COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY **CASE NO. PUR-2024-00032**

For approval and certification of electric transmission facilities: 500-230 kV Aspen Substation, 500 kV Aspen-Goose Creek Line #5002, 500 kV and 230 kV Aspen-Golden Lines #5001 and #2333, 500-230 kV Golden Substation, and Lines #2081/#2150 Loop

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY **CASE NO. PUR-2024-00044**

For approval and certification of electric transmission facilities: 230 kV Apollo-Twin Creeks Lines, and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations

REPORT OF M. RENAE CARTER, SENIOR HEARING EXAMINER

November 1, 2024

I recommend the Commission issue certificates of public convenience and necessity for the Apollo-Twin Creeks Project, using the route proposed in that Application and for the Aspen-Golden Project, using Route 1AA as modified for the JKLH Belmont Landbay KK Variation and the Community Church Proposed Modified Segment.[1] Given the concerns about the Updated Hybrid Proposal's route, constructability, and cost and given the lack of environmental analysis and environmental justice analysis, I do not find the Updated Hybrid Proposal meets the statutory criteria for issuance of a certificate of public convenience and necessity, nor do I find that the total public interest is best served by the Updated Hybrid Proposal.

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[1] Concerning the JKLH Belmont Landbay KK Variation, this recommendation includes flexibility to microsite the Aspen-Golden Lines' route and structures on the JKLH Belmont Property. This recommendation also incorporates the ability to work with Allan Myers to determine possible solutions for siting the Aspen-Golden Lines on Allan Myers' property without interfering with this business's future construction plans.

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CASE HISTORY

Aspen-Golden Application

On March 7, 2024, Virginia Electric and Power Company ("Dominion" or "Company") filed with the State Corporation Commission ("Commission") an application ("Aspen-Golden Application") for approval and certification of electric transmission facilities in Loudoun County, Virginia. Through the Aspen-Golden Application, Dominion seeks Commission approval to do the following (collectively, "Aspen-Golden Project"):[2]

1) Construct a new 500-230 kilovolt ("kV") Aspen Substation in Loudoun County, Virginia, entirely on Company-owned property. The 500 kV source to the Aspen Substation will be created by cutting the Company's existing overhead 500 kV Brambleton-Goose Creek Line #558 into the Aspen Substation, resulting in (i) 500 kV Aspen-Brambleton Line #558 and (ii) 500 kV Aspen-Goose Creek Line #597.

2) Construct a new 500 kV single circuit transmission line extending approximately 0.2 miles from the proposed 500-230 kV Aspen Substation to the Company's existing 500 kV Goose Creek Substation in Loudoun County, Virginia, named Aspen-Goose Creek Line #5002. Aspen-Goose Creek Line #5002 will be constructed entirely on Company-owned property or within existing right-of-way ("ROW") supported by one 500 kV single circuit monopole structure and will utilize three-phase triple-bundled 1351.5 Aluminum Conductor Steel Reinforced ("ACSR") conductors with a summer transfer capability of 4,357 megavolt amperes ("MVA").

3) Construct a new approximately 9.4-mile overhead 500 kV single circuit transmission line and a new 230 kV single circuit transmission line almost entirely on new ROW. The new

[2] Ex. 4 (Aspen-Golden Application) at 2-5.

transmission lines will originate at the 500 kV and 230 kV buses of the proposed Aspen Substation and continue to the proposed 500-230 kV Golden Substation, where the new lines will terminate, resulting in (i) 500 kV Aspen-Golden Line #5001, and (ii) 230 kV Aspen-Golden Line #2333 (collectively, "Aspen-Golden Lines"). The proposed Aspen-Golden Lines will be constructed on new ROW varying between 100 and 150 feet in width to support a 5/2 configuration on a combination of dulled galvanized steel double circuit three-pole or two-pole H-frame structures (150-foot-wide ROW) or monopole or two-pole structures (100-foot-wide ROW), as well as to accommodate the routing of the lines to their respective buses in the proposed Aspen and Golden Substations. The new 500 kV line will utilize three-phase triple-bundled 1351.5 ACSR conductors with a summer transfer capability of 4,357 MVA. The new 230 kV line will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

4) Construct the new 500-230 kV Golden Substation in Loudoun County, Virginia, on property to be obtained by the Company.

5) Loop the Company's existing 230 kV overhead Paragon Park-Sterling Park Line #2081 and Paragon Park-Sterling Park Line #2150, which are currently collocated on double circuit lattice towers, into and out of the proposed Golden Substation in Loudoun County, Virginia, resulting in (i) Golden-Sterling Park #2081, (ii) Golden-Sterling Park #2150, (iii) Golden-Paragon Park #2348, and (iv) Golden-Paragon Park #2351 (collectively, "Line Loop"). To cut the lines into the proposed Golden Substation, the Company will remove one existing double circuit lattice tower (Structure #2081/123 / #2150/183) and replace it with four dulled galvanized steel single circuit monopoles (Structures #2081/122A, #2150/182A, #2348/123A, and #2351/183A). The Line Loop will be constructed entirely within the existing transmission corridor ROW or on property to be obtained by the Company for the proposed Golden Substation. Temporary infrastructure may be installed within the existing transmission corridor to keep Lines #2081 and #2150 in service during construction of the Line Loop. The Company proposes to utilize three-phase twin-bundled 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA for the Line Loop, the rating of which will be limited to the rating of the existing lines.

The Company requested a Commission final order approving a desired in-service target date of June 1, 2028, for the Aspen-Golden Project, and a certificate of public convenience and necessity ("CPCN") sunset date of June 1, 2029, to accommodate adjustments to the Aspen-Golden Project schedule that could require up to a 12-month delay in the targeted in-service date.[3] The Commission docketed the Aspen-Golden Application as Case No. PUR-2024-00032.

Apollo-Twin Creeks Application

On March 27, 2024, Dominion filed with the Commission an application ("Apollo-Twin Creeks Application") for approval and certification of additional electric transmission facilities

[3] *Id*. at 11-12.

in Loudoun County, Virginia. Through the Apollo-Twin Creeks Application, Dominion seeks Commission approval to do the following (collectively, "Apollo-Twin Creeks Project"):[4]

1) Construct a new double circuit overhead 230 kV transmission line on entirely new ROW by cutting the Company's existing 230 kV Edwards Ferry-Pleasant View Line #203 at Structure #203/2 (collectively, "Apollo-Twin Creeks Lines"). From the cut-in location within the existing ROW, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide ROW,[5] interconnecting the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations and terminating at the proposed Apollo Substation. The proposed Apollo-Twin Creeks Lines will be supported primarily by double circuit galvanized steel monopoles and will utilize three-phase twin-bundled 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.

2) Construct five new 230-34.5 kv substations in Loudoun County, Virginia, on property to be obtained by the Company, *i.e.*, the Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation.

The Company asserted the proposed route for the Apollo-Twin Creeks Lines collocates with, or runs parallel to, the proposed Aspen-Golden Lines and existing or planned utilities for approximately 79% of the Apollo-Twin Creeks Lines' total length, specifically with the Aspen-Golden Lines for 0.9 miles (48% of the Apollo-Twin Creeks Lines' length) and with existing and proposed water and sewer lines for 0.6 miles (31% of the Apollo-Twin Creeks Lines' length).[6] Where the Aspen-Golden Lines and the Apollo-Twin Creeks Lines are collocated, the ROW ranges from 200 to 260 feet wide.[7]

The Company requested a Commission final order approving a desired in-service target date of September 30, 2028, for the Apollo-Twin Creeks Project, and a CPCN sunset date of September 30, 2029, to accommodate adjustments to the Apollo-Twin Creeks Project schedule that could require up to a 12-month delay in the targeted in-service date.[8] The Commission docketed the Apollo-Twin Creeks Application as Case No. PUR-2024-00044. Concurrent with the filing of the Apollo-Twin Creeks Application, the Company filed the Motion of Virginia Electric and Power Company to Consolidate, for Procedural and Hearing Purposes Only, Case Nos. PUR-2024-00032 and PUR-2024-00044 ("Motion to Combine").

[4] Ex. 5 (Apollo-Twin Creeks Application) at 2-3.
[5] There are two segments where the ROW for the proposed Apollo-Twin Creeks Lines is 140 feet wide. The Company asserted a 0.2-mile segment of wider ROW is needed so the Apollo-Twin Creeks Lines can cross under the proposed Aspen-Golden Lines to enter the proposed Sycolin Creek Substation. The Company asserted a 0.1-mile segment of wider ROW is needed so the Apollo-Twin Creeks Lines can cross under the Aspen-Golden Lines when leaving the proposed Starlight Substation. *Id*. at 3 n.4.
[6] *Id*. at 5.
[7] *Id*. at 2 n.1.
[8] *Id*. at 8.

Procedural Matters

On April 17, 2024, the Commission issued an Order for Notice and Hearing, wherein it granted the Motion to Combine;[9] set one procedural and hearing schedule for both Case Nos. PUR-2024-00032 and PUR-2024-00044 ("Combined Cases"); and appointed a Hearing Examiner to conduct all further proceedings in the Combined Cases.

The following filed notices of participation in the Combined Cases: Lansdowne Conservancy ("Conservancy"); Theresa Ghiorzi ("Ms. Ghiorzi"); Loudoun County, Virginia ("Loudoun County" or "County"); JK Land Holdings, LLC ("JKLH"); NA Dulles Real Estate Investor, LLC ("Kincora"); Leesburg Pike Community Church ("Community Church"); Visa U.S.A. Inc. ("Visa"); Loudoun County Sanitation Authority ("Loudoun Water"); Philadelphia-Baltimore-Washington Laborers' District Council ("Laborers' Council"); Piedmont Environmental Council ("PEC"); and Allan Myers VA, Inc. ("Allan Myers").

On May 13, 2024, the Department of Environmental Quality ("DEQ") filed its report on the Aspen-Golden Project. On May 28, 2024, DEQ filed its report on the Apollo-Twin Creeks Project.

On or before August 14, 2024, the following respondents pre-filed testimony: Allan Myers, Community Church, Conservancy, Ms. Ghiorzi, JKLH, Kincora, Laborers' Council, Loudoun County, and Loudoun Water.

On August 21, 2024, Commission Staff ("Staff") pre-filed its testimony along with a Staff Report for each of the Combined Cases.

On September 4, 2024, Dominion pre-filed its rebuttal testimony.

Motions

Multiple motions were filed, and Hearing Examiner's Rulings issued, in the Combined Cases. Among other things, the Hearing Examiner entered, on May 1, 2024, a Protective Ruling and, on August 5, 2024, a Protective Ruling Providing Additional Protective Treatment for Extraordinarily Sensitive Customer-Specific Information.[10] Other rulings (i) postponed to September 18, 2024, the portion of the hearing wherein Dominion, Staff, and respondents would be afforded an opportunity to provide evidence in the Combined Cases; (ii) set a local public hearing at Belmont Ridge Middle School in Loudoun County, Virginia; and (iii) extended the public comment period to September 10, 2024.[11]

[9] Though the title of the Motion to Combine used the term "[c[onsolidate," the Order for Notice and Hearing stated, "To the extent practicable, for all purposes including discovery, pre-filed testimony, and hearing dates, the procedural schedules in Case No. PUR-2024-00032 and Case No. PUR-2024-00044 shall be combined – without the cases or case numbers being consolidated – as set forth in this Order." Order for Notice and Hearing at 11, ¶ 4.
[10] Hearing Examiner's Protective Ruling (May 1, 2024); Hearing Examiner's Protective Ruling Providing Additional Protective Treatment for Extraordinarily Sensitive Customer-Specific Information (Aug. 5, 2024).
[11] Hearing Examiner's Ruling (May 15, 2024); Hearing Examiner's Ruling (July 10, 2024); and Senior Hearing Examiner's Ruling (July 26, 2024).

On July 9, 2024, Kincora filed NA Dulles Real Estate Investor, LLC's Motion for Partial Summary Judgment ("Motion for Partial Summary Judgment") concerning Dominion's condemnation authority over Loudoun Water's property, which the Aspen-Golden Lines are proposed to cross. As part of the Aspen-Golden Application, Dominion had proposed two options (known as Broad Run Variations A and B) for the Aspen-Golden Lines to traverse Loudoun Water's property. In the Motion for Partial Summary Judgment, Kincora reported that Loudoun Water opposes Broad Run Variation A and prefers Broad Run Variation B, while Dominion and Kincora prefer Variation A. Kincora asserted that Code § 25.1-102 provides Dominion the option to begin a condemnation proceeding against Loudoun Water if the Commission issues a CPCN for the Aspen-Golden Lines to cross Loudoun Water's property. Kincora requested the Commission enter an Order stating "that, pursuant to Va. Code § 25.1-102, the Commission can empower Dominion to condemn property owned by Loudoun Water."[12]

Kincora requested the Commission rule on the issue raised in the Motion for Partial Summary Judgment before the August 14, 2024, deadline for respondents to file their testimony and exhibits in the Combined Cases.[13] Kincora further requested that the Hearing Examiner certify this issue to the Commission, pursuant to 5 VAC 5-20-120 B of the Commission's Rules of Practice and Procedure, 5 VAC 5-20-10 *et seq*., since this matter is "a legal issue of first impression."[14] The Hearing Examiner declined to certify to the Commission the Motion for Partial Summary Judgment.[15] Thereafter, the Hearing Examiner extended the deadlines for responses and reply to the Motion for Partial Summary Judgment.[16]

On August 27, 2024, Dominion, Loudoun Water, and Kincora jointly filed a Motion to Receive and Consider Proposed Stipulation and Recommendation, and for Expedited Consideration ("Motion on Stipulation"), along with a Proposed Stipulation and Recommendation ("Proposed Stipulation"). The Hearing Examiner entered a ruling suspending the time for responses and reply to the Motion for Partial Summary Judgment.[17] Through a subsequent ruling, among other things, the Hearing Examiner set deadlines for any responses and replies to the Motion on Stipulation.[18]

Paragraph (1) of the Proposed Stipulation requested a finding that "[i]f the [Commission] determines the Company has satisfied the requirements of Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 *et seq*., for the construction and operation of the [Aspen-Golden] Project, . . . overhead Broad Run Variation A, which is part of the Company's Proposed Route, meets the statutory criteria for approval and certification under these statutes and should be the selected routing variation between overhead Broad Run Variations A and B."[19] The Hearing Examiner declined to make this finding before taking evidence on the Aspen-Golden

[12] Motion for Partial Summary Judgment at 1-4, 10 (July 9, 2024).
[13] *Id*. at 3. *See also id.* at 10.
[14] *Id*. at 3. *See also id.* at 10.
[15] Hearing Examiner's Ruling at 3-4 (July 15, 2024).
[16] Hearing Examiner's Ruling (July 29, 2024); Hearing Examiner's Ruling (Aug. 13, 2024).
[17] Hearing Examiner's Ruling (Aug. 27, 2024).
[18] Hearing Examiner's Ruling (Aug. 28, 2024).
[19] Motion on Stipulation, Exhibit A, at 2-3 (filed Aug. 27, 2024).

Application, but the Hearing Examiner took Dominion's, Kincora's, and Loudoun Water's position under advisement.[20]

The Proposed Stipulation also included provisions that (i) relevant portions of Dominion's Aspen-Golden Application, accompanying documents, and direct testimony would be admitted into the record without cross-examination to the extent those documents relate to the selection of Broad Run Variation A or B; (ii) Kincora and Loudoun Water would withdraw the pre-filed testimony of their witnesses; and (iii) Kincora would withdraw the Motion for Partial Summary Judgment.[21]

Hearing

The hearing on the Combined Cases was held in three segments. During the first portion of the hearing, on August 6, 2024, eight public witnesses offered testimony by telephone on the Combined Cases.[22] The second portion was a local public hearing held on September 5, 2024, at Belmont Ridge Middle School in Loudoun County, Virginia. On this occasion 41 public witnesses provided live testimony on the Combined Cases.[23] The testimony of all public witnesses is summarized later in this Report.

The third portion of the hearing convened September 18, 2024, and continued into September 19, 20, 23, and 26, 2024. During this portion of the hearing, the Company, respondents, and Staff gave opening statements, provided their testimony, and gave closing arguments.[24] Dominion was represented by Vishwa B. Link, Esquire, Sarah B. Nielsen, Esquire, Anne Hampton Haynes, Esquire, Briana M. Jackson, Esquire, all of McGuireWoods, LLP; Timothy L. McHugh, Esquire, of Troutman Pepper Hamilton Sanders LLP; and David J. DePippo, Esquire, and Charlotte P. McAfee, Esquire, in-house counsel. Cody T. Murphey, Esquire, and John P. O'Malley, Esquire, both of Williams Mullen, appeared on behalf of JKLH. Claire M. Gardner, Esquire, and Brian R. Greene, Esquire, both with GreeneHurlocker, PLC, appeared on behalf of Community Church. Loudoun County was represented by Andrew R. McRoberts, Esquire, and Adam B. Winston, Esquire, both with Sands Anderson PC; and by Leo P. Rogers, Esquire, County Attorney for Loudoun County. The Conservancy was represented by Bryan S. Turner, Esquire, with the firm of Turner, Holden & Turner; and Brian R. Greene, Esquire, with GreeneHurlocker, PLC. Timothy G. McCormick, Esquire, and Christian F. Tucker, Esquire, both with Christian & Barton, LLP, represented Kincora. Jeffrey S. Poretz, Esquire, of Miles & Stockbridge, represented Loudoun Water. William T. Reisinger, Esquire, of ReisingerGooch PLC, represented PEC. Brian J. Petruska, General Counsel for Laborers' International Union of North America Mid-Atlantic, represented the Laborers' Council. Jasdeep S. Khaira, Esquire, with Gentry Locke, represented Visa. Ms. Ghiorzi represented herself. William H. Chambliss, General Counsel – Utilities, and William H. Harrison, IV, Associate General Counsel, represented Staff.

[20] Hearing Examiner's Ruling at 4 (Aug. 28, 2024).
[21] Motion on Stipulation, Exhibit A, at 3-4 (filed Aug. 27, 2024).
[22] Transcript ("Tr.") at 14-64.
[23] *Id*. at 78-232.
[24] *See generally*, *id*. at 241-1871.

Allan Myers' counsel did not participate in the hearing. Toward the beginning of proceedings on September 18, 2024, after a brief discussion of the Motion on Stipulation and Proposed Stipulation, Loudoun Water and Kincora withdrew their witnesses' pre-filed testimony, and Kincora withdrew the Motion for Partial Summary Judgment. Counsel for Loudoun Water and Kincora were subsequently excused from the balance of the hearing.[25] Counsel for PEC was excused after opening statements but reserved the right to file comments on the Hearing Examiner's Report.[26] On the afternoon of September 19, 2024, Counsel for the Laborers' Council was excused from the balance of the hearing.[27]

Loudoun County pre-filed testimony that referenced an underground transmission line pilot incorporating a hybrid approval process, involving the Commission and local government, for several future transmission line projects, and involving a high wattage user rate to pay for these projects. During the hearing, the portions of Loudoun County witnesses' testimony addressing this issue were stricken; amended versions of the relevant testimony, excising discussion of such a pilot, were entered into the record.[28]

Public Comments

The Commission's Order for Notice and Hearing provided an opportunity for any interested person to file comments on the Aspen-Golden and Apollo-Twin Creeks Applications.[29] The original July 31, 2024 deadline for such comments was later extended until September 10, 2024.[30] A summary of these public comments follows.

Comments from Public Officials

Congresswoman Jennifer Wexton, Representative for the 10th Congressional District, urged the Aspen-Golden Lines be placed underground where feasible. She asserted undergrounding protects the economic value of homes and businesses in the area, protects the aesthetic quality of the area, and promotes environmental stewardship. She contended the additional costs of undergrounding are outweighed by the long-term value undergrounding will provide to communities and the environment. She asserted undergrounding will provide data to build an electric grid for future generations.[31]

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[25] *Id*. at 247-49, 266. Dominion's Aspen-Golden Application, accompanying documents, and direct testimony were admitted into the record with no cross-examination related to the selection of Broad Run Variation A or B. *Id*. at 249. Testimony summaries of Kincora's and Loudoun Water's witnesses are not included in this Report since they were withdrawn and not entered into the record.

[26] *Id*. at 341-43.

[27] *Id*. at 726-27.

[28] *See id*. at 369-72, 959-67. The versions of the testimony entered into the record are summarized herein. Ms. Ghiorzi objected to the removal of lines 32 through 39 of the pre-filed direct testimony of Loudoun County Witness Buddy Rizer. Her objection was noted for the record. *Id*. at 966. As relevant to Ms. Ghiorzi's objection, the direct testimony of Buddy Rizer was entered into the record excluding part of line 30, lines 31-36, and the beginning of line 37 of the pre-filed version of this testimony. *See* Ex. 23 (Rizer Direct) at 2.

[29] Order for Notice and Hearing at 23.

[30] Hearing Examiner's Ruling at 6 (May 15, 2024).

[31] Comments of Representative Jennifer Wexton, Member of Congress, 10th Congressional District (filed Sept. 17, 2024).

State Senators Russet Perry and Suhas Subramanyam, along with Delegates Kannan Srinivasan, Atoosa Reaser, David Reid, and Fernando Martinez, offered collective comments supporting undergrounding part or all of the Aspen-Golden Lines and recommending the industries creating the increase in energy demand contribute meaningfully to undergrounding costs. They discussed how undergrounding would preserve scenic assets and historic landscapes proximate to well-planned communities and asserted undergrounding offers reliability and resiliency benefits. The representatives also urged the Commission to consider options, including High Voltage Direct Current ("HVDC") or Advanced Conducting Material, to allow existing infrastructure to support additional power. They asserted undergrounding would both benefit Loudoun County and set precedent for responsible placement of electric infrastructure throughout Virginia and the United States.[32]

Delegate Geary Higgins, Member of the House of Delegates for the 30th District of Virginia, also urged that the Aspen-Golden Lines be placed underground where feasible. He posited undergrounding enhances public safety and protects the electric grid from weather-related outages, minimizes adverse impacts to community wellbeing and the local economy, and preserves scenic landscapes and historic assets. He further requested the Commission explore ways to carry more electricity across present infrastructure, such as by using direct current or advanced conductors. He asserted undergrounding would both benefit Loudoun County and set precedent for responsible placement of electric infrastructure throughout Virginia and the United States.[33]

The Coalition of Loudoun Towns is comprised of the Mayors of the following towns: Hamilton, Hillsboro, Leesburg, Lovettsville, Middleburg, Purcellville, and Round Hill. They requested the Commission require the Aspen-Golden Lines to be placed underground wherever feasible, claiming undergrounding preserves the aesthetic qualities and cultural heritage of Loudoun County and surrounding areas, preserves property values, and mitigates visual blight and health issues associated with overhead transmission lines. They suggested undergrounding to prevent the proliferation of a web of transmission lines across the area. They asserted undergrounding will provide electric resiliency during bad weather. They stressed that above-ground structures are outdated and should not be allowed simply because the energy industry has not coped well with the present electricity demand crisis.[34]

Juli Briskman, Vice Chair, Loudoun County Board of Supervisors and Algonkian District Supervisor, urged the Commission to approve undergrounding of the Aspen-Golden Lines wherever feasible, particularly where there is new and affordable housing that has been approved for construction. She stressed the County's careful planning of the Route 7 corridor and asserted undergrounding is the only way to protect homes, businesses, and other developments in the area. She also contended data centers, the cause for the need for increased energy, should contribute to paying for the undergrounding. She argued Dominion has not adequately

[32] Comments of State Senator Russet Perry, State Senator Suhas Subramanyam, Delegate Kannan Srinivasan, Delegate Atoosa Reaser, Delegate David A. Reid, and Delegate Fernando "Marty" Martinez (filed Aug. 27, 2024).
[33] Comments of Delegate Geary M. Higgins (filed Aug. 27, 2024).
[34] Comments of Coalition of Loudoun Towns (filed July 19, 2024, and Aug. 27, 2024).

considered undergrounding's benefits and should do so now since the data center industry is proliferating throughout Virginia.[35]

Comments from Members of the Public

Including the above-discussed comments, the Commission received approximately 290 comments total in the Combined Cases.[36] Commenters almost uniformly protested the overhead lines and/or advocated for undergrounding part or all of the transmission lines.[37] Concerns with overhead lines included:

- Negative health impacts;[38]
- Loss of scenic beauty to the area more generally and/or a neighborhood or home in particular;[39]
- Loss of tourism in the area;[40]
- Decreased property values;[41]
- Being stuck with an eyesore if Dominion later abandons the transmission line as data centers switch to green electricity sources;[42]
- Interference with Inova Loudoun Hospital's helipad operations;[43]
- Proximity of the proposed overhead lines to schools;[44]
- Diminished quality of life and community wellbeing;[45] and
- The use of outdated technology.[46]

Commenters promoted undergrounding for its perceived benefits, including:

[35] Comments of Juli E. Briskman (filed Sept. 11, 2024).
[36] One comment discussed American Electric Power's rates. Comments of Concerned Citizen (filed June 20, 2024). One comment addressed the U.S. Department of Energy's designation of National Interest Electric Transmission Corridors. Comments of Robert Tatum (filed June 25, 2024). Two comments addressed the Golden-Mars transmission line. Two Comments of Jaime Comes (filed Sept. 4, 2024).
[37] *But see* Comments of Frederick Peters (filed Sept. 4, 2024); Two Comments of Ed Dalrymple (filed Sept. 10, 2024).
[38] *See, e.g.*, Comments of Carmen Ross (filed Apr. 19, 2024); Comments of Arelis Piscitelli (filed June 25, 2024).
[39] *See, e.g.*, Comments of James Clapper (filed Aug. 7, 2024); Comments of Bill Wright, Board of Directors President, Lansdowne on the Potomac Homeowners Association (filed Aug. 27, 2024); Comments of Board of Directors for Lansdowne Village Greens Homeowners Association (filed Aug. 27, 2024).
[40] *See, e.g.*, Comments of Robert Pollard (filed Sept. 9, 2024).
[41] *See, e.g.*, Comments of Reza Mousavi (filed June 25, 2024); Comments of Elvin Capestany (filed July 23, 2024); Comments of Samuel Allaire (filed Aug. 20, 2024); Comments of Jack Kelly, Board of Members President, Lansdowne Woods of Virginia Community Association, LLC (filed Aug. 27, 2024).
[42] *See, e.g.*, Comments of Charles H. and Kathleen K. Helein (filed Aug. 26, 2024); Comments of Curtis Scott (filed Sept. 4, 2024).
[43] *See, e.g.*, Comments of Marizol Curry (filed Aug. 8, 2024). *Cf.* Comments of Dave Di Pietro (filed Sept. 9, 2024) (expressing concern about conflicts between overhead lines and the Leesburg Airport's flight paths).
[44] *See, e.g.*, Comments of Kendall Perry (filed Sept. 6, 2024).
[45] *See, e.g.*, Comments of Jeffrey Getty (filed Aug. 7, 2024); Comments of Joanne Jiang (filed Aug. 8, 2024); Comments of Wesley and Judith Ballenger (filed Aug. 19, 2024).
[46] *See, e.g.*, Comments of Rev. Dr. Jean Wright, Chair, Friends Acting for Climate Today (filed Sept. 4, 2024).

- Protection of the area's beauty, scenic assets, and historic resources, and/or preservation of greenspace and wildlife habitat;[47]
- Preservation of the area for future generations;[48]
- Preservation of businesses' economic vitality;[49]
- Resiliency of electric service;[50]
- Continued prosperity for the area;[51]
- Lower infrastructure maintenance costs;[52]
- The long-term value outweighing the higher cost now;[53] and
- Implementing the will of the community.[54]

Some commenters requested the Commission require the transmission lines be placed underground and further require data centers to pay the additional costs for undergrounding.[55] Some asserted that data centers in particular are the cause of the additional need for electricity and that, without undergrounding, residents are being asked to bear a burden for the benefit of an industry that doesn't benefit them (at least not more than it benefits the rest of the world).[56] Some pointed out undergrounding high-voltage lines is feasible because other parts of the world do so.[57] At least one commenter questioned whether options to expand transmission capacity on existing infrastructure have been pursued.[58]

Some commenters combined their comments advocating undergrounding and preserving the current scenic and historic nature of Loudoun County with discussion against data centers themselves.[59] Two commenters requested the data centers be placed underground, moved elsewhere, or at least that the pace of their addition be slowed until environmental and safety concerns can be addressed.[60]

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[47] *See*, *e.g.*, Comments of Katharine Goodwin (filed June 25, 2024); Comments of Venkatesh Varakala (filed June 28, 2024); Comments of Mark Allen (filed Aug. 8, 2024); Comments of Wesley and Judith Ballenger (filed Aug. 19, 2024); Comments of Joe May (filed Aug. 27, 2024); Comments of Jeffrey R. Tombros, President, Belmont Homeowners Association (filed Aug. 27, 2024); Comments of Jack Kelly, Board of Members President, Lansdowne Woods of Virginia Community Association, LLC (filed Aug. 27, 2024).
[48] *See*, *e.g.*, Comments of Kathleen Hughes (filed Aug. 19, 2024); Comments of Jerry Kidwell (filed Aug. 26, 2024).
[49] Comments of Kevin Carter, Lansdowne Resort (filed Aug. 27, 2024).
[50] Comments of Paul Deschamps (filed July 15, 2024); Comments of Ramsin Toma (filed July 23, 2024); Comments of Joe May (filed Aug. 27, 2024); Comments of Katie Kusjanovic (filed Sept. 5, 2024).
[51] *See*, *e.g.*, Comments of Jonathan Jiang (filed Aug. 8, 2024); Comments of Board of Directors for Lansdowne Village Greens Homeowners Association (filed Aug. 27, 2024).
[52] *See*, *e.g.*, Comments of Paul Deschamps (filed July 15, 2024).
[53] *See*, *e.g.*, Comments of Shirley and Roger Fortuna (filed Aug. 26, 2024); Comments of Andrew Cather (filed Aug. 30, 2024).
[54] *See*, *e.g.*, Comments of Daniel Lazzari (filed Aug. 5, 2024); Comments of Dr. Carmen Ross (filed Aug. 20, 2024).
[55] *See*, *e.g.*, Comments of Guy Frankenfield (filed May 1, 2024); Comments of David Chow (filed July 23, 2024); Comments of Andrew Nagle (filed Aug. 12, 2024); Comments of Laura Oyhenart (filed Sept. 4, 2024).
[56] *See*, *e.g.*, Comments of Susan Manch, Waterford Foundation (filed Aug. 27, 2024); Comments of Justin Harrison (filed Aug. 28, 2024).
[57] *See*, *e.g.*, Comments of Stephen Hoffman (filed Aug. 26, 2024).
[58] Comments of Melissa Goldman (filed June 17, 2024).
[59] *See*, *e.g.*, Comments of Lucy Rota-Keller (filed June 25, 2024); Comments of Arianne Brennan (filed June 25, 2024); Comments of Chris Tandy (filed Sept. 3, 2024).
[60] Comments of Maurice Rudiselle (filed Sept. 16, 2024); Comments of Marilyn Silvey (filed Sept. 16, 2024).

Some also claimed the Commission should approve undergrounding for the transmission lines since the Commission's mission statement includes balancing interests of citizens, customers, and companies.[61]

Approximately 115 individuals signed a petition submitted through the Commission's comment portal. The petition rejected Dominion's Aspen-Golden overhead lines proposal as not well planned and as harmful to Route 7 and other areas along the Aspen-Golden Lines corridor. The petition urged undergrounding of the Aspen-Golden Lines in accordance with Loudoun County's undergrounding proposal to protect specific scenic and cultural resources in the area as well as Inova Loudoun Hospital, schools, and Community Church. The petition decried Dominion's proposal as using outdated technology that will harm greenspace to serve 21st-century energy demand. Finally, the petition asserted irreparable harm would result if the Aspen-Golden Lines were placed entirely overhead.[62]

Finally, a few comments made specific requests, including the following:

- Bike Loudoun requested the Commission condition approval of the Aspen-Golden Project on Dominion working with Loudoun County to determine the feasibility of creating a shared use bike and pedestrian path in the transmission line ROW. Bike Loudoun claimed this request is consistent with corridor #6 of the Loudoun County Bike & Pedestrian Master Plan and with item #50 of the Possible Secondary Uses of Rights-of-Way, in the Commission's Guidelines for Transmission Line Applications.[63]

- James Hanna asked the Commission, when it approves undergrounding for part of the Aspen-Golden Lines, also to "call for a [s]tate-wide initiative to formulate and adopt a high voltage transmission line undergrounding policy" to set forth: the benefits of undergrounding; how those benefits align with stakeholder interests; undergrounding cost elements; and funding options, including electricity ratepayers, local tax revenues, and industrial consumers whose funding might be tapped through undergrounding utility tax assessment districts.[64]

- Alfred and Irene Ghiorzi requested the Commission deny approval of the Aspen-Golden Application so that the Aspen Substation may be considered along with the Mid-Atlantic Resiliency Link project through Virginia and so there is time to analyze an HVDC underground pilot for the Aspen-Golden 500 kV lines.[65]

- Susan Carroll, for Inova Loudoun Hospital, filed comments supporting Aspen-Golden Belmont Park Variation A over Variation B, asserting Variation B may put the hospital into a zoning noncompliance situation. Ms. Carroll indicated she had not been able to review Loudoun County's Updated Hybrid Proposal but would not object to it if the

[61] *See*, *e.g.*, Comments of Charles H. and Kathleen K. Helein (filed Aug. 26, 2024); Comments of Kelvin Shields (filed Sept. 11, 2024).
[62] Comments of Shea Brady (filed Sept. 11, 2024).
[63] Bike Loudoun Comments (filed May 31, 2024), by Mark Norman.
[64] Comments of James Hanna (filed Sept. 4, 2024).
[65] Comments of Alfred and Irene Ghiorzi (filed Sept. 9, 2024).

Commission approved it, stating it would eliminate risk to the hospital's helicopter operations.[66]

SUMMARY OF THE RECORD

Project Descriptions

Aspen-Golden Project

Overview. The Aspen-Golden Project comprises multiple parts, as follows:[67]

- The new Aspen Substation, which will be connected to the transmission grid by cutting the 500 kV Brambleton-Goose Creek Line, resulting in Aspen-Brambleton Line #558 and Aspen-Goose Creek Line #597, both of which will operate at 500 kV;
- The new 0.2-mile Aspen-Goose Creek Line #5002 which, together with Aspen-Goose Creek Line #597, will bring two new sources to the area by connecting Goose Creek Substation to the area grid via the proposed Aspen Substation. To accomplish this objective, substation line terminal upgrade work will be required at the 500 kV Goose Creek Substation to terminate Aspen-Goose Creek Lines #597 and #5002;
- A new approximately 9.4-mile overhead 500 kV line (Aspen-Golden Line #5001) and an overhead 230 kV line (Aspen-Golden Line #2333), both single circuit transmission lines, to be constructed almost entirely on new ROW. These lines will stretch from the new Aspen Substation to another new substation, the Golden Substation.
- The Line Loop, to connect the Golden Substation to the transmission grid. The lines that compose the Line Loop will provide a new 230 kV source from the Aspen/Goose Creek area into Data Center Alley via the Golden Substation.

Substations. As proposed, the Aspen Substation will be sited on Dominion-owned property, east of existing 500 kV Brambleton – Goose Creek Line #558 and west of the intersection of Cochran Mill Road and Samuels Mill Court.[68] The Golden Substation will be sited several miles away, on approximately 8.5 acres of property that Dominion will purchase.[69] This substation will be sited to the west of the Company's Paragon Park Substation, east of State Route 28 (Sully Road), and north of the Washington & Old Dominion ("W&OD") Trail.[70] Dominion plans to equip both the Aspen and Golden Substations with circuit breakers, line terminals, transformer banks, and capacitor banks to accommodate initial and future load growth. Due to space constraints, the 500 kV and 230 kV infrastructure will be constructed with gas insulated switchgear. The Company also plans to perform work at existing Goose Creek, Brambleton, Paragon Park, and Sterling Park Substations related to the Aspen-Golden Project. Work at the Brambleton, Paragon Park, and Sterling Park Substations is considered minor and not included in the total Aspen-Golden Project cost.[71]

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[66] Comments of Susan Carroll, President, Inova Loudoun Hospital (filed Sept. 11, 2024).
[67] Ex. 4 (Aspen-Golden Application) at 2-5.
[68] *See, e.g., id*. at Attached Appendix, p. 195.
[69] *See, e.g., id*. at Attached Appendix, pp. 331-32.
[70] *See*, e.g., Ex. 38 (Aspen-Golden Staff Report) at Attachment 6, p. 8.
[71] Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 331-32.

