64 per Hampton Roads customer, if amortized over a sixty-year period.²⁵¹ Mr. Tharpe compared his estimated annual cost of \$1.64 per customer to his recent monthly bill of \$242.87, which included state and local consumption tax of \$3.92, and asserted “that’s a very small price to pay to not destroy the historical context of the James River.”²⁵²

George Blow, a resident of River Bluffs in Kingsmill, testified in opposition to the Project.²⁵³ Mr. Blow stated that his family originated at Jamestown about 300 years ago, and that in 1804, one of his ancestors paid his tuition at the College of William and Mary with a herd of cattle that he drove across the James River and delivered to the college.²⁵⁴ Mr. Blow also pointed to later relatives that owned the land upon which the Yorktown National Battlefield Park is located.²⁵⁵ Mr. Blow acknowledged that he owned a few shares of Dominion Virginia Power stock, and if he were the chairman of Dominion Virginia Power, he would have never proposed an overhead transmission line across the James River.²⁵⁶ Mr. Blow maintained that the James River should not be put up for sale.²⁵⁷

Anne Rogers, a resident of River Bluffs in Kingsmill, testified in opposition to the Project.²⁵⁸ Ms. Rogers observed that the president of the United States was recently in residence at Kingsmill.²⁵⁹ Ms. Rogers imagined the president standing on the lawn overlooking the historic James River and thinking what a shame Dominion Virginia Power is even thinking of building sixteen lattice-style steel towers in the river, four of which would be 295 feet tall, or the

²⁴⁷ *Id.*

²⁴⁸ Tharpe, PW-Tr. at 49.

²⁴⁹ *Id.*

²⁵⁰ *Id.*

²⁵¹ *Id.* at 50.

²⁵² *Id.*

²⁵³ Blow, PW-Tr. at 51.

²⁵⁴ *Id.*

²⁵⁵ *Id.* at 52.

²⁵⁶ *Id.* at 52-53.

²⁵⁷ *Id.* at 53.

²⁵⁸ Rogers, PW-Tr. at 54.

²⁵⁹ *Id.*

equivalent of the height of the Statue of Liberty.²⁶⁰ Ms. Rogers contended that “[t]his horrendous construction will deface the beauty of this magnificent river which has been enjoyed and appreciated by previous presidents, statesmen and royalty.”²⁶¹

Judith Fuss, a resident of James City County and a member of the James City County Citizens’ Coalition, Inc., testified on her own behalf in opposition to the Proposed Alternative Project and the Proposed Project.²⁶² Ms. Fuss outlined her opposition to the Proposed Alternative Project: (i) the route cuts through the center of the county, destroying much forested land; (ii) the route crosses several environmentally sensitive areas; and (iii) the route passes close to two schools, parklands, and residential neighborhoods.²⁶³ Ms. Fuss opposes the Proposed Project because the aerial crossing of the James River includes numerous towers, some nearly 300 feet in height, which are near Carter’s Grove Plantation, and bisect the county’s only deep water port.²⁶⁴ Ms. Fuss raised health concerns with the river crossing as it may disturb kepone latent sediments.²⁶⁵ Ms. Fuss stated the proposed Skiffes Creek Switching Station is inconsistent with the county’s comprehensive plan.²⁶⁶ Ms. Fuss contended that the rate impact on individual customers of the additional cost required to build the transmission line underwater would be “too small to be felt” because the cost would be extended over 60 years and spread among 60 million residents in 13 states and the District of Columbia.²⁶⁷ Ms. Fuss maintained that there are other routes “that will bring the power closer to where it will ultimately be used.”²⁶⁸

Danny Schmidt, a resident of James City County, an archeologist with Preservation Virginia, and a board member of Save the James Alliance Trust, testified on his own behalf.²⁶⁹ Mr. Schmidt stated that as a child, he canoed the James River and imagined what it would have been like to be a Powhatan Indian in their dugout canoes, or the Spanish Jesuits on their way to establish a mission, or the first English colonists on their way to Jamestown.²⁷⁰ Mr. Schmidt observed that there are no bridges or other above-ground infrastructure connecting James City County and Surry County, which allows for stunning views to the south.²⁷¹ Mr. Schmidt asserted that “[i]t is our responsibility to protect [the James River] because we enjoy it, because our visitors, which number in the hundreds of thousands demand it, and because our obligation to history requires it.”²⁷²

²⁶⁰ *Id.*

²⁶¹ *Id.*

²⁶² Fuss, PW-Tr. at 55.

²⁶³ *Id.*

²⁶⁴ *Id.*

²⁶⁵ *Id.* at 55-56.

²⁶⁶ *Id.* at 56.

²⁶⁷ *Id.*

²⁶⁸ *Id.*

²⁶⁹ Schmidt, PW-Tr. at 57.

²⁷⁰ *Id.*

²⁷¹ *Id.*

²⁷² *Id.* at 58.

Mr. Schmidt testified that he has worked as an archeologist since 1994 on an effort to locate and map James Fort on Jamestown Island.²⁷³ Mr. Schmidt described his drive to work on the Colonial Parkway where he witnesses the sun rising over the same skyline as the Jamestown colonists.²⁷⁴ Mr. Schmidt asserted that “if these towers and transmission lines are built, that view will be scarred forever.”²⁷⁵ Mr. Schmidt described a meeting the archeologists had with Queen Elizabeth II of England on her visit to the United States in 2007.²⁷⁶ Mr. Schmidt reported that the Queen remarked how wonderful it was that the views from Jamestown Island had not been marred by modernity.²⁷⁷ Mr. Schmidt contended that “for Virginia, a state of living history, Jamestown, yes, Jamestown, is our crown jewel.”²⁷⁸ Mr. Schmidt argued that “the cost of doing business in 2012 should include the preservation of the most hallowed ground where so much of our national identity and our institutions were nurtured.”²⁷⁹ Mr. Schmidt noted that the balance between preservation and development is always difficult, but in this case, the transmission line must be buried under the river.²⁸⁰

Louis Malon, a resident of Richmond, Virginia, and director of preservation services for Preservation Virginia, testified on behalf of Preservation Virginia, which owns the most historic section of Jamestown and operates the site in conjunction with the National Park Service and Colonial Williamsburg.²⁸¹ Mr. Malon asserted that historic Jamestown brings hundreds of thousands of visitors to the Historic Triangle each year, and is part of the economic engine that drives the region’s economy.²⁸² Mr. Malon maintained that approximately six million people visit the area annually, contributing \$1 billion to the economy and \$80 million in state and local tax revenues.²⁸³ Mr. Malon stressed the importance of being able to present an authentic experience of that history to visitors and that the proposed James River crossing with its modern incongruity threatens the integrity of the visitors’ experience.²⁸⁴ Mr. Malon, on behalf of Preservation Virginia encouraged Dominion Virginia Power, the affected localities, and the Commission to look for other alternatives that would provide for our future energy needs without impacting our historical past.²⁸⁵

Ellen Smith Gajda, a resident of Kingsmill, an associate broker with Long and Foster Realtors, and a managing broker of the local Sotheby’s International Realty franchise, testified in opposition to the Proposed Project.²⁸⁶ Ms. Gajda reported on three final showings of a condominium in River Bluffs, Kingsmill’s most luxurious upscale condominium community,

²⁷³ *Id.*

²⁷⁴ *Id.*

²⁷⁵ *Id.*

²⁷⁶ *Id.* at 58-59.

²⁷⁷ *Id.* at 59.

²⁷⁸ *Id.*

²⁷⁹ *Id.*

²⁸⁰ *Id.* at 60.

²⁸¹ Malon, PW-Tr. at 61.

²⁸² *Id.*

²⁸³ *Id.* at 62.

²⁸⁴ *Id.*

²⁸⁵ *Id.* at 63.

²⁸⁶ Gajda, PW-Tr. at 64.

which was listed for \$900,000 and had spectacular third-floor panoramic views of the James River.²⁸⁷ Ms. Gajda confirmed that all three potential buyers declined to make an offer on the property because of the impact the proposed overhead transmission line would have on the view and resale value.²⁸⁸ Ms. Gajda contended that “if the towers are built, I believe the tremendous loss of the historic, expansive, beautiful views will have a significant adverse impact on the market value of the River Bluffs condominiums.”²⁸⁹

Joan Nancoz, a resident of Colonial Heritage, testified she cannot understand the difference in cost between the Proposed Project and the Proposed Alternative Project.²⁹⁰ Ms. Nancoz maintained that the Proposed Project is expected to cost less, but is ruining people’s views of the James River, while the Proposed Alternative Project is encroaching on people’s property.²⁹¹ Ms. Nancoz contended that the best alternative to satisfy everyone’s concerns would be to spend the additional money to bury the line under the James River.²⁹²

Hank Denning, a resident of Colonial Heritage, testified in opposition to the Proposed Alternative Project. Mr. Denning recognized that the region and James City County need additional electric capacity.²⁹³ Mr. Denning noted that population growth and the closure of the Yorktown Generation Station make it a question of where a new transmission line will be located.²⁹⁴ Mr. Denning maintained that the debate should focus on which alternative provides the most reliable electricity, minimizes the impact on James City County residents, and can be constructed on an expedited basis.²⁹⁵ Mr. Denning asserted that the Proposed Project is the most responsible choice because it is 59 percent less expensive, 72 percent shorter, and affects one-tenth the number of private homes than the Proposed Alternative Project.²⁹⁶

Mr. Denning noted the viewshed of the James River is already marred by the Ghost Fleet, the Surry Generation Station, roller coasters at Busch Gardens, military aircraft using Fort Eustis, and some shipping interests.²⁹⁷ Mr. Denning argued:

To suggest that all of us in the county should pay more to subsidize the protected view of a few of you that is arguably not at all today what Captain John Smith saw over 400 years ago is unfair to every taxpayer and [Dominion Virginia Power] customer in our community.²⁹⁸

²⁸⁷ *Id.*

²⁸⁸ *Id.*

²⁸⁹ *Id.* at 65-66.

²⁹⁰ Nancoz, PW-Tr. at 66.

²⁹¹ *Id.*

²⁹² *Id.*

²⁹³ Denning, PW-Tr. at 67.

²⁹⁴ *Id.*

²⁹⁵ *Id.* at 67-68.

²⁹⁶ *Id.* at 68.

²⁹⁷ *Id.* at 69.

²⁹⁸ *Id.*

Mr. Denning opposed underwater lines based on the estimated added cost, and opposed the Proposed Alternative Route.²⁹⁹ Mr. Denning asked everyone to support a route that is shorter, less expensive, and more reliable.³⁰⁰ Mr. Denning provided further support for the Proposed Project by submitting photos taken of his backyard showing where the Proposed Alternative Route would cross within 250 feet of his property.³⁰¹ In contrast, Mr. Denning advised that the Proposed Route would be two miles from the nearest land mass.³⁰² On cross-examination, Mr. Denning stated that he would support a route that had a reasonable cost and would impact neither Colonial Heritage nor Kingsmill.³⁰³

Caroline Coles Merrick, a resident of Madison County, Virginia, testified in opposition to the Project.³⁰⁴ Ms. Merrick stated that in 2006 and 2007, during the 400th anniversary of Jamestown celebration, she served as the Jamestown tourist liaison in Madison County and surrounding counties.³⁰⁵ Ms. Merrick expressed concern regarding the investment made by the Commonwealth to develop and preserve views of the James River from the Colonial Parkway, Carter's Grove, and Jamestown.³⁰⁶ Ms. Merrick cited data from the U.S. Travel Association that indicated that tourism was up 8 percent in Virginia for 2011, resulting in a corresponding increase in tourism revenues for Virginia.³⁰⁷ Ms. Merrick maintained that no state agency has come out in favor of the overhead crossing of the James River.³⁰⁸ Ms. Merrick argued that Dominion Virginia Power has overreached in this case by proposing an overhead transmission line at the proposed crossing location.³⁰⁹

Michael Maher, a resident of Colonial Heritage, opposed the Proposed Alternative Project, which he asserted literally would cut his neighborhood in half.³¹⁰ Mr. Maher testified that the Proposed Alternative Route is the longer route, which equals increased costs and increased negative environmental impact.³¹¹ Mr. Maher described himself as a "patriot who suffers from a chronic disease and a permanent disability."³¹² Mr. Maher maintained that his walks in the surrounding woods near his home are therapeutic.³¹³ Mr. Maher stated that if those woods are lost, he will lose the gains he has made in treating his disability.³¹⁴ Mr. Maher contended that the Proposed Alternative Project is not the solution for the area's increased need

²⁹⁹ *Id.*

³⁰⁰ *Id.* at 69-70.

³⁰¹ *Id.* at 71.

³⁰² *Id.*

³⁰³ *Id.* at 72.

³⁰⁴ Merrick, PW-Tr. at 73.

³⁰⁵ *Id.*

³⁰⁶ *Id.* at 74.

³⁰⁷ *Id.*

³⁰⁸ *Id.* at 75.

³⁰⁹ *Id.*

³¹⁰ Maher, PW-Tr. at 76.

³¹¹ *Id.*

³¹² *Id.*

³¹³ *Id.* at 77.

³¹⁴ *Id.*

for electricity.³¹⁵ Mr. Maher also opposed the overhead crossing of the James River, but is unsure whether there are any other alternatives.³¹⁶

Jackson Tuttle, a resident of Williamsburg and its city manager, on behalf of the City Council of the City of Williamsburg expressed deep concern over the irreparable damage that would be done to nationally and internationally significant historic and cultural resources by permanently marring the James River viewshed with an overhead transmission line.³¹⁷ Mr. Tuttle maintained that the location of the proposed overhead crossing “is without a doubt one of the most historically significant stretches of river anywhere in America.”³¹⁸ Mr. Tuttle testified that from Jamestown Island and the Colonial Parkway, “one can look down river and imagine the arrival of the three ships carrying the settlers who would interact with native inhabitants and who would establish the first permanent English settlement”³¹⁹ Mr. Tuttle noted that the city’s two iconic institutions, Colonial Williamsburg and the College of William and Mary, have led the way in seeking to have the Historic Triangle named a world heritage site.³²⁰ Mr. Tuttle observed that if we fail to protect the James River locally, “how can we expect the rest of the world to care.”³²¹ Mr. Tuttle contended that as Dominion Virginia Power ratepayers, we should be “willing to bear the cost of protecting such an incomparable place which nature and history has bequeathed to us.”³²² Mr. Tuttle maintained that the negative impacts of an overhead crossing of the James River in view of Jamestown Island and the Colonial Parkway “is far too high a price to pay.”³²³

Betty Ann Davis, a resident of Williamsburg and a former member of the Virginia Board of Housing and the Newport News School Board, testified in opposition to the Project.³²⁴ Ms. Davis maintained that “[i]t will be a huge mistake to put these lines above water knowing the consequences of that action and at this point that you’re able to prevent it.”³²⁵ Ms. Davis provided an old photograph of Williamsburg’s Duke of Gloucester Street with electric distribution lines going down the center of the Street.³²⁶ Ms. Davis asserted that the photo is an example of the easiest and least costly alternative for routing electric lines.³²⁷ Ms. Davis argued that it was a poor choice that ultimately was costly to correct.³²⁸

³¹⁵ *Id.*

³¹⁶ *Id.*

³¹⁷ Tuttle, PW-Tr. at 78.

³¹⁸ *Id.*

³¹⁹ *Id.* at 78-79.

³²⁰ *Id.* at 79.

³²¹ *Id.*

³²² *Id.*

³²³ *Id.*

³²⁴ B. Davis, PW-Tr. at 80-81.

³²⁵ *Id.* at 81.

³²⁶ *Id.* at 82; Exhibit No. PW-3.

³²⁷ B. Davis, PW-Tr. at 82.

³²⁸ *Id.*

Ms. Davis also provided a photograph of the space shuttle Endeavor being moved to its new home in California as an example of never knowing what the future may bring.³²⁹ Ms. Davis testified that no one knows what “might need to pass down James River.”³³⁰ Ms. Davis questioned whether the overhead transmission line provides sufficient clearance.³³¹ Ms. Davis encouraged the Commission to “look for the very best possible solution and not make a mistake that you’re in the power and position to prevent.”³³²

Faye Trevelino, a resident of Colonial Heritage, opposed the Proposed Alternative Project.³³³ Ms. Trevelino testified that she and her husband worked for thirty years in Northern Virginia before purchasing a small home in Colonial Heritage where they could enjoy watching nature.³³⁴ Ms. Trevelino stated that their home backs up to a protected wetland, with signs posted warning not to remove or destroy any of the vegetation.³³⁵ Ms. Trevelino encouraged the Commission to find another alternative that does not result in the destruction of the woods behind her house.³³⁶

Jim Brown, a resident of James City County, testified in opposition to the Proposed Project.³³⁷ Mr. Brown maintained that the focus should be on reliability and security, “and the overhead line doesn’t fair very well in either case.”³³⁸ Mr. Brown noted that in the past twelve years, the county has suffered three catastrophic power outages resulting from an ice storm and two hurricanes, leaving the county without power for a week or more during each event.³³⁹ Mr. Brown estimated the cost of each outage to be approximately \$500 per family, or roughly \$50 million per outage for James City County.³⁴⁰ Mr. Brown asserted that the additional cost for undergrounding the Proposed Project is \$250 million, which is equal to the losses suffered by customers in five storm events.³⁴¹ In regard to security, Mr. Brown contended that an overhead transmission line is subject to a terrorist attack, which would result in the line being out of service for an extended period of time.³⁴² Mr. Brown argued that underground lines are more feasible, more reliable, and more resistant to attacks.³⁴³ Mr. Brown recommended that all high voltage lines be placed underground.³⁴⁴

³²⁹ *Id.*

³³⁰ *Id.*

³³¹ *Id.* at 82-83.

³³² *Id.* at 83.

³³³ Trevelino, PW-Tr. at 84.

³³⁴ *Id.*

³³⁵ *Id.* at 85.

³³⁶ *Id.*

³³⁷ Brown, PW-Tr. at 86.

³³⁸ *Id.*

³³⁹ *Id.* at 86-87.

³⁴⁰ *Id.* at 87.

³⁴¹ *Id.*

³⁴² *Id.* at 87-88.

³⁴³ *Id.* at 89.

³⁴⁴ *Id.*

Alain Rigal, a resident of James City County and an international banker originally from France, testified in opposition to the Project.³⁴⁵ Mr. Rigal noted that in France approximately 95% of the electrical supply lines are buried.³⁴⁶ Mr. Rigal expressed concern for the impact of the line on the local economy, which he maintained has been in crisis for five years.³⁴⁷ Mr. Rigal questioned the need for the line as he failed to see any factors increasing the need for electricity in Williamsburg.³⁴⁸ Mr. Rigal noted the economy in the area has been stagnant for the last couple of years. Mr. Rigal questioned sacrificing a promising landscape to expand the electric grid and he opined that the expansion would allow the Company to speculate on the purchase and sale of electricity.³⁴⁹ Finally, Mr. Rigal stated that he would prefer that Dominion Virginia Power address its emergency warning system.³⁵⁰

Lisa Evans, a resident of Williamsburg, asked Dominion Virginia Power to develop a new plan.³⁵¹ Ms. Evans faulted the Company for failing to conduct a balloon study to conceptualize the visual impact of the line on the James River.³⁵² Ms. Evans stated the Company should examine further an underwater crossing of the James River.³⁵³

Charles Harwood, a longtime resident of Charles City County, testified in opposition to the Proposed Alternative Project.³⁵⁴ Given the significant additional cost, Mr. Harwood asserted that the Proposed Alternative Project should not even be considered.³⁵⁵ Mr. Harwood recommended that the Commission approve the route with the least impact, which he contended is the shortest route.³⁵⁶ On cross-examination, Mr. Harwood indicated that he could support a third alternative that did not impact Charles City County and was supported by James City County.³⁵⁷

Joe Burkart, a resident of Williamsburg and a volunteer interpreter at Jamestown, testified in opposition to the Project.³⁵⁸ Mr. Burkart stated that although he recognizes that the demands of population growth often clash with environmental considerations and in some cases must override environmental considerations, Mr. Burkart asserted that this is not one of those instances.³⁵⁹ Mr. Burkart testified that for the past five years he has spent every Wednesday afternoon at Dr. Kelso's archaeology site.³⁶⁰ Mr. Burkart maintained that during his drives along

³⁴⁵ Rigal, PW-Tr. at 90.

³⁴⁶ *Id.*

³⁴⁷ *Id.*

³⁴⁸ *Id.* at 91.

³⁴⁹ *Id.*

³⁵⁰ *Id.* at 92.

³⁵¹ Evans, PW-Tr. at 103.

³⁵² *Id.* at 103-04.

³⁵³ *Id.* at 104.

³⁵⁴ Harwood, PW-Tr. at 106.

³⁵⁵ *Id.* at 106-07.

³⁵⁶ *Id.* at 107.

³⁵⁷ *Id.* at 108.

³⁵⁸ Burkart, PW-Tr. at 109.

³⁵⁹ *Id.*

³⁶⁰ *Id.* at 109-10.

the Colonial Parkway, he never ceases to admire the James River's pristine, unmarred beauty and its role in history.³⁶¹ Mr. Burkart quoted from the Blair Niles 1939 book, *The James*:

Though the James River is wholly contained within the state of Virginia, it is not a local river, for it belongs to the Nation. So much of significance to our country has happened in the James River watershed, this river cannot belong to one state, but must belong to all.³⁶²

Mr. Burkart also quoted from Bob Deans' book, *The River Where America Began*, and contended that it is at the James River that our national story begins.³⁶³ Thus, Mr. Burkart recommended that we should "think long and hard before we erect these huge towers scarring forever the James River after 400 years."³⁶⁴ Mr. Burkart stated that, if possible, the transmission line should be buried under the river and the costs for doing so should be fully explained by the Company.³⁶⁵

Fred Blackmon, a resident of River Bluffs in Kingsmill, testified in opposition to the James River transmission line crossing.³⁶⁶ Mr. Blackmon argued that anyone along the James River who will have a view of an overhead transmission line will suffer an immediate, significant, and lasting decline in their property value.³⁶⁷ Mr. Blackmon asked that the damage done to property values be considered a collateral cost of the Project and included in the Commission's evaluation of the Project.³⁶⁸ Mr. Blackmon compared the immediate and permanent damage to property values to the insignificant impact on the average customer of amortizing the costs to underground the transmission line over 50 or 60 years.³⁶⁹ In addition, Mr. Blackmon observed that the Company proposes to build its transmission towers "adjacent to the most historic section of the most historic river in America."³⁷⁰ Mr. Blackmon maintained that if the transmission line is built over the James River, future generations will wonder "what were we thinking . . ."³⁷¹ Mr. Blackmon agreed with the statement that: "we don't inherit this world from our ancestors; we borrow it from our children."³⁷² Mr. Blackmon asserted that it is particularly unwise to permanently damage this historic section of river.³⁷³

³⁶¹ *Id.* at 110.

³⁶² *Id.*

³⁶³ *Id.*

³⁶⁴ *Id.*

³⁶⁵ *Id.* at 110-11.

³⁶⁶ Blackmon, PW-Tr. at 111-12.

³⁶⁷ *Id.* at 112.

³⁶⁸ *Id.*

³⁶⁹ *Id.* at 112-13.

³⁷⁰ *Id.* at 113.

³⁷¹ *Id.*

³⁷² *Id.*

³⁷³ *Id.*

Jefferson Davis, a resident of Colonial Heritage, testified in support of the James City County Board of Supervisors and their opposition to the Proposed Alternative Project.³⁷⁴ Mr. Davis pointed out that Colonial Heritage already has a transmission line traversing the subdivision; residents accept that line because it was present before they purchased their property.³⁷⁵ Mr. Davis testified that the Proposed Alternative Project would bring a new line through the subdivision that will be within relatively short distances of many homes and two schools.³⁷⁶ Mr. Davis contended that the quality of life of residents of Colonial Heritage would be impacted far greater than those with a view of an overhead transmission line crossing the James River.³⁷⁷ Mr. Davis argued that to be fair, the route selected should impact the fewest people, homes, and schools.³⁷⁸ If the Commission finds the Proposed Route unacceptable because of its impact on historical resources, Mr. Davis recommended that the Commission direct the Company to propose a third or fourth more acceptable route, even if they are more expensive.³⁷⁹

John Rogers, a resident of Williamsburg, testified he is “the only resident that this line is going over the top.”³⁸⁰ Mr. Rogers maintained that coming down an existing right-of-way for seven miles versus a forty-mile alternative is a “no-brainer.”³⁸¹ Mr. Rogers stated that the transmission towers in the James River would be good for fishing, and pointed out that the “dead fleet” had 100 boats out there for about twenty years and wasn’t a big deal.³⁸² Mr. Roger contended that an overhead line would be easier to fix than one below ground.³⁸³

Susan Biel, a resident of Williamsburg, testified on behalf of Colonial Heritage in favor of the Proposed Project because it will meet James City County’s growing demand for electricity.³⁸⁴ Ms. Biel maintained that an underground crossing of the James River has not been engineered, is likely to cost \$150 to \$200 million more than an overhead line, and take significantly longer to build.³⁸⁵ Taking into consideration the retirement of the Yorktown Power Station, Ms. Biel asserted that the only clear choice is the Proposed Project because of its reduced cost, greater efficiencies, and shorter construction schedule.³⁸⁶

On cross-examination, Ms. Biel stated that she could support another alternative that impacted neither Colonial Heritage nor Kingsmill.³⁸⁷

³⁷⁴ J. Davis, PW-Tr. at 114-15.

³⁷⁵ *Id.* at 115.

³⁷⁶ *Id.*

³⁷⁷ *Id.*

³⁷⁸ *Id.*

³⁷⁹ *Id.* at 116.

³⁸⁰ Rogers, PW-Tr. at 116.

³⁸¹ *Id.* at 116-17.

³⁸² *Id.* at 117.

³⁸³ *Id.*

³⁸⁴ Biel, PW-Tr. at 118.

³⁸⁵ *Id.*

³⁸⁶ *Id.* at 119.

³⁸⁷ *Id.* at 120.

Sasha Digges, a resident of Williamsburg, estimated that the \$250 million in cost to put the line the river would be about \$41 per customer.³⁸⁸ Mr. Digges took the position that the Company should be indifferent to the cost associated with undergrounding because it will earn an even larger return.³⁸⁹ Mr. Digges question Dominion Virginia Power's right to destroy a pristine river like the James River.³⁹⁰ Mr. Digges noted that the community has consistently opposed impacting the view along the James River and has opposed a bridge between Surry County and James City County.³⁹¹ Mr. Digges referred to the transmission lines that cross the James River adjacent to the James River Bridge and he suggested hanging Christmas balls from the lines and lighting them up in different colors to improve the view.³⁹² Mr. Digges maintained that a transmission line crossing either the James or the Chickahominy Rivers would be bad for duck hunting.³⁹³ Mr. Digges asserted that the undergrounding of the transmission line should be opened up to bids to get the best deal.³⁹⁴ Mr. Digges testified that "it's not a matter of dollars; it's a matter of common sense, common dignity and the beauty of our great state of Virginia."³⁹⁵

Mary Catherine Digges, a resident of Williamsburg, testified in opposition to the Project.³⁹⁶ Ms. Digges noted that proposals for a bridge between James City County and Surry County have always been overwhelmingly voted down.³⁹⁷ Ms. Digges stated that "[p]eople love the beautiful scenery, and they want it to stay the way it is."³⁹⁸ Ms. Digges questioned the need for a 500 kV line and wondered whether a 230 kV transmission line would meet the Company's needs.³⁹⁹ Ms. Digges maintained that a 230 kV line may be easier to construct and have less impact on the environment.⁴⁰⁰ Ms. Digges noted the Company constructed a 230 kV transmission line under the York River and questioned why the Company could not do the same under the James River.⁴⁰¹

Edward Ryan, a resident of James City County, testified in opposition to the Project.⁴⁰² Mr. Ryan argued that instead of focusing on landowners that will be directly impacted by the Proposed Project, the Commission should look at the thousands or millions of visitors over time that will be affected if those towers are built.⁴⁰³ Mr. Ryan testified that the view of the James River from the Colonial Parkway is "the same view that Christopher Newport looked at, that Captain John Smith looked at and even more likely that the Indians, the natives, looked at when

³⁸⁸ S. Diggse, PW-Tr. at 121.

³⁸⁹ *Id.*

³⁹⁰ *Id.* at 122.

³⁹¹ *Id.*

³⁹² *Id.*

³⁹³ *Id.* at 123.

³⁹⁴ *Id.*

³⁹⁵ *Id.* at 123-24.

³⁹⁶ M.C. Digges, PW-Tr. at 124.

³⁹⁷ *Id.*

³⁹⁸ *Id.*

³⁹⁹ *Id.* at 124-25.

⁴⁰⁰ *Id.* at 125.

⁴⁰¹ *Id.*

⁴⁰² Ryan, PW-Tr. at 125.

⁴⁰³ *Id.* at 126.

they saw the ships coming up the James River.”⁴⁰⁴ Mr. Ryan contended that the Company simply chose the shortest least costly alternative, but lost sight of the larger picture, which is the loss of our national historic heritage.⁴⁰⁵ Mr. Ryan affirmed that he would be willing to pay a little more to preserve the views of the James River.⁴⁰⁶ Given the Company’s recent earnings, Mr. Ryan maintained that the Company could absorb the cost of burying the transmission line under the river.⁴⁰⁷ Mr. Ryan took the position that the construction of the Proposed Project across the James River amounts to “a rape of the James River, and a rape of our natural, national, founding heritage and a destruction of one of the most beautiful and scenic places in America.”⁴⁰⁸

Helene Kriner, a resident of Colonial Heritage, testified in opposition to the Proposed Alternative Project.⁴⁰⁹ Ms. Kriner stated that she will be directly impacted by the Proposed Alternative Project, which would pass immediately behind her house.⁴¹⁰ The close proximity of the transmission lines would negatively impact Colonial Heritage. Ms. Kriner stated that she is retired and on a limited income, much like many of her neighbors who will also be negatively impacted by the close proximity of the transmission lines.⁴¹¹ Ms. Kriner noted that over 1500 properties would be directly impacted by the Proposed Alternative Project while fewer than 100 properties would be directly impacted by the Proposed Project.⁴¹² Ms. Kriner asked the Commission to “consider the impact on many of us throughout the county, rather than just looking to the interests of a few.”⁴¹³

On cross-examination, Ms. Kriner confirmed she would be willing to pay a little more to have the line go under the James River.⁴¹⁴

Lon Kriner, a resident of Colonial Heritage, testified in opposition to the Proposed Alternative Project.⁴¹⁵ Mr. Kriner testified that about 42 years ago, he and his wife traveled from Ohio to honeymoon in Williamsburg.⁴¹⁶ Mr. Kriner stated that in 2006, they started looking at Colonial Heritage and they purchased a home in the subdivision in 2009.⁴¹⁷ Mr. Kriner affirmed that at the time of purchase, he was aware of one transmission line adjoining the neighborhood, but was unaware that an easement for another line went directly through the neighborhood.⁴¹⁸ Mr. Kriner expressed concern for the impact a second transmission line would have on the

⁴⁰⁴ *Id.*

⁴⁰⁵ *Id.* at 127.

⁴⁰⁶ *Id.*

⁴⁰⁷ *Id.*

⁴⁰⁸ *Id.* at 128.

⁴⁰⁹ H. Kriner, PW-Tr. at 129.

⁴¹⁰ *Id.*

⁴¹¹ *Id.*

⁴¹² *Id.* at 129-30.

⁴¹³ *Id.* at 130.

⁴¹⁴ *Id.* at 130-31.

⁴¹⁵ L. Kriner, PW-Tr. at 131.

⁴¹⁶ *Id.*

⁴¹⁷ *Id.* at 131-32.

⁴¹⁸ *Id.* at 132.

quality of life, property values, and future investment in the area.⁴¹⁹ Mr. Kriner did not disagree with those that testified about the historic value of the James River, but he noted that the James River currently has nuclear cooling towers, an amusement park with roller coasters that can be seen from miles around, several golf courses, a marina, a brewery, and other commercial development.⁴²⁰

Peggy Mason, a resident of Adam's Hunt a subdivision next to Colonial Heritage, testified in opposition to the Proposed Alternative Project.⁴²¹ Ms. Mason referred to the movie, *Argo*, and stated that "it looks like the choice we have is we have to choose between the best bad idea"⁴²² Ms. Mason expressed concern with the impact the construction of the Proposed Alternative Project would have on environmental resources and maintained that the mostly undeveloped 37-mile route would never recover from the initial construction of the transmission line.⁴²³

Melvin Davis, a resident of James City County, testified in opposition to the Proposed Project.⁴²⁴ Mr. Davis confirmed that for twenty-three years, he lived in Colonial Heights, Virginia.⁴²⁵ Mr. Davis stated that he witnessed his pretty little town become a city, with "no regard for the aesthetics and beauty of the world we live in."⁴²⁶ Mr. Davis testified that he and his wife were drawn to the Williamsburg area because the local governments understood the value of progressive planning to maintain the area's historic heritage.⁴²⁷ Mr. Davis asked Dominion Virginia Power not to destroy the visual aesthetics that local governments have strived for hundreds of years to keep as a living museum.⁴²⁸

David and Judith Ledbetter's Direct Testimony

On December 5, 2012, David and Judith Ledbetter, residents of Charles City County, prefiled direct testimony. On April 8, 2013, David Ledbetter filed a corrected and revised direct testimony that was substituted for his direct testimony filed on December 5, 2012. The prefiled direct testimony, as corrected and revised, of David and Judith Ledbetter is summarized below.

David O. Ledbetter advised that he is retired from the active practice of environmental law and confines his law practice to assisting education, conservation, and public policy not-for-profit foundations and organizations.⁴²⁹ Mr. Ledbetter confirmed that he and his wife own

⁴¹⁹ *Id.*

⁴²⁰ *Id.* at 132-33.

⁴²¹ Mason, PW-Tr. at 134.

⁴²² *Id.*

⁴²³ *Id.*

⁴²⁴ M. Davis, PW-Tr. at 136.

⁴²⁵ *Id.*

⁴²⁶ *Id.* at 136-37.

⁴²⁷ *Id.* at 137.

⁴²⁸ *Id.* at 138.

⁴²⁹ Exhibit No. 17, at 1-2.

Mossy Farm (circa 1859) in Charles City County, which consists of 142 acres of cultivated fields, pastures, and woodlands, and a three-acre spring-fed pond.⁴³⁰

Mr. Ledbetter testified that the farm is a haven for all variety of wildlife.⁴³¹ Mr. Ledbetter maintained that the most immediate impact of constructing the Proposed Alternative Project would be the permanent, irremediable loss of and damage to the habitat in the right-of-way.⁴³² Mr. Ledbetter also expressed concern for creating a danger to birds living at or visiting his pond, which will be in close proximity to the transmission line under the Proposed Alternative Route.⁴³³

Mr. Ledbetter agreed with the DEQ Office of Wetlands and Stream Protection assessment that irreversible impacts on wetlands, particularly forested wetlands, of the Proposed Alternative Route would be “several orders of magnitude higher” than those of a James River crossing route; and permanent fragmentation of “large areas of forestland (both wetland and upland)” that would result from implementation of the Proposed Alternative Route would make them “more susceptible to potential introduction of invasive species.”⁴³⁴ Mr. Ledbetter calculated that over 300 acres of forestland (both wetland and upland) would be permanently destroyed by the Proposed Alternative Project, and “would result in the largest, most damaging single destruction and permanent loss of habitat and associated environmental resources in the history of Charles City County.”⁴³⁵ Mr. Ledbetter believes Dominion Virginia Power should be required to fully research and document the feasibility and cost mitigation requirements before any decision is made to approve the Proposed Alternative Route.⁴³⁶ Indeed, Mr. Ledbetter testified that “wetland ‘bank’ mitigation in the Chickahominy River watershed likely does not already exist and could not be created with acceptable results within a reasonable period of time.”⁴³⁷

Mr. Ledbetter expressed concern that EMF may represent a health hazard to his family and may materially damage his property.⁴³⁸ Mr. Ledbetter reviewed the EMF testimony in Case No. PUE-2009-00049⁴³⁹ and took issue with the Hearing Examiner’s findings that there was no basis on which to prohibit the Company from authorizing appropriate uses of its right-of-way.⁴⁴⁰ Pointing to the health risks associated with EMF, and the greater number of people that live in

⁴³⁰ *Id.* at 2.

⁴³¹ *Id.* at 2-3.

⁴³² *Id.* at 4.

⁴³³ *Id.* at 4-5.

⁴³⁴ *Id.* at 5.

⁴³⁵ *Id.*

⁴³⁶ *Id.* at 5-6.

⁴³⁷ *Id.* at 6.

⁴³⁸ *Id.*

⁴³⁹ *Application of Virginia Electric and Power Company For approval and certification of electric transmission facilities under Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 et seq., Hayes-Yorktown 230 kV transmission line*, Case No. PUE-2009-00049, Hearing Examiner’s Report (May 4, 2010).

⁴⁴⁰ Exhibit No. 17, at 6-8.

close proximity to the Proposed Alternative Route, Mr. Ledbetter argued that such circumstances “should very strongly militate against selection of the [Proposed] Alternative Route.”⁴⁴¹

Mr. Ledbetter expressed concern that construction and maintenance of the transmission lines will result in increased trespassing on his property.⁴⁴² Mr. Ledbetter stated that the Company “was unwilling to provide assurances that it would assume any responsibility for claims by trespassers, or by our family and invited guests resulting from unauthorized, illegal access to our property by those entering via a broad, permanently cleared right-of-way.”⁴⁴³

Finally, Mr. Ledbetter asserted that the previous owners of the property, who granted the Company the easement for the transmission line, could not have known the environmental, health, and safety issues associated with the easement when it was granted.⁴⁴⁴ Mr. Ledbetter argued that this case highlights the inherent inappropriateness and unfairness of rights-of-way for major utilities being acquired many decades in advance of their potential use.⁴⁴⁵

Judith F. Ledbetter testified in regard to Mosside Farm’s history and its importance to the Old Main Road Rural Historic District.⁴⁴⁶ Ms. Ledbetter affirmed that both Mosside Farm and the Old Main Road Rural Historic District are eligible for listing on the National Register of Historic Places.⁴⁴⁷ Ms. Ledbetter disagreed with the assessments of Dominion Virginia Power’s consultant and DHR that the transmission line will have a “moderate” impact on the Old Main Road Rural Historic District.⁴⁴⁸ Ms. Ledbetter asserted that the impact will be “severe” because the route crosses in the vicinity of the largest number of dwellings in the district.⁴⁴⁹ Ms. Ledbetter contended that the Proposed Alternative Route “will be a single-purpose industrial corridor cutting through and paralleling an historic district which is largely devoid of modern intrusions and completely devoid of industrial ones.”⁴⁵⁰ Ms. Ledbetter faulted Dominion Virginia Power’s consultant and DHR for failing to consider the impact of the transmission line on several other register-eligible properties located within the Old Main Road Rural Historic District, including: Mount Airy, Meadow Spring, Gill’s House and Store, Binns Hall and the Binns Hall Store, Liberty Baptist Church, and the Lemon House.⁴⁵¹

BASF Corporation’s Direct Testimony

On December 7, 2012, BASF prefiled the direct testimony of five witnesses: Charles R. Waltz, sites manager for BASF; Vernon C. Burrows, remediation project manager for BASF; Chris Henderson, senior vice president with CB Richard Ellis of Virginia, Inc., a commercial real

⁴⁴¹ *Id.* at 8.

⁴⁴² *Id.* at 9.

⁴⁴³ *Id.*

⁴⁴⁴ *Id.* at 9-10.

⁴⁴⁵ *Id.* at 10.

⁴⁴⁶ Exhibit No. 18, 1.

⁴⁴⁷ *Id.* at 1-2.

⁴⁴⁸ *Id.* at 2.

⁴⁴⁹ *Id.*

⁴⁵⁰ *Id.* at 3.

⁴⁵¹ *Id.*

estate firm; Dennis W. Gruelle, owner of Appraisal Consultation Group; and Stephen A. Romeo, land development services manager VHB Williamsburg. A summary of the prefiled direct testimony of each witness is presented below.

Charles R. Waltz testified that BASF owns property located in James City County, at 8961 Pocahontas Trail, Williamsburg, Virginia.⁴⁵² Mr. Waltz presented an aerial map of the BASF property that showed Dominion Virginia Power's proposed James River Crossing Variations 1 and 3.⁴⁵³

Mr. Waltz advised that BASF acquired an interest in the property in 1966 when Dow Chemical Company sold it to an existing joint venture between BASF and Dow Chemical Company, with BASF purchasing Dow Chemical Company's share in 1979.⁴⁵⁴ Mr. Waltz confirmed that the property was the headquarters of BASF's fiber business unit, and the site of manufacturing facilities, primarily for acrylic fiber.⁴⁵⁵ Mr. Waltz stated that in 1989, BASF sold the manufacturing operations and facilities to a management buyout group called Mann Industries, but BASF retained ownership of the remainder of the property.⁴⁵⁶ Mr. Waltz testified that in 1993, Mann Industries filed a Chapter 7 bankruptcy petition and that the bankruptcy receiver transferred a lien against one of the Mann Industries parcels to BASF and sold two other parcels to Virginia Commonwealth Textiles ("VCT").⁴⁵⁷ Mr. Waltz stated that in 2000, VCT filed a Chapter 7 bankruptcy petition and the two VCT properties were purchased by Truswood Properties who later sold them to Colonial Penniman, their current owner.⁴⁵⁸ Mr. Waltz affirmed that in 2004, BASF repurchased the portion of the manufacturing property covered by its lien to control the remediation of the property, which has been underway since the 1990s.⁴⁵⁹ Mr. Waltz advised that BASF has been conducting the remediation of the property to prepare it for development in accordance with its highest and best use, given its prime location on the James River in an extremely scenic and historic area.⁴⁶⁰

Mr. Waltz testified that BASF has plans to rezone the property from industrial to mixed use because of the strong interest in the property as a tourist destination, coupled with the lack of interest in the site for any industrial purpose.⁴⁶¹ Mr. Waltz maintained that James City County supports BASF's efforts to bring mixed-use development to the property.⁴⁶²

Mr. Waltz advised that prior to the sale of a former manufacturing property, BASF requires that the property demonstrate "low environmental risk" or internal standards more stringent than the applicable environmental laws and regulations, and are designed to preserve

⁴⁵² Exhibit No. 46, at 2.

⁴⁵³ *Id.* at Attached CRW-1.

⁴⁵⁴ *Id.* at 2-3.

⁴⁵⁵ *Id.* at 3.

⁴⁵⁶ *Id.*

⁴⁵⁷ *Id.*

⁴⁵⁸ *Id.*

⁴⁵⁹ *Id.* at 3.

⁴⁶⁰ *Id.* at 3-4.

⁴⁶¹ *Id.* at 4.

⁴⁶² *Id.*

and enhance ecological and historical resources at the former manufacturing properties.⁴⁶³ For the Williamsburg property, Mr. Waltz stated that BASF envisions resort hotel, time-share, and recreational or similar uses, with portions of the property permanently set aside for wildlife habitat.⁴⁶⁴ Mr. Waltz testified that an overhead crossing of the James River would be inconsistent with BASF's efforts to redevelop its property and severely limit the site's attractiveness for a mixed-use development, or any warehouse applications that include a high end office component.⁴⁶⁵ Mr. Waltz affirmed that BASF supports the parties' efforts to underground the transmission line, which BASF believes should be continued through its property.⁴⁶⁶

Mr. Waltz stated that BASF opposes James River Crossing Variation 1 because: (i) this variation would bifurcate the property, making it unsuitable for redevelopment, and (ii) it will disturb BASF's environmental remediation efforts.⁴⁶⁷ Mr. Waltz supported James River Crossing Variation 3, which would leave more BASF property available for development, provided that the easement along BASF Drive is not widened on its property in a manner that prevents expanding the roadway for access purposes consistent with the planned development of the property.⁴⁶⁸

Mr. Waltz summarized BASF's requests that the Commission: (i) select James River Crossing Variation 3, if the transmission line is going to cross BASF property; (ii) require the line to be constructed under the river and continue underground while on BASF property, if the transmission line is going to cross the James River; and (iii) limit construction along BASF Drive so that access to the property can be expanded in accordance with potential development plans.⁴⁶⁹

Vernon C. Burrows testified that the construction of a transmission line along James River Crossing Variation 1 "would have a devastating impact on the environment and on BASF's ongoing remediation efforts."⁴⁷⁰ Mr. Burrows stated that although BASF would prefer not to have the proposed transmission line on its property, BASF would prefer to have it routed along the extreme northern edge of its property, which makes James River Crossing Variation 3 the preferable option.⁴⁷¹ Mr. Burrows also endorsed an underwater river crossing and an underground crossing of BASF following Variation 3.⁴⁷²

Mr. Burrows outlined BASF's environmental remediation efforts at the property, which consists of approximately 700 acres, with 303 of those acres being the developed portion

⁴⁶³ *Id.* at 4-5.

⁴⁶⁴ *Id.* at 5-6.

⁴⁶⁵ *Id.* at 6.

⁴⁶⁶ *Id.* at 6-7.

⁴⁶⁷ *Id.* at 7-8.

⁴⁶⁸ *Id.* at 8-9.

⁴⁶⁹ *Id.* at 9.

⁴⁷⁰ Exhibit No. 48, at 2.

⁴⁷¹ *Id.*

⁴⁷² *Id.* at 2-3.

impacted by industrial operations.⁴⁷³ Mr. Burrows confirmed that the entire BASF site together with the eastern off-site tributaries, Wood Creek and Skiffes Creek, are subject to the Resource Conservation and Recovery Act (“RCRA”) corrective action under the auspices of EPA and DEQ.⁴⁷⁴

Mr. Burrows testified that BASF has spent tens of millions of dollars to construct and operate a massive wetlands to treat zinc, to treat contaminated groundwater, and to enclose five sludge lagoons and five surface water impoundments.⁴⁷⁵ Mr. Burrows affirmed that the Constructed Treatment Wetlands (“CTW”) consists of a 53.4 acre drainage basin, including 18.4 acres of non-impacted land, 16 acres of dredge spoils, and 19 acres of decommissioned landfill.⁴⁷⁶ In addition, the CTW has the capacity to retain runoff from a 100-year storm event.⁴⁷⁷ Mr. Burrows stated that BASF has spent millions of dollars to treat volatile organic (spent solvents) impacts to soil and groundwater quality in the north area of the site and within the former industrial areas.⁴⁷⁸ BASF has reduced concentrations of tetrachloroethylene (“PCE”) and trichloroethylene (“TCE”) in the main industrial area to levels below the EPA Maximum Contaminant Levels (“MCLs”) in 19 of 24 monitoring wells and effectively remediated PCE and TCE source contamination via the completion of 17 injection events over five years.⁴⁷⁹ At the Trusswood Property, BASF reduced concentrations of PCE and TCE to levels below the EPA’s MCLs in 5 of 7 monitoring wells and effectively remediated PCE and TCE source contamination via the completion of 17 injection events over five years.⁴⁸⁰ Mr. Burrows confirmed that BASF’s remediation efforts are continuing at both sites.⁴⁸¹

Mr. Burrows stated that in an area within the former main industrial area also known as “Area 4C,” BASF excavated 7 former lagoons and impoundments and reinterred the materials into a stabilized capped landfill.⁴⁸² Mr. Burrows testified that under James River Crossing Variation 1, at least one transmission tower would need to be placed in Area 4C, which would directly impact BASF’s remediation efforts.⁴⁸³ Mr. Burrows advised that in 2002, BASF completed remediation of 5 surface impoundments and 6 sludge lagoons that would be impacted by construction in Area 4C.⁴⁸⁴ In 2011, BASF submitted a plan to DEQ to address additional environmental issues in Area 4C involving groundwater migration with the installation of natural vegetative buffers, and the trenching and pumping of captured groundwater to the CTW for final treatment.⁴⁸⁵ Mr. Burrows contended that any construction in Area 4C would compromise the existing remediation plan, limit future remediation efforts, involve the direct oversight of EPA

⁴⁷³ *Id.* at 3.

⁴⁷⁴ *Id.*

⁴⁷⁵ *Id.* at 4.

⁴⁷⁶ *Id.*

⁴⁷⁷ *Id.*

⁴⁷⁸ *Id.* at 5.

⁴⁷⁹ *Id.*

⁴⁸⁰ *Id.*

⁴⁸¹ *Id.*

⁴⁸² *Id.*

⁴⁸³ *Id.*

⁴⁸⁴ *Id.* at 6.

⁴⁸⁵ *Id.* at 6-7.

and DEQ, and require BASF to re-engineer and implement another remediation plan at considerable cost.⁴⁸⁶ Mr. Burrows warned that due to concentrations of zinc in sediment samples in the unnamed tributary near Area 4C, BASF may have to dredge and dispose of the contaminated sediment.⁴⁸⁷ Mr. Burrows asserted that “[t]hese remediation areas would be directly and disastrously affected by a transmission line built on the Variation 1 route.”⁴⁸⁸

Mr. Burrows testified that the BASF site was “Wildlife at Work” certified in 2010 and was recertified in November 2012; of the 700 acre site, approximately 47 acres are dedicated to a wildlife management program.⁴⁸⁹ Mr. Burrows stated that BASF’s goal is to create a perpetual habitat for east coast migratory bird species, and this habitat is being developed consistent with Wildlife Habitat Council standards.⁴⁹⁰ Mr. Burrows advised that BASF is also conducting environmental and habitat studies of Wood Creek and Skiffes Creek which will be completed in 2014 and used by BASF to develop an appropriate habitat restoration plan for those areas and include them within the areas to be dedicated to ecological and habitat preservation.⁴⁹¹

Mr. Burrows maintained that construction of the transmission line on the Variation 1 route would effectively undo BASF’s completed remediation efforts and would derail planning for future remediation projects.⁴⁹² Mr. Burrows identified the following major problems with the Variation 1 route: (i) difficulty in spanning the bluff where the line would come ashore; (ii) destruction of existing wooded areas and habitat from the banks of the James River eastward to Area 4C, and then destruction of significant wooded area and habitat north to BASF Drive; and (iii) prevention of the implementation of the remediation plan for Area 4C and impact existing remediation efforts.⁴⁹³ Mr. Burrows took the position that BASF, EPA and DEQ would have to re-engineer an alternative remediation plan as well as address the impact of Dominion Virginia Power’s construction on the existing remediation efforts.⁴⁹⁴ Mr. Burrows expressed concern that drilling and tower foundation construction in Area 4C would impose a serious risk of cross contamination of shallow and deep aquifers by volatile organic compounds and zinc, and that disturbance of the existing landfill cap would result in contaminant transport through surface runoff and contaminated groundwater migration to sensitive ecological areas.⁴⁹⁵

Mr. Burrows confirmed BASF has spent approximately \$15 million remediating those areas impacted by the Variation 1 route.⁴⁹⁶ Mr. Burrows estimated that BASF will spend an additional \$5 million remediating Area 4C and that this cost estimate could double or triple if BASF had to re-engineer and construct alternative remediation facilities.⁴⁹⁷

⁴⁸⁶ *Id.* at 7.

⁴⁸⁷ *Id.*

⁴⁸⁸ *Id.*

⁴⁸⁹ *Id.* at 8.

⁴⁹⁰ *Id.* at 9.

⁴⁹¹ *Id.*

⁴⁹² *Id.*

⁴⁹³ *Id.* at 10.

⁴⁹⁴ *Id.*

⁴⁹⁵ *Id.*

⁴⁹⁶ *Id.* at 12.

⁴⁹⁷ *Id.*

Mr. Burrows testified that the Variation 3 route would be vastly preferable to the Variation 1 route because this route comes ashore at a point already impacted by a gas pipeline, and there are no known environmental impacts associated with Dominion Virginia Power's planned construction along the Variation 3 route.⁴⁹⁸ In addition, Mr. Burrows maintained that the Variation 3 route would not impact any remediation sites or environmentally sensitive areas.⁴⁹⁹

Mr. Burrows confirmed the Variation 1 route would also be unsuitable for an underground transmission line for the same reasons as an overhead line.⁵⁰⁰ On the other hand, Mr. Burrows contended that the Variation 3 route has no known impacts to current habitat areas, environmental remediation, or planned ecological enhancements at the site.⁵⁰¹

If an overhead transmission line is approved for the Variation 3 route, Mr. Burrows recommended that the Commission require Dominion Virginia Power to implement the following construction practices and policies:

- (1) Clearing of roadways or access points for construction purposes should be avoided when possible, especially in wooded areas that cannot be restored in a short amount of time. Existing roads and access points should be used when possible.
- (2) Construction traffic and equipment should be minimized so that only the vehicles and machinery necessary are used.
- (3) Construction activities should be coordinated with BASF, and BASF should be given a reasonable opportunity for input, especially about conditions, circumstances and mitigation opportunities that might not otherwise be apparent.
- (4) Construction practices that minimize disturbance of vegetation should be used to the extent possible.
- (5) Construction activity in proximity to rivers and creeks should be avoided if possible, and otherwise undertaken with utmost care.
- (6) Construction activity in proximity to remediation areas or areas identified as environmentally sensitive should be carefully coordinated with BASF, [DEQ], and [EPA].
- (7) Tower locations should be determined with the objective of minimizing visibility, and point of site screening by retention of

⁴⁹⁸ *Id.* at 13.

⁴⁹⁹ *Id.*

⁵⁰⁰ *Id.* at 13-14.

⁵⁰¹ *Id.* at 14.

existing vegetation and/or additional plantings should be used when it presents an opportunity to mitigate visual impact.

(8) Tower design and materials and conductor type should be selected to mitigate visibility.⁵⁰²

Mr. Burrows recommended the following right-of-way maintenance practices:

(1) Clear cutting of the right-of-way should be avoided where possible. This will not only minimize impacts on the wildlife habitat areas and the phytoremediation plots and the visibility of the line on the site, but will reduce its visibility from off-site, including the visibility of the line from the James River and from locations with James River viewsheds. It is especially important to avoid clear cutting on property adjoining the river.

(2) Dominion Virginia Power should conduct a vegetation inventory to identify low growing species that can be retained in the right-of-way and trees that can be trimmed rather than cut down.

(3) The relative height and location of the conductors and of trees in the right-of-way should be assessed and taken into account to reduce clearing and trimming of trees to the extent possible.

(4) Where clearing of the right-of-way is unavoidable, straight and uniform borders should be avoided in order to produce a “scalloped” effect, which mitigates visual impact as compared to the “tunnel” effect produced by clear cutting along straight borders.

(5) Herbicides should not be used to clear or maintain the right-of-way, particularly on property that includes wildlife habitat and environmentally sensitive and remediated areas, and in areas where rivers and creeks are crossed or are in proximity to the right-of-way.

(6) An erosion plan should be developed and implemented in areas near rivers or creeks, and near areas with steep slopes.

(7) The right-of-way should be designed and maintained to prevent access by unauthorized persons and, especially, vehicles.⁵⁰³

⁵⁰² *Id.* at 14-15.

⁵⁰³ *Id.* at 15-16.

Chris Henderson addressed the development potential of the BASF property, described the ongoing efforts to market the property, and described the impacts the proposed transmission line would have on the property and its marketability and value.⁵⁰⁴

Mr. Henderson confirmed that he has worked with BASF on the sale and development of the property since April, 2002.⁵⁰⁵ Mr. Henderson testified that “[t]he BASF property is ideally suited for mixed-use development that would include hotel, time share, retail, entertainment, and recreational uses that capitalize on the property’s natural features, and extensive river and creek frontage.”⁵⁰⁶ Mr. Henderson pointed out that the BASF property adjoins Carter’s Grove, has over two miles of frontage on the James River featuring high bluffs and panoramic views, and has one mile of creek frontage along Wood Creek and Skiffes Creek with their wildlife habitat areas.⁵⁰⁷ Mr. Henderson contended that the panoramic views combined with multiple points of direct access to deep water, a proposed connection to Interstate 64, and the upland forest and natural areas offer dramatic opportunities for recreation uses not found in any other undeveloped site in Southeastern Virginia.⁵⁰⁸ Mr. Henderson pointed out that the property could also be developed for other commercial uses, such as mixed-use office and industrial.⁵⁰⁹ Mr. Henderson provided architectural site plans showing the various potential uses of the property, Industrial Use Plan, Landmark Mixed Use Resort Plan, and Wilderness Mixed Use Resort Plan.⁵¹⁰

Mr. Henderson testified that BASF intends to sell and/or lease the property to a third party who would develop it for their own account.⁵¹¹ Mr. Henderson maintained that interest in the property will increase when BASF completes the environmental remediation and the economy improves.⁵¹² Mr. Henderson confirmed the property is zoned M-2, General Industry, which allows for a variety of industrial and commercial uses.⁵¹³ Mr. Henderson noted that James City County supports BASF’s plans for the property as a resort or recreational tourist destination.⁵¹⁴

Mr. Henderson provided a summary of offers presented to BASF for the property.⁵¹⁵ These offers have included a high-end resort and tourist attraction, a hotel and conference center with a high-end resort and time-share community, and a major theme park based on an American History theme.⁵¹⁶ Mr. Henderson contended that a major concern has been direct access to Interstate 64 and that issue is being resolved.⁵¹⁷

⁵⁰⁴ Exhibit No. 60, at 1.

⁵⁰⁵ *Id.* at 2.

⁵⁰⁶ *Id.*

⁵⁰⁷ *Id.* at 2-3.

⁵⁰⁸ *Id.* at 3.

⁵⁰⁹ *Id.*

⁵¹⁰ *Id.* at Attached TCH-4, TCH-5, and TCH-6.

⁵¹¹ *Id.* at 4.

⁵¹² *Id.* at 5.

⁵¹³ *Id.*

⁵¹⁴ *Id.* at 5-6.

⁵¹⁵ *Id.* at Attached TCH-9.

⁵¹⁶ *Id.* at 6-7.

⁵¹⁷ *Id.* at 7.

Mr. Henderson testified that James River Crossing Variation 1 would have a devastating impact on the potential development of the property as it would bifurcate the largest developable area on the property and make any large scale non-linear development impossible.⁵¹⁸ Mr. Henderson contended that the visual impact of above-ground transmission lines would inhibit the development of the property as a high-end resort complex as the proposed towers and transmission lines would dominate the landscape and destroy the pristine historic viewshed.⁵¹⁹ Mr. Henderson asserted that James River Crossing Variation 3 is preferable to Variation 1 but the mere presence of an overhead transmission line creates a significant impediment to the site's development potential regardless of its location.⁵²⁰ Mr. Henderson supported an underground transmission line on the Variation 3 route.⁵²¹

Finally, Mr. Henderson summarized the negative impacts an overhead transmission line would have on the most important attribute of the BASF property, its dramatic viewshed, and the resulting impact on future development of the property.⁵²²

Dennis W. Gruelle analyzed the impact that James River Crossing Variations 1 and 3 would have on the value of the BASF property.⁵²³ Mr. Gruelle stated that he performed his analysis on the property taking into consideration the highest and best use of the property for mixed use with resort, time-share, and recreational components.⁵²⁴ Mr. Gruelle testified that Variation 1 would have the greatest impact on the value of the property, Variation 3 would have a lesser impact, and an underground transmission line would have the least impact.⁵²⁵

Mr. Gruelle stated that he based his analysis on: (i) consultations with investors, developers, brokers, and active market participants; (ii) literature on power line impacts and detrimental conditions associated with those lines; (iii) study sales that quantified the impact of power lines on property values; and (iv) publicly available information on the property and various reports about the property.⁵²⁶ Mr. Gruelle found the monetary damage to the value of the property under Variation 1 to range between \$15,750,000 and \$22,500,000, and the monetary damage to the value of the property under Variation 3 ranges between \$6,700,000 and \$9,000,000.⁵²⁷ In addition, Mr. Gruelle calculated that James City County would lose \$285,721 per year in property taxes based on the reduction in value if BASF were unable to undertake a mixed-use development with resort, time-share, and recreational components because of the

⁵¹⁸ *Id.*

⁵¹⁹ *Id.* at 8.

⁵²⁰ *Id.*

⁵²¹ *Id.*

⁵²² *Id.* at 9.

⁵²³ Exhibit No. 59, at 2.

⁵²⁴ *Id.*

⁵²⁵ *Id.*

⁵²⁶ *Id.* at 2-3.

⁵²⁷ *Id.* at 3.

construction of an overhead transmission line.⁵²⁸ Finally, Mr. Gruelle advised that an underground transmission line would reduce the level of damages significantly.⁵²⁹

Stephen A. Romeo offered an evaluation of the impact of James River Crossing Variations 1 and 3 on the future development of the BASF property.⁵³⁰ Mr. Romeo prepared a map of the BASF property that defined areas suitable for development.⁵³¹ Mr. Romeo maintained that BASF's plans for the property's development as a mixed-use resort are feasible and would likely include time-shares, hotel/conference, entertainment, recreation, restaurant, and marina facilities.⁵³²

Mr. Romeo testified that Variation 1 would result in a significant impairment of BASF's plans to develop the property as a mixed use resort and that it would be impractical "to re-plan the resort facilities and amenities in order to attempt to minimize conflict with the construction and operation of such a transmission line, or to minimize the visual impact of the electricity transmission facilities."⁵³³ Mr. Romeo stated that Variation 1 may preclude the development of the BASF property as a mixed-use resort, as other such resorts in the area are not burdened by overhead transmission lines.⁵³⁴

Mr. Romeo contended that the impacts of Variation 3 would be considerably less adverse since it does not pass through the middle of the property.⁵³⁵ Mr. Romeo pointed out that the transmission line would be less visible from much of the area that would be developed.⁵³⁶ However, Mr. Romeo noted that with Variation 3, BASF would lose certain opportunities to develop the northern side of its property.⁵³⁷ Mr. Romeo affirmed that "Variation 3 is greatly preferable to Variation 1."⁵³⁸

Mr. Romeo expressed concern for the impact of Variations 1 and 3 on BASF Drive, which shares a 300-foot wide "pipe stem" of the BASF property with an existing 130-foot Dominion Virginia Power easement.⁵³⁹ Mr. Romeo stated that in order to accommodate development as a mixed-use resort, the two-lane BASF Drive would need to be widened to a median divided four-lane "parkway style" road, with a width of 120 feet.⁵⁴⁰ In order to provide an adequate screening buffer, Mr. Romeo requested that the Commission impose the following condition on Dominion Virginia Power:

⁵²⁸ *Id.*

⁵²⁹ *Id.*

⁵³⁰ Exhibit No. 62, at 1.

⁵³¹ *Id.* at 2; Attached SAR-1.

⁵³² *Id.* at 2-3.

⁵³³ *Id.* at 3

⁵³⁴ *Id.* at 4.

⁵³⁵ *Id.* at 4-5.

⁵³⁶ *Id.* at 5.

⁵³⁷ *Id.*

⁵³⁸ *Id.*

⁵³⁹ *Id.*

⁵⁴⁰ *Id.* at 5; Attached SAR-2.

to only expand the existing easement to the north and away from BASF Drive, requiring [Dominion Virginia Power] to use construction means and methods conducive to preserving existing trees in the easement and requiring Dominion to include verbiage in its easement document obligating them and their successors to permit retainage of the trees, replacing such in the event of loss and providing supplementary trees and shrubbery and the maintenance thereof for the purpose of visual screening buffer acceptable to BASF and its successors.⁵⁴¹

Mr. Romero opined that without this proposed condition, the negative impact of the overhead transmission line adjacent to the entrance corridor may be sufficient to render BASF's plans for a mixed-use resort infeasible.⁵⁴²

Finally, Mr. Romeo testified that because the transition facilities from underground to overhead are substantial in size and are highly visible, any transition facility would have to be located inland to avoid impacting the James River viewshed, and the viewsheds from the proposed mixed-use resort, Carter's Grove, and Jamestown Island.⁵⁴³ Mr. Romeo recommended that an underground crossing of the James River continue underground to the Skiffes Creek Switching Station.⁵⁴⁴

James City County's Direct Testimony

On December 7, 2012, James City County prefiled the direct testimony of ten witnesses: Robert Middaugh, county administrator; Dr. William Kelso, director of research and interpretation for the Preservation Virginia Jamestown Rediscovery Project; Colin Campbell, president and chief executive officer of The Colonial Williamsburg Foundation (the "Foundation"); James Horn, vice president of Research and Historical Interpretation for the Foundation; Richard Schreiber, president and chief executive officer of the Greater Williamsburg Chamber & Tourism Alliance; Edward Chappell, director of Architectural and Archeological Research for the Foundation; William "Bill" Street, executive director of the James River Association; Tamara Rosario, principal planner for James City County; Wayne Whittier, principal power system engineer with RLC Engineering; and Kurt Westergard, president of Digital Design & Imaging Service, Inc. ("Digital Design"). At the April Hearing, the prefiled direct testimony of Tamara Rosario was adopted by Leanne Ridenbach, senior planner II for James City County. A summary of the prefiled direct testimony of each witness is presented below.

Robert Middaugh addressed: (i) the zoning requirements that are applicable to the Proposed Route; (ii) James City County's first introduction to the Proposed Project; and (iii) the

⁵⁴¹ *Id.* at 6.

⁵⁴² *Id.*

⁵⁴³ *Id.* at 7.

⁵⁴⁴ *Id.*

significant impacts the Proposed Project will have on economic development, particularly tourism.⁵⁴⁵

Mr. Middaugh testified that the Proposed Project includes a new Skiffes Creek Switching Station, which is planned for a property located near several housing developments, most of which are considered to be “affordable housing.”⁵⁴⁶ Mr. Middaugh advised that the proposed switching station property is zoned R-8, Rural Residential, and that a switching station is not a use permitted as a matter of right in an R-8 zoning district.⁵⁴⁷ Mr. Middaugh maintained that a special use permit (“SUP”) would be required to change the property’s zoning by applying with the Department of Development Management for James City County.⁵⁴⁸

Mr. Middaugh stated that Dominion Virginia Power initially presented the Proposed Alternative Project as its only option, and later added the Proposed Project.⁵⁴⁹ Mr. Middaugh pointed out that after its own investigation of other possible routes, James City County became aware of a proposal to PJM by Northeast Transmission Development LLC for a single-circuit 230 kV hybrid underground transmission line for crossing the James River.⁵⁵⁰ Mr. Middaugh noted that early in the process Dominion Virginia Power indicated that it would not consider an underground transmission line as an alternative, which he believes led many people to believe that an underground alternative was in fact infeasible.⁵⁵¹ Mr. Middaugh asserted that “the citizens of James City County and many who have reviewed the Proposed Route have been misled about what viable options are available to prevent marring the James River with overhead transmission lines.”⁵⁵² Mr. Middaugh advised that the James City County Board of Supervisors adopted two resolutions, one of which opposed the Proposed Alternative Route, and the other urged the James River crossing be underground.⁵⁵³

Mr. Middaugh stated that in 2010, tourism contributed more than \$335 million to James City County’s economy, and roughly \$1 billion to the local area.⁵⁵⁴ Mr. Middaugh noted that Xanterra Parks and Resorts, Inc. is making capital investments in a major conference center and recreational center on the James River in the immediate area of the Proposed Project.⁵⁵⁵ Mr. Middaugh also confirmed that James City County has been working with BASF on the redevelopment of its property.⁵⁵⁶ ⁵⁵⁷Mr. Middaugh contended that an overhead transmission line may negatively impact the development of both Xanterra Parks and BASF.

⁵⁴⁵ Exhibit No. 56, at 4.

⁵⁴⁶ *Id.*

⁵⁴⁷ *Id.*

⁵⁴⁸ *Id.* at 4-5.

⁵⁴⁹ *Id.* at 6.

⁵⁵⁰ *Id.*

⁵⁵¹ *Id.*

⁵⁵² *Id.* at 7.

⁵⁵³ *Id.* at 7; attached Exhibits 2 and 3.

⁵⁵⁴ *Id.* at 7-8.

⁵⁵⁵ *Id.* at 8.

⁵⁵⁶ *Id.*

⁵⁵⁷ *Id.* at 8-9.

Mr. Middaugh testified that James City County's investments in easement acquisitions and purchases of development rights stands as a testament to the importance of preserving the James River's scenic viewshed.⁵⁵⁸ Mr. Middaugh noted that the importance of the James River is codified in § 10.1-419 of the Code, which "declares the lower James River in James City County to be an historic river with noteworthy scenic and ecological qualities, to include superior natural beauty, in order to assure its use and enjoyment for historic, scenic, recreational, geologic, fish and wildlife, cultural and other values."⁵⁵⁹ Mr. Middaugh highlighted the importance of National Park Service sites such as the Colonial National Historic Park, the Captain Smith Trail, and Jamestown Island.⁵⁶⁰ Mr. Middaugh expressed concern that:

[t]he Proposed Route would severely diminish and otherwise alter the views from the National Park Service sites which have been previously specifically and carefully managed in order to avoid defacing those views from the time of the original settlement.⁵⁶¹

Mr. Middaugh took the position that visitors to the area seeking the historical experience would likely be turned off by the presence of transmission lines in plain view of the settlement of the first English colonists.⁵⁶²

Mr. Middaugh asserted that because they are intertwined, the Proposed Project's negative impacts on the James River viewshed will affect James City County, the City of Williamsburg, and York County (jointly referred to as the "Historic Triangle").⁵⁶³ Similarly, Mr. Middaugh referred to the HRPDC, which is a regional organization that represents 16 local governments, which unanimously adopted a resolution in opposition to the Proposed Project and the Proposed Alternative Project.⁵⁶⁴

Dr. William Kelso addressed the impacts the Proposed Project will have on historic resources, particularly Jamestown Island.⁵⁶⁵ Dr. Kelso advised that his employer, Preservation Virginia, is a private non-profit organization founded in 1889; that Preservation Virginia owns 22.5 acres of Jamestown Island comprising the original historic settlement; and that the National Park Service owns the remaining 1,577 acres.⁵⁶⁶

Dr. Kelso stressed the importance of Jamestown Island as a historical resource for Virginia, where the ideals of self-government, rule of law, a free economy, and an international language were first established to be subsequently spread throughout the entire British Empire.⁵⁶⁷ Dr. Kelso pointed to the work of the National Park Service to allow the land surrounding the

⁵⁵⁸ *Id.* at 9.

⁵⁵⁹ *Id.* at 10.

⁵⁶⁰ *Id.*

⁵⁶¹ *Id.*

⁵⁶² *Id.* at 11.

⁵⁶³ *Id.* at 11-12.

⁵⁶⁴ *Id.* at 13-14; Attached Exhibit 6.

⁵⁶⁵ Exhibit No. 67, at 3.

⁵⁶⁶ *Id.* at 4.

⁵⁶⁷ *Id.* at 4-5.

Jamestown settlement to revert “almost completely back to the ‘state of nature’ that the original settlers first encountered.”⁵⁶⁸ Dr. Kelso testified that on Jamestown Island, “[a] five mile wilderness trail/road is maintained for visitors to leisurely travel and explore the landscape and the James River from various vantage points unspoiled by any modern development.”⁵⁶⁹ Dr. Kelso maintained that the Proposed Project “would be easily viewed from the tip of Jamestown Island.”⁵⁷⁰

Dr. Kelso testified that since 1993, an archeological project on the 22.5 acres owned by Preservation Virginia has uncovered the remains of the original James Fort, and has recovered approximately one million late 16th and early 17th century pan-European and native-American artifacts.⁵⁷¹ Dr. Kelso advised that the archeological site is open to the public and is visited by 220,000 people annually.⁵⁷²

Dr. Kelso maintained that the “James River from Mulberry Island on the east for at least 20 miles northwest remains as open, natural, and as inviting as it appeared to the original Colonists and as it had appeared to the Virginia Indians for millennia.”⁵⁷³ Dr. Kelso contended that the Proposed Project will severely mar the approach to Jamestown Island as first viewed from the Colonial Parkway, and will be visible from the eastern end of Jamestown Island, compromising the pristine historic viewshed.⁵⁷⁴ Dr. Kelso asserted that the only way to mitigate the impact of the Proposed Project would be to place the transmission line under the river.⁵⁷⁵

In addition, Dr. Kelso expressed concern for the impact of the Proposed Project on the viewshed at Carter’s Grove and Kingsmill.⁵⁷⁶ Dr. Kelso maintained that both were former colonial plantation sites and the view from both “remains the same today as it appeared for hundreds and thousands of years.”⁵⁷⁷ Dr. Kelso argued that everyone wins if the proposed transmission line is routed under the James River.⁵⁷⁸

Colin Campbell addressed the significance of the historical and cultural resources located along the James River that would be detrimentally impacted by construction of the Proposed Project, and the adverse effect that construction of the Proposed Project would have on the preservation efforts of the Foundation and other organizations to preserve the unique historical sites and resources that are located in the area.⁵⁷⁹ Mr. Campbell also addressed the

⁵⁶⁸ *Id.* at 5.

⁵⁶⁹ *Id.*

⁵⁷⁰ *Id.*

⁵⁷¹ *Id.* at 5-6.

⁵⁷² *Id.* at 6.

⁵⁷³ *Id.* at 7.

⁵⁷⁴ *Id.*

⁵⁷⁵ *Id.* at 8.

⁵⁷⁶ *Id.* at 9.

⁵⁷⁷ *Id.*

⁵⁷⁸ *Id.* at 10.

⁵⁷⁹ Exhibit No. 77, at 3.

efforts by the Foundation, Preservation Virginia, and the College of William and Mary to obtain World Heritage Site designation for the Historic Triangle.⁵⁸⁰

Mr. Campbell affirmed that since 1926, the Foundation's preservation efforts have been performed "at a cost in today's dollars that is likely to be in excess of \$1 billion."⁵⁸¹

Mr. Campbell testified that Jamestown, Williamsburg, and Yorktown have been preserved and linked by the Colonial Parkway because they are so historically interconnected.⁵⁸² Mr. Campbell took the position that "[t]here are few views tied to the nation's history more compelling than those of the James River."⁵⁸³

Mr. Campbell stressed the importance of World Heritage Site designation for the Historic Triangle from the United Nations Educational, Scientific and Cultural Organization ("UNESCO").⁵⁸⁴ Mr. Campbell testified that World Heritage Site designation would, if granted, increase the Historic Triangle's attraction for visitors from across the nation and from other countries.⁵⁸⁵ Mr. Campbell reported that the historic sites and other attractions in the Historic Triangle draw approximately 6 million visitors annually who contribute \$1 billion to the economy and generate approximately \$80 million annually in state and local tax revenues.⁵⁸⁶ Mr. Campbell expressed concern that the Proposed Project will jeopardize efforts to obtain World Heritage status and could diminish the Historic Triangle as an important economic driver in the region and in Virginia.⁵⁸⁷

James Horn addressed the importance of the historic resources that will be detrimentally impacted by the construction of the Proposed Project, including the James River, sections of the Colonial Parkway, Carter's Grove, Jamestown Island, and Colonial Williamsburg.⁵⁸⁸

Mr. Horn maintained that the James River is one of the most historically and culturally significant waterways in the United States.⁵⁸⁹ Mr. Horn outlined the history of the area beginning with the great Powhatan chiefdom in the second half of the 16th century; the early exploration of the Chesapeake Bay by Spanish missionaries in the 1570s and by the English in the mid-1580s; and the establishment of Jamestown in the spring of 1607.⁵⁹⁰ Mr. Horn advised that after Jamestown, English colonists subsequently settled all along the James River, including Carter's Grove where the town site of Wolstenholme (Martins) Hundred was discovered.⁵⁹¹ Mr. Horn contended that the combination of Historic Jamestown's emphasis on early English

⁵⁸⁰ *Id.*

⁵⁸¹ *Id.* at 4.

⁵⁸² *Id.* at 4-5.

⁵⁸³ *Id.* at 5.

⁵⁸⁴ *Id.*

⁵⁸⁵ *Id.* at 7.

⁵⁸⁶ *Id.*

⁵⁸⁷ *Id.*

⁵⁸⁸ Exhibit No. 52, at 2.

⁵⁸⁹ *Id.* at 5.

⁵⁹⁰ *Id.* at 5-6.

⁵⁹¹ *Id.* at 6.

America, with Colonial Williamsburg's presentation of the American Revolution provides a compelling narrative of our nation's founding, and is integral to obtaining a designation as a World Heritage Site.⁵⁹²

Finally, Mr. Horn testified that the proposed transmission line would be visible from the east side of Jamestown Island, from sections of the Colonial Parkway, and from Carter's Grove.⁵⁹³ More specifically, Mr. Horn asserted that the proposed transmission line:

would constitute a highly visible intrusion in the historic view shed. The view shed over the James River from Jamestown Island and nearby Parkway is essentially unchanged since the days of Captain John Smith.⁵⁹⁴

Richard Schreiber addressed the potential impact that construction of the Proposed Project will have on business, educational institutions, and other organizations in the area.⁵⁹⁵ Mr. Schreiber testified that the Greater Williamsburg Chamber & Tourism Alliance, represents more than 750 members who are businesses, educational institutions, and non-profit organizations in the Historic Triangle.⁵⁹⁶

Mr. Schreiber maintained that "[t]he Historic Triangle has built its identity on authenticity."⁵⁹⁷ Mr. Schreiber pointed out that Colonial Parkway, which connects the Historic Triangle was designed to be devoid of modern intrusions to the extent possible.⁵⁹⁸ Mr. Schreiber contended that any erosion of authenticity will undo almost a century of work aimed at developing that attribute, and may cause the area to lose its luster as a unique place to visit.⁵⁹⁹

Mr. Schreiber reported that for 2011, tourism spending in the Historic Triangle was \$1,092,724,812, and he estimated that the area received between three and four million visitors.⁶⁰⁰ Although Mr. Schreiber admitted that he was unable to quantify the direct impact of the Proposed Project on tourism, Mr. Schreiber argued that over a century of work of positioning the area as both historically important and authentic in its presentation will be diminished by the introduction of major modern intrusions.⁶⁰¹ Mr. Schreiber observed that vacation photos taken from Jamestown Island looking south will feature large transmission towers instead of the river views experienced by the first English settlers.⁶⁰² Mr. Schreiber contended that any loss of tourism will have a cascading effect on the local economy, its businesses, and local

⁵⁹² *Id.* at 8.

⁵⁹³ *Id.*

⁵⁹⁴ *Id.*

⁵⁹⁵ Exhibit No. 78, at 3.

⁵⁹⁶ *Id.*

⁵⁹⁷ *Id.*

⁵⁹⁸ *Id.*

⁵⁹⁹ *Id.*

⁶⁰⁰ *Id.* at 4.

⁶⁰¹ *Id.*

⁶⁰² *Id.* at 5.

governments.⁶⁰³ Moreover, Mr. Schreiber warned that the impacts on historical sites and historic tourism cannot be mitigated unless the lines are placed underground.⁶⁰⁴

Edward Chappell addressed the ongoing efforts to preserve the historic sites and resources that are located near the area of the Proposed Project, and the impact of the Proposed Project on preservation efforts and on the mission of the Foundation and associated institutions.⁶⁰⁵ Mr. Chappell traced historic preservation in Virginia to the 1807 bicentennial of the founding of Jamestown and the creation of the Association for the Preservation of Virginia Antiquities, now known as Preservation Virginia.⁶⁰⁶ Mr. Chappell testified that in 1926, John D. Rockefeller began his efforts to restore Williamsburg to its 18th-century state, as an example of a living and working colonial town.⁶⁰⁷ Mr. Chappell maintained that the Colonial Parkway was designed to incorporate scenic river views and avoid what its designer called “visual junk.”⁶⁰⁸ Mr. Chappell asserted that the Colonial Parkway “is among the finest American scenic highways that address historic sites as well as unspoiled landscapes.”⁶⁰⁹

Mr. Chappell discussed the current preservation efforts occurring at Historic Jamestown and Colonial Williamsburg, including the recent purchase of easements on the wooded areas adjoining Route 132 to preserve a scenic connection from Interstate 64 to the Historic Area and Colonial Parkway.⁶¹⁰ He also outlined the various state and/or federal historic designations covering Jamestown, Colonial Williamsburg, and Yorktown.⁶¹¹

Mr. Chappell argued that “[t]he reason the interrelated [historic] sites were designated and drawn together as an entity with the Colonial Parkway was that the varied landscapes and James River views were unspoiled.”⁶¹² Mr. Chappell maintained that large transmission towers in the James River would permanently scar this section of the river and that the only way to mitigate the impact of the proposed transmission line would be to construct it under the river.⁶¹³ Mr. Chappell pointed to previous efforts to protect the scenic view of Jamestown, and other successful efforts to protect the scenic views of Mount Vernon, Westover Plantation, and Monticello.⁶¹⁴ Mr. Chappell emphasized the deleterious impact the Proposed Project will have on Carter’s Grove and pointed out that the main entrance of Carter’s Grove faces the James River, making the sweeping vistas of the river integral to the house.⁶¹⁵

⁶⁰³ *Id.*

⁶⁰⁴ *Id.*

⁶⁰⁵ Exhibit No. 76, at 3.

⁶⁰⁶ *Id.* at 4.

⁶⁰⁷ *Id.* at 4-5.

⁶⁰⁸ *Id.* at 5.

⁶⁰⁹ *Id.* at 6.

⁶¹⁰ *Id.* at 6-7.

⁶¹¹ *Id.* at 7-8.

⁶¹² *Id.* at 8.

⁶¹³ *Id.* at 9.

⁶¹⁴ *Id.* at 9-11.

⁶¹⁵ *Id.* at 11-12.

Mr. Chappell testified that the Proposed Project will have a negative impact on efforts by the Historic Triangle to obtain a World Heritage Site designation because a negative impact on one part of the Historic Triangle affects the whole.⁶¹⁶

William “Bill” Street addressed the historic, cultural, and ecological importance of the Lower James River, including the importance of the Captain Smith Trail, the designation of the James River as a “Historic River” by the Virginia General Assembly, and the designation of “America’s Founding River” by Act of Congress in 2007.⁶¹⁷ Mr. Street also addressed the historical and ecological importance of the Chickahominy River in the area of the Proposed Alternative Project and the efforts of the JRA to preserve and protect the James River and the Chickahominy River.⁶¹⁸

Mr. Street testified that the Captain Smith Trail was established in 2006 by Congress to: (i) commemorate the voyages of John Smith on the Chesapeake Bay and its tributaries in 1607-1609; (ii) share knowledge about American Indian tribes and cultures; (iii) interpret the natural history of the Chesapeake Bay; and (iv) provide recreational experiences on water and on land along the trail.⁶¹⁹ Mr. Street maintained that the Proposed Project and the Proposed Alternative Project would detract from the trail by imposing large modern industrial structures on a landscape that has the historic and natural resources the trail is intended to present to the public.⁶²⁰

Mr. Street stated that the Nationwide Rivers Inventory is a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more “outstandingly remarkable” natural or cultural values judged to be of more than local or regional significance.⁶²¹ Mr. Street advised that the section of the James River from Mogarts Beach in Isle of Wight County to Hopewell was included for its historical value.⁶²²

In 1988, the Virginia General Assembly adopted § 10.1-419 which provides as follows:

A. In keeping with the public policy of the Commonwealth of Virginia to conserve the portions of certain rivers possessing superior natural beauty, thereby assuring their use and enjoyment for their historic, scenic, recreational, geologic, fish and wildlife, cultural and other values, that portion of the Lower James River in Charles City, James City and Surry Counties, from an unnamed tributary to the James River approximately 1.2 miles east of Trees Point in Charles City County (northside) and Upper Chippokes Creek (southside) to Grices Run (northside) and Lawnes Creek

⁶¹⁶ *Id.* at 12-13.

⁶¹⁷ Exhibit No. 63, at 4.

⁶¹⁸ *Id.*

⁶¹⁹ *Id.* at 5-6.

⁶²⁰ *Id.* at 6.

⁶²¹ *Id.* at 7.

⁶²² *Id.*

(Southside), is hereby declared to be an historic river with noteworthy scenic and ecological qualities.

B. In all planning for the use and development of water and related land resources which changes the character of a stream or waterway or destroys its historic, scenic or ecological values, full consideration and evaluation of the river as an historic, scenic and ecological resource should be given before such work is undertaken. Alternative solutions should also be considered before such work is undertaken.

C. The General Assembly hereby designates the [DCR] as the agency of the Commonwealth responsible for assuring that the purposes of this chapter are achieved. Nothing in this designation shall impair the powers and duties of the local jurisdictions listed above or the [VDOT].

Mr. Street noted the above statute and contended that the Proposed Project would change the character of the James River and/or degrade its historic, scenic or ecological value.⁶²³

Mr. Street testified that in July 2007, the United States Congress passed a resolution recognizing the James River “America’s Founding River.”⁶²⁴

In addition, Mr. Street outlined the efforts of the JRA to have the Chickahominy River designated a Chesapeake Gateway and Water Trail.⁶²⁵ Mr. Street noted the Proposed Alternative Project is planned to cross an area of the Chickahominy River that was designated “outstanding” for its ecological integrity in the Virginia Natural Landscape Assessment.⁶²⁶ Mr. Street contended that the healthy and undisturbed natural landscapes along the Chickahominy River are the highest quality natural landscapes in the Lower James River watershed.⁶²⁷ Mr. Street argued that there is no way to mitigate the impact of the Proposed Alternative Project.⁶²⁸

Leanne Ridenbach addressed the significant impacts that both the Proposed Project and the Proposed Alternative Project will have on county residents, businesses, and visitors. Her testimony focused on the Proposed Project’s inconsistency with the James City County 2009 Comprehensive Plan (“Comprehensive Plan”) with regard to historic resources, community character, environmental impacts, and economic development.⁶²⁹

Ms. Ridenbach testified that the proposed overhead crossing of the James River would be detrimental to and inconsistent with a number of goals, strategies, and actions of the Comprehensive Plan, beginning with the County’s vision statement, which provides that James City County has “a responsibility to preserve and protect its irreplaceable assets for future

⁶²³ *Id.* at 8.

⁶²⁴ *Id.* at 9; Attached Exhibit 3.

⁶²⁵ *Id.* at 9-10.

⁶²⁶ *Id.* at 10.

⁶²⁷ *Id.*

⁶²⁸ *Id.* at 11.

⁶²⁹ Exhibit No. 50, at 4.

generations . . . [and] sustain the quality of life and economic vitality in James City County while preserving our special natural and cultural heritage.”⁶³⁰ Ms. Ridenbach confirmed that the economic development section of the Comprehensive Plan provides support for tourism and promotes James City County as a historic and unique destination in the region.⁶³¹ Ms. Ridenbach noted that the parks and recreation section encourages collaboration with the National Park Service to develop water trails like the Captain Smith Trail, expand public access to the James River, and promote tourism and associated industries year-round.⁶³² Ms. Ridenbach reported that the community character section acknowledges that it is the responsibility of the county to be good stewards of the land and preserve and enhance the scenic, cultural, rural, farm, forestal, natural, and historic qualities that are essential to the County’s rural and small town character, economic vitality, and overall quality of life.⁶³³ Ms. Ridenbach noted the Comprehensive Plan requires all new utilities to be placed underground, unless granted an exception by the Planning Commission, because the visual impact of above-ground utilities can be substantial.⁶³⁴

Ms. Ridenbach advised that the Proposed Project would be visible from River’s Bluff and the Kingsmill Resort, with at least 13 of the transmission towers in the James River visible from the marina, restaurants, and residences.⁶³⁵ Ms. Ridenbach expressed concern that at least the four tallest towers would be lit at night, which conflicts with the Comprehensive Plan directive to minimize light pollution and a James City County ordinance amendment supporting dark sky lighting principles.⁶³⁶

Ms. Ridenbach testified that the Proposed Project is inconsistent with the Economic Development and Enterprise Zone sections of the Comprehensive Plan, and specifically cited to the impact of the Proposed Project on future development of the BASF site.⁶³⁷

Ms. Ridenbach confirmed there are approximately 159 single-family homes or mobile homes within 500 feet of the edge of the Project’s right-of-way.⁶³⁸

Ms. Ridenbach testified that the proposed Skiffes Creek Switching Station would be located on a parcel zoned R-8, Rural Residential, and would require a SUP.⁶³⁹ Ms. Ridenbach warned that the approval of a SUP is not guaranteed.⁶⁴⁰ Ms. Ridenbach pointed out that the switching station is proposed for a parcel designated Low Density Residential in the Comprehensive Plan and is bordered by an existing residential neighborhood that is also designated Low Density Residential and two existing mobile home parks that are designated

⁶³⁰ *Id.* at 5.

⁶³¹ *Id.* at 6.

⁶³² *Id.* at 7.

⁶³³ *Id.*

⁶³⁴ *Id.* at 8.

⁶³⁵ *Id.*

⁶³⁶ *Id.* at 8-9.

⁶³⁷ *Id.* at 9.

⁶³⁸ *Id.* at 10.

⁶³⁹ *Id.* at 11.

⁶⁴⁰ *Id.*

Moderate Density Residential.⁶⁴¹ In addition to the zoning issue, Ms. Ridenbach expressed concern that the proposed Skiffes Creek Switching Station “would require the property to be cleared all the way to the northern property line (adjacent the railroad and Route 143), potentially making the Switching Station more visible to travelers”⁶⁴² Ms. Ridenbach indicated that Dominion Virginia Power would have to mitigate all of the adverse impacts before a SUP would be issued.⁶⁴³ Ms. Ridenbach confirmed Dominion Virginia Power has not yet filed an application for a SUP for the Skiffes Creek Switching Station.⁶⁴⁴

Ms. Ridenbach testified that the Proposed Alternative Project impacts a larger number of existing and planned residential areas, other public facilities, agricultural and timber land, and sensitive environmental areas due to its longer length and route through James City County’s Primary Service Area (“PSA”). The PSA is an area where county facilities and services are planned and the bulk of the county’s residential and commercial growth is directed and encouraged.⁶⁴⁵ Ms. Ridenbach advised that county records indicate there are more than 1,000 existing residences within 500 feet of the edge of the proposed right-of-way. The Proposed Alternative Project would impact 15 existing residential subdivisions, one approved master planned community that is currently being developed, and several undeveloped parcels.⁶⁴⁶ The Alternative Project also crosses areas that are outside the PSA where most land is designated Rural Lands in the county’s Comprehensive Plan.⁶⁴⁷ In addition, Ms. Ridenbach confirmed that the Proposed Alternative Project crosses two Agricultural and Forestal Districts, approximately 8,000 linear feet of land designated as Conservation Areas in the Comprehensive Plan, and crosses the Chickahominy River at one of the most pristine locations along the river.⁶⁴⁸

Waine Whittier provided: (i) an independent evaluation of the Proposed Project; (ii) a review of PJM’s TEAC report dated April 27, 2012; and (iii) a discussion of potential alternative routes, including an underground option for the James River Crossing and a different overhead option about 16 or 17 miles southeast of Dominion Virginia Power’s proposed crossing at the site of an existing overhead 230 kV double-circuit river crossing.⁶⁴⁹

Mr. Whittier advised that because of time constraints, he was unable to “undertake comprehensive powerflow modeling or some other independent analysis that could have provided additional conclusions and potentially additional viable alternative routes.”⁶⁵⁰ Nonetheless, Mr. Whittier maintained that other viable alternative routes were either rejected by Dominion Virginia Power without adequate analysis or effort to correct identified deficiencies, or were not investigated at all.⁶⁵¹

⁶⁴¹ *Id.* at 11-12.

⁶⁴² *Id.* at 12.

⁶⁴³ *Id.*

⁶⁴⁴ *Id.* at 13.

⁶⁴⁵ *Id.*

⁶⁴⁶ *Id.*

⁶⁴⁷ *Id.* at 14.

⁶⁴⁸ *Id.* at 15-16.

⁶⁴⁹ Exhibit No. 68, at 2-3; Exhibit No. 23, Attached Appendix at 62-89.

⁶⁵⁰ Exhibit No. 68, at 4-5.

⁶⁵¹ *Id.*

Mr. Whittier outlined other viable alternatives that should be considered to include: (i) undergrounding a single- or double-circuit 230 kV line; (ii) upgrading existing lines to and on the Peninsula to solve the reliability violations, including reconductoring the Company's existing 230 kV lines, or upgrading the Company's 115 kV lines to 230 kV; and (iii) resolving the reliability violation through demand side management ("DSM").⁶⁵² Mr. Whittier pointed out that the Company could implement a transmission solution that addresses local needs for the near term, and address long-term reliability issues with DSM.⁶⁵³

Mr. Whittier highlighted the LS Power 230 kV underground proposal presented to PJM.⁶⁵⁴ Mr. Whittier noted that PJM selected the Proposed Project because it was lower in cost and more robust.⁶⁵⁵ Mr. Whittier observed that while the Project was "more robust," there was no finding the LS Power proposal would not work, as PJM found that the LS Power alternative solved all the applicable criteria violations in the near term.⁶⁵⁶ Mr. Whittier concluded:

the LS Power 230 kV underground proposal is very likely a viable and cost competitive alternative that can solve the cited NERC reliability violations, especially in the near term. With minor adjustments it could very well also be a long term solution.⁶⁵⁷

Mr. Whittier raised concerns that Dominion Virginia Power may have prematurely rejected other alternatives in favor of the Proposed Project.⁶⁵⁸ Mr. Whittier faulted the Company for rejecting an alternative for its failure to resolve all identified NERC violations without first attempting to adjust the alternative to resolve the remaining violations.⁶⁵⁹ In addition, Mr. Whittier argued that the Company's rejection of an alternative because it fails to resolve a Category D right-of-way outage should not be determinative because it is not a NERC requirement to solve Category D violations, but rather to evaluate them and possible actions that could mitigate their consequence.⁶⁶⁰ Finally, Mr. Whittier noted that the Company's need analysis included no discussion of DSM as a method to avoid the NERC violations.⁶⁶¹

Mr. Whittier asserted that Dominion Virginia Power failed to preform sufficient analysis of the two 230 kV underground alternatives before rejecting them as viable options.⁶⁶² For

⁶⁵² *Id.* at 6.

⁶⁵³ *Id.*

⁶⁵⁴ *Id.*

⁶⁵⁵ Mr. Whittier noted the cost difference between the two options is actually \$14.2 million. He believes the cost difference is not significant enough to choose one alternative over the other. Mr. Whittier opined the LS Power estimate of \$99 million for an underground 230 kV line was reasonable.

⁶⁵⁶ Exhibit No. 68, at 6-7; Exhibit No. 23, Attached Appendix at 78.

⁶⁵⁷ Exhibit No. 68, at 7.

⁶⁵⁸ *Id.* at 7-8.

⁶⁵⁹ *Id.* at 8; Exhibit No. 23, Attached Appendix at 56.

⁶⁶⁰ *Id.*; *Id.* at 57.

⁶⁶¹ Exhibit No. 68, at 8.