Route. Aspen-Golden 500 kV Line #5001 and 230 kV Line #2333 will originate at the 500 kV and 230 kV buses of the proposed Aspen Substation and terminate, after approximately 9.4 miles, at two corresponding buses in the proposed Golden Substation.[72] These lines comprise Route 1, the Belmont Park Segment (A/B), and the Broad Run Segment (A/B). Schematically, the route of Aspen-Golden Lines can be visualized as:[73]

Start (Aspen) → Route 1 → Belmont Park Segment → Route 1 → Broad Run Segment → Route 1 → End (Golden)

The first portion of Route 1 begins at the proposed Aspen Substation, with Line #5001 starting from the north portion of the substation and Line #2333 starting from the east. The lines head along separate ROWs for approximately 0.2 miles, cross the existing transmission corridor for 230 kV Lines #227 and #274, and then merge.[74] Continuing east, Lines #5001 and #2333 cross the southern edge of the proposed Twin Creeks Substation, cross Cochran Mill Road and Goose Creek, and continue southeast for approximately 0.6 miles where they cross between two proposed buildings on a planned data center campus. The lines then veer north for approximately 0.5 miles, passing the proposed Sycolin Creek and Starlight Substations. North of the Starlight Substation, the Aspen-Golden Lines turn east for 0.9 miles, cross between two proposed data center campuses, cross over Belmont Ridge Road, and pass along the western side of an undeveloped land parcel planned as a data center campus. Route 1 next turns southeast and parallels Route 7 for about 0.6 miles until reaching the Belmont Park Segment. Altogether, the first portion of Route 1 is approximately 2.9 miles long.[75]

The Belmont Park Segment is approximately 0.6 miles long. Variation A calls for Lines #5001 and #2333 to continue on the south side of Route 7. For Variation B, approximately 0.3 miles west of Claiborne Parkway, the lines would turn northeast for 0.1 miles, cross over Route 7, and parallel the north side of Route 7 for 0.4 miles. The lines would cross Lansdowne Boulevard and then cross back over to the south side of Route 7 approximately 0.3 miles east of Claiborne Parkway.[76]

After the Belmont Park Segment, Route 1 continues along the south side of Route 7 for about 2.4 miles, crossing Ashburn Village Boulevard and Loudoun County Parkway. Before reaching the George Washington Boulevard Bridge, the Aspen-Golden Lines turn south for 0.3 miles, cross Russell Branch Parkway, and then turn southwest for 0.3 miles crossing parts of two land parcels that have been designated by the Loudoun County Board of Supervisors as open space easements. Thereafter, Route 1 turns south for 0.3 miles and reaches the Broad Run Segment. Altogether, this portion of Route 1 is approximately 3.3 miles long.[77]

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[72] *See, e.g., id.* at 3.
[73] *See, e.g., id.* at Attached Appendix, p. 195. "Route 1" is the term Dominion uses for all parts of the Aspen-Golden Route that are not part of Belmont Park Variation A or B or Broad Run Variation A or B. *Id.* at 7.
[74] *Id.* at Attached Appendix, p. ii n.4.
[75] *Id.* at Attached Appendix, p. 195. The Twin Creeks, Sycolin Creek, and Starlight Substations are proposed as part of the Apollo-Twin Creeks Project.
[76] *Id.* at Attached Appendix, pp. 198-99.
[77] *Id.* at Attached Appendix, pp. 195-96. The Company indicated it informed the County, on February 8, 2024, that it prefers to cross the open space easements to avoid residential development, minimize environmental impacts, and maximize collocation with buried utilities. The Company stated it will need Loudoun County Board of Supervisors approval to cross the open space easements. Dominion explained that if such approval is not received, Route 1

The Broad Run Segment runs approximately 2.2 miles to 2.3 miles, for Variations A and B, respectively. Broad Run Variation A begins approximately 0.1 miles north of Beaverdam Run, continues south for 0.2 miles, then parallels Loudoun County Parkway for 1.3 miles. Variation A then crosses Reuse Lane, Aquiary Way, Gloucester Parkway, and Coach Gibbs Drive before turning southeast for 0.3 miles along the W&OD Trail and Dominion's existing ROW for Lines #227 and #274, at the point where the ROW crosses with existing Lines #2143, #2207, and #2165. Variation A then continues northeast for 0.2 miles and southeast for 0.2 miles, ending near Pacific Boulevard. Variation A is collocated with Loudoun County Parkway for 1.3 miles and with existing Dominion transmission lines for 0.3 miles.[78]

Broad Run Variation B begins approximately 0.1 miles north of Beaverdam Run, turns east for 0.4 miles, then south for 0.8 miles across Loudoun Water's Broad Run Water Reclamation Facility property, following an existing Dominion overhead distribution line and a buried sewer utility ROW and access road. It next crosses Broad Run and continues south for 0.2 miles, then crosses Gloucester Parkway. It then continues south for 0.6 miles, passes the BECO Substation, and continues south for another 0.2 miles before crossing Pacific Boulevard, where it ends. Variation B is collocated with buried water and sewer lines and Dominion's future 230 kV BECO-DTC line for 0.8 miles and with overhead electric distribution lines for 0.4 miles.[79]

After the Broad Run Segment, Route 1 resumes. The Aspen-Golden Lines continue together for 0.1 miles before splitting into separate paths, with Line #5001 heading east into the proposed Golden Substation and Line #2333 heading south and east for 0.3 miles before turning and entering the Golden Substation from the south.[80]

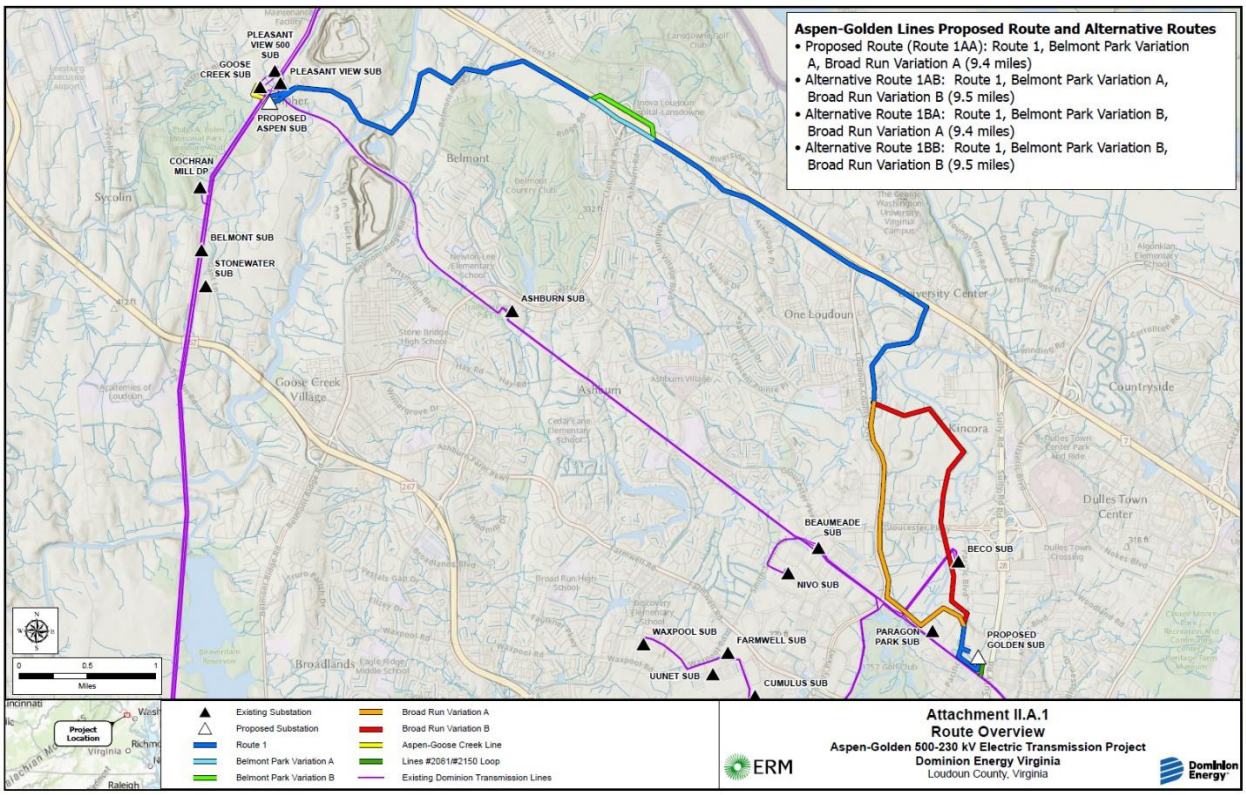
would cease to be viable, and the Company would revert to aligning Route 1 along one of several rejected alternatives. *Id*. at Attached Appendix, p. 196.

[78] *Id*. at Attached Appendix, p. 201.

[79] *Id*. at Attached Appendix, pp. 202-03.

[80] *Id*. at 3 n.5 and Attached Appendix, p. 196.

Dominion selected Route 1AA, consisting of Route 1, Belmont Park Variation A, and Broad Run Variation A, though the Company proposed all four alternatives (1AA, 1AB, 1BA, 1BB) for notice purposes and for Commission consideration.[81] Route 1AA is shown in the dark blue, light blue, dark blue, and orange lines on the diagram below. Route 1AB is shown with dark blue, light blue, dark blue, and red lines. Route 1 BA is shown with dark blue, green, dark blue, and orange lines. Route BB is shown with dark blue, green, dark blue, and red lines.[82]



ROW. Dominion proposed to construct the Aspen-Golden Lines on new ROW varying in width between 100 and 150 feet. Where the proposed Aspen-Golden Lines are collocated with the proposed Apollo-Twin Creeks Lines (*i.e.*, the western portion of the dark blue line depicted above), the ROW will vary in width from 200 to 260 feet.[83]

Structures. The Aspen-Golden Application reflects that this project will require 79 structures, including dulled galvanized steel double circuit three-pole, H-frame, monopole, and two-pole structures.[84] The Aspen-Golden Lines' structures will support a 5/2 configuration, *i.e.*, a vertical alignment among the structures so that one position on the structures will carry the 500 kV circuit and a separate position on the structures will carry the 230 kV circuit.[85] Along Dominion's preferred Route 1AA, the structures for the Aspen-Golden Lines will have a

[81] *Id.* at 8-9.
[82] *Id.* at Attached Appendix, p. 161.
[83] *Id.* at 4 and n.6 and Attached Appendix, pp. 179-89.
[84] *Id.* at 4 and Attached Appendix, pp. 214-23.
[85] *Id.* at 4, n.7.

minimum height of 120 feet, a maximum height of 196 feet, and an average height of 171 feet.[86] The one pole required for Aspen-Goose Creek Line #5002 will stand 190 feet tall.[87] The structures required for the Line Loop will have a minimum height of 105 feet, a maximum height of 115 feet, and an average height of 110 feet.[88]

Cost. The total estimated cost for the Aspen-Golden Project is approximately $700.1 million, which comprises approximately $176.9 million for transmission work (assuming Route 1AA) and approximately $523.2 million for substation work. The transmission related costs will fluctuate, depending on which route alternative is constructed.[89] The costs for the 230 kV components of the Aspen-Golden Project are allocated 100% to PJM Interconnection, L.L.C's ("PJM") DOM Zone, while the costs for the 500 kV components of the Project are allocated among other PJM Zones in addition to the DOM Zone.[90]

Need. Dominion asserted the Aspen-Golden Project is necessary (i) to maintain the transmission system's structural integrity and reliability; (ii) to maintain and improve service to customers, including those in the Eastern Loudoun Load Area, an area generally north and west of the Dulles International Airport that includes Loudoun County's Data Center Alley; (iii) to address load growth in the Eastern Loudoun Load Area; and (iv) to resolve violations of mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, beginning in summer 2028. Dominion explained that PJM, the regional transmission organization of which the Company is a part, has designated the Aspen-Golden Project as a "baseline project resolving several system reliability criteria violations."[91]

Schedule. Dominion proposed an Aspen-Golden Project in-service date of June 1, 2028, with construction expected to begin around June 2025. Dominion estimated approximately 44 months will be needed for detailed engineering, procurement of materials, permitting, real estate, and Aspen-Golden Project construction.[92]

Undergrounding. Dominion did not propose an underground option for the Aspen-Golden Lines. The Company did, however, retain a consultant, Black & Veatch Corporation ("Black & Veatch"), to study the feasibility of undergrounding the Aspen-Golden Lines.[93] Additionally, RLC Engineering, PLLC ("RLC") developed an initial undergrounding proposal ("Initial Hybrid Proposal") for the Conservancy.[94] RLC later developed, for Loudoun County, a proposal to underground a portion of the Aspen-Golden Lines ("Updated Hybrid Proposal") whereby an approximately three-mile stretch of the Aspen Golden Lines – generally from the

[86] *Id*. at Attached Appendix, p. 233.
[87] *Id*. at Attached Appendix, pp. 223-24, 233.
[88] *Id*. at Attached Appendix, pp. 231, 233.
[89] *Id*. at Attached Appendix, p. 55. Transmission line costs for the alternatives are as follows: Route 1AB, $176.4 million; Route 1BA, $184.9 million, and Route 1BB, $179.2 million. *Id*.
[90] *Id*. at Attached Appendix, pp. 56-58.
[91] *See*, *e.g*., Ex. 4 (Aspen-Golden Application) at 2 and Attached Appendix, pp. 1-3.
[92] *See*, *e.g*., *id*. at 10.
[93] Ex. 47 (Moulton Rebuttal) at 3 and Attached Rebuttal Schedule 1.
[94] *See*, *e.g*., Tr. at 661-62 (Conroy).

proposed Sycolin Creek Substation to just past Community Church on Route 7 – would be placed underground.[95]

Apollo-Twin Creeks Project

Overview. The Apollo-Twin Creeks Project comprises the following:[96]

- A new overhead double circuit 230 kV transmission line extending approximately 1.9 miles from a cut-in on the Edwards Ferry-Pleasant View line to the new Apollo Substation; and
- The construction of five substations: Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo.

Route and Lines. The Apollo-Twin Creeks Project was designed to serve three data centers (Customers A, B, and C, located at corresponding Campuses A, B, and C) in eastern Loudoun County. The proposed 1.9-mile route of the Apollo-Twin Creeks Lines generally follows the location of these three customers and interconnects the substations serving these customers to Dominion's electric grid. Schematically, the route of the lines is as follows:[97]

Pleasant View/Edwards Ferry cut-in (start) → Twin Creeks → Sycolin Creek → Starlight → Lunar → Apollo (end)

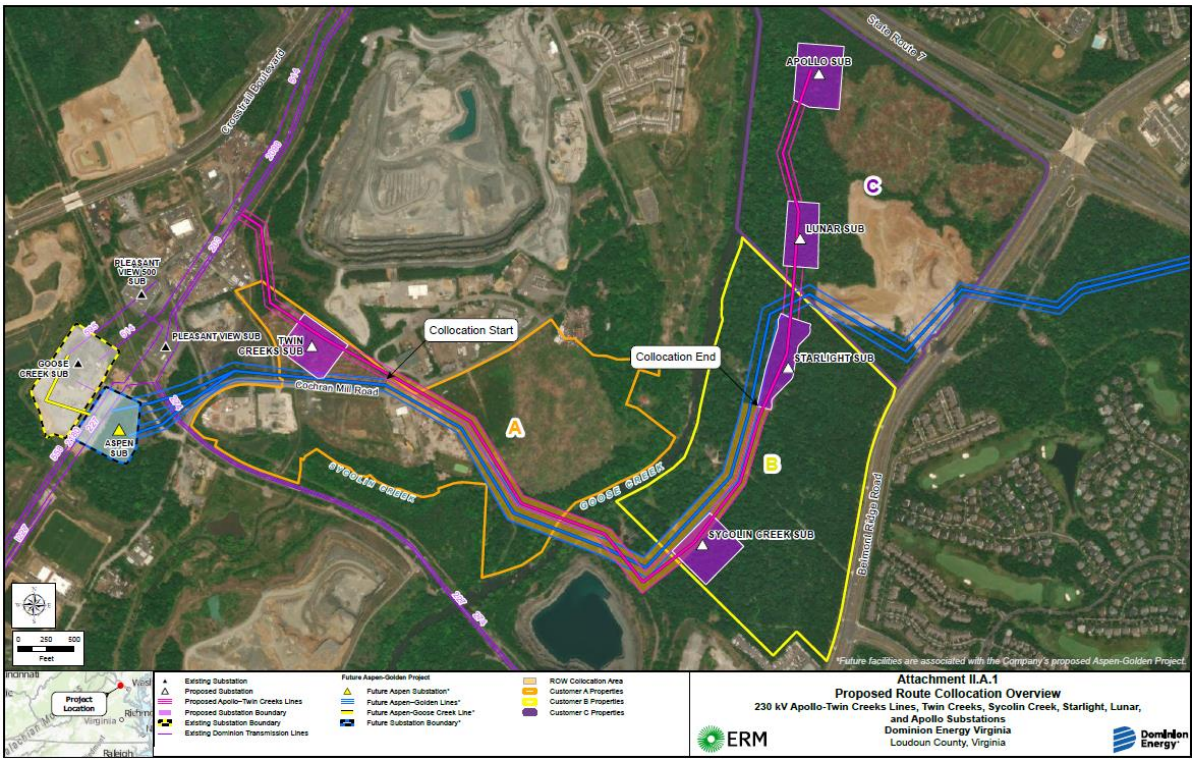
From the cut-in of the Edwards Ferry-Pleasant View Line #203, the Apollo-Twin Creeks Route heads south for approximately 0.2 miles, following the Luck Stone quarry property line and Loudoun Water utility lines, then connects with the Twin Creeks Substation. The route continues southeast for approximately 0.2 miles to a point just north of Cochran Mill Road. Here, the route begins to parallel and collocate with the Aspen-Golden Lines. After crossing Cochran Mill Road, the route continues southeast across Customer A's property for approximately 0.4 miles. The route next crosses Goose Creek, just north of a former quarry that is now a reservoir, about 0.2 miles northeast of Dominion's Lines #227 and #274. The route continues south across the Milestone Reservoir property for 0.1 miles before turning northeast, where it connects to the Sycolin Creek Substation. Continuing northeast, the route crosses Customer B's property for approximately 0.3 miles to the south side of the Starlight Substation. At this point, the route of the Apollo-Twin Creeks Lines separates from the Aspen-Golden Lines. The Apollo-Twin Creeks Lines continue for 0.2 miles and then enter the Starlight Substation, then proceed north for approximately 0.4 miles across Customer C's property connecting to the Lunar Substation and then continuing on to, and terminating at, the Apollo Substation south of Route 7 and east of Goose Creek.[98]

[95] *See, e.g.*, Ex. 20 (Conroy Direct) at 3, 5, and Attached Exhibit BC-3. The Black & Veatch feasibility study and the Updated Hybrid Proposal were the subject of considerable discussion during the hearing and are mentioned here to help the reader understand the testimony summaries below.
[96] Ex. 5 (Apollo-Twin Creeks Application) at 2-3.
[97] *Id*. at Attached Appendix, pp. iii and 6.
[98] *Id*. at Attached Appendix, pp. 88-89.

The Apollo-Twin Creeks Project will result in the following lines:[99]

Origin Station	Termination Station	Line Name and Number
Pleasant View	Twin Creeks	Pleasant View-Twin Creeks Line #2320
Edwards Ferry	Twin Creeks	Edwards Ferry-Twin Creeks Line #203
Twin Creeks	Sycolin Creek	Sycolin Creek-Twin Creeks Line #2316
Twin Creeks	Sycolin Creek	Sycolin Creek-Twin Creeks Line #2317
Sycolin Creek	Starlight	Starlight-Sycolin Creek Line #2334
Sycolin Creek	Starlight	Starlight-Sycolin Creek Line #2335
Starlight	Lunar	Lunar-Starlight Line #2340
Starlight	Lunar	Lunar-Starlight Line #2341
Lunar	Apollo	Apollo-Lunar Line #2342
Lunar	Apollo	Apollo-Lunar Line #2343

The diagram below depicts the Apollo-Twin Creeks Route, including the collocation with the Aspen-Golden Lines. The dark blue line represents the 500 kV/230 kV Aspen-Golden Route, while the magenta line represents the 230 kV Apollo-Twin Creeks Route. The five substations and lines marking the property boundaries of Customer A (orange), Customer B (yellow), and Customer C (purple) are also depicted. Note the other purple lines in the diagram represent existing Dominion transmission lines.[100]



[99] *Id*. at Attached Appendix, p. 6.
[100] *Id*. at Attached Appendix, p. 73.

Substations. As proposed, the Apollo-Twin Creeks Project includes construction of five new substations. Details of these substations are as follows:[101]

Substation	Acreage	To be constructed with:
Twin Creeks	4.7	Four 112 MVA 230-34.5 kV transformers One 230 kV ring bus with a six-breaker circuit configuration
Sycolin Creek	4.7	Two 112 MVA 230-34.5 kV transformers One 230 kV ring bus with a four-circuit breaker configuration
Starlight	4.5	Two 84 MVA 230-34.5 kV transformers One six 230 kV ring bus with a six-circuit breaker configuration
Lunar	4.0	Two 112 MVA 230-34.5 kV transformers One 230 kV gas insulated switchgear ring bus with a six-circuit breaker configuration
Apollo	5.0	Two 84 MVA 230-34.5 kV transformers One 230 kV ring bus with a five-circuit breaker configuration

The substations will also have room to accommodate future load growth. Due to size restrictions, the Company will utilize gas insulated switchgear equipment at the Lunar Substation. Customer C will pay an excess facilities charge for this equipment. The Apollo-Twin Creeks Project also will require minor work at the Edwards Ferry and Pleasant View Substations, including line terminal and protection updates and control enclosures. This work is not a component of the Apollo-Twin Creeks Project, and its costs are not included in the Apollo-Twin Creeks Project cost estimate.[102]

ROW. Dominion proposed to construct the Apollo-Twin Creeks Lines on entirely new ROW. The ROW width is predominantly 100 feet, though it will extend to 140 feet in two locations. The first expansion, approximately 0.2 miles long, will allow the Apollo-Twin Creeks Lines to pass under the proposed Aspen-Golden Lines to enter the proposed Sycolin Creek Substation. The second expansion, approximately 0.1 miles long, enables the Apollo-Twin Creeks Lines to leave the proposed Starlight Substation and pass under the Aspen-Golden Lines. Where the Aspen-Golden Lines are collocated with the Apollo-Twin Creeks Lines, the ROW will vary in width from 200 to 260 feet.[103]

The Apollo-Twin Creeks Route crosses 14 privately owned parcels, nine (64%) of which are owned by Customers A, B, and C.[104]

Structures. The Apollo-Twin Creeks Lines would be supported by 13 structures: nine dulled galvanized steel monopole double dead-end structures; three two-pole double dead-end

[101] *Id*. at Attached Appendix, pp. 130-31.
[102] *Id*. at Attached Appendix, pp. 130-31 and n.33.
[103] *Id*. at Attached Appendix, pp. i-ii and n.3, and p.78 n.28.
[104] *Id*. at Attached Appendix, p. 89.

structures; and one monopole suspension structure.[105] The structures will have a minimum height of 85 feet, a maximum height of 135 feet, and an average height of 112 feet.[106]

Cost. The total estimated cost for the Apollo-Twin Creeks Project is approximately $299.0 million, which comprises approximately $32.7 million for transmission work and approximately $266.3 million for substation work. Substation-specific costs are as follows:[107]

Twin Creeks	$63.4 million
Sycolin Creek	$39.2 million
Starlight	$40.6 million
Lunar	$73.2 million
Apollo	$50.0 million

The costs for the Apollo-Twin Creeks Project are allocated 100% to PJM's DOM Zone.[108]

Need. Dominion asserted the Apollo-Twin Creeks Project is necessary (i) to serve three new data center campuses in the Leesburg Load Area, which Dominion defined as an area bounded by Leesburg Pike on the north, Crosstrail Boulevard on the west, State Route 267 (Dulles Greenway) and State Route 625 (Ashburn Farm Parkway) to the south, and State Route 901 (Claiborne Parkway) and the Ashburn Community on the east; (ii) to maintain reliable service for load growth in the area; and (iii) to comply with mandatory NERC Reliability Standards. More specifically, the Twin Creeks Substation is needed to serve Customer A; the Sycolin Creek and Starlight Substations are needed to serve Customer B; and the Lunar and Apollo Substations are needed to serve Customer C. Dominion explained that PJM designated the Apollo-Twin Creeks Project as a supplemental project to interconnect new load.[109]

Schedule. Dominion proposed an Apollo-Twin Creeks Project in-service date of September 30, 2028, with construction expected to begin around March 2025. Dominion estimated it will need approximately 47 months, after the Commission issues a CPCN, for detailed engineering, procurement of materials, permitting, real estate, and construction. Given the possibility of delays, Dominion requested the Commission's final order approve both an in-service target date of September 30, 2028, and a CPCN sunset date of September 30, 2029.[110]

Dominion Direct Testimony

With the Aspen-Golden and Apollo-Twin Creeks Applications, Dominion offered the direct testimony of the following witnesses: Kunal S. Amare, Matthew B. Vinson, Kamlesh A. Joshi, James P. Young, and Jacob M. Rosenberg.

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[105] *Id*. at Attached Appendix, pp. 98-103.
[106] *Id*. at Attached Appendix, pp. 98-100 and 217. The Apollo-Twin Creeks Application indicated that these structure heights do not account for those structures that are within the substations' footprints. *Id*. at Attached Appendix, p. 97 n.31.
[107] *Id*. at Attached Appendix, p. 41.
[108] *Id*. at Attached Appendix, p. 42.
[109] *See, e.g., id*. at Attached Appendix, pp. 1-5, 17.
[110] *See, e.g., id*. at Attached Appendix, pp. 39-40.

Kunal S. Amare is a Consulting Engineer in the Company's Electric Transmission Planning Department. He is responsible for planning the Company's electric transmission system for voltages of 69 kV through 500 kV.[111] He sponsored or co-sponsored those sections of the Aspen-Golden and Apollo-Twin Creeks Application Appendices describing Dominion's electric transmission system and the need for, and benefits of, the proposed projects, as follows:[112]

- Executive Summary: This section provides a high-level overview of the need for and components of the project, estimated conceptual cost, and project schedule.
- Section I.A: This section details the primary justifications for the project.
- Section I.B: This section details the engineering justifications for the project.
- Section I.C: This section describes the present system and details how the project will effectively satisfy present and projected future load demand requirements.
- Section I.D: For the Aspen-Golden Application, this section describes critical contingencies and associated violations due to the inadequacy of the existing system. This section is not applicable to the Apollo-Twin Creeks Project.
- Section I.E: This section explains alternatives, if any, to the project.
- Section I.G: This section provides a system map of the affected area.
- Section I.H: This section provides the desired project in-service date and the estimated construction time.
- Section I.J: This section provides information about the project if approved by PJM.
- Section I.N: This section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the project.
- Section II.A.3: This section provides color maps of existing or proposed ROW in the project vicinity.
- Section II.A.10: This section provides details of the construction plans for the project, including requested and approved line outage schedules.

During the hearing, Mr. Amare testified that projects such as the Aspen-Golden Project, that PJM considers reliability projects, support the entire PJM area, not particular customers.[113] He also explained that PJM's final forecast considers its own load forecast, which traditionally has been a minimum forecast, along with distribution company and customer forecasts.[114]

Matthew B. Vinson is a Consulting Engineer in the Company's Electric Transmission Line Engineering Department. He is responsible for the estimating, conceptual, and final design of high voltage transmission line projects from 69 kV to 500 kV.[115] He sponsored or

[111] Ex. 6 (Amare Direct) at 1 (Aspen-Golden Application).
[112] *Id*. at Summary Page and 4 (Aspen-Golden Application) and at Summary Page and 3 (Apollo-Twin Creeks Application). *See also* Letter from Vishwa B. Link, Esquire, of McGuireWoods LLP, dated September 5, 2024, to Bernard Logan, Clerk of the Commission, filed in the Combined Cases ("Dominion First Witness Adoption Notice") at 1 (noting Mr. Amare's adoption of the pre-filed direct testimony of Brittany S. Rieckmann in the Apollo-Twin Creeks Application).
[113] *See, e.g.*, Tr. at 410-15 (Amare).
[114] *Id*. at 435-36 (Amare).
[115] Ex. 7 (Vinson Direct) at 1 (Aspen-Golden Application).

co-sponsored those sections of the Aspen-Golden and Apollo-Twin Creeks Application Appendices describing the design characteristics of the transmission facilities for the projects and discussing electric and magnetic field ("EMF") levels, as follows:[116]

- Executive Summary: This section provides a high-level overview of the need for and components of the project, estimated conceptual cost, and project schedule.
- Section I.A: This section details the primary justifications for the project.
- Section I.F: This section describes any lines or facilities that will be removed, replaced, or taken out of service upon completion of the Aspen-Golden Project. This section is not applicable to the Apollo-Twin Creeks Project.
- Section I.I: This section provides the estimated total project cost.
- Section II.A.5: This section provides drawings of the ROW cross section showing typical transmission line structure placements.
- Sections II.B.1 to II.B.2: These sections provide the line design and operational features of the project, as applicable.
- Sections II.B.3 to II.B.5: These sections provide supporting structure details along the project's proposed (and alternative, if applicable) routes. Section II.B.4, which concerns proposed structures for feasible alternative routes, is not applicable to the Apollo-Twin Creeks Project. Section II.B.5, which concerns structure details for lines being rebuilt, is not applicable to either project.[117]
- Section II.B.6: This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section IV: This section provides analysis on the health aspects of EMF levels.
- Section V.A: This section provides the proposed route description and structure heights for notice purposes.

During the hearing, Mr. Vinson testified that reconductoring or upgrading existing infrastructure would not adequately meet the reliability needs for the area. He added that Dominion uses ACSS/TW/HS conductors, with improved ampacity, on 230 kV circuits to achieve maximum ampacity given currently available technology.[118]

Kamlesh A. Joshi is a Senior Electrical Engineer in the Transmission and Distribution Services Department at Burns & McDonnell. He is responsible for evaluating substation project requirements, feasibility studies, conceptual physical design, scope development, preliminary engineering and cost estimating for high voltage transmission and distribution substations.[119] He sponsored or co-sponsored the following sections of the Aspen-Golden and Apollo-Twin Creeks Application Appendices:[120]

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[116] *Id*. at Summary Page and 4 (Aspen-Golden Application) and at Summary Page and 3 (Apollo-Twin Creeks Application). *See also* Dominion First Witness Adoption Notice at 1 (noting Mr. Vinson's adoption of the pre-filed direct testimony of Shannon L. Snare in the Apollo-Twin Creeks Application).
[117] *See* Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 234; Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, pp. 97-105.
[118] Tr. at 446-48 (Vinson).
[119] Ex. 8 (Joshi Direct) at 1 (Aspen-Golden Application).
[120] *Id*. at Summary Page and 4 (Aspen-Golden Application) and at Summary Page and 3 (Apollo-Twin Creeks Application). *See also* Dominion First Witness Adoption Notice (noting Mr. Joshi's adoption of the pre-filed direct testimony of George C. Brimmer in the Apollo-Twin Creeks Application).

- Executive Summary: This section provides a high-level overview of the need for and components of the project, estimated conceptual cost, and project schedule.
- Section I.A: This section details the primary justifications for the project.
- Section I.I: This section provides the estimated total project cost.
- Section II.C: This section describes and furnishes one-line diagrams of the substations associated with the project.

James P. Young is an Environmental Services Electric Transmission Environmental Specialist III for the Company. He sponsored Sections V.B through V.D of the Application Appendices, related to public notice of each project. In addition, he co-sponsored the DEQ Supplement with Company Witness Rosenberg and the following sections of the Aspen-Golden and Apollo-Twin Creeks Application Appendices:[121]

- Section I.H (for Apollo-Twin Creeks Application only): This section provides the desired project in-service date and the estimated construction time.
- Section II.A.11: This section details how the construction of the project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Section III. This section details the impact of the proposed project on scenic, environmental, and historic features.

Jacob M. Rosenberg is a Principal Consultant with Environmental Resources Management ("ERM"). He is responsible for supporting transmission line projects by handling communications with property owners and other stakeholders impacted by proposed electric transmission projects. Additionally, he communicates the impacts and benefits of Dominion's proposed projects to the public by functioning as a liaison between the community and the Company's Electric Transmission Team.[122] He sponsored the Environmental Routing Study, he co-sponsored the DEQ Supplement with Company Witness Young, and he sponsored or co-sponsored the following portions of the Aspen-Golden and Apollo-Twin Creeks Application Appendices, as follows:[123]

- Executive Summary: This section provides a high-level overview of the need for and components of the project, estimated conceptual cost, and project schedule.

[121] Ex. 43 (Young) at Summary Page and 4 (Aspen-Golden Application) and at Summary Page and 3 (erroneously numbered as the second page 2) (Apollo-Twin Creeks Application). *See also* Letter from Vishwa B. Link, Esquire, of McGuireWoods LLP, dated September 12, 2024, to Bernard Logan, Clerk of the Commission, filed in the Combined Cases ("Dominion Second Witness Adoption Notice") at 1-2 and Attachments 1 and 2 (noting those portions of the pre-filed direct testimony of Laura P. Meadows in the Aspen-Golden Application that Mr. Young is adopting, and those portions of the pre-filed direct testimony of Craig R. Hurd in the Apollo-Twin Creeks Application that Mr. Young is adopting).

[122] Ex. 9 (Rosenberg Direct) at 1 (Aspen-Golden Application).

[123] *Id.* at Summary Page and 6-7 (Aspen-Golden Application) and Summary Page and 5 (Apollo-Twin Creeks Application). *See also* Dominion First Witness Adoption Notice at 1 (noting Mr. Rosenberg's adoption of the pre-filed direct testimony of Roya P. Smith in the Apollo-Twin Creeks Application); Dominion Second Witness Adoption Notice at 1-2 and Attachments 1 and 2 (noting those portions of the pre-filed direct testimony of Laura P. Meadows in the Aspen-Golden Application that Mr. Rosenberg is adopting and those portions of the pre-filed direct testimony of Craig R. Hurd in the Apollo-Twin Creeks Application that Mr. Rosenberg is adopting).

- Section I.A: This section details the primary justifications for the project.
- Section I.H (for Apollo-Twin Creeks Application only): This section provides the desired project in-service date and the estimated construction time.
- Section II.A.1: This section provides the length of the proposed corridor and viable alternatives to the project.
- Section II.A.2: This section provides a map showing the project route in relation to notable points close to the project.
- Section II.A.4: This section explains why the existing ROW is inadequate to serve the need.
- Sections II.A.6 to II.A.8: These sections provide detail regarding the ROW for the project.
- Section II.A.9: This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11: This section details how the construction of the project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Section II.A.12: This section identifies the counties and localities through which the project will pass and provides General Highway Maps for these localities.
- Sections II.B.3 to II.B.4: These sections provide supporting structure details along the project's proposed (and alternative, if applicable) routes. Section II.B.4, which concerns proposed structures for feasible alternative routes, is not applicable to the Apollo-Twin Creeks Project.[124]
- Section II.B.6: This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III: This section details the impact of the project on scenic, environmental, and historic features.
- Section V.A: This section provides the proposed project route description and structure heights for notice purposes.

During the hearing, Mr. Rosenberg walked through a map showing the Aspen-Golden Route, the Apollo-Twin Creeks Route, an underground route considered by Company consultant Black & Veatch, and Loudoun County's Updated Hybrid Proposal.[125] He testified that since the Company did not have Loudoun County's dataset, the Company positioned the Underground Hybrid Proposal by georeferencing points such as road ROW and parcel lines. He asserted, "And with a pretty high degree of certainty, you've placed that in an accurate location that is to scale."[126]

On cross-examination, Mr. Rosenberg also addressed what Dominion perceived as flaws with the Initial Hybrid Proposal RLC had developed for the Conservancy, which were discussed in a February 2024 meeting. Mr. Rosenberg stated these perceived flaws include ROW width,

[124] *See* Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 234; Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, pp. 97-105.
[125] Tr. at 454-523 (Rosenberg). *See also* Ex. 10 (Ruling ¶ 2 Exhibit Map).
[126] Tr. at 670-71 (Rosenberg). *See also id.* at 783-84 (in which counsel for Loudoun County noted, with regard to the depiction of the Updated Hybrid Proposal on Exhibit 10, that "the shape files didn't get to the Company in time.").

cables per phase in the Initial Hybrid Proposal, and the need for workspace where the underground line passes under roadways, waterbodies, or wetlands.[127]

When asked if any underground transmission line in Loudoun County, not just the Aspen-Golden Updated Hybrid Proposal, would face three additional issues Dominion pointed out – soil compaction, potential damage to underground utilities, and the prevalence of hard diabase rock – Mr. Rosenberg responded, "For the most part, with the distinction that a trenched line in other areas of the [C]ounty could encounter, say, less adverse geologic conditions where diabase rock is not present so close to the surface."[128] He acknowledged Dominion did not drill test or conduct other soil testing methods along the route of Loudoun County's Updated Hybrid Proposal but instead relied on U.S. Geologic Survey and Virginia state agency information, as well as maps of the area showing quarry sites.[129] He asserted that given the engineering and routing issues surrounding underground line options, the Company did not need to perform drill testing.[130]

Mr. Rosenberg also was cross-examined about the Company's 44-month construction estimate for the proposed overhead Aspen-Golden Lines versus Black & Veatch's 47-month construction estimate for an 8.5-mile underground route for the Aspen-Golden Lines. Mr. Rosenberg distinguished these estimates, asserting that the Company's experience with overhead line construction means it is more familiar with the construction and permitting required, and thus renders the overhead construction estimate more accurate. Conversely, he testified that the 47-month estimate for underground construction is "this isolated, like perfect condition" for undergrounding that does not account for issues such as vested land rights, unknowns surrounding buried utilities, and construction methods.[131] He revisited this topic on redirect examination, testifying that the 44-month timeframe for overhead construction includes detailed engineering, materials procurement, permitting, real estate, and construction.[132]

Mr. Rosenberg emphasized an underground 3.7-mile line in Chino Hills, California was built entirely along that electric utility's already-owned ROW, meaning Southern California Edison "had . . . a clear right-of-way where [it] could have all of [its] workspace contained within something the company owned." He noted in the case of the Aspen-Golden Lines, Dominion owns only "a few smaller slivers of existing distribution rights-of-way."[133]

Respondent Testimony

Multiple respondents provided testimony. Summaries of these testimonies, in alphabetical order by respondent full name, follow.

[127] *Id*. at 547-53 (Rosenberg).
[128] *Id*. at 609-10 (Rosenberg).
[129] *Id*. at 611-12 (Rosenberg).
[130] *Id*. at 663-64 (Rosenberg).
[131] *Id*. at 619, 622-25 (Rosenberg). *See also* Ex. 47 (Moulton Rebuttal) at Attached Rebuttal Schedule 1, p. 18 for an indication that the Black & Veatch-designed underground line was 8.5 miles long.
[132] Tr. at 665-66 (Rosenberg).
[133] *Id*. at 620-21 (Rosenberg).

Allan Myers VA, Inc.

For context, the 500 kV and 230 kV Aspen-Golden Lines each proceed from separate structures at the proposed Aspen Substation and converge on the Allan Myers property, north of Cochran Mill Road.[134]

Allan Myers offered the testimony of **Curtis Hall**, Senior Vice President of Asphalt and Paving for Allan Myers. Mr. Hall testified that Allan Myers is located at 42050 Cochran Mill Road, Leesburg, Virginia, on approximately ten acres, and that Allan Myers' property will be negatively impacted by the Aspen-Golden Lines. Specifically, he explained the Aspen-Golden route traverses the southern portion of Allan Myers' property, and Dominion proposes to locate two transmission structures on the property. According to Mr. Hall, Allan Myers plans to build an approximately 3,500 square foot multi-purpose building on this portion of the property within two to three years. If the Aspen-Golden Lines are built as proposed, the planned building location would be in the 150-foot ROW required for the Aspen-Golden transmission structures. Mr. Hall averred that Dominion's Guidelines for Use of Real Estate Encumbered by Electric Transmission Rights of Way and Dominion's proposed Transmission Right of Way Agreement (VA) prohibit construction of the multi-purpose building in the ROW for the Aspen-Golden Lines. Mr. Hall asserted the multi-purpose building cannot be moved elsewhere on Allan Myers' property without negatively impacting current operations and storage area. Mr. Hall requested that Dominion modify the Aspen-Golden Route to allow construction of the multi-purpose building.[135]

JK Land Holdings, LLC

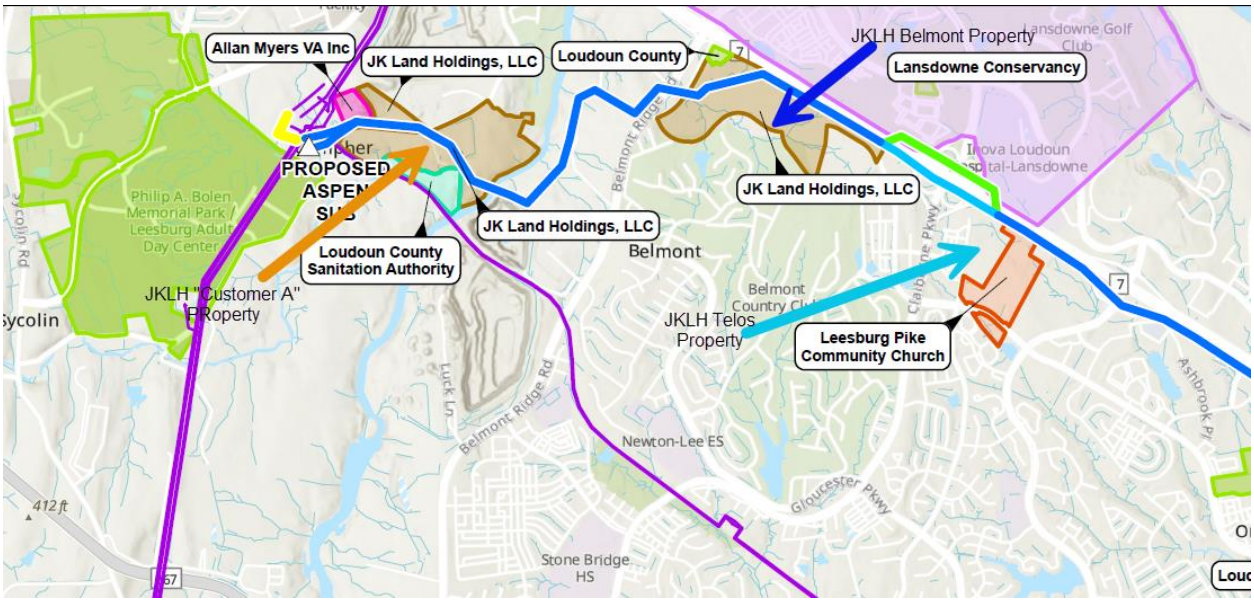
For context, the record discussed at least three properties JKLH owns that will be impacted by one or both of the Aspen-Golden and Apollo-Twin Creeks Projects. These are: JKLH's "Customer A" Property, with a data center to be served by the Twin Creeks Substation; JKLH's "Belmont Property," an approximately 108-acre parcel of land JKLH owns near the southeast corner of the intersection of Route 7 and Belmont Ridge Road, located between mileposts 2.0 and 2.9 of the proposed Aspen-Golden Route, which JKLH plans to develop as a data center; and JKLH's "Telos Property," located to the west of Community Church, where a data center may be built in the future. These are shown on the map below. The Customer A Property is at the tip of the orange arrow on the map. The Belmont Property is at the tip of the dark blue arrow. The Telos Property is marked approximately at the tip of the aqua blue arrow.[136]

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[134] *Id*. at 463-65 (Rosenberg).

[135] Ex. 17 (Hall Direct) at 1-2 and Attached Exhibits 1-4.

[136] The map is a portion of Ex. 12 (Yudd Direct) at Attached Exhibit A. For the markings of the properties and their uses, *see also id*. at 6-7 and Attached Exhibit B; Ex. 11 (Tock Direct) at 2; Ex. 10 (Ruling ¶ 2 Exhibit Map) at pp. 1 of 5A and 2 of 5A; Tr. at 497-98 (Rosenberg). The Hearing Examiner added the orange, dark blue, and aqua blue arrows with their corresponding labels for clarity and better visibility of the subject properties on the map.



JKLH's testimony mainly addresses the Belmont Property. They also refer to the "Site Plan" for the Belmont Property. This document, filed with Loudoun County, is "Belmont Landbay KK Data Center, Plan Number STPL-2023-0025." The Site Plan originally was submitted to Loudoun County on behalf of the prior property owner, Toll Brothers, Inc. The Site Plan was assigned to JKLH in connection with JKLH's acquisition of the Belmont Property in February 2024. The Site Plan includes two 504,000 square-foot, three-story data centers able to provide up to 300 MW of power to users of each building, a construction laydown area, an equipment yard, and an office building.[137] With this background, summaries of the pre-filed testimony of JKLH's witnesses, Charles Yudd, Clayton Tock, Brian C. Andrews, and Andrew M. Forrest, follow.

Charles Yudd is Director of Land Planning and Development for JKLH. He described his previous career, including 27 years working for Loudoun County in the areas of land use and zoning, among other responsibilities. He also stated that he was the executive in charge of the Loudoun County zoning ordinance rewrite, which resulted in adoption of a new zoning ordinance on December 13, 2023.[138] Mr. Yudd described JKLH as one of the largest developers of data center sites in Northern Virginia, with projects in both Loudoun and Prince William Counties. He also discussed JKLH's commitment to conservation.[139]

According to Mr. Yudd, JKLH owns, through subsidiaries, nine properties affected by the Aspen-Golden Project and/or the Apollo-Twin Creeks Project. Specifically, he noted that JKLH owns the property that will host Data Center A and the Twin Creeks Substation discussed in the Apollo-Twin Creeks Application. He stated JKLH does not oppose the proposed Apollo-Twin Creeks Route.[140]

[137] Ex. 11 (Tock Direct) at 3-4 and attached Exhibit A; Ex. 12 (Yudd Direct) at 10-11.
[138] Ex. 12 (Yudd Direct) at 1-2.
[139] *Id.* at 3-4.
[140] *Id.* at 6-7.

Mr. Yudd focused on the impact of the Aspen-Golden Project to JKLH's Belmont Property, contending the proposed Aspen-Golden Route "will completely eliminate JKLH's ability to develop the Belmont Property efficiently, effectively, and productively as an economically viable data center project – the sole purpose for which JKLH paid $185,000,000 to acquire the Belmont Property."[141] He averred the proposed Aspen-Golden Route would impact the Belmont Property in such a way that the Site Plan submitted to Loudoun County would be impossible to develop. He testified the proposed route would cross the drive aisle, parking area, and equipment yard of Data Center Building B on the Belmont Property Site Plan, and Dominion's proposal includes locating a transmission structure in the area proposed for the equipment yard.[142] Mr. Yudd asserted Dominion failed to consider the equipment that must be housed at the equipment yard, some pieces of which are 70 feet tall. He also claimed Dominion's proposal would interfere with JKLH's ability to install, maintain, and service the cooling and mechanical equipment around Data Center Building B's perimeter.[143]

Mr. Yudd explained that Loudoun County allowed data center development by right (*i.e.*, through approval of the Loudoun County Department of Building and Development and without further Board of Supervisors' approval[144]) until December 13, 2023, on properties zoned as Office Park, like the Belmont Property. The Board of Supervisors removed the by-right data center use for Office Park-zoned properties as of December 13, 2023. However, JKLH determined, when purchasing the Belmont Property, that it could continue to develop the Belmont Property for data center use by right because of a resolution the Board of Supervisors passed at the same time it removed the by-right data center use option. The resolution provided that site plans accepted for review before December 13, 2023, would continue to be reviewed pursuant to the previous ordinance allowing by-right data center use "provided the applicant does not make any substantial modification(s) to such application."[145] Mr. Yudd maintained that even if the Site Plan could be amended to reduce Data Center Building B's size to accommodate Dominion's proposed Aspen-Golden Route, the act of amending the Site Plan could forfeit any owner's ability to develop the Belmont Property as a data center. He averred that "the change of the Site Plan with respect to the reduction in size of Belmont Data Center Building B required to avoid the Proposed Route would constitute 'substantial modification' under the . . . [r]esolution."[146]

Mr. Yudd explained that if the Site Plan were assessed under the new zoning ordinance, JKLH would have to expend "substantial additional time and expense" to ty to obtain a special exception from Loudoun County to place a data center on the Belmont Property, which exception is granted by the Board of Supervisors. In Mr. Yudd's opinion, such a situation "likely jeopardizes any data center development on the Belmont Property."[147] He stated the 2019 Loudoun County Comprehensive Plan shows the Belmont Property in an area planned for suburban mixed use, a designation that does not include data centers as a core, complementary, or conditional land use and thus raises concern as to whether the Board of Supervisors would

[141] *Id*. at 5-6.
[142] *Id*. at 9-10.
[143] *Id*. at 11-12.
[144] *Id*. at 15.
[145] *Id*. at 11-13.
[146] *Id*. at 13-14.
[147] *Id*. at 17.

approve a special exception for a data center on the Belmont Property. He also discussed recent Board of Supervisors' actions that appear to reflect less openness to data centers.[148]

Mr. Yudd discussed two options that would allow JKLH to develop the Site Plan with minimal adverse impact: (i) the Freedom Center Variation, discussed in the Aspen-Golden Application; and (ii) the Belmont Landbay KK Variation, described in more detail by JKLH Witness Andrews. Mr. Yudd recommended approval of the second option.[149] In discussing these choices, Mr. Yudd stressed that the Loudoun Freedom Center is not a planned development but only part of a prior submission that is subject to change by JKLH. He emphasized that JKLH will donate part of its property to the African American Cemetery for the Enslaved at Belmont ("African American Cemetery"), for development of the Loudoun Freedom Center, if one of these options is approved but stressed that if the Belmont Property cannot be developed as an economically viable data center, JKLH would not be in a position to donate the property.[150]

Mr. Yudd explained the Belmont Landbay KK Variation was jointly developed by Dominion, JKLH, and Pastor Michelle Thomas (owner of the African American Cemetery) to offer a solution that allows construction of the Aspen-Golden Project, the Belmont Property data center campus, and the Loudoun Freedom Center. This variation makes minimal changes to the proposed Aspen-Golden Route between mileposts 2.1 and 2.4 to keep the transmission line and ROW from crossing the equipment yard. Additionally, under this variation, the transmission line infrastructure and ROW would only marginally encroach into the drive aisle of Data Center Building B on the Belmont Property. This variation would allow the proposed Aspen-Golden Project's adverse impacts to be avoided or reasonably minimized to the greatest extent reasonably practicable. Mr. Yudd requested the Commission approve the proposed Aspen-Golden Route with the Belmont Landbay KK Variation and provide Dominion and JKLH latitude to microsite this variation to accommodate construction needs.[151]

Clayton Tock, P.E., is a Principal at Urban, Ltd ("Urban") and Manager of Urban's Chantilly office, testifying on behalf of JKLH. Mr. Tock stated that among other things, Urban assists JKLH on matters such as new site analysis, rezoning, site plans, site survey, and construction administration. Specifically, Urban is working with JKLH on developing the Belmont Property, including work with design professionals and obtaining permits required for the Belmont Property Site Plan.[152]

Mr. Tock explained how the proposed Aspen-Golden Route would interfere with construction and maintenance of Belmont Property Data Center Building B. He stated the proposed route crosses over Data Center Building B's drive aisle and encroaches approximately 83 feet into the equipment yard, which houses backup generators, transformers, and switch gear.

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[148] *Id.* at 17-19.
[149] *Id.* at 20-21.
[150] *Id.* at 22-25, 27.
[151] *Id.* at 25-27. In comments approximately two weeks before JKLH filed its testimony, Pastor Thomas stated the Freedom Center and the African American community are most negatively impacted by the route proposed in the Aspen-Golden Application. Pastor Thomas stated she had requested Dominion move the Aspen-Golden Lines westward to ensure boundary protection for the African American Cemetery. Comments of Pastor Michelle Thomas (filed July 31, 2024).
[152] Ex. 11 (Tock Direct) at 1-3.

Some of these items will be placed on a structural raised equipment yard to service the upper floors of Data Center Building B. To construct and maintain this equipment, a crane with a boom extending upward of 120 feet is needed. Mr. Tock explained that the height of the transmission conductors over the drive aisle and equipment yard would prevent such cranes from being able to place this equipment and maintain equipment both in the equipment yard and on Data Center Building B's rooftop.[153]

Mr. Tock next discussed the unavoidability of the proposed Aspen-Golden Route's impacts to the Belmont Property Site Plan. He explained that the most Data Center Building B may be shifted is 15 feet to the west, meaning the proposed route would still encroach into the equipment yard by approximately 68 feet. Nor, he testified, can the equipment yard be located outside the proposed route's ROW because of (i) a stream on the Belmont Property, and (ii) the configuration of the power lines serving the inner-most data halls in Data Center Building B. Mr. Tock claimed the only way to avoid negative impacts from the Aspen-Golden Route would be to shrink the depth of Data Center Building B, which in his opinion "would result in a data center building that is not marketable to a prospective purchaser or tenant."[154] Mr. Tock agreed either the Freedom Center Variation or the Belmont Landbay KK Variation would avoid adverse impacts to the Belmont Property and the Site Plan.[155]

As for the Freedom Center Variation, Mr. Tock testified that Urban coordinated with Forrest Environmental Services, Inc., to conduct electromagnetic and ground penetrating radar surveys of the portion of the Belmont Property within the ROW of the Freedom Center Variation. Due to time constraints, the entire area of the Belmont Property between the stream and the African American Cemetery was not surveyed. Rather, the survey boundaries were chosen based on the anticipated locations of the transmission poles for the Freedom Center Variation. No unmarked graves were found in the surveyed areas. Mr. Tock reported that Pastor Thomas expressed support for the Freedom Center Variation in November 2023, and that this variation would allow the Belmont Property to be developed consistent with the Site Plan.[156]

According to Mr. Tock, coordination continued among JKLH, Dominion, and Pastor Thomas to develop the Belmont Landbay KK Variation. This variation shifts the Aspen-Golden Project ROW between mileposts 2.1 and 2.4 to keep it away from the equipment yard. This variation also causes only marginal encroachment in the Data Center Building B drive aisle. Further, this variation accommodates a crane to place necessary equipment for data center operation in the equipment yard. Mr. Tock recommended the Commission approve the Belmont Landbay KK Variation with latitude for Dominion and JKLH to microsite this variation. He explained microsite approval is needed because ongoing maintenance concerns and actual site conditions may require minor deviations of approximately 25 feet. Mr. Tock also reported that Pastor Thomas most recently expressed support for the Belmont Landbay KK Variation.[157]

[153] *Id*. at 5-9.
[154] *Id*. at 10-12.
[155] *Id*. at 12, 15.
[156] *Id*. at 13-15 and Attached Exhibit G.
[157] *Id*. at 15-18 and Attached Exhibit I.

During the hearing, Mr. Tock testified that the underground portion of Loudoun County's Updated Hybrid Proposal appears to overlap "a little bit" with a stormwater management facility on the JKLH property.[158] He indicated that JKLH would have to modify its site plan with Loudoun County and such a change could possibly impact the property's grandfathered status, though he noted, "We don't know how [Loudoun] County would rule on that."[159]

Brian C. Andrews, a Principal with Brubaker & Associates, Inc., testified on behalf of JKLH.[160] He asserted JKLH's Belmont Property and its planned Belmont Landbay KK data center project would be adversely affected if Dominion constructed the Aspen-Golden Project along its proposed route.[161] He clarified he was not making any recommendation as to the need for the Aspen-Golden Project and was testifying only as to the portion of the proposed Aspen-Golden route between mileposts 2 and 2.4, in the vicinity of the JKLH Belmont Landbay KK data center development.[162]

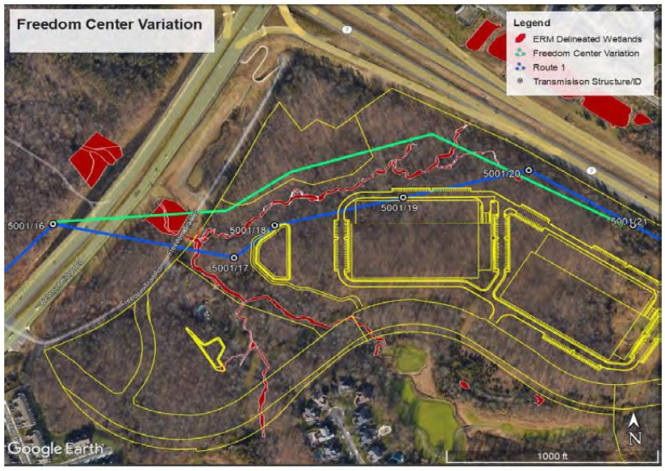
Specifically, Mr. Andrews claimed that construction of the proposed Aspen-Golden Route would bar JKLH from building a data center on JKLH's property consistent with the site plan filed with Loudoun County. He described two route alternatives that would allow for construction of the data center on the Belmont Property in accordance with the Site Plan: (i) the Freedom Center Variation; and (ii) the Belmont Landbay KK Variation. Mr. Andrews explained the Belmont Landbay KK Variation is preferred by both JKLH and Pastor Thomas, who intends to develop the Loudoun Freedom Center on land JKLH will donate if the Belmont Landbay KK Variation is approved.[163]

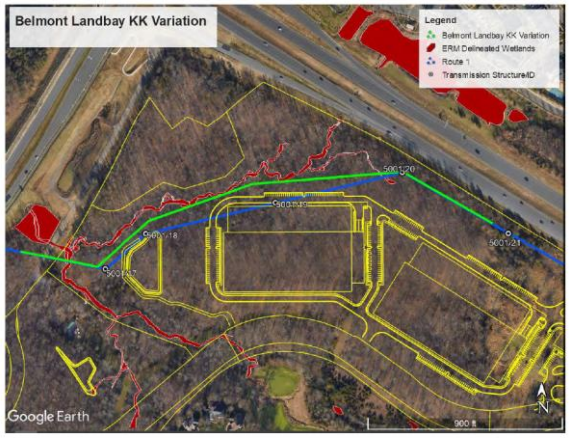


Mr. Andrews included figures showing the proposed Aspen-Golden Route, the Freedom Center Variation, and the Belmont Landbay KK Variation.[164] He provided the "JKLH Data Center Site Plan: Proposed Route 1" figure, which he asserted illustrates the proposed Aspen-Golden Route (blue line) in direct conflict with the footprint of one of the data center buildings.[165] He also described the Freedom Center Variation (green line), which would shift the Aspen-Golden Route northwest and across the

[158] Tr. at 530-31, 535 (Tock).
[159] *Id*. at 531-32 (Tock).
[160] Ex. 13 (Andrews Direct) at 1, 4.
[161] *Id*. at 4.
[162] *Id*. at 6.
[163] *Id*. at 11-12, 18.
[164] The figures may be found *id*. at 11, 13, and 17.
[165] *Id*. at 10-11.

creek running through the Belmont Property. The Belmont Landbay KK Variation (shifted green line), he stated, would also shift the Aspen-Golden Route northwest but would allow the transmission line structures to remain on the south side of the creek on the Belmont Property.[166]





Mr. Andrews described the Freedom Center Variation as an alternative originally proposed by JKLH, which Dominion "prematurely rejected due to cultural resource concerns that should have been alleviated" by a study conducted by JKLH Witness Forrest. Mr. Andrews took issue with Dominion's claim that this variation would potentially impact unmarked gravesites at the African American Cemetery, noting Mr. Forrest's opinion that it is unlikely unmarked graves are on JKLH's Belmont Property. Mr. Andrews also disagreed with Dominion's claim the Freedom Center Variation would create increased wetland and waterbody impacts. Mr. Andrews testified the impacts to wetlands would be nearly identical to the impacts from the proposed Aspen-Golden Route since the creek is roughly in the middle between the proposed route and Freedom Center Variation. Finally, he disagreed that the Freedom Center Variation would prevent development of the Loudoun Freedom Center. He testified that if the Freedom Center Variation is approved and JKLH obtains other project approvals, JKLH would be able to donate the land to Pastor Thomas for the Loudoun Freedom Center.[167]

According to Mr. Andrews, the Belmont Landbay KK Variation was jointly developed by Dominion, JKLH, and Pastor Thomas. Mr. Andrews stated this variation would allow for the construction of the data center campus, the Loudoun Freedom Center, and the Aspen-Golden Project. He described the benefits of this variation, including that it is only 18 feet longer than the comparable portion of the proposed Aspen-Golden Route, would have the same number of structures, and would keep the Aspen-Golden Lines on the south side of the creek on the Belmont Property. Mr. Andrews stated he does not expect any material difference in cost between this variation and the proposed route. He requested that the Commission approve the Belmont Landbay KK Variation and afford JKLH and Dominion latitude to microsite this variation to accommodate construction and maintenance needs, such as a 25-foot adjustment to the ROW, based on field conditions and the Site Plan.[168]

[166] *Id.* at 12, 16.
[167] *Id.* at 13-15.
[168] *Id.* at 16-19.

Andrew M. Forrest is the President of Forrest Environmental Services, Inc., and a registered Professional Geologist with the Commonwealth of Virginia. He testified on behalf of JKLH and presented the results of a geophysical survey of JKLH's Belmont Property, along with his conclusion that there is unlikely to be any unmarked grave sites or other buried anthropogenic material on the Belmont Property.[169]

Mr. Forrest explained that on February 15-17, 2024, his company conducted ground penetrating radar and electromagnetic surveys on three sites (the green polygons in the diagram) totaling ten acres in the northwest corner of the Belmont Property, between the creek on the Belmont Property and the African American Cemetery/ Loudoun Freedom Center site (marked by the dark pink "X" in the diagram), in an attempt to locate grave sites and other anthropogenic material. He testified that the survey data collections were consistent with industry standards.[170]



Mr. Forrest gave his "professional opinion, to a reasonable degree of scientific certainty, that buried grave sites and other buried material would be highly unlikely on the Belmont Property based on [his] survey and based on the surface characteristics of the Belmont Property."[171] He explained that the creek and presence of large boulders in the survey areas and in the vicinity of those areas may inhibit burial activity.[172]

Lansdowne Conservancy

Tom Jeavons, President of Lansdowne Conservancy, testified on behalf of the Conservancy. He supported Loudoun County's proposal to underground parts of the Aspen-Golden Lines. He testified that if the Commission does not require Dominion to underground the Aspen-Golden Lines, the Conservancy supports Belmont Park Variation A over Belmont Park Variation B.[173]

Mr. Jeavons explained the Conservancy is an overarching property owners' association composed of all who own property in the Conservancy, some of whom also are members of sub-associations. Members of the Conservancy include: Lansdowne Resort, Inova Loudoun Hospital, National Conference Center, Saul Shopping Center, numerous office and medical buildings, condominium owners, and various homeowners' associations (the latter of which include Lansdowne on the Potomac Homeowners' Association, Lansdowne Village Green

[169] Ex. 14 (Forrest Direct) at 1-2.
[170] *Id*. at 3-5. The diagram may be found *id*. at 6 and on attached Exhibit B, p. 6 (unnumbered). The Hearing Examiner added the dark pink "X" for better visibility of the approximate site of the African American Cemetery and Loudoun Freedom Center.
[171] *Id*. at 8.
[172] *Id*. at 8-9.
[173] Ex. 15 (Jeavons Direct) at 1-2.

Homeowners' Association and the Lansdowne Woods Condo Associations). Mr. Jeavons reported the combined real estate assets of the Conservancy have an assessed value of over $3.3 billion.[174]

Mr. Jeavons discussed the influx of data centers into Loudoun County in the past 15 years and data centers' peak demand and energy usage, as indicated in Dominion's 2023 Integrated Resource Plan. He asserted the Aspen-Golden Application raises the question, "[H]ow do we ensure reliable electricity service for the behemoth needs of a single industry while at the same time being thoughtful and considerate to those who live in or near the data center communities?"[175] He urged the Commission to balance the need for power with the adverse impacts overhead transmission lines have on the local community, claiming "now is the time to introduce undergrounding as an alternative to overhead transmission lines and towers."[176] Mr. Jeavons suggested a pilot program to collect data about underground lines would benefit the public by providing an opportunity to learn more about underground lines' costs and reliability, in addition to other matters. He advocated for the Updated Hybrid Proposal as a plan that "ensure[s] the safe and reliable delivery of power where it is needed while preserving the scenic beauty and property values throughout Loudoun County."[177]

Mr. Jeavons acknowledged undergrounding is more expensive but insisted the Commission has not treated cost as the dispositive factor when deciding transmission line applications. He testified that undergrounding has economic benefits, including preventing property devaluation. He noted the growing backlash against data centers, arguing that proliferation of above-ground power lines is a major factor causing the outcry. He acknowledged officials in Loudoun County and elsewhere in Virginia are placing zoning and development constraints to protect properties and suggested that without appropriate measures, property owner backlash will continue, hindering both data center and economic development. He declared that undergrounding is an effective way to strike the right balance of welcoming the data center industry while shielding property owners from the negative impacts of overhead transmission lines.[178]

Mr. Jeavons claimed undergrounding the Aspen-Golden Lines is the only appropriate solution. Nonetheless, should the Commission decide not to require undergrounding, Mr. Jeavons advocated for Belmont Park Variation A over Belmont Park Variation B. He listed several concerns with Variation B, including:[179]

- Variation B would require two crossings of Route 7;
- Variation B would require more transmission structures;
- More residences fall within 250 feet of Variation B than Variation A;
- Variation B would have a higher impact on traffic; and

[174] *Id.* at 2.
[175] *Id.* at 3-4.
[176] *Id.* at 5.
[177] *Id.* at 5-6.
[178] *Id.* at 6-8.
[179] *Id.* at 8-9.

- Variation B's transmission structures would be closer to Inova Loudoun Hospital and its helipad.

He also discussed property-related concerns. First, he asserted that placing the Aspen-Golden Lines on the north side of Route 7, as Belmont Park Variation B would do, violates the Conservancy's restrictive covenant against above-ground utilities. This restrictive covenant is written in the Second Amended and Restated Declaration for Lansdowne ("Lansdowne Declaration"), recorded in Loudoun County land records. He claimed the restrictive covenant is a valuable real estate interest for all property owners governed by the Lansdowne Declaration. He testified that the Lansdowne Declaration and related Design Guidelines, which include the rules and regulations adopted pursuant to the Lansdowne Declaration, require utilities to be installed underground, "and Dominion is not exempt from that requirement."[180] He claimed that installation of the transmission infrastructure as proposed in Belmont Park Variation B would breach the restrictive covenant.[181]

Next, Mr. Jeavons contended that installation of the transmission infrastructure as proposed in Belmont Park Variation B would violate the scenic easement described by Loudoun County witnesses and would adversely impact property values in the Conservancy. Finally, he claimed Belmont Park Variation B would require the taking of real estate from Inova Loudoun Hospital and the Camden Apartments, again in violation of the restrictive covenants and restrictive scenic easement granted to the Loudoun County Board of Supervisors in 1991. He clarified that the scenic easement is imposed within 300 feet of the north side of Route 7.[182]

Mr. Jeavons provided a copy of the Lansdowne Declaration as an attachment to his testimony. Lansdowne Declaration Article 8, § 8.2 (k) reads in pertinent part: "Except for hoses and the like which are reasonably necessary in connection with construction activities or normal landscape maintenance, no water pipe, sewer pipe, gas pipe, drainage pipe, television cable or other similar transmission line shall be installed or maintained upon any Lot above the surface of the ground."[183] Similarly, in summarizing the restrictions and covenants applicable to Lansdowne, the Design Guidelines refer to Lansdowne Declaration § 8.2 (k) and state in pertinent part: "Other than as reasonably necessary for construction activities, all utilities must be installed below the surface of the ground."[184]

Leesburg Pike Community Church

Charles Whitlow, Lead Pastor of Leesburg Pike Community Church and Chancellor of Virginia Academy, testified on behalf of Community Church. He agreed with Loudoun County that the Aspen-Golden Lines should be placed underground. He contended that if the Commission does not require undergrounding, it should require Dominion "to site the poles in a

[180] *Id*. at 9. A copy of the Lansdowne Declaration is located *id*. at Attached Exhibit TJ-1.
[181] *Id*. at 9-10.
[182] *Id*. at 10.
[183] *Id*. at Attached Exhibit TJ-1, p. 48.
[184] *Id*. at Attached Exhibit TJ-2, p. 8.

way that causes the least impact to the Community Church's current and proposed uses for its land."[185]

Pastor Whitlow described Community Church's history. He stated that currently the church has approximately 4,000 members and is associated with a school, Virginia Academy, attended by approximately 1,000 students, whose curriculum encourages academics, fine arts, and athletics. He added that the church hosts summer camps for first through sixth graders. He noted that both the athletics and summer camp programs use land that would be in the ROW of the proposed Aspen-Golden Lines.[186]

Pastor Whitlow also described Community Church's expansion plans, for which it has already spent about $475,000 in architectural and engineering fees. He asserted Community Church plans to add playgrounds, a multi-use sports field, and signage to the front of its property, in the area Dominion has selected for its transmission line ROW. He added that the sports field and playgrounds will also be used by i9 Sports, a local children's recreational sports program. The land at issue now houses a berm, a pond, and a grassy area, the latter two of which already are used for outdoor activities and sports. Pastor Whitlow stated that if the Aspen-Golden Lines are built as proposed, Community Church would have to obtain an easement from Dominion for these activities.[187]

According to Pastor Whitlow, in addition to interfering with outdoor activities, the 183-foot transmission structures Dominion plans to build near the church would interfere with the Community Church steeple.[188] He commented that this steeple, which is lit up at night, and the church's placement along Route 7 were the church founder's dream to help the church serve the community. He classified the steeple as an iconic landmark in Loudoun County. He took issue with Dominion's analysis that the Aspen-Golden Lines would have a minor impact to Community Church as a visually sensitive resource. In short, he testified the transmission line would impede Community Church's plans for serving the community and its members in the future. Undergrounding, he asserted, would solve these problems by eliminating any impediments to Community Church's plans.[189]

Should the Commission not require the undergrounding, Pastor Whitlow requested the Commission require Dominion to factor in Community Church's current and future uses of its land when Dominion sites the Aspen-Golden Lines' steel monopoles. He noted that the front of the church's property is approximately 700 feet long, and Dominion indicated the distance between its poles should be 760 feet. He urged Dominion to avoid placing poles on Community Church's property to minimize adverse impact to the church.[190]

[185] Ex. 16 (Whitlow Direct) at 1-2.
[186] *Id*. at 3-4.
[187] *Id*. at 4-5 and Attached Exhibit CW-2.
[188] *Id*. at 5-6 and Attached Exhibit CW-3.
[189] *Id*. at 2, 5-7 and attached Exhibit CW-4.
[190] *Id*. at 7 and Attached Exhibit CW-5.

Loudoun County

Loudoun County offered the testimonies of the following witnesses: William Patrick Giglio, Buddy Rizer, Brian A. Conroy, and the collective testimony of Richard N. Olsen and William C. Harvey.[191]

William Patrick Giglio is Senior Planner in the Community Planning Division of the Loudoun County Department of Planning and Zoning. He explained that among other duties, he reviews legislative applications for their conformance to the policies set forth in the Loudoun County 2019 General Plan. He is also project manager and author of amendments to the 2019 General Plan and assists with the Data Center Locations and Design Comprehensive Plan and Zoning Ordinance Amendment project. He testified on Loudoun County's policies concerning land use and development, heritage and environmental resources, and electrical infrastructure.[192]

Specifically, Mr. Giglio asserted the 2019 General Plan's electrical policies stress electrical providers considering high-voltage corridors should minimize impacts on roadways, heritage resources, and existing residential communities and should consider undergrounding where possible. He opined that "Dominion has not adequately considered options for undergrounding a portion of the proposed route to mitigate impacts and to maintain the visual characteristic and sense of place established by the existing employment, business and residential uses in the Route 7 corridor."[193]

Mr. Giglio described the background of the 2019 General Plan and how this document, along with the Loudoun County 2019 Countywide Transportation Plan, compose the Comprehensive Plan. He explained that for many years, Loudoun County has sought to protect the rural and agricultural portions of the County to the west and have focused development in the eastern, suburban portions of the County. He stressed the importance to Loudoun County of protecting and preserving its natural, environmental, and heritage resources.[194]

In Mr. Giglio's opinion, "As demand for electrical power continues, consideration should be given to the appearance and location of electrical generation facilities, substations and power lines to ensure these facilities are adequately screened and buffered to reduce the visual impact of these facilities on neighboring uses and the community as called for in the policies of the 2019 General Plan." He explained that in residential and mixed-use place types (area designations), the 2019 General Plan calls for consultation between Loudoun County and electrical providers to identify opportunities to underground high-voltage power lines. He claimed such consultation has been "perfunctory" in actual practice, without leading to meaningful undergrounding.[195]

Mr. Giglio described how Loudoun County personnel were engaged in review of the Aspen-Golden Lines starting in fall 2022 and periodically discussed routing, land uses, visual impacts, and impacts to heritage and environmental resources with Dominion. He reported that

[191] During the hearing, Mr. Olsen adopted this collective testimony as his own. Tr. at 1073 (Olsen).
[192] Ex. 22 (Giglio Direct) at 1-2.
[193] *Id*. at 2-3.
[194] *Id*. at 4-6.
[195] *Id*. at 7-8 and Attached Exhibit WPG-3, pp. Chapter 6-23 and Chapter 6-24. The quotations are found *id*. at 7-8.

even since the filing of the Aspen-Golden Application, Loudoun County has proposed undergrounding a portion of the Aspen-Golden Route along Route 7 and has discussed routing along Broad Run Variations A and B. He testified that Loudoun County supports undergrounding an approximately three-mile portion of the Aspen-Golden Lines adjoining Route 7 from approximately the intersection of Belmont Ridge Road to Ashburn Village Boulevard. This area includes Lansdowne and Belmont, two master-planned residential communities; Inova Loudoun Hospital; Howard Hughes Medical Institute Janelia Research Campus; Community Church; heritage resources including the African American Cemetery, Belmont Manor, Belmont Chapel and Cemetery, and Janelia; and various office parks and commercial retail spaces. He asserted undergrounding this portion of the Aspen-Golden Lines is in keeping with the 2019 General Plan's electrical policies, and this segment was selected for undergrounding by Loudoun County because it comprises the greatest concentration of residential uses and heritage resources within the Aspen-Golden Route's viewshed.[196]

Mr. Giglio described how the Loudoun County Comprehensive Plan has identified the portion of Route 7 from Goose Creek to Route 28 as an important gateway corridor, and how much of the road frontage along Route 7 incorporates features to create a campus-like view, including large landscape buffers. He noted the Loudoun County Zoning Ordinance requires a 100-foot Gateway Corridor Buffer with enhanced landscaping through this portion of Leesburg Pike. He contended Dominion's proposed location of the Aspen-Golden Lines, with 180-foot structures adjacent to the road and within required buffers "significantly compromises the visual quality of" this part of the road and views from nearby properties, and "are in direct conflict with the intent and purpose of the County's Gateway Corridor Buffer adjoining Route 7 . . . to provide a landscaped buffer between the roadway and existing uses."[197] Mr. Giglio also provided his understanding that the Lansdowne property has open space easements to maintain a forested buffer and to visually screen the community from the roadway, and that the Belmont Manor house has a historic viewshed easement to maintain both the viewshed of the home and views to the north toward Route 7.[198]

Mr. Giglio faulted Dominion for not addressing visual impacts of the Aspen-Golden Lines to Belmont Manor and to homes and businesses in and near Lansdowne and Belmont and for not considering the diminution in property values along Route 7 from the Aspen-Golden Lines. He also expressed dissatisfaction with the current process involving informal discussions between a locality and a public utility about undergrounding options.[199]

Mr. Giglio described how Loudoun County is working on an amendment to the Comprehensive Plan to adopt a map identifying existing high-voltage corridors as a feature in the 2019 General Plan and to express preference for use of these existing corridors to collocate and develop future high voltage transmission corridors.[200] He testified the amendment would "help electric providers better identify places where the County would support transmission corridors" and would help such providers locate transmission lines "in areas where they would be with

[196] *Id*. at 10-12.
[197] *Id*. at 13.
[198] *Id*. at 14.
[199] *Id*. at 15-16.
[200] *Id*. at 19.

similar uses and/or finding means to mitigate impacts should they have to pass through residential areas or areas where they are not in keeping with that design characteristic."[201] He clarified that the County's current "policies actually talk about [and] encourage the safe grouping and bearing of utility lines and facilities" but do not incorporate a map reflecting places in the County for co-location of transmission corridors.[202]

Mr. Giglio attached to his testimony a copy of Loudoun County Department of Planning and Zoning's March 21, 2024 correspondence to Dominion providing feedback on the proposed Aspen-Golden Lines. The letter summarized:[203]

> Loudoun County policies support the establishment of the proposed 500-230kV Aspen to Golden Transmission Line to meet electric demand for the area while ensuring the structural integrity and reliability of the transmission system. County staff reviewed the primary Route 1 and four alternative routes. The County supports the construction of Route 1, Belmont Park Variation A, and the Broad Run Variation A route which parallel Leesburg Pike (Route 7) and Loudoun County Parkway (Route 607) as it provides the most direct route and results in the least impact on environmental resources. [The Department of Planning and Zoning] recommends that Dominion [] work with the County to consider options for burying portions of the proposed transmission route adjoining Leesburg Pike to reduce and mitigate potential visual impacts on historic resources, roadways, and existing and future uses proximate to the proposed transmission corridor in conformance with the electrical polices of the 2019 [General Plan]. [The Department of Planning and Zoning] also recommends that Dominion [] continue to work with the County to achieve policy goals regarding the protection of environmental and heritage resources as outlined in the 2019 [General Plan] and discussed in this correspondence.

During the hearing, Mr. Giglio confirmed these statements accurately reflect Loudoun County's position.[204] He also stated Loudoun County is advocating for the Updated Hybrid Proposal because it maintains the design characteristics of the area for which undergrounding is proposed, considering "the long-term vision of this area for where our communities and our businesses are and also our policies are for trying to mitigate those impacts . . . particularly when they come in proximity to heritage resources, environmental resources, key transportation corridors, as well as residential communities."[205]

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[201] Tr. at 842 (Giglio).
[202] *Id*. at 894 (Giglio).
[203] Ex. 22 (Giglio Direct) at Attached Exhibit WPG-4, p. 6. (Internal citations omitted.).
[204] Tr. at 974-76 (Giglio).
[205] *Id*. at 837-38 (Giglio).

Mr. Giglio also went into further detail about the County's zoning for the Route 7 corridor. He explained that the portion of Route 7 starting around Goose Creek and going to Route 28 has been set aside as a landscaped corridor since at least 2001. He testified that in previous County plans, this area was "called a keynote employment area, and this is where we envisioned large-scale office, you know, international companies; however, with the market the way it is, things changed, and that's why our comprehensive plan now designates it as a suburban mixed use and also suburban employment area."[206] On cross-examination, he confirmed that utilities are allowed, and are present, in the 100-foot corridor setbacks.[207]

Mr. Giglio also testified during the hearing that the labels on his Exhibit WPG-5 reflect place types, which are a component of Loudoun County's 2019 General Plan, and that data centers are not in the use list for either the "suburban mixed use" or "suburban neighborhood" place types but are permissible in the "suburban industrial" and "suburban employment" place types.[208] He clarified that JKLH's Belmont Property and JKLH's Telos Property have active site plans for data centers "because the underlying zoning permitted the data center use on these properties."[209] He also confirmed that Vantage and Belmont Innovation (Campuses C and B, respectively, in the Apollo-Twin Creeks Application) have active site plans, and all four of these entities with active site plans "are actively pursuing construction at the moment."[210]

Mr. Giglio described the interplay of the 2019 General Plan's place types and the County's zoning. He explained, "Generally, what you'd like to do is have your [underlying] zoning and the type of uses that are in those zoning districts align with your plan's vision for what's to develop there. . . . [A]nd the County has not done that in the past to try and align those. So that's where the discrepancies are in those and why they don't align with the actual plan vision of those place types in our comprehensive plan."[211]

Also, during the hearing, Mr. Giglio clarified that a business with a grandfathered land parcel still goes through site plan review with Loudoun County's building and development department. He explained that during this process, the business may make changes that "cannot be substantial changes" but can be "minor tweaks." He indicated such minor changes include "if a road moves a little bit or parking changes" and include moving a stormwater pond.[212] He confirmed the four buildings on the Belmont Innovation property, owned by SDC Capital Partners, LLC ("Sentinel") and situated near the proposed Sycolin Creek and Starlight Substations, have been approved as part of the County legislative process and that the size of these buildings "can be smaller and, again, would be recognized as being a minor change at that

[206] *Id*. 838-40, 860 (Giglio).
[207] *Id*. 998-99 (Giglio).
[208] *Id*. at 1006-08 (Giglio).
[209] *Id*. at 1001-04 (Giglio).
[210] *Id*. at 1011-15 (Giglio). The Vantage property is "Campus C," and the Belmont Innovation property is "Campus B," in the Apollo-Twin Creeks Application. *Compare* Ex. 10 (Ruling ¶ 2 Exhibit Map) *with* Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, pp. 4-5, 8.
[211] Tr. at 1009 (Giglio).
[212] *Id*. at 834-35 (Giglio).

point because you're not increasing the degree of conformity there."[213] On redirect examination, Mr. Giglio testified that:[214]

> our building and development department would be the group that would make that determination in terms of the – how substantial that change would be and whether it was, you know, permissible in terms of our definition of the microchange and the minor changes, the little tweaks that are often necessary because of changes in the construction design or suddenly there's new discovery of, you know, some type of rock or whatever we have in an area or if there's underground utilities or whatever that may be.