⁶⁶² *Id.* at 9.

example, in response to a discovery request, the Company stated the two options would be “expected” to result in several overloads on the 230 kV transmission system.⁶⁶³ Mr. Whittier contended that “[w]ith no analysis, [Dominion Virginia Power] cannot then consider what other system improvements might resolve existing problems.”⁶⁶⁴ Mr. Whittier questioned the reasonableness of the Company’s cost estimate of \$290.9 million for a double-circuit 230 kV line from Surry to Skiffes Creek, which he maintained is three to five times what would be expected.⁶⁶⁵ The Company’s cost estimate of \$70 to \$95 million per mile for the underground portion of the line is three to five times what would be expected. Mr. Whittier stated that the LS Power estimate of \$99 million for a single-circuit 230 kV underground line and PAR is comparable to industry standards.⁶⁶⁶

Mr. Whittier observed the Peninsula has a well-developed network of 230 kV and 115 kV transmission lines, which makes it possible to use existing rights-of-ways for upgrades or rebuilds to address reliability violations.⁶⁶⁷ Mr. Whittier testified that if an alternative source of power to the Peninsula causes different violations to materialize, “resolving them with existing network upgrades should be manageable.”⁶⁶⁸

Mr. Whittier addressed rebuilding Lines #214 and #263 as an alternative to the Proposed Project.⁶⁶⁹ Mr. Whittier recommended that the NERC violations occurring on those lines be addressed directly.⁶⁷⁰ For example, Mr. Whittier proposed as an alternative to reconductor or rebuild both lines to higher capacity on existing right-of-way and build a new line across the James River at the James River Bridge to resolve a double-circuit tower issue.⁶⁷¹ Mr. Whittier estimated the cost of rebuilding Lines #214 and #263 to be \$99 million, with the cost per mile reduced by \$100,000 if the Company is able to use existing line structures for the upgrade.⁶⁷²

Mr. Whittier testified that Dominion Virginia Power has not considered non-transmission alternatives to resolve the NERC reliability violations.⁶⁷³ Mr. Whittier noted that the Peninsula is a relatively highly developed area, including some large commercial and industrial customers, and maintained that Dominion Virginia Power has not considered fully how energy efficiency, DSM, distributed generation, or interruptible contracts might offset transmission needs.⁶⁷⁴ Mr. Whittier recommended that the Company be directed to perform an analysis to determine what level of non-transmission alternatives would be required to solve the NERC reliability violations in the near term.⁶⁷⁵ Mr. Whittier further advised that if it is determined that it is not feasible or

⁶⁶³ *Id.* at 9; Attached Exhibits 1 and 2.

⁶⁶⁴ *Id.* at 9.

⁶⁶⁵ *Id.* at 9; Attached Exhibit 3.

⁶⁶⁶ *Id.* at 9-10.

⁶⁶⁷ *Id.* at 10.

⁶⁶⁸ *Id.*

⁶⁶⁹ *Id.* at 11.

⁶⁷⁰ *Id.*

⁶⁷¹ *Id.*

⁶⁷² *Id.* at 12-13.

⁶⁷³ *Id.* at 13.

⁶⁷⁴ *Id.*

⁶⁷⁵ *Id.* at 13-14.

practical for non-transmission alternatives to solve those near-term violations, analysis should be performed to determine if they could provide a long-term solution.⁶⁷⁶

Finally, Mr. Whittier offered the following conclusions regarding Dominion Virginia Power's Application:⁶⁷⁷

- [Dominion Virginia Power] has identified needs to reinforce its transmission system in the area resulting from load growth and generator retirements.
- [Dominion Virginia Power] proposed 500 kV river crossing at Surry would solve most of the identified reliability violations. However, it is unclear that it addresses all Category D contingencies.
- Cost competitive single-circuit 230 kV cable and double 230 kV cables river crossings including crossing under the river, appear to be viable alternatives. However, [Dominion Virginia Power] has not given these alternatives adequate consideration. If [Dominion Virginia Power] does not believe that these options solve all of the cited reliability violations, then [Dominion Virginia Power] should investigate what adjustments to these options would solve those reliability violations.
- [Dominion Virginia Power] should analyze the lines 214 and 263 rebuild option presented here by RLC Engineering. This may be the lowest cost alternative of all proposed.
- [Dominion Virginia Power] should consider other alternatives that include upgrading transmission line capacity on existing rights-of-way. This could include reconductoring or rebuilding existing 230 kV lines or upgrading existing 115 kV lines to 230 kV.
- [Dominion Virginia Power] should investigate whether energy efficiency, distributed generation, interruptible contracts, or other demand side options could mitigate some or all of the need for system improvements.

Kurt Westergard addressed the methodology and results of the four photo simulations included in the Application that were prepared by Truescape and offered alternative photo simulations on behalf of James City County.⁶⁷⁸ Mr. Westergard testified that his firm, Digital

⁶⁷⁶ *Id.* at 14.

⁶⁷⁷ *Id.* at 14-15.

⁶⁷⁸ Exhibit No. 84, at 2-3.

Design, duplicated the exact camera locations and targets chosen by Dominion Virginia Power, specifically viewpoints 9, 11, 12, and 15.⁶⁷⁹

Mr. Westergard confirmed that he visited each of the photo locations on land, and visited the proposed key tower locations on the James River by boat to understand the context and size of the design layout.⁶⁸⁰ Mr. Westergard advised that the camera and proposed tower locations were closely examined using a combination of global positioning satellite (“GPS”) data provided by Dominion Virginia Power, and on-site matching with prints of the Truescape photos.⁶⁸¹ Mr. Westergard testified that for the key towers, which range in height from 176 feet to 296 feet, Digital Design verified the core data depicting a tower’s exact location, height, and width on the James River, and confirmed the heights of the proposed towers with an aerostat balloon and laser range finder.⁶⁸²

Mr. Westergard compared the single-frame simulations prepared by Digital Design with the multiple frame stitched panoramas prepared by Truescape.⁶⁸³ Mr. Westergard acknowledged that the Application presents the panoramic simulations as “Proposed View,” which is the view that a person standing in that location would be expected to see; whereas the “Proposed View – Enlargement Area” is represented as a zoomed in and cropped version of the visual impact.⁶⁸⁴ Mr. Westergard maintained that the “Proposed View” images were produced by a wide angle 28mm, and are designed to show the full scope of what a person would see, including peripheral vision; but they fail to accurately represent the scale, detail, and magnitude of the central scene.⁶⁸⁵ Mr. Westergard asserted that the simulations prepared by Digital Design more accurately represent the correctly scaled and detailed view that a person standing in that location would be expected to see, but do not include what would be seen in their peripheral vision.⁶⁸⁶ Mr. Westergard testified that it is widely agreed that correct horizontal and vertical scale is critical in any visual impact simulation.⁶⁸⁷

Mr. Westergard maintained that Truescape’s photo simulations were done with a wide angle lens stitched into a panoramic display.⁶⁸⁸ Mr. Westergard argued that panoramic shots are generally considered an inappropriate format for scientific analysis and visual impact study simulations.⁶⁸⁹ Mr. Westergard contended that the industry standard is to use a 50mm lens because a 28mm lens has the effect of making objects, such as the transmission towers, appear

⁶⁷⁹ *Id.* at 4; Attached Exhibits A-E.

⁶⁸⁰ *Id.* at 5.

⁶⁸¹ *Id.*

⁶⁸² *Id.* at 5-6.

⁶⁸³ *Id.* at 6-7.

⁶⁸⁴ *Id.* at 7.

⁶⁸⁵ *Id.*

⁶⁸⁶ *Id.* at 7.

⁶⁸⁷ *Id.*

⁶⁸⁸ *Id.* at 8.

⁶⁸⁹ *Id.*

smaller.⁶⁹⁰ More specifically, Mr. Westergard listed the inherent flaws with cropping out a 50mm perspective from a 28mm perspective generated panorama:⁶⁹¹

- Loss of resolution. A photo taken with a 50mm lens will show significantly more detail than the identical scene captured with a 28mm lens. Cropping a 28mm image may make the scale larger, but it will not increase the detail. In contrast it makes the lattice structures look smaller and slightly fuzzy.
- Cropping from a stitched panorama implies that the final 50mm crop will include an unknown and uneven amount of distortion. The resulting “pin cushion effect” will distort the true vertical geometry of the towers near the edge of the photos. The [towers] will tip over slightly instead of standing plumb to the horizon. This “parallax” distortion can be easily corrected, but this is unacceptable in scientific simulations. As such, rendering any models into this scene can result in incorrect model placement and virtual camera matching. Each individual image needs to be stretched and trimmed to create a seamless merge between adjacent photos. Areas can be erased or clone stamped out of the scene.

Mr. Westergard opined Truescape’s visual simulations were convincing in terms of their hue and value, but they had some fundamental flaws in their alignment and their perceived height.⁶⁹² Mr. Westergard noted that based on GPS data and line drawings provided by Dominion Virginia Power, the transmission line shown in the Truescape simulations had an approximate 400-foot misalignment in tower location.⁶⁹³ Mr. Westergard maintained that the Truescape simulation taken from Carter’s Grove shows that Carter’s Grove would be impacted by 1.5 transmission towers, when in fact it would be impacted by 2.5 transmission towers.⁶⁹⁴ Mr. Westergard also contended that the tower heights in the Truescape simulations appeared smaller than they actually would be as a result of perspective foreshortening and the lack of solid scale references in the middle of a featureless river.⁶⁹⁵

Although not shown in the visual simulations, Mr. Westergard advised that the transmission towers in the river, particularly the four highest towers at the channel crossings, will have white blinking strobe lights at the top of the tower plus red and green maritime navigation lights on both sides of the concrete legs to comply with Federal Aviation Administration and United States Coast Guard regulations.⁶⁹⁶ Mr. Westergard testified that he was unsure whether the nighttime lighting would impact Jamestown Island or the Colonial Parkway; however, he was

⁶⁹⁰ *Id.*

⁶⁹¹ *Id.* at 8-9.

⁶⁹² *Id.* at 9.

⁶⁹³ *Id.*

⁶⁹⁴ *Id.* at 9-10.

⁶⁹⁵ *Id.* at 10.

⁶⁹⁶ *Id.* at 11.

sure they would be moderately apparent from Kingsmill and strongly apparent from Carter's Grove.⁶⁹⁷

In summary, Mr. Westergard stated Digital Design had a number of concerns with the Truescape photo simulations, especially the diminished size of the James River transmission towers resulting from the use of a wide angle lens.⁶⁹⁸ Mr. Westergard confirmed that the industry standard is a narrow angle 50mm lens.⁶⁹⁹ Mr. Westergard noted the Bureau of Land Management and National Park Service literature of simulation strategies provide that human vision is most similar to a 50mm lens.⁷⁰⁰ Mr. Westergard testified that although the Truescape photos help the viewer understand the James River context, the Truescape photos distort the size impact of the proposed transmission line.⁷⁰¹

Charles City County's Direct Testimony

On December 7, 2012, Charles City County prefiled the direct testimony of Matthew D. Rowe, director of the Department of Planning and Zoning; and Judith F. Ledbetter, director of the Charles City County Center for Local History. A summary of the prefiled direct testimony of each witness is presented below.

Matthew D. Rowe testified that Charles City County is at a competitive disadvantage because it is surrounded by counties that have substantial water and sewer infrastructure and are conveniently located along major transportation corridors.⁷⁰² Mr. Rowe maintained that while the surrounding counties are forecast to experience exponential growth, Charles City County is only expected to have a slight population increase.⁷⁰³ On the other hand, Mr. Rowe asserted that Charles City County's pristine environment, rural and agricultural landscape, abundant cultural and historic resources, and sense of place made Charles City County a weekend "get-a-way" for nearby urban visitors and a place where the film industry finds authentic locations for its historic films.⁷⁰⁴ Mr. Rowe confirmed that Charles City County's economic growth is expected to occur within the tourism sector.⁷⁰⁵

Mr. Rowe identified several land use and economic development issues related to the Proposed Alternative Project including: (i) environment impacts; (ii) degradation of historical and cultural resources; (iii) physical fragmentation of close-knit communities; (iv) impacts to existing properties; (v) rural viewsheds lost; and (vi) impacts to identified prime farmland.⁷⁰⁶

⁶⁹⁷ *Id.*

⁶⁹⁸ *Id.* at 12.

⁶⁹⁹ *Id.*

⁷⁰⁰ *Id.*

⁷⁰¹ *Id.*

⁷⁰² Exhibit No. 20, at 1.

⁷⁰³ *Id.*

⁷⁰⁴ *Id.* at 2.

⁷⁰⁵ *Id.*

⁷⁰⁶ *Id.*

Mr. Rowe stated that such impacts directly relate to Charles City County's ability to grow its tourism industry.⁷⁰⁷

Mr. Rowe testified that the environmental issues associated with the Proposed Alternative Route include the impacts on numerous acres of pristine wetlands located within the Chesapeake Bay Act Preservation Area, and the impacts on known habitats for rare, threatened, and endangered species.⁷⁰⁸

Mr. Rowe stated that the Proposed Alternative Route would pass through and near numerous historical and cultural sites, including a significant historic district.⁷⁰⁹ Additionally, the Proposed Alternative Route passes within close proximity to the Chickahominy Indian Tribe Cultural Center where the tribe holds its annual Pow-Wow, an event that draws thousands of visitors to the County.⁷¹⁰

In regard to the fragmentation of existing communities, Mr. Rowe pointed out that Charles City County has families and individuals who still reside in close-knit communities.⁷¹¹ Mr. Rowe expressed concern that residents' sense of community would be negatively impacted by an overhead transmission line that would create a physical barrier and noticeable demarcation between properties and neighbors.⁷¹²

As for existing properties, Mr. Rowe expressed concern that because Dominion Virginia Power has failed to provide Charles City County with a detailed survey that shows the extent of its right-of-way easement, people have purchased properties in subdivisions impacted by the right-of-way and are completely unaware of the proposed transmission line.⁷¹³ Mr. Rowe asserted that this lack of information exacerbates the usual identified negative externalities associated with overhead transmission lines and towers.⁷¹⁴ Mr. Rowe also emphasized that the Proposed Alternative Route passes within 500 feet of approximately 1,129 homes.⁷¹⁵

In regard to rural viewsheds, Mr. Rowe pointed out that the Proposed Alternative Route crosses ten county roads, which means almost all visitors entering Charles City County from its northern boundary would pass under the proposed transmission line, as well as visitors to the Chickahominy WMA.⁷¹⁶ Mr. Rowe contended that the proposed transmission line "will have a substantial visual impact on visitors' perception of [Charles City] County."⁷¹⁷

⁷⁰⁷ *Id.*

⁷⁰⁸ *Id.* at 3.

⁷⁰⁹ *Id.*

⁷¹⁰ *Id.*

⁷¹¹ *Id.*

⁷¹² *Id.*

⁷¹³ *Id.*

⁷¹⁴ *Id.*

⁷¹⁵ *Id.*

⁷¹⁶ *Id.* at 3-4.

⁷¹⁷ *Id.* at 4.

As for prime farmland, Mr. Rowe testified that the Proposed Alternative Route directly impacts identified prime farmland, which is based upon the suitability of agricultural soils.⁷¹⁸ Mr. Rowe maintained that this farmland has been productive and vital for centuries, and still contributes significantly to Charles City County's strong agricultural economy.⁷¹⁹

Finally, Mr. Rowe emphasized that the Proposed Alternative Project is more costly for the Company and would be extremely detrimental for tourism for an already economically disadvantaged county.⁷²⁰

Judith F. Ledbetter opined when the right-of-way easements were acquired in the early 1970s it is doubtful that any consideration was given to the impact on historic structures. Ms. Ledbetter raised several concerns regarding the impacts of the Proposed Alternative Project on the cultural resources of Charles City County including: (i) the number of homes on the National Register of Historic Places and a number of potentially eligible properties identified by the Virginia Division of Historic Landmarks in a survey conducted in 1989; (ii) the loss of historic structures when owners of these modest vernacular dwellings can no longer preserve, sell, or operate them as historic homes; (iii) the negative impact on the Chickahominy Water Trail, which is a part of the Captain Smith Trail; and (iv) the crossing of the Chickahominy River at one of its most pristine and undeveloped sections.⁷²¹

Ms. Ledbetter confirmed she supplied additional information to DHR to locate the Architectural Survey of Charles City County completed by the Virginia Division of Historic Landmarks in 1989, which identified the Old Main Road Rural Historic District as a National Register-eligible district.⁷²² In addition, Ms. Ledbetter supplied information on several unmarked cemeteries located in the vicinity of the right-of-way, one unmarked cemetery located in the right-of-way, and requested that the Adams Bridge roadbed be treated as an archeological resource.⁷²³ Ms. Ledbetter maintained that neither the Company's historic resource consultant, nor DHR evaluated the impact of the Proposed Alternative Project on the potentially National Register-eligible properties she supplied.⁷²⁴ Ms. Ledbetter contended that without such evaluations, the record is insufficient for the Commission to make a determination concerning the impact of the Proposed Alternative Project on the historic resources in Charles City County.⁷²⁵

For historic resources evaluated by DHR, Ms. Ledbetter disagreed with the DHR's assessment of the Proposed Alternative Project's impacts on the Old Main Road Rural Historic District, which she contends will be severe instead of moderate, and the impact on Piney Grove, which she states will be moderate to severe instead of minimal.⁷²⁶ Ms. Ledbetter testified that

⁷¹⁸ *Id.*

⁷¹⁹ *Id.*

⁷²⁰ *Id.*

⁷²¹ Exhibit No. 21, at 2-3.

⁷²² *Id.* at 3.

⁷²³ *Id.*

⁷²⁴ *Id.*

⁷²⁵ *Id.* at 4.

⁷²⁶ *Id.*

the viewshed of the Old Main Road Rural Historic District will lose its current rural setting with the installation of a transmission line and towers within close proximity.⁷²⁷ Ms. Ledbetter noted that the Proposed Alternative Route will pass immediately behind Piney Grove and the view of the property from the road will make it “appear as though it has been transported from its rural setting to an industrial corridor.”⁷²⁸

Ms. Ledbetter agreed with the DHR assessment that the Proposed Alternative Project would have a moderate to severe impact on the Chickahominy Water Trail.⁷²⁹

On the other hand, Ms. Ledbetter pointed out that Dominion Virginia Power’s consultant and DHR failed to assess the impact of the Proposed Alternative Project on the Chickahominy Indian Tribe, which is the second-largest of the state-recognized tribes.⁷³⁰ Ms. Ledbetter testified that the transmission towers will be visible from the Pow-Wow grounds, the Tribal Center, and Samaria Church.⁷³¹ Ms. Ledbetter stated that the Chickahominy Tribe is one of Charles City County’s most significant historic/cultural resources, and its Pow-Wow is Charles City County’s largest annual event.⁷³² Ms. Ledbetter was troubled that this proceeding might consider the impact of transmission lines on Jamestown and not consider the impact on the Chickahominy Indian Tribe.⁷³³

Lennar Corporation’s Direct Testimony

On December 7, 2012, Lennar prefiled the direct testimony of: Andrea Berenfeld, project manager at Colonial Heritage and president of the Colonial Heritage Homeowner’s Association; and Patricia Davis, a resident of Colonial Heritage. A summary of the prefiled direct testimony of each witness is presented below.

Andrea Berenfeld opposed construction of the Proposed Alternative Project, and addressed the environmental, historic, and scenic impacts that construction of the Proposed Alternative Project will have on the future development of Colonial Heritage.⁷³⁴ Ms. Berenfeld confirmed Lennar has lost a significant number of sales due to the threat of construction of the Proposed Alternative Project.⁷³⁵

Ms. Berenfeld testified that Lennar is one of the nation’s leading homebuilders and is listed on the New York Stock Exchange.⁷³⁶ Ms. Berenfeld confirmed that Lennar is the developer and builder of Colonial Heritage, which is located on 1,500 acres in James City

⁷²⁷ *Id.* at 5.

⁷²⁸ *Id.*

⁷²⁹ *Id.*

⁷³⁰ *Id.* at 6.

⁷³¹ *Id.*

⁷³² *Id.*

⁷³³ *Id.*

⁷³⁴ Exhibit No. 15, at 1.

⁷³⁵ *Id.*

⁷³⁶ *Id.* at 3.

County.⁷³⁷ Ms. Berenfeld stated that the completed Colonial Heritage will have 659 acres of forest, wetlands, and other environmentally sensitive areas within the community that will be protected from development.⁷³⁸ Ms. Berenfeld described Colonial Heritage as an award-winning, active adult (age 55+) gated golf course community with home prices that range from the mid \$200,000 to \$440,000, with square footages from 1,655 to 3,800 square feet.⁷³⁹ Ms. Berenfeld reported that to date, Lennar has sold 838 homes; has plans to open a new section in January 2013, with an additional 109 homes; and plans to develop an additional 753 homesites in the future.⁷⁴⁰

Ms. Benenfeld identified the environmental and cultural resources located in Colonial Heritage that were not identified in Dominion Virginia Power's Application to include: (i) existing habitat for the Small Whorled Pogonia, a threatened and endangered plant species protected by the U.S. Fish and Wildlife Service, located in the Proposed Alternative Project right-of-way, and (ii) a cemetery located approximately 2,000 feet from the Proposed Alternative Project right-of-way.⁷⁴¹

Ms. Berenfeld testified that the Application clearly shows that the environmental, historical, cultural, and economic development impacts to those residents living in close proximity to the Proposed Alternative Project far exceed the impacts of the Proposed Project.⁷⁴² Ms. Berenfeld stressed that there are approximately 1,129 homes within 500 feet of the Proposed Alternative Project right-of-way, as compared to the 84 homes within 500 feet of the Proposed Project right-of-way.⁷⁴³ In addition, Ms. Berenfeld maintained that the Proposed Alternative Project would require ratepayers to absorb an additional \$55 million in construction costs to avoid "spoiling" a view.⁷⁴⁴ Ms. Berenfeld pointed out that the Proposed Alternative Project requires clearing approximately 420 acres of forest land, as opposed to approximately 20 acres for the Proposed Project.⁷⁴⁵ Ms. Berenfeld stated that she "oppose[s] the use of the [Proposed Alternative Project] and favor[s] the Proposed James River route."⁷⁴⁶

Patricia Davis testified that she and her husband have lived in a number of nice places throughout the United States, but when it came time to retire, they fell in love with the Williamsburg area and Colonial Heritage.⁷⁴⁷ Ms. Davis confirmed that she lives within 1,000 feet of the existing transmission line and was able to easily gauge the visual impact of the existing line prior to the purchase of her home.⁷⁴⁸ Ms. Davis provided two photos, one from behind her home and one fifty feet away to demonstrate how a small change in distance and

⁷³⁷ *Id.* at 4.

⁷³⁸ *Id.*

⁷³⁹ *Id.* at 5.

⁷⁴⁰ *Id.*

⁷⁴¹ *Id.* at 6-7, Attached Berenfeld-1, 7, 8, and 9.

⁷⁴² *Id.* at 7.

⁷⁴³ *Id.* at 7-8.

⁷⁴⁴ *Id.* at 8.

⁷⁴⁵ *Id.*

⁷⁴⁶ *Id.*

⁷⁴⁷ Exhibit No. 16, at 1.

⁷⁴⁸ *Id.* at 2.

orientation can result in a significant change in the visual impact of a transmission line.⁷⁴⁹ Ms. Davis asserted that adding another row of towers will transform Colonial Heritage “into a full industrial complex serving the power needs of the entire Peninsula.”⁷⁵⁰

Ms. Davis maintained that construction of the Proposed Alternative Project will jeopardize the environmental and scenic qualities of Colonial Heritage.⁷⁵¹ Ms. Davis contended that the clearing activities associated with construction of the transmission line will have significant short- and long-term impacts, particularly for the 53 residents living along Winthrop Circle who would have an unobstructed view of the transmission line.⁷⁵²

Ms. Davis expressed concern that the Proposed Alternative Project will “scare off” potential new homeowners and result in higher assessment fees to account for lost potential residents.⁷⁵³ Ms. Davis maintained that if development within Colonial Heritage is slowed, state and local tax receipts and local businesses may be impacted adversely.⁷⁵⁴

Ms. Davis stated that she “oppose[s] the use of the [Proposed Alternative Project] and favor[s] the Proposed James River route.”⁷⁵⁵

Brian E. Gordineer’s Direct Testimony

On December 7, 2012 Brian Gordineer, co-owner of Piney Grove, a historic property and lodging facility located in Charles City County, Virginia, prefiled direct testimony, which is summarized below.

Brian E. Gordineer testified that Piney Grove is on the Virginia Landmarks Register and National Register of Historic Places with the Piney Grove house being the major contributing structure.⁷⁵⁶ The house is a rare and well-preserved example of Early Virginia Log Architecture, which was later expanded into a country store and eventually expanded further into a home.⁷⁵⁷ Mr. Gordineer confirmed that the Piney Grove house is located approximately 500 feet from the Proposed Alternative Route.⁷⁵⁸ Mr. Gordineer stated that the grounds also include Ladysmith (circa 1857), Ashland (circa 1835), and Duck Church (circa 1917) all located approximately 500 to 600 feet from the Proposed Alternative Route.⁷⁵⁹ Mr. Gordineer advised that the gardens, grounds, and nature trail are open to the public daily and guided tours of the house interiors are given on many Saturdays and on other days by appointment.⁷⁶⁰ In addition,

⁷⁴⁹ *Id.* at 2-3; Attached Exhibit Davis 1 and 2.

⁷⁵⁰ *Id.* at 3-4.

⁷⁵¹ *Id.* at 4.

⁷⁵² *Id.* at 4-5; Attached Exhibits Davis 10-12.

⁷⁵³ *Id.* at 5.

⁷⁵⁴ *Id.* at 6.

⁷⁵⁵ *Id.*

⁷⁵⁶ Exhibit No. 19, at 2.

⁷⁵⁷ *Id.*

⁷⁵⁸ *Id.*

⁷⁵⁹ *Id.*

⁷⁶⁰ *Id.* at 3.

Mr. Gordineer testified that Piney Grove offers bed and breakfast lodging in the Ladysmith house, which directly overlooks the Proposed Alternative Route.⁷⁶¹

Mr. Gordineer disagreed with the assessment of the Company's consultant and DHR that construction of the Proposed Alternative Project would have a "minimal" impact on Piney Grove and a "moderate" impact on the Old Main Road Rural Historic District.⁷⁶² Mr. Gordineer contended that the impact on both would be "severe."⁷⁶³ Mr. Gordineer affirmed that the approaching views of Piney Grove from the east on Glebe Lane (Route 615) will be dominated by the lattice transmission towers, which will be twice as tall as any structure on the property.⁷⁶⁴ Mr. Gordineer faulted the analysis conducted by the Company and DHR for focusing solely on the view from the house, and not the view to the house, which are of paramount importance for tour and lodging visitors coming to the property.⁷⁶⁵ Mr. Gordineer expressed concern that the loss of the pristine view of cultivated fields from the bed and breakfast guest rooms with the construction of the proposed transmission towers, could result in a loss of bed and breakfast revenues.⁷⁶⁶ In addition, Mr. Gordineer maintained that a balloon study is needed to provide an accurate assessment of the visual impact of the transmission towers on his property.⁷⁶⁷

Mr. Gordineer testified that the approaching view of many contributing structures of the Old Main Road Rural Historic District on Glebe Lane (Route 615) will be dominated by the lattice transmission towers, which will be twice as tall as the surrounding structures.⁷⁶⁸ Mr. Gordineer faulted the Company's analysis for considering only the views from individual structures without considering the impact of the towers on the entire historic district.⁷⁶⁹ Mr. Gordineer maintained that the views to the structures and views from the structures, as well as the setting in its entirety, are of equal importance to the Old Main Road Rural Historic District, which appears almost as it did in the 1800s when most of the area's structures were built.⁷⁷⁰ Mr. Gordineer contended that a balloon study is needed to assess the impact of the transmission towers on the Old Main Road Rural Historic District.⁷⁷¹

Staff's Direct Testimony

On January 11, 2013, Staff filed the direct testimony of John W. Chiles, principal for GDS Associates; and Wayne D. McCoy, president of Mid Atlantic Environmental ("MAE"). A summary of the prefiled direct testimony of each witness is presented below.

⁷⁶¹ *Id.*

⁷⁶² *Id.*

⁷⁶³ *Id.*

⁷⁶⁴ *Id.* at 4.

⁷⁶⁵ *Id.*

⁷⁶⁶ *Id.*

⁷⁶⁷ *Id.* at 5.

⁷⁶⁸ *Id.*

⁷⁶⁹ *Id.*

⁷⁷⁰ *Id.* at 5-6.

⁷⁷¹ *Id.* at 6.

John W. Chiles performed an independent analysis of the need for the Proposed Project and presented testimony on the following topics: (i) a description of how the Company determined the need for the Proposed Project; (ii) the results of his independent efforts to replicate the power flow studies performed by the Company; (iii) an evaluation of the effectiveness with which the Proposed Project and the Proposed Alternative Project address the identified reliability need; (iv) an evaluation of alternative transmission solutions; and (v) an evaluation of alternative generation solutions.⁷⁷²

Mr. Chiles confirmed that Dominion Virginia Power provided Staff with the power flow models for the summer peak periods in 2015-16 that the Company used in its analysis.⁷⁷³ Mr. Chiles noted that the Company planned to undertake a number of bulk power system projects and referred to those projects as “Pre-Projects.”⁷⁷⁴ Mr. Chiles expressed concern that the “Pre-Projects” provided in response to Staff’s discovery did not match the “Pre-Projects” described by PJM’s TEAC.⁷⁷⁵ Mr. Chiles testified that Dominion Virginia Power also provided Staff with the power flow models for 2019 and 2020.⁷⁷⁶ However, Mr. Chiles reported that these models assume no generation retirements at Chesapeake and Yorktown, and are presented by the Company to demonstrate that the Proposed Project eventually would be needed.⁷⁷⁷

Mr. Chiles affirmed that he re-ran the Company’s power flow models and generally produced similar results.⁷⁷⁸ Mr. Chiles noted that his studies failed to verify overloads in the 2015 retirement cases involving Enclave 230/115 kV transformers #1, #2, and #3 for the multiple contingency loss of lines #2017 and #9020; and for Sewell’s Point 115/230 kV transformers #1 and #2 for the multiple contingency loss of lines #257 and #2099.⁷⁷⁹ Mr. Chiles also found that the Company’s evaluation of tower line outages and right-of-way outages in their 2019 and 2020 models to be incomplete.⁷⁸⁰ Mr. Chiles testified that he was able to verify the Company’s power flow results, but expressed concerns with the thoroughness of the analysis.⁷⁸¹ In addition, Mr. Chiles provided analysis of several alternatives to the Proposed Project.⁷⁸²

Mr. Chiles made the following findings concerning Dominion Virginia Power’s analysis of need:⁷⁸³

- The power flow analyses conducted by the Company contain inconsistent assumptions regarding choice of system stressor, unit retirements, proper choice

⁷⁷² Exhibit No. 79, at 4.

⁷⁷³ *Id.* at 8.

⁷⁷⁴ *Id.* at 8-9.

⁷⁷⁵ *Id.* at 9-11.

⁷⁷⁶ *Id.* at 11-12.

⁷⁷⁷ *Id.* at 12.

⁷⁷⁸ *Id.* at 14.

⁷⁷⁹ *Id.* at 15.

⁷⁸⁰ *Id.* at 16.

⁷⁸¹ *Id.*

⁷⁸² *Id.*

⁷⁸³ *Id.* at 16-17.

of load forecast vintage, and unmatched contingency cases within the four years studied.

- The study conducted by the Company is not sufficient to assess fully the need for the Proposed Project.
- The Company failed to provide an analysis that evaluates solutions that combine a subset of the planned generation retirements and lower voltage transmission alternatives to the Proposed Project.
- The Company failed to assess a pure generation alternative to the Proposed Project.

In regard to inconsistent assumptions, Mr. Chiles stated that in accordance with NERC Standards, Dominion Virginia Power defines a critical system condition to be the unavailability of the generating unit with the greatest effect on the area being studied.⁷⁸⁴ Mr. Chiles advised that Dominion Virginia Power used either Yorktown Unit No. 2 or Yorktown Unit No. 3 as the critical system condition, for conducting contingency studies.⁷⁸⁵ Mr. Chiles maintained that the use of Yorktown Unit No. 2 was inconsistent with the testimony of Company witness Hathaway and the Company's decision to retire Yorktown Unit No. 2.⁷⁸⁶

Mr. Chiles contended that Dominion Virginia Power failed to analyze the following alternatives: (i) a double-circuit 230 kV overhead line; (ii) a single-circuit 230 kV overhead line; (iii) a double-circuit 230 kV underground (hybrid) line; and (iv) a single-circuit 230 kV underground (hybrid) line.⁷⁸⁷ Mr. Chiles maintained that such alternatives should be studied because they are "less environmentally and visually impacting alternatives"⁷⁸⁸ Indeed, Mr. Chiles conducted load flow analyses of the 230 kV options and concluded:

[N]one of the 230 kV line alternatives are viable alternatives to the [Proposed] Project in terms of meeting the identified reliability need. Additionally, from an engineering perspective, none of the 230 kV options can be feasibly constructed to achieve the approximate 5,000 MVA capacity afforded by the [Proposed] Project. This additional capacity will be available to address long-term load growth in the Hampton Roads area.⁷⁸⁹

Moreover, Mr. Chiles reported that "both single- and double-circuit 230 kV hybrid lines would have reliability violations beyond those of corresponding 230 kV overhead lines."⁷⁹⁰

⁷⁸⁴ *Id.* at 17.

⁷⁸⁵ *Id.*

⁷⁸⁶ *Id.* at 17-18.

⁷⁸⁷ *Id.* at 19.

⁷⁸⁸ *Id.*

⁷⁸⁹ *Id.* at 24.

⁷⁹⁰ *Id.* at 25.

However, Mr. Chiles noted that his analyses were conducted with information supplied by Dominion Virginia Power, and recommended that analyses be conducted to update modeling assumptions to eliminate inconsistencies and to include PJM's release of its 2013 load forecast.⁷⁹¹

Mr. Chiles examined the repowering of the Chesapeake and Yorktown generating units, but found that there is insufficient natural gas pipeline capacity in the area to supply the units at both stations.⁷⁹² In addition, Mr. Chiles modeled the injection of 550 MW of generation at the proposed Skiffes Creek Switching Station and found that the new generation option "was slightly less efficient than the 230 kV options, and was less effective than the [Proposed] Project."⁷⁹³

Wayne D. McCoy prepared two reports that were attached to his testimony: (i) "Report to the [Commission] on the Routing and Environmental Aspects of the [Company's] [Proposed Project]" ("Staff Routing Report"); and (ii) "Environmental Regulations Review Report to the [Commission] on the [Company's] [Proposed Project]" ("Staff Environmental Regulations Report").⁷⁹⁴ Mr. McCoy stated that the Staff Environmental Regulations Report verified the environmental regulations and required environmental equipment associated with the Company's decisions to retire generation at Chesapeake and Yorktown.⁷⁹⁵

Mr. McCoy testified that "[t]his case presents a number of issues that include physical and cultural constraints, no matter which alignment is ultimately chosen."⁷⁹⁶ Ultimately, Mr. McCoy recommended the Proposed Route, use of the Company's 51-acre tract for the new Skiffes Creek Switching Station, and the Company's proposed alignment of the Skiffes Creek-Wheaton 230 kV transmission line.⁷⁹⁷

Public Witness Testimony – Richmond Hearing

On January 10, 2013, a public hearing was held in the Commission's courtroom in Richmond, Virginia, to receive the testimony of public witnesses. Twenty-seven public witnesses presented testimony. Their testimony is summarized below.

Stephen R. Adkins a resident of Charles City County, Virginia, and chief of the Chickahominy Indian tribe, testified in opposition to the Proposed Alternative Route.⁷⁹⁸ Mr. Adkins maintained that the Proposed Alternative Route crosses the Chickahominy River at a landscape he described as "evocative" and "indigenous cultural."⁷⁹⁹ Mr. Adkins stated that the

⁷⁹¹ *Id.* at 26.

⁷⁹² *Id.* at 28.

⁷⁹³ *Id.* at 29.

⁷⁹⁴ Exhibit No. 83, at 2; Attached Exhibit WDM-1; Attached Exhibit WDM-2.

⁷⁹⁵ *Id.* at 2; Attached Exhibit WDM-2.

⁷⁹⁶ *Id.* at 4.

⁷⁹⁷ *Id.* at 6.

⁷⁹⁸ S. Adkins, PW-Tr. at 163-64.

⁷⁹⁹ *Id.* at 164.

Captain Smith Trail showcases the Chickahominy tribe and is a low impact sustainable job creator for Charles City County and the tribe.⁸⁰⁰

Mr. Adkins contended that the Chickahominy River “is a sacred traditional cultural property to the Chickahominy tribe.”⁸⁰¹ Mr. Adkins maintained that the Jamestown settlers survived on food procured in trades with the Chickahominy Indians.⁸⁰² Mr. Adkins expressed concern that both Dominion Virginia Power and DHR failed to assess the impact of the proposed transmission line on the Chickahominy tribe, its community, its powwow grounds, or its tribal center.⁸⁰³

Mr. Adkins asked the Commission to “consider the Chickahominy Indian tribe and its sacred waterway in making its decision.”⁸⁰⁴

Thomas D. Fenton of Richmond testified on behalf of the descendants of Charles and Mary Ashton Holmes and the family graveyard which is located within the Proposed Alternative Route.⁸⁰⁵ Mr. Fenton advised that the graveyard is located within the Chickahominy WMA, was first used in 1859, and includes the graves of eight family members.⁸⁰⁶ Mr. Fenton confirmed that the graveyard and house site are identified in the record as potentially eligible for national register listing.⁸⁰⁷

Mr. Fenton identified one of the family members buried in the graveyard as George Washington Holmes, who was 18 years old in 1862 when he volunteered for a unit that became part of the 53rd Virginia Infantry.⁸⁰⁸ Mr. Fenton reported that Mr. Holmes was wounded in “General Pickett’s infamous charge at Gettysburg,” twice captured, and returned to his home to die on June 20, 1865, “from typhoid fever he had contracted while in prison just six months shy of his 20th birthday.”⁸⁰⁹

Mr. Fenton asserted that Dominion Virginia Power does not own an easement over the graveyard.⁸¹⁰ Mr. Fenton testified that “[t]he memory of George Holmes is cherished by my family, and we will not allow his gravesite to be desecrated.”⁸¹¹

JoAnn McGrew of Williamsburg testified in opposition to the Proposed Alternative Route, because it passes the Lois Hornsby Middle School and the J. Blain Blayton Elementary

⁸⁰⁰ *Id.* at 164-65.

⁸⁰¹ *Id.* at 165.

⁸⁰² *Id.* at 165-66.

⁸⁰³ *Id.* at 166.

⁸⁰⁴ *Id.*

⁸⁰⁵ Fenton, PW-Tr. at 167-68.

⁸⁰⁶ *Id.* at 168.

⁸⁰⁷ *Id.*

⁸⁰⁸ *Id.* at 168-69.

⁸⁰⁹ *Id.* at 169.

⁸¹⁰ *Id.* at 170.

⁸¹¹ *Id.*

School in James City County.⁸¹² Based on her experience as a school counselor, Ms. McGrew stressed the need to have a safe school environment.⁸¹³ Ms. McGrew warned of the unintended consequences of attempting to satisfy the need for additional power. The use of coal and water produces water and air pollution; or the use of nuclear power resulted in potentially catastrophic power plant malfunctions, such as Three Mile Island, Chernobyl, or Fukushima.⁸¹⁴ Ms. McGrew expressed concern on behalf of the 1100 children and staff “who may have to face power line caused health issues in the future.”⁸¹⁵

Honorable Sherri Bowman testified in opposition to the Proposed Alternative Route on behalf of the descendants of Lebius Bowman and on behalf of the Cedar Grove Baptist Church.⁸¹⁶ Ms. Bowman stated that in 1896, her great-grandfather, Lebius Bowman, purchased four and three-quarter acres of land located to the north of Moss Side Farm, and made it the home place for his wife and ten children.⁸¹⁷ Ms. Bowman advised that in 1971, when Dominion Virginia Power sought to purchase an easement, there were 25 heirs then living, 6 of whom refused to sell.⁸¹⁸ Ms. Bowman maintained that the money was put in escrow and Dominion Virginia Power does not own an easement across this property.⁸¹⁹

Ms. Bowman confirmed that the Cedar Grove Baptist Church and its cemetery is located at 5500 Adkins Road, and the Company’s power line easement is approximately 100 feet from the cemetery, which includes the graves of approximately 400 deceased church members.⁸²⁰ Ms. Bowman expressed concern for the impact of the transmission line on the appearance of the church and its neighborhood, the safety of young people playing on church grounds near the line, and the peace and tranquility of the cemetery.⁸²¹ Ms. Bowman asserted:

Both my grandparents, Skunk and Marcelle Bowman, would roll over in their graves if they thought power lines might tower above their beloved church and its cemetery.⁸²²

Valerie Adkins of Charles City County opposed the Proposed Alternative Route, whose right-of-way passes within 100 feet of her home.⁸²³ Ms. Adkins stated that when she built her home in 1988, she “had no idea that there was any possibility a high power transmission line might be built next door”⁸²⁴ Ms. Adkins expressed concern regarding the health effects of living so close to the line, for herself, her son, who suffers from severe asthma, and for her three

⁸¹² McGrew, PW-Tr. at 171.

⁸¹³ *Id.* at 172.

⁸¹⁴ *Id.* at 172-73.

⁸¹⁵ *Id.* at 173.

⁸¹⁶ Bowman, PW-Tr. at 174-75.

⁸¹⁷ *Id.* at 175.

⁸¹⁸ *Id.*

⁸¹⁹ *Id.* at 176.

⁸²⁰ *Id.*

⁸²¹ *Id.*

⁸²² *Id.* at 177.

⁸²³ V. Adkins, PW-Tr. at 178-79.

⁸²⁴ *Id.* at 179.

grandchildren that visit weekly.⁸²⁵ Ms. Adkins also expressed concern for the safety of her grandchildren (who may get on the right-of-way and go places they should not), the value of her home, and the impact of the line on the Cedar Grove Baptist Church and its cemetery.⁸²⁶ Ms. Adkins advised that approximately 20 members of her family are buried in the church cemetery, and maintained that “[w]e should not interfere with our loved ones who are at rest.”⁸²⁷

Sylvia Williams of Charles City County opposed the Proposed Alternative Route.⁸²⁸ Ms. Williams testified that she and her son built homes on portions of property that had been in her mother’s family for many years.⁸²⁹ Ms. Williams asserted that she and her son “had no idea that there was any possibility a high power transmission line might be built next to our homes until we received a notice from [Dominion Virginia Power].”⁸³⁰ Ms. Williams expressed concern for the health effects of the line, especially on her husband, who gardens during the summer, and on her two grandchildren.⁸³¹ Ms. Williams also expressed concern for the noise that may be made by the transmission line, for the reduction of the value of her property, and for the impact of the line on the Cedar Grove Baptist Church and its cemetery.⁸³²

Silas E. Marrow of Providence Forge, in Charles City County, expressed concern regarding the health effects of the proposed transmission line.⁸³³ Mr. Marrow pointed out that he has had a couple of brain tumors and operations.⁸³⁴ Mr. Marrow stated that “I’m just – don’t feel like this thing is very efficient for my neighborhood.”⁸³⁵

Clarence L. Williams of Adkins Road, testified that he used to work at MCV in the Department of Radiation Therapy.⁸³⁶ Mr. Williams stated that there were several mornings when he had to stay at home because he had too much radiation in his body.⁸³⁷ Mr. Williams opposed the line running close to his house because it would produce radiation.⁸³⁸ Mr. Williams maintained that “I know how it feels, and it’s unpleasant.”⁸³⁹

C. Douglas Harwood of Goochland testified that he owns a piece of land beside Cedar Grove Church.⁸⁴⁰ As a Dominion Virginia Power shareholder, Mr. C. Harwood asserted that “the idea of spending 50-some million dollars that they don’t have to spend is ridiculous.”⁸⁴¹

⁸²⁵ *Id.*

⁸²⁶ *Id.*

⁸²⁷ *Id.* at 180.

⁸²⁸ S. Williams, PW-Tr. at 181.

⁸²⁹ *Id.*

⁸³⁰ *Id.* at 182.

⁸³¹ *Id.*

⁸³² *Id.* at 182-83.

⁸³³ Marrow, PW-Tr. at 184.

⁸³⁴ *Id.*

⁸³⁵ *Id.*

⁸³⁶ C. Williams, PW-Tr. at 185-86.

⁸³⁷ *Id.* at 186.

⁸³⁸ *Id.*

⁸³⁹ *Id.*

⁸⁴⁰ C. Harwood, PW-Tr. at 187.

C. D. Harwood, Jr. of Binns Hall, testified that his ancestors have lived in Charles City County for centuries, and have acquired many acres of timber land.⁸⁴² Mr. C. D. Harwood stated that his family's timber operations will be negatively impacted by construction of the transmission line, including the permanent clearing of land, and the opening of land to trespassers.⁸⁴³ Mr. C. D. Harwood expressed concern that trespassers would enter the land on ATVs and then sue landowners if they are injured.⁸⁴⁴

Mr. C. D. Harwood also opposed the Proposed Alternative Route because it will negatively impact Binns Hall, which was built by his great-grandfather in 1879 and was the first post office in Charles City County.⁸⁴⁵ Mr. C. D. Harwood contended that Dominion Virginia Power performed no assessment of the impact of the line on Binns Hall because it has not been nominated to the National Register.⁸⁴⁶ Mr. C. D. Harwood also opposed the Proposed Alternative Route because it will be visible from the Charles City Chapel Methodist Meeting House (established in 1791) and cemetery located on Sturgeon Point Road.⁸⁴⁷ Again, Mr. C. D. Harwood contended that Dominion Virginia Power failed to assess the impact of the line on these historic sites.⁸⁴⁸

Bonnie Whittaker of Charles City County opposed the Proposed Alternative Route.⁸⁴⁹ Ms. Whittaker testified that when she purchased her home, which faces the James River, she knew that there was a 500 kV transmission line with two towers about two hundred yards from her home.⁸⁵⁰ Within a year of her purchase, Ms. Whittaker stated that Dominion Virginia Power installed strobe lights on the towers during the day that switch to red lights at night.⁸⁵¹ Ms. Whittaker maintained that when there was a storm or any kind of a power surge, the strobe lights would continue all through the night.⁸⁵² Ms. Whittaker also confirmed that the lines make a buzzing and humming sound.⁸⁵³ Ms. Whittaker argued that Charles City County has already done its part to deliver power to the peninsula with its existing power lines.⁸⁵⁴

Victoria Gussman of Toano opposed construction of an overhead transmission line across the James River based on: (i) the impact on the views of the James River, (ii) questions about demand and the urgency of need, and (iii) the need to examine additional alternatives.⁸⁵⁵

⁸⁴¹ *Id.*

⁸⁴² C. D. Harwood, PW-Tr. at 188-89.

⁸⁴³ *Id.* at 189.

⁸⁴⁴ *Id.*

⁸⁴⁵ *Id.* at 190.

⁸⁴⁶ *Id.*

⁸⁴⁷ *Id.* at 190-91.

⁸⁴⁸ *Id.* at 191.

⁸⁴⁹ Whittaker, PW-Tr. at 192.

⁸⁵⁰ *Id.*

⁸⁵¹ *Id.*

⁸⁵² *Id.* at 193.

⁸⁵³ *Id.*

⁸⁵⁴ *Id.* at 194.

⁸⁵⁵ Gussman, PW-Tr. at 195.