Buddy Rizer is Executive Director of Economic Development for Loudoun County. He stated that he has worked for Loudoun County for over 17 years, during which time he has promoted the growth of the data center industry in the County. He further stated he participated in the development of the 2019 Comprehensive Plan and is charged with seeing it successfully implemented. He asserted Loudoun County is committed to keeping its status as the hub of the data center industry and its appeal as both a historical and rural escape from urbanization. He supported undergrounding power lines to provide more resilient and reliable power infrastructure, which he asserted is crucial for the data center industry and County residents.[215]

Mr. Rizer provided a brief history of the data center industry in Loudoun County and General Assembly incentives supporting that industry. He testified that in the past 15 years, in just Loudoun County, over 40 million square feet of data centers have been built, with 4 million additional square feet in development and a further 8-10 million square feet likely to be developed. He touted Loudoun County's moniker as "Data Center Alley." He explained the attractiveness of Northern Virginia as a data center market given its proximity to Washington, D.C., where many data center customers are, and as a home to dense and expanding fiber infrastructure, a skilled and educated workforce, and low power rates.[216]

Mr. Rizer discussed the burgeoning need for electric power to supply data center development, and Loudoun County citizens' and organizations' growing concern about, and opposition to, the impact of overhead transmission lines on their community. He posited that undergrounding may provide a long-lasting solution that preserves landscape, maintains Loudoun County's history and beauty, and provides power that is less prone to outages. He specifically explained that data center chips require more power than before, and that cooling those chips also requires much electricity. He affirmed that "[i]n my 18 years, power lines [are] the number one discussion, the number one complaint, and the biggest challenge, I think, we're facing."[217]

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[213] *Id*. at 847-48 (Giglio).
[214] Tr. 1024-25 (Giglio).
[215] Ex. 23 (Rizer Direct) at 1-3.
[216] *Id*. at 3-5.
[217] *Id*. at 5-7; Tr. at 1032, 1046 (Rizer). The quotation is found at Tr. at 1046.

During the hearing, Mr. Rizer testified to his relationship with Dominion, stating he has "worked very closely in partnership with Dominion, really since the beginning, on identifying the right places to put the data centers and projecting out the demand and working with them very closely on the electrical agreements and interfacing with the companies for – for a long time."[218] He added, "[W]e have been clear and Dominion has been aware for 15 years that not having power lines along Route 7 was a County priority. … We anticipate we're going to continue to be in the data center business, and we're trying to find new ways to approach that and to balance that."[219]

During cross-examination, Mr. Rizer testified that because of data centers, Loudoun County has grown its tax base to nearly 50% commercial and 50% residential, and the County is projected to take in tax revenues of $850 million to $1 billion from data centers in fiscal year 2025.[220] He posited that data center tax revenues "make everything better, including lowering the tax rate on our citizens by $0.42 on the dollar. It's the reason that we can . . . build world-class schools, it's the reason that we can provide the greatest road network in Northern Virginia, and expand our health and services, that we can put a penny of our tax rate toward affordable housing." He stated he is not aware of the County setting aside any funds specifically for undergrounding.[221] He further testified that data centers provide a broader benefit to internet users generally, noting that "this is one of the most important hubs in the world."[222]

Mr. Rizer acknowledged during live testimony that "there will have to be new lines to come into the County for sure" to serve data centers in the future.[223] He indicated that meeting the in-service date to serve the data centers is important because "projects . . . are waiting to come online" and that if the Aspen-Golden Project is delayed, data center projects will experience delays, with data center companies experiencing stranded capital, and with those companies and the County both experiencing lost revenues.[224]

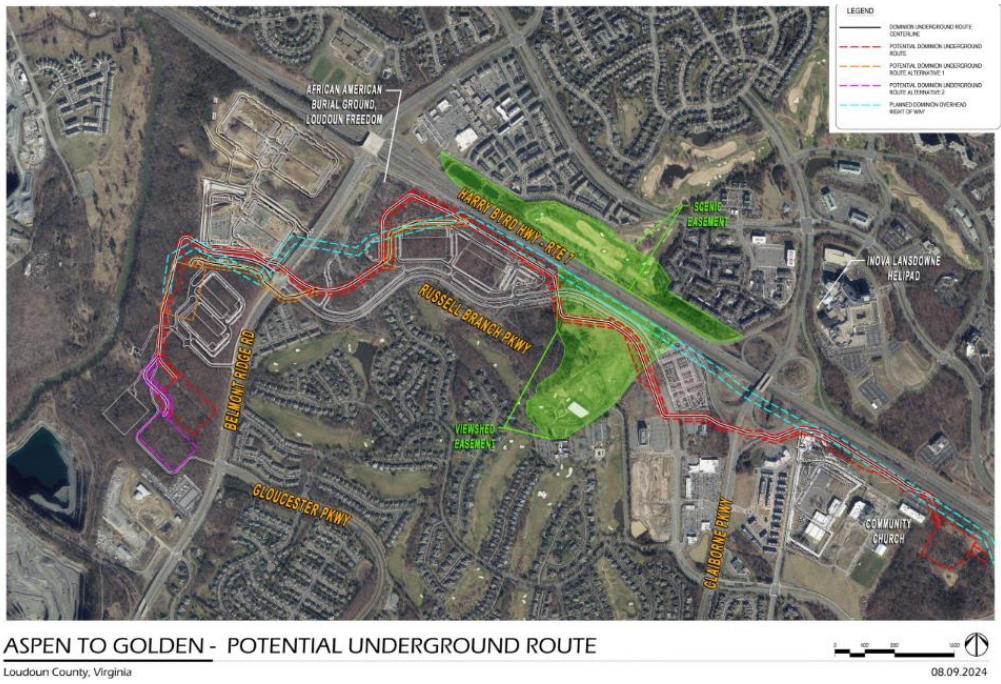
Mr. Rizer contended the County should invest in undergrounding technology research and development (i) to drive down the cost of this technology, reducing financial barriers, and (ii) to expand the County's knowledge on this topic to make undergrounding more feasible and to implement best practices. He posited that "[e]mbracing innovation in energy generation, storage, usage and delivery technologies will position us at the forefront of sustainable and aesthetically considerate power solutions, without a prohibitive increase in power costs landing on the average customers' shoulders."[225]

During the hearing, Mr. Rizer asserted it is Loudoun County's responsibility "to be a leader and an innovator in all aspects of the industry," emphasizing that the County should "continue to innovate and look for new ways to … deliver services. And I think that it's important that, as a leader in this industry, that we are taking a leadership role in finding the new

[218] Tr. at 1031 (Rizer).
[219] *Id*. at 1065 (Rizer).
[220] *Id*. at 1060-61 (Rizer).
[221] *Id*. at 1051 (Rizer).
[222] *Id*. at 1042-43 (Rizer).
[223] *Id*. at 1041 (Rizer).
[224] *Id*. at 1037, 1059-60 (Rizer).
[225] Ex. 23 (Rizer Direct) at 8-9.

ways and learning."[226] He acknowledged undergrounding is expensive and testified that "what we would like to understand is how we can make sure that the … costs are responsible, especially for our citizens, on the delivery of all this infrastructure."[227]

Brian A. Conroy, P.E., is Manager of Power System Studies for RLC. He testified that he both oversees and participates in transmission and distribution studies that include estimating, forecasting, production modeling, and other economic analyses. He discussed an undergrounding alternative for a portion of the Aspen-Golden Route.[228] The alternative is composed of: following Dominion's proposed overhead route (aqua blue line) from the proposed Aspen Substation to the proposed Sycolin Creek Substation; constructing a transition station (options are shown in the diagram in magenta, orange, and red boxes to the left of Belmont Ridge Road), undergrounding the next three miles of the proposed Aspen-Golden Lines (red line), and constructing a second transition substation east of Community Church (red box in the lower right corner of the diagram), with the remainder of the Aspen-Golden Route being overhead and following Dominion's proposal.[229] Mr. Conroy reported that in total, the underground segment would be three miles long, shorter than the Chino Hills, California 3.7-mile 500 kV underground line constructed by Southern California Edison.[230]



Mr. Conroy testified about the scope of RLC's review of the Aspen-Golden Project and how it assessed alternative routes and related constraints, resulting in a conceptual underground layout that was shared with Dominion in February 2024. RLC received Dominion's feedback and modified its proposal accordingly. Dominion's concerns and RLC's adjustments, made in the Updated Hybrid Proposal, were as follows:[231]

[226] Tr. at 1045, 1053 (Rizer).
[227] *Id*. at 1053-54 (Rizer).
[228] Ex. 20 (Conroy Direct) at 1-2.
[229] *Id*. at 5, 14, and Attached Exhibits BC-3 and BC-4.
[230] *Id*. at 8, 12. The diagram is located *id*. at Attached Exhibit BC-5.
[231] *Id*. at 5-7, 11.

Dominion Concern	RLC Adjustment
Original RLC design lacked enough cables per phase to meet MVA ratings.	Modified design to include 4 cables per phase for both the 230 kV and 500 kV lines.
The vault size appeared too small.	Adjusted the vault size to 10'x30'x10'.
The transition station footprints were too small.	Adjusted the transition station footprints to 470 x 700 feet and 539 x 550 feet.
The cables for both lines were in a common duct bank.	Modified the design to provide separate duct banks for the 230 kV and 500 kV lines.
The distance between splice vaults was too long.	Adjusted the distance between splice vaults to meet Dominion's criteria.
Rock and fracture rock are common geologic conditions in the area.	Reviewed geological surveys on adjacent parcels and provided a cost estimate assuming the project would encounter 30% rock.
The ROW was not wide enough to accommodate necessary design modifications.	Adjusted the ROW width to 100 feet for duct banks and 150 feet for splice vault locations.

Mr. Conroy noted that environmental and geological details would be assessed in the more detailed design. He testified that RLC has found the depth of bedrock in the area of the transmission line varies from 2.5 feet to 13.5 feet. He indicated that these details, regulatory and permitting risks, and other risks all are inputs into the conceptual estimate.[232]

Mr. Conroy maintained Dominion did not fully evaluate a partial undergrounding alternative. He based his assessment on adverse impacts of the overhead Aspen-Golden Lines to several features along the proposed Aspen-Golden Route, including the heliport at Inova Loudoun Hospital; the Loudoun Freedom Center and African American Cemetery; Belmont Manor; the Lansdowne scenic easement; the Belmont viewshed easement; and residential development. Loudoun County's Updated Hybrid Proposal, Mr. Conroy asserted, greatly mitigates adverse impacts to these features.[233] During the hearing in this case, Mr. Conroy clarified that photo renditions attached to his testimony, purportedly showing the impacts from various viewpoints of the impact of an overhead transmission line versus an underground line, actually show the impact of an overhead transmission line versus the existing conditions when the photos were taken. For example, the photos continue to show trees and other large vegetation that would be impermissible in the ROW of an underground line.[234]

In further support of the Updated Hybrid Proposal, Mr. Conroy dismissed Dominion's claims of infeasibility. He stressed that the alternative does not cross Goose Creek or Broad Run, and the cost estimate includes a 1,000-foot allowance for trenchless excavation (and a 2,000-foot allowance if contingency is included). He claimed that given the ability to isolate an underground transmission line's cables during an outage, 75% of the line's flow can continue until a repair is complete, which is not an option with an overhead line. He also asserted other residential and commercial delivery requests in the area could be served from overhead portions

[232] *Id*. at 7, 13, 16.
[233] *Id*. at 7-8 and Attached Exhibit BC-3.
[234] *See* Tr. at 750-54 (Conroy).

of the Aspen-Golden Lines, by a planned duct bank, or by local distribution, including Belmont Innovation, Vantage, Belmont Data Center, Belmont Park, and Ashburn Chase.[235]

Mr. Conroy reported that RLC assumed the following dates when developing the Updated Hybrid Proposal:[236]

Activity	Milestone Dates
Engineering	10/01/2024 through 12/31/2025 (electrical/civil)
Planning / Approvals	03/01/2024 through 10/01/2026 (including federal, state, local, environmental, and utility approvals, etc.)
Cable Procurement	06/01/2025 through 12/31/2026 (assumes 18-month lead time)
Construction	10/01/2026 through 06/01/2028

Mr. Conroy calculated the cost of the Updated Hybrid Proposal to be $1.112 billion, which is $423 million more than the overhead line's cost of $689 million. He calculated the underground portion of the Updated Hybrid Proposal to be $478 million.[237] He testified this figure is subject to a -50% to +200% margin of error.[238]

Mr. Conroy listed the critical routing and location decisions RLC made in developing the Updated Hybrid Proposal, including:[239]

- Locating transition stations where there is adequate space;
- Locating the route where there is appropriate width;
- Locating splice vaults, with the expanded ROW requirement, where there is enough width to accommodate them while spacing them close together enough for cable pulling and reel size;
- Accommodating both existing and planned developments and existing uses such as the Inova Loudoun Hospital helipad; and
- Avoiding culturally significant sites and preserving existing viewshed and scenic easements.

Mr. Conroy concluded that while Dominion's proposed overhead Aspen-Golden Route appears feasible, it does not reasonably minimize adverse impacts to scenic assets, historic districts, and the environment of the area addressed by the hybrid underground option, in his opinion. He asserted the hybrid alternative is both feasible and would minimize adverse impacts in a sensitive area along the route.[240]

[235] Ex. 20 (Conroy Direct) at 8-10, 13-16; Tr. at 780-81 (Conroy).
[236] Ex. 20 (Conroy Direct) at 9, 12, 15, and Attached Exhibit BC-3, pp. 6-7.
[237] *Id*. at 9, 15-16, and Attached Exhibit BC-3 at 1.
[238] Tr. at 746-47 (Conroy). *Compare* the Updated Hybrid Proposal, Ex. 20 (Conroy Direct) at Attached Exhibit BC-3, p. 6 (§ 1.4), *with* the Initial Hybrid Proposal, Ex. 47 (Moulton Rebuttal) at Attached Rebuttal Schedule 2, p. 8 (§ 1.4).
[239] Ex. 20 (Conroy Direct) at 17. *See also id*. at Attached Exhibit BC-2.
[240] *Id*. at 18.

During the hearing, Mr. Conroy compared the Updated Hybrid Proposal schedule with one provided by Black & Veatch in its undergrounding study. Mr. Conroy concluded the two schedules were "very similar" in breaking out timeframes for engineering, permitting, cable procurement, and construction and that RLC's cost-per-mile for the Updated Hybrid Proposal is in line with the costs shown in the Black & Veatch report.[241]

Mr. Conroy also took issue with Dominion's assumption that the Company would have to install transition stations to serve future customers along the Aspen-Golden Route. Mr. Conroy asserted that 230 kV gas insulated switchgear equipment could be used to feed these customers electricity from underground. He stated this equipment would occupy less space compared to an above-ground structure.[242] He also indicated that "[o]nce you're within the substation fence, the … gas insulated switch gear and the transformer are a certain height. The overhead structures, if they were there, would be much taller in those substations."[243]

Mr. Conroy confirmed that the Updated Hybrid Proposal, the underground line considered in the Black & Veatch study, and Dominion's proposed Aspen-Golden Route are each a "conceptual plan" and that, specifically with the Updated Hybrid Proposal, his intent was to prove the underground line's feasibility and provide a cost estimate for this alternative.[244] He testified that "with a conceptual design, there's a lot of details that need to fall out over time," and designing interfaces to serve future customers with 230 kV service could "be planned into the detail design."[245]

When asked about the feasibility of using HVDC for the Aspen-Golden Lines, Mr. Conroy indicated this option is typically used where there are stability issues. He also stated the Aspen-Golden Lines, being under ten miles in length, are relatively short for HVDC use and that HVDC requires additional equipment, specifically a converter station at each end of the HVDC line.[246]

Richard N. Olsen, MAI, testified on behalf of Loudoun County.[247] He discussed both his and his colleague's, Mr. William C. Harvey's, extensive training and education in real estate appraisal and appraisal review.[248] He explained that Loudoun County requested Messrs. Olsen and Harvey to develop a combination of mass and single property appraisals reflecting the unimpaired and impaired values of residential properties along an approximately 4.5-mile long segment of Route 7 near Loudoun County Parkway to Belmont Ridge Road, and an approximately 2.0-mile long segment of Route 7 near Ashburn Village Boulevard to Belmont Ridge Road. According to Mr. Olsen, these areas are expected to be affected detrimentally by

[241] Tr. at 683-84, 697 (Conroy).
[242] *Id*. at 699-701 (Conroy).
[243] *Id*. at 712 (Conroy).
[244] *Id*. at 688-89 (Conroy).
[245] *Id*. at 703-04 (Conroy). Mr. Conroy later clarified that in response to a discovery question, he mentioned the idea of serving two future data centers from underground. He testified this idea was "[n]ot even conceptual. It was more strategic, here's ways we could do it." *Id*. at 745 (Conroy).
[246] *Id*. at 710-13 (Conroy).
[247] The testimony was pre-filed as the joint testimony of Richard N. Olsen, MAI, and William C. Harvey, CCIM, MAI, but during the hearing Mr. Olsen adopted the testimony as his own. Tr. at 1073 (Olsen).
[248] Ex. 24 (Olsen Direct) at 1-2.

the overhead aerial lines and structures of the planned 500 kV and 230 kV lines from the Aspen-Golden Project. Loudoun County also requested Messrs. Olsen and Harvey provide an opinion on the economic benefit of undergrounding the transmission lines along the approximately 2.0-mile stretch of Route 7 near Ashburn Village Boulevard and Belmont Ridge Road.[249]

Mr. Olsen testified that he and Mr. Harvey studied and analyzed the effect that existing high voltage overhead transmission lines ("HVOTLs") have on residential property values in Loudoun County and applied their results to the 4.5-mile and 2.0-mile segments noted above. Mr. Olsen stated their valuation process followed a model set forth in *The Appraisal of Real Estate* (15th ed. 2020).[250]

According to Mr. Olsen, he and Mr. Harvey based their mass appraisal on the sales comparison approach to value. They took property assessments as of January 1, 2024, developed by the Loudoun County Commissioner of the Revenue's office, and adjusted them to present time using an assessment-to-sales ratio developed using recent sales. Similarly, they based their single property appraisals on the sales comparison approach, using paired sales analysis. Mr. Olsen explained this analysis compares properties impacted by HVOTLs with unimpaired properties with similar characteristics in the same location. Essentially, by analyzing real estate transactions comparable to the properties along the route segments at issue, Mr. Olsen averred he and Mr. Harvey were able to ascertain the impact of the 500 kV and 230 kV transmission lines and structures on nearby residential properties along those segments.[251]

For their analysis, Messrs. Olsen and Harvey used an assessment-to-sales ratio of 1.124, or 112.4%, to increase the January 1, 2024 assessments to current value based on July 2024 sales data for 25 properties.[252] Next, they developed case studies to determine diminution in value due to a property's location vis-à-vis already-existing 500 kV/230 kV transmission infrastructure. The case studies revealed a diminution in value of between -1.0% and -19.2%, with an average diminution of -8.5%.[253]

Mr. Olsen reported the results of the analysis as follows:[254]

Item	4.5-mile segment	2.0-mile segment
Number of residential properties in the area	4,210	1,830
01/01/24 assessed value	$2,638,614,000	$1,391,379,610
Current rounded unimpaired value (01/01/24 value x 1.124)	$2,965,000,000	$1,565,000,000
Impaired value (-8.5% adjustment)	$2,712,975,000	$1,431,975,000
Difference between current and impaired value	$252,025,000	$133,025,000

[249] *Id*. at 2-3.
[250] *Id*. at 7-8 and Attached Exhibit WH-3.
[251] *Id*. at 10-14. *See also* Tr. at 1110 (Olsen) (explaining sales comparison is an approach, but paired sales is an analysis that "isolates a difference to show whether there is or isn't an impact to overall value due to that isolated characteristic").
[252] Ex. 24 (Olsen Direct) at 14 and Attached Exhibit WH-7.
[253] *Id*. at 14-15 and Attached Exhibit WH-8.
[254] *Id*. at 14-18. Data for residential properties in these areas is located *id*. at Attached Exhibits WH-5 and WH-6.

Mr. Olsen concluded "that the geographic area that will be potentially impacted by Dominion's planned 500/230 kV lines and towers extends for a quarter mile to the north and south for most of the approximate Route 7 and 2.0-mile-long segments and extends to as much as three-quarters of a mile at the southwestern corner of the zone where the planned 500/230 kV lines and towers head south."[255] He also asserted that the diminution in property values from power lines that Dominion recognizes (a decrease of 4% - 6%) "closely parallels" what he and Mr. Harvey found in peer-reviewed appraisal literature and the results of their own case studies for the Combined Cases.[256]

Mr. Olsen testified he viewed this analysis as conservative since he and Mr. Harvey could have used the upper end of the range of negative impacts, -19.2%, which would have more than doubled the above-noted damages estimates. Mr. Olsen also recognized several high-rise residential properties outside the impact zone may be impaired by their view of the 500 kV/230 kV transmission lines and structures. Further, he mentioned damages of approximately 451 non-residential properties within the impact zone were not included in the estimates. He noted that the area also may suffer additional, qualitative damages including "the impairment to the lands encumbered with conservation and open space easements, residential common areas, and Loudoun County's gateway corridor that fall within [their] estimated impact zone."[257]

Finally, Mr. Olsen discussed the economic benefit likely to result from the 500 kV/230 kV transmission lines and structures if the lines were placed underground along the approximately 2.0-mile segment. He estimated the economic benefit would be not less than $133,025,000.[258]

During the hearing, Mr. Olsen responded to critiques of his and Mr. Harvey's analysis by Dominion Witness Colorito, who claimed the numerous differences between Messrs. Olsen's and Harvey's control and case pairings resulted in their analysis being unreliable.[259] Mr. Olsen testified there are numerous differences between properties, and what one buyer will pay for a particular home feature versus what another buyer would pay cannot be precisely measured. He testified, "And so, therefore, [*The Appraisal of Real Estate*], 15th Edition, that speaks to these issues, allows the appraiser to use their art of appraising and adjustments to be based on judgment and experience." He averred the adjustments he and Mr. Harvey made are "supported by the expectations of users for these type of similar assignments and the trillion-dollar collateral mortgage market that these appraisers utilize."[260]

Mr. Olsen modified his analysis during the hearing to remove five pairings in his paired sales analysis, four of which were duplicates and one because the case sale was outside the 0.25-mile impact zone.[261] He testified his paired sales analysis was based on homes near an

[255] *Id*. at 16 and Attached Exhibits WH-10, WH-11, and WH-12.
[256] *Id*. at 17. For the 4% to 6% property value impact recognized by Dominion, the testimony refers to a YouTube video. The Hearing Examiner could not open the video link provided in the testimony.
[257] *Id*. at 18.
[258] *Id*. at 19.
[259] Tr. at 1080 (Olsen).
[260] *Id*. at 1092 (Olsen).
[261] *Id*. at 1123, 1136-42 (Olsen).

existing 500 kV/230 kV line that he believes is approximately 100 feet tall (shorter than the proposed Aspen-Golden Lines), though he did not physically measure the height of the existing transmission line.[262]

In trying to isolate the impact of the transmission line on case sales, Mr. Olsen stated he and Mr. Harvey made certain adjustments (such as for lot size and square footage of the home above-grade and below-grade) based on their experience and judgment (*i.e.*, the art of appraisal) of what is acceptable to lenders for whom Messrs. Olsen and Harvey do work.[263] When asked about the size differences between case and control properties, Mr. Olsen explained that he and Mr. Harvey "were kind of hamstrung in finding those case sales . . . within that quarter mile impact" and could not find a more suitable transmission line to use for comparison purposes with "the number of sales – of case studies that were available within a recent time frame that we were trying to ascertain."[264]

Philadelphia-Baltimore-Washington Laborers' District Council

The Laborers' Council offered the testimony of **Marshall Brown**, Director of the Laborers-Employer Cooperation and Education Trust ("LECET") for the Laborers' International Union of North America's Mid-Atlantic Region. Mr. Brown explained that Mid-Atlantic LECET covers, among other areas, Virginia, Maryland, Pennsylvania, and Washington, D.C. He testified that the Laborers' Council represents over 6,300 workers, including thousand residing in Virginia. He added that LECET's goal is to expand markets and work opportunities for union members and contractors.[265]

Mr. Brown recommended that Dominion underground the Aspen-Golden Project where feasible and prioritize the hiring of local workers and workers from Virginia when constructing the Aspen-Golden Project. Among other things, he highlighted that undergrounding the Aspen-Golden Project will: preserve host communities' property values; lower transmission line maintenance costs in the long-term; protect public health by reducing exposure to EMF and reducing the risks of overhead lines and poles falling during storms; minimize disruption to local ecosystems and habitats; and provide resiliency and reliability benefits.[266]

As for employment, Mr. Brown estimated the Aspen-Golden Project will create numerous direct and indirect jobs during construction. He asserted local workers spend their earnings in the local community, use local healthcare facilities, and pay local and state taxes. He further averred local workers produce a higher quality product because, as residents of the local area, they have an interest in a project's long-term success.[267]

Mr. Brown contended that since 2019, workers who are part of the Laborers' International Union of North America's Mid-Atlantic Region have logged nearly 20 million

[262] *Id*. at 1130, 1134-35 (Olsen).
[263] *Id*. at 1150-59, 1180 (Olsen). *See also id*. at 1169-76 (in which Mr. Olsen indicated he used the art of appraisal to adjust for the presence of a fireplace and for upgrades to homes over $1 million in sales price).
[264] *Id*. at 1164-65 (Olsen).
[265] Ex. 19 (Brown Direct) at 1-2.
[266] *Id*. at 3-4.
[267] *Id*. at 4-5.

hours installing underground pipelines, work that is comparable to installing underground transmission lines. Both types of projects, he argued, involve laying pipe or conduit; backfilling by compacting soil to restore the ground surface; testing infrastructure to ensure its functionality and integrity prior to commercial operation; and complying with safety protocols and industry requirements and standards.[268]

Theresa Ghiorzi

Theresa Ghiorzi testified on her own behalf. A resident of Loudoun County, she stated that her property would not be directly impacted by either the Aspen-Golden or the Apollo-Twin Creeks Projects, but she indicated that her and her family members' "properties are likely to be impacted by the 500kV lines proposed to import power for these data centers."[269]

Concerning the five proposed substations that are part of the Apollo-Twin Creeks Project, Ms. Ghiorzi asserted the specific data centers that will use these substations should pay for them. She argued data centers should have their own rate classification. As an example of such treatment, Ms. Ghiorzi provided a copy of an Ohio Power Company application with the Public Utilities Commission of Ohio, wherein that utility sought approval of two tariffs for data centers – one for stationary data centers and one for mobile, or cryptocurrency mining, customers.[270]

Ms. Ghiorzi contended the general public does not need the 500 kV and 230 kV transmission lines that are part of the Aspen-Golden Project. She argued that "data centers are private use for private gain" and that eminent domain laws do not allow the taking of "property rights of one set of property owners so that a different set of private property owners can achieve their own development and economic aspirations."[271]

Ms. Ghiorzi also charged that NextERA did not seek adequate community and stakeholder feedback in designing the route of the Mid-Atlantic Resiliency Link.[272]

Staff Testimony

Aspen-Golden Project

Staff offered a Staff Report, along with the testimony of Schuyler Ingram and Jeff Dodson, each adopting portions of the Staff Report.

Schuyler Ingram, a Utilities Engineer in the Division of Public Utility Regulation ("PUR"), adopted the following portions of the Staff Report: Introduction; Project Details – the Line General Description, the Routing Description, and ROW; Project Cost; Construction

[268] *Id*. at 5.
[269] Ex. 18 (Ghiorzi Direct) at 1.
[270] *Id*. at 1-2 and Attached Exhibit 1.
[271] *Id*. at 2-3. The testimony at this point referred to "the 500kv and 230kv transmission lines in Case No. PUR-2024-00044," (*id*. at 2) but that case number refers to the Apollo-Twin Creeks Project, which has no 500 kV line component. Since the Aspen-Golden Project incorporates both 500 kV and 230 kV lines, it appears the reference to Case No. PUR-2024-00044 may have been a typographical error.
[272] *Id*. at 3-5 and Attached Exhibits 2 and 3.

Schedule; Environmental, Science and Historic Impacts of the Project; Staff's Analysis of the Routes; Environmental Justice; Economic Development; Coordinated Environmental Review; and Conclusions and Recommendations.[273]

During the hearing, Mr. Ingram addressed Item #24 in the attachment to Staff's "Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia." This item reads, "If an overhead line must be routed across uniquely scenic, recreational, or historic areas or rivers, the feasibility of placing the lower voltage line underground should be considered. And if the line must be placed overhead, it should be located on a right-of-way least visible from areas of public view."[274] Mr. Ingram affirmed Dominion fulfilled this guideline. He stated the Company "did consider the undergrounding, they did provide information in their [Aspen-Golden A]pplication regarding the scenic, recreational, and historic areas, and we've been able to evaluate that in regards to the overhead routing."[275]

Jeff Dodson, a Senior Utilities Engineer in the Division of PUR, adopted the following portions of the Staff Report: Existing and Future Facilities; Need for the Project; Staff's Analysis of the Need for the Project; Demand-Side Management Considerations; Project Details – Substations and Proposed Structures and Conductors; and Transmission Alternatives – Undergrounding.[276]

During the hearing, Mr. Dodson testified that given the short time between the filing of testimony discussing the Updated Hybrid Proposal and the date for the filing of Staff's testimony, Staff was unable to include its review of the Updated Hybrid Proposal in the Staff Report.[277] However, he offered live testimony addressing this proposal.

Generally, Mr. Dodson classified Staff's concerns with the Updated Hybrid Proposal into three categories: timing constraints, constructability, and cost. As for timing constraints, Mr. Dodson worried that Dominion would need extra time to solicit bids for the procurement of conductor specially designed for the Aspen-Golden Project. Should Dominion not meet PJM's June 1, 2028 in-service date for this project, Mr. Dodson indicated reliability violations can occur, leading to financial penalties and an increased risk of power outages or power system instability, as well as possible damage to the electric system from overloading. He noted that if overloading results in damage to breakers, transformers, and certain other equipment with long lead times for replacement, an extended outage could occur, affecting customers beyond Loudoun County since most of Virginia is served from the 500 kV system.[278]

As for constructability issues, Mr. Dodson mentioned that Dominion may face time and practical challenges in relocating existing utilities, acquiring property rights, and securing permits. Additionally, he noted undergrounding the Aspen-Golden Project likely will require trenchless excavation to cross the Claiborne Parkway/Route 7 cloverleaf intersection, requiring

[273] Ex. 27 (Ingram Direct) at 1-2.
[274] Tr. at 1260-62 (Ingram).
[275] *Id*. at 1263-64 (Ingram).
[276] Ex. 37 (Dodson Direct) at 1-2.
[277] Tr. at 1298-99 (Dodson).
[278] *Id*. at 1286-89 (Dodson).

additional ROW for drilling rigs, entry and exit pits, cable storage and materials, and to make room for construction crews and vehicles. Mr. Dodson stated Staff agrees with Dominion that the ROW width provided in the Updated Hybrid Proposal may not be adequate for trenchless excavation. He added additional width may be required for spacing between the underground cables as well, to dissipate heat.[279]

Mr. Dodson also discussed the unpredictability of the area's geologic conditions given the presence of shallow bedrock. He explained excavating such rock could require drilling, blasting, or other specialized techniques. He hypothesized that if the Updated Hybrid Proposal's 30% bedrock estimate is too low, there could be significant impacts to both project time and cost to overcome this challenge.[280]

As for cost, Mr. Dodson reported the Updated Hybrid Proposal's estimated cost to underground three miles of the Aspen-Golden Lines is $478 million, exceeding by approximately $307 million the proposed cost to construct the entire 9.4-mile Aspen-Golden Project overhead and 8.7 times higher than the cost of constructing those same three miles overhead. He noted Dominion's undergrounding estimate, which is higher than RLC's, is "at least $502 million, excluding expenses for permitting, real estate acquisition, transition station design and construction, and any required trenchless crossings."[281] He opined that given the minimal precedent for undergrounding 500 kV circuits and the uncertainties surrounding underground construction, "the potential for significant cost increases remains high."[282]

Mr. Dodson distinguished the Chino Hills, California undergrounding project, pointing out the Chino Hills project's purpose was to connect a renewable generation facility to a load area; it was not built to address reliability concerns. He further noted the Chino Hills project was built entirely through company-owned ROW. He added that the Aspen-Golden Project is for "a 500 kV circuit with a much higher required capacity than Chino Hills as well as a 230 kV circuit."[283]

Mr. Dodson opined that the Updated Hybrid Proposal is not "complete enough for an actual project" given the issues Staff identified. He stressed the novelty of undergrounding a 500 kV line. He reported Staff's conclusion "that the overhead route remains the only feasible and economical option for the Aspen-Golden [L]ines to address the need identified in the Company's [A]pplication."[284]

On cross-examination, Mr. Dodson agreed that data that could be acquired from undergrounding a 500 kV line, including data on topics such as permitting, cable cost and installation, lead times to procure items, construction, soil impacts, and line operation and

[279] *Id*. at 1287, 1289-90 (Dodson).
[280] *Id*. at 1290-91 (Dodson).
[281] *Id*. at 1291-92, 1294-95 (Dodson). The quotation appears *id*. at 1292.
[282] *Id*. at 1292 (Dodson).
[283] *Id*. at 1296-97 (Dodson).
[284] *Id*. at 1297-98 (Dodson).

maintenance. However, he testified the opportunity to gain this information does not outweigh Staff's concerns about undergrounding the Aspen-Golden Lines.[285]

Mr. Dodson stated Staff considers community concerns along with other factors when evaluating transmission line projects.[286] He stressed that "conductor is really the cornerstone of the design" for an underground transmission project, "[b]ut, as of right now, we don't have a conductor."[287]

The **Staff Report** included the following:

Introduction. Staff provided a brief overview of the Aspen-Golden Project and the procedural history of the Aspen-Golden Case.[288]

Existing and Future Facilities. Staff described the 230 kV and 500 kV transmission corridors already in the Eastern Loudoun Load Area, some of which contain multiple transmission lines.[289]

Need. Staff reviewed the need for the Aspen-Golden Project, including Dominion calculations of load growth in the Eastern Loudoun Load Area reflecting load growth from 798 MW in 2013, to 2,699 MW in 2022, with further anticipated growth of 112%, to 5,734 MW by 2032.[290] Staff discussed PJM's study findings that this load growth will lead to multiple contingency scenarios causing NERC reliability violations impacting the Eastern Loudoun Load Area by the summer of 2028.[291] Staff verified PJM's power flow models and confirmed the projected violations without the Aspen-Golden Project. Staff further verified, through power flow modeling, that the Aspen-Golden Project resolves the reliability standards violations cited by Dominion. Staff concluded the Aspen-Golden Project will address the projected NERC violations starting in the summer of 2028 and will ensure the transmission systems' structural integrity and reliability to accommodate overall load growth in the area.[292]

Demand-Side Management. Staff agreed with Dominion that demand-side management measures alone are insufficient to eliminate the need for the Aspen-Golden Project.[293]

Project Details. Staff reviewed the main components of the Aspen-Golden Project, along with the project's proposed cost and schedule.[294]

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[285] *Id*. at 1300-04, 1318 (Dodson). *See also* demonstrative Ex. 39 (Underground Pilot Data List) for a listing of the types of data counsel for the Conservancy suggested could be studied through the Updated Hybrid Proposal.
[286] Tr. at 1305 (Dodson).
[287] *Id*. at 1312 (Dodson).
[288] Ex. 38 (Aspen-Golden Staff Report) at 1-3.
[289] *Id*. at 3-4. *See also id*. at Attachment 1 for a map of the existing transmission lines in the Eastern Loudoun Load Area.
[290] *Id*. at 4-5. Note these figures reflect Eastern Loudoun Load Area summer loads. The Company noted forecasted values are based on the 2023 PJM load forecast. *Id*. at Attachment 9 (Company Response to Staff Interrogatory No. 3-10).
[291] *Id*. at 5.
[292] *Id*. at 7.
[293] *Id*. at 7-8.
[294] *See generally, id*. at 9-24, 44.

Environmental, Scenic, and Historic Impacts. Staff reviewed these impacts by considering land use, existing and planned dwellings, historic features, and wetlands.

Land Use. Notable features of Route 1 include that 83%, or 5.5 miles, of this route is on land that permits data center development as a by-right use. Route 1 crosses one publicly owned park with an existing Company easement. Route 1 also would require clearing of approximately 55.2 acres of forested land.[295]

Belmont Park Variation A crosses four privately owned land parcels as well as Virginia Department of Transportation ("VDOT") ROW. Construction would require clearing approximately 2.3 acres of forested land. While 0.2 miles of land along Variation A is zoned as Residential or Rural Commercial, about twice that amount (0.4 miles) of land along Belmont Park Variation B is zoned as Housing. Variation B crosses five privately owned land parcels and involves two crossings of Route 7 as well as one crossing of Lansdowne Boulevard. Construction of this variation would require clearing of approximately 2.3 acres of forested land. Inova Loudoun Hospital's helipad is approximately 960 feet to the north of Variation B. Inova Health expressed concern that Variation B would impact helipad operations, while Variation A would not have such an impact if the transmission line incorporates visual markers.[296]

Broad Run Variation A would cross six privately owned land parcels, and one parcel owned by Loudoun Water. Construction would require clearing of approximately 9.1 acres of forested land. Broad Run Variation B would cross seven privately owned land parcels, and one parcel owned by Loudoun Water. It would also cross 0.5 miles of existing Loudoun County Board of Supervisors open space easements along Gloucester Parkway. Construction of this variation would require clearing of approximately 19.5 acres of forested land.[297]

Dwellings. Staff reported the following dwellings in relation to the Aspen-Golden Project:[298]

Portion of Line	Within 500 Feet of Centerline	Within 250 Feet of Centerline	Within 100 Feet of Centerline
Route 1 - Existing	2 single-family 1 multi-family	1 single-family	0
Route 1 – Planned	11 single-family 89 multi-family	27 multi-family	0
Belmont A – Existing	1 multi-family	0	0
Belmont A – Planned	90 residential units	34 single-family	3 single-family
Belmont B - Existing	10 multi-family	3 multi-family	0
Belmont B – Planned	28 single-family	0	0
Broad Run A	0 existing or planned		
Broad Run B	0 existing or planned		

[295] *Id*. at 25.
[296] *Id*. at 25-27.
[297] *Id*. at 27-28.
[298] *Id*. at 28-29.

According to the Staff Report, Dominion has coordinated with the landowner and resident of the home within 250 feet of the centerline of Route 1 to minimize potential impacts of the Aspen-Golden Project to this home. Further, Belmont Park Variation A would cross an approved residential development for approximately 0.1 miles, but no construction on this development had begun as of March 2024, and Dominion adjusted the ROW to avoid crossing approved residential lots.[299]

Historic Resources. The Staff Report identified the portions of the Aspen-Golden Project with historic resource impacts projected by Dominion and the Virginia Department of Historic Resources ("DHR"), as follows:[300]

Resource	Impact
African American Cemetery	Route 1 – Moderate Impact Belmont Park (A or B) – Moderate Impact
Belmont Chapel and Cemetery	Route 1 – Minimal Impact Belmont Park (A or B) – Minimal Impact
Belmont Manor	Route 1 – Moderate Impact Belmont Park (A or B) – Minimal Impact
Cooke's Mill	Route 1 – Minimal Impact
Janelia/Howard Hughes Research Center	Route 1 – Moderate Impact Belmont Park (A or B) – Moderate Impact
W&OD Railroad Historic District	Route 1 – Minimal Impact Broad Run (A or B) – Minimal Impact

Wetlands. All portions of the Aspen-Golden Lines cross land with a medium or higher probability of containing wetlands or waterbodies, reported by Staff as follows:[301]

- Route 1: 15.4%, or 16.1 acres, with 6.4 acres being forested wetlands
- Belmont Park Variation A: 11.6%, or 0.8 acres, with 0.7 acres being forested wetlands
- Belmont Park Variation B: 32%, or 2.5 acres, with1.8 acres being forested wetlands
- Broad Run Variation A: 22%, or 6.6 acres, with 5.3 acres being forested wetlands
- Broad Run Variation B: 59%, or 18.0 acres, with 14.4 acres being forested wetlands

Additionally, Route 1 crosses 32 waterbodies, including 27 intermittent streams and three perennial waterbodies. Broad Run Variation A crosses five waterbodies, three intermittent streams and two perennial waterbodies. Broad Run Variation B crosses six waterbodies, including three intermittent streams and three perennial waterbodies. Also, the Staff Report states Dominion expects Broad Run Variation B would affect more than two contiguous acres of forested wetlands, meaning a U.S. Army Corps of Engineers ("USACE") Individual Permit would be necessary.[302]

[299] *Id*.
[300] *Id*. at 29-33.
[301] *Id*. at 33-34.
[302] *Id*.

Staff's Analysis: Staff did not oppose the proposed routes for Aspen-Goose Creek Line #5002 or the Line Loop, noting these lines use existing ROW and thus minimize impacts to land use.[303] Staff agreed with Dominion's rationale for developing Route 1 and did not oppose this route for the Aspen-Golden Lines. Staff pointed to the following benefits of Route 1:[304]

- It maximizes collocation along major roadways and existing utility corridors.
- It avoids existing homes and businesses to the greatest extent possible.
- It collocates with the Apollo-Twin Creeks Lines across Goose Creek and three data center campuses.
- This alignment permits a future tie into Starlight Substation to avoid a potential reliability violation.
- This alignment would allow the Aspen-Golden Lines to serve two potential future data centers between Belmont Ridge Road and Ashburn Village Boulevard.

As for the Belmont Park Segment, Staff favored Variation A over Variation B though Staff admitted both options are electrically viable. Staff pointed to the following concerns with Variation B:[305]

- It could hamper emergency helicopter operations at Inova Loudoun Hospital.
- It requires two crossings of Route 7, requiring extensive coordination with VDOT.
- It would require more structures (seven, instead of four for Variation A).
- It is approximately $8 million more expensive than Variation A.

As for the Broad Run Segment, Staff did not oppose Broad Run Variation A but also considered Broad Run Variation B to be a viable option based on a totality of considerations such as type of land impacted, easements crossed, and collocation opportunities. Staff also noted the choice of segment depends on approval from Loudoun Water, since either variation requires crossing its Broad Run Facility property.[306]

Overall, Staff stated it does not oppose Route 1AA or Route 1AB and considers Route 1BA and 1BB as less favorable.[307]

Transmission Alternatives. The Staff Report discussed alternatives Dominion considered to the Aspen-Golden Project. One would involve a new 500-230 kV line from the proposed Aspen Substation to the Commanders Substation. Dominion determined this option was infeasible for several reasons, partly because this site is constrained by zoning issues and an open space easement. Staff did not object to Dominion's rejection of this alternative.[308]

[303] *Id*. at 35, 38.
[304] *Id*. at 35-36.
[305] *Id*. at 36.
[306] *Id*. at 37.
[307] *Id*. at 38.
[308] *Id*. at 38-39.

Dominion also considered two other overhead transmission line corridors, one along the W&OD Trail and a second along the Dulles Greenway/Waxpool Road corridor. The major reason Dominion rejected the W&OD Trail option was insufficient ROW without viable options to obtain more ROW due to homes in the area and the improbability of acquiring new ROW along Loudoun County-owned park lands or School Board-owned lands. The Dulles Greenway/Waxpool Road option's challenges included that this corridor is 1.9 miles to 2.0 miles south of the proposed Aspen and Golden Substations, necessitating additional connecting infrastructure. This option also would require condemnation and removal of residences and the crossing of multiple existing overhead 230 kV lines. Staff concurred with the rejection of these options.[309]

The Staff Report next reviewed Dominion's consideration of full and partial undergrounding of the Aspen-Golden Lines. Dominion named several challenges to the all-underground option, including the need for four transition stations, each of which would require six acres within a fenced area and additional area beyond the fence, land which is lacking particularly at the Golden Substation site. Dominion also stated it would have to employ special construction methods to cross underneath Goose Creek and Broad Run, likely requiring the condemnation of existing buildings. Dominion also stated it would alter the overhead route so that it could make the underground route as short as possible, putting the line closer to residential areas and potentially causing greater environmental impacts. Dominion further pointed to the paucity of 500 kV transmission lines underground worldwide and in the United States, increased project cost (approximately a 500% increase, to over $1 billion), and time constraints as additional challenges to the all-underground option. Staff concluded that "[w]hile acknowledging the visual advantages of an underground route, Staff concurs that an all-underground option is not practical for the proposed Project, especially given the availability of a viable overhead option and the high cost and cost uncertainty associated with the all-underground option."[310]

Staff next discussed Dominion's consideration of undergrounding a 2.0-mile segment of Route 1 from Belmont Ridge Road to Ashburn Village Boulevard. Though Staff stated it "lacked the necessary details to determine the viability of this option at this time," Staff opined that similar challenges would exist for a hybrid underground option as for the all-underground option. These include the need for transition stations, routing challenges, need to condemn buildings and relocate gas and water utilities, impacts to homes, challenges serving future data centers, and delays to the Project's in-service date.[311]

Environmental Justice. Staff next addressed environmental justice. Staff reported the Company's findings that there are 48 Census Block Groups ("CBGs") within the Aspen-Golden Project study area, 12 of which are crossed by at least one of the project's routing options. Of these 12, four CBGs have populations of color; two CBGs have populations with limited English-speaking households; three CBGs appear to include both populations of color and limited English-speaking households; and one CBG appears to have both of those qualities in

[309] *Id*. at 39-42.
[310] *Id*. at 42-45 and Attachment 9 (Company Response to Staff Interrogatory No. 3-13 and Company Responses to Loudoun County Interrogatory Nos. 2-4, 2-5, and 2-8).
[311] *Id*. at 45-46.

addition to low-income populations. Staff reviewed Dominion's outreach efforts to these communities and recommended the Company continue engaging them to address concerns that may be identified as the Aspen-Golden Project progresses. Staff stated the project does not appear to adversely impact any goal of the Virginia Environmental Justice Act.[312]

Economic Development. Staff noted the Company's representation that the Aspen-Golden Project is needed to meet electric load requirements and to serve future load growth in the Eastern Loudoun Load Area, which in turn will facilitate economic growth in the Commonwealth. Staff declared future development in the area is reasonably foreseeable. Staff further commented there would be minimal additional work to maintain and operate the project after its construction, and thus there would be a negligible impact on job creation from the Aspen-Golden Project.[313]

Conclusion. Staff stated it does not oppose Dominion's request for a CPCN to construct and operate the Aspen-Golden Project. Staff opined that Belmont Park Variation A and Broad Run Variation A are optimal routes for the Aspen-Golden Lines but noted Broad Run Variation B also is a viable route.[314]

Apollo-Twin Creeks Project

Staff offered a Staff Report, along with the testimony of Jason Brannick and Mr. Dodson, each adopting portions of the Staff Report.

Jason Brannick, a Utilities Engineer in the Division of PUR, adopted the following portions of the Staff Report: Introduction; Existing and Future Facilities; Project Details; Project Costs; Construction Schedule; Environmental, Science and Historic Impacts of the Project; Environmental Justice; Economic Development; Coordinated Environmental Review; Wetland Impacts Consultation; and Conclusions and Recommendations.[315]

Mr. **Dodson** adopted the following portions of the Staff Report: Need for the Project; Staff's Analysis of the Need for the Project; and Demand-Side Management Considerations.[316]

The **Staff Report** included the following:

Introduction. Staff provided a brief overview of the Apollo-Twin Creeks Project and the procedural history of the Apollo-Twin Creeks.[317]

Existing and Future Facilities. Staff described the 230 kV and 500 kV transmission corridors already in the Apollo-Twin Creeks Project area, as well as the facilities Dominion proposes to construct as the Aspen-Golden Project.[318]

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[312] *Id*. at 46, 48.
[313] *Id*. at 47.
[314] *Id*. at 48.
[315] Ex. 28 (Brannick Direct) at 1-2.
[316] Ex. 35 (Dodson Direct) at 1-2.
[317] Ex. 36 (Apollo-Twin Creeks Staff Report) at 1-2.
[318] *Id*. at 2.

Need. Staff reviewed Dominion's assertions that the Apollo-Twin Creeks Project is needed so the Company can provide electric service to three data center campuses in the project area. Staff reported these campuses collectively will require 1,372 MW of power, as follows: 300 MW for Customer A, 555 MW for Customer B, and 517 MW for Customer C. The current substations in the area, Edwards Ferry, Ashburn, and Pleasant View, have limited capacity and would violate NERC reliability criteria if they were used to serve the data center campuses. Staff explained the Company plans to serve these customers with new substations, as follows:[319]

Campus	New Substation	Initial Summer Peak Load Projection	Summer Peak Load Growth to	Targeted In-Service Date
A	Twin Creeks	84 MW in 2025	300 MW in 2035	June 2026
B	Sycolin Creek	6 MW in 2026	300 MW in 2036	September 2026
B	Starlight	18 MW in 2028	255 MW in 2038	February 2028
C	Lunar	12 MW in 2026	278 MW in 2036	June 2028
C	Apollo	27 MW in 2027	239 MW in 2037	March 2028

Without the proposed Twin Creeks Substation, Staff reported Campus A would cause reliability violations at the existing Pleasant View and Ashburn Substations by 2024. Staff indicated Customer A initially would be served with bridging power, limited to approximately 30 MVA, from the Pleasant View Substation. Staff further stated Dominion asserts the Twin Creeks Substation would experience reliability violations and transformer overloads by 2026 if it were to serve both the full power loads of Customers A and B. Accordingly, Dominion has proposed to construct the Sycolin Creek and Starlight Substations to serve Customer B. Dominion has no plans to provide bridging power to Customer B. According to the Staff Report, Dominion claims Campus C requires power from both the proposed Lunar and Apollo Substations because the existing Edwards Ferry Substation would experience reliability violations by 2028 and transformer overloads by 2026 if it were to serve Customer C. Dominion intends to provide Customer C with bridging power from the Edwards Ferry Substation, limited to approximately 30 MVA. Staff reported both Campuses B and C require two substations each since the Company's Facility Interconnections Requirement document requires total load at any distribution substation not to exceed 300 MW of directly connected load. This requirement is to ensure system reliability and remain compliant with NERC reliability criteria.[320]

The Staff Report explained that based on the projected load the proposed five substations are expected to serve, in the future Dominion will need to connect these substations to a third energy source to avoid a potential reliability violation. Thus, when needed, Dominion intends to cut the proposed 230 kV Aspen-Golden Line #2333 into and out of the proposed Starlight Substation, creating the third energy source for these substations.[321]

Staff verified the load ramp schedules of Customers A, B, and C, as well as the power flows projecting reliability violations. Staff confirmed both that these violations would occur and that the Apollo-Twin Creeks Project addresses the violations. Staff confirmed Dominion's

[319] *Id*. at 3-4.
[320] *Id*. at 4-5 and n.19.
[321] *Id*. at 6.

planning studies showing the five substations are needed to meet projected load demand, avoid overloads, and comply with NERC reliability standards. Staff also agreed the Apollo-Twin Creeks Lines are necessary to interconnect the five substations.[322]

Demand-Side Management. Staff agreed with Dominion that demand-side management measures alone are insufficient to eliminate the need for the Aspen-Golden Project.[323]

Project Details. Staff reviewed the main components of the Apollo-Twin Creeks Project, including Dominion's estimated project cost and schedule.[324]

Environmental, Scenic, and Historic Impacts. Staff reviewed these impacts of the Apollo-Twin Creeks Project by considering the following categories: land use, dwellings, historic features, and wetlands.

Land Use. According to the Staff Report, Dominion avers the Project crosses a variety of land uses, including undeveloped forest land, land being used for mineral extraction, the forested Goose Creek Scenic Valley Buffer, and land now owned by industrial and data center developers. Of the 36.8 acres of forested land the Apollo-Twin Creeks Project will impact, approximately 35.4 acres are already planned for development and are likely to be cleared before Dominion begins construction of the Apollo-Twin Creeks Project.[325]

Dwellings. Staff reported there are no dwellings in the proposed Apollo-Twin Creeks Project's ROW, or within 100 feet of the ROW centerline, though there is one home within 500 feet and one home within 250 feet of the proposed centerline. Also, there are plans to locate 12 data center or warehouse structures within 500 feet of the centerline of the proposed ROW.[326]

Historic Resources. The Staff Report noted there are six historic resources within 1.0 miles of the Apollo-Twin Creeks Project. According to Dominion, the Project will have no impact on three of these. The Project will have a minimal impact on the W&OD Railroad Historic District, Cooke's Mill, and the African American Cemetery.[327]

Wetlands. Staff reported the Apollo-Twin Creeks Project crosses approximately 1.0 acres of land with a medium or higher probability of containing wetlands or waterbodies, including riverine wetlands. The project's proposed route also crosses waterbodies seven times, including crossings of Goose Creek and two intermittent tributaries to Goose Creek[328]

Environmental Justice. Staff next addressed environmental justice. Staff reported the Company's findings that there are 16 CBGs within one mile of the proposed route of the Apollo-Twin Creeks Project, two of which are crossed by the Project. Staff reported Dominion does not

[322] *Id*. at 6-7.
[323] *Id*. at 7.
[324] *See generally, id*. at 7-14 and Attachments 2, 3, and 4.
[325] *Id*. at 14-15.
[326] *Id*. at 15.
[327] *Id*.
[328] *Id*. at 16.

expect disproportionately high or adverse impacts to these communities or to the broader community surrounding the project. Staff agreed with the Company's assessment.[329]

Economic Development. Staff noted the Company's representation that the Apollo-Twin Creeks Project is needed to provide electric service requested by Customers A, B, and C; to maintain reliable service for overall load growth in the area; and to comply with mandatory NERC reliability standards. Staff commented there would be minimal additional work to maintain and operate the project after its construction, and thus there would be a negligible impact on job creation from the project.[330]

Conclusion. Staff concluded Dominion has reasonably shown the need for the Apollo-Twin Creeks Project. Staff found Dominion's proposed route for the project to be optimal because it maximizes opportunities for collocation and crosses the properties of Customers A, B, and C for much of its length. Staff further found the proposed route appears to avoid or reasonably minimize impacts to existing residences, scenic assets, historic districts, and the environment. Staff concluded the Apollo-Twin Creeks Project does not appear to adversely impact any goal of the Virginia Environmental Justice Act. Staff therefore did not oppose Commission issuance of a CPCN for construction and operation of the Apollo-Twin Creeks Project.[331]

DEQ Reports

Aspen-Golden Project

On May 13, 2024, DEQ filed the DEQ Report, summarizing the Aspen-Golden Project's potential impacts to natural and cultural resources in Virginia.[332] DEQ stated that the following agencies joined with DEQ in review of the Project:[333]

- Department of Conservation and Recreation ("DCR");
- Virginia Department of Health ("VDH");
- DHR;
- Virginia Marine Resources Commission ("VMRC");
- Department of Wildlife Resources ("DWR");
- Department of Aviation ("DOAV");
- VDOT; and
- Virginia Outdoors Foundation ("VOF").

The DEQ Report listed numerous permits and approvals that are likely prerequisites to the Aspen-Golden Project's construction.[334] In addition to these requirements of local, state, or

[329] *Id*.
[330] *Id*. at 17.
[331] *Id*. at 18.
[332] Ex. 30 (Aspen-Golden DEQ Report) at Cover Letter, p. 1 (unnumbered).
[333] *Id*. at 1. DEQ indicated the Virginia Department of Agriculture and Consumer Services, Department of Forestry, Northern Virginia Regional Commission, and Loudoun County also were invited to comment. *Id*.
[334] *See id*. at 3-5.

federal law, the DEQ Report included several recommendations made by the reviewing agencies for the Commission's consideration. These are:[335]

- Follow DEQ's recommendations for construction activities to avoid and minimize impacts to wetlands to the maximum extent possible;
- Follow DEQ's recommendations regarding erosion and sediment control and stormwater management, as applicable;
- Reduce solid waste at the source, reuse it and recycle it to the maximum extent practicable, as applicable;
- Coordinate with DCR's Division of Natural Heritage ("DNH") regarding its recommendations for invasive species management, avoidance of impacts to cores, and to obtain an update on natural heritage information as necessary;
- As recommended by DHR:
  - Perform comprehensive cultural resources surveys, in accordance with DHR guidelines, by qualified professionals before constructing any Commission-approved alternative;
  - Evaluate all identified resources for listing in the Virginia Landmarks Register ("VLR") / National Register of Historic Places ("NRHP");
  - Assess potential direct and indirect impacts to all VLR/NRHP-eligible or -listed resources, including previously inaccessible properties; and
  - Avoid, minimize, and/or mitigate moderate to severe impacts to VLR/NRHP-eligible or -listed resources by Dominion in consultation with DHR and other stakeholders.[336]
- Coordinate with VDH regarding its recommendations to protect public drinking water sources;
- Follow the principles and practices of pollution prevention to the maximum extent practicable;
- Limit the use of pesticides and herbicides to the extent practicable; and
- Coordinate with VOF if the Aspen-Golden Project area changes or if the project does not begin within 24 months.

The DEQ Report also recorded DCR-DNH's recommendation that the Aspen-Golden Project avoid the Ashburn Quarry Conservation site during construction. Finally, the DEQ Report offered DCR-DNH's corrections to the Aspen-Golden Application's DEQ Supplement.[337]

Apollo-Twin Creeks Project

On May 28, 2024, DEQ filed the DEQ Report, summarizing the Apollo-Twin Creeks Project's potential impacts to natural and cultural resources in Virginia.[338] DEQ stated that the following agencies joined with DEQ in review of the Project: [339]

[335] *See generally*, *id*. at 6-7.
[336] *Id*. at 21.
[337] *Id*. at 18-19.
[338] Ex. 29 (Apollo-Twin Creeks DEQ Report) at Cover Letter, p. 1 (unnumbered).
[339] *Id*. at 1. DEQ indicated VDOT, the Virginia Department of Agriculture and Consumer Services, Department of Forestry, Northern Virginia Planning District Commission, and Loudoun County also were invited to comment. *Id*.

- DCR;
- VDH;
- DHR;
- VMRC;
- VOF;
- DOAV; and
- DWR.

The DEQ Report listed numerous permits and approvals that are likely prerequisites to the Apollo-Twin Creeks Project's construction.[340] In addition to these requirements of local, state, or federal law or regulations, the DEQ Report included recommendations made by the reviewing agencies for the Commission's consideration. These are:[341]

- Follow DEQ's recommendations for construction activities to avoid and minimize impacts to wetlands to the maximum extent possible;
- Follow DEQ's recommendations regarding erosion and sediment control and stormwater management, as applicable;
- Take precautions to minimize emissions, particularly during periods of high ozone;
- Reduce solid waste at the source, reuse it, and recycle it to the maximum extent practicable, as applicable;
- Coordinate with DCR-DNH to obtain an update on natural heritage information and to discuss their recommendations to protect natural heritage resources, avoid impacts to cores, and develop an invasive species management plan as needed;
- As recommended by DHR:
  - Perform comprehensive cultural resources surveys, in accordance with DHR guidelines, by qualified professionals before constructing any Commission-approved alternative;
  - Evaluate all identified resources for listing in the VLR/NRHP;
  - Assess potential direct and indirect impacts to all VLR/NRHP-eligible or -listed resources, including previously inaccessible properties; and
  - Avoid, minimize, and/or mitigate moderate to severe impacts to VLR/NRHP-eligible or -listed resources by Dominion in consultation with DHR and other stakeholders;[342]
- Coordinate with VDH regarding its recommendations to protect public drinking water sources;
- Coordinate with VOF if the Apollo-Twin Creeks Project area changes or the project does not start for 24 months;
- Follow the principles and practices of pollution prevention to the maximum extent practicable;
- Limit the use of pesticides and herbicides to the extent practicable;

[340] These are detailed *id*. at 3-5.
[341] *See generally*, *id*. at 6-7.
[342] *Id*. at 20.

- Follow DOAV's recommendations regarding continued coordination with the Federal Aviation Administration ("FAA") concerning potential impacts created for Virginia Public-Use Airports' development and safety; and
- Coordinate with DWR regarding its recommendations to protect the Green Floater and minimize adverse impacts from linear utility projects and instream work.

In addition to the above summary of recommendations, the DEQ Report offered DCR-DNH's corrections to the Apollo-Twin Creeks Application's DEQ Supplement.[343]

Dominion Rebuttal Testimony

Dominion offered rebuttal testimony of the following witnesses: Kunal S. Amare, Matthew B. Vinson, Kamlesh A. Joshi, James P. Young, Lori Schuelke, Robert E. Richardson, Lawrence J. Colorito, Jr., Gabor Mezei, Shane A. Moulton, and Jacob M. Rosenberg.

Kunal S. Amare, Consulting Engineer in the Company's Electric Transmission Planning Department, reiterated the need for the Aspen-Golden and Apollo-Twin Creeks Projects; commented on the Staff Reports in each of the Combined Cases; discussed the Updated Hybrid Proposal; and discussed the concept of a data center rate class.[344]

Need. Mr. Amare summarized the need for the Aspen-Golden Project. He focused on load flow studies showing the negative impacts of projected load growth on the system that will cause thermal overloads by summer 2028. He testified that if the Aspen-Golden Project and other planned projects are not implemented, "the identified reliability violations will severely impact the transmission system's ability to provide reliable service to Dominion Energy Virginia's customers in the Eastern Loudoun Load Area."[345] Mr. Amare also confirmed the Apollo-Twin Creeks Project is needed to ensure the Company can provide requested electric service to three data centers while maintaining reliable electric service at NERC reliability standards for current customers along with anticipated load growth of 1,372 MW in the Leesburg Load Area.[346]

During the hearing, Mr. Amare refuted concerns that demand in the Eastern Loudoun Load Area will not materialize, noting that Dominion interconnects multiple data centers every year and confirming that "the Company's confident that the demand will actually materialize."[347]

In response to the suggestion that Dominion can delay interconnecting future customers, Mr. Amare affirmed that for the Aspen-Golden Project, "delaying interconnection is not a remedy for this kind of reliability project" and can be done only if the project were customer driven, as is the case for the Apollo-Twin Creeks Project.[348] He noted that delaying customer connections if the Aspen-Golden Project does not meet its in-service date is one planned

[343] *Id*. at 17-19.
[344] Ex. 40 (Amare Rebuttal) at 1, 5.
[345] *Id*. at 2-3.
[346] *Id*. at 3-4.
[347] Tr. at 1321 (Amare). For context, *see also id*. at 337-38 (Reisinger).
[348] *Id*. at 1323 (Amare).

contingency, but "not the only one."[349] In response to the suggestion that pushing back the Aspen-Golden Project in-service date will not result in NERC violations, Mr. Amare responded that there "will be multiple thermal violations as listed in the [Application] [A]ppendix if the in-service date of this project is not met," including the potential for damage to existing lines from overheating, which could cause widespread outages throughout Virginia.[350]

Response to Staff Reports. Mr. Amare expressed the Company's appreciation for Staff's investigation of the Aspen-Golden and Apollo-Twin Creeks Projects. He clarified that the proposed Sycolin Creek Substation projected peak load is expected to occur in September 2026, not in summer 2026. He affirmed this update has no effect on the need for the Apollo-Twin Creeks Project.[351]

Updated Hybrid Proposal. Mr. Amare asserted Dominion's proposed overhead Aspen-Golden Routes (1AA, 1AB, 1BA, and 1BB) "are the only robust and reliable long-term solution to meet the identified need for the Aspen-Golden Project," and noted PJM classified this project "as a critical baseline reliability project" that must be operational by June 1, 2028.[352] He explained that, assuming a Commission final order by October 28, 2024, the Company could meet PJM's deadline. Such a schedule would provide 44 months to construct the overhead lines and perform related activities such as engineering, materials procurement, and permitting. He claimed that, by contrast, constructing an all-underground alternative would require approximately 47 months solely for construction, excluding time for other activities such as procuring long lead equipment, relocating existing utilities, closing roads, and accounting for permitting and outage delays. He further claimed that undergrounding a three-mile segment of the Aspen-Golden Lines would require approximately 36 months solely for construction. He contended these timeframes would apply if undergrounding were viable, which he denied is the case. He briefly summarized the reasons other Dominion rebuttal witnesses gave as to the infeasibility of undergrounding, including: inadequate ROW widths, encroachment on or crossing of multiple existing utilities, the time it will take to drill and blast through diabase rock that will likely be encountered during undergrounding, and multiple issues with the Updated Hybrid Proposal.[353]

Rates and Cost Responsibility. Mr. Amare responded to testimony that high-wattage customers or data centers be made into a special customer class that would pay for undergrounding costs. He asserted the Combined Cases are to obtain project approvals, not cost recovery, and thus this concept is beyond the scope of the Combined Cases. He further claimed Dominion's entire transmission system is a 500 kV loop, throughout which there are no direct connections to individual customers. He contended that even the 230 kV Apollo-Twin Creeks Project, which will provide electric service to three data center customers, also allows Dominion to maintain reliable service while accommodating growth in the Leesburg Load Area. He

[349] *Id*. at 1326 (Amare).
[350] *Id*. at 1323-24 (Amare).
[351] Ex. 40 (Amare Rebuttal) at 6-8.
[352] *Id*. at 8-10.
[353] *Id*. at 9-11.

concluded the Aspen-Golden and Apollo-Twin Creeks Projects will benefit all customers and that it is equitable for all customers to pay for the costs of these projects.[354]

Matthew B. Vinson, a Consulting Engineer in Dominion's Electric Transmission Line Engineering Department, addressed the concerns of Community Church and the Belmont Landbay KK Variation suggested by JKLH witnesses.

Community Church Concerns. To assuage the concerns of Community Church, Mr. Vinson stated Dominion determined it could shift the location of two transmission structures, so that one structure would no longer be centered on the Community Church steeple viewable from Route 7, and shift a third structure to accommodate the height changes of the two structures whose location is being moved ("Community Church Proposed Modified Segment"). Under this modification, the height of one pole would decrease from 190 feet to 170 feet, while the heights of two structures that were originally 175 feet would increase to 180 feet and 185 feet. He confirmed this modification does not require additional structures or structure configurations beyond what was originally proposed. He reported that, in response to the Community Church Proposed Modified Segment, Community Church "stated that these changes addressed its concerns with the Company's proposed overhead Aspen-Golden Lines over its property."[355]

During the hearing, Mr. Vinson affirmed that, both at the time of the Application's filing and with the Community Church Proposed Modified Segment, the proposed project includes one overhead structure on Community Church's property.[356]

Belmont Landbay KK Variation. Mr. Vinson confirmed Dominion can accommodate the Belmont Landbay KK Variation and reported the Company will continue working with JKLH to microsite the locations of the structures along this variation. Though the structure heights for the up-to-four structures to be relocated is unknown, Mr. Vinson averred they are anticipated to be similar to what was originally proposed, with similar average heights. He also confirmed this modification does not require additional structures or structure configurations beyond what was included in the Aspen-Golden Application Appendix.[357]

Clarifications. During the hearing, Mr. Vinson clarified that of the 44 months provided in the timeline for the Aspen-Golden Project, the Company allotted 24 months for construction. He indicated Dominion believes construction can occur in 18 months but added a six-month buffer to account for unforeseen delays or outages. He also testified that the Company's total Aspen-Golden Project cost of $171 million includes approximately $61 million for real estate costs to construct Aspen-Golden Route 1AA.[358]

[354] *Id.* at 11-12.
[355] Ex. 41 Vinson Rebuttal) at 2-4.
[356] Tr. at 1339 (Vinson).
[357] Ex. 41 (Vinson Rebuttal) at 4-5.
[358] Tr. at 1337-38, 1340-41 (Vinson). *See also* Ex. 42 (Site Summary Report).

Kamlesh A. Joshi is a Senior Electrical Engineer in the Transmission and Distribution Services Department at Burns & McDonnell. He responded to testimony of Loudoun County and of Ms. Ghiorzi.

Response to Loudoun County Witnesses. Mr. Joshi addressed a statement by Mr. Giglio concerning the size of the transition station that would be required if the Aspen-Golden Lines were undergrounded. Mr. Joshi clarified two transition stations would be required, one at each end of the underground portion of the transmission lines. These transition stations would require seven acres each (not including required setbacks, buffers, access roads, and a stormwater pond) for equipment to accommodate both the 500 kV and 230 kV lines. The equipment would "include, at a minimum, transmission line backbone structures, switches, shunt reactors, circuit breakers for the shunt reactors, underground to overhead gateways, a control house, security enclosure, and bus arrangements." According to Mr. Joshi, this equipment would likely stand from 35 to 120 feet tall and would be installed inside a 20-foot-high security fence.[359]

During the hearing, Mr. Joshi confirmed the seven-acre requirement for a 5/2 transition station, not including a stormwater management pond, Loudoun County-required setbacks, access roads, and buffers. He also indicated a 230 kV-only transition station would require a two-acre footprint for one 230 kV line making an overhead-to-underground transition, which acreage again does not include stormwater facilities, setbacks, access roads, and buffers. He explained a buffer for either a substation or a transition station is a 15- to 20-foot space outside the fence for security, holding a security post if required, the fence post, and crushed rock.[360] He further testified a 230 kV air-insulated substation would require approximately five acres for an overhead line, and two additional acres if an underground line is coming into the substation.[361]

When asked to explain why a 5/2 transition station would require seven acres, when the Company previously indicated it would only require five acres, Mr. Joshi explained that at the time of the earlier estimate, the Company was still studying this issue. He confirmed a transition station for the Aspen-Golden Project would require seven acres including shunt reactors and road access within the substation. He testified the shunt reactors are required by Company policy in this instance "to maintain the planning and the equipment group requirements."[362]

Mr. Joshi also testified concerning the height of infrastructure at transition stations. He explained that the minimum height of the low bus is 30 feet on the 230 kV side, and 35 feet on the 500 kV side. He stated that where the overhead line would come into the transition station, the transmission line dead-end structures would be the tallest infrastructure, at 120 feet.[363]

According to Mr. Joshi, Loudoun County did not account for other transition stations that may be required to serve JKLH's Belmont Property or Telos Property. Mr. Joshi posited that both properties may require a 230 kV transition station tapped from Aspen-Golden 230 kV Line #2333 to serve these data centers. He asserted the 5.7 acres JKLH set aside on its Belmont

[359] Ex. 26 (Joshi Rebuttal) at 2-3.
[360] Tr. at 1201-02, 1226-27 (Joshi).
[361] *Id*. 1224-25, 1241 (Joshi).
[362] *Id*. at 1236-40.
[363] *Id*. at 1232-33 (Joshi).

Property and the 2.7 acres JKLH set aside on its Telos Property are insufficient to accommodate such transition stations and the additional infrastructure needed to serve these delivery points. On cross-examination, Mr. Joshi testified that the 2.7 acres set aside for electric infrastructure on the JKLH Telos Property would be insufficient for an air-insulated substation, and the Company would have to evaluate a gas insulated switchgear substation option.[364] When asked if it is feasible, using gas insulated switchgear technology, to fit a 230 kV transition station and a substation on the 5.7-acre set-aside for electric infrastructure on the JKLH Belmont Property, Mr. Joshi responded he "cannot guarantee that right now."[365] He stressed that the Company's standard practice to serve delivery points "is to not tap the 230 kV line. The standard practice is to cut and loop out the 230 kV lines with the four-breaker ring bus configuration, which will be expandable to six as an ultimate configuration for reliability purposes," meaning "we will need two 230 kV underground lines coming to that space. Hence, the minimum 2-acres area will not satisfy this requirement."[366]

As to cost for the Updated Hybrid Proposal, Mr. Joshi asserted certain components were not included in Loudoun County Witness Conroy's underground transmission line estimate worksheet, as follows:

- 500 kV shunt reactors: $10.4 million
- 230 kV shunt reactors: $9 million
- Associated breakers, disconnect switches, and arresters $2 million

He stated this entire cost should be multiplied by two, one set of costs for the transition station on each side of the underground line.[367]

In response to the question whether customer delivery points from the Updated Hybrid Proposal could be served from underground instead of via a transition station, Mr. Joshi stated the gas insulated switchgear option "will be a stretch and it will be considerably [more] expensive than the [air-insulated] option."[368]

Response to Ms. Ghiorzi. Mr. Joshi clarified, contrary to Ms. Ghiorzi's assertions, that the Apollo-Twin Creeks Project substations "are not for the sole and exclusive use of any specific data center" but "have been designed with additional capacity that potentially can be allocated to accommodate future electrical utility needs within the local area surrounding the data centers."[369]

James P. Young, Environmental Services Electric Transmission Environmental Specialist III for Dominion, addressed environmental concerns raised in the DEQ Reports on the

[364] Ex. 26 (Joshi Rebuttal) at 4-5; Tr. at 1241-42 (Joshi). Mr. Joshi more generally testified that gas insulated switchgear facilities are more expensive than their air-insulated counterparts, noting "the difference in cost between an air-insulated substation and a comparable [gas insulated switchgear] substation would be approximately double the cost." Tr. at 1208 (Joshi).
[365] Tr. at 1255 (Joshi).
[366] *Id*. at 1203-04 (Joshi).
[367] *Id*. at 1218-19, 1251-52 (Joshi).
[368] *Id*. at 1252 (Joshi).
[369] Ex. 26 (Joshi Rebuttal) at 6.