Ms. Gussman took the position that the Proposed Project will degrade the views of the James River, particularly between Jamestown Island and Hog Island.⁸⁵⁶ Ms. Gussman maintained that Hog Island at its highest point is less than five feet above sea level and would fail to be a visual barrier to 21-story transmission towers.⁸⁵⁷

Ms. Gussman questioned the need and urgency for the Proposed Project based on the area's dependence on investment by the federal government, and projections for an extremely slow U. S. economic recovery.⁸⁵⁸ Ms. Gussman testified that Dominion Virginia Power has demonstrated the efficacy of submerging transmission lines and she suggested that if a 500 kV line cannot be submerged then perhaps a smaller line could be built now, with a second, submerged line built later.⁸⁵⁹

Ms. Gussman urged the denial of the proposed certificate to "demonstrate that Virginia holds the historic triangle, especially the Colonial Parkway in Jamestown, in great esteem as a historic place and an attraction to visitors from all over the world."⁸⁶⁰

Otway P. Harwood, II, of Goochland testified against the Proposed Alternative Project, which he contended "would be a blight upon the terrain."⁸⁶¹ Mr. O. Harwood recommended using the existing line and adding additional power lines to it.⁸⁶²

Elva B. Yates of Charles City County and owner of Poplar Springs, a property on the National Register of Historic Places, opposed the Proposed Alternative Project.⁸⁶³ Ms. Yates advised that the Company's right-of-way is located approximately 1,300 feet from Poplar Springs where it runs across open fields.⁸⁶⁴ Ms. Yates confirmed that portions of Poplar Springs were built in 1809, 1840, and 1844, and that Poplar Springs is part of the Old Main Road Register Eligible Rural Historic District.⁸⁶⁵ Ms. Yates expressed concern that she may soon need to sell Poplar Springs and would like it to remain as an historic property, but questioned if anyone would be interested with a 500 kV transmission line in plain view.⁸⁶⁶

Stephen James Binns of Charles City County opposed the Proposed Alternative Project.⁸⁶⁷ Mr. Binns testified that he lives in a register-eligible historic home on Sunnyside Farm in the Old Main Road Rural Historic District and opposed the Proposed Alternative Project based on its visual impact on the Charles City Chapel Cemetery and on the Old Main Road Rural

⁸⁵⁶ *Id.*

⁸⁵⁷ *Id.* at 196.

⁸⁵⁸ *Id.* at 196-97.

⁸⁵⁹ *Id.* at 197.

⁸⁶⁰ *Id.* at 198.

⁸⁶¹ O. Harwood, PW-Tr. at 199.

⁸⁶² *Id.* at 199-200.

⁸⁶³ Yates, PW-Tr. at 201.

⁸⁶⁴ *Id.*

⁸⁶⁵ *Id.* at 202.

⁸⁶⁶ *Id.* at 203.

⁸⁶⁷ Binns, PW-Tr. at 205.

Route Historic District.⁸⁶⁸ Mr. Binns advised that his grandparents and great-grandparents, as well as many relatives and former neighbors are buried at the Charles City Chapel Cemetery.⁸⁶⁹ Mr. Binns contended that the cemetery and his home are just two of the many historic sites or properties that will be impacted by the Proposed Alternative Route.⁸⁷⁰ Mr. Binns questioned whether there has been adequate assessment of the impact of the Proposed Alternative Route.⁸⁷¹

Jack Miniclier of Charles City County stated that in 1993, he purchased a home and seven acres of land on the Chickahominy River near the Chickahominy WMA, completely unaware of the easement owned by Dominion Virginia Power that passes within 300 feet of his property.⁸⁷² Mr. Miniclier opposed the Proposed Alternative Project for personal reasons and based on the negative impacts it will have on Charles City County.⁸⁷³ Mr. Miniclier pointed out that the Proposed Alternative Route crosses ten county roads and is unfair to residents because Charles City County already bears more than its fair share of providing power to the peninsula regions.⁸⁷⁴ Mr. Miniclier maintained that those who create the demand for power should bear their fair share of the burden.⁸⁷⁵

Mr. Miniclier testified to the unique and unmarred beauty of the Chickahominy River in the area impacted by the Proposed Alternative Route.⁸⁷⁶ Mr. Miniclier noted the use of the area in a recent movie and the lack of any development, with the exception of two docks, within this five-mile stretch of the Chickahominy River.⁸⁷⁷

Mr. Miniclier pointed out that the Proposed Route is shorter and less costly than the Proposed Alternative Route.⁸⁷⁸ Finally, Mr. Miniclier questioned the need for a second right-of-way through Charles City County, and the need to expand the existing right-of-way if it is to be used.⁸⁷⁹ On cross-examination Mr. Miniclier supported an alternative crossing under the James River, with one 230 kV added, and an additional 230 kV added in the future when demand grows.⁸⁸⁰

Marinda Hall of Charles City County opposed the Proposed Alternative Route.⁸⁸¹ Ms. Hall testified that her home was built in 1991, and is located on the historic Meadow Spring

⁸⁶⁸ *Id.*

⁸⁶⁹ *Id.* at 206.

⁸⁷⁰ *Id.*

⁸⁷¹ *Id.* at 206-07.

⁸⁷² Miniclier, PW-Tr. at 209-10.

⁸⁷³ *Id.* at 210.

⁸⁷⁴ *Id.* at 210-11.

⁸⁷⁵ *Id.* at 211-12.

⁸⁷⁶ *Id.* at 213.

⁸⁷⁷ *Id.* at 213-14.

⁸⁷⁸ *Id.* at 214.

⁸⁷⁹ *Id.* at 214-15.

⁸⁸⁰ *Id.* at 215-16.

⁸⁸¹ Hall, PW-Tr. at 221.

Farm.⁸⁸² Ms. Hall asserted that when the home was built, she had no knowledge that it was within 500 feet of the Dominion Virginia Power right-of-way.⁸⁸³

Ms. Hall expressed concern for the visual impact of the transmission line on her home, and for the health impacts, especially on her son, of the associated EMF radiation.⁸⁸⁴ Ms. Hall questioned if anyone would want to buy her home if she tried to sell.⁸⁸⁵ Ms. Hall also expressed concern for the impact of the transmission line on Meadow Spring Farm, with its house built in 1805, located approximately 600 feet from the right-of-way.⁸⁸⁶

Ms. Hall maintained that she chose to live in Charles City County because it is rural, and she does not want to live next to an industrial corridor.⁸⁸⁷ Ms. Hall stated that “[t]he beauty of Charles City, its rural surroundings and historic properties will be destroyed forever if a high voltage power line is allowed to run through the county and the Chickahominy River.”⁸⁸⁸

Mark Perreault of Norfolk testified on behalf of the Citizens for a Fort Monroe National Park.⁸⁸⁹ Mr. Perreault expressed concern that the Proposed Project, with its James River crossing would negatively impact the entire southeastern Virginia region.⁸⁹⁰ Mr. Perreault contended that “[t]he industrialization of the James River threatens to reduce tourism to the region, but, more importantly, reduce the appeal and image of the region across the nation when the region’s economy at this time faces military downsizing.”⁸⁹¹

Mr. Perreault cited to a *Wall Street Journal* article that reported that U. S. electrical use is barely growing, and maintained that it is not in the interest of Virginia to damage its internationally significant landscape for infrastructure that may not be needed.⁸⁹² Mr. Perreault asked the Commission to recognize “that a utility at the least does not have the right to befoul an internationally significant landscape like the James near Jamestown and the Colonial National Historic Park for its business convenience.”⁸⁹³

Margaret Nelson Fowler of Williamsburg opposed both the Proposed Project and the Proposed Alternative Project.⁸⁹⁴ Ms. Fowler maintained that in a state replete with historically significant places, “there has to come a time when a utility . . . finds itself infringing on the most sacred of places in the state, and there needs to be at that point in time some creative

⁸⁸² *Id.*

⁸⁸³ *Id.*

⁸⁸⁴ *Id.* at 222.

⁸⁸⁵ *Id.*

⁸⁸⁶ *Id.*

⁸⁸⁷ *Id.* at 223.

⁸⁸⁸ *Id.*

⁸⁸⁹ Perreault, PW-Tr. at 224.

⁸⁹⁰ *Id.* at 224-25.

⁸⁹¹ *Id.* at 225.

⁸⁹² *Id.* at 225-26.

⁸⁹³ *Id.* at 227.

⁸⁹⁴ Fowler, PW-Tr. at 229.

thinking.”⁸⁹⁵ Ms. Fowler supported submerging the line under the James River, and recommended that utilities look for more innovative ways to solve reliability issues.⁸⁹⁶

Joe Boggan of Colonial Heritage in Williamsburg vehemently opposed the Proposed Alternative Project.⁸⁹⁷ Mr. Boggan testified that he purchased his home in December 2011 with the understanding that the land behind his home was a protected, natural open space, but the Proposed Alternative Route runs less than 150 feet from his property line.⁸⁹⁸ Mr. Boggan maintained that the Yarmouth Creek watershed is classified as highly significant, and citizens living along the edge of the area are not permitted to remove any vegetation.⁸⁹⁹ Mr. Boggan argued that the construction of a transmission line through the area “will surely lead to degradation of natural resources within the watershed.”⁹⁰⁰

Mr. Boggan raised concerns regarding the noise of the transmission lines and the health effects to the over 1,100 homes and families impacted by the Proposed Alternative Project.⁹⁰¹ In addition, Mr. Boggan noted that the transmission line would devalue the substantial investment in the homes impacted by this route and reduce property tax revenues to James City County.⁹⁰²

Jack Baer of Colonial Heritage in Williamsburg supported the Proposed Project over the Proposed Alternative Project.⁹⁰³ Mr. Baer pointed out that the Proposed Project has a significantly lower cost estimate, would be more reliable, has lower environmental impacts, and impacts fewer people.⁹⁰⁴ On cross-examination, Mr. Baer advised that he would support a hybrid alternative that would go under the James River if it solved the reliability problems and had less impact.⁹⁰⁵

Leonard Calabrese of Colonial Heritage in James City County opposed the Proposed Alternative Project.⁹⁰⁶ Mr. Calabrese emphasized the 1,129 homes within 500 feet of the Proposed Alternative Route, and compared that to the 84 homes within 500 feet of the Proposed Project.⁹⁰⁷ Mr. Calabrese supported an alternative under the James River.⁹⁰⁸ However, Mr. Calabrese pointed out that of the two proposed routes, for every 10 families impacted by the Proposed Project, “130 families would live under the shadow of those towers for the [Proposed Alternative Project].”⁹⁰⁹

⁸⁹⁵ *Id.* at 230.

⁸⁹⁶ *Id.*

⁸⁹⁷ Boggan, PW-Tr. at 231.

⁸⁹⁸ *Id.*

⁸⁹⁹ *Id.* at 232.

⁹⁰⁰ *Id.*

⁹⁰¹ *Id.* at 233.

⁹⁰² *Id.* at 233-34.

⁹⁰³ Baer, PW-Tr. at 235-36.

⁹⁰⁴ *Id.* at 236-37.

⁹⁰⁵ *Id.* at 238.

⁹⁰⁶ Calabrese, PW-Tr. at 239-40.

⁹⁰⁷ *Id.* at 240.

⁹⁰⁸ *Id.* at 240-41.

⁹⁰⁹ *Id.* at 241.

George Major of Colonial Heritage in James City County opposed the Proposed Alternative Project because of its visual and environmental impacts on his neighborhood.⁹¹⁰ Mr. Major also opposed the Proposed Alternative Project based on its cost, its impact on many more properties, and its impacts on cultural resources such as Freedom Park.⁹¹¹ Mr. Major did not question the need for power to replace Yorktown, and to provide for future growth.⁹¹²

Page Sutton of Williamsburg opposed the Proposed Alternative Project.⁹¹³ Mr. Sutton testified that when Captain Smith sailed up the James River, he did not see cars and ferries, ships, planes, motorboats, navigational devices, and homes.⁹¹⁴ Mr. Sutton contended that the transmission line should cross the river, but by the least intrusive route.⁹¹⁵

Mr. Sutton maintained that in the long term, technology will replace transmission lines.⁹¹⁶ Mr. Sutton pointed to studies that demonstrated the possibility of wireless power transmission.⁹¹⁷ Mr. Sutton recommended that the Commission adopt the most economical solution now, but predicted that they will be removed within a couple of decades.⁹¹⁸

John H. Roberts of Colonial Heritage in James City County did not question the need for electrical power.⁹¹⁹ Mr. Roberts maintained that the choice is between the longer, more expensive, less reliable Proposed Alternative Project, and the shorter, less expensive, less environmentally damaging Proposed Alternative.⁹²⁰ As a former member of the air force and a disabled veteran of the Vietnam conflict, Mr. Roberts stressed the need for reliable power for our military.⁹²¹ Mr. Roberts pointed to the impacts that base closures have had in Hampton Roads and asserted:

For the security of our region and the security of our nation, we cannot allow our federal . . . institutions to be subjected to uncertain and unreliable power supplies that could lead to their realignment or relocation.⁹²²

Mr. Roberts opposed the Proposed Alternative Project based on the needs of the military.⁹²³

⁹¹⁰ Major, PW-Tr. at 242-43.

⁹¹¹ *Id.* at 243.

⁹¹² *Id.*

⁹¹³ Sutton, PW-Tr. at 245.

⁹¹⁴ *Id.*

⁹¹⁵ *Id.* at 245-46.

⁹¹⁶ *Id.* at 246.

⁹¹⁷ *Id.*

⁹¹⁸ *Id.* at 248.

⁹¹⁹ Roberts, PW-Tr. at 251.

⁹²⁰ *Id.*

⁹²¹ *Id.* at 251-52.

⁹²² *Id.* at 252.

⁹²³ *Id.* at 252-53.

On cross-examination, Mr. Roberts agreed that if the reliability issues were addressed by a hybrid or under-the-river route, he would support such an alternative.⁹²⁴

Natalie Joshi of Colonial Heritage in Williamsburg testified that she moved into her home in 2011 and faced preparation for Hurricane Irene.⁹²⁵ Ms. Joshi questioned the added risk of facing a catastrophic category 3 or 4 storm with transmission power lines near her home.⁹²⁶ Based on her 25 years of experience with the CIA as a case officer, Ms. Joshi warned that evidence can be misrepresented, distorted, and sometimes used to suppress the truth.⁹²⁷ Ms. Joshi also acknowledged that passion should also be taken into consideration.⁹²⁸ Ms. Joshi urged the Commission to use wisdom to make its decision:

[W]hen the [C]ommission makes its decision, please weigh the evidence. Think about the passion of the people, but also make the decisions using Godly wisdom, because ultimately it's wisdom and looking down the road to find out what the consequences will be, but let's use wisdom when we make our decision.⁹²⁹

Elizabeth Kostelny of Richmond contended that the Commission does not face a simple choice between the Proposed Project and the Proposed Alternative Project, but must find a means to ensure that the valued assets of the Commonwealth are protected while ensuring that the electric power is delivered to the Hampton Roads and Northern Neck regions.⁹³⁰ Ms. Kostelny contended that in the past the Commission has directed Dominion Virginia Power "to bury lines, develop solar resources and explore alternative options, even when these options will incur greater expense to the consumer or require new technology and engineering."⁹³¹ In this case, Ms. Kostelny argued that "the real alternative is including an underwater crossing of the James."⁹³²

Dominion Virginia Power's Rebuttal Testimony

On March 14, 2013, Dominion Virginia Power filed the rebuttal testimony of the following fifteen witnesses: Scot C. Hathaway; Peter Nedwick; Steven R. Herling, vice president of planning for PJM; Mark S. Allen, manager, electric transmission line engineering for the Company; Walter R. Thomasson, III, engineer III, electric transmission line engineering for Dominion Technical Solutions, Inc.; Pamela Faggert, vice president and chief environmental officer of Dominion Resources Services, Inc. ("Services"); Glenn A. Kelly, director of generation system planning for the Company; Kurt W. Swanson, project director-regulation for

⁹²⁴ *Id.* at 254.

⁹²⁵ Joshi, PW-Tr. at 255.

⁹²⁶ *Id.* at 256.

⁹²⁷ *Id.* at 257.

⁹²⁸ *Id.* at 257-58.

⁹²⁹ *Id.* at 258.

⁹³⁰ Kostelny, PW-Tr. at 260-61.

⁹³¹ *Id.* at 263.

⁹³² *Id.*

the Company; Elizabeth P. Harper; Edward Twiss, North American operations manager for Truescape Limited (“Truescape”); Douglas J. Lake; Marvin Wolverton, emeritus associate professor, College of Business Administration, Department of Finance, Insurance and Real Estate, Washington State University; Cathy Taylor, director, electric environmental services for the Company; Michael Brucato, supervisor for the forestry section of the electric transmission business unit of the Company; and Linda S. Erdreich, senior managing scientist in the Health Sciences Center for Epidemiology, Biostatistics, and Computational Biology at Exponent, Inc. (“Exponent”). A summary of the prefiled rebuttal testimony of each witness is presented below.

Scot C. Hathaway testified that the Company has completed all of the additional studies directed in the Hearing Examiner’s Ruling dated January 30, 2013 (“*January 30 Ruling*”). Mr. Hathaway reported that the results of these additional studies show that the Proposed Project “is still the most reliable, responsible and reasonable solution for our customers.”⁹³³ More specifically, Mr. Hathaway maintained:

The [Proposed] Project optimally maintains and protects the integrity and reliability of the transmission system and its construction has been approved in [PJM’s] 2012 [RTEP], which has identified the need for the construction of the [P]roposed Project by the summer of 2015 to relieve violations of mandatory NERC Reliability Standards.⁹³⁴

Mr. Hathaway agreed with the findings of Staff witness Chiles that confirmed the need for the Proposed Project and that there are no viable 230 kV alternatives.⁹³⁵ Mr. Hathaway affirmed that Dominion Virginia Power analyzed whether a 230 kV alternative could address the reliability violations identified in the North Hampton Roads Load Area.⁹³⁶ Mr. Hathaway testified that the Proposed Project remains the most reliable, responsible, and reasonable solution – both now and in the future.⁹³⁷ Furthermore, Mr. Hathaway estimated that the 230 kV alternatives plus generation options, and the stand-alone generation option would cost between three and seven times the cost of the Proposed Project.⁹³⁸

Mr. Hathaway agreed with Staff witness McCoy’s testimony that the Proposed Project area cannot easily absorb a new transmission line.⁹³⁹ Mr. Hathaway maintained that Mr. McCoy’s opinion reinforces the Company’s proposal to construct a 500 kV transmission line, as opposed to a 230 kV transmission line, because the 230 kV option “would require the addition of numerous other facilities”⁹⁴⁰ Mr. Hathaway highlighted Mr. McCoy’s recommendation for approval of the Company’s proposed route for the Proposed Project.⁹⁴¹

⁹³³ Exhibit No. 130, at 3.

⁹³⁴ *Id.*

⁹³⁵ *Id.* at 5.

⁹³⁶ *Id.* at 6.

⁹³⁷ *Id.* at 6-7.

⁹³⁸ *Id.* at 7.

⁹³⁹ *Id.* at 9.

⁹⁴⁰ *Id.*

⁹⁴¹ *Id.* at 12-13.

Mr. Hathaway highlighted the importance for the Commission to act on the Application by October 2013.⁹⁴² Mr. Hathaway disagreed with Mr. McCoy's suggestion that the Company could seek an extension for the Mercury and Air Toxics Standards ("MATS") compliance.⁹⁴³ Mr. Hathaway took the position that the proposed Skiffes Creek Switching Station is included within the definition of "transmission line" and is preempted from local zoning requirements.⁹⁴⁴ Finally, Mr. Hathaway confirmed that the Company conducted a rate impact analysis as requested by the Hearing Examiner on January 10, 2013.⁹⁴⁵

Peter Nedwick noted that Staff witness Chiles verified the Company's power flow studies and that Mr. Chiles found that the Proposed Project adequately addressed the identified NERC reliability violations.⁹⁴⁶

Mr. Nedwick reported that based on the 2013 PJM Load Forecast, in the summer of 2015, under normal conditions the North Hampton Roads Load Area will import 86.6% of its capacity from west of Richmond, and in summer of 2015, under critical system conditions, this area will import 98% of its capacity.⁹⁴⁷ By the summer of 2021, under normal conditions the North Hampton Roads Areas will import 87% of its capacity from west of Richmond, and under critical system conditions this area will import 98% of its capacity.⁹⁴⁸ Mr. Nedwick maintained that the capacity needs of the North Hampton Roads Load Area cannot be met by 230 kV circuits from the South Hampton Roads Area because that area is also capacity deficient, as the South Hampton Roads Load Area in the summer of 2015 will import 52% of its capacity under normal conditions and 75% of its capacity under critical system conditions.⁹⁴⁹ Likewise, in the summer of 2021, the South Hampton Roads Area will import 54.6% of its capacity under normal conditions and 76.6% of its capacity under critical system conditions.⁹⁵⁰

Mr. Nedwick outlined the additional studies Dominion Virginia Power conducted based on the *January 30 Ruling* to include the following alternatives:

- Base Case;
- Proposed Project;
- Alternative A – Single-circuit 230 kV hybrid line (crossing under the James River);
- Alternative B – Double-circuit 230 kV hybrid line (crossing under the James River); and

⁹⁴² *Id.* at 13-14.

⁹⁴³ *Id.* at 14.

⁹⁴⁴ *Id.* at 14-15.

⁹⁴⁵ *Id.* at 15.

⁹⁴⁶ Exhibit No. 87, at 5.

⁹⁴⁷ *Id.* 6-7.

⁹⁴⁸ *Id.* at 7.

⁹⁴⁹ *Id.* at 6-7.

⁹⁵⁰ *Id.* at 7.

- Alternative C – Rebuild and reconfiguration of existing 230 kV Lines #214 and #263 crossing above the James River between Isle of Wight County and Newport News.⁹⁵¹

Mr. Nedwick confirmed that for the Base Case, Dominion Virginia Power used the 2013 PJM Load Forecast, included all announced retirements of generation at Yorktown and Chesapeake Generating Stations, and certain transmission “Pre-Projects” approved by PJM.⁹⁵² Mr. Nedwick provided a matrix, discussion, and results for each of the additional studies.⁹⁵³ A summary of the studies and their results are provided below:

Transmission Only Studies:

Study No. 1 – For 2015, Base Case with no critical system conditions – resulted in 0 – NERC TPL A violations; 39 – NERC TPL B violations; 350 NERC TPL C violations; and 21 NERC TPL D violations;⁹⁵⁴

Study No. 2 – For 2015, Base Case with the critical system condition of Surry Unit No. 2 off-line – resulted in 0 – NERC TPL A violations; and 62 – NERC TPL B violations;⁹⁵⁵

Study No. 3 – For 2015, Base Case plus the Proposed Project with no critical system conditions – resulted in 0 – NERC TPL A violations; 0 – NERC TPL B violations; 0 NERC TPL C violations; and 0 NERC TPL D violations;⁹⁵⁶

Study No. 4 – For 2015, Base Case plus the Proposed Project with the critical system condition of Surry Unit No. 2 off-line – resulted in 0 – NERC TPL A violations; and 0 – NERC TPL B violations;⁹⁵⁷

Study No. 5 – For 2015, Base Case with the critical system condition of Surry Unit No. 1 off-line – resulted in 1 – NERC TPL A violation; and 93 – NERC TPL B violations;⁹⁵⁸

Study No. 6A – For 2015, Base Case plus Alternative A with no critical system conditions – resulted in 0 – NERC TPL A violations; 0 – NERC TPL B violations; 9 NERC TPL C violations; and 3 NERC TPL D violations;⁹⁵⁹

⁹⁵¹ *Id.* at 8-9; Attached Rebuttal Schedule 2.

⁹⁵² *Id.* at 10.

⁹⁵³ *Id.* at Attached Rebuttal Schedule 2; Exhibit No. 90.

⁹⁵⁴ *Id.*; *Id.* at 14.

⁹⁵⁵ *Id.*; *Id.*

⁹⁵⁶ *Id.*; *Id.* at 15.

⁹⁵⁷ *Id.*; *Id.*

⁹⁵⁸ *Id.*; *Id.* at 14.

⁹⁵⁹ *Id.*; *Id.* at 16.

Study No. 6B – For 2015, Base Case plus Alternative B with no critical system conditions – resulted in 0 – NERC TPL A violations; 1 – NERC TPL B violation; 4 NERC TPL C violations; and 0 NERC TPL D violations;⁹⁶⁰

Study No. 6C – For 2015, Base Case plus Alternative C with no critical system conditions – resulted in 0 – NERC TPL A violations; 5 – NERC TPL B violations; 122 NERC TPL C violations; and 8 NERC TPL D violations;⁹⁶¹

Study No. 7A – For 2015, Base Case plus Alternative A with critical system condition of Surry Unit No. 1 off-line – resulted in 0 – NERC TPL A violations; and 3 – NERC TPL B violations;⁹⁶²

Study No. 7B – For 2015, Base Case plus Alternative B with critical system condition of Surry Unit No. 1 off-line – resulted in 0 – NERC TPL A violations; and 2 – NERC TPL B violations;⁹⁶³

Study No. 7C – For 2015, Base Case plus Alternative C with critical system condition of Surry Unit No. 1 off-line – resulted in 0 – NERC TPL A violations; and 70 – NERC TPL B violations;⁹⁶⁴

Study No. 8 – For 2021, Base Case with no critical system conditions – resulted in 0 – NERC TPL A violations; 55 – NERC TPL B violations; 559 NERC TPL C violations; and 43 NERC TPL D violations;⁹⁶⁵

Study No. 9 – For 2021, Base Case with the critical system condition of Surry Unit No. 2 off-line – resulted in 0 – NERC TPL A violations; and 49 – NERC TPL B violations;⁹⁶⁶

Study No. 10 – For 2021, Base Case plus the Proposed Project with no critical system conditions – resulted in 0 – NERC TPL A violations; 0 – NERC TPL B violations; 2 NERC TPL C violations; and 0 NERC TPL D violations;⁹⁶⁷

Study No. 11 – For 2021, Base Case plus the Proposed Project with the critical system condition of Surry Unit No. 2 off-line – resulted in 0 – NERC TPL A violations; and 0 – NERC TPL B violations;⁹⁶⁸

⁹⁶⁰ *Id.*; *Id.* at 17.

⁹⁶¹ *Id.*; *Id.* at 18.

⁹⁶² *Id.*; *Id.* at 16.

⁹⁶³ *Id.*; *Id.* at 17.

⁹⁶⁴ *Id.*; *Id.* at 18.

⁹⁶⁵ *Id.*; *Id.* at 14.

⁹⁶⁶ *Id.*; *Id.*

⁹⁶⁷ *Id.*; *Id.* at 15.

⁹⁶⁸ *Id.*; *Id.*

Study No. 12 – For 2021, Base Case with the critical system condition of Surry Unit No. 1 off-line – resulted in 0 – NERC TPL A violations; and 184 – NERC TPL B violations;⁹⁶⁹

Study No. 13A – For 2021, Base Case plus Alternative A with no critical system conditions – resulted in 0 – NERC TPL A violations; 9 – NERC TPL B violations; 113 NERC TPL C violations; and 7 NERC TPL D violations;⁹⁷⁰

Study No. 13B – For 2021, Base Case plus Alternative B with no critical system conditions – resulted in 0 – NERC TPL A violations; 1 – NERC TPL B violation; 12 NERC TPL C violations; and 0 NERC TPL D violations;⁹⁷¹

Study No. 13C – For 2021, Base Case plus Alternative C with no critical system conditions – resulted in 0 – NERC TPL A violations; 12 – NERC TPL B violations; 182 NERC TPL C violations; and 13 NERC TPL D violations;⁹⁷²

Study No. 14A – For 2021, Base Case plus Alternative A with critical system condition of Surry Unit No. 1 off-line – resulted in 0 – NERC TPL A violations; and 1 – NERC TPL B violation;⁹⁷³

Study No. 14B – For 2021, Base Case plus Alternative B with critical system condition of Surry Unit No. 1 off-line – resulted in 0 – NERC TPL A violations; and 0 – NERC TPL B violations;⁹⁷⁴

Study No. 14C – For 2021, Base Case plus Alternative C with critical system condition of Surry Unit No. 1 off-line – resulted in 0 – NERC TPL A violations; and 39 – NERC TPL B violations;⁹⁷⁵

230 kV Transmission and Additional Generation Studies:

Study No. 15 – For 2015, Base Case plus the minimum generation to meet reliability criteria with no critical system conditions;

Study No. 16 – For 2015, Base Case plus the minimum generation to meet reliability criteria with critical system condition of Surry Unit No. 1 off-line – Studies 15 and 16 were reported to show the need for 620 MW, with the size of the smallest unit that must remain in service to be 295 MW;⁹⁷⁶

⁹⁶⁹ *Id.*; *Id.* at 14.

⁹⁷⁰ *Id.*; *Id.* at 16.

⁹⁷¹ *Id.*; *Id.* at 17.

⁹⁷² *Id.*; *Id.* at 18.

⁹⁷³ *Id.*; *Id.* at 16.

⁹⁷⁴ *Id.*; *Id.* at 17.

⁹⁷⁵ *Id.*; *Id.* at 18.

⁹⁷⁶ *Id.*; Exhibit No. 87, at Attached Rebuttal Schedule 3, at 3; Exhibit No. 90, at 23.

- Study No. 17A – For 2015, Base Case plus Alternative A plus the minimum generation to meet reliability criteria with no critical system conditions;
- Study No. 17B – For 2015, Base Case plus Alternative B plus the minimum generation to meet reliability criteria with no critical system conditions;
- Study No. 17C – For 2015, Base Case plus Alternative C plus the minimum generation to meet reliability criteria with no critical system conditions;
- Study No. 18A – For 2015, Base Case plus Alternative A plus the minimum generation to meet reliability criteria with critical system condition of Surry Unit No. 1 off-line – Studies 17A and 18A were reported to show the need for 1,008 MW, with the size of the smallest unit that must remain in service to be 0 MW;⁹⁷⁷
- Study No. 18B – For 2015, Base Case plus Alternative B plus the minimum generation to meet reliability criteria with critical system condition of Surry Unit No. 1 off-line – Studies 17B and 18B were reported to show the need for 159 MW, with the size of the smallest unit that must remain in service to be 0 MW;⁹⁷⁸
- Study No. 18C – For 2015, Base Case plus Alternative C plus the minimum generation to meet reliability criteria with critical system condition of Surry Unit No. 1 off-line – Studies 17C and 18C were reported to show the need for 552 MW, with the size of the smallest unit that must remain in service to be 56 MW;⁹⁷⁹
- Study No. 19 – For 2021, Base Case plus the minimum generation to meet reliability criteria with no critical system conditions;
- Study No. 20 – For 2021, Base Case plus the minimum generation to meet reliability criteria with critical system condition of Surry Unit No. 1 off-line – Studies 19 and 20 were reported to show the need for 618 MW, with the size of the smallest unit that must remain in service to be 295 MW;⁹⁸⁰
- Study No. 21A – For 2021, Base Case plus Alternative A plus the minimum generation to meet reliability criteria with no critical system conditions;
- Study No. 21B – For 2021, Base Case plus Alternative B plus the minimum generation to meet reliability criteria with no critical system conditions;
- Study No. 21C – For 2021, Base Case plus Alternative C plus the minimum generation to meet reliability criteria with no critical system conditions;

⁹⁷⁷ *Id.*; *Id.*; *Id.* at 20.

⁹⁷⁸ *Id.*; *Id.*; *Id.* at 21.

⁹⁷⁹ *Id.*; *Id.*; *Id.* at 22.

⁹⁸⁰ *Id.*; *Id.*; *Id.* at 23.

Study No. 22A – For 2021, Base Case plus Alternative A plus the minimum generation to meet reliability criteria with critical system condition of Surry Unit No. 1 off-line – Studies 21A and 22A were reported to show the need for 1,449 MW, with the size of the smallest unit that must remain in service to be 87 MW;⁹⁸¹

Study No. 22B – For 2021, Base Case plus Alternative B plus the minimum generation to meet reliability criteria with critical system condition of Surry Unit No. 1 off-line – Studies 21B and 22B were reported to show the need for 551 MW, with the size of the smallest unit that must remain in service to be 27 MW;⁹⁸²

Study No. 22C – For 2021, Base Case plus Alternative C plus the minimum generation to meet reliability criteria with critical system condition of Surry Unit No. 1 off-line – Studies 21C and 22C were reported to show the need for 505 MW, with the size of the smallest unit that must remain in service to be 139 MW;⁹⁸³

The Proposed Project and Retirements for 2021 Studies:

Study No. 23 – For 2021, Base Case with no retirements of generation at Yorktown and Chesapeake Generating Stations, with no critical system conditions – resulted in 0 – NERC TPL A violations; 0 – NERC TPL B violations; 2 NERC TPL C violations; and 11 NERC TPL D violations;⁹⁸⁴

Study No. 24 – For 2021, Base Case with no retirements of generation at Yorktown and Chesapeake Generating Stations, with critical system condition of Surry Unit No. 2 off-line – resulted in 0 – NERC TPL A violations; and 4 – NERC TPL B violations;⁹⁸⁵

Study No. 25 – For 2021, Base Case with no retirements of generation at Yorktown and Chesapeake Generating Stations, plus Proposed Project with no critical system conditions – resulted in 0 – NERC TPL A violations; 0 – NERC TPL B violations; 0 NERC TPL C violations; and 0 NERC TPL D violations;⁹⁸⁶ and

Study No. 26 – For 2021, Base Case with no retirements of generation at Yorktown and Chesapeake Generating Stations, plus Proposed Project with critical system condition of Surry Unit No. 2 off-line – resulted in 0 – NERC TPL A violations; and 0 – NERC TPL B violations.⁹⁸⁷

⁹⁸¹ *Id.*; *Id.*; *Id.* at 20.

⁹⁸² *Id.*; *Id.*; *Id.* at 21.

⁹⁸³ *Id.*; *Id.*; *Id.* at 22.

⁹⁸⁴ Exhibit No. 87, Attached Rebuttal Schedule 2; Exhibit No. 90, at 24.

⁹⁸⁵ *Id.*; *Id.*

⁹⁸⁶ *Id.*; *Id.*

⁹⁸⁷ *Id.*; *Id.*

Mr. Nedwick testified that the PJM 2013 Load Forecast reduced summer forecasts for the North Hampton Roads Load Area for 2015 and 2021, by 42 MW and 40 MW, respectively.⁹⁸⁸

Mr. Nedwick maintained that the studies outlined above show that for 2015, the Company's Proposed Project resolves all identified NERC Reliability Violations and none of the 230 kV Alternatives is able to resolve all NERC Reliability Violations without additional transmission or generation.⁹⁸⁹ Mr. Nedwick contended that for 2021, the above studies support the Proposed Project which, with a minor upgrade of a 115 kV line continues to resolve all of the identified NERC Reliability Violations.⁹⁹⁰ Mr. Nedwick asserted that all of the other alternatives "would require much more extensive and costly facilities to achieve the same results and could not be achieved by the 2015 need date."⁹⁹¹ The table below summarizes the cost of the various alternatives as presented by Mr. Nedwick:⁹⁹²

Alternatives	Cost	2015 Cost for Full Compliance	2021 Cost of Full Compliance
Proposed Project	155.4	155.4	172.7
Proposed Alternative Project	213.2	213.2	230.5
Alternative A 230 kV	273.8	488.6	515.3
Alternative A 230 kV plus Generation	623.8	623.8	1,200.8
Alternative B 230 kV	440.4	488.6	515.3
Alternative B 230 kV plus Generation	540.4	540.4	1,117.4
Alternative C 230 kV	144.8	226.9	408.8
Alternative C 230 kV plus Generation	494.8	494.8	1,071.8
Stand-Alone Generation	633.0	633.0	1,345.0

In addition to the additional cost of the various 230 kV Alternatives, Mr. Nedwick advised that under currently effective cost allocation methodology, 12.28% of the cost of a 500 kV transmission line is allocated to Dominion Virginia Power's customers, while 99.84% of the cost of a new 230 kV transmission line is allocated to the Company's customers.⁹⁹³

Mr. Nedwick examined the difference between High Pressure Fluid Filled Cable ("HPFF Cable") and Cross-Linked Polyethylene Cable ("XLPE Cable") and maintained that because the XLPE Cable required one fewer reactor banks, using XLPE Cable would save \$6 million.⁹⁹⁴

Mr. Nedwick emphasized that results of the studies summarized above are consistent with earlier studies completed over the prior two years.⁹⁹⁵

⁹⁸⁸ Exhibit No. 87, at 11-12.

⁹⁸⁹ *Id.* at 12.

⁹⁹⁰ *Id.*

⁹⁹¹ *Id.*

⁹⁹² *Id.* at 13-14; Exhibit No. 91.

⁹⁹³ *Id.* at 16.

⁹⁹⁴ *Id.* at 16-18.

⁹⁹⁵ *Id.* at 20-23.

Mr. Nedwick addressed concerns raised by Staff witness Chiles in his review of the power flow cases included in the Application.⁹⁹⁶ Mr. Nedwick noted that before filing its Application, the Company considered several double-circuit 230 kV lines, including both overhead and underground options.⁹⁹⁷

Finally, Mr. Nedwick stated that “the Skiffes Station is and should be considered a ‘transmission line’ for the purposes of . . . [§ 56-46.1 F of the Code].”⁹⁹⁸

Steven R. Herling responded to the testimony of James City County witnesses Whittier and Middaugh regarding (i) PJM’s analysis of alternatives to the Proposed Project, (ii) the role of demand-side management (“DSM”) in load forecasting, and (iii) the need for a 500 kV transmission line in the North Hampton Roads Area.⁹⁹⁹

Mr. Herling provided background information on PJM and PJM’s RTEP.¹⁰⁰⁰ Mr. Herling testified that the RTEP will direct PJM’s transmission owning members to address reliability needs through transmission projects.¹⁰⁰¹ Nonetheless, Mr. Herling advised that “the RTEP permits other resource providers, including generators, demand response providers and merchant transmission developers, the opportunity to address identified system needs in a manner that might delay or even obviate the transmission solution first identified in the RTEP.”¹⁰⁰²

Mr. Herling testified that PJM considered non-transmission solutions in its planning process including market-driven additions of new generation capacity, DSM, and energy efficiency resources.¹⁰⁰³ Mr. Herling affirmed that PJM’s RTEP includes generation and merchant transmission proposals that are in the interconnection queue process, and reflects DSM and energy efficiency resources that have bid into and cleared PJM’s Reliability Pricing Model (“RPM”) auctions.¹⁰⁰⁴ Mr. Herling confirmed that for the North Hampton Roads Load Area there are currently no generation projects under development and during the 2012 summer peak period, only 13.3 MW of demand resources were available to PJM.¹⁰⁰⁵ Mr. Herling stated that for the 2015/16 delivery year, 1,333 MW of DSM resources located in the Dominion Zone cleared PJM’s RPM.¹⁰⁰⁶

Mr. Herling acknowledged that PJM does not have the power to direct new generation or to compel DSM efforts.¹⁰⁰⁷ Mr. Herling stated that as an RTO, “PJM can only direct the reinforcement of transmission facilities to address [violations of mandatory NERC Reliability

⁹⁹⁶ *Id.* at 24.

⁹⁹⁷ *Id.* at 28.

⁹⁹⁸ *Id.* at 36.

⁹⁹⁹ Exhibit No. 92, at 3.

¹⁰⁰⁰ *Id.* at 4-6.

¹⁰⁰¹ *Id.* at 5.

¹⁰⁰² *Id.*

¹⁰⁰³ *Id.* at 6.

¹⁰⁰⁴ *Id.* at 7.

¹⁰⁰⁵ *Id.*

¹⁰⁰⁶ *Id.* at 7-8.

¹⁰⁰⁷ *Id.* at 8.

Standards], either through the modification of existing transmission facilities . . . or the construction of new transmission facilities.”¹⁰⁰⁸

Mr. Herling testified that PJM’s load forecasting models are issued annually and are designed to produce estimates of the monthly unrestricted peak loads of each of the 20 PJM zones, selected Locational Deliverability Areas, and total PJM.¹⁰⁰⁹ Mr. Herling stated that the models are driven by calendar effects, anticipated economic conditions, and weather conditions.¹⁰¹⁰ Mr. Herling confirmed that adjustments for DSM are made and shown in the PJM load forecast report based on actual DSM resources that have cleared the RPM auctions.¹⁰¹¹ Mr. Herling affirmed that DSM impacts for the first three years of the load forecast are based on amounts that have been committed in RPM auctions for those years, and after the third year, the load forecast assumes the amount in the third year will remain constant into the future.¹⁰¹² Mr. Herling advised that PJM’s load forecasts are only at the zone level and that companies such as Dominion Virginia Power develop load studies down to the level of load buses.¹⁰¹³

Mr. Herling pointed out that in the PJM’s RTEP process there is uncertainty regarding future generation as approximately 85% of proposed generation has dropped out of the interconnection queue.¹⁰¹⁴ Mr. Herling noted that in this case, there is no generation in progress.¹⁰¹⁵ As for demand response resources, Mr. Herling maintained that these resources are not well-suited to address unplanned transmission outages.¹⁰¹⁶ Indeed, Mr. Herling questioned the viability of demand response as a long-term solution in eastern PJM based on a recent decline in resources and an increased level of such resources “buying out” their commitments.¹⁰¹⁷

Mr. Herling advised that PJM considered non-incumbent transmission proposals alternatives to utility-built RTEP projects.¹⁰¹⁸ Mr. Herling confirmed that LS Power made four different proposals as alternatives to Dominion Virginia Power’s Proposed Project.¹⁰¹⁹ Mr. Herling testified that none of the LS Power proposals resolved all of the reliability problems.¹⁰²⁰ Mr. Herling stated that at their May 2012 meeting, the PJM Board approved Dominion Virginia Power’s Proposed Project “based on operational considerations and its performance with respect to NERC Planning Standards, cost considerations, and the performance of the project in sensitivity analyses related to the possibility of further generation retirements at Yorktown.”¹⁰²¹ In addition, Mr. Herling noted that LS Power could have challenged PJM’s selection of the

¹⁰⁰⁸ *Id.* at 8-9.

¹⁰⁰⁹ *Id.* at 10.

¹⁰¹⁰ *Id.* at 11.

¹⁰¹¹ *Id.*

¹⁰¹² *Id.* at 12.

¹⁰¹³ *Id.*

¹⁰¹⁴ *Id.*

¹⁰¹⁵ *Id.*

¹⁰¹⁶ *Id.* at 13.

¹⁰¹⁷ *Id.* at 14.

¹⁰¹⁸ *Id.* at 16.

¹⁰¹⁹ *Id.* at 18-19.

¹⁰²⁰ *Id.* at 19-20.

¹⁰²¹ *Id.* at 20-21.

Proposed Project pursuant to the PJM Operating Agreement, or by filing a protest at FERC.¹⁰²² Mr. Herling affirmed that LS Power took no action.¹⁰²³

Mr. Herling agreed with other Company witnesses that a new 500 kV transmission line is important for the long-term reliability of service to customers in the area.¹⁰²⁴

Mr. Herling acknowledged that additional generation in the North Hampton Roads Load Area could potentially offset the need for the Proposed Project.¹⁰²⁵ However, Mr. Herling noted that the PJM interconnection queue contains no generation interconnection requests that would offset the need for the Proposed Project.¹⁰²⁶

Mr. Herling advised that if the Commission were to approve either the Proposed Alternative Project or one of the 230 kV Alternatives, there would be delay that could prevent completion of an alternative project in time to meet the identified need date.¹⁰²⁷

Mark S. Allen responded to proponents of the single- and double-circuit 230 kV underground alternatives, and provided an estimate of the cost of constructing additional overhead transmission facilities required to resolve violations of the NERC Reliability Standards for each of the 230 kV alternatives.¹⁰²⁸

Mr. Allen testified that underground transmission facilities represent 1.27% of Dominion Virginia Power's total transmission system.¹⁰²⁹ Mr. Allen maintained that the Company constructed underground transmission facilities only when: (i) no feasible, cost-effective overhead alternative was available; (ii) the line was built for a customer who requested underground service and paid for the construction; (iii) underground construction was required by Virginia law; or (iv) underground construction was approved by the Commission as a pilot project.¹⁰³⁰

Mr. Allen contended that when determining whether to build overhead or underground transmission power lines, Dominion Virginia Power considers the following four factors: reliability, time to construct, operability, and cost.¹⁰³¹ Among other things, Mr. Allen estimated that the minimum time to construct the facilities to fully resolve the 2015 NERC Reliability Violations is 60 months for 230 kV Alternatives A or B, and ten years for 230 kV Alternative C.¹⁰³²

¹⁰²² *Id.* at 21.

¹⁰²³ *Id.*

¹⁰²⁴ *Id.* at 22.

¹⁰²⁵ *Id.*

¹⁰²⁶ *Id.*

¹⁰²⁷ *Id.* at 24.

¹⁰²⁸ Exhibit No. 93, at 3.

¹⁰²⁹ *Id.* at 6.

¹⁰³⁰ *Id.* at 7-8.

¹⁰³¹ *Id.* at 9.

¹⁰³² *Id.* at 9-10.

Mr. Allen stressed that the greater complexity and time required to find and repair an outage on an underground transmission line would have a detrimental effect on the reliability of electric service.¹⁰³³ Moreover, Mr. Allen testified that with an overhead transmission line, after a fault occurs, breakers open to protect the line and may “reclose” in a fraction of a second if the line has not been damaged.¹⁰³⁴ Mr. Allen advised that such automatic “reclosing” is not permitted on underground transmission lines.¹⁰³⁵ Mr. Allen pointed out that underground lines are not immune to the weather and provided the example of a 230 kV line under the Elizabeth River that locked out in 2009 for a fault during Hurricane Ida due to salt contamination of the transition station.¹⁰³⁶ Mr. Allen also maintained that a river crossing in this case would result in a riverbed excavation of 36,000 cubic yards of sediment.¹⁰³⁷

Mr. Allen recommended against the use of any underground construction for the Proposed Project.¹⁰³⁸ Mr. Allen contended that underground construction would be less reliable, is not viable for a 500 kV line, is not cost-effective, and requires too long of a construction period.¹⁰³⁹

Mr. Allen testified that the Proposed Project does not qualify as a pilot program pursuant to HB 1319.¹⁰⁴⁰ Mr. Allen maintained that it is not viable to construct a 500 kV line underground, and the cost to resolve the NERC Reliability Violations would exceed 2.5 times the cost of building the line overhead.¹⁰⁴¹

Mr. Allen provided the estimated cost for constructing each of the 230 kV alternatives and the cost of the additional transmission projects required for full compliance with NERC Reliability Standards for both 2015 and 2021.¹⁰⁴² These costs are summarized in the table below:

¹⁰³³ *Id.* at 11-13.

¹⁰³⁴ *Id.* at 13.

¹⁰³⁵ *Id.* at 14.

¹⁰³⁶ *Id.*

¹⁰³⁷ *Id.* at 15.

¹⁰³⁸ *Id.*

¹⁰³⁹ *Id.* at 16-18.

¹⁰⁴⁰ *Id.* at 19.

¹⁰⁴¹ *Id.* at 19-20.

¹⁰⁴² *Id.* at 20-22; Attached Rebuttal 4.