Aspen-Golden and Apollo-Twin Creeks Projects, environmental impacts of undergrounding the Aspen-Golden Lines, and permitting concerns with Loudoun County's Updated Hybrid Proposal. Mr. Young testified that Dominion does not object to the "Summary of Findings and Recommendations" in the Aspen-Golden and Apollo-Twin Creeks DEQ Reports. He did, however, address specific recommendations within the DEQ Reports.[370]

Aspen-Golden DEQ Report – Locating Wells. Mr. Young discussed the VDH Office of Drinking Water's recommendation that the Company field-verify locations of wells within a 1,000-foot radius of the Aspen-Golden Project site to protect them from accidental damage during construction. Mr. Young explained that water wells within the 1,000-foot radius may be beyond the transmission line corridor and on private property, in which case Dominion has no ability or right to field-mark them. Mr. Young referred to the Company's proposal to plot and call out the wells on the Erosion and Sediment Control plans to flag them for Dominion's construction team, and VDH's agreement in a prior case that such approach is reasonable. Mr. Young confirmed Dominion intends to follow this approach and will coordinate with VDH's Office of Drinking Water as needed.[371]

Apollo-Twin Creeks DEQ Report – Work Restrictions during Songbird Nesting Season. Mr. Young expressed strong opposition to DWR's recommendation that Dominion conduct significant tree removal and ground-clearing activities outside the timeframe of March 15 to August 15, the primary songbird nesting season. He requested the Commission reject this recommendation. He explained Dominion intends to receive all permits and begin construction of the Apollo-Twin Creeks Line upon receipt of a Commission final order, which the Company expects by March 2025. He averred construction would take at least one year, overlapping with the recommended songbird nesting season restriction. Given that tree removal and ground clearing are the first construction step, he estimated adoption of this recommendation would delay the Apollo-Twin Creeks Project schedule by three months. He expressed concern that this delay could be compounded by time-of-year restrictions related to the Northern Long-eared Bat, imperiling the Company's ability to meet the project's in-service date and potentially increasing project costs. Mr. Young offered that the Company would coordinate with DWR to minimize songbird-related impacts from the project.[372]

During the hearing, Mr. Young reiterated the request that the Commission reject this DWR recommendation on the basis that the Company will coordinate with the agency to minimize impacts to songbirds. He added that there is overlap between the Apollo-Twin Creeks Project clearing and other tree-clearing activities associated with other projects in the area. He testified, "[A]nd so with being able to coordinate once we get a final approved alignment, at that point, we'll actually know what impacts would be occurring and be able to coordinate more effectively with DWR in trying to minimize those impacts."[373]

Mr. Young also stated during the hearing that there are no regulatory updates related to the Northern Long-eared Bat and the Tri-colored Bat beyond what the Company has already

[370] Ex. 43 (Young) at 1-4.
[371] *Id*. at 4-5, 31. *See also* Ex. 4 (Aspen-Golden Application) at DEQ Supplement, pp. 61-62 and Attachment 2.P.2.
[372] Ex. 43 (Young) at 5, 32-33.
[373] Tr. at 1349-51 (Young).

reported. He explained that specific to the Aspen-Golden and Apollo-Twin Creeks Projects, the Company does not foresee any restrictions related to these animals due to a lack of hibernacula or roost trees in the transmission corridors. He affirmed Dominion monitors regulatory changes to determine the impact both on specific projects and the Company's program.[374]

Apollo-Twin Creeks DEQ Report – Recommendation on Green Floater. Mr. Young addressed DWR's recommendations that in-stream work in Goose Creek or tributaries occur outside the restricted times of April 15 through June 15 and August 15 through September 30; that the Company conduct in-stream activities during low-flow or no-flow conditions; and that the Company implement strict erosion and sediment control measures. Mr. Young affirmed the Company implements and adheres to strict requirements of erosion and sediment control and stormwater management laws and regulations as required by DEQ. He also clarified Dominion does not anticipate conducting in-stream work for the Apollo-Twin Creeks Project. He confirmed that if such work is required, the Company will coordinate with DWR and DEQ and adhere to requirements associated with the Green Floater through the permitting process. He requested the Commission reject these DWR recommendations.[375]

Both DEQ Reports – Petroleum Release Sites. Mr. Young addressed the DEQ Division of Land Protection and Revitalization's ("DEQ-DLPR") statement that the Aspen-Golden Project should evaluate five petroleum release sites to determine the location, nature, and extent of release and each release's impact on the Aspen-Golden Project. He noted a similar request by DEQ-DLPR in the Apollo-Twin Creeks DEQ Report, wherein DEQ-DLPR recommended further evaluation of three petroleum release sites to determine the location, nature, and extent of release and each release's impact on the Apollo-Twin Creeks Project. The three petroleum release sites referenced in the Apollo-Twin Creeks DEQ Report are the same as three of the five petroleum release sites referenced Aspen-Golden DEQ Report. The petroleum release sites are:[376]

Aspen Report?	Apollo Report?	Pollution Complaint No.	Occurrence or Report Date	Date Closed
Yes	No	19901824	June 1990	1994
Yes	No	19910186	August 8, 1990	1995
Yes	Yes	20223034	Unspecified	March 2022
Yes	Yes	19880981	July 1988	June 1995
Yes	Yes	19921766	1991	1993

Mr. Young asserted these release sites do not require further study because of their regulatory status as closed, the time elapsed since closure, and the location of the release sites. Specifically, he represented "[i]t is the Company's understanding that the DEQ deems a site closed once no further risk to the general public has been identified, although petroleum residue might remain." As to time elapsed since closure, he testified that four of the five complaints were closed between 29-34 years ago, with the fifth complaint closed over two years ago. As to

[374] *Id*. at 1355-56 (Young).
[375] Ex. 43 (Young) at 5, 33-34.
[376] *Id*. at 6-9, 11-13.

the sites' locations, he averred that none are within the ROW of either the Aspen-Golden or Apollo-Twin Creeks Lines, though some sites are within 100-200 feet of a project's centerline.[377]

Mr. Young requested the Commission reject any requirement for the Company to evaluate these sites further. He noted that if contaminated soils are found during construction, Dominion will coordinate with the regulatory agency and ensure the soils are correctly discarded.[378]

Both DEQ Reports – Ecological Cores. Mr. Young stated that the DEQ Reports for both projects include a recommendation from DCR-DNH that the Company avoid impacts to ecological cores and, when avoidance is unachievable, that the Company minimize the impact area and concentrate any impact at the edges of cores to allow the most interior portion of the core to remain intact. Mr. Young asserted Dominion already tries to avoid ecological cores where feasible and to minimize impacts where impacts are unavoidable or impracticable. He testified that all ecological cores crossed by the proposed and alternate routes of the Aspen-Golden Lines or within a substation site that is part of the Apollo-Twin Creeks Project are ranked as C4 (Moderate) or C5 (General), the lowest two rankings of ecological integrity. He further explained that four of these six ecological cores are fragments because they do not meet the requirement that an ecological core comprise "at least 100 acres of continuous interior, natural cover."[379] He noted several of these cores already contain transmission or distribution lines or other clearing activity. The largest (182-acre) ecological core, he explained, has already experienced clear-cutting of approximately 75.9 acres to accommodate the campuses of data center Customers B and C. He shared that "[t]he Proposed Routes for both Projects cross through or are directly adjacent to the permitted limits of disturbance of either development to reduce further impact to the core."[380] Mr. Young stated some of the core fragments also have been or are proposed for clearing to make way for other developments. He emphasized the Company has collocated the Aspen-Golden and Apollo-Twin Creeks Lines together and has collocated portions of these lines along existing infrastructure such as roads and buried utility lines to minimize the fragmentation of ecological cores or forests. He requested the Commission reject DCR-DNH's recommendation about ecological cores.[381]

Both DEQ Reports – Rare Species Survey. Mr. Young addressed DCR-DNH's agreement with Dominion that habitat for rare plants associated with diabase soils in the areas of the Aspen-Golden and Apollo-Twin Creeks Projects is poor habitat not requiring survey. He added that DCR-DNH also suggested rare species surveys be conducted "where rare species are possible within the project area" instead of "informing construction crews about the rare species and requesting they identify them in the field . . .." He asked the Commission to reject this request for expert surveys where rare species are possible for both the Combined Cases and for future projects. He asserted that since rare species are not endangered or threatened, they do not enjoy regulatory protections. He claimed a survey requirement would lead to additional project

[377] *Id*. at 9-10, 13-14. The quotation is located *id*. at 9.
[378] *Id*. at 10-11, 14-15.
[379] *Id*. at 15-16.
[380] *Id*. at 16-18.
[381] *Id*. at 18-20.

costs and delays. He confirmed Dominion will coordinate with required agencies during the ultimate project design stage.[382]

Mr. Young also requested the Commission reject DCR-DNH's request that Dominion use botanists to identify rare species for the same reasons as it should reject the survey requirement. He emphasized that overhead transmission construction minimally disturbs the ground compared to other utility development and explained the Company's use of matting and placement of heavy equipment to limit soil disturbance. He testified that disturbances during project construction are stabilized upon sequential development, and the Company reseeds the disturbed area with an approved seed mix.[383]

Both DEQ Reports – Invasive Species Management Plan. Mr. Young discussed DCR-DNH's recommendation that Dominion develop and implement an invasive species management plan as part of its ROW maintenance practices and inventory the Aspen-Golden and Apollo-Twin Creeks Projects areas for invasive species. Mr. Young explained Dominion already has an Integrated Vegetation Management Plan ("IVMP") that incorporates multiple methods to control vegetation, including invasive species. He asserted the IVMP is consistent with the standards of national organizations and incorporates mowing and/or selective approved herbicide applications to destroy vegetation threatening the transmission system while promoting the retention of desirable flora. He averred developing a separate invasive species plan for these two project areas could increase costs and create project delays. He confirmed the Company and DCR-DNH have been in communications about an addendum to Dominion's IVMP addressing invasive species. DCR provided a response to Dominion's proposed addendum in January 2024, and the addendum is not yet finalized. Mr. Young requested the Commission reject this agency suggestion based on Dominion's existing IVMP and its ongoing coordination with DCR-DNH.[384]

Both DEQ Reports – ROW Restoration and Maintenance. Mr. Young reported DCR-DNH recommends Dominion's ROW restoration and maintenance practices include revegetation using native species, with robust monitoring and an adaptive plan if initial revegetation attempts are unsuccessful or an outbreak of invasive species emerges. Mr. Young represented that Dominion's IVMP already addresses revegetation and maintenance of transmission ROWs. He requested the Commission reject this recommendation.[385]

Both DEQ Reports – Response to DCR Comments. Mr. Young acknowledged a typographical error DCR pointed out in each of the DEQ Reports concerning documented state-listed plants. He agreed there is one state-listed plant in the area of the projects, Torrey's Mountain-mint. He noted Dominion and DCR-DNH also agree that a survey for this species is not recommended due to unsuitable habitat conditions.[386]

Mr. Young also noted two slightly differing recommendations in the two DEQ Reports, both aiming to ensure Dominion's compliance with the Virginia Endangered Species Act (Code

[382] *Id*. at 20-21. The quotation is located *id*. at 20.
[383] *Id*. at 21-23.
[384] *Id*. at 24-26.
[385] *Id*. at 26-27.
[386] *Id*. at 27-28.

§ 29.1-563 *et seq*.) to protect the Peregrine Falcon. Mr. Young acknowledged the Peregrine Falcon is a threatened species and is aware a falcon nest is being monitored within the Ashburn Quarry Conservation Site. This nest is approximately 0.8 miles from the edge of the ROW of the Apollo-Twin Creeks and Aspen-Golden Projects. Mr. Young explained that since the February 15 through July 15 time-of-year restriction applies only to activities within 600 feet of an active nest, this restriction does not apply to the Aspen-Golden and Apollo-Twin Creeks Projects. He further indicated the projects do not utilize the steep slopes of the quarry area to which the Peregrine Falcon is attracted. He confirmed the Company will coordinate with DWR or other appropriate agencies if active Peregrine Falcon nests are located within 600 feet of the projects' ROW and that the Company is committed to avoiding and reducing impacts to this species.[387]

Environmental Impacts of Undergrounding. Mr. Young addressed the assertion of Laborers' Council Witness Brown that undergrounding minimizes disruption to local ecosystems and wildlife and preserves natural landscape. He explained that when installing overhead transmission lines, the Company timbers forested areas down to open meadow/shrub habitat and utilizes matting in sensitive resource areas, leaving stumps and root taps of trees and shrubs to limit disturbance. He also noted wildlife relocate during construction and return to the area once overhead line construction is completed. Conversely, Mr. Young described how underground transmission lines require a fully maintained ROW denuded of tree and shrub habitat, including root systems that could interfere with the underground line. To achieve such an environment, all root systems and stumps are removed during construction, reducing ecosystem functions below what is maintainable in an overhead line context. He also noted underground lines require more time to be constructed and, post-construction, there are more limitations on permitted landscaping within the ROW of the underground line. He concluded that underground lines "have a more direct impact to vegetative management, local ecosystems and wildlife, preservation of the natural landscape, and biodiversity" when compared to overhead lines.[388]

During the hearing, Mr. Young explained that when constructing an underground facility, "you will strip everything off of that face of your right-of-way, and then overhead facility, you will not. You will basically be limiting your ground disturbance . . . which typically is going to be associated with where each individual structure is located and designated access." He indicated that allowable vegetation under overhead lines includes shrubs and smaller woody species of plants, whereas allowable vegetation in the ROW for an underground facility is grass or turf.[389]

Permitting Concerns with the Updated Hybrid Proposal. Lastly, Mr. Young expressed concern regarding permitting of Loudoun County's Updated Hybrid Proposal. He explained that the underground alignment would require excavation of large trenches along the entire corridor of the underground portion of the Aspen-Golden Lines, directly impacting the stream channel and riparian corridor in the area. He claimed undergrounding in this area would require a Nationwide Permit 57 from the USACE, which permit in turn is based on whether DEQ issues a Clean Water Act section 401 water quality certification. Given the environmental impacts of any

[387] *Id*. at 28-30.
[388] *Id*. at 34-37.
[389] Tr. at 1371-73 (Young). The quotation is found *id*. at 1372-73.

underground route in the region where JKLH has property, Mr. Young surmised DEQ would require an individual DEQ Virginia Water Protection permit. He explained DEQ only issues an individual permit after considering reasonable alternatives to a project and finding the proposal seeking the individual permit is the Least Environmentally Damaging Practicable Alternative. He posited DEQ could not find the Hybrid Underground Proposal to be such an alternative since an overhead line alternative would have fewer impacts to the riparian area as well as lesser impacts on natural resources and the affected community.[390]

When asked whether DEQ would have to consider the overhead proposal a practicable alternative if the Commission were to order the Company to construct the Updated Hybrid Proposal, Mr. Young responded that "the Company did not present the underground [proposal], and we do not believe that it is constructible or permittable."[391]

Mr. Young also claimed the alignment of the Updated Hybrid Proposal passes immediately adjacent to the African American Cemetery, a protected historic resource, and directly conflicts with plans to develop the Loudoun Freedom Center. He announced, "The Company does not propose and will not accept such an alignment" and that it is not feasible, constructable, or the least impactful option.[392] Additionally, Mr. Young took issue with a ground penetrating radar survey of portions of the JKLH Belmont Property to search for evidence of unmarked burials. He averred that the survey did not cover the two underground route options proposed to go across the JKLH Belmont Property and that further analysis is required.[393]

During the hearing, Mr. Young revisited a potential issue with undergrounding the Updated Hybrid Proposal through the JKLH Belmont Property, specifically through its stormwater facility. He opined that there are issues with trying to go around or underneath this facility and "all of those, I think, would have a significant impact on the permitting risk of the hybrid project itself."[394] He faulted the Updated Hybrid Proposal for failing to recognize the environmental resources on the JKLH Belmont Property where the underground line is proposed to be situated. He explained his opinion that it is infeasible to place the underground line on the Belmont Property due the presence of a retaining wall and a stream corridor.[395]

Mr. Young also criticized the Updated Hybrid Proposal for its lack of consideration of regulatory permitting. He explained environmental review analysis is conducted to identify sensitive resources and determine how to avoid them or minimize impacts to them. He stated these determinations directly affect "engineering constructability costs, permitting requirements, and time frames and ultimately, the feasibility and practicality of the project." H asserted that "finding out after a line is sited and approved by the [Commission] that [the] line will have significant impacts on environmental, historical, cultural, and scenic resources [that] may render the project unpermittable also [is] ultimately unacceptable."[396]

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[390] Ex. 43 (Young) at 37-41.
[391] Tr. at 1388 (Young).
[392] Ex. 43 (Young) at 41.
[393] Tr. at 1393-95 (Young).
[394] *Id*. at 1356-57 (Young).
[395] *Id*. at 1376-81 (Young).
[396] *Id*. at 1359-61. Quotations may be found *id*. at 1360.

Community Church View Concerns. On cross-examination, Mr. Young affirmed the Company will work to minimize impacts of the Updated Hybrid Proposal's eastern 5/2 transition station on Community Church. He indicated such discussions could occur after a determination of where and how the transition station would be situated, after full design, after the Company performs its due diligence, and after the Company applies for approval through Loudoun County's site and specifications process.[397]

Lori Schuelke is the Director of the Electric Transmission Construction group for Dominion. She addressed Laborers' Council Witness Brown's recommendation that Dominion prioritize hiring local workers and workers from Virginia in constructing the projects. She explained Dominion's typical construction hiring practices. Specifically, Dominion solicits construction bids or uses established master service agreements from companies Dominion has selected who have demonstrated they can perform the required work. She indicated the Company has such agreements with union and non-union companies. She explained the selected companies are responsible for acquiring the labor needed to construct the project, which may include workers from Loudoun County, Virginia, Hispanic, and other environmental justice communities. She stated detailed plans with percentages of workforce from various communities, including types of construction crafts, are not currently available.[398]

Robert E. Richardson is a Communications Consultant for Dominion. He addressed public comments related to the community outreach process. He explained how starting in 2023, Dominion discussed the Aspen-Golden and Apollo-Twin Creeks Projects with individual property owners, community members, and particular neighborhoods, including Belmont, Lansdowne, and One Loudoun. He discussed how the Company's online GeoVoice tool was populated with the routing options for the projects on May 10, 2023, to provide users with location-specific information in relation to the projects' routing options. He stated information learned during community meetings is shared with the project team and incorporated. He emphasized that during this process, routing has not yet been finalized.[399]

Mr. Richardson also described how Dominion assigns a Communications Consultant to each project, who is available to discuss their designated project by email or telephone with members of the community. He indicated he has corresponded by email with Ms. Lucy Rota-Keller and with Ms. Marina Rota, both of whom expressed concerns about community input for the Aspen-Golden and Apollo-Twin Creeks Projects. He also described his interactions with Mr. Daniel Lazzari, who commented that Dominion should involve communities earlier in the planning process.[400]

Lawrence J. Colorito, Jr., is a Senior Managing Director for Valbridge Property Advisors. He stated he has appraised property in Loudoun County since 1992, particularly focusing on the region east of and including Leesburg, where the Aspen-Golden and Apollo-Twin Creeks Projects are located. He testified that research about the effects of HVOTLs on property values is a mature area of research. He contended that research before and after 2010

[397] *Id*. at 1364-67 (Young).
[398] Ex. 32 (Schuelke Rebuttal) at 1-2.
[399] Ex. 33 (Richardson Rebuttal) at 1-4.
[400] *Id*. at 5-6 and Rebuttal Schedules 1-4.

has consistently shown that property value is not significantly impacted by proximity to HVOTLs and that observed impacts diminish as distance from the HVOTLs grows.[401]

Mr. Colorito alleged Loudoun County Witnesses Harvey and Olsen failed to properly consider the overall conclusions of peer-reviewed appraisal literature since the 1960s, which "is not an assumption that all properties with any view of power lines will experience average diminution in value of 1-10%, as they suggest." Rather, Mr. Colorito alleged the literature's overarching conclusion is that there are no consistent findings.[402]

Mr. Colorito testified he was hired to determine whether the Harvey/Olsen analysis conducted on behalf of Loudoun County was credible and compliant with the Uniform Standards of Professional Appraisal Practice.[403] He described paired sales analysis, the type of analysis employed by Messrs. Harvey and Olsen in their case study. He claimed that under this analysis, the goal is to isolate the value impact of one characteristic, with the optimal comparison being the sales price of the same property before and after the characteristic was introduced. He contended Messrs. Harvey and Olsen compared non-identical properties and did not provide any explanation for differences between case sales properties (those impacted by an existing transmission line corridor) and control sales properties (those not so impacted). Among other things, Mr. Colorito charged that Messrs. Harvey's and Olsen's case properties and control properties differed in square footages, lot sizes, locations, number of bedrooms, number of baths, and other amenities. He noted that in 34 of the 38 pairing originally presented in Mr. Olsen's testimony, the control (non-impacted) property is markedly larger than the case (impacted) property, which could account for the control property's higher sales price. He opined that "conclusions reached based on data that is this dissimilar and in one consistent direction calls the reliability of the conclusions into question," with the ultimate result being "that the variable in question (proximity to HVOTLs) cannot be reliably isolated as a cause of any difference in case and control property sales prices." Mr. Colorito also took issue with the Harvey/Olsen case study for using properties within the same distance from the transmission line as both control (non-impacted) and case (impacted) properties. Because proximity to HVOTLs was not properly isolated, Mr. Colorito asserted the conclusion of Messrs. Harvey and Olsen is not supported, *i.e.*, their case study does not validate that using an average 8.5% loss, the Aspen-Golden Project would result in hundreds of millions of dollars of property value diminution.[404]

During the hearing, Mr. Colorito testified that to his knowledge and based on his searching, the term "art of the appraisal" is not in *The Appraisal of Real Estate*, 15th Edition. He took issue with the use of a $50 per square foot adjustment to account for the difference in above-grade dwelling area between the case sale and the control sale in the Harvey/Olsen analysis. Mr. Colorito claimed $50 per square foot is not reasonable or market oriented. He updated the analysis using $150 per square foot, which he asserted is more market oriented. With this change, Mr. Colorito determined the average difference in price for a case sale would be only 0.9% less than a control sale, markedly less than the Harvey/Olsen analysis

[401] Ex. 45 (Colorito Rebuttal) at 1-6.
[402] *Id*. at 6-7.
[403] Tr. at 1409 (Colorito).
[404] Ex. 45 (Colorito Rebuttal) at 7-15 and Attached Rebuttal Schedules 5-7. Quotations are found *id*. at 11-12.

determination of an 8.2% decrease. Mr. Colorito testified that a 0.9% difference is "within the margin of error for no adjustment at all."[405]

According to Mr. Colorito, the Harvey/Olsen analysis makes so many unsupported adjustments between case and control sales that "[i]t's impossible to tell . . . whether or not the difference that falls out of the bottom of their analysis is due to the condition they are trying to isolate or whether it's due to this myriad of other differences that the sales they are trying to compare to each other had."[406]

Further, based on the errors described during Mr. Olsen's live testimony, Mr. Colorito asserted the results of the Harvey/Olsen analysis are not credible because they violate two industry standards requiring an appraiser not to commit a substantial error or provide service in a careless or negligent manner.[407]

Mr. Colorito discussed comments from members of the public, Loudoun County Witness Rizer, and Laborers' Council Witness Brown expressing concern about the negative impact of overhead transmission lines on property values. Mr. Colorito reiterated that literature on this topic is mature and consistent and does not support the conclusion that overhead power lines significantly decrease property values. He emphasized that the neighborhoods of Lansdowne on the Potomac and Regency at Belmont will not be crossed by the Aspen-Golden Lines, and that there are only 10 dwellings within 500 feet of the Aspen-Golden Project as a whole. Finally, Mr. Colorito disagreed with public witness William R. Wright's assertion that property values would decrease around 20%, amounting to an approximately $360 million decrease in property values impacting the community. Mr. Colorito stated he was not provided with the bases for Mr. Wright's assertions and believes Mr. Wright's conclusion is not supportable.[408]

Gabor Mezei, M.D., Ph.D., is a Principal Scientist in the Health Sciences Practice of Exponent, Inc. He testified in response to comments concerning EMF.

Scientific Research. Dr. Mezei summarized that effects of exposure to EMF on health have been heavily researched over the past 50 years, and has been regularly reviewed, using well-established scientific methods, on behalf of national and international health, scientific, and government agencies. He asserted, "None of these agencies that relied on valid scientific methods concluded EMF exposure … from power lines and substations, is the cause of any adverse health effects."[409]

Dr. Mezei discussed how effects of EMF have been studied using three approaches and how reviews by scientific panels of all these approaches represent consensus opinions. He testified that multiple scientific, health, and government agencies reviewed the cumulative scientific evidence over the most recent 25 years, and none concluded that the evidence confirms

[405] Tr. at 1412-18 (Colorito); Ex. 46 (Revised Paired Sales Analysis). The quotation is located at Tr. at 1417. Note the 8.2% was determined by removing five paired sales from the original Harvey/Olsen analysis with Mr. Olsen's consent. *See* Tr. at 1123, 1136-42 (Olsen).
[406] Tr. at 1422-25 (Colorito). The quotation is found *id*. at 1425.
[407] *Id*. at 1419-21 (Colorito).
[408] Ex. 45 (Colorito Rebuttal) at 15-17.
[409] Ex. 34 (Mezei Rebuttal) at 1-3. The quotation is located *id*. at 3.

adverse long-term health impacts from exposure to EMF at levels below scientifically established exposure guidelines. Dr. Mezei noted that limited evidence of childhood leukemia, and other evidence for cancer and non-cancer health outcomes in children and adults, were inadequate according to these agencies' reviews. He also emphasized the conclusion of the International Commission on Non-Ionizing Radiation Protection in 2010 that since there is not a causal relationship between EMF and childhood leukemia, there is no health benefit from reducing EMF exposure. He reviewed similar findings by other agencies as well.[410]

Dr. Mezei reported many agencies' concerns with the BioInitiative Working Group, which suggests childhood leukemia and other health outcomes are linked to EMF exposure, for not following widely accepted scientific methods, selecting studies that support its conclusions, and relying heavily on only one scientific approach.[411]

EMF Measurement. According to Dr. Mezei, there are no federal standards for 60-Hertz EMF exposure, but there are scientifically based exposure guidelines. He stated the International Commission on Non-Ionizing Radiation Protection's reference level for 60 Hertz, developed in 2010, is 4.2 kilovolts per meter ("kV/m") for electric fields, and 2,000 milligauss ("mG") for magnetic fields. The comparable levels developed by the International Committee of Electromagnetic Safety in 2019 are 5 kV/m and 9,040 mG. He pointed out that the Aspen-Golden Application reported that 66.443 mG is the highest magnetic-field level at projected average loading, and 113.403 mG is the highest at projected peak loading. The Apollo-Twin Creeks Application reported that 42.592 mG is the highest magnetic-field level at projected average loading, and 71.921 mG is the highest at projected peak loading. These levels, Dr. Mezei concluded, are well below the international commissions' limits.[412]

Response to Public Comments and Testimony. Dr. Mezei acknowledged some property owners' concerns related to EMF and health, expressed during open houses and through the Company's GeoVoice online tool. He reiterated that no health, scientific, and government agencies have found EMF exposure at levels below scientifically established exposure guidelines either causes or contributes to adverse health outcomes in children or adults. He specifically confirmed scientific literature has not confirmed causality between breast cancer and residential or occupational exposure to EMF. He also stated research has not confirmed EMF adversely impacts the health, behavior, or productivity on wild or domestic animals.[413]

Dr. Mezei also addressed several written comments expressing concerns about exposure to EMF. In addition to reiterating other scientific conclusions on EMF exposure, Dr. Mezei confirmed no scientifically valid reviews by health and scientific agencies identified either epilepsy or seizure disorder as an outcome of EMF exposure from power lines. He also confirmed the World Health Organization and other organizations have concluded there is inadequate evidence to show an association between EMF exposure and adverse impacts on human reproduction.[414]

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[410] *Id*. at 4-10.
[411] *Id*. at 10-11.
[412] *Id*. at 12-13.
[413] *Id*. at 13-16.
[414] *Id*. at 16-20.

Dr. Mezei addressed the testimony of Laborers' Council Witness Brown, who stated undergrounding transmission lines significantly reduces EMF exposure. While Dr. Mezei agreed magnetic field levels from underground lines diminish quicker with distance compared to overhead transmission lines, he noted that magnetic field levels directly above an underground line may be higher than comparable levels directly under an overhead line.[415]

Shane A. Moulton is a Supervisor in the Company's Electric Underground Transmission Line Engineering Department. He addressed comments and testimony relating to underground transmission line engineering.[416]

Pre-Application Undergrounding Options. Mr. Moulton testified Dominion retained Black & Veatch to conduct an underground transmission line feasibility study for the Aspen-Golden Lines and retained ERM to determine routing options for any feasible underground lines. He reported that based on these analyses, Dominion determined an all-underground option was infeasible. He also discussed the Company's analysis of the two-mile Initial Hybrid Proposal prepared by RLC. According to Mr. Moulton, Dominion shared concerns about this option with multiple stakeholders during a meeting on February 15, 2024. These concerns addressed length, need for more ROW and the crossing of a large network of existing buried utility lines, challenging geologic conditions caused by diabase bedrock, the need for two or more transition stations, cost, and ability of this underground option to meet PJM's in-service date of June 1, 2028. He testified Dominion found it infeasible to present to the Commission either a hybrid or an all-underground option for the Aspen-Golden Lines considering that, even if such could be constructed, it would not meet system reliability and in-service date requirements.[417]

Loudoun County's Updated Hybrid Proposal. Mr. Moulton noted he found the three-mile undergrounding proposal cursory and lacking in detail. Despite Mr. Conroy's claims that the Updated Hybrid Proposal addresses the Company's concerns, (such as footprint of transition stations and ROW width), Mr. Moulton explained most of the Company's concerns remain unaddressed, and others were inadequately addressed, including:[418]

- *ROW width*: Loudoun County's proposed 100-foot-wide ROW, consisting of 60 feet of permanent ROW and 40 feet of temporary ROW, is sufficient only under limited conditions. In conceptual planning, Dominion typically estimates a permanent ROW of 85 to 115 feet to allow for unknowns such as existing underground utilities, field conditions, and higher native soil thermal resistivity (which would require additional separation between the 500 kV and 230 kV duct banks). Micro-tunnel and horizontal directional drill installation also would require wider ROWs.[419]

- *Cable Phase*: While the Updated Hybrid Proposal incorporates four cables per phase for both the 230 kV and 500 kV Aspen-Golden Lines, Dominion requires five cables

[415] *Id*. at 18-19.
[416] Ex. 47 (Moulton Rebuttal) at 1-2.
[417] *Id*. at 2-6.
[418] *Id*. at 6-7.
[419] *Id*. at 7-10.

per phase for the 500 kV line. Even if Dominion used only four cables per phase for the 500 kV line, fewer cables would mean more heat in each cable, requiring wider ROW.[420]

- *Trenchless Excavation Allowance*: The Updated Hybrid Proposal assumes trenched construction with a 1,000-foot allowance for trenchless construction under roads the underground lines would cross. The proposal further included another allowance of 1,000 feet of trenchless excavation as contingency. VDOT will not allow trenched construction to cross major roadways absent specific circumstances. Thus, Mr. Moulton found the assumption for trenched construction with limited contingencies for trenchless construction to be unrealistic.[421]

- *Rock*: Mr. Moulton faulted the Updated Hybrid Proposal's estimate that the Aspen-Golden Project would encounter 30% rock. He stated the proposal does not estimate the impact that encountering rock would have on the project's construction schedule, even if 30% were a reasonable assumption. He reiterated that unknowns related to the type and amount of rock the project may encounter, as well as the time necessary to excavate that rock are of major concern to the Company when considering undergrounding options.[422]

- *Construction Timeline*: The 20-month timeframe to construct the three-mile underground portion is unrealistic. The estimate provided by Dominion consultant Burns & McDonnell is 36 months, not including ROW acquisition, relocating existing utilities, and permitting, and not considering delays associated with long-lead equipment, labor availability, and ability to close roads.[423]

- *Cost*: The Updated Hybrid Proposal's $478 million cost estimate to underground the three-mile segment, and pay for transition stations, also is unrealistic. Dominion's consultant's estimate is $502 million, not including costs for permitting, real estate acquisition, transition station design and construction, or trenchless crossings. Mr. Moulton also faulted the Updated Hybrid Proposal for not estimating any costs for real estate acquisition.[424]

- *Future Development*: Loudoun County Witness Conroy suggested several future residential and commercial developments could be served by the electric distribution system and that two commercial delivery points may be served by the overhead portion of the Aspen-Golden Lines. Mr. Moulton responded that serving future delivery points from existing underground lines is possible but is more expensive, takes more time, and results in longer outage durations than serving these areas from overhead lines. He also worried that available ROW to accommodate the underground infrastructure to maintain existing circuit ratings would not be available

[420] *Id*. at 10-12.
[421] *Id*. at 12-13.
[422] *Id*. at 13-14.
[423] *Id*. at 14-15. *See also* Tr. at 1469-73 (Moulton).
[424] Ex. 47 (Moulton Rebuttal) at 14-16.

for any new circuit needed for the tapped line. He argued pre-designing future delivery points into initial underground installation is the only way to ensure delivery points are properly served.[425]

- *Dissimilarity with Chino Hills Line*: Mr. Moulton distinguished the Aspen-Golden Project's proposed underground portion from the Chino Hills Line in number of lines (Chino Hills involved one 500 kV line only); cables per phase (two for Chino Hills but five for the Aspen-Golden 500 kV Line); amps to be delivered at project completion (2,300 for Chino Hills; 9,000 for the Aspen-Golden Project); and ROW (the Aspen-Golden Project ROW is constrained by existing conditions). He added that the fact the Aspen-Golden underground portion would be shorter than Chino Hills does not change his assessment.[426]

Engineering and Practicality Concerns with the Updated Hybrid Proposal. During the hearing, Mr. Moulton explained that "the golden rule for underground engineering" is to meet the base project requirement, and "[t]he way to do that is maintain the project's ampacity," which for the Aspen-Golden Project is "5,000 amps for the 500 kV line, [and] 4,000 amps for the 230 kV line."[427] He described how maintaining ampacity is a balancing act among an underground project's thermal resistivity of soil, depth of duct bank, the mutual heating effect between duct banks, and number of cables per phase. As to these engineering considerations, Mr. Moulton faulted the Updated Hybrid Proposal for its thermal resistivity assumption of 1.15 degrees Celsius per centimeter watt, which limits the depth of the duct banks or requires more separation between duct banks, jeopardizing the 60-foot permanent ROW in the Updated Hybrid Proposal. Also, to make the Aspen-Golden Lines fit a 60-foot permanent ROW, Mr. Moulton calculated the lines' depth must be no lower than eight feet. However, given the multiple likely underground utilities the Aspen-Golden Lines will encounter, Mr. Moulton hypothesized that it is likely the lines would have to be placed deeper than eight feet, and he stated the Company would assume around 15 feet in early planning.[428]

To these faults, Mr. Moulton added the concern about practicality. He explained that "in real world conditions," the Company needs to allow a construction buffer on either side of the ROW to accommodate unknowns that might be encountered during construction, such as underground utilities or an existing distribution-related duct bank.[429]

On cross-examination, Mr. Moulton agreed that "in an ideal world," it would be possible to use a duct bank with a 60-foot permanent ROW; that it is "unlikely, but possible" that the underground line could be narrower than 60 feet at points; and that it is possible to move utilities or otherwise avoid utilities depending on the circumstances.[430] He confirmed that Dominion believes a more prudent assumption for a permanent ROW is 85 to 115 feet, and he stated the Company strives to maintain a consistent ROW width.[431]

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[425] *Id*. at 17-18.
[426] *Id*. at 18-19.
[427] Tr. at 1451-52 (Moulton).
[428] *Id*. at 1451-64 (Moulton).
[429] *Id*. at 1465 (Moulton).
[430] *Id*. at 1534-37 (Moulton).
[431] *Id*. at 1538-39 (Moulton).

Live Testimony on Underground Hybrid Proposal Timeline. During the hearing, Mr. Moulton explained Dominion used Burns & MacDonnell to propose a timeline for the Updated Hybrid Proposal. He testified to this consulting firm's experience, including: work on the Chino Hills project; construction management experience with a 500 kV underground line; and work with Dominion on the Haymarket, Glebe, and Coastal Virginia Offshore Wind projects. He testified that he would rely on the 36-month construction schedule Burns & MacDonnell developed, over the Black & Veatch and RLC estimates, because the Burns & MacDonnell schedule was developed based on more, and more recent, information about utilities and bedrock in the area. Additionally, Burns & MacDonnell had the advantage of input from a Dominion construction employee who had experience with undergrounding the Company's Beaumeade-NIVO transmission line in Loudoun County. This employee provided information on how much progress could be made daily while trenching through the rock in Loudoun County.[432]

Mr. Moulton also explained the types of construction-related delays the Updated Hybrid Proposal could face, including excavating and removing rock, scheduling outages for existing utilities to be moved, encountering undocumented utilities, securing specialized equipment and contractors who are able and certified to do the work, and working with VDOT on traffic modifications. He emphasized the limited nature of the contractors and equipment required for the Updated Hybrid Proposal, stating, "[W]e are heavily dependent on the material and equipment that's in current circulation and we can't dictate that timeline, so we're at their mercy when it comes to coordinating that."[433]

When asked on cross-examination about Black & Veatch's timeline of 47 months for detailed design, permitting, ROW, and real estate acquisition, including 25 months for construction activities to underground an 8.5-mile transmission line, Mr. Moulton responded that this estimate is two-and-a-half years old and was made with the information Black & Veatch had at the time, which he had earlier explained was "extreme high-level" and "done more or less in an engineering vacuum."[434] He also explained that Dominion has used Black & Veatch for engineering exercises but has never used that company for procurement or construction activities.[435]

Trenchless Construction Cost and Overall Cost of the Updated Hybrid Proposal. Mr. Moulton estimated there would be three or four instances of trenchless excavation to cross roads as part of the Updated Hybrid Proposal. He discussed RLC's estimate of $5 million for 1,000 linear feet of trenchless excavation, with additional contingency of a bit less than $5 million for another 1,000 linear feet of trenchless excavation. Mr. Moulton testified that

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[432] Id. at 1469-73 (Moulton). *See also Application of Virginia Electric and Power Company, For approval and certification of Beaumeade-NIVO 230 kV Underground Transmission line and 230-34.5 kV NIVO Substation under Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 et seq., and as a pilot project pursuant to HB 1319*, Case No. PUE-2008-00063, 2009 S.C.C. Ann. Rep. 319, Final Order (May 29, 2009) (approving a double circuit 230 kV underground transmission line of approximately 0.71 miles in Loudoun County, Virginia), these facts of which I take judicial notice.

[433] Tr. at 1474-80 (Moulton). The quotation is found *id*. at 1479-80.

[434] *Id*. at 1448-49, 1510-11 (Moulton). The quotations are found *id*. at 1449.

[435] *Id*. at 1517 (Moulton).

though length is one factor in the cost of trenchless excavation, there are costs for mobilization, demobilization, and materials as well. These latter factors have a larger impact on cost than length of the trenchless segment. By way of comparison, Mr. Moulton offered that Dominion's Glebe project involves micro-tunneling two 1,000-foot sections, and these will cost around $40 million to complete. He averred micro-tunneling is similar to jack-and bore and contended RLC's estimate is still "off by a factor of four."[436]

On cross-examination, Mr. Moulton explained that 1,000 feet is a linear length only, and RLC did not apply the technical requirements of five or six bores per location, which would increase the 1,000 feet to 5,000 feet. He testified the requirement for five to six bores at each location was in the Black & Veatch report index. He asserted that using drilled feet is a better representation of cost and schedule impacts to a project than the measure of linear feet.[437]

As to overall cost, Mr. Moulton made a few adjustments to RLC's Transmission Line Estimate Worksheet, including adjusting for 30% rock and increasing contingency from 10% to 40%, which he averred better matches the Company's experience. He determined a new estimate of just over $1 billion for the Updated Hybrid Proposal, in contrast to RLC's $478 million estimate. These figures represent the cost for only the underground portion of the Aspen-Golden Lines.[438]

Also pertaining to cost, Mr. Moulton admitted RLC's proposal could be amended to include five cables, instead of four, in the 500 kV duct bank. This change would not alter the ROW width but would increase costs.[439]

Benefits of Undergrounding v. Overhead Construction. Mr. Moulton addressed Loudoun County's assertion that its Updated Hybrid Proposal would perform better than an overhead alternative. He explained that while overhead lines experience more unplanned outages, those unplanned outages underground lines do experience last longer, and the lines cannot provide reliable service during outages.[440]

Mr. Moulton also disagreed with Laborers' Council Witness Brown that underground transmission lines have lower long-term maintenance costs and promote safety, resilience, economic stability, and community well-being. He reported Dominion's experience with underground lines has shown routine and corrective operation and maintenance costs are as much as six times higher than comparable overhead costs on an annual per-circuit-mile basis. Moreover, he asserted the costs to design, procure, and construct an underground line is five times higher than for an overhead line in the same or a similar area. Mr. Moulton also rejected Mr. Brown's claim that underground lines are a better solution for maintaining the transmission system's structural integrity and reliability. In explaining that unplanned outages for underground lines last longer than those for overhead lines, Mr. Moulton shared that a section of

[436] *Id*. at 1481-85 (Moulton). The quotation is found *id*. at 1485. *See also* Ex. 48 (Email exchange between VDOT and Dominion from September 11, 2024).
[437] Tr. at 1518-21 (Moulton).
[438] *Id*. at 1486-94 (Moulton).
[439] *Id*. at 1543 (Moulton).
[440] Ex. 47 (Moulton Rebuttal) at 20-22.

underground cable can take weeks to months to complete depending on location and crew availability. He further noted underground repair materials can take months to procure and be installed, which, more than fault detection, is the cause for the long outage time.[441]

In response to Loudoun County Witness Conroy's testimony on the ability to isolate individual underground cables, allowing 75% of the line to continue providing energy while one cable is awaiting repair, Mr. Moulton agreed isolation is possible, but only in particular circumstances, such as when there is switching equipment at both ends of the line. He also explained if multiple cables share a manhole, all cables in that manholes must be shut off until repairs are made. Mr. Moulton also asserted most underground cable failures occur at terminations, near electrical hazards, in which case it is unlikely other cables can remain energized. Finally, he claimed fault detection technology for overhead lines is superior to that for underground lines.[442]

Dominion's Undergrounding Experience. Mr. Moulton sponsored an exhibit showing the Company's experience undergrounding lines of 230 kV or greater. He spoke to how this experience might be related to undergrounding a 500 kV line. He testified that the electrical technology to underground a 500 kV line is proven, and installation techniques would be similar to undergrounding both a 230 kV and a 500 kV line, though undergrounding a 500 kV line is a larger scale project than undergrounding a 230 kV line. He summarized that higher voltage lines "require more capacity, and ultimately, it's more of an impact. It's a larger construction; it's a larger excavation, requires more cables per phase, which is more material."[443]

Mr. Moulton also testified that, in Dominion's experience, on a per-circuit-mile basis, there were 5.28 times more outages on underground transmission lines than overhead transmission lines in 2022 if one excludes outages lasting only a fraction of a second.[444]

Jacob M. Rosenberg is a Principal Consultant with ERM. As a preliminary matter, he described ERM's routing methodology for new transmission line projects, which he averred ERM followed in identifying routes for the Aspen-Golden and Apollo-Twin Creeks Projects. He affirmed ERM studied multiple underground routing solutions, but none were viable or feasible.[445]

Community Church's Routing Concerns. Mr. Rosenberg stated that Community Church's plans for a soccer/athletic field and walking trail adjacent to Route 7 may be accommodated despite the Aspen-Golden Lines Route 1 ROW overlapping the planned athletic field by approximately ten feet. He stated recreation fields and trails are often approved uses within ROW for overhead transmission lines. Similarly, he testified Community Church's planned monument sign, if below a certain height, would be an acceptable use in the ROW,

[441] *Id*. at 22-24. The pre-filed testimony stated the cost to design, procure, and construct an underground line is five to 10 times higher than for an overhead line in the same or a similar area. In live testimony, Mr. Moulton revised that estimate to "somewhere around five [times]." Tr. at 1549-50, 1552 (Moulton).
[442] Ex. 47 (Moulton Rebuttal) at 24-25.
[443] Tr. at 1496-1501 (Moulton). The quotation is found *id*. at 1500-01. *See also* Ex. 49 (230+ kV Underground Chart).
[444] *Id*. at 1547-48 (Moulton).
[445] Ex. 50 (Rosenberg Rebuttal) at 1, 3-5.

except for where the poles would be sited. As to the three playgrounds Community Church is planning, Mr. Rosenberg indicated playgrounds are not permitted in ROW but can be located adjacent to ROW. He concluded it does not appear these facilities would be prevented by the Aspen-Golden Lines. In response to concerns about locations of transmission poles, Mr. Rosenberg explained a route adjustment, the Community Church Proposed Modified Segment, as part of which Structure #5001/28 / #2333/28 would be moved 370 to the west, toward the north-most corner of the church's property. In all, this modification would require the Company to shift the locations of three poles (one on the church's property and two on commercial properties) and modify their heights to keep Structure #5001/28 / #2333/28 from being centered on Community Church's Route 7 frontage. Mr. Rosenberg asserted the Community Church Proposed Modified Segment resolves the church's concerns.[446]

JKLH Belmont Property Routing Concerns. Mr. Rosenberg testified the Company does not support the Freedom Center Variation but does support the Belmont Landbay KK Variation. He agreed Dominion will need authority to microsite the line route and structures to best accommodate all planned uses in the area, since the Company has not yet been able to determine what conditions on the property may impact construction. He clarified that the Belmont Landbay KK Variation is 27 feet longer than the proposed Aspen-Golden Lines Route and results in: at least 0.1 acres more tree clearing, 0.3 acres more wetland impacts, and a slightly closer position to the Loudoun Freedom Center and African American Cemetery. He acknowledged this variation also aligns the ROW on top of a stream the Company initially tried to avoid. He termed these additional impacts "slight" considering the minimized impact to JKLH's Belmont Property and the agreement of JKLH, the Company, and Pastor Thomas.[447]

During the hearing, Mr. Rosenberg addressed the ground penetrating radar survey that was performed by a JKLH consultant. Mr. Rosenberg testified that the surveyed area was limited and does not cover at least one of the Updated Hybrid Proposal's underground options through the JKLH Belmont Property.[448]

Allan Myers Routing Concerns. Mr. Rosenberg stated the Company was unaware, until Allan Myers Witness Hall filed testimony, that Allan Myers is planning a building with which Aspen-Golden Route 1 would interfere. Mr. Rosenberg testified the Company cannot route around this development but is committed to working with Allan Myers to consider micrositing or other solutions that may allow the building to be constructed elsewhere on Allan Myers' property. He stated Dominion also is willing to consider a change to the route alignment, though any changes will require negotiation with those impacted, input from VDOT, and engineering verification.[449]

Updated Hybrid Proposal. Mr. Rosenberg took issue with several aspects of the Updated Hybrid Proposal, as follows:

[446] *Id*. at 5-11 and Attached Rebuttal Schedule 2.
[447] *Id*. at 11-14 and Rebuttal Schedule 5.
[448] Tr. at 1586-87 (Rosenberg).
[449] Ex. 50 (Rosenberg Rebuttal) at 14-16.

- *No Inspection of or Estimate for Relocating Existing Utilities*: Mr. Rosenberg asserted one of the difficult aspects of routing and installing underground transmission lines concerns the network of already-present utilities such as what exists throughout the study area and along Route 7. Such utilities may cause project risk and uncertainty and can even cause an underground route to be infeasible.[450]

- *Estimate of Encountering 30% Rock*: Mr. Rosenberg averred the likelihood of encountering solid bedrock along the Updated Hybrid Route is a certainty. While drilling or cutting through this rock is possible, it must be done slowly and at substantially increased cost. He also noted the ground penetrating radar survey conducted by JKLH's consultant found bedrock at eight feet depth in the area, meaning the bedrock is close to the surface. and "hitting the diabase is almost a certainty for almost the entire portion of the County's underground route." He posited encountering this rock would impact routing and timing of constructing an underground route.[451]

- *Issues with Start and End-Point Transition Stations*: Mr. Rosenberg explained Loudoun County proposed one potential and two alternative transition stations at the start of the undergrounding portion of the Updated Hybrid Proposal. All three are on property owned by Sentinel, within an approved data center development. All three options would overlap with Sentinel's plans for future buildings and/or substations, and Sentinel has stated any taking associated with the starting-point transition station would cause it irrevocable economic harm, resulting in lost revenue for Loudoun County. Mr. Rosenberg reported Sentinel has obtained all necessary zoning approvals and is fully vested, and it unclear how these vested rights can be superseded other than through condemnation. He also asserted two of the three starting-point transition station locations have insufficient land mass for a 5/2 transition station. The one starting-point transition station option that may have enough land also encroaches on the Starlight Substation footprint in addition to interfering with Sentinel's plans. Mr. Rosenberg also indicated the ending-point transition station proposal is on land owned by BF Saul Real Estate, is encumbered by a proffer at odds with a transition station, sits on top of gas infrastructure and part of an archaeological site, and could visually impact Community Church.[452]

- *Encroachments on Other Properties*. Mr. Rosenberg claimed the underground ROW and a potential splice area may impact the proposed Belmont Cove residential development, likely eliminating 20 or more townhouse lots and future homesites. There is also a ROW encroachment on the Intersport Performance Auto Repair Service & Storage building.[453]

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[450] *Id*. at 16-18.
[451] *Id*. at 18-19 and Attached Rebuttal Schedules 7 and 8; Tr. at 1588-91 (Rosenberg). The quotation is found at Tr. at 1591.
[452] Ex. 50 (Rosenberg Rebuttal) at 19-22 and Attached Rebuttal Schedules 9 and 10.
[453] *Id*. at 22-23 and Attached Rebuttal Schedule 9.

- *Future Delivery Points*. Mr. Rosenberg reported two planned developments, JKLH's Belmont Property and Telos Property, are planned for data center development and will require 230 kV service. The areas JKLH has set aside for substations will not also accommodate 230 kV transition stations. For the JKLH Telos Property in particular, the Company would have to provide service by constructing an additional segment of overhead line, either 0.5 miles from the transition station to the east of Community Church or 2.5 miles from the starting-point transition station. Either option places an overhead line in the place where Loudoun County seeks to have an underground line.[454]

- *Lesser Impact Caused by Undergrounding*. Mr. Rosenberg disagreed with Loudoun County that visual and other impacts will be greatly mitigated by undergrounding. Rather, he asserted undergrounding mitigates some visual impacts while creating others, such as visual impacts from transition stations. He also noted both overhead and underground lines require clearing of vegetation. He asserted overhead lines are less impactful environmentally because undergrounding the Aspen-Golden Lines requires wider ROW, trenched installation, and clearing for the transition stations. He disagreed with Loudoun County Witness Conroy's illustrations depicting existing conditions as representative of conditions with underground lines. Mr. Rosenberg argued existing conditions do not account for transition stations and cleared ROW. He took issue with individual photo depictions in Mr. Conroy's testimony as well.[455]

Other Objections to Loudoun County Testimony. Mr. Rosenberg objected to Mr. Conroy's claim that Dominion did not fully evaluate a hybrid underground alternative. Mr. Rosenberg asserted the Black & Veatch underground feasibility study examined end-to-end underground options and was comprehensive, so it did not need to assess small segments of the Aspen-Golden Lines for feasibility. He recited factors making the Aspen-Golden Lines infeasible for undergrounding, including geological challenges, existing utilities, and the presence of multiple data centers. He also faulted Mr. Conroy's claim that undergrounding will not disturb wetlands and waterbodies crossed by the Aspen-Golden Lines. According to Mr. Rosenberg, trenched undergrounding will create significant disruption, and Loudoun County did not mention horizontal directional drilling or account for the workspaces and ROW needed for such installation. Mr. Rosenberg disagreed with Mr. Conroy's claim that the transition stations at either end of the Updated Hybrid Proposal are located on property zoned for data center use. Mr. Rosenberg pointed out that the easternmost transition station would be on industrial land with no planned data center and would impact views from Community Church. Finally, Mr. Rosenberg claimed Mr. Conroy overlooked the additional transition stations or overhead lines that will be needed to serve two future data centers.[456]

Mr. Rosenberg also disagreed with Loudoun County Witness Conroy's claim that Dominion's overhead routes do not reasonably minimize adverse impact on scenic assets, historic districts, and the environment. He posited that Dominion thoroughly considered such impacts. He noted the proposed Aspen-Golden Route does not cross historic districts and would

[454] *Id*. at 23-25.
[455] *Id*. at 25-30 and Attached Rebuttal Schedule 12.
[456] *Id*. at 30-33.

create only low-to-moderate visual impacts to scenic assets like Belmont Manor and Janelia, which already are surrounded by development. He emphasized the portion of the Aspen-Golden Route analogous to the portion proposed for undergrounding in the Updated Hybrid Proposal parallels a highly trafficked highway, crosses four planned data centers, avoids existing and planned residential areas, and avoids the African American Cemetery.[457]

Mr. Rosenberg criticized Loudoun County Witness Giglio's claim that the Updated Hybrid Proposal is in keeping with the electrical policies in the County's 2019 General Plan. Mr. Rosenberg asserted Dominion considered these policies, though the 2019 General Plan does not include much in the way of such policies. He testified that the Aspen-Golden Project uses improved conductor technology and new monopole structure types, is efficient in terms of cost and long-term maintenance, and uses the minimum amount of ROW. He disagreed that the Updated Hybrid Proposal minimizes impacts on key travel corridors, sensitive cultural and historic resources, and residential communities as called for in the 2019 General Plan, given the proposed placement of the transition stations. He maintained that the Aspen-Golden Project route was optimized to collocate with roadways, cross commercial and industrial uses, and avoid residences as much as possible. He emphasized that if the most important directive of the 2019 General Plan is to avoid existing residences, the proposed Aspen-Golden Route is compliant with the 2019 General Plan. Finally, Mr. Rosenberg sought to correct Mr. Giglio's claim that the Aspen-Golden Lines are in the viewshed of numerous historic resources. Mr. Rosenberg asserted the lines will have only a minimal impact on the W&OD Trail and Houghs/Cook Mavens Mill, and they will have no impact on Broad Run Ridge and Toll House.[458]

Specifically, as to Belmont Manor, during the hearing Mr. Rosenberg discussed the wording of the Belmont Manor Viewshed Easement. He alleged the wording of the easement indicates its purpose is to maintain an unobstructed view of the Belmont Manor house from Route 7, *i.e.*, to provide someone driving on Route 7 a view of that historic structure. He testified Aspen-Golden Route 1AA would place two structures along the Belmont Viewshed Easement.[459]

Further, Mr. Rosenberg discounted Mr. Giglio's characterization of the portion of Route 7 from Goose Creek to Route 28 as an important gateway corridor in Loudoun County's Comprehensive Plan. Mr. Rosenberg testified that the 2019 General Plan does not mention this segment and that this portion of Route 7 "has no clearly defined purpose or import as a gateway corridor."[460] During cross-examination, Mr. Rosenberg and counsel for Loudoun County had a lively discussion about the County's 2019 General Plan, its Comprehensive Plan, and Loudoun County's land use planning with regard to data centers.[461]

Underground Pilot Program. Mr. Rosenberg averred the Aspen-Golden Project is not suitable for an underground pilot program because it is not a small-scale project designed to test feasibility, effectiveness, or the impact of underground technology and construction prior to

[457] *Id*. at 48-49.
[458] *Id*. at 33-36, 49-53.
[459] Tr. at 1602-03, 1665-66 (Rosenberg); Ex. 52 (Belmont Viewshed Easement).
[460] Ex. 50 (Rosenberg Rebuttal) at 53-54.
[461] Tr. at 1640-48 (Rosenberg cross-examination by Winston).

large-scale implementation. Rather, the Aspen-Golden Project is complex and large in size, will be built in a constrained area, and requires new ROW. He defined Southern California Edison's Chino Hills line as a pilot that, despite being in company-owned ROW with no existing utilities or existing development, still doubled that project's proposed construction timeline. He asserted the Aspen-Golden Project cannot tolerate a delay of its in-service date and faces obstacles like existing underground utilities that need to be crossed or possibly relocated.[462]

Undergrounding Impacts. Mr. Rosenberg disagreed with Mr. Giglio's claim that Dominion's pre-application process does not appropriately consider undergrounding. Mr. Rosenberg explained Dominion met with Loudoun County staff, elected officials, and community members multiple times to discuss routing and informed them as soon as the Company determined undergrounding was infeasible. In response to Conservancy Witness Jeavons' claim that undergrounding is the best option to preserve scenic beauty, Mr. Rosenberg reiterated his concern that undergrounding could result in four transition stations within a three-mile segment, impacting neighborhoods and historic resources. He alleged that overhead construction preserves scenic beauty by keeping the Aspen-Golden Lines away from residences and protected scenic areas. He further argued undergrounding would not minimize impacts to Community Church because it would require a transition station directly east of the church, as close as 100 feet from the church's property. He added that Community Church is likely to be affected by a future double circuit 230 kV overhead line to serve the JKLH Telos Property, resulting in even greater visual impacts to the church.[463]

Responses to Public Witnesses. In response to public witnesses who testified on August 6, 2024, Mr. Rosenberg affirmed the Company considered scenic assets and historic areas during the routing process. He noted only a few specific resources, such as Belmont Manor, have designated scenic protections. He explained that even with these scenic protections in place, the area of Loudoun County the Aspen-Golden Lines will traverse has become substantially more developed in the past 40 years. He asserted overhead transmission lines are visually consistent with the existing level of development in the area, particularly considering the proposed Aspen-Golden route crosses seven existing and planned data center sites. He emphasized undergrounding incurs its own set of visual impacts.[464]

In response to testimony from public witnesses Badger and Frankenfield as to the impact on views from their homes, Mr. Rosenberg stated that a visual impact analysis does not consider specific views from individual residences. Rather, residences are considered in the aggregate using representative views. Nevertheless, Mr. Rosenberg provided photo simulations to further depict visual impacts of the Aspen-Golden Lines on the Regency at Belmont community. He explained these simulations show the transmission lines and structures are visible in the distance, with the forms, lines, and colors of the transmission lines being similar to, but taller than, existing landscape elements. He reported Dominion concluded the Aspen-Golden Lines would have a moderate visual impact on visually sensitive resources.[465]

[462] Ex. 50 (Rosenberg Rebuttal) at 37-38 and Attached Rebuttal Schedule 13.
[463] *Id*. at 40-43.
[464] *Id*. at 44-46.
[465] *Id*. at 46-48 and Attached Rebuttal Schedule 15.

In response to public witness Jack Kelly's concerns about impacts of the proposed Aspen-Golden Lines to residents in upper levels of the Lansdowne Woods of Virginia condominiums, Mr. Rosenberg stated this community is 4,000 feet (about ¾ of a mile) from the lines, and no visual simulations were created for this community. Mr. Rosenberg also explained that a visual impact assessment focuses on visual changes from publicly accessible areas such as public buildings, parks, streets, and sidewalks. He acknowledged that Lansdowne Woods of Virginia residents on upper floors may see the lines but stated Dominion considers the visual impact minimal. He explained that "given the relative scale of the proposed lines and structures as viewed from this height and distance, the existing mix of features is better able to absorb new physical changes without overly affecting the landscape's visual character and quality."[466]

In response to public witness Kevin Carter's comments about a scenic easement covering a Lansdowne Resort and Spa golf course, Mr. Rosenberg testified the proposed Aspen-Golden Route does not cross any part of the resort or associated scenic easement. He noted the proposed route is on the opposite side of Route 7 from the easement area. He added that, nonetheless, utility infrastructure and required structures are permitted uses in the scenic easement.[467]

During the hearing, Mr. Rosenberg sponsored a schedule incorporating the Company's response to the topics raised by public witnesses on September 5, 2024.[468]

Responses to Public Commenters. In response to Arelis Piscitelli's comment that the Aspen-Golden Lines will traverse her property, Mr. Rosenberg stated this commenter's property is 3.8 miles west of the nearest Aspen-Golden Project facility. In response to Mr. Frankenfield's comments, Mr. Rosenberg noted Mr. Frankenfield's home is approximately 900 feet from the closest proposed Aspen-Golden structure, and neighboring residences are likely to obstruct his view of the line. Mr. Rosenberg also stated Mr. Frankenfield resides near the JKLH Telos Property. This data center development is likely to be approximately 500 feet from his home. Mr. Rosenberg asserted that given the nearby industrial zoning and the nearness of Mr. Frankenfield's home to a major highway, the Aspen-Golden Lines are not incompatible with existing and proposed land uses.[469]

Impact of Viewing the Overhead Lines. Mr. Rosenberg testified that the transmission line used for the Harvey/Olsen paired sales analysis was actually 140 feet tall, not 100 feet, and that the impact zone the appraisers used was excessive. He provided a copy of the Dominion Simulation Accuracy Tool, illustrating that from 100 yards away, each additional ten feet of height appears to a person as a 5/8-inch difference. He suggested that from a quarter-mile distance a person might not be able to perceive a difference between a 140-foot tower and a 180-foot tower. He opined that if a person standing three-quarters of a mile away can see a 140-foot to 180-foot tower, "you're probably standing on top of the house and seeing them in the distance."[470]

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[466] *Id.* at 56-57.
[467] *Id.* at 59 and Attached Rebuttal Schedule 17.
[468] Tr. at 1576-81 (Rosenberg); Ex. 51 (Rosenberg Surrebuttal Schedule 1).
[469] Ex. 50 (Rosenberg Rebuttal) at 58.
[470] Tr. at 1604-12 (Rosenberg); Ex. 53 (Dominion Simulation Accuracy Tool). The quotation is located at Tr. at 1612 (Rosenberg).

Support for Belmont Park Variation A. Mr. Rosenberg agreed with Conservancy Witness Jeavons that Belmont Park Variation A is superior to Belmont Park Variation B. Reasons for this include that Belmont Park Variation A avoids two crossings of Route 7 and impacts traffic less, requires fewer structures, requires no two-pole angle structures, has fewer residences within 250 feet of the centerline, and is more distant from the Inova Loudoun Hospital helipad.[471]

Proposed Stipulation on Broad Run Variations. Mr. Rosenberg testified the Proposed Stipulation resolves the dispute between Broad Run Variations A and B, about which Dominion, Loudoun Water, and Kincora disagreed. He explained all three agree Broad Run Variation A meets the statutory criteria for approval and certification, and the Commission should select this variation. He reiterated Broad Run Variation A avoids existing and planned recreational areas along Broad Run, wetlands, forests, and ecological cores.[472]

Public Witnesses

August 6, 2024 Telephonic Public Witnesses

The following witnesses provided testimony during the telephonic public witness portion of the hearing, on August 6, 2024:

Mary Badger, speaking on behalf of the Regency at Belmont Community Group, expressed concerns about the impact of Dominion's proposed transmission lines along the Aspen-Golden Route, particularly near Route 7. She highlighted that the "area has been deemed a sensitive area in part because of the historic nature of Belmont Manor, Inova Hospital with its helipad, Lansdowne Resort, Virginia Academy, Community Church, and residential neighborhoods in very close proximity." Ms. Badger emphasized the potential negative effects on property values, residents' quality of life, and local development plans. She urged the Commission to support the undergrounding of the transmission lines or, if that is not feasible, to consider Belmont Variation B, an alternative route that would minimize the impact on residential and sensitive areas.[473]

Guy Frankenfield, a resident of Regency at Belmont, expressed concern about Dominion's proposed above-ground transmission lines along Route 7. He emphasized that while he is not opposed to transmission lines or data centers, the towering 180-foot monopoles would disrupt the natural beauty of the area, negatively impacting scenic views and potentially devaluing nearby residential communities. Mr. Frankenfield asked that the Commission consider undergrounding the transmission lines to preserve the area's historic and scenic qualities, despite the higher cost.[474]

Kevin Carter, Managing Director of Lansdowne Resort & Spa, expressed concerns about the proposed power lines along the Aspen-Golden Route, emphasizing their potential

[471] Ex. 50 (Rosenberg Rebuttal) at 60.
[472] *Id*. at 60-61.
[473] *Id*. at 15-19 (Badger). The quotation is found *id*. at 16.
[474] *Id*. at 21-24 (Frankenfield).

negative impact on the resort's property values and business operations. He supported Loudoun County's efforts to underground the lines to preserve the scenic value crucial to their business, which caters to high-profile clients seeking serenity. Mr. Carter highlighted the economic significance of the resort, which generates around $60 million annually and employs roughly 450 people, arguing that the proposed power lines would significantly diminish both property and enterprise value. He urged the Commission to consider these factors and support the undergrounding of the power lines as a compromise.[475]

William R. Wright, speaking as President of the Lansdowne on the Potomac Homeowners Association, expressed concerns over the proposed power lines near his residential community of 2,155 homes. He highlighted potential property value losses, estimating a possible $360 million decrease due to the visual impact of nearly 200-foot transmission structures. Mr. Wright argued that undergrounding the lines is feasible and necessary to balance the needs of the community and Dominion's energy demands, particularly given the future energy requirements of Data Center Alley. He also raised safety concerns about the proximity of the transmission structures to the Inova Loudoun Hospital, citing his experience as a military helicopter pilot.[476]

Tom Jeavons, speaking for himself and as President of the Lansdowne Village Greens Homeowners Association, testified before the Commission expressing strong opposition to Dominion's proposal for 190-foot structures and conduit above ground near his community. He emphasized that such infrastructure would negatively impact property values, pose safety risks for medical helicopters and visiting dignitaries and/or political representatives, and disrupt the local environment. Mr. Jeavons advocated for undergrounding the power lines, highlighting widespread community support for this approach despite its higher cost. He urged the Commission to mandate undergrounding, particularly in sensitive areas, to protect Loudoun County's resources and support sustainable economic growth.[477]

James Tombros, President of the Belmont Homeowners Association, testified before the Commission expressing concerns over Dominion's proposed utility structures along Route 7. He emphasized the historical significance of Belmont Manor House, a federal-style mansion built in the early 1800s, which is listed on the NRHP and serves as a clubhouse for the gated Belmont community. Mr. Tombros argued that Loudoun County established a viewshed easement extending from the Belmont Manor House, down the hill, to Route 7. He stated that the view would be permanently ruined by the transmission structures, negatively impacting both the community and the historic burial grounds nearby. He highlighted the importance of preserving this historic site and its surrounding landscape.[478]

Jack Kelly, President of the Lansdowne Woods of Virginia Board of Members, testified about the potential negative impacts of Dominion's proposed 190-foot-tall transmission structures on the scenic beauty and property values of their 55-plus community, which includes the tallest buildings in Loudoun County. While supporting the development of data centers and

[475] *Id*. at 26-29 (Carter).
[476] *Id*. at 30-37 (Wright).
[477] *Id*. at 39-45 (Jeavons).
[478] *Id*. at 46-49 (Tombros).

electrical services, he emphasized the community's strong preference for undergrounding the power lines to mitigate visual, environmental, and economic impacts. Mr. Kelly stated that he "overwhelmingly supports undergrounding these power lines."[479]

Woodward Kaye, a representative of www.Loudoun-Liberty.org, an informal citizens activist group, argued that the Loudoun County Board of Supervisors and the State legislature have violated federal and state constitutional protections regarding private property. He contended that "[t]he NextEra pipeline will transport energy from West Virginia to eastern Loudoun for the benefit of Dominion Energy and the owners of data centers, which are all private enterprises."[480] Mr. Kaye also asserted the Commission "is a private entity, is therefore separate from and independent of the government of Virginia, and therefore is unconstitutional."[481] He emphasized the importance of protecting private property rights as a fundamental aspect of constitutional law.[482]

September 5, 2024 Local Public Witnesses

The following provided live testimony during the local public witness hearing on September 5, 2024, at Belmont Ridge Middle School:

Supervisor Mike Turner, member of the Board of Supervisors for the Ashburn District, described Route 7 as a historic scenic corridor whose pristineness would be interrupted by the addition of the Aspen-Golden Lines. He averred residential property values also would be impacted by these lines. He discussed the increasing needs of data centers for power. He requested that the Aspen-Golden Lines be placed underground and that the Commission "make the users that these lines are principally designed to serve pay for that extra infrastructure."[483]

Senator Russet Perry, State Senator for the 31st District in Loudoun and Fauquier Counties, stressed how often she hears from constituents about transmission lines and data centers. She stated their concerns encompass home values, the environment, and energy costs. She stated that every elected official in Loudoun County has come together to request the Aspen-Golden Lines be placed underground and that high energy users pay the costs for these lines. She mentioned she introduced a bill in the most recent General Assembly session to accomplish these goals, and the General Assembly ultimately passed a bill to requiring the Joint Legislative Audit and Review Commission ("JLARC") to study the issue. Senator Perry stated she does not believe the JLARC report will be issued prior to representatives having to submit bills for the next General Assembly session. She surmised that "Aspen-Golden may be the first high voltage line to bisect planned residential and mixed-use developments but it certainly will not be the last" and urged the Commission to "use the wisdom and foresight that we have entrusted you with and that we believe that you possess to take action and to mitigate these impacts while you still have time."[484]

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[479] *Id.* at 51-54 (Kelly).
[480] *Id.* at 58 (Kaye).
[481] *Id.* at 59 (Kaye).
[482] *Id.* at 55-61 (Kaye).
[483] *Id.* at 78-83 (Turner).
[484] *Id.* at 83-88 (Perry).

Delegate Fernando Martinez, House of Delegates representative for the 29th District including Leesburg and surrounding areas, also asked that the Aspen-Golden Lines be placed underground and that data centers bear the costs for undergrounding. He asserted the data centers' need for power arises from both the greater power required by data center racks and from the data centers' increased cooling needs. He posited that overhead lines would devalue property and cause visual impairment and economic impact.[485]

Supervisor Sylvia Glass is a member of the Loudoun County Board of Supervisors for the Broad Run District. She spoke in support of undergrounding the Aspen-Golden Lines and of Broad Run Variation A. She asserted the Board of Supervisors has kept a vegetative appearance along Route 7, and undergrounding the lines would keep 150-foot-tall structures and power lines out of the community's viewshed. She particularly mentioned impacts to Belmont Manor House, Belmont Country Club, and One Loudoun areas.[486]

Delegate Kannan Srinivasan, House of Delegates representative for the 26th District, recognized the transformational nature of data center projects in Loudoun County. He urged that the Aspen-Golden Lines be placed underground for the benefit of future generations and for safety reasons.[487]

Chair-at-Large Phyllis Randall, Loudoun County Board of Supervisors, appearing in her official capacity and as a resident, requested the Aspen-Golden Lines be placed underground and asked that high voltage users pay for the costs of undergrounding. She emphasized Route 7's nature as a gateway corridor and urged undergrounding to protect against the negative financial impacts of overhead lines, to protect communities, and to protect scenic and cultural assets. She stressed the Aspen-Golden Lines "would be the first [] transmission line to cut through planned residential and mixed used developments" and surmised other similarly placed transmission lines would follow.[488]

Dylan Feathers, head of Virginia Academy located at Community Church, testified that placing the Aspen-Golden Lines overhead would interfere with the school's planned turf field. He cited scenic and health concerns related to these lines and asked that they be placed underground.[489]

Gregory Anoset testified as a Loudoun County resident, father of a Virginia Academy pupil, and one who commutes daily via Route 7. He urged that the Aspen-Golden Lines be placed underground to preserve the aesthetic beauty of the community, to align with modern infrastructure and sustainability, and for safety.[490]

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[485] *Id*. at 90-93 (Martinez).
[486] *Id*. at 93-96 (Glass).
[487] *Id*. at 97-99 (Srinivasan).
[488] *Id*. at 99-104 (Randall).
[489] *Id*. at 104-06 (Feathers).
[490] *Id*. at 107-09 (Anoset).

John McBride, Esquire, with Odin, Feldman, Pittleman, testified on behalf of Beazer Homes, the owner and builder of a new residential community called Belmont Park. He described the residences Beazer Homes plans to build in Belmont Park. He asserted that two homes are within the Aspen-Golden Lines' ROW "and will be gone," while 13 homes are within 100 feet of the ROW, 11 homes are within 100-150 feet of the ROW, and all other homes are within 600 feet of the ROW. He posited that once a transmission corridor for the Aspen-Golden Lines is established, more infrastructure would be placed there as well. He feared that overhead placement of the Aspen-Golden Lines would destroy the Belmont Manor viewshed easement and the Route 7 buffer. He urged undergrounding up to three miles of the Aspen-Golden Lines, asserting undergrounding would reduce ROW acquisition costs and shorten acquisition timeframes. He estimated a $13 million loss to residential property. He asserted undergrounding would eliminate significant adverse impact to the planned homes and testified that "[i]f the [C]ounty's proposed three miles or less corridor—underground corridor is selected, there will be no acquisition cost through Belmont Park."[491]

Beth LaBella-Foster testified that she is a homeowner who will suffer direct impact from the Aspen-Golden Lines. Specifically, she stated 75% of her home's windows, and most of her outdoor space, would have a direct view of multiple transmission structures. She suggested undergrounding a portion of the Aspen-Golden Lines is a compromise under which "Dominion gets most of its project intact as it planned it to be" and residents "in the high density population area get to retain most of our quality of life."[492]

Natalie Pien noted that she serves on the Board of Directors for the Piedmont Environmental Council and the Board of Directors for the Chesapeake Climate Action Network, but that she was speaking on her own behalf as a climate change activist, environmentalist, and grandmother concerned about a habitable world for her grandchildren. She urged that the Aspen-Golden Lines be placed underground to protect land easements, cultural and natural resources, and existing communities and businesses. She also requested the Commission require Dominion to use new technology so existing transmission lines and ROW can be used instead of building new transmission lines. Ms. Pien also noted the maps of the Aspen-Golden Lines do not reflect the origin of the power they are transporting.[493]

Fred Vann, a counselor at Community Church who also works for Virginia Academy, estimated the Aspen-Golden overhead lines would be within 150 to 200 feet of the Virginia Academy buildings. He worried about the health effects of the Aspen-Golden Lines on schoolchildren attending Virginia Academy all day long year after year.[494]

Marianne Mueller testified she is a resident of Lansdowne Woods, an active adult community in Lansdowne Conservancy. She favored undergrounding the Aspen-Golden Lines to preserve Lansdowne's green space and scenic and historic viewsheds. She described

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[491] *Id*. at 110-16 (McBride) and Ex. 1 (McBride Data Packet). In discussions with a Dominion attorney during his testimony, Mr. McBride stated he is aware Dominion worked with Beazer Homes to adjust the ROW to avoid overlapping two planned homes. He commented, "It is so tight, we hope that's the case." Tr. at 114-15 (McBride).
[492] *Id*. at 116-20 (LaBella-Foster).
[493] *Id*. at 120-23 (Pien).
[494] *Id*. at 124-25 (Vann).

Lansdowne Woods as having approximately 1,700 residents in high-rise buildings looking into trees and situated within one-quarter of a mile from the proposed Aspen-Golden Lines. She averred that if these lines were placed overhead, approximately 500 units with large picture windows would face the transmission structures and conduit, decreasing the units' value and impacting residents' retirement investments. She also contended that in 10-15 years, data centers will be less grid reliant while the community will be impacted by the lines for decades.[495]

Frederich Rose advocated for undergrounding the Aspen-Golden Lines. He stated undergrounding the lines is feasible, and the lower costs of placing the lines overhead should be weighed against an approximately $500 million in lost profitability to the community if the lines were placed overhead. He also recommended the Company investigate switching from alternating current to direct current to decrease the number of lines per circuit. He asserted transmission plans need more planning time to allow Dominion to consider options other than its own proposal. Mr. Rose also advocated for undergrounding to protect animal life along the Route 7 corridor as well as historic properties located there.[496]

Thomas Donahue, a retired electrical engineer from Leesburg, testified that he has lived in Loudoun County for 37 years. He asserted the Commission should evaluate the Aspen-Golden Project in the context of the cost and harm from all the electric infrastructure planned for Loudoun County and the surrounding region. Based on PJM information, he claimed there will be six electric lines feeding into one electrical loop, a $5 billion project in total, to support data center growth, and these projects will fall short of the data centers' requirements. According to Mr. Donahue, comparing costs for overhead versus underground construction is an insufficient basis to consider the harm caused by the Aspen-Golden Lines and future infrastructure projects. He discussed a 230 kV transmission project the Commission approved for aboveground construction based on cost but that was undergrounded after a law was passed. He acknowledged that balancing construction costs versus harm is a matter of judgment. He argued that the Commonwealth's policies and regulatory decisions should consider the full cost to those who must live with the infrastructure.[497]

Karen Brown, a One Loudoun resident and realtor with over 35 years of experience, including about 12 years in Loudoun County, testified that the current path for the Aspen-Golden Lines will make the lines an eyesore for her community and negatively impact the blue herons living nearby. She also estimated, based on her experience, that Loudoun residents whose homes are by the power line will experience a property value decrease of 10% or more. She asked that the data centers pay for the Aspen-Golden Lines since they are the ones who need the power to be carried along those lines.[498]

Jeffrey Goldman, a 20-year Lansdowne resident and Chair for the Advisory Commission on Youth for Loudoun County, opposed adding new transmission structures near schools and other places where people congregate. He suggested reconductoring the already established transmission lines instead of building new lines. He claimed such action would

[495] *Id*. at 126-31 (Mueller).
[496] *Id*. at 131-35 (Rose).
[497] *Id*. at 136-40 (Donahue).
[498] *Id*. at 140-43 (Brown).

avoid the Company having to procure new easements through areas that do not have transmission structures now.[499]

Benjamin Win of Leesburg, Virginia, testified on behalf of the Goose Creek Scenic River Advisory Committee. He stated this committee supports undergrounding that portion of the new transmission lines that goes through Goose Creek to avoid any negative impact on the scenic value of that area, if possible. He explained Loudoun Water is planning to run lines under the creek to an old quarry it plans to use as a reservoir. Mr. Win further requested that the area where the transmission lines cross Goose Creek not be clear cut, to preserve vegetation.[500]

Michael Lloyd stated he resides on the second green of Belmont Ridge and his home will be one of the closest to the Aspen-Golden Lines. He contended data centers are consuming the area's resources, and transmission structures will worsen the situation with their visual impact, the loss of beauty in the area, and effects on Inova Loudoun Hospital's helipad operations. He worried that he would have difficulty selling his home with the transmission structures nearby.[501]

Maciej Wakowski testified that he has resided in Loudoun County since 1982 and has experienced the County's large population growth since that time. He described living in Loudoun County as a sheltered experience where residents don't have factories nearby. He spoke against the idea of having data centers pay for the power lines. Instead, he contended the end use customer is going to pay for the lines ultimately. He urged that the ultimate decision on the power lines be based on science.[502]

David Fisher stated he is President of the One Loudoun Neighborhood Association and was speaking on behalf of that association. He discussed the nature of the community and its plans for affordable housing and claimed the proposed transmission lines so close to One Loudoun will interrupt these plans. He asserted the lines will damage the One Loudoun property and landscaping, decrease home values, and threaten the livelihood of the small businesses in the area. He asked that the Aspen-Golden Lines be buried all along Loudoun County Parkway to benefit all residents and that the costs of the power lines be borne by the data centers. In particular, he took issue with the concept "to bury the lines along the Route 7 stretch of Loudoun County and the prospect that that would benefit some select people, but then burden us . . .."[503]

Lynn Moore, a 23-year Loudoun County resident and the association manager at Magnolias of Lansdowne Woods, requested the Aspen-Golden Lines be buried to minimize impact to homes, the African American Cemetery, Inova Loudoun Hospital and its helipad operations, Virginia Academy, and other locations. She also mentioned Loudoun County's importance to national history.[504]

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[499] *Id*. at 143-46 (Goldman).
[500] *Id*. at 146-49 (Win).
[501] *Id*. at 149-54 (Lloyd).
[502] *Id*. at 154-58 (Wakowski).
[503] *Id*. at 158-61 (Fisher).
[504] *Id*. at 161-63 (Moore).