	Alternative A (Millions)	Alternative B (Millions)	Alternative C (Millions)
Surry-Skiffes Creek Line	\$187.5	\$343.8	
Skiffes Creek – Whealton Line	46.4	46.4	
Skiffes Creek Switching Station	23.5	23.8	
Surry Switching Station	14.0	23.0	
Whealton Substation	2.0	2.0	
Lanexa & Yorktown Substation	<u>0.4</u>	<u>0.4</u>	
Wreck & Rebuild 263 Line			\$26.8
Wreck & Rebuild 214 Line			61.3
New Single Circuit River Crossing			37.5
Wreck & Rebuild 261 Line			11.2
Temporary Line			6.4
Capacitor Bank at Peninsula Sub			<u>1.6</u>
Total	\$273.8	\$440.4	\$144.8
Full Compliance for 2015			
Wreck & Rebuild 209 Line	\$27.5	\$27.5	
Temporary Line (285/209)	0.7	0.7	
3 rd 500/230 Transformer at Suffok Sub	20.0	<u>20.0</u>	\$20.0
Build 2 nd 230 kV Surry-Skiffes Ln	<u>166.6</u>		
Wreck & Rebuild 2113 Line			36.3
Wreck & Rebuild 34 Line			17.3
Wreck & Rebuild 234 Line			0.5
R/P Transformer at Lanexa			<u>8.0</u>
Total	\$214.8	\$48.2	82.1
Additional Full Compliance for 2021			
230/115 Transformer at Whealton	\$8.0	\$8.0	\$8.0
Wreck & Rebuild 34 Line	<u>18.7</u>	<u>18.7</u>	
Wreck & Rebuild 209 Line			35.6
Wreck & Rebuild 209 & 285			11.4
Wreck & Rebuild 2102			59.7
Reconductor 2102			1.9
Wreck & Rebuild 99 Line			17.3
Shellbank 230/115 Transformer			8.0
SVC at Skiffes Creek location			<u>40.0</u>
Total	\$26.7	\$26.7	\$181.9
Total Cost	\$515.3	\$515.3	\$408.8

Mr. Allen noted that the above costs do not include the estimated \$652 million in additional costs associated with the postponement of the retirement of Yorktown Units 1 and 2.¹⁰⁴³

¹⁰⁴³ *Id.* at 22.

Mr. Allen disagreed with BASF witness Burrows's assessment that using the "Variation 1 route would be a disaster."¹⁰⁴⁴ Mr. Allen corrected Mr. Burrows and pointed out that Dominion Virginia Power plans to use a "minimally invasive" pipe pile foundation and not Drilled Foundations on the BASF property.¹⁰⁴⁵ Mr. Allen also disagreed with Mr. Burrows's contention that it will be difficult to span the bluff at the river and noted that Dominion Virginia Power will not locate any towers in the capped landfill in Area 4C of the BASF property.¹⁰⁴⁶

Mr. Allen responded to the eight procedures that Mr. Burrows asked to be required for the construction of an overhead route on BASF property as follows:¹⁰⁴⁷

1. Avoid clearing of roadways – Mr. Allen stated that Dominion Virginia Power will use existing roadways when practical. Preliminary route reviews indicate that all right-of-way and structure locations can be accessed from an existing roadway, driveway, or by using a short ingress and egress route.
2. Limit construction traffic and equipment – Mr. Allen agreed to this request.
3. Coordinate construction activities with BASF – Mr. Allen agreed to work with BASF to develop construction practices within appropriate bounds provided BASF requirements do not impede Dominion Virginia Power's construction schedule, cause excessive cost, and do not conflict with established safety and construction methods used by Dominion Virginia Power and its contractors.
4. Minimize disturbance of vegetation – Mr. Allen stated that construction of the line will be done within the right-of-way, ingress and egress locations, and set up locations for the wire pulling activity.
5. Avoid construction activities in proximity to rivers and creeks if possible and otherwise undertake with utmost care – Mr. Allen agreed to this request.
6. Construction in proximity to remediation and environmentally sensitive areas should be carefully coordinated with BASF, DEQ, and EPA. – Mr. Allen agreed to this request.
7. Tower locations should minimize visibility – Mr. Allen stated that "where possible, Dominion Virginia Power will make every effort to retain existing vegetation that will not interfere with the usage and reliable operation of the transmission line.
8. Tower design and materials and conductor type should mitigate visibility – Mr. Allen testified that such issues will be decided by the Commission and are part of Dominion Virginia Power's Application.

¹⁰⁴⁴ *Id.* at 23.

¹⁰⁴⁵ *Id.*

¹⁰⁴⁶ *Id.* at 23-24.

¹⁰⁴⁷ *Id.* at 24-26.

Walter R. Thomasson, III, provided design and cost estimates for the 230 kV Alternatives A and B, and addressed statements by James City County witness Whittier concerning the Company's estimated cost to construct a 230 kV hybrid underground Surry to Skiffes Creek line and estimates provided to PJM by LS Power.¹⁰⁴⁸

Mr. Thomasson testified that Alternatives A and B would start their river crossings south of the existing pipelines in Surry County, cross the river in a straight line of approximately 4.0 miles, and use a HPFF cable system for the underground portion.¹⁰⁴⁹ Mr. Thomasson confirmed that for Alternative A, the river crossing would consist of three horizontal directional drills, through a required right-of-way width of 240 feet, with two sets of intermediate splicing platforms in three locations for a total of six platforms.¹⁰⁵⁰ Mr. Thomasson advised that for Alternative B, the river crossing would consist of six horizontal directional drills, through a required right-of-way width of 400 feet, with three sets of intermediate splicing platforms in three locations for a total of nine platforms.¹⁰⁵¹ In addition, Mr. Thomasson stated that Alternative A would require two fenced areas approximately 150 feet by 100 feet to house the transition stations and equipment, with Alternative B requiring one such area to be 200 feet by 200 feet.¹⁰⁵²

Mr. Thomasson supported the use of HPFF cable rather than XLPE cable based on the Company's successful experience with HPFF cable, HPFF's longer expected life, and the relative ease of installation and replacement of HPFF cable.¹⁰⁵³

Mr. Thomasson estimated the cost of the line portion of Alternative A to be \$187.5 million, including \$154.6 for the underground portions, \$30.3 million for the overhead portions, and \$2.6 million for two transition stations.¹⁰⁵⁴ For Alternative B, Mr. Thomasson estimated the cost of the line portion to be \$343.8 million, including \$323.9 million for the underground portions, \$18.2 million for the overhead portions, and \$1.7 million for the transition station.¹⁰⁵⁵

Mr. Thomasson differentiated the estimated cost of Dominion Virginia Power's underground construction of the Surry-Skiffes Creek line from the estimates provided to PJM from LS Power by pointing out that Dominion Virginia Power is proposing double to four times the capacity of the LS Power proposal.¹⁰⁵⁶ Mr. Thomasson contended that on a cost per MVA of transfer capability basis, Dominion Virginia Power's estimate is lower than the estimate submitted by LS Power.¹⁰⁵⁷

¹⁰⁴⁸ Exhibit No. 102, at 2.

¹⁰⁴⁹ *Id.* at 4.

¹⁰⁵⁰ *Id.* at 5.

¹⁰⁵¹ *Id.* at 6.

¹⁰⁵² *Id.* at 7-8.

¹⁰⁵³ *Id.* at 8-10.

¹⁰⁵⁴ *Id.* at 11.

¹⁰⁵⁵ *Id.*

¹⁰⁵⁶ *Id.* at 13.

¹⁰⁵⁷ *Id.* at 15.

Pamela Faggert addressed statements made in the Environmental Regulations Review Report sponsored by Staff witness McCoy, and presented the environmental restrictions on the operation of Yorktown Unit 3.¹⁰⁵⁸

Ms. Faggert acknowledged that as noted by Mr. McCoy, pursuant to MATS it is possible to apply for a one-year extension of the three-year compliance period.¹⁰⁵⁹ However, Ms. Faggert asserted that if the Proposed Project is completed on time, the Company will not qualify for an extension.¹⁰⁶⁰ Ms. Faggert outlined the procedures, timing, and information required for an extension under MATS.¹⁰⁶¹

Ms. Faggert referred to Mr. McCoy's statement that CAIR "is currently being complied with and thus, would have no impact on the existing facilities," and advised that CAIR emission reductions will be achieved through a cap and trade system that will be implemented in two phases.¹⁰⁶² Ms. Faggert stated that Phase I of CAIR is currently in effect.¹⁰⁶³ However, when Phase II becomes effective starting in 2015, NO_x emissions must be reduced by 17%, and the SO₂ allowance surrender requirements will increase from the current 2-to-1 ratio to a 2.86-to-1 ratio.¹⁰⁶⁴

Ms. Faggert disagreed with Mr. McCoy's statement that "[u]nder the [NPDES] component of the Clean Water Act, cooling towers must have the best available technology to prevent or reduce their environmental impact."¹⁰⁶⁵ Ms. Faggert maintained that § 316(b) of the Clean Water Act requires that "the location, design, construction and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact," and "does not specify a particular best available technology, such as cooling towers."¹⁰⁶⁶ Ms. Faggert advised that the capital upgrades for Yorktown found in Attachment V of the MAE Environmental Report are to meet proposed rules expected to be required in 2021 and 2022.¹⁰⁶⁷

Ms. Faggert advised that if Yorktown Unit 3 is a "limited use unit," it must have an annual capacity factor of less than 8% of its maximum or nameplate heat input, whichever is greater, averaged over a 24-month block contiguous period commencing April 16, 2015.¹⁰⁶⁸

Glenn A. Kelly confirmed that the Company employed the Strategist model, a state-of-the-art portfolio optimization tool, to determine the lowest reasonable cost and most reliable plan

¹⁰⁵⁸ Exhibit No. 103, at 2.

¹⁰⁵⁹ *Id.* at 4.

¹⁰⁶⁰ *Id.*

¹⁰⁶¹ *Id.* at 6-10.

¹⁰⁶² *Id.* at 10-11.

¹⁰⁶³ *Id.* at 11.

¹⁰⁶⁴ *Id.*

¹⁰⁶⁵ *Id.* at 12.

¹⁰⁶⁶ *Id.*

¹⁰⁶⁷ *Id.*

¹⁰⁶⁸ *Id.* at 14.

to meet anticipated environmental regulations.¹⁰⁶⁹ Mr. Kelly outlined the unit retirements included in its recent integrated resource plans (“IRP”) as follows:¹⁰⁷⁰

IRP Plan	Planned Retirements	Planned Repower/Retrofits
2011 Plan	Yorktown Unit 1 – 2015 Chesapeake Units 1-2 – 2015 Chesapeake Units 3-4 – 2016	Bremo Units 3-4 – 2014 – coal to natural gas Yorktown Unit 2 – 2015 – coal to gas & oil Altavista – 2013 – coal to biomass Hopewell – 2013 – coal to biomass Southampton – 2013 – coal to biomass Yorktown Unit 3 – 2015 – retrofit Possum Point Unit 5 – 2015 – retrofit
December 2011 Update	Yorktown Unit 2 – 2015	
2012 Plan	Yorktown Units 1-2 – 2015 Chesapeake Units 1-4 – 2015	Bremo Units 3-4 – 2014 – coal to natural gas Altavista – 2013 – coal to biomass Hopewell – 2013 – coal to biomass Southampton – 2013 – coal to biomass Yorktown Unit 3 – 2018 – retrofit Possum Point Unit 5 – 2015 – retrofit

Mr. Kelly confirmed that to retrofit Yorktown Units 1 and 2 to comply with environmental regulations would require the installation of a Dry Scrubber, Baghouse, Selective Catalytic Reduction, Water Intake Screens, Variable Speed Drives, and Closed Cycle Cooling. Mr. Kelly stated that the estimated cost of retrofitting these units is extraordinarily sensitive, but noted that Staff witness Chiles reviewed these estimates and found them to be reasonable.¹⁰⁷¹

Mr. Kelly testified that the Company explored repowering some or all of the generating units with natural gas but found that there is not enough firm gas supply to support year-round operation of gas-fired generation at the Yorktown or Chesapeake units, and that such an expansion could not be completed until 2018.¹⁰⁷² Mr. Kelly affirmed that estimated costs to expand natural gas capacity to the area is extraordinarily sensitive, and was reviewed by Staff witness Chiles, who concluded that the cost of firm transport for natural gas would exceed the cost of the cheapest transmission alternative.¹⁰⁷³

Mr. Kelly noted that Yorktown Unit 3 is limited to an 8 percent capacity factor beginning in 2015, and that this unit is one of the most expensive units in the Company’s generation fleet to operate.¹⁰⁷⁴ Mr. Kelly estimated that on an average day, Yorktown Unit 3 would increase customer fuel costs by approximately \$2.5 million versus market purchases.¹⁰⁷⁵

¹⁰⁶⁹ Exhibit No. 110, at 5.

¹⁰⁷⁰ *Id.* at 6-7.

¹⁰⁷¹ *Id.* at 10-11; Exhibit No. 79, at 28.

¹⁰⁷² *Id.* at 12.

¹⁰⁷³ *Id.* at 12-14.

¹⁰⁷⁴ *Id.* at 15.

¹⁰⁷⁵ *Id.* at 15-16.

Mr. Kelly provided additional support and detail, including information deemed to be extraordinarily sensitive, for the generation cost estimates presented by Company witnesses Hathaway and Nedwick.¹⁰⁷⁶ Mr. Kelly maintained that the additional analyses conducted for this proceeding confirm and reinforce the results of the analyses conducted by Dominion Virginia Power for its 2011 and 2012 IRP Plans.¹⁰⁷⁷

Kurt W. Swanson provided estimated customer rate impacts of the Proposed Project, Proposed Alternative Project, and Alternative B, including the costs for the additional work needed to address all NERC violations in 2015.¹⁰⁷⁸ Mr. Swanson calculated that the monthly bill of a residential customer using 1,000 kWh per month would increase by the following amounts:

- Proposed Project - \$0.21;
- Proposed Alternative Project - \$0.22; and
- Alternative B - \$1.07.¹⁰⁷⁹

Elizabeth P. Harper addressed: (i) the DEQ Report; (ii) route selection; (iii) impacts of the Proposed Route; (iv) Skiffes Station; (v) underground routing options; (vi) existing James River Crossing Rebuild; and (vii) BASF Property.¹⁰⁸⁰

Ms. Harper confirmed that Dominion Virginia Power has no issues with the permit requirements provided in the DEQ Report.¹⁰⁸¹ As for the recommendations of specific agencies, Ms. Harper noted that agency recommendations for an underwater route are addressed by other Company rebuttal witnesses.¹⁰⁸² Ms. Harper affirmed that the Company will coordinate with DOF concerning the mitigation for loss of forest land, but asked for the opportunity to negotiate and possibly avoid mitigation depending upon the route that is selected.¹⁰⁸³ Ms. Harper advised that the proposed Skiffes Creek – Whealton 230 kV transmission line will be at the same height as the existing lines it will parallel, “so there will be no change in existing conditions.”¹⁰⁸⁴

Ms. Harper testified that the Proposed Route was chosen over the Proposed Alternative based on its shorter length, lesser overall impacts, and lower cost.¹⁰⁸⁵

Ms. Harper contended that the Proposed Project is routed through a section of the James River that is zoned for industrial use.¹⁰⁸⁶ Ms. Harper stated that “[o]f the 3.85 miles of the

¹⁰⁷⁶ *Id.* at 19-22.

¹⁰⁷⁷ *Id.* at 23.

¹⁰⁷⁸ Exhibit No. 116, at 2.

¹⁰⁷⁹ *Id.* at 4.

¹⁰⁸⁰ Exhibit No. 118, at 3-4.

¹⁰⁸¹ *Id.* at 4.

¹⁰⁸² *Id.*

¹⁰⁸³ *Id.*

¹⁰⁸⁴ *Id.*

¹⁰⁸⁵ *Id.* at 6-7.

[Proposed Route] on land, 3.33 miles is on land zoned for industrial use.”¹⁰⁸⁷ Ms. Harper maintained that comments by respondents and public witnesses on the visual impact of the Proposed Project on the James River, “understate, if they acknowledge at all, the existing military, industrial and recreational uses of the James River and its surrounding property in this location”¹⁰⁸⁸

As for the Skiffes Creek Switching Station site, Ms. Harper confirmed that the site is bordered by transmission lines on the western and southern sides, and CSX railroad tracks and Route 143 to its north.¹⁰⁸⁹ Ms. Harper advised that the site is also near: the Virginia Peninsula Regional Jail, Merrimac Juvenile Detention Center, a VDOT storage yard, and the Lee Hall Asphalt Plant.¹⁰⁹⁰ Ms. Harper acknowledged that the site is zoned Rural Residential, but contended that it is ideal for a switching location and offers a forested buffer between it and the surrounding residential areas.¹⁰⁹¹ Ms. Harper noted that Dominion Virginia Power has asked the Commission to approve Skiffes Creek Switching Station pursuant to § 56-46.1 and the Utilities Facilities Act as a “transmission line.”¹⁰⁹²

In regard to underground routing considerations, Ms. Harper testified that the James River has had a history of contamination from Kepone and PCBs, and that an underwater routing would create significant disturbance to the sediment.¹⁰⁹³ Mr. Harper also pointed out that an underground installation on the BASF property “could require special and costly measures due to contaminated groundwater”¹⁰⁹⁴

Ms. Harper maintained that the rebuild of the existing James River crossing of 230 kV Lines #263 and #214 would require additional right-of-way on both sides of the James River and would constitute a new project requiring a new application and new notice to Isle of Wight County and the City of Newport News.¹⁰⁹⁵ Ms. Harper asserted that Dominion Virginia Power “could not expect to receive approval from the Commission, obtain permits, engineer and order materials, and acquire right-of-way easements before the need date.”¹⁰⁹⁶

Ms. Harper testified that Dominion Virginia Power did not give the possible redevelopment of the BASF property “serious weight against impacts to existing uses.”¹⁰⁹⁷ Ms. Harper acknowledged that for route selection purposes, more weight was given to the existing gas lines, wetlands, airspace issues regarding Felker Airfield, Carter’s Grove, and the shortest

¹⁰⁸⁶ *Id.* at 8.

¹⁰⁸⁷ *Id.*

¹⁰⁸⁸ *Id.* at 12.

¹⁰⁸⁹ *Id.* at 17.

¹⁰⁹⁰ *Id.*

¹⁰⁹¹ *Id.*

¹⁰⁹² *Id.* at 18-20.

¹⁰⁹³ *Id.* at 21-22.

¹⁰⁹⁴ *Id.* at 22.

¹⁰⁹⁵ *Id.* at 23.

¹⁰⁹⁶ *Id.* at 24.

¹⁰⁹⁷ *Id.* at 27.

distance to the existing transmission line corridor serving the Dow Chemical Substation.¹⁰⁹⁸ Ms. Harper stated that the Company could not support James River Crossing Variation 3, which is favored by BASF, because of the uncertainty of acquiring a right-of-way from the Authority, and because of the additional visual impact to Carter's Grove, and the closer distance to Kingsmill.¹⁰⁹⁹

Edward Twiss provided the visual simulations used in routing studies prepared for Dominion Virginia Power and provided a revised visual simulation from Carter's Grove.¹¹⁰⁰ Mr. Twiss testified that his simulations are TrueView™ photo simulations designed to "represent the 'Primary Human Field of View' that would be seen if standing 19.7 inches back from actual photo point position"¹¹⁰¹ Mr. Twiss affirmed that the full size simulations are approximately 21 inches by 59 inches and are designed to "completely fill your field of view with the same view you would see at the photo point position."¹¹⁰² Nonetheless, Mr. Twiss advised that the Application includes "reduced size" and enlargement area views taken from the full size photo simulations.¹¹⁰³

Mr. Twiss disagreed with James City County witness Westergard's contention that a camera using a 50 mm lens produces images that more accurately depict size and scale of simulated objects.¹¹⁰⁴ Mr. Twiss maintained that the correct size and scale at which objects are viewed are determined by "the size at which the image is physically printed, and the corresponding correct viewing distance"¹¹⁰⁵ Mr. Twiss also disagreed with Mr. Westergard's use of a single frame image, and argued that because this represents only a portion of the Primary Human Field of View, they can artificially focus an individual's attention and overemphasize the perception of size and scale of the simulated object.¹¹⁰⁶ Mr. Twiss noted that the 50 mm lens used to be the industry standard, but has been superseded with the development of technology.¹¹⁰⁷

Mr. Twiss distinguished his simulations from traditional photos stitched into a panoramic display, which he agreed would create panoramic shots that are generally considered an inappropriate for visual impact study.¹¹⁰⁸ Mr. Twiss pointed out that his simulation technique "combines multiple images in a 3D environment, as opposed to stitching them in a 2 dimensional manner with traditional photo switching software."¹¹⁰⁹

¹⁰⁹⁸ *Id.*

¹⁰⁹⁹ *Id.* at 29.

¹¹⁰⁰ Exhibit No. 98, at 1-2.

¹¹⁰¹ *Id.* at 4.

¹¹⁰² *Id.*

¹¹⁰³ *Id.*

¹¹⁰⁴ *Id.* at 8.

¹¹⁰⁵ *Id.*

¹¹⁰⁶ *Id.* at 9.

¹¹⁰⁷ *Id.* at 10.

¹¹⁰⁸ *Id.* at 11.

¹¹⁰⁹ *Id.*

Mr. Twiss noted that Mr. Westergard expressed concern over the alignment of towers in the simulations produced by the Company for the Carter's Grove location, and provided updated simulations to reflect the revised tower alignments.¹¹¹⁰

Finally, Mr. Twiss defended the tower heights in his simulations and questioned the lack of precision on the part of James City County.¹¹¹¹

Douglas J. Lake addressed: (i) the routing process; (ii) the developed landscape of the Proposed Route; (iii) impact to Carter's Grove; and (iv) issues impacting the BASF property.¹¹¹²

Mr. Lake affirmed that NRG was brought in to assist in the planning of a new 500 kV transmission line to a new transmission switching station near Skiffes Creek in James City County.¹¹¹³ Mr. Lake stated that the initial focus was on identifying existing rights-of-way, which led to examining routing between the Chickahominy Substation and Skiffes Creek.¹¹¹⁴ Mr. Lake confirmed that while the Company examined two possible routes from the Chickahominy Substation, Dominion Virginia Power determined that it could also provide 500 kV energy to Skiffes Creek from its existing Surry Switching Station.¹¹¹⁵

Mr. Lake characterized the shorelines of the James River bordering the Proposed Route to "contain a mixture of industrial, commercial and residential development interspersed with forested areas or tidal marshlands on both sides of the crossing."¹¹¹⁶ Mr. Lake noted that the BASF property on the east side of the river "is bordered by undeveloped land owned by the [Authority] to the north, a large Walmart distribution center and the Green Mount Industrial Park to the east, the Sanifill of Virginia landfill and the Branscome Quarries to the southeast and Fort Eustis and associated docking and shipping facilities to the south along the James River."¹¹¹⁷ Mr. Lake also pointed out that "James City County zoning currently encourages industrial development within this area on the east side of the river."¹¹¹⁸ Mr. Lake disputed claims by other witnesses that the views of this section of the James River are pristine and undeveloped.¹¹¹⁹

Mr. Lake testified that in comparing the James River Crossing Variations, Variation 3 would appear closer to most public viewing points, such as the Colonial Parkway and Jamestown Island, due to its more northern alignment in the river.¹¹²⁰ Mr. Lake confirmed that the Proposed Project would be visible from Carter's Grove.¹¹²¹ More specifically, Mr. Lake stated that for the Proposed Route, three of the seventeen towers would be all or partially visible from near the

¹¹¹⁰ *Id.* at 13.

¹¹¹¹ *Id.* at 14.

¹¹¹² Exhibit No. 124, at 2.

¹¹¹³ *Id.*

¹¹¹⁴ *Id.* at 3.

¹¹¹⁵ *Id.*

¹¹¹⁶ *Id.* at 5.

¹¹¹⁷ *Id.*

¹¹¹⁸ *Id.*

¹¹¹⁹ *Id.* at 7.

¹¹²⁰ *Id.* at 8.

¹¹²¹ *Id.* at 10.

house on Carter's Grove, and that Variation 3 would be closer and more visible.¹¹²² Mr. Lake reviewed the visual simulation from Carter's Grove prepared by James City County witness Westergard and maintained that the "results are essentially the same in terms of visible towers and tower height as those provided by Truescape, although they do not simulate the actual lattice structure design that is proposed to be used by the Company."¹¹²³

Marvin L. Wolverton, Ph.D., responded to testimony and comments concerning the impact of the Proposed Alternative Project on the property value of homes in Colonial Heritage by asserting that based on research and recent peer-reviewed literature, "there would be little to no detrimental market price effect (e.g., 0% to 2%) on Colonial Heritage homes directly abutting the right-of-way."¹¹²⁴ As for the impact of the Proposed Project on the value of homes in River Bluff, Dr. Wolverton concluded that because the transmission line was more than 500 feet away, it "would not be expected to affect property values"¹¹²⁵

In regard to World Heritage Site designation efforts, Dr. Wolverton identified several sites that are surrounded by or abutting modern development, such as: (i) The Alamo; (ii) Cahokia Mounds State Park in Illinois; and (iii) Historic Bridgetown and Anne's Garrison in Bridgetown, Barbados.¹¹²⁶ Dr. Wolverton outlined the process by which World Heritage Sites are selected and noted that "the Historic Triangle of Virginia has no standing in the World Heritage application process."¹¹²⁷ Under the most optimistic assumptions, Dr. Wolverton estimated that the earliest recommendation for enrollment of the Historic Triangle as a World Heritage Site would be in midsummer of 2020.¹¹²⁸ Dr. Wolverton concluded that "the likelihood of enrollment of the Historic Triangle as a World Heritage Site is statistically low."¹¹²⁹

Dr. Wolverton questioned the credibility of the appraisal reports on the "damage impact" of the Proposed Project on the BASF property.¹¹³⁰ Dr. Wolverton pointed out that the claim that the BASF property has a value of \$45,000,000, is contradicted by the report's statement that the property is listed for sale at \$10,500,000.¹¹³¹ Dr. Wolverton expressed concern that the appraisers failed to follow the proper procedure for determining the "highest and best use" of the BASF property.¹¹³²

Cathy Taylor maintained that the Proposed Project will not compromise the environmental remediation on the BASF property.¹¹³³ Ms. Taylor confirmed that the Proposed Route would cross Area 4C of the BASF property, but contended that the location of the single

¹¹²² *Id.* at 12.

¹¹²³ *Id.* at 14.

¹¹²⁴ Exhibit No. 126, at 11.

¹¹²⁵ *Id.*

¹¹²⁶ *Id.* at 12-15.

¹¹²⁷ *Id.* at 17.

¹¹²⁸ *Id.*

¹¹²⁹ *Id.* at 18.

¹¹³⁰ *Id.* at 19.

¹¹³¹ *Id.* at 20.

¹¹³² *Id.* at 24-25.

¹¹³³ Exhibit No. 127, at 2.

tower will not impact the former lagoons and the current capped landfill.¹¹³⁴ In addition, Ms. Taylor advised that construction of the tower should not cause BASF to implement an alternate remedial plan or undertake additional remediation.¹¹³⁵ Ms. Taylor stated that a transmission tower would be constructed between the capped landfill and the unnamed tributary and would not impact the dredging of sediments and the stabilization of the unnamed tributary.¹¹³⁶ Ms. Taylor acknowledged that the use of hybrid poplars in the phytoremediation cover area would be problematic in the right-of-way area, but pledged to work with BASF to find a suitable alternative.¹¹³⁷

Ms. Taylor testified that because of groundwater contamination remediation activities associated with the "Truswood Property," an underground transmission line through this area creates the potential for adding costs to mitigate the migration of groundwater contamination along the horizontal underground line.¹¹³⁸

Michael Brucato responded to BASF's recommendation that clear cutting of the right-of-way should be avoided where possible, and stated that in order to safely and reliably operate the transmission line, it is necessary to remove all trees and vegetation that will eventually grow to a height that will encroach on required clearances.¹¹³⁹ Mr. Brucato agreed that a vegetation inventory to identify low-growing species in the proposed right-of-way could be conducted, but rejected BASF's request for an inventory of trees that can be trimmed rather than cut down.¹¹⁴⁰

Mr. Brucato recommended against BASF's request for a "scalloped" right-of-way border.¹¹⁴¹ However, Mr. Brucato stated that "[w]here sufficient distance is allowed between the outside conductor and the cleared right-of-way edge, . . . selective lateral trimming . . . can produce a more feathered appearance to the right-of-way edge."¹¹⁴²

In regard to BASF's recommendation that herbicides not be used to clear or maintain the right-of-way, Mr. Brucato pointed out that BASF markets herbicides for utility right-of-way use.¹¹⁴³ Mr. Brucato testified that the only practical alternative to the use of herbicides is mowing on a three-year cycle, which will fail to produce usable food or habitat for wildlife.¹¹⁴⁴

Linda S. Erdreich, Ph.D., testified that scientific research generally shows "that exposure to extremely low frequency ("ELF") EMF in the general environment or from power lines does not cause adverse health effects."¹¹⁴⁵ Dr. Erdreich advised that considerable scientific

¹¹³⁴ *Id.* at 3.

¹¹³⁵ *Id.* at 4.

¹¹³⁶ *Id.* at 5.

¹¹³⁷ *Id.* at 7.

¹¹³⁸ *Id.* at 8-9.

¹¹³⁹ Exhibit No. 129, at 5.

¹¹⁴⁰ *Id.* at 6.

¹¹⁴¹ *Id.* at 8.

¹¹⁴² *Id.*

¹¹⁴³ *Id.* at 9.

¹¹⁴⁴ *Id.*

¹¹⁴⁵ Exhibit No. 14, at 3.

research has been conducted to understand the potential health effects associated with exposure to ELF EMF.¹¹⁴⁶ Dr. Erdreich warned against considering the results of a single study in isolation, but maintained that all of the research must be evaluated together.¹¹⁴⁷

Dr. Erdreich responded to the 2002 report from the International Agency for Research on Cancer (“IARC”) cited by the Ledbetters, and acknowledged that the IARC “categorized ELF magnetic fields as ‘possibly carcinogenic to humans’ (Group 2B) based on the statistical association of higher than average residential magnetic fields and childhood leukemia.”¹¹⁴⁸ Dr. Erdreich testified that the IARC’s Group 2B classification as a “possible carcinogen” is below that of a “known carcinogen” (Group 1) and “probable carcinogen” (Group 2A).¹¹⁴⁹ Dr. Erdreich affirmed that ELF magnetic field exposure is in the same cancer classification as “coffee, gasoline engine exhaust, and pickled vegetables.”¹¹⁵⁰ Dr. Erdreich argued that statistical association is not evidence for a causal association.¹¹⁵¹ Moreover, Dr. Erdreich advised that considerable research has been completed since the 2002 IARC.¹¹⁵²

Dr. Erdreich testified that there are no federal or Virginia guidelines for exposure to either electric or magnetic fields produced by a transmission line.¹¹⁵³ Dr. Erdreich advised that the World Health Organization (“WHO”) recommends compliance with international guidelines from the International Committee on Electromagnetic Safety (“ICES”) of 9,040 mG and the International Commission on Non-Ionizing Radiation Protection (“ICNIRP”) of 2,000 mG.¹¹⁵⁴

Dr. Erdreich asserted it is unlikely that the public located along either the Proposed Route or the Proposed Alternative Route “would have ‘frequent or prolonged exposure’ to ELF EMF at levels above those that are commonly encountered in residential settings.”¹¹⁵⁵ Dr. Erdreich concluded that “the ELF EMF levels associated with the [Proposed Project] would not pose a health hazard to the general public.”¹¹⁵⁶

DISCUSSION

The discussion will begin with a review of the statutory requirements applicable to this proceeding, followed by a brief introduction to key issues that remain in contention.

¹¹⁴⁶ *Id.*

¹¹⁴⁷ *Id.* at 4.

¹¹⁴⁸ *Id.* at 5.

¹¹⁴⁹ *Id.*

¹¹⁵⁰ *Id.*

¹¹⁵¹ *Id.* at 6.

¹¹⁵² *Id.*

¹¹⁵³ *Id.* at 7.

¹¹⁵⁴ *Id.*

¹¹⁵⁵ *Id.* at 9.

¹¹⁵⁶ *Id.* at 10.

STATUTORY REQUIREMENTS

Pursuant to the Utility Facilities Act,¹¹⁵⁷ generally, it is unlawful for any public utility to construct facilities without first obtaining a certificate of public convenience and necessity from the Commission.¹¹⁵⁸ For certificates for overhead transmission lines of 138 kV or more, § 56-265.2 A 1 of the Code requires compliance with the provisions of § 56-46.1 of the Code.

Section 56-46.1 of the Code directs the Commission to consider several factors in regard to proposed new facilities. For example, § 56-46.1 A of the Code directs the Commission to consider the effect of the facility on the environment and establish “such conditions as may be desirable or necessary to minimize adverse environmental impact.” Section 56-46.1 A of the Code directs the Commission to consider all reports that relate to the proposed facility by state agencies concerned with environmental protection and, if requested, to local comprehensive plans. In addition, § 56-46.1 A of the Code states that “the Commission (a) shall consider the effect of the proposed facility on economic development within the Commonwealth . . . and (b) shall consider any improvements in service reliability that may result from the construction of such facility.”

Section 56-46.1 B of the Code states as follows:

As a condition to approval the Commission shall determine that the line is needed and that the corridor or route the line is to follow will reasonably minimize adverse impact on the scenic assets, historic districts and environment of the area concerned. To assist the Commission in this determination, as part of the application for Commission approval of the line, the applicant shall summarize its efforts to reasonably minimize adverse impact on the scenic assets, historic districts, and environment of the area concerned. In making the determinations about need, corridor or route, and method of installation, the Commission shall verify the applicant’s load flow modeling, contingency analyses, and reliability needs presented to justify the new line and its proposed method of installation. . . . Additionally, the Commission shall consider, upon the request of the governing body of any county or municipality in which the line is proposed to be constructed, (a) the costs and economic benefits likely to result from requiring the underground placement of the line and (b) any potential impediments to timely construction of the line.

Section 56-46.1 C of the Code provides for hearings and includes a requirement that “[i]n any hearing the public service company shall provide adequate evidence that existing rights-of-way cannot adequately serve the needs of the company.” This requirement is further supported by § 56-259 C of the Code which states that “[p]rior to acquiring any easement of right-of-way,

¹¹⁵⁷ Chapter 10.1 of Title 56, §§ 56-265.1 to 265.9 of the Code.

¹¹⁵⁸ Section 56-265.2 A 1 of the Code.

public service corporations will consider the feasibility of locating such facilities on, over, or under existing easements of rights-of-way.”

Section 56-46.1 D of the Code provides that “[e]nvironment’ or ‘environmental’ shall be deemed to include in meaning ‘historic,’ as well as a consideration of the probable effects of the line on the health and safety of the persons in the area concerned.”

Section 56-46.1 E of the Code permits the Commission to cause the publishing of additional notice to consider a route or routes significantly different from the route described in the notice required by § 56-46.1 B.

Section 56-46.1 F of the Code states: “Approval of a transmission line pursuant to this section shall be deemed to satisfy the requirements of § 15.2-2232 and local zoning ordinances with respect to such transmission line.”

AREAS OF CONTENTION

At the close of the record in this proceeding, there were three areas of contention: (i) issues pertaining to “reasonably mitigated;” (ii) issues related to the proposed Skiffes Creek Switching Station; and (iii) routing issues concerning the BASF property.

Reasonably Mitigated

Dominion Virginia Power maintained that the planned retirements of Yorktown Units 1 and 2 will create NERC reliability violations in the North Hampton Roads Load Area beginning in the summer of 2015.¹¹⁵⁹ Based on this, Company stated that “[t]he question, then, for this Commission to answer is what is the most reliable and cost-effective solution available to it that can be constructed by the need date of June 1, 2015, and are the impacts of that solution on the affected area reasonably mitigated.”¹¹⁶⁰ While James City County acknowledged that Dominion Virginia Power has shown “an electrical need generally on the Peninsula,”¹¹⁶¹ James City County argued that the Proposed Project should not be approved because:

of the severe and extensive adverse impacts it would cause the historic, scenic and environmental assets of the Commonwealth by the overhead crossing of the James River. The only way those impacts can reasonably be mitigated and minimized – which is mandated by statute – is by undergrounding a replacement line across the James, or by moving the project elsewhere.¹¹⁶²

As quoted above, § 56-46.1 B of the Code directs the Commission to “determine that the line is needed and that the corridor or route the line is to follow will reasonably minimize adverse impact on the scenic assets, historic districts and environment of the area concerned.” In

¹¹⁵⁹ Dominion Virginia Power Brief at 1-2.

¹¹⁶⁰ *Id.* at 2.

¹¹⁶¹ James City County Brief at 22.

¹¹⁶² *Id.* at 1.

transmission line cases before this Commission, this statutory directive typically has been applied in a two-step process. First, the Commission makes a determination of whether the proposed line is needed. If the Commission finds that the line is needed, then it determines which route minimizes adverse impacts. In this case, James City County argues for more of a one-step process in which the approval of a proposed line is contingent in part, on whether the adverse impacts are reasonably minimized. I note that the statute puts forth two requirements, *i.e.*, “needed” and “reasonably minimize,” that are connected by the word “and.” Therefore, in this case, the determination of “need” will include consideration of the “adverse impact on the scenic assets, historic districts and environment of the area concerned” and whether such impacts are reasonably minimized.

Skiffes Creek

In regard to the proposed Skiffes Creek Switching Station, Dominion Virginia Power contended that the proposed Skiffes Creek Switching Station is “required by NERC, as part of the NERC Reliability Standards”¹¹⁶³ The Company advised that “neither the new 500 kV line nor the new 230 kV line could, or would, be constructed or operated without [the proposed Skiffes Creek Switching Station], which is integral to those lines.”¹¹⁶⁴ James City County asserted that there would be no need for the Proposed Project or the Proposed Alternative Project without the proposed Skiffes Creek Switching Station.¹¹⁶⁵ However, because of James City County’s opposition to the Proposed Project, Dominion Virginia Power has asked the Commission to find that the Skiffes Creek Switching Station constitutes a “transmission line” for the purposes of § 56-46.1 of the Code.¹¹⁶⁶ James City County disagreed and maintained that Dominion Virginia Power must obtain a SUP from James City County.¹¹⁶⁷ Moreover, James City County noted that in order to resolve whether Skiffes Creek Switching Station is a “transmission line” for the purposes of § 56-46.1, it has filed a declaratory judgment action in circuit court, which it contended is the proper forum for such a determination.¹¹⁶⁸ Staff took the position that Circuit Courts of the Commonwealth possess jurisdiction to determine the effect of a Commission determination on local zoning authority.¹¹⁶⁹ The Skiffes Creek issues will be addressed in a separate section below following the “Need” analysis.

BASF Routing

Issues related to the routing of the Surry-Skiffes Creek Line across property owned by BASF focus on alternative proposed James River crossings. Dominion Virginia Power maintained that its Proposed Route will not disrupt the ongoing remediation on the BASF property and will not have a significant impact on the future development of the property.¹¹⁷⁰ BASF contended that the Proposed Route “cuts directly through the most sensitive

¹¹⁶³ Dominion Virginia Power Brief at 91.

¹¹⁶⁴ *Id.*

¹¹⁶⁵ James City County Brief at 2, 49-50.

¹¹⁶⁶ Dominion Virginia Power Brief at 73-98.

¹¹⁶⁷ James City County Brief at 51-55.

¹¹⁶⁸ *Id.* at 55-57.

¹¹⁶⁹ Staff Brief at 43-50.

¹¹⁷⁰ Dominion Virginia Power Brief at 100-10.

environmental remediation area on the property,” and “bisect[s] the property, which would make plans for development, especially plans for mixed use resort development, effectively impossible.”¹¹⁷¹ BASF witnesses supported a James River crossing offered by Dominion Virginia Power as Variation 3, which would leave more BASF property available for development.¹¹⁷² During the hearing, BASF counsel offered additional variations for the James River crossing portion of Variation 3 that were designed to lessen the impact of the line on Carter’s Grove.¹¹⁷³ Eventually, these additional variations were distilled to Variation 4, which provided a viable river crossing and crossed the BASF property as proposed in Variation 3.¹¹⁷⁴ Nonetheless, Dominion Virginia Power continues to oppose use of Variation 4 based on the impacts to Carter’s Grove, and because of the necessity of acquiring an easement across property owned by the Authority.¹¹⁷⁵ The BASF routing issues will be addressed in the BASF Routing section below.

NEED

As directed by § 56-46.1 B, “the Commission shall determine that the line is needed and that the corridor or route the line is to follow will reasonably minimize adverse impact on the scenic assets, historic districts and environment of the area concerned.” Consequently, the discussion of need will begin with a review of NERC reliability standards, the load flow modeling and contingency analyses used to determine need, and the consequences of inaction. The Proposed Project and the Proposed Alternative Project will then be examined. This examination will include an assessment of the impact of the proposed projects on both the identified electrical need, and on the Commonwealth’s historic, scenic and environmental assets. Similar examinations will also be made of each of the other options identified and studied in this proceeding, including: (i) the Proposed Alternative Project, (ii) various 230 kV transmission options, (iii) generation options, (iv) combinations of 230 kV transmission and generation, and (v) variations offered by James City County witness Whittier. After review of each of the above, other factors, such as cost and construction times will be addressed before recommendations are presented to the Commission.

NERC Standards

Pursuant to the federal Energy Policy Act of 2005, NERC’s voluntary reliability standards became mandatory, subject to FERC oversight.¹¹⁷⁶ Indeed, Dominion advised that utilities could be fined up to \$1 million per day per violation if found to be in noncompliance.¹¹⁷⁷ NERC has been designated by the Federal Energy Regulatory Commission (“FERC”) as the Electric Reliability Organization for the United States.¹¹⁷⁸ NERC’s mandatory reliability

¹¹⁷¹ BASF Brief at 3-4.

¹¹⁷² Exhibit No. 46, at 8-9.

¹¹⁷³ Tr. at 354-363; Exhibit No. 39.

¹¹⁷⁴ Tr. 1470-77; Exhibit No. 97.

¹¹⁷⁵ Dominion Virginia Power Brief at 110-12.

¹¹⁷⁶ Pub. L. No. 109-85, Title XII, Subtitle A, 119 Stat. 594, 941 (2005), codified at 16 U.S.C. 824 (o).

¹¹⁷⁷ Dominion Virginia Power Brief at 11; Exhibit No. 23, Attached Appendix at 4.

¹¹⁷⁸ *Id.* at 11-12; *Id.*

standards are applied to Dominion Virginia Power through PJM's RTEP process.¹¹⁷⁹ Through the RTEP, PJM's transmission owning members, such as the Company, are directed to make transmission upgrades to address near-term needs within five years and assess long-lead time transmission options requiring a planning horizon of 15 years or more.¹¹⁸⁰

Company witness Nedwick testified that the NERC Reliability Standards require the identification of critical system conditions and assessment of system performance for system events that fall into the following four basic categories:

Category A – No Contingencies;

Category B – Event resulting in the loss of a single element;

Category C – Event(s) resulting in the loss of two or more (multiple) elements;

and

Category D – Extreme event resulting in two or more (multiple) elements removed or cascading out of service.¹¹⁸¹

Mr. Nedwick stated that for each of Category A, B, and C events, the system is required to remain stable and that both thermal and voltage limits will remain within the Company's planning criteria.¹¹⁸² Dominion Virginia Power asserted that its transmission planning criteria was "established over 30 years ago, [and] has been found to be compliant with NERC Reliability Standards by NERC, FERC and the Commission."¹¹⁸³

Staff witness Chiles examined and accepted Dominion Power's planning criteria.¹¹⁸⁴ Indeed, Mr. Chiles ultimately concluded that "[t]he technical analysis in this case supports the finding that there are NERC reliability violations that must be addressed in the 2015 and 2021 periods."¹¹⁸⁵

James City County questioned the Company's planning criteria, and asked the Commission to adopt less rigorous criteria, especially when considering alternatives to the Proposed Project.¹¹⁸⁶ For example, James City County witness Whittier maintained that for the Independent System Operator ("ISO") New England, the planning criteria permits 100% thermal loading, where Dominion Virginia Power considers it a violation for Category B, if the thermal loading exceeds 94%.¹¹⁸⁷

¹¹⁷⁹ *Id.* at 12; *Id.* at 4-5.

¹¹⁸⁰ *Id.*; Exhibit No. 92, at 5.

¹¹⁸¹ Exhibit No. 31, at 7-8.

¹¹⁸² *Id.* at 8.

¹¹⁸³ Dominion Virginia Power Brief at 10; Nedwick, Tr. at 1293.

¹¹⁸⁴ Exhibit No. 79, at 5-7.

¹¹⁸⁵ Staff Brief at 8-9; Chiles, Tr. at 1082.

¹¹⁸⁶ James City County Brief at 25-26, 36.

¹¹⁸⁷ *Id.* at 25; Whittier, Tr. at 942; *See*, Exhibit No. 31, at 8.

As pointed out by Dominion Virginia Power, the Company's planning criteria has been accepted by this Commission for many years and in many cases, as well as by FERC and NERC. The more rigorous criteria used by Dominion Virginia Power reflects the rate of growth experienced in many of the areas served by the Company, the constraints in siting new facilities, and the sensitivity of some of the vital government and military installations. As Mr. Whittier observed, "[i]n my decades of being involved in forecasting, I've done that enough to know that seldom are we right."¹¹⁸⁸ I find that the inherent uncertainties of forecasting several years into the future, coupled with the growth, constraints, and sensitivity of the Company's system, especially in the North Hampton Roads Load Area, support continued use of the Company's planning criteria for this case.

Load Flow Forecasts

None of the Respondents or Staff took issue with the load flow studies undertaken by Dominion Virginia Power in this proceeding. Both Staff witness Chiles and James City County witness Whittier performed load flow studies that corroborated the load flow studies undertaken by Dominion Virginia Power.¹¹⁸⁹ Moreover, the Company's load flow studies were conducted over many months; incorporated PJM's 2011, 2012, and 2013 load forecasts; and all consistently showed that with the 2014 retirements of Yorktown Units No. 1 and 2, and with the 2014 retirements of Chesapeake Units No. 1 – 4, additional transmission or generation is needed for the North Hampton Roads Load Area beginning in June 2015. Even James City County conceded that some project is needed (although, to be fair, James City County argued that Dominion Virginia Power failed to prove the need for the Proposed Project).¹¹⁹⁰

In the first quarter of 2011, Dominion Virginia Power's initial studies projected that as a result of anticipated load growth for the North Hampton Roads Load Area, NERC reliability violations would begin to occur in the summer of 2019.¹¹⁹¹ These studies were based on the 2010 PJM Load Forecast and reflected no generation retirements.¹¹⁹²

In November 2011, Dominion Virginia Power announced the retirement of Yorktown Unit 1 and Chesapeake Units 1 and 2 by the end of 2014.¹¹⁹³ In the first quarter of 2012, Dominion Virginia Power's load flow studies, based on the 2011 PJM Load Forecast, showed that with these retirements, NERC reliability violations were now projected to begin in the summer of 2015.¹¹⁹⁴ In September 2012, the Company announced the retirement of Yorktown Unit 2, and conducted additional load flow studies based on the 2012 PJM Load Forecast.¹¹⁹⁵ These load flow studies showed that the retirement of Yorktown Unit 2 increased the severity of the NERC reliability violations beginning in 2015.¹¹⁹⁶

¹¹⁸⁸ Whittier, Tr. at 943.

¹¹⁸⁹ Exhibit No. 79, at 16; Exhibit No. 68, at 14.

¹¹⁹⁰ James City County Brief at 22.

¹¹⁹¹ Dominion Virginia Power Brief at 18; Exhibit No. 87, at 4.

¹¹⁹² *Id.*; *Id.*

¹¹⁹³ *Id.* at 19; *Id.*

¹¹⁹⁴ *Id.*; *Id.*

¹¹⁹⁵ *Id.*; *Id.*

¹¹⁹⁶ *Id.*; *Id.*

In the *January 30 Ruling*, Dominion Virginia Power was directed to run additional load flow studies to incorporate the 2013 PJM Load Forecast, and to test various transmission and generation scenarios for the years 2015 and 2021. Among other things, these additional load flow studies included “base case” scenarios to provide a point of reference for what may happen if the Yorktown units are retired and no new transmission or generation is added. Company witness Nedwick reported that with no new transmission or generation, in the summer of 2015, NERC reliability violations, or overloads, were projected for the following facilities:¹¹⁹⁷

- Line #2113 (Lanexa-Waller)
- Line #2102 (Chickahominy-Waller)
- Line #214 (Surry-Winchester)
- Line #263 (Chuckatuck-Newport News)
- Line #209 (Waller-Yorktown)
- Line #285 (Waller-Yorktown)
- Suffolk 500-230 kV Transformer
- Line #34 (Lanexa-Yorktown)
- Line #99 (Peninsula-Whealton)
- Whealton 230-115 kV Transformer
- Shellbank 230-115 kV Transformer
- Line #234 (Whealton-Winchester)
- Line #261 (Newport News-Shellbank)
- Chickahominy 500-230 kV Transformer
- Lanexa 230-115 kV Transformer
- Line #292 (Yorktown-Whealton)
- Line #289 (Chuckatuck-Suffolk)
- Line #2076 (Birchwood-Northern Neck)

Mr. Nedwick summarized the NERC reliability violations for 2015 for the base case as follows:¹¹⁹⁸

<u>Study</u>	<u>NERC Category Tests</u>			
	<u>Category A</u>	<u>Category B</u>	<u>Category C</u>	<u>Category D</u>
Study 1 – No Critical System Condition	0	39	350	21
Study 2 – Surry Unit 2 is the Critical System Condition	0	62	N/A	N/A
Study 5 – Surry Unit 1 as the Critical System Condition	1	93	N/A	N/A

The study results for 2021, show that the NERC reliability violations for the base case generally increase in number.¹¹⁹⁹

¹¹⁹⁷ Exhibit No. 90, at 5.

¹¹⁹⁸ *Id.* at 14.

¹¹⁹⁹ *Id.*

<u>Study</u>	<u>NERC Category Tests</u>			
	<u>Category A</u>	<u>Category B</u>	<u>Category C</u>	<u>Category D</u>
Study 8 – No Critical System Condition	0	55	559	43
Study 9 – Surry Unit 2 is the Critical System Condition	0	49	N/A	N/A
Study 12 – Surry Unit 1 as the Critical System Condition	0	184	N/A	N/A

Dominion Virginia Power maintained that the consequences of the NERC reliability violations include: (i) the possibility of fines of up to \$1 million per day per violation; and (ii) the risk of cascading outages for the North Hampton Roads area, Northern Virginia, the City of Richmond, and North Carolina.¹²⁰⁰

All of the load flow studies conducted by Dominion Virginia Power were verified by Staff's independent consultant, John Chiles.¹²⁰¹ Staff agreed with Dominion Virginia Power, that with the retirement of either Yorktown unit, NERC reliability violations will occur, beginning in 2015.¹²⁰² Mr. Chiles further interpreted the load flow studies as follows:

The problem . . . that we see from the power flow is . . . we have a set of lines coming in from the north, . . . from Chickahominy, . . . [and] a set of lines coming in from the south, the lines 214 and 263, and a source, what you really see in looking at the power flow is if you lose the northern source, all the power flows to the southern source, and you see overloads on that end of the system. Conversely, if you lose the lines on 214 and 263, you're importing the majority of the power from the north, and therefore you see overloads coming from Chickahominy at Waller, in that direction south.¹²⁰³

Proposed Project¹²⁰⁴

Dominion Virginia Power asserted that the Proposed Project

will resolve all of the identified NERC Reliability Violations in 2015, and address the risk of cascading outages, by providing a new source of bulk power from the 500 kV system to support the 230 kV system in the North Hampton Roads Load Area, by relieving loading on that system through the addition of a new 230

¹²⁰⁰ *Id.* at 10; Dominion Virginia Power Brief at 11, 14.

¹²⁰¹ Staff Brief at 8; Chiles, Tr. at 1069.

¹²⁰² *Id.*; *Id.*

¹²⁰³ *Id.*; *Id.* at 1109.

¹²⁰⁴ For a description of the Proposed Project *see, supra* at p.12. For a detailed description of the route to be followed by the Proposed Project *see, supra* at pp. 24, 25, 30, and 35.

kV source into the Peninsula east of Skiffes Creek, and by feeding existing east-west 230 kV and 115 kV lines that will be split to receive power from Skiffes [Creek Switching] Station.¹²⁰⁵

Company witness Nedwick presented the results of the updated load flow studies directed in the *January 30 Ruling* for the Proposed Project, which confirmed that it would resolve all of the NERC reliability violations for 2015.¹²⁰⁶ For 2021, the updated load flow studies showed two NERC reliability violations (both Category C, with no critical system condition).¹²⁰⁷ Mr. Nedwick testified that the Proposed Project with “a minor upgrade of a 115 kV line in the area (a variation of which shows up in all the alternatives in that timeframe) . . . continues to resolve the identified NERC Reliability Violations.”¹²⁰⁸ These results were verified and confirmed by Staff witness Chiles.¹²⁰⁹ No respondent challenged the results of the Company’s load flow studies or the effectiveness of the Proposed Project to resolve identified NERC Reliability Violations.

However, as outlined above, James City County takes the position that the Proposed Project should not be approved because of its impacts on historic, scenic, and environmental assets.¹²¹⁰ Specifically, James City County contends that the Proposed Project will cause significant adverse impact to the historic assets within the Historic Triangle, and will cause significant adverse impact to a largely unspoiled and historic portion of the James River.¹²¹¹ Dominion Virginia Power, on the other hand, maintains that views of the Proposed Project will be distant or, in most cases, not at all visible from the Historic Triangle, and that much of this portion of the James River is zoned industrial, with modern structures visible throughout the area.¹²¹² Both James City County and Dominion Virginia Power, rely in part upon visual simulations, which were the subject of much debate during the course of the April Hearing. Thus, the discussion of the impacts of the Proposed Project will focus first on the visual impacts of the Proposed Project on the Historic Triangle, to be followed with an examination of the visual impacts of the Proposed Project on this area of the James River.

Impact on the Historic Triangle – James City County presented several witnesses to establish the importance of the Historic Triangle, including Mr. Campbell, Dr. Horn, and Dr. Kelso. On brief, James City County pointed to the testimony of Dr. Horn and contended that “[t]he 23 miles between the sites of Jamestown, Yorktown, and Williamsburg represent . . . the ‘alpha and omega of the British Empire.’”¹²¹³ James City County also quoted Dr. Kelso’s description of the Historic Triangle as “the kernel of what the United States finally became, in one place, 200 years of history.”¹²¹⁴ Dominion Virginia Power offered witnesses that attempted

¹²⁰⁵ Dominion Virginia Power Brief at 24; Exhibit No. 30, at 5.

¹²⁰⁶ Exhibit No. 90, at 15.

¹²⁰⁷ *Id.*

¹²⁰⁸ Exhibit No. 87, at 12.

¹²⁰⁹ Chiles, Tr. at 1071.

¹²¹⁰ James City County Brief at 1.

¹²¹¹ *Id.* at 10-19.

¹²¹² Dominion Virginia Power Brief at 61-68.

¹²¹³ James City County Brief at 10; Horn, Tr. at 636.

¹²¹⁴ *Id.*; Kelso, Tr. at 880.

to downplay the importance of the Historic Triangle, offering comparisons to the Alamo and Plymouth, Massachusetts.¹²¹⁵

I find that the comparisons to the Alamo and Plymouth, Massachusetts, generally serve to establish the importance of the Historic Triangle. Furthermore, the public comments received in this proceeding also provide a rough measure of the importance of the Historic Triangle. In particular, of the 741 Change.org online petitions received by the Commission, 117 were from areas of the United States outside Virginia, and twenty-four were from outside the United States.¹²¹⁶

As for the actual visual impact of the Proposed Project on the Historic Triangle, the record in this case shows that the Proposed Project will be visible to tourists and visitors from few areas within the Historic Triangle. As Company witness Lake testified, the Proposed Project would not be visible from Colonial Williamsburg, historic Yorktown, or from the James Fort area of Jamestown Island.¹²¹⁷ Of the twenty-three miles of the Colonial Parkway, the Proposed Project would be visible from a short portion, primarily the first parking lot (traveling from Williamsburg towards Jamestown).¹²¹⁸ Staff witness McCoy described his assessment of the views from the Colonial Parkway as follows:

MAE drove the Colonial National Historic Parkway and stopped at the respective parking areas to view the river sightline. Much of the impact of the crossing of the James is shielded by trees. The view from the parking lots is varied. The first parking lot (traveling from Williamsburg towards Jamestown) would have the most view of the towers that would be approximately 5 miles away. The second and subsequent parking lots would have to look across Hog Island and the tree line associated with the Surry Power Plant.¹²¹⁹

As for Jamestown Island, while not visible from the James Fort area, the Proposed Project would be visible from the island's easternmost tip, referred to as Black's Point.¹²²⁰ Mr. McCoy reported on his visit to Jamestown Island as follows:

MAE visited Jamestown Island . . . to get an appreciation of the potential for visual impact. The areas that would most likely have views are actually screened from the James River by heavy vegetation associated with this type of wetland and transitional habitat. Along the access road around the island, MAE parked at the top of the loop and hiked to the public access point on the river that would have the most potential for visual impact. MAE

¹²¹⁵ See, Wolverton, Exhibit No. 126, at 14, Attached Rebuttal Schedule 3; Lake, Tr. at 527.

¹²¹⁶ See *supra*, notes 6 and 7.

¹²¹⁷ Exhibit No. 124, at 9.

¹²¹⁸ Exhibit No. 83, Attached Exhibit WDM-1 at 18.

¹²¹⁹ *Id.*

¹²²⁰ *Id.* at 18-19; McCoy, Tr. at 1168-69.

observed the trees associated with the Surry Power Station and the northwest tip of Hog Island. It appears that there would be little, if any visual impact on this site. It is not open after sunset for visitation.¹²²¹

Visual simulations of views of the Proposed Project were presented by the Company and James City County from both the Colonial Parkway, near the parking lot discussed above, and from Black's Point on Jamestown Island.¹²²² In other words, the visual simulations concerning the Colonial Parkway and Jamestown Island simulate the most impacted views. The Proposed Project will not be seen from most of the Colonial Parkway and Jamestown Island, such as the fort, settlement, and visitor center areas. Although they were produced using different techniques and equipment, and were sharply attacked by the opposing party, I find that the photo simulations produced by Dominion Virginia Power and James City County from these two points, tend to show relatively the same level of visual impact. For the most accurate depiction of these visual simulations, the Commission should refer to both the pdf file provided on Exhibit No. 85, pages 1-8 and 17-24; and to Exhibit No. 99, Viewpoints 9 and 12, careful to follow the viewing instructions.

Nonetheless, to provide a convenient reference and context to this discussion, immediately following this page of the report, I have inserted copies of the following visual simulations: (i) the simulated view from the Colonial Parkway presented by James City County, based on the Company's originally proposed route, printed from page 7 of the pdf file entered into the record as Exhibit No. 85;¹²²³ (ii) the simulated view from the Colonial Parkway, designated as Viewpoint 9, of James River Crossing Variation 3 presented by Dominion Virginia Power entered into the record as Exhibit No. 23, Attached Appendix C, at 19; (iii) the simulated view from Black's Point on Jamestown Island presented by James City County, based on the Company's originally proposed route, printed from page 23 of the pdf file entered into the record as Exhibit No. 85; and (iv) the simulated view from Black's Point on Jamestown Island, designated as Viewpoint 12, of James River Crossing Variation 3 presented by Dominion Virginia Power entered into the record as Exhibit No. 23, Attached Appendix C, at 43.

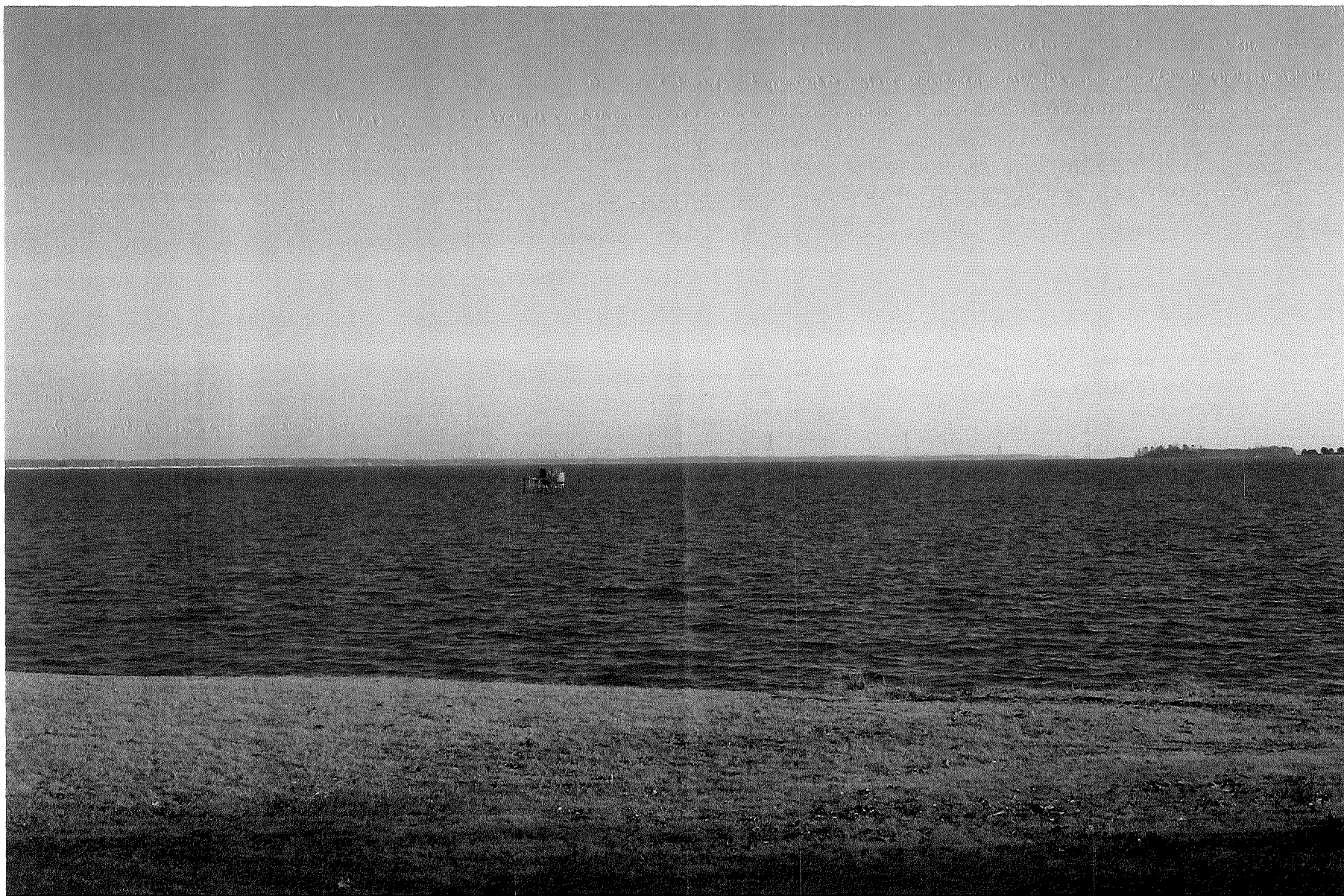
Mr. McCoy concluded that "[b]ased upon our observation and review of the digital simulation pictures, there would be little to no visual impact on the Colonial National Historic Parkway or Jamestown Island, beyond that which already exists."¹²²⁴ Based on my review of the simulations presented by both James City County and Dominion Virginia Power, and on the record in this proceeding, I agree with Staff witness McCoy that the Proposed Project will have little impact on the Colonial Parkway or Jamestown Island. Put simply, the Proposed Project will not be seen from the vast majority of the Colonial Parkway or Jamestown Island. Where the

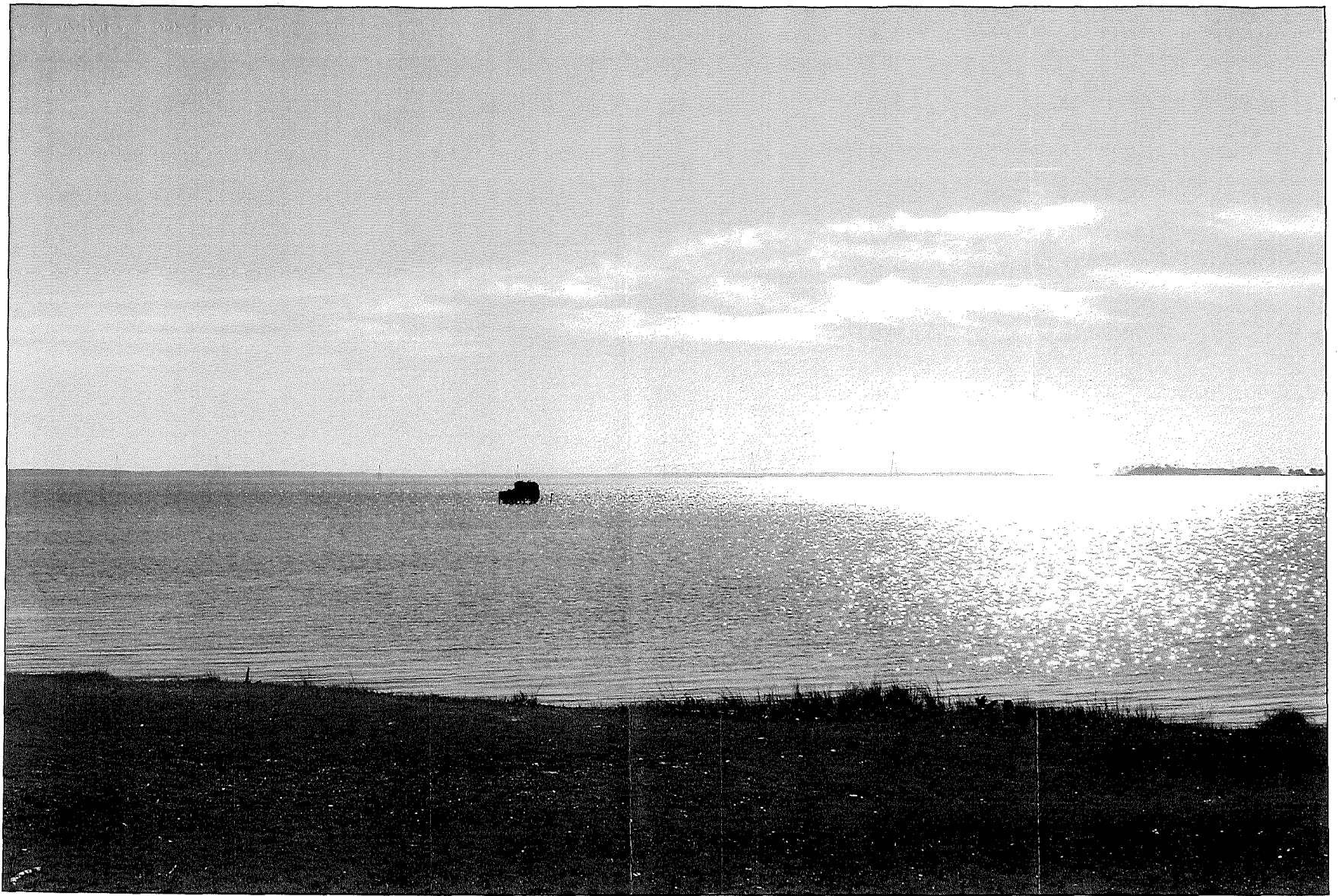
¹²²¹ Exhibit No. 83, Attached Exhibit WDM-1, at 18-19.

¹²²² Exhibit No. 23, Attached Appendix C, at 12-19, 36-43; Exhibit No. 99, at Viewpoints 9 and 12; Exhibit No. 84, Attached Exhibits A1-A4, C1-C4; Exhibit No. 85, Attached file: JCC_JRCV1_Exhibits_13x19.pdf, at 1-8, 17-24.

¹²²³ A copy of this simulation was provided as Exhibit No. 84, Attached Exhibit A4. I found the copy printed from the pdf file in Exhibit No. 85, to be sharper and clearer than my copy of Exhibit No. 84, Attached Exhibit A4.

¹²²⁴ Exhibit No. 83, Attached Exhibit WDM-1, at 19.

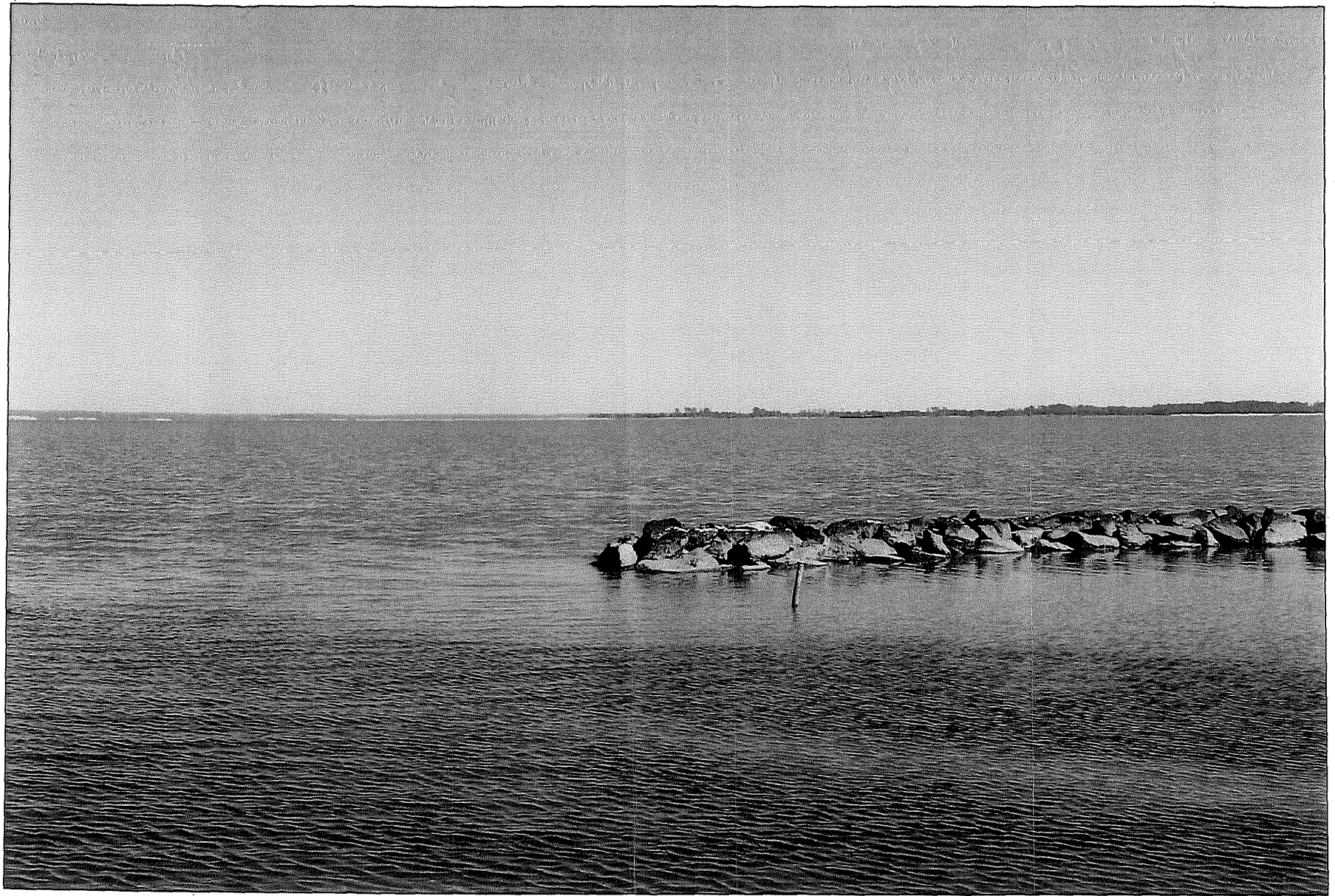




Viewpoint 09 - Colonial Parkway - Looking Southeast - James River Crossing Variation 3 - Proposed View

Enlargement Area of previous page - enlarged to a representative view when printed on a 11 x 17 " page and viewed from approx. 20" distance.





Viewpoint 12 - East End of Jamestown Island - Looking Southeast - James River Crossing Variation 3 - Proposed View
Enlargement Area of previous page - enlarged to a representative view when printed on a 11 x 17" page and viewed from approx. 20" distance.

Proposed Project can be seen from these areas, it will be distant, and will tend to blend with other development that can be seen from these areas.

The Proposed Project will have greater visual impacts on other sites in or near the Historic Triangle, such as Carter's Grove, and Kingsmill Resort and Golf Club. However, both of these sites have factors that tend to lessen the weight given to these visual impacts. While Carter's Grove is listed on the Virginia Landmarks Register and is designated as a National Historic Landmark,¹²²⁵ the property was owned as a private residence and currently is under the control of a bankruptcy-court-appointed trustee, who is marketing the property as a private residence.¹²²⁶

As for the Kingsmill Resort and Golf Club, Mr. McCoy testified that the views from the waterfront residential and commercial structures would be direct, but that the towers would be approximately 3.0 to 4.5 miles from the waterfront multifamily units, such as River Bluffs.¹²²⁷ Furthermore, Mr. McCoy pointed out that the Kingsmill development, itself, has impacted the James River viewshed:

MAE agrees that the development of this area has affected the views both on and off the river. MAE, however, also notes the lack of vegetative screening and buffering. MAE believes this to be the longest linear area of developed shoreline in the project area. The developed shoreline is clearly visible both during the day and at night with lighting.¹²²⁸

Impacts on the James River – The examination of the impact of the Proposed Project on the nature of the James River is colored by the assessment of the current nature of the James River, which ranges from “unspoiled” and “pristine,” to “industrial” and “developed.” For example, James City County witness Horn described the current viewshed of the James River as follows:

In the case of this section of the James River, we have a remarkably intact viewshed. It's truly, I think, a unique viewshed across the James River. If you're looking from Jamestown itself, from Jamestown Island, if you're looking from the parkway or from Carter's Grove, it's a glorious view across the river that hasn't changed significantly in 400 years. It's the same landscape that the first English Settlers saw, John Smith saw.¹²²⁹

Similarly, James City County witness Chappell contended that the James River is “unspoiled,” and that modern visual intrusions, such as “a glimpse of the domes of the Surry

¹²²⁵ Exhibit No. 52, at 6.

¹²²⁶ Campbell, Tr. at 1056-57.

¹²²⁷ Exhibit No. 83, Attached Exhibit WDM-1, at 19-20.

¹²²⁸ *Id.* at 19.

¹²²⁹ Horn, Tr. at 639.

plant” are “very modest in scale relative to the proposed transmission lines.”¹²³⁰ Dr. Chappell described this section of the James River as follows:

What you see from Jamestown and the Colonial Parkway, that section of the parkway, it’s really an extraordinary gift to the American people that that part of the riverscape that you see from Jamestown and the parkway is so pristine. You can stand on Jamestown Island and look across the James River and it looks essentially as it did in 1607.¹²³¹

Dominion Virginia Power maintained that the Proposed Project is routed through areas that are zoned industrial.¹²³² Company witness Harper provided an aerial photography map outlining the areas adjacent to the proposed river crossings that are zoned industrial.¹²³³ Dominion Virginia Power listed the industrial and large modern recreational properties as: BASF, Busch Gardens amusement park, Anheuser-Busch Brewery, Kingsmill Resort and Golf Club, the Hampton Roads Sanitation District Williamsburg Sewage Treatment Plant, a juvenile detention center and adult regional jail, Walmart and Sam’s Club distribution warehouses, James River Commerce Center, Felker Airfield, and the Surry Nuclear Power Station.¹²³⁴ In response, James City County witness Reidenbach acknowledged the area’s industrial uses, but asserted that they could not be seen from either the Colonial Parkway or Carter’s Grove.¹²³⁵

The photo simulations discussed above provide some indication of the current viewshed of this section of the James River. In addition, Dominion Virginia Power offered additional photographs of the James River that were admitted as Exhibit No. 100. More importantly, Staff witness McCoy specifically addressed the impact of modern structures on views of the James River from both Black’s Point on Jamestown Island and the Colonial Parkway. From Black’s Point on Jamestown Island, Mr. McCoy described the view as follows:

[C]andidly, the first [modern] intrusion is really the revetment, shoreline revetment which is manmade. So that’s the first near shore sort of modern-day change.

The long views, you have the tops of the nuclear power plant which are observable from the Black’s Point area. And then you have a view shed that goes a long distance across - - you would have to go across Hog Island, much of which is low sort of scrub-shrub. So, I think you would have some visual impact there. But again, because of the distance, which I think is roughly six miles, six-and-a-half miles, again, I don’t think that that would be the first thing you would say, oh, there are a bunch of towers.

¹²³⁰ Chappell, Tr. at 1021-22.

¹²³¹ *Id.* at 1022.

¹²³² Company Brief at 61.

¹²³³ Exhibit No. 118, Attached Rebuttal Schedule 1.

¹²³⁴ *Id.* at 8; Company Brief at 62-63; Street, Tr. at 836-41.

¹²³⁵ Reidenbach, Tr. at 607.

Actually, Kingsmill, the sewage treatment plant is also observable from those areas.¹²³⁶

Mr. McCoy described the night views from the Colonial Parkway as follows:

[M]y first impression was that the first thing you see in terms of lights are navigational lights, which are actually pretty close. So, that was what my eye was drawn to first.

The long view, again, a lot of lighting at Kingsmill and then what I believed was the sewage treatment. So, I'm not saying that you wouldn't have a view, . . . but I think it would be consistent with those other views.¹²³⁷

Based on the photo simulations, and the testimony of Mr. McCoy, I cannot find that the section of the James River proposed to be crossed by the Proposed Project is "pristine" or is the same view enjoyed by Captain John Smith. For example, from Black's Point on Jamestown Island, the view in 1607 most likely did not include the man-made rock protection of the shore line, Surry Nuclear Power Station, distant water towers and roller coasters, a sewage treatment plant, Kingsmill Resort, or even the traffic on the Colonial Parkway. Given the distance, and the partial buffering by Hogs Island, I find that the Proposed Project would not alter the current nature of the James River in this area.

James City County also pointed to the designation of this section of the James River as the Commonwealth's only "Historic River" pursuant to § 10.1-419 of the Code.¹²³⁸ This section of the Code designates a twenty-five mile section of the James River to be an "Historic River," and provides that in "planning for the use and development of water and related land resources . . . full consideration and evaluation of the river as an historic, scenic and ecological resource should be given before such work is undertaken."¹²³⁹ The route of the Proposed Project is just within the portion of the James River designated by §10.1-419 as an "Historic River" when it begins its river crossing in Surry County near the Surry Nuclear Power Station, but crosses out of the portion of the James River designated by § 10.1-419 as an "Historic River" before reaching any of the proposed routes across the BASF property in James City County.¹²⁴⁰ Given the presence of the Surry Nuclear Plant, I find that the Surry-Skiffes Creek Line would not change the character of the James River where it crosses the portion of the James River designated by § 10.1-419 as an "Historic River." Furthermore, based on its distance from historic resources such as Jamestown Island, the Colonial Parkway, and even Carter's Grove, and based on the screening of Hogs Island for views from Jamestown Island and the Colonial Parkway, I find that the portion of the Surry-Skiffes Creek Line crossing through the portion of the James River designated by § 10.1-419 as an "Historic River" will be the least visually

¹²³⁶ McCoy, Tr. at 1169.

¹²³⁷ *Id.* at 1169-70.

¹²³⁸ James City County Brief at 14.

¹²³⁹ Street, Tr. at 856; § 10.1-419 B.

¹²⁴⁰ *Id.* at 853-56; Exhibit No. 66.

impacting portion of the James River crossing of the Surry-Skiffes Creek Line. Consequently, I find that the Proposed Project complies with §10.1-419 of the Code.

Finally, James City County stresses the importance and the impact of the Proposed Project on the Captain Smith Trail.¹²⁴¹ The more than 2,000-mile Captain Smith Trail was established in 2006 to commemorate the voyages of Captain John Smith and his crew as they explored the Chesapeake Bay between 1607 and 1609.¹²⁴² Staff witness McCoy stated that the Proposed Project would have “a severe impact [on] the [Captain Smith Trail] in this area.”¹²⁴³ Nonetheless, Company witness Harper emphasized that “not all parts of the [Captain Smith Trail] are pristine.”¹²⁴⁴

James City County witness Street testified that the National Park Service “identifie[d] the Jamestown region of the section of the James River as highly evocative of and highly significant for the historic and natural viewscapes there along the section of the river,” in a January 2013 report titled: “A Conservation Strategy for the Captain John Smith Chesapeake National Historic Trail” (“NPS Report”).¹²⁴⁵ Among other things, this report identified areas of current and potential conservation focus. Jamestown Island is shown on maps as being in a conservation focus area, while the area of the James River that would be crossed by the Proposed Project is not within any conservation focus area.¹²⁴⁶ Thus, the Proposed Project does not appear to impact the Captain Smith Trail in an area that the National Park Service has designated for special emphasis or protection.

In summary, I find that the Proposed Project will have a limited visual impact on one section of the Colonial Parkway and a very limited impact on a small portion of Jamestown Island. Both of these areas are already impacted by views of modern structures and development. From most of the Colonial Parkway, and the areas of Jamestown Island that are the focus of most public interest, such as the visitor’s center, fort, settlement, and archeological digs, the Proposed Project will not be seen. Where the Proposed Project is visible from the Colonial Parkway or Jamestown Island, because of the Proposed Project will be more than four to six miles distant, the Proposed Project should blend with the other modern intrusions on the viewshed. Thus, I find that the Proposed Project will not alter the nature of this section of the James River. The Proposed Project will have a significant visual impact on the view from Carter’s Grove, and will impact the view from Kingsmill Resort and Golf Club. The significant visual impact to Carter’s Grove is discounted, somewhat, by the recent use and current marketing of Carter’s Grove as a private residence, not open to the public. The visual impacts to Kingsmill Resort and Golf Club are offset by the lack of vegetation and screening, which makes the Kingsmill development a modern visual intrusion on the viewshed of the surrounding historic resources, such as the Colonial Parkway and Jamestown Island.

¹²⁴¹ James City County Brief at 14-16.

¹²⁴² Exhibit No. 64, at 1.

¹²⁴³ Exhibit No. 83, Attached Exhibit WDM-1, at 21.

¹²⁴⁴ Harper, Tr. at 1716.

¹²⁴⁵ Street, Tr. at 805; Exhibit No. 64.

¹²⁴⁶ Exhibit No. 64, at 25, 28.

Proposed Alternative Project¹²⁴⁷

In a nutshell, the Proposed Alternative Project is the functional equivalent to the Proposed Project in terms of addressing projected NERC violations. However, the additional length of this route, and its greater impacts on scenic assets and the environment, have left this alternative with no supporters and nearly universal opposition. Indeed, respondents such as the Ledbetters, Charles City County, and Lennar participated in this proceeding solely to oppose the Proposed Alternative Route. Moreover, in reviewing public comments received in this case, I believe it is more appropriate to count the 505 signers of a petition supporting the proposed Surry-Skiffes Creek Route and the fifty-eight other comments supporting the proposed Surry-Skiffes Creek Route as being more opposed to the Proposed Alternative Project than actually supporting the Proposed Project.

Company witness Nedwick testified that both the Proposed Project and the Proposed Alternative Project “are electrically viable and functionally equivalent.”¹²⁴⁸ Staff witness Chiles tested and confirmed the Company’s assertion.

I and my staff subjected the [Proposed Alternative Project] to the same GDS verification process and found that it performed comparably to the [Proposed Project], which agrees with the Company’s assertion.

From a transmission standpoint, I agree with the statement in Company witness Nedwick’s rebuttal testimony that the [Proposed Alternative Project] is a functional equivalent of the [Proposed Project].¹²⁴⁹

No respondent challenged the Company’s assertions or the effectiveness of the Proposed Alternative Project to resolve identified NERC Reliability Violations. Thus, based on the testimonies of Messrs. Nedwick and Chiles, I find that the Proposed Alternative Project would meet the demonstrated “need” in this case.

In regard to the relative impact of the Proposed Alternative Project on the scenic assets, historic districts, and environment of the area concerned, no one supported the Proposed Alternative Project over the Proposed Project. Some of the quantifiable impacts are presented in the table below, which compares the Chickahominy-Skiffes Creek Line portion of the Proposed Alternative Project to the Surry-Skiffes Creek Line portion of the Proposed Project, as updated to include James River Crossing Variation 1:¹²⁵⁰

¹²⁴⁷ For a description of the Proposed Alternative Project *see, supra* at 12. For a detailed description of the route to be followed by the Proposed Alternative Project *see, supra* at 27, 30.

¹²⁴⁸ Exhibit No. 87, at 5.

¹²⁴⁹ Chiles, Tr. at 1071.

¹²⁵⁰ Exhibit No. 23, Attached Environmental Routing Study at Table 4-1, as corrected by Exhibit No. 29 and Lake, Tr. at 499; *See*, Lennar Brief at 3-4.

Environmental Feature	Chickahominy-Skiffes Creek	Surry-Skiffes Creek
Overall Length	37.89 miles	7.95 miles
Private Parcels Crossed	300 parcels	7 parcels
Residences within 500 feet	1,129	160
Existing Subdivisions	28	1
Conservation Lands Crossed	9	0
	8.56 miles	0.00 miles
Surface Waters Crossed	0.61 miles	4.15 miles
Wetlands – Total	7.55 miles	0.13 miles
	145.61 acres	2.64 acres
Forested Wetlands	5.62 miles	0.01 miles
	106.91 acres	0.62 acres
Forest Land to be Cleared	420.45 acres	20.09 acres
National Register-Eligible	4 – within right-of-way	1 – within right-of-way
and –Listed Properties,	11 – within 0.5 miles	1 – within 0.5 miles
Battlefields, Historic	11 – between 0.5 and 1.0 miles	2 – between 0.5 and 1.0 miles
Landscapes, and National		
Historic Landmarks		

In comparing the water crossings of each route, while the crossing of the James River for the Surry-Skiffes Creek Line is longer, the Chickahominy River crossing of the Chickahominy-Skiffes Creek Line would have a greater impact on changing the existing nature of the river. Staff witness McCoy characterized the Chickahominy River as highly evocative, and compared the natural environments of the two proposed crossings as follows:¹²⁵¹

I think in terms of the natural environment, there really is no comparison. This is a smaller – so the towers would be more – obviously, if you are passing under a tower, it’s an impact. But, this is a smaller area, very natural area, that would now have a structure inconsistent with what has always been there. Versus the James River, that would have also a major impact as you pass under towers, but it’s three miles, it requires more towers, but . . . when I factored the view sheds of Kingsmill, water towers, Fort Eustis, the Marina at Kingsmill, in my mind, there was no comparison.

In addition, Mr. McCoy pointed out that the proposed Chickahominy River crossing would impact severely the Captain Smith Trail.¹²⁵² Indeed, Mr. McCoy maintained that at the proposed Chickahominy River crossing, you get a sense of what John Smith may have seen.¹²⁵³ I find Mr. McCoy’s testimony consistent with the NPS Report, which shows that the proposed Chickahominy River crossing would impact the Captain Smith Trail in an area that the National Park Service has designated for special emphasis or protection.¹²⁵⁴

¹²⁵¹ McCoy, Tr. at 1161.

¹²⁵² Exhibit No. 83, Attached Exhibit WDM-1, at 25.

¹²⁵³ McCoy, Tr. at 1160; *See*, Staff Brief at 30.

¹²⁵⁴ Exhibit No. 64, at 28.

One factor that may suggest the use of the proposed Chickahominy-Skiffes Creek route is that this route uses Company-owned right-of-way and would require little additional right-of-way acquisition.¹²⁵⁵ However, 24.9 miles of the Company-owned right-of-way is an unused right-of-way purchased in the early 1970s.¹²⁵⁶ As demonstrated by the testimony of many of the public witnesses in this case, for people living near the unused right-of-way, from a public impact perspective, there is little difference between constructing a new transmission line on a new right-of-way and an unused existing right-of-way.

In summary, I find that the Proposed Alternative Project provides electrical reliability comparable to the Proposed Project, but its longer route would have a significantly greater adverse impact on the scenic assets, historic districts, and environment than that of the Proposed Project.

230 kV Transmission Options

In its Application, Dominion Virginia Power reported that it had compared the Proposed Project and the Proposed Alternative Project to several 230 kV transmission options including: (i) an overhead Surry-Skiffes Creek Double Circuit 230 kV transmission line following the original proposed route; (ii) an overhead Chickahominy-Skiffes Creek Double Circuit 230 kV transmission line following the Proposed Alternative Route; and (iii) an underground Surry-Skiffes Creek 230 kV transmission line.¹²⁵⁷ The Company contended that each of these alternatives failed to resolve all of the NERC reliability violations through 2021, with only the overhead Chickahominy-Skiffes Creek Double Circuit 230 kV transmission line resolving the NERC reliability deficiencies in 2015 and 2016.¹²⁵⁸

Staff witness Chiles conducted an independent analysis of the Company's load-flow studies for each of the 230 kV transmission options examined by Dominion Virginia Power, and concluded:

none of the 230 kV line alternatives are viable alternatives to the [Proposed Project] in terms of meeting the identified reliability need. Additionally, from an engineering perspective, none of the 230 kV options can be feasibly constructed to achieve the approximate 5,000 MVA capacity afforded by the [Proposed Project]. This additional capacity will be available to address long-term load growth in the Hampton Roads area.¹²⁵⁹

Nonetheless, in his prefiled direct testimony, Mr. Chiles expressed concern regarding whether the 230 kV transmission alternatives had been sufficiently analyzed by the

¹²⁵⁵ Exhibit No. 83, Attached Exhibit WDM-1, at 22.

¹²⁵⁶ *Id.*

¹²⁵⁷ Exhibit No. 23, Attached Appendix at 55-58, 61.

¹²⁵⁸ *Id.*

¹²⁵⁹ Exhibit No. 79, at 24.

Company.¹²⁶⁰ In his prefiled direct testimony, Mr. Chiles recommended that several additional load flow studies be undertaken in this proceeding.¹²⁶¹ In his prefiled direct testimony, James City County witness Whittier was also critical of the Company's consideration of 230 kV transmission alternatives.¹²⁶² Among other things, Mr. Whittier proposed to reconductor or rebuild the Surry-Winchester Line #214 and Chuckatuck-Newport News Line #263, which serve the Peninsula from the south as an additional 230 kV transmission alternative.¹²⁶³

Accordingly, in the *January 30 Ruling*, Dominion Virginia Power was directed to run additional load flow studies to incorporate the 2013 PJM Load Forecast, and to test various transmission and generation scenarios for the years 2015 and 2021. Among other things, these additional load flow studies included three 230 kV transmission alternatives: (i) Alternative A – Single-circuit 230 kV hybrid line (crossing under the James River); (ii) Alternative B – Double-circuit 230 kV hybrid line (crossing under the James River); and (iii) Alternative C – Rebuild and reconfiguration of existing 230 kV Lines #214 and #263 crossing above the James River between Isle of Wight County and Newport News.¹²⁶⁴ Company witness Nedwick reported that none of the 230 kV transmission options resolved all of the NERC reliability violations in 2015 or in 2021.¹²⁶⁵

Mr. Nedwick summarized the NERC reliability violations for 2015 for the three 230 kV Alternatives as follows:¹²⁶⁶

<u>Study</u>	<u>NERC Category Tests</u>			
	<u>Category A</u>	<u>Category B</u>	<u>Category C</u>	<u>Category D</u>
Study 6A – No Critical System Condition	0	0	9	3
Study 6B – No Critical System Condition	0	1	4	0
Study 6C – No Critical System Condition	0	5	122	8
Study 7A – Surry Unit 1 as the Critical System Condition	0	3	N/A	N/A
Study 7B – Surry Unit 1 as the Critical System Condition	0	2	N/A	N/A
Study 7C – Surry Unit 1 as the Critical System Condition	0	70	N/A	N/A

Mr. Nedwick also reported three 230 kV Alternatives would fail to resolve the following number of NERC reliability violations for 2021:¹²⁶⁷

¹²⁶⁰ *Id.* at 19-20; Staff Brief at 12.

¹²⁶¹ Exhibit No. 79, at 33-34.

¹²⁶² Exhibit No. 68, at 9.

¹²⁶³ *Id.* at 11-12.

¹²⁶⁴ Exhibit No. 87 at 8-9, Attached Rebuttal Schedule 2.

¹²⁶⁵ *Id.* at 9, 12; Exhibit No. 90, at 7-9.

¹²⁶⁶ Exhibit No. 90, Attached Rebuttal Schedule 4, at 16-18.

¹²⁶⁷ *Id.*

<u>Study</u>	<u>NERC Category Tests</u>			
	<u>Category A</u>	<u>Category B</u>	<u>Category C</u>	<u>Category D</u>
Study 13A – No Critical System Condition	0	9	113	7
Study 13B – No Critical System Condition	0	1	12	0
Study 13C – No Critical System Condition	0	12	182	13
Study 14A – Surry Unit 1 as the Critical System Condition	0	1	N/A	N/A
Study 14B – Surry Unit 1 as the Critical System Condition	0	0	N/A	N/A
Study 14C – Surry Unit 1 as the Critical System Condition	0	39	N/A	N/A

During the April Hearing, Mr. Chiles testified that he reviewed and ran the power flow models underlying the Company's additional analysis and was able to verify the Company's results.¹²⁶⁸ Indeed, Mr. Chiles also verified that the Proposed Alternative Project would perform similarly to the Proposed Project, using the updated information incorporated into the studies performed as directed by the *January 30 Ruling*.¹²⁶⁹ Mr. Chiles reported that in 2015, under Alternative A, overloads in violation of NERC reliability criteria would occur on the 230 kV Surry-Skiffes Creek Line, itself; the Lanexa-Waller Line #2113; Skiffes-Yorktown Line #209; and the Suffolk 500-230 transformer.¹²⁷⁰ Mr. Chiles confirmed that in 2015, under Alternative B, overloads in violation of NERC reliability criteria would occur on the Skiffes-Yorktown Line #209, and the Suffolk 500-230 transformer.¹²⁷¹ Finally, Mr. Chiles testified that in 2015, for Alternative C, overloads in violation of NERC reliability criteria would occur on Lanexa-Walker Line #2113, Lanexa-Yorktown Line #34, Whealton-Winchester Line #234, Suffolk 500-230 transformer, and Lanexa 230-115 transformer.¹²⁷² Mr. Chiles confirmed that all of the above violations of NERC reliability criteria are resolved by the Proposed Project.¹²⁷³

Based on the uncontested load flow results, I find that none of the 230 kV transmission alternatives, by themselves, satisfy the NERC reliability requirements for 2015, or for 2021.

However, as directed in the *January 30 Ruling*, Dominion Virginia Power estimated the additional overhead transmission facilities, and their cost, necessary to resolve all of the NERC reliability violations for both 2015 and 2021.¹²⁷⁴ Company witness Allen presented the additional transmission projects necessary to resolve all of the NERC reliability violations and showed that only a double-circuit 230 kV hybrid transmission line would resolve all of the

¹²⁶⁸ Chiles, Tr. at 1068.

¹²⁶⁹ *Id.* at 1071.

¹²⁷⁰ *Id.* at 1073; Staff Brief at 13; Exhibit No. 90, at 7.

¹²⁷¹ *Id.*; *Id.*; *Id.* at 8.

¹²⁷² *Id.*; *Id.*; *Id.* at 9.

¹²⁷³ Chiles, Tr. at 1074.

¹²⁷⁴ *See supra* at p. 114.

NERC reliability violations for 2015.¹²⁷⁵ Because the Company was unable to determine a transmission solution that would resolve all of the NERC reliability violations for 2015, I find that Alternative A – Single-circuit 230 kV hybrid line should be eliminated from further consideration. Dominion Virginia Power argued against Alternative B and Alternative C, after the inclusion of additional transmission projects that resolve all of the NERC reliability violations based on the significantly higher cost associated with these alternatives and because construction of these alternatives cannot be completed by the June 2015 need date.¹²⁷⁶ Cost and the need date will be discussed in detail below.¹²⁷⁷

Generation Options

As directed in the *January 30 Ruling*, Dominion Virginia Power determined that it would take two new generating units in the North Hampton Roads Load Area with a combined 620 MW capacity, with the size of the smallest unit of 295 MW, to resolve all of the NERC reliability violations for 2015.¹²⁷⁸ To resolve all of the NERC reliability violations for 2021, Dominion Virginia Power reported that it would take an additional 618 MW of generation.¹²⁷⁹ Dominion Virginia Power argued against a stand-alone option based on the significantly higher cost associated with the stand-alone generation and because construction of the stand-alone generation cannot be completed by June 2015 need date.¹²⁸⁰ Cost and the need date will be discussed in detail below.¹²⁸¹

In addition, Staff witness Chiles modeled injecting new or increased generation at the proposed Skiffes Creek Switching Station, the proposed Brunswick power station, and reviewed the Company's stand-alone generation studies.¹²⁸² Mr. Chiles found that the injection of an additional 550 MW of generation at Skiffes Creek would not resolve all of the NERC reliability criteria violations for 2015 and 2016.¹²⁸³ Similarly, Mr. Chiles reported that generation in "Brunswick County – even if approved by the Commission and constructed in a timely fashion – would not address [Dominion Virginia Power's] transmission needs identified in the instant case."¹²⁸⁴ Finally, Mr. Chiles confirmed the Company's studies concerning stand-alone generation.¹²⁸⁵

On brief, James City County faulted the Company for failing to consider other generating options such as repowering the Yorktown units with liquefied natural gas ("LNG") or off-shore wind.¹²⁸⁶ However, Company witness Kelly testified that LNG was considered for repowering

¹²⁷⁵ *Id.*; Exhibit No. 93, Attached Rebuttal Schedule 4, at 1.

¹²⁷⁶ Company Brief at 32-34; Exhibit No. 130, Attached Rebuttal Schedule 1.

¹²⁷⁷ *See infra* pp. 152-55.

¹²⁷⁸ Exhibit No. 87, Attached Rebuttal Schedule 3; Exhibit No. 90, at 23.

¹²⁷⁹ *Id.*; *Id.*

¹²⁸⁰ Company Brief at 33-34; Exhibit No. 130, Attached Rebuttal Schedule 1.

¹²⁸¹ *See infra* pp. 152-55.

¹²⁸² Staff Brief at 16.

¹²⁸³ *Id.* at 17; Exhibit No. 79, at Attached JWC-2, at 13-15.

¹²⁸⁴ *Id.* at 18; Exhibit No. 81.

¹²⁸⁵ Chiles, Tr. at 1068-69.

¹²⁸⁶ James City County Brief at 26, 47-48.

Yorktown, but was rejected based on cost and the difficulty of getting a permit to build an import facility in a populated area like Yorktown.¹²⁸⁷ As for off-shore wind, because of the required transmission infrastructure for such generation, I find advocating off-shore wind generation is inconsistent for a party opposing the construction of a 500 kV transmission line. The 2012 NCTPC-PJM Joint Interregional Reliability Study entered into the record by James City County, stated that “[i]ntegration of 3,000 to 10,000 MW of off-shore wind in North Carolina and Virginia would require approximately \$1-2 billion in transmission upgrades.”¹²⁸⁸ The report stated that integration of such power into PJM would require a new 500 kV substation and upgrades to the 500 kV system and local 230 kV network.¹²⁸⁹ Indeed, the report listed six new transmission lines required in Virginia, including a forty-five mile, 500 kV Surry to Chickahominy transmission line.¹²⁹⁰

Combinations of 230 kV Transmission and Generation

As directed in the *January 30 Ruling*, Dominion Virginia Power studied the amount of additional generation that would be required to be added to each of the 230 kV transmission alternatives to eliminate all projected NERC reliability violations for 2015 and 2021. Company witness Nedwick testified that to eliminate all projected NERC reliability violations for 2015: (i) if Alternative A – single-circuit 230 kV hybrid line is constructed, an additional 1,008 MW of generating capacity would be required; (ii) if Alternative B – double-circuit 230 kV hybrid line is constructed, an additional 159 MW of generating capacity would be required; and (iii) if Alternative C – the rebuild and reconfiguration of existing 230 kV Lines #214 and #263 is undertaken, an additional 522 MW of generating capacity would be required, with 56 MW being the minimum size of a generating unit that must remain in service.¹²⁹¹ Mr. Nedwick stated that to eliminate all projected NERC reliability violations for 2021: (i) if Alternative A and the additional generating capacity is constructed for 2015, an additional 1,449 MW of generating capacity would be required, with 87 MW being the minimum size of a generating unit that must remain in service; (ii) if Alternative B and the additional generating capacity is constructed for 2015, an additional 551 MW of generating capacity would be required, with 27 MW being the minimum size of a generating unit that must remain in service; and (iii) if Alternative C and the additional generating capacity is constructed for 2015, an additional 505 MW of generating capacity would be required, with 139 MW being the minimum size of a generating unit that must remain in service.¹²⁹²

Similar to stand-alone generation, Dominion Virginia Power and Staff opposed combinations of 230 kV transmission and generation primarily based on cost and the time to complete.¹²⁹³ These topics will be addressed below.¹²⁹⁴

¹²⁸⁷ Kelly, Tr. at 1622-23, 1626-27.

¹²⁸⁸ Exhibit No. 133, at 3.

¹²⁸⁹ *Id.* at 2.

¹²⁹⁰ *Id.* at 26.

¹²⁹¹ Exhibit No. 87, Attached Rebuttal Schedule 3, at 3.

¹²⁹² *Id.*

¹²⁹³ Company Brief at 33-34; Staff Brief at 38-41.

¹²⁹⁴ *See infra* pp. 152-155.

Whittier's Variations

During the hearing, James City County witness Whittier offered two additional alternatives: (i) Whittier's Variation of Alternative A – 230 kV transmission hybrid (under river crossing) from Surry to Whealton without Skiffes Creek Switching Station;¹²⁹⁵ and (ii) Whittier's Variation of Alternative C – New 230 kV overhead transmission line from Chuckatuck to Whealton (collectively, "Whittier's Variations").¹²⁹⁶ On brief, James City County argued that Whittier's Variations "reasonably [address] all issues consistent with NERC requirements," would be "reasonable in cost," and could be "constructed in a timely manner."¹²⁹⁷

Company witness Nedwick contended that based on a "high-level quick assessment," Whittier's Variation of Alternative A failed to resolve all NERC reliability violations, with overloads to the Lanexa 230 to 115 auto transformers, Suffolk 500 to 230 transformers, both Whealton 230 to 115 transformers, and Line #99.¹²⁹⁸ Similarly, Mr. Nedwick found that Whittier's Variation of Alternative C failed to resolve all of the NERC reliability violations.¹²⁹⁹ Mr. Nedwick maintained that because Whittier's Variations connected directly to Whealton, electrically, they were both variations to Alternative C of the *January 30 Ruling*.¹³⁰⁰

Mr. Whittier acknowledged that his proposed variations failed to resolve all NERC reliability violations. For example, for Whittier's Variation to Alternative A, he reported "a couple . . . problems with Category B violation," such as a 106 percent loading of a transformer.¹³⁰¹ As for Whittier's Variation to Alternative C, he testified that "an initial look still showed us . . . more violations . . . than we wanted to see."¹³⁰² To address some of these violations, Mr. Whittier recommended the addition of another 500 to 230 kV transformer at Surry, but still admitted that such an addition only "solves almost everything. Not everything."¹³⁰³

On brief, James City County tried to bolster Whittier's Variations with the testimony of Staff witness Chiles. James City County maintained that "[w]hen given the opportunity, he did not contest that Whittier alternatives would resolve the NERC issues and in fact expressed the firm opinion that Whittier and he could find alternatives that addressed all of the NERC issues."¹³⁰⁴ I disagree. Mr. Whittier presented his variations for the first time during oral testimony on the morning of April 15, 2013. Mr. Chiles appeared as a witness on the afternoon of the same day. Mr. Chiles had not reviewed Mr. Whittier's analysis and expressed no opinion:

¹²⁹⁵ Whittier, Tr. at 909-13; Exhibit No. 69.

¹²⁹⁶ *Id.* at 940-941; Exhibit No. 71.

¹²⁹⁷ James City County Brief at 24.

¹²⁹⁸ Nedwick, Tr. at 1298.

¹²⁹⁹ *Id.* at 1303.

¹³⁰⁰ *Id.* at 1299-04.

¹³⁰¹ Whittier, Tr. at 936.

¹³⁰² *Id.* at 940.

¹³⁰³ *Id.* at 941.

¹³⁰⁴ James City County Brief at 35, citing Chiles, Tr. at 1089, 1110.

Q. The NERC violations, you just simply haven't looked at [Mr. Whittier's] analysis, so you really can't say whether they do or do not really solve the NERC problems at this point?

A. That's correct.¹³⁰⁵

Nonetheless, Mr. Chiles raised two criticisms of Mr. Whittier's approach that undermined the usefulness of Whittier's Variations in this case. The first criticism ties into Mr. Nedwick's observation that by running both variations directly to Whealton, electrically, Mr. Whittier has offered two variations of Alternative C. That is, by eliminating the Skiffes Creek Switching Station, neither of Whittier's Variations can resolve NERC violations by feeding power to the North. Mr. Whittier looked at the cause of projected NERC violations on the 230 kV transmission lines crossing under the James River and stated:

And as I looked at it, a lot of that – some of that overload wasn't because of the need down in the south near the Whealton area, but it was because they had interjected a new substation at Skiffes Creek that was drawing some power from those new circuits, too. So instead of the north relying on the lines from the north around Chickahominy, they're also relying – they're taking power from this new crossing, so that together with the power that was going down to Whealton overloaded the new lines.¹³⁰⁶

Mr. Chiles took issue with Mr. Whittier's approach for failing to consider the interrelated power flow problems that can be caused by losing power to the Peninsula from either the North or the South.¹³⁰⁷ Mr. Chiles stated his concern as follows:

So my concern with [Whittier's Variations] on the south side once again is you haven't really solved the issue of a strong source in the middle of the peninsula. . . .

It's really twofold. The strong source, number one, serves basically as a surrogate, if you will, for the Yorktown generation. So it's reasonable to assume that that makes sense.

The other thing is by splitting up the 230 lines coming from Chickahominy going down further, going down to Whealton, by splitting those circuits and injecting power at . . . [Skiffes Creek], what we're really doing is we're sending power throughout the peninsula both north and south in that case, which is going to create a counterflow to resolve the generator deficiencies in the north, which is going to solve NERC violations to the north. It's also going to deal with the issues of the generation load deficiency

¹³⁰⁵ Chiles, Tr. at 1110.

¹³⁰⁶ Whittier, Tr. at 910.

¹³⁰⁷ Chiles, Tr. at 1109; *See supra* at p. 133.

in the south at that injection point, as well. . . . [W]hat we're really doing is lessening the generation load balance, so we're reducing flows across the northern and southern circuit sends into the system.¹³⁰⁸

James City County contended that the remaining NERC violations may also be addressed by other simple measures such as DSM.¹³⁰⁹ However, for transmission planning purposes, PJM builds DSM forecasts into its load forecasts for each of the coming three years based on the amounts that have been committed in the RPM auction for the particular delivery years.¹³¹⁰ Consequently, for 2015, the amount of DSM reflected in the 2012 load forecast is based on the results of the RPM auction for that year.¹³¹¹ In addition, Company witness Herling outlined the practical problems of relying on DSM to solve NERC reliability violations, such as the DSM requirement of a two-hour notification, which would be ineffective in response to an instantaneous event.¹³¹² Accordingly, I find that DSM is already considered in PJM's transmission planning process and additional amounts should not be assumed to be available to address projected NERC reliability violations.

Based on the record in this case, I find that Whittier's Variations fail to resolve all of the NERC reliability violations and do not appear to address all of the NERC violations the Project is designed to solve.

Mr. Chiles' second criticism of Whittier's Variations concerns a fundamental difference in transmission planning between the two witnesses. Both Mr. Whittier and Mr. Chiles testified to the difficulty of accurately forecasting the future and the resulting need for flexibility to be designed into a transmission system.¹³¹³ However, the witnesses advocated opposite approaches for creating flexibility in the Company's transmission system. Mr. Whittier advocated an approach that could be expanded as needed and would address future NERC violations on an individual basis.¹³¹⁴ For example, Mr. Whittier advised that "[m]y longer term plan, if I go beyond 2021, or if load grows a lot more than expected, is that I might put in both of these 230 kV alternatives that we've talked about"¹³¹⁵ On the other hand, Mr. Chiles advocated the Proposed Project, with its 5000 MVA to address the NERC violations identified in 2015 and 2021, and provide for expected future load growth.¹³¹⁶ Mr. Chiles contended:

So rather than piecemealing a solution where you have, say, a line that's loaded at 1000 MVA and you put something in that when it goes into power flow is loaded at 995, and then a year later you're building something else, the capacity of . . . [Surry-

¹³⁰⁸ *Id.* at 1109-11.

¹³⁰⁹ James City County Brief at 25-26.

¹³¹⁰ Exhibit No. 92, at 11-12.

¹³¹¹ *Id.*

¹³¹² Herling, Tr. at 1380.

¹³¹³ Chiles, Tr. at 1099-1100; Whittier, Tr. at 943-45.

¹³¹⁴ Whittier, Tr. at 908, 945.

¹³¹⁵ *Id.* at 965.

¹³¹⁶ Chiles, Tr. at 1099.

Skiffes Creek Line] gives some flexibility for operations in the future and a lot of growth in the future.¹³¹⁷

Mr. Whittier's approach may be appropriate in an area with relatively stable load, and where the siting of future or additional transmission facilities would be easy and without impact on scenic assets, historic districts, and the environment. Such a situation is not present in this case. I agree with Mr. Chiles, and Dominion Virginia Power, that from an operational or electrical perspective, the Proposed Project provides the flexibility to address both the NERC violations and expected or possible future load growth.

Other fallacies of a piecemeal approach include cost and efficiencies. More importantly, the added impacts of the likely additional future projects on scenic assets, historic districts, and the environment argue against such an approach. Under Mr. Whittier's plan, both of Whittier's Variations may need to be constructed. Even more transmission may need to be constructed in the Chickahominy area to relieve NERC violations to the north that Whittier's Variations do not address. Thus, instead of the impacts of one transmission line and switching station, within a few years, the area could be impacted by the construction of a transmission line from Surry to Whealon, and a second overhead transmission line constructed from Chuckatuck to Whealon. Company witness Harper presented a preliminary routing map for Mr. Whittier's proposed Chuckatuck to Whealon transmission line and outlined several routing constraints including: (i) expansion of the existing right-of-way through residential and business developments; (ii) crossing a wide expanse of wetlands; (iii) a new crossing of the James River; (iv) routing across land owned by the City of Newport News and thus, not subject to eminent domain; and (v) the siting of two underground terminals; and (vi) beginning the process for approval of a new transmission line, including open houses, state agency review, and a new application with the Commission.¹³¹⁸

Moreover, to address NERC violations in the Chickahominy area and to the north, additional transmission lines may need to be built in the Chickahominy area. Consequently, under a piecemeal approach, it is possible that after building one or both of Mr. Whittier's Variations, PJM could again direct Dominion Virginia Power to undertake a project similar to the Proposed Project or the Proposed Alternative Project.

Accordingly, I find that Whittier's Variations should not be considered as viable alternatives in this proceeding based on their failure to resolve all of the NERC reliability violations, and because addressing NERC reliability violations by such a piecemeal approach in such a growing and constrained area creates the risk that system reliability ultimately will require multiple additional projects with multiple additional impacts on scenic assets, historic districts, and the environment.

¹³¹⁷ *Id.*

¹³¹⁸ Harper, Tr. at 1683-84; Exhibit No. 119.

Cost Considerations

On brief, Staff contended that cost remains an important consideration when evaluating transmission and generation alternatives.¹³¹⁹ Staff pointed to *Campbell County*¹³²⁰ and *Mt. Crawford*¹³²¹ as examples of the Virginia Supreme Court recognizing the Commission's duty to consider cost as a factor in deciding among alternatives for maintaining system reliability. No party appears to contest whether the Commission can include cost as a factor in choosing between transmission and generation alternatives. For example, James City County argued Whittier's Variations are "reasonable in cost, if not the same or less, and any increases in cost are more than justified in mitigation of impacts."¹³²²

On rebuttal, and attached to its brief, Dominion Virginia Power provided cost estimates for resolving NERC reliability violations for 2015 and for 2021, for the options studied pursuant to the *January 30 Ruling*.¹³²³ The table below summarizes the cost of the various alternatives studied:¹³²⁴

Alternatives	Cost	2015 Cost of Full Compliance	2021 Cost of Full Compliance
Proposed Project	\$155.4	\$155.4	\$172.7
Proposed Alternative Project	213.2	213.2	230.5
Alternative A 230 kV	273.8	488.6	515.3
Alternative A 230 kV plus Generation	623.8	623.8	1,200.8
Alternative B 230 kV	440.4	488.6	515.3
Alternative B 230 kV plus Generation	540.4	540.4	1,117.4
Alternative C 230 kV	144.8	226.9	408.8
Alternative C 230 kV plus Generation	494.8	494.8	1,071.8
Stand-Alone Generation	633.0	633.0	1,345.0

As further pointed out by Company witness Swanson, for ratemaking purposes, pursuant to the FERC-approved PJM cost allocation procedures, PJM's Dominion Zone would receive 12.38% of the cost of a 500 kV transmission line and 99.84% of the cost of a 230 kV transmission line.¹³²⁵ Thus, all other things being equal, a 230 kV transmission line would have a much higher impact on the rates of Virginia jurisdictional customers. These differences in cost allocation and rate impacts are not reflected in the costs presented in the above table.

¹³¹⁹ Staff Brief at 25-26.

¹³²⁰ *Campbell County v. APCo*, 216 Va. 93, 100 (1975) ("In 1972, the General Assembly enacted Code § 56-46.1, directing the [Commission] to effect a balance between environmental factors and economic and other traditional considerations where the construction and location of electrical transmission lines were involved.") ("*Campbell County*").

¹³²¹ *Mt. Crawford v. VEPCO*, 220 Va. 645, 650 (1980) ("the Commission relied on the following factors . . . the proposed deviation would substantially increase the cost of the entire line . . .") ("*Mt. Crawford*").

¹³²² James City County Brief at 29-33.

¹³²³ Exhibit No. 130, Attached Rebuttal Schedule 1; Company Brief Attached Appendix 1.

¹³²⁴ *Id.*; *Id.*; Exhibit No. 91.

¹³²⁵ Exhibit No. 116, Attached Rebuttal Schedule 1.

The cost projections presented above were accepted by Staff and were not challenged by any of the respondents. Indeed, James City County witness Whittier testified:

So my comment is that overall I think the Company's construction cost estimates are reasonable. In some cases, I might be a little lower. In some cases, mine might have been higher. But overall, I thought they were reasonable.¹³²⁶

On brief, ODEC argued against the use of any of the 230 kV transmission options, especially the options involving crossing under the James River.¹³²⁷ ODEC maintained that the 230 kV transmission options fail to be the best option when considering reliability, time to construct, operability, or cost.¹³²⁸ Of these considerations, ODEC emphasized the increased cost involved in undergrounding the 230 kV transmission options, which ODEC asserted to be between 2.83 and 3.14 times the cost of the Proposed Project.¹³²⁹ ODEC explained its sensitivity to such extra cost as follows:

Keeping in mind that a number of ODEC's member cooperatives' member-customers live in economically depressed areas, and that requiring undergrounding would be in response to purely aesthetic concerns of a few [James City County] and Williamsburg residents, it would appear difficult to justify the cost difference for underground 230 kV lines and especially the increased portion of the cost that would be paid by ODEC's customers.¹³³⁰

From a cost prospective, I find that the record in this case shows that the Proposed Project is by far the least cost alternative.

Construction Times

In this case, much of the need for new transmission or generation in 2015 is tied to the retirements of Yorktown Units 1 and 2.¹³³¹ In turn, the retirements of Yorktown Units 1 and 2 are driven by EPA regulations including: (i) MATS; (ii) the Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, Standards of Performance; (iii) the National Ambient Air Quality Standards; (iv) Cross State Air Pollution Rule; (v) the Clean Air Interstate Rule; (vi) the National Pollution Discharge Elimination System under the Clean Water Act; and (vii) Coal Combustion Byproducts under the Resource Conservation and Recovery Act.¹³³²

¹³²⁶ Whittier, Tr. at 906-07.

¹³²⁷ ODEC Brief at 5-6.

¹³²⁸ *Id.* at 6.

¹³²⁹ *Id.* at 8.

¹³³⁰ *Id.*

¹³³¹ Exhibit No. 87, at 4.

¹³³² Exhibit No. 83, Attached Exhibit WDM-2.

Of the various environmental rules and regulations that tighten standards for electric generating facilities, compliance with MATS produces the most relevant deadline for completion of the transmission or generation contemplated in this case.¹³³³ Although Dominion Virginia Power has asserted that Yorktown Units 1 and 2 must be retired by 2015 to comply with MATS,¹³³⁴ Staff witness McCoy testified that EPA and DEQ, on a case-by-case basis could grant extensions.¹³³⁵ Mr. McCoy stated:

MAE . . . believes that the strict timeline suggested by [Dominion Virginia Power] could ultimately be shifted in order to provide the time necessary to implement a solution to electrical reliability in this region. While granting extensions for cause has been a general practice in many environmental cases, until [Dominion Virginia Power] and the appropriate agencies have a specific discussion on timelines, there are no guarantees that this would be the case in this instance.¹³³⁶

Company witness Faggert confirmed Mr. McCoy's testimony and acknowledged that the compliance deadline for existing generating units, such as Yorktown, is April 16, 2015, but that a one-year extension is available from DEQ, and that an additional one-year extension is available from the EPA.¹³³⁷ Nonetheless, Ms. Faggert stressed that such extensions would be up to DEQ and the EPA.¹³³⁸ Therefore, I find that the Company's 2015 deadline for completion of the Proposed Project to be a "soft" deadline based on the availability or possibility of two one-year extensions. The "hard" deadline in this case, although not without some risk, is 2017. Thus, a viable alternative to the Proposed Project should not be rejected from consideration simply because it cannot be completed by the summer of 2015, as long as it can be completed by the summer of 2017. On the other hand, the additional risk associated with alternatives that cannot be completed by the summer of 2015 should be weighed in choosing between viable alternatives.

Dominion Virginia Power estimated the date for the completion of each of the alternatives for resolving the projected 2015 NERC reliability violations studied pursuant to the *January 30 Ruling*.¹³³⁹ The table below summarizes the Company's estimates.¹³⁴⁰

¹³³³ *Id.*; Exhibit No. 103.

¹³³⁴ Company Brief at 2.

¹³³⁵ Exhibit No. 83, Attached Exhibit WDM-2, at 7.

¹³³⁶ *Id.*

¹³³⁷ Exhibit No. 103, at 4-5.

¹³³⁸ Faggert, Tr. at 1566-67.

¹³³⁹ Exhibit No. 130, Attached Rebuttal Schedule 1; Company Brief Attached Appendix 1.

¹³⁴⁰ Company Brief Attached Appendix 1.

Alternatives	Completion Date for 2015 Compliance
Proposed Project	2015
Proposed Alternative Project	2015
Alternative A 230 kV	2018
Alternative A 230 kV plus Generation	2017
Alternative B 230 kV	2018
Alternative B 230 kV plus Generation	2018
Alternative C 230 kV	N/A
Alternative C 230 kV plus Generation	2021
Stand-Alone Generation	2016

James City County witness Whittier questioned the estimated construction completion dates presented by Dominion Virginia Power, especially given the disparity between the Proposed Project and some of the alternatives.¹³⁴¹ Mr. Whittier contended that the Whittier Variations could both be constructed in 18 months or “a little beyond 18 months, but certainly not out five years or anything like that.”¹³⁴² Mr. Whittier acknowledged that construction of an alternative project would take innovation to make the construction sequencing work.¹³⁴³ Company witness Allen responded by pointing out that some of the alternatives would require starting over by filing a new application with the Commission and working with local jurisdictions and other state and federal agencies.¹³⁴⁴ Mr. Allen also maintained that the underwater cable must be ordered twenty-four months in advance and that the installation of directional drilling operations increased his estimate to forty-eight months.¹³⁴⁵

In assessing the testimony of the witnesses and the record, I find that the 230 kV alternatives are likely to take longer than the Proposed Project or the Alternate Proposed Project due to either the requirement to begin a new application process at the Commission or due to the complications of an underwater crossing. However, Mr. Whittier’s testified that steps could be taken to sequence the construction work to complete the project sooner than projected by the Company. In other words, Dominion Virginia Power was not convincing that all of the additional projected time would be required to complete the alternative projects. Therefore, I find that only Alternative C, and Alternative C 230 kV plus generation should be eliminated from further consideration based on the inability to construct the alternative by the projected need date. Moreover, for the remaining alternatives, I find that the risk associated with the completion of the project as well as the risk associated with obtaining the required extensions should be weighed in choosing between proposals and alternatives.

Recommendations to Address Need

Based on the analysis presented above, I find that the Proposed Project is needed and that the corridor or route the line is to follow, subject to the discussion below concerning the BASF

¹³⁴¹ Whittier, Tr. at 969-71.

¹³⁴² *Id.* at 972-73.

¹³⁴³ *Id.* at 970.

¹³⁴⁴ Allen, Tr. at 1463-64.

¹³⁴⁵ *Id.* at 1464-65.

property, will reasonably minimize adverse impacts on the scenic assets, historic districts, and environment of the area concerned. The Proposed Project is the least cost alternative to resolve all of the NERC reliability violations and its 5,000 MVA capacity provides the Company with some flexibility for addressing long-term growth in the Hampton Roads area. Based on the Company's projections, the Proposed Project should be completed by the summer of 2015 and permit the retirement of Yorktown Units 1 and 2 with the request of little or no extension of time from the DEQ for MATS compliance.

James City County has argued that the Proposed Project "should not be approved because of the severe and extensive adverse impacts it would cause the historic, scenic and environmental assets of the Commonwealth by the overhead crossing of the James River."¹³⁴⁶ As discussed above, based on the record and the visual simulations submitted by both James City County and Dominion Virginia Power, I find that the visual impacts of the proposed overhead crossing of the James River will not have so great an impact on the historic, scenic and environmental assets of the Commonwealth that it must be mitigated by placing the line under the James River or moving the project elsewhere.

The Proposed Project will have a negative visual impact that must be considered in relation to the project's need and in choosing between alternatives. However, the visual impacts of the Proposed Project are mitigated by locating the line where it will not be seen from most areas of the Historic Triangle likely to be visited by the public. Where the overhead crossing of the James River can be seen from the Colonial Parkway or Jamestown Island, it will be distant (approximately 4 to 6 miles away), and tend to blend with other development that can be seen from these areas. Moreover, the added capacity of the 500 kV transmission line, over time, should serve to reduce overall impacts on historic, scenic, and environmental assets by reducing the need for additional transmission projects associated with a less-robust or piecemeal approach.

If, however, the Commission determines that the proposed overhead crossing of the James River will have so great an impact on historic, scenic, and environmental assets that such an overhead crossing cannot be built, then the Commission's next best choice would be the Proposed Alternative Project. This alternative provides the same electrical reliability, capacity, and flexibility as the Proposed Project; has the second lowest cost among the alternatives; and can be completed by the summer of 2015. As discussed above, the Proposed Alternative Project is much longer than the Proposed Project (approximately 38 miles to 8 miles) and, in my opinion, has greater impacts on historic, scenic, and environmental assets than the Proposed Project. Furthermore, areas crossed by the Proposed Alternative Project may be more sensitive. For example, the Chickahominy River Crossing in the Proposed Alternative Project would impact the Captain Smith Trail in an area that the National Park Service has designated for special emphasis or protection.¹³⁴⁷ By contrast, the Proposed Project's James River Crossing is not in an area of the Captain Smith Trail designated for special emphasis or protection.¹³⁴⁸

If the Commission determines that both the Proposed Project and the Proposed Alternative Project will impact historic, scenic, and environmental assets to such an extent that

¹³⁴⁶ James City County Brief at 1.

¹³⁴⁷ Exhibit No. 64, at 28.

¹³⁴⁸ *Id.*

neither alternative is possible, then the Commission would be left with a choice between four possible alternatives, listed in order of my finding of their suitability: (i) Alternative B 230 kV plus transmission; (ii) Alternative B 230 kV plus generation; (iii) stand-alone generation; and (iv) Alternative A 230 kV plus generation. Each of these alternatives is significantly more expensive than the Proposed Project, and each of these alternatives would require: (i) the granting of an extension from DEQ and, possibly, EPA; and/or (ii) completion quicker than the time estimated by Dominion Virginia Power.

In weighing the differences in cost, in addition to the cost to construct which is provided in the table above, differences in cost allocation at the PJM level will make the 230 kV alternatives even more expensive for customers of Dominion Virginia Power. For example, the cost to construct Alternative B – 230 kV plus transmission is \$448.6 million for resolution of all NERC violations in 2015.¹³⁴⁹ Comparable costs for the Proposed Project are \$155.4 million.¹³⁵⁰ However, from a customer rate impact perspective, Alternative B – 230 kV plus transmission would increase Virginia jurisdictional annual revenue requirements by \$56.4 million as compared to the annual increase associated with the Proposed Project of \$11.0 million.¹³⁵¹

Furthermore, none of the remaining alternatives is without some impact on historic, scenic, and environmental assets. For example, as Company witness Thomassen testified, an underwater crossing of the James River will require the construction of temporary platforms on piles driven into the riverbed, and the river dredged to install the underground cables.¹³⁵²

Finally, because these remaining alternatives provide less capacity, they carry a greater risk that this or nearby areas will be impacted by the need for additional transmission or generation.

SKIFFES CREEK

Dominion Virginia Power requests that the Commission find that based on the facts and circumstances of this case, Skiffes Creek Switching Station constitutes a “transmission line.”¹³⁵³ With such a finding, pursuant to § 56-46.1 F, Commission approval of the Proposed Project would satisfy zoning requirements and the Company would avoid applying for a SUP from James City County. James City County opposes the Proposed Project and maintains that the impact of the transmission line crossing the James River can be reasonably mitigated only by placing the lines under the river, or by moving the project to another location.¹³⁵⁴ Moreover, James City County argues that Dominion Virginia Power must obtain a SUP for the Skiffes Creek Switching Station, and asks the Commission to condition any approval on the Company obtaining such a SUP.¹³⁵⁵

¹³⁴⁹ Exhibit No. 93, Attached Rebuttal Schedule 4, at 2.

¹³⁵⁰ Exhibit No. 130, Attached Rebuttal Schedule 1; Company Brief Attached Appendix 1.

¹³⁵¹ Exhibit No. 116, Attached Rebuttal Schedule 1.

¹³⁵² Thomassen, Tr. at 1556-58.

¹³⁵³ Company Brief at 73.

¹³⁵⁴ James City County Brief at 1.

¹³⁵⁵ *Id.* at 49.

In its brief, James City County advised that it has filed a declaratory judgment action in circuit court, which it contended is the proper forum for such determinations.¹³⁵⁶ Staff agreed that circuit courts have authority to decide this issue.¹³⁵⁷ More specifically, Staff stated that “case law and prior action by [Dominion Virginia Power] itself indicate that the legal effect of a certificate of public convenience and necessity on local zoning authority can be adjudicated by a Circuit Court and that such a ruling can occur regardless of whether or not the Commission determines to define the term “transmission line.”¹³⁵⁸

Because of the pending circuit court action, and accepting Staff contention regarding the jurisdiction of circuit courts to decide the matter whether or not the Commission defines the term “transmission line,” I find that the Commission has the option of either: (i) making a finding that the Skiffes Creek Switching Station is or is not a “transmission line,” or (ii) decide to forgo making any finding, thus leaving the issue for the circuit court to decide. The discussion below sets forth an analysis of the record and legal arguments concerning whether the Skiffes Creek Switching Station is or is not a “transmission line.”

Section 56-46.1 F of the Code states:

Approval of a transmission line pursuant to this section shall be deemed to satisfy the requirements of § 15.2-2232 and local zoning ordinances with respect to such transmission line.

Section 15.2-2232 of the Code provides in part:

A. Whenever a local planning commission recommends a comprehensive plan or part thereof for the locality and such plan has been approved and adopted by the governing body, it shall control the general or approximate location, character and extent of each feature shown on the plan. Thereafter, unless a feature is already shown on the adopted master plan or part thereof or is deemed so under subsection D, no street or connection to an existing street, or park or other public area, public building or public structure, public utility facility or public service corporation facility other than a railroad facility or an underground natural gas or underground electric distribution facility of a public utility as defined in subdivision (b) of § 56-265.1 within its certificated service territory, whether publicly or privately owned, shall be constructed, established or authorized, unless and until the general location or approximate location, character, and extent thereof has been submitted to and approved by the commission as being substantially in accord with the adopted comprehensive plan or part thereof. . . .

¹³⁵⁶ *Id.* at 55.

¹³⁵⁷ Staff Brief at 46-47.

¹³⁵⁸ *Id.*

Staff and the parties generally agree that § 56-46.1 F provides an exception to a locality's zoning authority for a transmission line for which the Commission grants a certificate of public convenience and necessity.¹³⁵⁹ There is also general agreement that the term "transmission line" is undefined by the Code.¹³⁶⁰ Furthermore, there appears to be general agreement between the Staff and the parties that the Skiffes Creek Switching Station is necessary or inseparable from the Proposed Project and the Proposed Alternative Project.¹³⁶¹ As James City County argued:

there is no need for the Surry-Skiffes Creek 500 kV line without the Skiffes Creek 500/230/115 kV Switching Station. As shown in Dominion's Application, the switching station is required to step down or transform the 500 kV power to 230 kV to feed power into two existing 230 kV transmission lines at the site, and to feed power into the new 230 kV transmission line to Whealton, and to feed power into two 115 kV transmission lines already on site.

Without this switching station, there is no way for 500 kV power to be used in the project, no way to step it down or transform the voltage of the power in a usable way, as the 500 kV line ends at the Skiffes Creek site. Thus, without an SUP from [James City County] for the Skiffes Creek Switching Station, there is no need for the 500 kV line and by extension, the Proposed Project.¹³⁶²

Based on the discussion of "need" above, I disagree that "need" turns on a SUP for the Skiffes Creek Switching Station. If nothing is done, and Yorktown Units 1 and 2 are retired as scheduled, numerous NERC reliability violations are predicted beginning in the summer of 2015.¹³⁶³ A more accurate statement is that without the Skiffes Creek Switching Station, the Proposed Project will not resolve the NERC reliability violations. Thus, through its SUP process, James City County seeks to eliminate the Proposed Project, the Proposed Alternative Project, and possibly every other transmission option relying on some type of a switching station at Skiffes Creek.

Both Dominion Virginia Power and James City County pointed to prior Commission decisions in support of their arguments. Dominion Virginia Power referred to the Commission's decision in *Morrisville*,¹³⁶⁴ and a subsequent decision by the Circuit Court of Fauquier County to grant the Company's Motion for Summary Judgment that Commission approval of a 500 kV –

¹³⁵⁹ *Id.* at 45-46; Company Brief at 79; James City County Brief at 52-53.

¹³⁶⁰ *Id.*; *Id.* at 95; *Id.* at 53.

¹³⁶¹ *Id.* 48-50; *Id.* at 89-91; *Id.* at 49-50.

¹³⁶² James City County Brief at 50 (citations omitted).

¹³⁶³ *See supra* at p. 132.

¹³⁶⁴ *Application of Virginia Electric and Power Company and Application of Potomac Edison Company of Virginia, For approval of electrical facilities under §56-46.1 of the Code of Virginia and for certification of such facilities under the Utility Facilities Act*, Case Nos. 11655 and 10758, 1975 S.C.C. Ann. Rep. 64, 67 (1975) ("*Morrisville*").

230 kV transmission switching station preempted local zoning requirements.¹³⁶⁵ In *Morrisville*, Fauquier County opposed the construction of a Morrisville transmission switching station, (“Morrisville Station”), which would serve as the “center point” for three 500 kV transmission lines and a 230 kV transmission line.¹³⁶⁶ In *Morrisville* the Commission held:

Having reached this point, the reasonableness of the proposed location of the Morrisville Substation should be resolved. Earlier, we commented on the interlocking nature of the facilities and the fact that the location of all the transmission facilities was dictated, in large part, by the location of Morrisville Substation

The type facilities, and their electrical configuration, proposed by Companies are geared to location of a substation in the vicinity of Morrisville. Facilities keyed to the Morrisville Substation are 500, 230, and 115 kV transmission lines, and substations with capabilities to transform voltages of 500, 230, 115, and 34.5 kV. Relocation of a facility, different from the electrical configuration proposed by Companies, or utilization of an existing right-of-way, generally requires structuring a different electrical configuration. A number of changes were offered by the Protestants in this proceeding. One such change was to relocate the substation proposed at Morrisville to the vicinity of Bristers on the Elmont-Bristers corridor. This change was suggested to support Protestants’ contention that Companies should utilize the existing corridors of Mt. Storm-Doubs-Loudoun, Elmont-Bristers, and Bristers-Remington, in whole or in part.

The Commission spent considerable time considering the record to determine whether the Morrisville Substation should be eliminated, or whether its basic function should be served from a substation located at an alternate site, such as at Bristers. Alternate electrical configurations were considered, with the view in mind that, if justified, the Commission would either direct [the Company] to implement an alternative or it would require further investigation into the merits of such an alternative. After consideration of the environmental impact, the electric power requirements of the public, and the cost estimates of various electrical configurations, we find that the Morrisville Substation site, and the electrical configuration controlled in large part by that site, will best serve the public interest and satisfy the requirements of controlling statutes.¹³⁶⁷

¹³⁶⁵ Exhibit No. 42, at DOM SC 00872-886.

¹³⁶⁶ 1975 S.C.C. Ann. Rep. at 72-3; Company Brief at 82.

¹³⁶⁷ *Id.* at 76-77; *Id.* at 82-83.

In a pending litigation brought by the Company against Fauquier County for the County's failure to act on the Company's application for local zoning approval for the Morrisville Station, based on the Commission's order in *Morrisville*, and the Company filed its Motion for Summary Judgment and its Memorandum in Support of Motion for Summary Judgment.¹³⁶⁸ In its Memorandum in Support of Motion for Summary Judgment, the Company noted the then newly enacted provision in § 56-46.1 that "[a]pproval of a transmission line pursuant to this section shall be deemed to satisfy the requirements of . . . local zoning ordinances with respect to such transmission line."¹³⁶⁹ Furthermore, the Company maintained:

As noted above the Commission, on May 15, 1975, gave the requisite approval.* Therefore, under the clear and unambiguous language of the statute local zoning and planning requirements are deemed to have been met. It necessarily follows that this proceeding can and should be disposed of by summary judgment. The statutory declaration that local zoning requirements have been met eliminates any relevant issue of fact, and the relief required by the Complainant should be granted as a matter of law.

* Two of the applications to the Commission included, as necessary adjuncts to the transmission lines, transmission substation facilities. These facilities, which have no use or function without the transmission lines, were properly included in the proceedings before the Commission and were approved by the Commission. They should be governed by those proceedings to the same extent as the transmission lines themselves.¹³⁷⁰

Based on the Commission's order in *Morrisville*, the Company's Motion for Summary Judgment, and its Memorandum in Support of Motion for Summary Judgment, the Circuit Court of Fauquier County, granted the Company's Motion for Summary Judgment.¹³⁷¹

On the other hand, James City County pointed to the Commission's decision in *Greenway*¹³⁷² to condition its approval on the Company receiving a SUP from Loudoun County to construct the Greenway Substation.¹³⁷³ In citing to *Greenway*, James City County failed to distinguish between a *distribution substation* and a *transmission or switching station*. In *Greenway*, the substation in question was a distribution substation that was proposed to handle

¹³⁶⁸ Exhibit No. 42, at DOM SC 000871-883; Company Brief at 81-82.

¹³⁶⁹ *Id.* at DOM SC 000874; *Id.* at 84.

¹³⁷⁰ *Id.*; *Id.* at 84-85 (emphasis and footnote omitted).

¹³⁷¹ *Id.* at DOM SC 00883; *Id.* at 85.

¹³⁷² *Application of Virginia Electric and Power Company D/B/A Dominion Virginia Power, For a certificate of public convenience and necessity for facilities in Loudoun County: Beaumeade-Beco 230 kV Transmission Line and Beaumeade-Greenway 230 kV Transmission Line*, Case No. PUE-2001-00154, Order Granting Approval and Remanding for Further Proceedings (June 27, 2002) ("*Greenway*").

¹³⁷³ Exhibit No. 40, at 2; James City County Brief at 50.

additional local distribution load, most of which was associated with a new data center.¹³⁷⁴ This distribution substation addressed a localized distribution problem, and was tied directly to the locality's decisions on growth and development. This distribution substation did not involve the interconnection or operation of the transmission system as was the case in *Morrisville*. In *Morrisville*, the transmission switching station addressed grid reliability problems that extended well beyond the interests of the locality. Such a matching of the scope of the problem with to the scope of the interests is at the heart of the General Assembly's preemption of local government zoning authority in regard to transmission lines.

While there is general agreement that the term "transmission line" as used in § 56-46.1 F is undefined, Dominion Virginia Power and James City County offered definitions. Dominion Virginia Power cited to a decision by the Maine Public Service Commission that included the following definition for "transmission line" in a decision addressing whether a proposed switching station at the terminus of a proposed transmission project was part of the transmission line and subject to Maine's certification requirements:

As a starting point, we agree that the wires, or conductors, that carry the high voltage electricity are a necessary part of a transmission line. There is no transmission "line" without wires. We also agree that the poles and other structures that hold the wires in the air, and the associated pieces of equipment that attach to the wires and the poles, should be considered part of the "line". We disagree, however, that it is clear, in the context of section 3132, that transmission "line" includes poles that hold wires in the air and the pieces of equipment that attach to the poles or the wires as they hang in the air, but does not include any associated pieces of equipment at the substation such as a switch, dead end insulator, tap or transformer that also directly connect to the wires.

....

... Construction of a transmission line cannot be restricted to wires, poles, and the pieces of equipment that attach to the poles or wires in the air. The wires must be connected to switches, buses or transformers typically located in substations. ...

....

PSNH is not simply adding a new switching substation next to its Three Rivers Substation. The new substation, in the Petitioners' view, is a necessary part of the 345 kV line, the rest of which CMP

¹³⁷⁴ *Application of Virginia Electric and Power Company D/B/A Dominion Virginia Power, For a certificate of public convenience and necessity for facilities in Loudoun County: Beaumeade-Beco 230 kV Transmission Line and Beaumeade-Greenway 230 kV Transmission Line*, Case No. PUE-2001-00154, Report of Alexander F. Skirpan, Jr., Hearing Examiner, at 1, 27-33 (January 25, 2002).

is building, leading up to and connecting at the substation. In terms of section 3132, the substation to be built by PSNH should be viewed as part of a transmission line that will be built in southern Maine, and, as such PSNH remains a proper petitioner seeking to build part of the transmission line project known as the MPRP.¹³⁷⁵

Dominion Virginia Power also pointed to NERC's Glossary of Terms, which defines "transmission line" as follows:

A system of structures, wires, insulators and associated hardware that carry electric energy from one point to another in an electric power system. Lines are operated at relatively high voltages varying from 69 kV up to 765 kV, and are capable of transmitting large quantities of electricity over long distances.¹³⁷⁶

Thus, the Company defined "transmission line" to include the switching stations or the facilities necessary to connect and transmit electricity across the transmission system, including facilities used to interconnect transmission lines of differing voltage.

James City County contended that the following "dictionary" definition of "transmission line" provides its plain meaning for purposes of § 56-46.1 F:

A metallic circuit of three or more conductors used to send energy usu. at high voltage over a considerable distance; *specif*: a usu. metallic line used for the transmission of signals or for the adjustment of circuit performance and often consisting of a pair of wires suitably separated, a coaxial cable, or a wave guide¹³⁷⁷

James City County argued that the "definition simply does not describe a large switching station with transformers connected to a number of transmission lines as described in the Application."¹³⁷⁸ A "circuit," however, requires a completed path. The definition of "circuit" includes:

6 a: the complete path of an electric current including any displacement current b: a specified portion of a circuit <external> <generator~> c: the region through which the magnetic flux from any source extends esp. when largely confined within a ferromagnetic body (as a magnet) . . . 8 a: an assemblage of electronic elements : HOOK-UP b: a system for two-way

¹³⁷⁵ Company Brief at 86-87; *Central Maine Power and Public Service of New Hampshire*, Docket No. 2008-255, Order Denying PSNH Motion to Dismiss, 2009 Me. PUC LEXIS 305 ("Maine Decision").

¹³⁷⁶ Company Brief at 92.

¹³⁷⁷ James City County Brief at 53; *Webster's Third New International Dictionary* 2429 (2002).

¹³⁷⁸ James City County Brief at 53.

communication between two places (as by telegraph, telephone, or radio)¹³⁷⁹

With “circuit” defined as “the complete path of an electric current” and “an assemblage of electronic elements,” the plain meaning of “transmission line” is consistent with the transmission line definitions that form the basis of the Circuit Court’s decision concerning *Morrisville*, the *Maine Decision*, and the NERC definition. All of these definitions include the facilities necessary to terminate or complete the transmission line, and all of these definitions refer to the function of sending high voltage or large quantities of electricity over large distances.

Finally, as in *Morrisville*, I find that the Commission should make a finding that the Skiffes Creek Switching Station is necessary to or inseparable from the Proposed Project, and will best serve the public interest and satisfy the requirements of controlling statutes.

BASF ROUTING

In this section, the routing of the Surry-Skiffes Creek Line across the James River and across the BASF property, and BASF’s requested mitigation measures will be addressed. At the close of the record, there were three proposed variations for an overhead crossing of the James River.

Variation 1, which is the crossing recommended by Dominion Virginia Power is described as follows:

Before leaving the shoreline in Surry County, the route turns southeast for 0.2 mile to a point in the river, this route turns northeast for 0.6 mile, pivots north for approximately 1.0 mile offshore from the eastern side of the Hog Island WMA, and turns east for 2.5 miles to the shoreline of James City County.¹³⁸⁰ James River Crossing Variation 1 is approximately 4.1 miles long and would require 17 structures in the James River.¹³⁸¹

Variation 3, which is a crossing presented by the Company and was preferred by BASF and James City County is described as follows:

The terrestrial portion of this route in Surry County is the same as that of Variation 1. After turning southeast for 0.2 mile to a point in the river, this route then pivots northeast 0.6 mile to follow the existing pipeline corridor, turns north for 0.6 mile offshore adjacent to the shoreline of the eastern side of Hog Island WMA, turns northeast 2.4 miles crossing the James River, then pivots to the southeast for 0.5 mile to the shoreline of James City County.¹³⁸² James River Crossing Variation 3 is approximately 4.1 miles long and would require 16 structures in the James River.¹³⁸³

¹³⁷⁹ *Webster’s Third New International Dictionary* 408 (2002).

¹³⁸⁰ Exhibit No. 37, at 24.

¹³⁸¹ *Id.*

¹³⁸² *Id.* at 25.

¹³⁸³ *Id.*

One of the biggest differences between Variation 1 and Variation 3 is where it enters the shoreline of James City County. Variation 1, essentially, would enter at the middle of the BASF property. Variation 3 would enter at the northern edge of the BASF property, preserving more of the BASF property for possible future development. The map on the following page provides a visual orientation of the crossing of the BASF property by Variations 1 and 3.¹³⁸⁴

During the April Hearing, James River Crossing Variation 4 was developed in an attempt to lessen the visual impact of Variation 3 on Carter's Grove, while maintaining the more northerly crossing of the BASF property provided by Variation 3.¹³⁸⁵ James River Crossing Variations 1, 3, and 4 are shown on Exhibit No. 97, a copy of which is also attached following this page.

The BASF property is the former site of manufacturing facilities, primarily for acrylic fiber.¹³⁸⁶ Although the property is still zoned industrial, in approximately 2000, all manufacturing operations at the site ceased.¹³⁸⁷ BASF currently is conducting extensive environmental remediation to prepare the over 620-acre property, with approximately two miles of frontage on the James River, for development.¹³⁸⁸

BASF objected to James River Crossing Variation 1 based on the route's impact on remediation efforts and plans for development of the property. On brief BASF asserted that Variation 1 "cuts directly through the most sensitive environmental remediation area on the property," and "bisect[s] the property, which would make plans for development, especially plans for mixed use resort development, effectively impossible."¹³⁸⁹ Dominion Virginia Power maintained that Variation 1 will not disrupt remediation of the BASF property and will not have a significant impact on the future development of the BASF property.¹³⁹⁰

Dominion Virginia Power opposed James River Crossing Variations 3 and 4 based on the greater visual impact these variations would have on Carter's Grove, and because these variations would require an easement from the Authority, which is owned by James City County and not subject to the Company's power of eminent domain.¹³⁹¹ BASF acknowledged the historic significance of Carter's Grove, but pointed out that the property is not open to the public, and is in the hands of a trustee that is attempting to sell the property as a private residence.¹³⁹² BASF also advised that the Authority has committed to providing the necessary easement.¹³⁹³

¹³⁸⁴ The attached map is a copy of Exhibit No. 62, Attached Exhibit SAR-1.

¹³⁸⁵ Exhibit No. 97; Allen, Tr. at 1474-75.

¹³⁸⁶ Exhibit No. 46, at 3.

¹³⁸⁷ *Id.*; Exhibit No. 118, Attached Rebuttal Schedule 1.

¹³⁸⁸ *Id.* at 3-4; Exhibit No. 60, at 2-3.

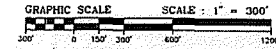
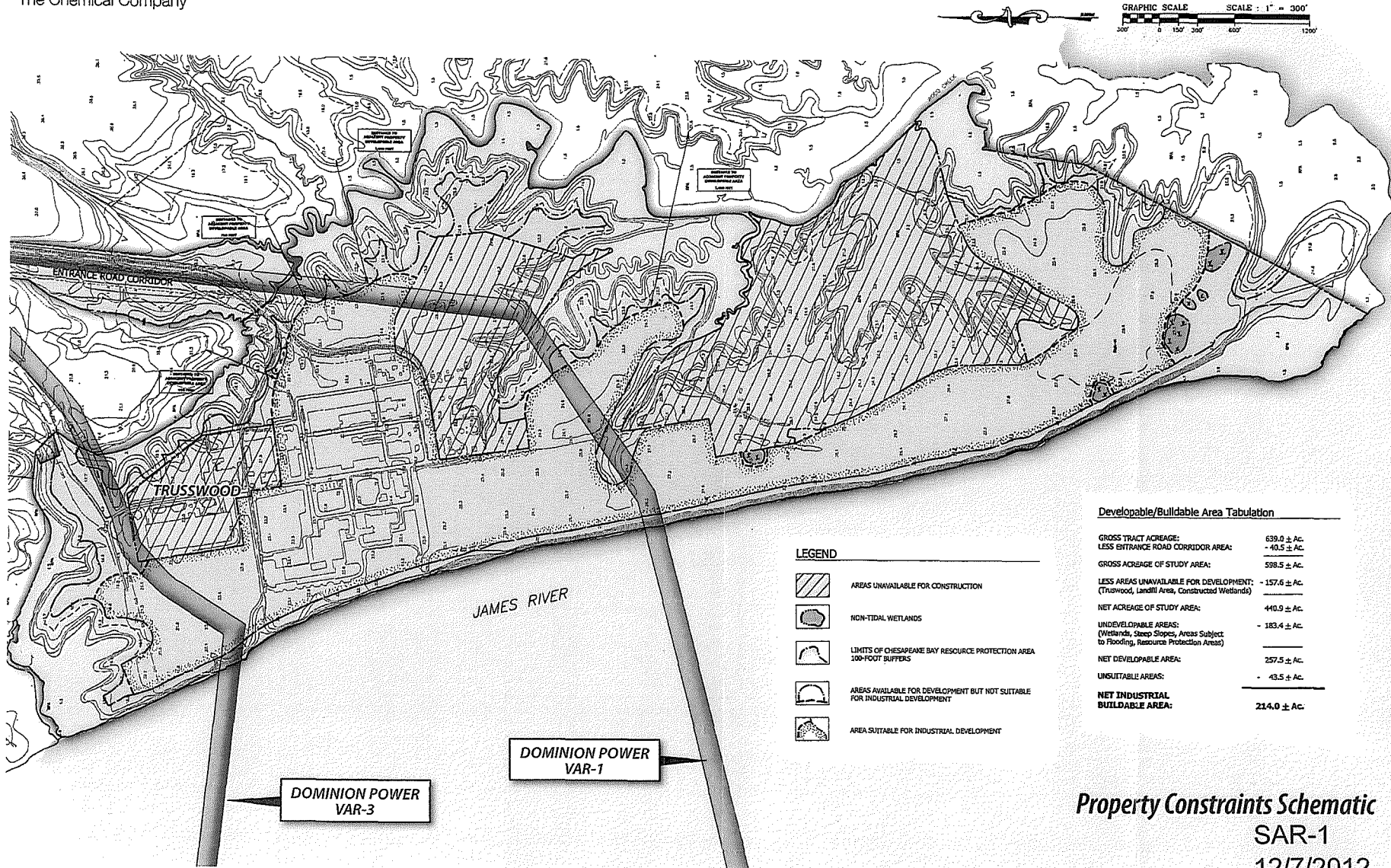
¹³⁸⁹ BASF Brief at 3-4.

¹³⁹⁰ Company Brief at 100, 105.

¹³⁹¹ *Id.* at 111-12.

¹³⁹² BASF Brief at 23.

¹³⁹³ *Id.* at 26.



LEGEND

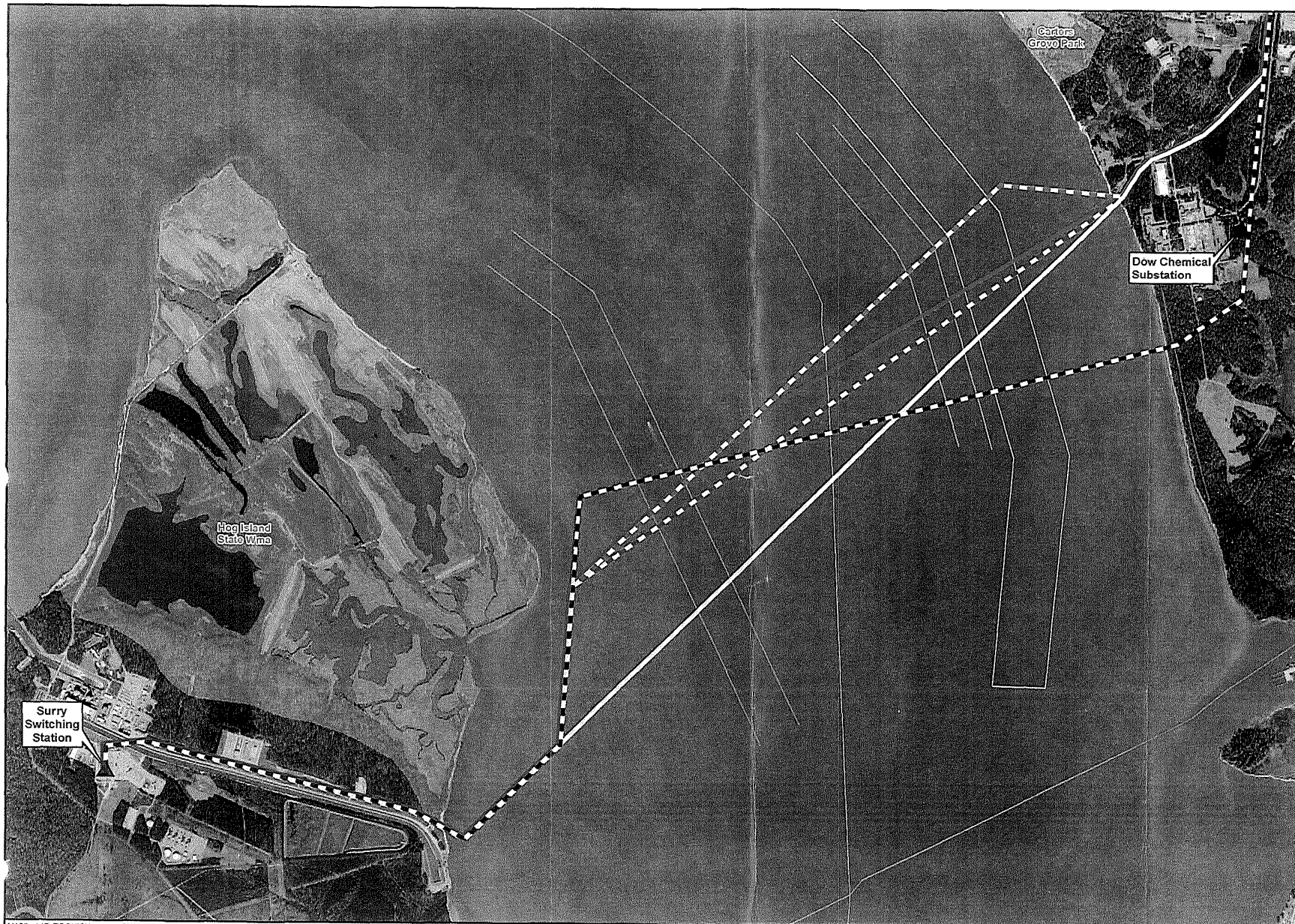
	AREAS UNAVAILABLE FOR CONSTRUCTION
	NON-TIDAL WETLANDS
	LIMITS OF CHESAPEAKE BAY RESOURCE PROTECTION AREA 100-FOOT BUFFERS
	AREAS AVAILABLE FOR DEVELOPMENT BUT NOT SUITABLE FOR INDUSTRIAL DEVELOPMENT
	AREA SUITABLE FOR INDUSTRIAL DEVELOPMENT

Developable/Buildeable Area Tabulation

GROSS TRACT ACREAGE:	639.0 ± AC.
LESS ENTRANCE ROAD CORRIDOR AREA:	- 40.5 ± AC.
GROSS ACREAGE OF STUDY AREA:	598.5 ± AC.
LESS AREAS UNAVAILABLE FOR DEVELOPMENT: (Trusswood, Landfill Area, Constructed Wetlands)	- 157.6 ± AC.
NET ACREAGE OF STUDY AREA:	440.9 ± AC.
UNDEVELOPABLE AREAS: (Wetlands, Steep Slopes, Areas Subject to Flooding, Resource Protection Areas)	- 183.4 ± AC.
NET DEVELOPABLE AREA:	257.5 ± AC.
UNSUITABLE AREAS:	- 43.5 ± AC.
NET INDUSTRIAL BUILDABLE AREA:	214.0 ± AC.

Property Constraints Schematic
SAR-1
12/7/2012

LANDMARK DESIGN GROUP Landscape Architecture • Urban Planning • Civil Engineering	
PROJECT: SAR-1	DATE: 12/7/2012
CLIENT: BASF	LOCATION: JAMES CITY COUNTY, VIRGINIA
PROJECT NUMBER: 282000-0001	DESIGN NUMBER: 14,0127A-01
<p>PRELIMINARY ASSESSMENT - INDUSTRIAL DEVELOPMENT SUITABILITY</p> <p>BASF PROPERTY</p> <p>ROBERTS DISTRICT</p>	



Proposed and Supplemental Surry - Skiffes Creek 500 kV Crossing Alternatives of the James River

- Existing Substation/
Switching Station
- Proposed
Switching Station
- James River
Crossing Variation 1
- James River
Crossing Variation 2
- James River
Crossing Variation 3
- James River
Crossing Variation 4
- BASF Variation A
- Channel Boundary
- Edge of Dredge
Disposal Area
- Recreation Area



0 1,000 2,000
Feet

1:24,000



Remediation

The route followed by James River Crossing Variation 1 across the BASF property would take the Surry-Skiffes Creek Line across one of the property's most sensitive remediation sites, referred to as Area 4C.¹³⁹⁴ As proposed, Variation 1 would include the placement of one transmission tower within Area 4C as well as crossing Area 4C with the transmission right-of-way.¹³⁹⁵

Area 4C is the site of a capped landfill that contains the reinterred excavated materials from 7 former lagoons and impoundments that made up the wastewater treatment system of the former manufacturing facility.¹³⁹⁶ As BASF witness Burrows testified:

The issue is it's not just a capped landfill. All right. The entire area of 4C is a source of contamination, continuing contamination to the unnamed tributary, which is to the south. . . . And that tributary then in turn flows into Wood Creek which in turn flows into Skiffes Creek. The primary contaminants are zinc and volatile organic compounds. . . . Now, this Area 4C was the former wastewater treatment facility for the BASF plant. About ten years ago, BASF excavated and stabilized the contents of the lagoons and the surface impoundments. Over 110,000 cubic yards of contaminated material, sludges, solids were stabilized with Portland cement, and they were reinterred in what is now the existing landfill. That is approximately a 3.7 acre existing landfill. However, what we found out through groundwater monitoring, post remediation groundwater monitoring, [the] remedy was not effective. . . . We still have considerable amount of zinc and volatile organics emanating from the entire area of 4C. That's a 30-acre parcel, radial outward and the primary impact point is to that unnamed tributary. . . . Area 4C is still a source. We have a lot of work to do to abate this continuing source moving forward.¹³⁹⁷

To address this continuing source, BASF has plans for a bio-barrier trench and the planting of a phytoremediation plot. Mr. Burrows explained the bio-barrier trench as follows:

The permeable reactive barrier, what it's designed to do is take care of zinc and volatile organics. . . . [The trench will be] 1,200 feet long, 30 feet deep, three to five feet wide. The majority of that trench will be filled with a mushroom compost, and the idea is it precipitates out the zinc. . . . And at the same time, the volatile organics are not treated by the mushroom compost. The

¹³⁹⁴ Exhibit No. 48, at 5-6.

¹³⁹⁵ Exhibit No. 93, at 24; Attached Rebuttal Schedule 5.

¹³⁹⁶ Exhibit No. 48, at 5.

¹³⁹⁷ Burrows, Tr. at 555-56.

mushroom compost affects the pH. It will precipitate out. What we have to do periodically is we have to take and clean out that compost and remove the precipitated zinc. At the same time, there's active pumping going on in the trench to capture the volatile organics, and that is pumped to a million gallon tank which is then pumped down to another area of the site that we refer to as the constructive treatment wetlands.¹³⁹⁸

BASF expressed concern regarding the location of a transmission tower between the capped landfill and the bio-barrier trench. BASF maintained that such a placement would be "a significant engineering challenge."¹³⁹⁹

As for the phytoremediation plot, BASF asserted that the clearing of a right-of-way "through Area 4C and the disruption of the planned phyto-plot area . . . may well undo the entire remediation plan."¹⁴⁰⁰ Mr. Burrows described the phytoremediation plot as follows:

What a phytoplot is designed to do is to drop the water table. The idea is the zinc and the volatile organics we missed through this entire northern area we would get [through the] establishment of trees, native species initially started with hybrid poplars. Basically, you bind up the zinc in the soil and in the root mass at the same time you drop the water table, and that is the long term remedy for Area 4C. So at the end of the day, Area 4C, which is approximately 30 acres, will be 26 acres of wildlife habitat, native species trees, hybrid poplars initially phased out. The only thing left not covered with trees is this 3.7-acre landfill.¹⁴⁰¹

Mr. Burrows further described the effect of cutting a 150-foot right-of-way through the planned phytoremediation plot as:

like punching a hole through our trench. I mean, you have to have water budget control. That is approximately – a preliminary engineering is – that punch-through is about 30 percent, 25 to 30 percent of our – phytoplot would be off the table. That will render the remedy at best ineffective, at worst useless.¹⁴⁰²

Company witness Taylor disagreed with Mr. Burrows and pointed to the documentation of BASF's remediation plan which indicated that the plan contemplates losing 20% of the hybrid poplars without any additional action needed to be taken; and that the plan lists other plant species, including a large number of native grasses and other species compatible with a

¹³⁹⁸ *Id.* at 565-66.

¹³⁹⁹ BASF Brief at 10.

¹⁴⁰⁰ *Id.*

¹⁴⁰¹ Burrows, Tr. at 559-60.

¹⁴⁰² *Id.* at 560.

transmission line right-of-way, that could serve the same purpose in the phytoremediation area.¹⁴⁰³

Mr. Burrows disagreed with the Company's assessment of the impact of the transmission line right-of-way on the remediation plan and maintained that BASF, the EPA, and DEQ would have to re-engineer an alternative remedy.¹⁴⁰⁴ BASF warned that Dominion Virginia Power and its ratepayers could have "a tremendous expense" imposed on them if Variation 1 undoes BASF's remediation plans.¹⁴⁰⁵ BASF estimated that over \$15 million has been spent on areas directly impacted by the Variation 1 route, and that it will cost an additional \$5 million to implement the additional remediation actions planned in Area 4C.¹⁴⁰⁶ BASF further estimated that to re-engineer and construct alternative measures in this area "could easily . . . double or triple the cost spent and allocated for this area."¹⁴⁰⁷ Finally, BASF stated that it faces a 2020 deadline imposed by the EPA to complete remediation of the site.¹⁴⁰⁸ BASF contended that it could face treble damages for failing to meet the 2020 deadline.¹⁴⁰⁹ As Mr. Burrows testified:

If we're at 2020, the remedy is not in place, EPA could simply fire DEQ, do direct oversight, direct a probe called a unilateral order or just direct oversight, excavate the whole thing, \$30 million, and bill us three times cost, so \$90 million.¹⁴¹⁰

Ms. Taylor advised that the 2020 deadline is part of the RCRA and outlined the program's four goals and BASF's compliance with those goals as follows:

One is that site assessments have been conducted on the site. Second is that the human health exposures are under control at at least 95 percent of the sites, and migration of the contaminated ground-water is under control at at least 95 percent of the sites, and construction of the final remedy is complete at at least 95 percent of the sites. And in the case of BASF, documentation on DEQ's website and EPA Region 3's website indicates that the current health exposure is under control and that the contaminated groundwater is under control, although there's additional work obviously that needs to be done in the final remedy, so that the open issue is the construction of the final remedy.¹⁴¹¹

¹⁴⁰³ Taylor, Tr. at 1808-09; Exhibit No. 128.

¹⁴⁰⁴ Burrows, Tr. at 560.

¹⁴⁰⁵ BASF Brief at 13.

¹⁴⁰⁶ *Id.*

¹⁴⁰⁷ *Id.* at 14.

¹⁴⁰⁸ *Id.*

¹⁴⁰⁹ *Id.*

¹⁴¹⁰ Burrows, Tr. at 564.

¹⁴¹¹ Taylor, Tr. at 1810-11.

Dominion Virginia Power argued that Variation 1 will allow construction of the final remedy consistent with the approved plan.¹⁴¹² In addition, the Company “committed to [work] with BASF to ensure that the tower placement is consistent with the final remedy and to ensure that compatible species of plant life are allowed to remain and flourish within the right-of-way.”¹⁴¹³ Dominion Virginia Power contended that Variation 1 “will not affect BASF’s attainment of a remediation construction date of 2020.”¹⁴¹⁴

Based on the record and arguments summarized above, I find that construction of Surry-Skiffes Creek following the route for James River Crossing Variation 1 carries a high degree of risk that the remediation efforts in Area 4C will be impacted adversely. Moreover, such adverse impacts also carry the risk of additional costs. I find that these risks should be weighed against use of Variation 1.

Future Development

BASF argued that Variation 1 would frustrate its long-standing plans to develop the property for its highest and best use.¹⁴¹⁵ BASF witness Henderson testified that he has been working with BASF on the sale and development of the property since 2002.¹⁴¹⁶ Mr. Henderson contended that the “BASF property is ideally suited for mixed-use development that would include hotel, time share, retail, entertainment, and recreational uses that capitalize on the property’s natural features and extensive river and creek frontage.”¹⁴¹⁷ Mr. Henderson also advised that the property could be developed for other commercial uses, including industrial and office uses.¹⁴¹⁸

Dominion Virginia Power maintained that for routing purposes, “it is inappropriate to put significant weight on the speculative future development plans for the property.”¹⁴¹⁹ In particular, Dominion Virginia Power emphasized the environmental problems associated with the property and property’s continuing environmental limitations.¹⁴²⁰ BASF witness Waltz confirmed that because of continuing environmental concerns, some areas of the property will never be sold by BASF, other areas will be available only for lease, and some areas will be available for sale.¹⁴²¹

Mr. Henderson presented an exhibit that outlined nine offers that he has received on the BASF property between 2003 and 2009.¹⁴²² Five of the offers were to develop the property as a resort, two offers were for horse breeding or racing, and two were for industrial purposes (an

¹⁴¹² Company Brief at 105.

¹⁴¹³ *Id.*

¹⁴¹⁴ *Id.*

¹⁴¹⁵ BASF Brief at 16.

¹⁴¹⁶ Exhibit No. 60, at 2.

¹⁴¹⁷ *Id.*

¹⁴¹⁸ *Id.* at 3.

¹⁴¹⁹ Company Brief at 107.

¹⁴²⁰ *Id.* at 106.

¹⁴²¹ Waltz, Tr. at 543-45; Exhibit No. 47.

¹⁴²² Exhibit No. 60, Attached Exhibit TCH-9.

ethanol plant and an LNG terminal).¹⁴²³ This exhibit confirms that despite the environmental limitations of the property, there appears to be some interest in further development of the BASF property. The addition of a 500 kV transmission line that bisects the property cannot be seen as conducive to such plans. The environmental limitations of the property should tend to magnify the negative impacts of the placement of the 500 kV transmission line through the middle of the property. Thus, I find that the negative impact of placing the transmission line through the middle of the property should be weighed against the use of Variation 1. On the other hand, the environmental limitations of the property limit the overall development possibilities for the BASF property, which should reduce the weight given to the future development of the property in relation to the weight given to other impacts such as remediation and visual impacts.

Visual Impacts

Dominion Virginia Power supports Variation 1 over either Variation 3 or Variation 4 based in part on the visual impacts of the crossings on Carter's Grove.¹⁴²⁴ In addition, based on the visual simulations, Dominion Virginia Power advocates Variation 3 over Variation 4 based on the visual impacts of the variations on Carter's Grove.¹⁴²⁵

While the structures for Variation 4 are located farther away from the Carter's Grove property, the visual simulation and line of sight study prepared for this route indicates that more towers for Variation 4 (two towers and the top half of a third tower) would be visible from the house at Carter's Grove than for Variation 3, and does not improve the visual impacts on Carter's Grove.¹⁴²⁶

In reviewing the relative visual impacts of the proposed variations on Carter's Grove, I find that Variation 1 will have less of an impact on the view from Carter's Grove and that Variations 3 and 4 will have a greater impact. Variation 4 will have a slightly greater visual impact on Carter's Grove than Variation 3. Variation 4 appears to provide lines of sight to more towers, but the closer towers in Variation 3 appear taller than the towers in Variation 4.

However, as discussed previously in the need section, the weighing of visual impacts in this case goes beyond the visual impact on Carter's Grove. Indeed, I found that more weight should be given to the visual impacts of the Surry-Skiffes Creek line on the view from the first parking lot on the Colonial Parkway (traveling from Williamsburg to Jamestown Island) and on the view from Black's Point on Jamestown Island. In comparing these simulations, Variation 1 will have less of an impact on the view from these points.¹⁴²⁷ A simulation of the view of Variation 4 was not made from either the Colonial Parkway or Jamestown Island. Nonetheless,

¹⁴²³ *Id.*

¹⁴²⁴ Company Brief at 110-12.

¹⁴²⁵ *Id.* at 111.

¹⁴²⁶ *Id.*; compare Exhibit No. 101 with Exhibit No. 23, Attached Appendix C, at 54; compare Exhibit No. 125 with Exhibit No. 23, Attached Appendix A, Figure 4.2.4-4.

¹⁴²⁷ Exhibit No. 99, compare Viewpoint 9 – James River Crossing Variation 1, and Viewpoint 9 – James River Crossing Variation 3; compare Viewpoint 12 – James River Crossing Variation 1, and Viewpoint 12 – James River Crossing Variation 3.

based on its more easterly alignment, it should have slightly less of an impact on those views that Variation 3, but more of an impact than Variation 1. Consequently, based on visual impact, Variation 1 should be picked over either Variation 3 or 4. However, giving more weight to the views from the Colonial Parkway and Jamestown Island, I find that based on visual impacts, Variation 4 should be chosen over Variation 3.

Easement from the Authority

Dominion Virginia Power contended that James River Crossing Variation 3 is not a viable route because it does not have a right-of-way agreement to cross the Authority's land, and because the Authority is owned by James City County, the Company does not have the power to gain such a right-of-way through the exercise of the power of eminent domain.¹⁴²⁸ BASF maintained that the Authority has committed to granting Dominion Virginia Power the required easement.¹⁴²⁹ BASF referred to the testimony of Russell Seymour, director of economic development for James City County and secretary for the Authority, who committed to provide such an easement.¹⁴³⁰ Furthermore, Exhibit No. 134 was reserved for an exhibit to be filed on May 17, 2013, to provide either an executed right-of-way agreement or an update concerning negotiations. This exhibit was filed as scheduled and indicated that the parties had agreed to both location and price, but that a complete agreement had not been concluded.¹⁴³¹

Because of its lack of the power of eminent domain over the Authority, I agree with Dominion Virginia Power that it must, eventually, obtain a right-of-way agreement from the Authority for either Variation 3 or 4 to be a viable route.

BASF Routing Recommendation

Assuming the Authority and Dominion Virginia Power are able to conclude a right-of-way agreement (thus making Variations 3 and 4 viable routes), the choice between James River Crossing Variations and BASF Routing becomes a weighing of: (i) the differences in visual impacts; versus (ii) the impacts to, and risks associated with, the BASF property remediation; and (iii) the impacts on future development.

In its brief, Staff cited to § 56-46.1 A of the Code and advised that the preference of the Authority for either Variation 3 or 4 "is relevant to the Commission's consideration of the effect the various tower alignments for the Proposed Project may have on economic development within the Commonwealth."¹⁴³² Nonetheless, Staff stated that it does not oppose Variations 1, 3, or 4.¹⁴³³

Based on my review of the record, I find that more weight should be given to remediation and development of the BASF property than to the slight differences in visual impacts. This also

¹⁴²⁸ Company Brief at 111.

¹⁴²⁹ BASF Brief at 26.

¹⁴³⁰ Seymour, Tr. at 662-63.

¹⁴³¹ Exhibit No. 134.

¹⁴³² Staff Brief at 38.

¹⁴³³ *Id.* at 36.

factors in the support of the Authority and James City County for Variation 3 or 4. Furthermore, as stated above, in choosing between Variations 3 and 4, I recommend James River Crossing Variation 4 based on its alignment being slightly farther from the Colonial Parkway and Jamestown Island.

However, if the Authority and Dominion Virginia Power are unable to conclude a right-of-way agreement, Variations 3 and 4 are no longer viable routes. The only remaining option at that point would be James River Crossing Variation 1. Because the routing of the James River Crossing depends on the Authority and Dominion Virginia Power concluding a right-of-way agreement, and in order to provide the parties with enough time to conclude such an agreement, I recommend that the Commission approve James River Crossing Variation 4 on the condition that the Authority and Dominion Virginia Power conclude a right-of-way agreement within three weeks of the Commission's final order. If such an agreement is not concluded three weeks from the Commission's final order, then the Commission's approval would be for James River Crossing Variation 1.

BASF Requested Mitigation Measures

Regardless of the route chosen, the Surry-Skiffes Creek Line will cross BASF's property. BASF has proposed several mitigation measures, most of which have been agreed to by Dominion Virginia Power. On brief, BASF has asked that the Commission adopt these mitigation measures and make them a condition of any certificate granted.¹⁴³⁴ Each of the mitigation measures requested in BASF's brief will be addressed below.

1. BASF Drive – BASF requested that Dominion Virginia Power maintain the tree buffer between its existing right-of-way and BASF Drive, and that if Dominion Virginia Power must expand its existing right-of-way that it be permitted to expand the right-of-way only to the west.¹⁴³⁵ BASF contended that BASF Drive will need to be expanded into a four-lane parkway for any future development, and that the existing tree buffer is needed to screen the transmission line from the entrance to the property.¹⁴³⁶ BASF witness Waltz testified that Dominion Virginia Power agreed to BASF's request, but only if the expanded right-of-way remained solely on BASF property.¹⁴³⁷ BASF maintained that Company witness Harper testified that there is room to expand the right-of-way without going on someone else's property, and the need to expand the right-of-way can be avoided with the use of galvanized steel monopoles.¹⁴³⁸

I agree with BASF that the Commission should condition the certificate in this case to maintain the tree buffer along BASF Drive by only expanding its existing right-of-way to the west.

2. Galvanized Steel Monopoles – BASF requested that galvanized steel monopoles be used to cross BASF property rather than the lattice towers proposed by Dominion Virginia

¹⁴³⁴ BASF Brief at 27-28.

¹⁴³⁵ *Id.* at 28.

¹⁴³⁶ *Id.*; Exhibit No. 62, at 5-6.

¹⁴³⁷ *Id.* at 29; Waltz, Tr. at 535-36.

¹⁴³⁸ *Id.*; Harper, Tr. at 1692-93.

Power.¹⁴³⁹ Company witness Allen testified that he agreed that monopoles could be used on the BASF property and that they could be placed in the existing 130-foot right-of-way, but they would have an average height of 155 feet as opposed to 128 feet for the towers.¹⁴⁴⁰ Mr. Allen also testified that the monopoles would be more costly, increasing the cost of Variation 1 by \$3 million and the cost of Variation 3 by \$3.8 million.¹⁴⁴¹

Based on the heavy impacts on the BASF property, regardless of the route variation, I find that BASF's request for monopoles should be granted.

3. Construction Practices – BASF requested that the Commission reflect the following construction practices that were agreed to during the proceeding by both BASF and Dominion Virginia Power:

- a) Dominion will use existing roadways for access to construction locations, unless use of such roadways is not practical.
- b) Construction traffic and equipment should be minimized so that only the vehicles and machinery necessary are used.
- c) Dominion will work with BASF in developing construction practices within appropriate bounds provided that BASF's requirements do not impede Dominion's construction schedule, do not cause the Company to absorb excessive cost to the project, and do not conflict with established safety and construction methods used by Dominion and its contractors.
- d) Dominion will use experienced and qualified construction firms in constructing the transmission line, and assign a Dominion representative experienced in transmission line construction to oversee all construction activities. Construction of the line will be done within the confines of the right-of-way except where ingress and egress is needed for tower locations or for set up locations for wire pulling activities.
- e) Construction activity in proximity to rivers and creeks should be avoided if possible, and otherwise undertaken with utmost care.
- f) Construction activity in proximity to remediation areas or areas identified as environmentally sensitive should be carefully coordinated with BASF, DEQ, and EPA.

¹⁴³⁹ BASF Brief at 29.

¹⁴⁴⁰ Allen, Tr. at 1481-82.

¹⁴⁴¹ *Id.* at 1482-83.

- g) Where possible, Dominion will make every effort to retain existing vegetation that will not interfere with the usage and reliable operation of the transmission line.¹⁴⁴²

Based on the agreement between BASF and Dominion Virginia Power, I find that the above construction practices should be included as a condition to the certificate.

4. Right-of-Way Maintenance Policies - BASF requested that the Commission reflect the following right-of-way maintenance policies that BASF maintained are adjusted to reflect concerns raised by the Company:

- a) Mowing the right-of-way should be avoided where possible. It is especially important to avoid mowing on property adjoining the river. Instead, where possible a diverse meadow-like plant community on the right-of-way should be promoted.
- b) Dominion should conduct a vegetation inventory to identify compatible species that can be retained in the right-of-way. The inventory may be limited to types of species, rather than number of plants present.
- c) Where sufficient distance is allowed between the outside conductor and the cleared right-of-way, selective lateral trimming should be used to produce a more feathered appearance to the edge of the right-of-way.
- d) Dominion will work with BASF to avoid the use of herbicides in the right-of-way that would interfere with environmental remediation efforts on the property.
- e) An erosion plan should be developed and implemented in areas near rivers or creeks, and near areas with steep slopes.
- f) The right-of-way should be designed and maintained to prevent access by unauthorized persons and, especially, vehicles.¹⁴⁴³

Based on the record, it appears that there is agreement between BASF and Dominion Virginia Power on the above policies. Therefore, I find that the Commission should include the above right-of-way policies for the BASF property as a condition to the certificate.

¹⁴⁴² BASF Brief at 30-31; Exhibit No. 93, at 24-26; Burrows, Tr. at 570-71.

¹⁴⁴³ *Id.* at 31-32; Exhibit No. 48, 15-16; Exhibit No. 129, at 5-9; Brucato, Tr. at 1826-31.

FINDINGS AND RECOMMENDATIONS

In conclusion, based on the evidence and for the reasons set forth above, I find that:

1. Dominion Virginia Power's transmission planning criteria should be used in applying mandatory NERC transmission reliability planning standards;
2. Dominion Virginia Power's load flow studies are based on reasonable assumptions for transmission planning purposes, and were confirmed by an independent Staff consultant;
3. Dominion Virginia Power's load flow studies indicate that with the retirement of Yorktown Units 1 and 2, numerous NERC reliability violations begin to occur in the summer of 2015;
4. Dominion Virginia Power's load flow studies support the need for additional transmission and/or generation to resolve NERC reliability violations;
5. The Proposed Project will resolve all of the 2015 NERC reliability violations and with a minor upgrade continues to resolve identified NERC reliability violations through 2021;
6. The Proposed Project's overhead crossing of the James River will have a limited visual impact on one section of the Colonial Parkway and a very limited impact on a small portion of Jamestown Island. Overall, the Proposed Project will reasonably minimize the adverse impacts on the scenic assets, historic districts, and environments;
7. The Proposed Project is the least cost viable alternative for addressing the identified NERC reliability violations presented in this case, can be constructed in a timely manner, and is the best alternative in this case;
8. The Proposed Alternative Project is a viable alternative, is electrically equivalent to the Proposed Project and can be constructed in a timely manner. However, the Proposed Alternative Project has a higher cost than the Proposed Project and will have a greater impact on scenic assets, historic districts and the environment;
9. None of the 230 kV transmission alternatives or Whittier's Variations, by themselves, resolved all of the NERC reliability violations for 2015 or 2021;
10. Additional generation, and combinations of new 230 kV transmission alternatives with additional generation resolve the identified NERC reliability violations, but at a significantly higher price and at a greater risk of failing to be completed by the date needed;
11. The Commission may or may not decide to address whether the Skiffes Creek Switching Station is a "transmission line" for purposes of § 56-46.1 F;
12. The route crossing the James River should follow James River Crossing Variation 4 on the condition that the Authority and Dominion Virginia Power conclude a right-of-way

agreement within three weeks of the Commission's final order. If such an agreement is not concluded three weeks from the Commission's final order, then the route crossing the James River should be James River Crossing Variation 1;

13. Any certificate issued by the Commission in this case should be conditioned to direct Dominion Virginia Power to maintain the tree buffer along BASF Drive by only expanding its existing right-of-way to the west;

14. Any certificate issued by the Commission in this case should be conditioned to direct Dominion Virginia Power to use galvanized steel monopoles for crossing the BASF property;

15. Any certificate issued by the Commission in this case should be conditioned to direct Dominion Virginia Power to follow the construction practices listed below:

- a) Dominion Virginia Power will use existing roadways for access to construction locations, unless use of such roadways is not practical.
- b) Construction traffic and equipment should be minimized so that only the vehicles and machinery necessary are used.
- c) Dominion Virginia Power will work with BASF in developing construction practices within appropriate bounds provided that BASF's requirements do not impede Dominion Virginia Power's construction schedule, do not cause the Company to absorb excessive cost to the project, and do not conflict with established safety and construction methods used by Dominion Virginia Power and its contractors.
- d) Dominion Virginia Power will use experienced and qualified construction firms in constructing the transmission line, and assign a Dominion Virginia Power representative experienced in transmission line construction to oversee all construction activities. Construction of the line will be done within the confines of the right-of-way except where ingress and egress is needed for tower locations or for set up locations for wire pulling activities.
- e) Construction activity in proximity to rivers and creeks should be avoided if possible, and otherwise undertaken with utmost care.
- f) Construction activity in proximity to remediation areas or areas identified as environmentally sensitive should be carefully coordinated with BASF, DEQ, and EPA.

g) Where possible, Dominion Virginia Power will make every effort to retain existing vegetation that will not interfere with the usage and reliable operation of the transmission line; and

15. Any certificate issued by the Commission in this case should be conditioned to direct Dominion Virginia Power to follow the right-of-way maintenance policies listed below:

a) Mowing the right-of-way should be avoided where possible. It is especially important to avoid mowing on property adjoining the river. Instead, where possible a diverse meadow-like plant community on the right-of-way should be promoted.

b) Dominion Virginia Power should conduct a vegetation inventory to identify compatible species that can be retained in the right-of-way. The inventory may be limited to types of species, rather than number of plants present.

c) Where sufficient distance is allowed between the outside conductor and the cleared right-of-way, selective lateral trimming should be used to produce a more feathered appearance to the edge of the right-of-way.

d) Dominion Virginia Power will work with BASF to avoid the use of herbicides in the right-of-way that would interfere with environmental remediation efforts on the property.

e) An erosion plan should be developed and implemented in areas near rivers or creeks, and near areas with steep slopes.

In accordance with the above findings, ***I RECOMMEND*** the Commission enter an order that:

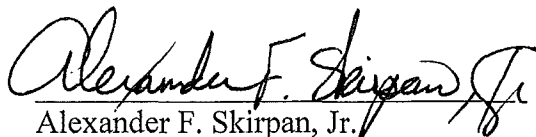
1. ***ADOPTS*** the findings in this Report;
2. ***GRANTS*** the Application to construct the proposed transmission facilities;
3. ***AMENDS*** Dominion Virginia Power's current certificates of public convenience and necessity to authorize construction of the proposed transmission facilities; and
4. ***DISMISSES*** this case from the Commission's docket of active cases.

COMMENTS

The parties are advised that pursuant to Rule 5 VAC 5-20-120 C of the Commission's Rules of Practice and Procedure, any comments to this Report must be filed with the Clerk of the Commission in writing, in an original and fifteen copies, within twenty-eight days from the date

hereof. The mailing address to which any such filing must be sent is Document Control Center, P. O. Box 2118, Richmond, Virginia 23218. Any party filing such comments shall attach a certificate to the foot of such document that copies have been mailed or delivered to all other counsel of record and to any party not represented by counsel.

Respectfully submitted,


Alexander F. Skirpan, Jr.
Senior Hearing Examiner

A copy hereof shall be sent by the Clerk of the Commission to all persons on the official Service List in this matter. The Service List is available from the Clerk of the State Corporation Commission, c/o Document Control Center, 1300 East Main Street, First Floor, Tyler Building, Richmond, VA 23219.

Table of Defined Terms

Defined Term	Meaning
230 kV Chickahominy Option	a double-circuit 230 kV line from the Chickahominy Substation to the Skiffes Creek Switching Station along the route of the Proposed Alternative Project
230 kV Tower Option	a double-circuit 230 kV tower line from the Surry 230 kV Switching Station to the proposed Skiffes Creek Switching Station
Alliance	Save the James Alliance Trust
Application	Application for Approval and Certification of Electric Facilities: Surry-Skiffes Creek 500 kV Transmission Line, Skiffes Creek -Wheaton 230 kV Transmission Line, and Skiffes Creek 500 kV-230 kV-115 kV Switching Station
April Hearing	Hearing held in the Commission's Courtroom on 4/9/13 through 4/12/13, and 4/15/13 through 4/18/13
Authority	James City County Economic Development Authority
BASF	BASF Corporation
Brian Gordineer	Brian E. Gordineer
Campbell County	<i>Campbell County v. APCo</i> , 216 Va. 93, 100 (1975)
Captain Smith Trail	Captain John Smith Chesapeake National Trail
Chickahominy ROW Option	a 500 kV line from the Chickahominy Substation to the Lexana Substation using the Company's existing improved right-of-way between the Chickahominy Substation and Lightfoot Junction
Chickahominy-Skiffes Creek Line	500 kV line approximately 37.9 miles in length from the Company's existing Chickahominy Substation in Charles City County, through York County and the City of Williamsburg, to the proposed Skiffes Creek Switching Station in James City County
Code	Virginia Code
COE	U.S. Army Corps of Engineers
Commission	State Corporation Commission
Company	Virginia Electric and Power Company d/b/a Dominion Virginia Power
Comprehensive Plan	James City County 2009 Comprehensive Plan
CPDC	Crater Planning District Commission
CTW	Constructed Treatment Wetlands
DACS	Department of Agriculture and Consumer Services
DCR	Department of Conservation and Recreation
DEQ	Virginia Department of Environmental Quality
DEQ Report	Coordinated review of the potential impacts to natural and cultural resources associated with the proposed project
DGIF	Department of Game and Inland Fisheries
DHR	Department of Historic Resources
Digital Design	Digital Design & Imaging Service, Inc.
DOA	Department of Aviation
DOD	Department of Defense
DOF	Department of Forestry
DOH	Department of Health
Dominion Virginia Power	Virginia Electric and Power Company d/b/a Dominion Virginia Power
DOMME	Department of Mines, Minerals and Energy
DSM	Demand Side Management
ELF	Extremely Low Frequency
EMF	Electric and Magnetic Field
Environmental Respondents	Appalachian Voices, Chesapeake Climate Action Network, and the Virginia Chapter of the Sierra Club
EPA	Environmental Protection Agency
Exponent	Exponent, Inc.
FAA	Federal Aviation Administration
FERC	Federal Energy Regulatory Commission
Foundation	The Colonial Williamsburg Foundation
GPS	global positioning satellite
Historic Triangle	Jamestown, Williamsburg, Yorktown, and the Colonial Parkway that connects all three historic sites
HPFF Cable	High Pressure Fluid Filled Cable
HRPDC	Hampton Roads Planning District Commission

Defined Term	Meaning
IARC	International Agency for Research on Cancer
ICES	International Committee on Electromagnetic Safety
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IRP	Integrated Resource Plan
ISO	Independent System Operator
<i>January 30 Ruling</i>	Hearing Examiner's Ruling dated January 30, 2013.
JC Citizens	James City County Citizens' Coalition, Inc.
JRA	James River Association
Kingsmill	Kingsmill Community Services Association
Lennar	US Home Corporation d/b/a Lennar Corporation
LNG	liquefied natural gas
MAE	Mid Atlantic Environmental
MATS	Mercury and Air Toxics Standards
MCLs	EPA Maximum Contaminant Levels
Merchant Great Bridge Option	new 500 kV and 115 kV substations at Great Bridge with a 500-115 kV transformer and a new single-circuit 230 kV Surry-Skiffes Creek Line with a PAR at the Surry Switching Station
Merchant PAR Option	a new single-circuit 230 kV Surry-Skiffes Creek Line built along the proposed route along with a PAR at the Surry Switching Station in series with the new 230 kV line
mG	Milligauss
Middle Peninsula	Essex County, King William County, King and Queen County, Middlesex County, Mathews County, Gloucester County, and the City of West Point
Morrisville Station	500 kV - 230 kV transmission switching station in Morrisville, Virginia
MRC	Marine Resource Commission
<i>Mt. Crawford</i>	<i>Mt. Crawford v. VEPCO</i> , 220 Va. 645, 650 (1981)
NERC	North American Electric Reliability Corporation
North Hampton Roads Load Area	Peninsula, Middle Peninsula, and Northern Neck
Northern Neck	King George County, Westmorland County, Northumberland County, Richmond County, Lancaster County, and the City of Colonial Beach
NPDES	National Pollution Discharge Elimination System
NPS Report	A National Park Service Report dated January 2013, titled: A Conservation Strategy for the Captain John Smith Chesapeake National Historic Trail
NRG	Natural Resources Group, LLC
ODEC	Old Dominion Electric Cooperative
PAR	Phase Angle Regulator
PCE	tetrachloroethylene
Peninsula	Charles City County, James City County, York County, Williamsburg, Yorktown, Newport News, Poquoson, and Hampton
PJM	PJM Interconnection, L.L.C.
Proposed Alternative Project	The Chickahominy-Skiffes Creek Line, the Skiffes Creek Switching Station, the Skiffes Creek-Wheaton Line, and additional facilities at the existing Chickahominy and Wheaton Substations
Proposed Project	The Surry-Skiffes Creek Line, the Skiffes Creek Switching Station, the Skiffes Creek-Wheaton Line, and the additional proposed facilities at the Surry Switching Station and Wheaton Substation
PSA	James City County's Primary Service Area
RCRA	Resource Conservation and Recovery Act
River Bluffs	River Bluffs Condominium Association
RPM	Reliability Pricing Model
RTEP	Regional Transmission Expansion Plan
RTEPP	Regional Transmission Expansion Planning Process
Services	Dominion Resources Services, Inc.
Skiffes Creek-Wheaton Line	230 kV transmission line from the proposed Skiffes Creek Switching Station in James City County, through York County and the City of Newport News, to the Company's Wheaton Substation located in the City of Hampton

Defined Term	Meaning
South Hampton Roads Load Area	The Virginia Counties of Southampton and Isle of Wight; the Virginia Cities of Suffolk, Chesapeake, Virginia Beach, Portsmouth, and Norfolk; and the North Carolina Counties of Camden, Gates, Currituck, Pasquotank, and Perquimans
Staff Environmental Regulation Report	Environmental Regulations Review Report to the Virginia State Corporation Commission on the Virginia Electric and Power company Surry-Skiffes Creek 500 kV Transmission Line, Skiffes Creek 500 kV-230 kV-115 kV Switching Station
Staff Routing Report	Report to the Virginia State Corporation Commission on the Routing and Environmental Aspects of the Virginia Electric and Power company Surry-Skiffes Creek 500 kV Transmission Line, Skiffes Creek 500 kV-230 kV-115 kV Switching Station
Surry-Skiffes Creek Line	500 kV transmission line from the Company's existing 500 kV-230 kV Surry Switching Station in Surry County to a new 500 kV-230 kV-115 kV Skiffes Creek Switching Station in James City County
TCE	trichloroethylene
TEAC	Transmission Expansion Advisory Committee
TERPS	Terminal Instrument Procedures
the Ledbetters	David and Judith Ledbetter
Truescape	Truescape Limited
UNESCO	United Nations Educational, Scientific and Cultural Organization
VCT	Virginia Commonwealth Textiles
VDOT	Department of Transportation
VOF	Virginia Outdoors Foundation
Whittier's Variations	Whittier Variation of Alternative A - 230 kV transmission hybrid line from Surry to Whealton without Skiffes Creek Switching Station, and Whittier Variation of Alternative B - New 230 kV overhead transmission line from Chuckatuck to Whealton
WHO	World Health Organization
WMA	Wildlife Management Area
Xanterra	Xanterra Parks and Resorts
XLPE Cable	Cross-Linked Polyethylene Cable