Alan Robins spoke about the visual impact the Aspen-Golden Lines transmission structures will have on nearby properties, and the corresponding loss in property values. He asserted that as one who has worked in executive management at several large banks, he has performed forensic studies on the impact of transmission lines on residential properties. He estimated a 10% to 30% diminution in affected homes' values.[505]

Stefan Midford stated he is a resident of One Loudoun and coordinator of One Loudoun Homeowners Association and the One Loudoun Master Association. He further stated he worked on a rezoning process with a developer to increase residential units and make changes to the community's commercial density. He asserted the additional planned 1,700 residential units, whose construction has begun, will be impacted directly by the Aspen-Golden Lines. He claimed specifically that the additional uses for the paths and pond in that section of the development will lie directly beneath the proposed power lines and will negatively visually impact the community. He testified that both associations of which he is a part have passed motions objecting to construction of the power lines as Dominion has proposed. He requested Dominion's Applications be denied and that Dominion reconsider the budgets needed to pay for underground facilities.[506]

Marina Rota, a resident of a 55+ community called Riverview Condominium, asserted that residents and small business owners are majority taxpayers yet will benefit only in a tiny way, compared to data centers, from the proposed Aspen-Golden Project. She testified her particular area will be uniquely disadvantaged because of its views of Potomac River and beyond. She worried about the property value diminution that would come from the power lines and the effect of such diminution on the elderly people who live in her building. She encouraged Dominion to underground the power lines and to ask the data centers to share the cost.[507]

Pedro Victor Zalan testified his home will be much affected by the Aspen-Golden Lines. He expressed particular concern for the health impacts of living near transmission lines and the noise such lines make. He urged the Aspen-Golden Lines be placed underground and, if not, that the lines be routed along Belmont Park Variation A.[508]

Dorna Taintor stated she resides in the western portion of Loudoun County and commented in support of her fellow County residents. She asserted that homes, businesses, and schools are bearing a disproportionate share of hardships from growth compared to the profitable data centers in the area. She asked that the transmission lines be placed underground and that data centers bear the costs of undergrounding.[509]

Nick Bryant stated he is a resident of Loudoun County, a member of Community Church, and the father of a pupil at Virginia Academy. He asked that the Aspen-Golden Lines be placed underground to support the people who are building their lives in the community.[510]

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[505] *Id*. at 163-68 (Robins).
[506] *Id*. at 169-71 (Midford).
[507] *Id*. at 171-76 (Rota).
[508] *Id*. at 176-81 (Zalan).
[509] *Id*. at 181-83 (Taintor).
[510] *Id*. at 183-86 (Bryant).

Theodore Williamson IV stated he grew up in the area, belongs to Community Church, and is a teacher at Virginia Academy. He spoke against the overhead power lines' placement as interfering with the view of the church steeple and with plans for a practice field and parking area on the church/school property.[511]

Trinity Mill spoke on behalf of Loudoun Wildlife Conservancy. She urged the Commission ton consider impacts to wildlife when siting the transmission lines. She expressed support for Broad Run Variation A and disappointment about the disruption to the Goose Creek habitat. She explained her preference for siting lines along existing infrastructure corridors such as roadways.[512]

Dr. **Jared Skillings**, a psychologist and Loudoun County resident, urged undergrounding of the Aspen-Golden Lines to eliminate the negative effects created if they were placed overhead. He stated that a community's mental health is negatively impacted by environmental clutter. He asserted undergrounding is the only solution that meets everyone's needs.[513]

Robert English, a lifelong resident of Northern Virginia, spoke against overhead transmission lines. He suggested a broader solution involving undergrounding the transmission lines and expanding transportation options in the area. He asserted there was nothing in Dominion's proposals that would benefit Loudoun County and that his solution would provide jobs in the area and preserve its beauty.[514]

Bearus Billuck, a resident of Lansdowne Town Center, urged that the Aspen-Golden Lines be buried underground to protect people's health and the beauty of the area. He also stated he is against the placement of small modular nuclear reactors in Loudoun County.[515]

Katherine Koschenovic testified she lives near the W&OD Trail and sends her children to Virginia Academy. She stated she would not like the overhead lines near the school and advocated for undergrounding the lines. She stated growth in revenue from data centers could offset the cost of undergrounding.[516]

Zi Fu stated she bought a home in Ashburn last year and, while shopping for a home, became ill from touring a house with a power line nearby. She asserted no one in the area will purchase a home near a power line. She urged Dominion to underground the transmission lines as far away from residences as possible and cited China as an example where such undergrounding is practiced.[517]

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[511] *Id*. at 186-88 (Williamson).
[512] *Id*. at 188-92 (Mill).
[513] *Id*. at 192-95 (Skillings).
[514] *Id*. at 196-201 (English).
[515] *Id*. at 202-05 (Billuck).
[516] *Id*. at 205-08 (Koschenovic).
[517] *Id*. at 208-12 (Fu).

Andrew Robertson, a teacher at Virginia Academy, suggested undergrounding the Aspen-Golden Lines would preserve Loudoun County's legacy for future generations. He also stated overhead power lines would interfere with the school's planned athletic field.[518]

Kevin Nugent stated he lives on the Lansdowne golf course and his area has a clear view of Belmont Manor, which will be obstructed by the overhead transmission lines. He asserted underground lines are less costly to maintain long-term and that data centers, not residents, should be accountable to pay the costs of the data centers' operation.[519]

Laura Tuck, a Lansdowne resident, strongly supported undergrounding the power lines and asserted data centers should cover the costs they impose, including undergrounding costs.[520]

Gayle Myers testified that she is a life-long Loudoun County resident with a history of community service. She defined Community Church, with its many beneficial programs, and Inova Loudoun Hospital, with its helipad, as the community core, which she argued should not be disrupted by an overhead transmission line. She also urged that commercial customers should pay for the substations and underground lines providing them electric service.[521]

Victoria Petreska requested the Aspen-Golden Lines be placed underground. She feared an overhead transmission line within a mile of her home at Lansdowne Town Center will interfere with her medical condition, causing her to have to sell her home at lower value and move to a less satisfactory environment than her walking community.[522]

Janelle Ferguson, a life-long Loudoun County resident, testified as to how meaningful the Community Church steeple and the church itself are to her. As a teacher at the school, she indicated that the buzzing from overhead transmission lines would be a hindrance to those using the practice field and walking to and from the Community Church parking area.[523]

CODE

The statutory scheme governing the Application is found in several chapters of Title 56 of the Code. Code § 56-265.2 A 1 provides that "it shall be unlawful for any public utility to construct . . . any facilities for use in public utility service, except ordinary extensions or improvements in the usual course of business, without first having obtained a certificate from the Commission that the public convenience and necessity require the exercise of such right or privilege."

Code § 56-46.1 A requires the Commission to consider environmental reports issued by other state agencies, local comprehensive plans, the impact on economic development, and

[518] *Id.* at 212-16 (Robertson).
[519] *Id.* at 216-21 (Nugent).
[520] *Id.* at 221-23 (Tuck).
[521] *Id.* at 223-26 (Myers).
[522] *Id.* at 226-27 (Petreska).
[523] *Id.* at 228-32 (Ferguson).

improvements in reliability before approving construction of electrical utility facilities, stating in part as follows:

> Whenever the Commission is required to approve the construction of any electrical utility facility, it shall give consideration to the effect of that facility on the environment and establish such conditions as may be desirable or necessary to minimize adverse environmental impact. … In every proceeding under this subsection, the Commission shall receive and give consideration to all reports that relate to the proposed facility by state agencies concerned with environmental protection; and if requested by any county or municipality in which the facility is proposed to be built, to local comprehensive plans that have been adopted pursuant to Article 3 (§ 15.2-2223 et seq.) of Chapter 22 of Title 15.2. Additionally, the Commission (a) shall consider the effect of the proposed facility on economic development within the Commonwealth, including but not limited to furtherance of the economic and job creation objectives of the Commonwealth Clean Energy Policy set forth in § 45.2-1706.1, and (b) shall consider any improvements in service reliability that may result from the construction of such facility.

Code § 56-46.1 B further provides:

> As a condition to approval the Commission shall determine that the line is needed and that the corridor or route chosen for the line will avoid or reasonably minimize adverse impact to the greatest extent reasonably practicable on the scenic assets, historic resources recorded with the Department of Historic Resources, 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. If the local comprehensive plan of an affected county or municipality designates corridors or routes for electric transmission lines and the line is proposed to be constructed outside such corridors or routes, in any hearing the county or municipality may provide adequate evidence that the existing planned corridors or routes designated in the plan can adequately serve the needs of the company. 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.[524]

[524] Legislation enacted during the 2024 General Assembly Session added "cultural resources identified by federally recognized Tribal Nations in the Commonwealth" to the resources that Code § 56-46.1 B directs the Commission, when evaluating a line route, to determine will avoid or reasonably minimize adverse impact to the greatest extent reasonably practicable. The legislation did not become effective until July 1, 2024, which was after the Aspen-Golden and Apollo-Twin Creeks Applications were filed. Accordingly, this legislative amendment does not apply to the Combined Cases, in my view. No such resources were identified in the record of this case.

As provided in Code § 56-46.1 D, the term "[e]nvironment" or "environmental" used in Code § 56-46.1 "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."

The Code also requires the Commission to consider existing ROW easements when siting transmission lines. Code § 56-46.1 C provides 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." In addition, Code § 56-259 C provides, "Prior to acquiring any easement of right-of-way, public service corporations will consider the feasibility of locating such facilities on, over, or under existing easements of rights-of-way."

Code § 2.2-235 of the Virginia Environmental Justice Act provides that "[i]t is the policy of the Commonwealth to promote environmental justice and ensure that it is carried out throughout the Commonwealth, with a focus on environmental justice communities and fenceline communities."

Code § 2.2-234 defines the following terms, among others, used in the Virginia Environmental Justice Act:

> "Community of color" means any geographically distinct area where the population of color, expressed as a percentage of the total population of such area, is higher than the population of color in the Commonwealth expressed as a percentage of the total population of the Commonwealth. …
>
> "Environmental justice" means the fair treatment and meaningful involvement of every person, regardless of race, color, national origin, income, faith, or disability, regarding the development, implementation, or enforcement of any environmental law, regulation, or policy.
>
> "Environmental justice community" means any low-income community or community of color.
>
> "Fenceline community" means an area that contains all or part of a low-income community or community of color and that presents an increased health risk to its residents due to its proximity to a major source of pollution.
>
> "Low income" means having an annual household income equal to or less than the greater of (i) an amount equal to 80 percent of the median income of the area in which the household is located, as reported by the Department of Housing and Urban Development, and (ii) 200 percent of the Federal Poverty Level.
>
> "Low-income community" means any census block group in which 30 percent or more of the population is composed of people with low income.

ANALYSIS

Aspen-Golden Project

Need and Project Alternatives

As pertinent here, the Federal Energy Regulatory Commission ("FERC") designated NERC to be the electric reliability organization for the United States.[525] FERC regulates, and NERC monitors, the PJM regional transmission organization, which is "responsible for ensuring the reliability and coordinating the movement of electricity through all or parts of" thirteen States, including the Commonwealth of Virginia, and the District of Columbia.[526] Dominion is part of PJM and, within PJM, provides transmission service to entities in the DOM Zone, including the Company's own retail customers in Virginia and North Carolina; Appalachian Power Company; three cooperatives: Central Virginia Electric Cooperative, Northern Virginia Electric Cooperative, and Old Dominion Electric Cooperative; the Virginia Municipal Electric Association; the North Carolina Electric Membership Corporation; and the North Carolina Eastern Municipal Power Agency.[527] Mandatory NERC Reliability Standards are the minimum criteria with which Dominion must comply or face fines of up to $1.3 million per violation per day.[528]

PJM annually conducts its Regional Transmission Expansion Plan ("RTEP") process, which analyzes the electric transmission system to identify improvements needed in the PJM region. The RTEP process incorporates NERC and PJM criteria and reliability standards and Dominion's transmission planning criteria, among other things. The RTEP process classifies projects as: (a) baseline upgrades, meaning they "resolve a system reliability criteria violation"; (b) network upgrades needed "primarily to eliminate reliability criteria violations caused by proposed generation, merchant transmission, or long-term firm transmission services requests"; or (c) supplemental projects, needed "to interconnect new customer load, address degraded equipment performance, improve operational flexibility and efficiency, and increase infrastructure resilience."[529] PJM identified the Aspen-Golden Project as a baseline project and identified the Apollo-Twin Creeks Project as a supplemental project to interconnect the electric loads of Customers A, B, and C, to serve their three new data center campuses in Eastern Loudoun County.[530]

Dominion asserted the Aspen-Golden Project is necessary "to maintain and improve electric service to customers, including in the Eastern Loudoun Load Area …; to address

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[525] *See, e.g.*, Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 2. *See also, e.g., Piedmont Env. Council v. Virginia Elec. & Power Co.*, 278 Va. 553, 566-67, 684 S.E.2d 805, 812-13 (2009) (explaining FERC's selection of NERC as the national Electric Reliability Organization and subsequent adoption of "the majority of NERC's formerly voluntary transmission reliability standards, making them mandatory and subject to penalty by fines against [regional transmission entities] and independent utilities that fail to adhere to those standards." (Internal citations omitted.)).

[526] *See, e.g.*, Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 1. *See also, e.g., Piedmont Env. Council v. Virginia Elec. & Power Co.*, 278 Va. 553, 559 684 S.E.2d 805, 808 (2009).

[527] *See, e.g.*, Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 1.

[528] *See, e.g., id*. at Attached Appendix, p. 2.

[529] *Id*. at Attached Appendix, pp. 2-4.

[530] *See, e.g., id*. at Attached Appendix, p. 3; Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, pp. 1, 3.

significant load growth in the Eastern Loudoun Load Area; and to resolve identified NERC reliability violations."[531] The Company explained that the 2023 PJM Load Forecast for the DOM Zone was adjusted to account for substantial data center growth, meaning that the 2023 forecast for the 2027/2028 time period was 2,440 MW higher than the 2022 forecast.[532] Among other things, Dominion explained that "[o]n July 28, 2023, Dominion Energy Virginia set a new system summer peak of 21,993 MW," and that the 27 substations serving the Eastern Loudoun Load Area alone served 2,325 MW (approximately 10.57%) of that peak.[533]

Dominion asserted expected load growth in the Eastern Loudoun Load Area requires the infrastructure proposed in the Aspen-Golden Project. The Company indicated it is aware of further planned data center development in this area, on land "currently owned by data center developers in zoning consistent with data center use that ultimately will be developed into large scale data center campuses and will require additional infrastructure, which includes the proposed [Aspen-Golden] Project."[534] Dominion asserted, "The 2023 PJM Load Forecast is sufficient to drive the need for the proposed [Aspen-Golden] Project and the distribution forecast shows the need for a robust electrical solution to be implemented."[535]

Dominion reported that local and regional NERC violations are expected to occur, beginning in summer 2028, which will impact the Eastern Loudoun Load Area. Dominion specifically listed numerous thermal violations identified through PJM's 2022 RTEP 2027 Analysis. Among other things, load flow modeling identified 21 monitored facilities that, under certain contingencies, exceed 100% of loading capacity without the Aspen-Golden Project. Such loading reaches as high as 121.16%, and many of these facilities exceed 100% loading under multiple assumed contingency conditions. Dominion explained such thermal overloads could damage Company facilities and lead to service interruptions for the area and the region, negatively impacting the Company's ability to provide reliable service. With the Aspen-Golden Project, however, load flow modeling indicates the monitored facilities will remain under 90% of loading.[536] Dominion asserted that it and PJM "have determined that the proposed [Aspen-Golden] Project … will provide the most comprehensive, robust solution for resolving the projected NERC reliability violations by summer 2028, as well as provide for future load growth in the Eastern Loudoun Load Area and the regional transmission system as a whole."[537] Dominion averred its independent load flow studies validated PJM's load flow studies.[538]

Code § 56-46.1 B provides, among other things, that "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." For the Aspen-Golden Project, Staff verified PJM's power flow models and confirmed the projected violations would occur without

[531] Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 3.
[532] *Id*. at Attached Appendix, p. 21.
[533] *Id*. at Attached Appendix, pp. 1, 5. Note that 2,325 divided by 21,993 equals 0.1057154549.
[534] *Id*. at Attached Appendix, pp. 5-6. *See also id*. at Attached Appendix, pp. 13-16, 17 ("All future transmission, distribution, and/or customer projects planned for the Eastern Loudoun Load Area will require the construction of this [Aspen-Golden] Project, as well as others that are planned for this area.").
[535] *Id*. at Attached Appendix, p. 22.
[536] *Id*. at Attached Appendix, pp. 25-45.
[537] *Id*. at Attached Appendix, p. 4.
[538] *Id*.

the project. Staff further verified through load flow modeling that the Aspen-Golden Project resolves the violations of NERC Reliability Standards that otherwise would occur. Staff concurred with Dominion "that the proposed Project will address projected violations of mandatory NERC Reliability Standards starting in the summer of 2028 and will ensure the structural integrity and reliability of the transmission system to accommodate overall load growth in the area."[539]

Dominion also determined that neither existing nor incremental demand-side management can meet the needs of the Aspen-Golden Project, explaining the 2023 PJM Load Forecast is 2,440 MW greater in 2027/2028 compared to the 2022 PJM Load Forecast. Dominion further surmised load in the DOM Zone, and particularly in the Eastern Loudoun Load Area, will continue to grow. For comparison, Dominion stated its demand-side management programs lowered demand by only 404.8 MW (gross) / 264.8 MW (net) in 2022.[540] Staff agreed demand-side management measures will not meet the needs of the Aspen-Golden Project.[541]

Dominion asserted it did not consider distribution alternatives in place of the Aspen-Golden Project because of the impending overload conditions and projected violations that otherwise would occur. The Company considered one transmission alternative: a new 500 kV/230 kV line from the proposed Aspen Substation to the Commanders Substation. Dominion explained the reasons it rejected this alternative, including complications from the Commanders Substation's encumbrance with a major floodplain and an existing open space easement. Dominion also stated uncertainties surrounding the Loudoun County review and approval processes challenged the timing and viability of this alternative.[542] Staff did not object to the Company's rejection of this alternative. Staff recognized the Commanders Substation's site limitations and noted this alternative, if built, would impact Route 7 similarly to the proposed Aspen-Golden Project.[543]

Based on the above, I find there is sufficient evidence that the Aspen-Golden Project is needed.

Economic Development

Code § 56-46.1 A requires the Commission to "consider the effect of the proposed facility on economic development within the Commonwealth" and to "consider any improvements in service reliability that may result from the construction of such facility."

As discussed above, the Aspen-Golden Project will help "to maintain and improve electric service to customers, … to address significant load growth in the Eastern Loudoun Load Area, and to resolve identified NERC reliability violations."[544] In addition, the Application represents that "[a]ll future transmission, distribution, and/or customer projects planned for the

[539] Ex. 38 (Aspen-Golden Staff Report) at 7.
[540] Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 46-48.
[541] Ex. 38 (Aspen-Golden Staff Report) at 7-8.
[542] Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 46-47.
[543] Ex. 38 (Aspen-Golden Staff Report) at 38-39.
[544] Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 3.

Eastern Loudoun Load Area will require the construction of this [Aspen-Golden] Project, as well as others that are planned for this area."[545] The Aspen-Golden Project is designed to meet impending electric needs with an eye to this future development. For example, the proposed Aspen and Golden Substations will have room to incorporate additional circuit breakers, transformer banks, and other infrastructure to accommodate future load growth.[546] The evidence demonstrates that by maintaining reliable electric power delivery, and doing so in a manner that will accommodate future development, the Aspen-Golden Project supports economic development in the Eastern Loudoun Load Area and the Commonwealth.[547]

Additionally, the Aspen-Golden Project is driven in part by the electrical needs of data centers.[548] Loudoun County Witness Rizer testified to the contributions the data center industry makes to the economies of Virginia and, in particular, of Loudoun County in terms of jobs and economic output.[549] By supporting reliable electric power delivery to data centers, the Aspen-Golden Project also supports economic growth in Loudoun County and the Commonwealth.

Routing and ROW

When developing the route of the Aspen-Golden Project, Dominion considered existing ROW corridors. According to the Aspen-Golden Application, routing for new infrastructure to serve Loudoun County's Data Center Alley is challenging because the power source is from the west, with much residential development lying between. Dominion also noted the limited number of west-to-east corridors available.[550] Nonetheless, the Company was able to locate both Aspen-Goose Creek Line #5002, in the vicinity of proposed Aspen Substation, and the Line Loop near the proposed Golden Substation, entirely within existing ROW or on property Dominion owns or will own.[551]

Rejected Overhead Options

The Company could not, however, site the Aspen-Golden Lines connecting the proposed Aspen and Golden Substations using existing ROW or Company-owned or to-be-owned property. The Company noted several routing constraints: the presence and configuration of existing homes and neighborhoods, existing commercial and industrial buildings, planned developments, existing utilities, publicly owned lands including those owned by Loudoun Water, historic and cultural resources, and the Goose Creek and Broad Run riparian corridors.[552] Dominion considered, and rejected, two overhead routing options for lines connecting the new Aspen and Golden Substations, (i) a route along the W&OD Trail; and (ii) a route along the

[545] *Id*. at Attached Appendix, p. 17.
[546] *Id*. at 9-10.
[547] *See* Ex. 38 (Aspen-Golden Staff Report) at 47. Additionally, Staff opined that there will be some minimal additional operations and maintenance work for the Aspen-Golden Project after its construction, creating a negligible impact on long-term job creation. *Id*.
[548] *See, e.g*., Tr. at 406-08 (Amare) (testifying that new and existing data centers are "one of the prominent" industries driving the demand for electricity in Virginia).
[549] *See, e.g*., Ex. 23 (Rizer Direct) at 4-5.
[550] Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 5.
[551] *Id*. at Attached Appendix, pp. 173-74.
[552] *Id*. at Attached Environmental Routing Study, pp. 10-11.

Dulles Greenway/Waxpool Road Corridor. Reasons for rejection of these alternatives included: impact to residences, including possible condemnation; crossing of public lands; space constraints; impacts to civic features such as the Metrorail Silver Line Ashburn Station; and infeasibility of crossing existing utility lines in the area.[553]

Commission Staff concurred with rejection of these overhead routing options.[554]

Rejected Underground Options

Prior to filing the Aspen-Golden Application, Dominion considered two underground options, both of which it rejected. Dominion acknowledged there are few examples of long-distance underground high-voltage lines (*i.e.*, 500 kV or greater) globally, including one in the United States, the Chino Hills, California line. Dominion considered "how inappropriate it would be for the Company to propose an underground solution [for the Aspen-Golden Project] in the context of the study area because a viable, constructable overhead solution exists."[555]

Dominion first considered an all-underground route between the proposed Aspen and Golden Substations, developed by Black & Veatch. Dominion later reviewed a hybrid option for undergrounding of an approximately 2.0-mile-long segment along Route 7, from Belmont Ridge Road to Ashburn Village Boulevard, developed by the Conservancy's consultant RLC.[556]

During the hearing, the Company explained its process for analyzing underground lines includes three steps: an engineering feasibility analysis, an environmental routing study, and then a step in which the Company receives input from multiple business groups, including permitting, ROW, and real estate groups "to kind of pool all the information we've collected to date and truly evaluate the feasibility of what we're taking a look at."[557]

Rejected Black & Veatch Underground Option

As for the first undergrounding option, Black & Veatch prepared for Dominion a document dated June 21, 2023, and titled "Northern Virginia Underground Option Feasibility Aspen to Golden: Feasibility, Cost Estimates, and Impacts for 230kV and 500kV Underground Options."[558] The study noted, "The preliminary loading requirements for these lines of 1,593 MVA for the 230kV circuit and 4,330 MVA for the 500kV circuit are unusually high for underground transmission."[559] Nevertheless, the study concluded the best underground option for the project under consideration would be for Dominion to build a Cross-linked Polyethylene ("XLPE") duct bank underground option, approximately 8.5 miles long, using trenched excavation, combined with trenchless excavation to cross waterways and highways where trenching is not acceptable. Black & Veatch determined such a line would cost $1.027 billion and would take 47 months to complete. The study posited that impacts to the public from such

[553] *Id*. at Attached Appendix, p.173, and at Attached Environmental Routing Study, pp. 12-17.
[554] Ex. 38 (Aspen-Golden Staff Report) at 41-42.
[555] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 30-31.
[556] *Id*. at Attached Environmental Routing Study, p. 32.
[557] Tr. at 1450-51 (Moulton).
[558] *See generally*, Ex. 47 (Moulton Rebuttal) at Rebuttal Schedule 1.
[559] Ex. 47 (Moulton Rebuttal) at Rebuttal Schedule 1, p. 4.

an undergrounding project would be "[s]ignificant … with continuous excavation, mostly on private ROW." Black & Veatch also considered the option of undergrounding via tunnel using gas insulated lines but found that option less feasible due to cost and scheduling issues. The report noted, for example, that material lead times for gas insulated lines exceed 24 months, whereas material lead times for XLPE cable exceed only 12 months.[560]

The Black & Veatch report also noted multiple route options were assessed, and that the routes that formed the report's basis were not final because a complete routing study was still in progress. The route selected for study of the feasibility of XLPE duct bank installation started at the Aspen Substation location and proceeded to cross Leesburg Asphalt Plant, Luck Stone Goose Creek Plant, Goose Creek, and Belmont Ridge Road. Continuing eastward, the route surrounded a future residential neighborhood near the intersection of Route 7 and Belmont Ridge Road, then crossed Claiborne and Loudoun County Parkways, remaining mostly off-road and crossing a mix of public and private land. The route then veered south, crossing Beaverdam Run and Broad Run streams, ending at the Golden Substation site. Black & Veatch pointed out major concerns with this route, including impacts to traffic and wetlands as well as space concerns in areas where other utilities and drainage systems already were present.[561] Black &Veatch's proposed XLPE underground route is shown in the figure below (the dark purple line).[562]

Figure 4-1 Preliminary Routing – Duct Bank System



[560] *Id*. at Rebuttal Schedule 1, pp. 4-5, 29. The quotation is found *id*. at Rebuttal Schedule 1, p. 5. Note the cost estimate is either in late 2022 or 2023 dollars. *Compare id*. at Rebuttal Schedule 1, p. 4 ("The following cost estimates are based on late 2022 costs and do not include escalation across the lift of the project.") *with* p. 23 ("Estimates are based on historical prices from other projects in the Mid-Atlantic [R]egion and provided in 2023 dollars.").

[561] *Id*. at Rebuttal Schedule 1, pp. 18, 20-21.

[562] *Id*. at Rebuttal Schedule 1, p. 19. The start and end labels, as well as the lighter purple arrows, have been added by the Hearing Examiner for increased visibility.

The Black & Veatch report also stated that XLPE and gas insulated line tunnel options were feasible, at costs of $965 million and $1.141 billion respectively. The report noted significant concerns with these options, explaining that such tunneling "requires very specific right of way and can not easily divert around a challenging real estate acquisition." The report went on to note that tunnel installations for XLPE and gas insulated lines "are rare and require specialized contractors that Dominion does not typically employ."[563] The report concluded with several caveats, as follows:[564]

> If Dominion moves forward with an underground option, extensive negotiations for obtaining easements will be required along with investigation of existing utilities in public ROW, and development plans in progress.
>
> The routing presented in this report is preliminary based on limited knowledge of developments in progress and landowner receptiveness to ROW acquisition. Additional routing investigation and evaluations are required to identify a final route.
>
> In order to finalize construction methods substantial field investigations will be required including topographic survey, subsurface utility investigation, and geotechnical investigations.
>
> Close coordination is required with the city and county officials to come to agreement on acceptable traffic control and protection of the public methods to minimize impacts on the public.

The Company reviewed the Black & Veatch feasibility study and determined not to pursue it based on multiple concerns, including:[565]

- Cost: Over $1 billion for undergrounding the lines versus $171 million for overhead lines.[566]
- In-service Date: Dominion feared missing PJM's June 1, 2028 deadline for the Aspen-Golden Project because the report's estimate of 47 months for permitting, construction, real estate acquisition, and related services did not account for multiple possibilities for delay. These included delays in lead time for equipment and cable manufacture and for relocating existing utilities: availability of construction crews:

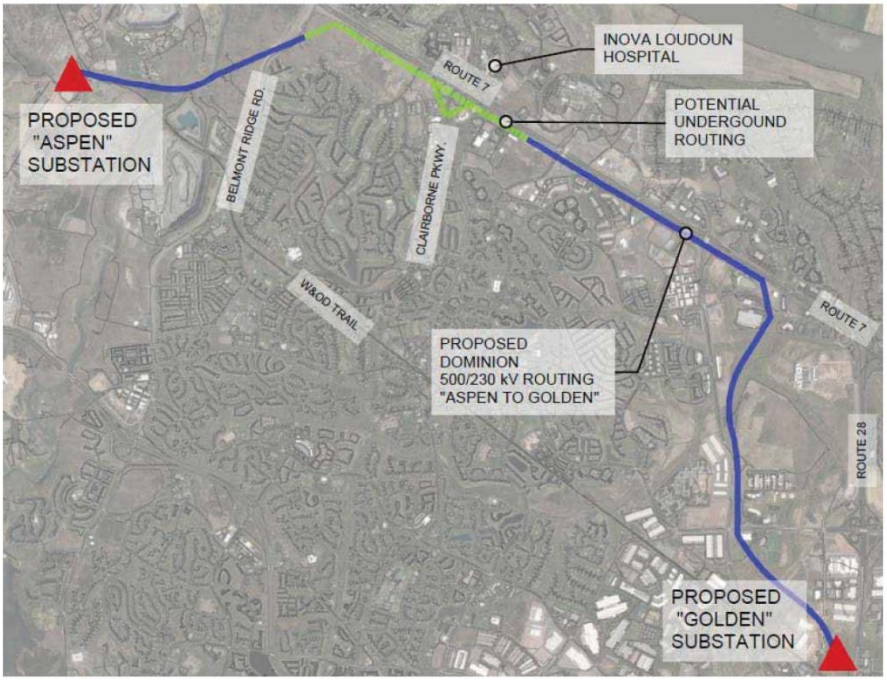
[563] *Id*. at Rebuttal Schedule 1, pp. 29-30.
[564] *Id*. at Rebuttal Schedule 1, p. 30.
[565] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 31-32. *See also, e.g*., Ex. 40 (Amare Rebuttal) at 9.
[566] Note that of the original Aspen-Golden Project cost estimate of $688.6 million, approximately $171.1 million was for transmission-related work, with the balance of $517.5 million for substation-related work. *See* Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 55. These figures were updated to 2024 dollars by *errata* Dominion filed on August 23, 2024. The updated figures are incorporated into Ex. 4 (Aspen-Golden Application). These cost figures are: approximately $700.1 million for the Aspen-Golden Project, composed of $176.9 million for transmission-related work and $523.2 million for substation-related work.

and ability to close roads during construction or make modifications based on the results of additional investigations (geotechnical, subsurface, and topographical).

- Land constraints: Dominion was concerned with a lack of land area for transition stations either at the Aspen and Golden Substation sites or at other places along the underground route. Dominion also was concerned about the permanent ROW and temporary workspace required for horizontal directional drilling underneath Goose Creek and Broad Run. Dominion further surmised the diabase rock prevalent through the routing area would impede trenching and tunneling.
- Environmental Concerns: Dominion claimed underground lines have greater environmental impacts than overhead lines, particularly to wetlands and small waterbodies. The Company also contended underground transmission construction is more likely to produce soil compaction than overhead line construction.
- Limited flexibility: Dominion asserted underground lines are not able to connect to delivery points to serve future customers along the route unless additional transition stations (requiring multiple acres each) were also constructed.
- Nature of Underground Lines: Dominion claimed that damage to underground lines is harder to locate and takes five to ten times longer to repair than damage to overhead lines. Further, visual impacts of underground lines are different than overhead lines, but still present, particularly in the areas of transition stations.

Rejected Initial Hybrid Proposal

In addition to the 8.5-mile fully underground Black & Veatch option, Dominion considered the Initial Hybrid Proposal, a 2.0-mile underground segment of the otherwise-overhead Aspen-Golden Route, developed by RLC for the Conservancy.[567] The underground segment was proposed to be along Route 7, from Belmont Ridge Road to Ashburn Village Boulevard.[568] Dominion rejected this alternative for reasons including: insufficient cables to meet Dominion's loading requirements; incorrect



[567] This report from January 31, 2024, titled "500kV & 230kV XLPE Dual Circuit Underground Transmission Lines Summary Estimate" is Rebuttal Schedule 2 to Ex. 47 (Moulton Rebuttal).
[568] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, p. 32. The diagram is a copy of Figure 1 in the Initial Hybrid Proposal report, Ex. 47 (Moulton Rebuttal) at Rebuttal Schedule 2, p. 5.

spacing and size of the proposed duct bank; inadequate area required for transition stations; lack of information such as width of permanent ROW needed for duct bank and/or trenchless installation; and failure to account for obstacles such as relocating utilities present in the area, crossings of planned developments and archaeological sites, inability to serve future data center customers in the area, and delays to the Aspen-Golden Project in-service date. Dominion concluded the Initial Hybrid Proposal was not viable because "[t]he assumptions used in the study by [RLC] did not appear to allow for the underground segment to meet the Company's construction and operations standards or the electrical requirements of the Project from a planning perspective."[569]

Dominion, the Conservancy, RLC, and others met on February 15, 2024, to discuss the Initial Hybrid Proposal. In particular, Dominion continued to reject the claim that the Initial Hybrid Proposal would lessen visual impacts to historic resources compared to an overhead line option. Rather, Dominion concluded that assuming sufficient land for transition stations in the area existed, the location of those transition stations would worsen visual impacts to certain resources, including the African American Cemetery, Janelia, Community Church, and the Belmont neighborhood.[570]

Dominion's Proposed Aspen-Golden Overhead Route

Dominion did not present an underground route as part of the Aspen-Golden Application because:[571]

> The Company determined that, considering the site-specific conditions, cost to construct, and anticipated schedule in conjunction with the critical need, an underground route for the Aspen-Golden Lines would not be feasible and, even if it could be constructed, it would not meet the [Aspen-Golden] Project's system reliability and in-service date requirements. As a result, the Company could not create a viable, feasible underground route option, whether all underground or hybrid, to present to the Commission for consideration.

Dominion ultimately proposed an overhead route, much of which follows Route 7, as outlined in the "Project Descriptions" section of this Report. According to the Company, virtues of this route include: it allows collocation with a portion of the Apollo-Twin Creeks Lines and with major roadways, existing utilities, and planned data center developments; there are only two existing buildings within 150 feet of Route 7 on either side from Belmont Ridge Road to Route 28; it would cross only short sections of residential zoning districts; and it accounts for the need

[569] Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 193-94. *See also id*. at Attached Environmental Routing Study, pp. 32-33.
[570] *Id*. at Attached Appendix, p. 194. *See also id*. at Attached Environmental Routing Study, p. 33. *See, e.g*., Ex. 20 (Conroy Direct) at Attached Exhibit BC-3, p. 1 for an indication that Loudoun County also attended the meeting on February 15, 2024.
[571] Ex. 47 (Moulton Rebuttal) at 5-6.

to serve additional data center delivery points in the future.[572] Dominion proposed four routing options for its overhead route, including Route 1 (common to all options), two options (A and B) for the Belmont Park segment, and two options (A and B) for the Broad Run segment. Dominion initially requested Commission approval of Route 1AA.[573] Between the filing of the Aspen-Golden Application and the portion of the hearing beginning September 18, 2024, the Company refined its request to seek approval of Route 1AA with three slight changes: (i) approval of the JKLH Belmont Landbay KK Variation; (ii) approval of the Community Church Proposed Modified Segment; and (iii) the ability to work with Allan Myers to determine possible solutions to site the Aspen-Golden Lines on Allan Myers' property without interfering with this business's future construction plans.[574]

Dominion proposed to construct the Aspen-Golden Lines on new ROW varying in width between 100 and 150 feet. Where the Aspen-Golden Lines would be collocated with the proposed Apollo-Twin Creeks Lines, the ROW will vary in width from 200 to 260 feet.[575]

Code § 56-46.1 B requires the Commission to consider "that the corridor or route chosen for the line will avoid or reasonably minimize adverse impact to the greatest extent reasonably practicable on the scenic assets, historic resources recorded with the Department of Historic Resources, and environment of the area concerned." The Company's Environmental Routing Study, provided with the Aspen-Golden Application, provided multiple summaries of impacts from the Aspen-Golden Lines. These vary depending on whether one considers Belmont Park Variations A and B, and Broad Run Variations A and B.

Land use in Loudoun County is governed by the 2019 General Plan, part of the County's comprehensive plan. Among other things, the 2019 General Plan includes "[p]lace types, which characterize permitted uses … within a specific area."[576] The chart below indicates which parts of the Aspen-Golden Project cross various place types, and indicate whether data centers are a core, complementary, or conditional use of that place type.[577]

Place Type	Data Centers Allowed?	Part of Project that Crosses the Place Type
Leesburg Joint Land Management Area Employment	Allowed as a complementary use.	Aspen Substation Aspen-Goose Creek Line Route 1

[572] Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 179-80, and Attached Environmental Routing Study, pp. 17-19.
[573] *See, e.g., id*. at 6-8.
[574] Tr at 282-84 (Nielson). *See* Ex. 50 (Rosenberg Rebuttal) at Rebuttal Schedules 2, 5, and 6 for map depictions of the Community Church Proposed Modified Segment, the JKLH Belmont Landbay KK Variation, and the Allan Myers Proposed Building, respectively. Dominion also requested flexibility to microsite the Aspen-Golden Lines' route and structures on the JKLH Belmont Property because, as of the time the Company's rebuttal testimony was prepared, it had been "unable to determine what conditions exist on the property that may impact the construction of the [JKLH Belmont Landbay KK V]ariation." Ex. 50 (Rosenberg Rebuttal) at 12-13.
[575] Ex. 4 (Aspen-Golden Application) at 4 and n.6 and Attached Appendix, pp. 179-89.
[576] *Id*. at Attached Environmental Routing Study, p. 43.
[577] *Id*. at Attached Environmental Routing Study, pp. 43-44.

Place Type	Data Centers Allowed?	Part of Project that Crosses the Place Type
Suburban Employment	Allowed as a conditional use.	Route 1 Broad Run A/B
Suburban Industrial / Mineral Extraction	Allowed as a core use.	Route 1 Broad Run A/B
Suburban Mixed Use	Not allowed.	Route 1 Belmont Park A/B Broad Run A/B Line Loop
Suburban Neighborhood	Not allowed.	Route 1 Belmont Park A/B
Transition Industrial / Mineral Extraction	Allowed as a core use.	Route 1

The Environmental Routing Study described land use in the study area for the Aspen-Golden Lines, stating it "consists predominantly of low to medium density single-family residential neighborhoods and commercial/industrial areas," though the report also noted the area is bordered to the west and east by the riparian areas of Goose Creek and Broad Run, respectively.[578] The following table shows the land uses and land cover crossed by Route 1, Belmont Park Variations A and B, and Broad Run Variations A and B:[579]

Table 6.1-5: Land Use/Land Cover Crossed by the Routes (acres) *

Land Use/Land Cover	Route 1[a]	Belmont Park Variation A	Belmont Park Variation B	Broad Run Variation A	Broad Run Variation B
Forested	56.5	2.3	2.4	9.1	19.5
Agricultural	0.0	0.0	0.0	0.0	0.0
Developed	27.6	3.7	4.4	7.5	1.4
Open Space	20.4	0.8	0.9	12.8	9.3
Open Water	1.6	0.0	0.0	0.3	0.3

** Based on local and state-wide data sets and aerial photo interpretation*

Residences. The Environmental Routing Study summarized existing and planned residences within 60, 100, 250, and 500 feet of the centerline of the Aspen-Golden Lines' ROW, as follows:[580]

[578] *Id*. at Attached Environmental Routing Study, p. 41.
[579] *Id*.
[580] *Id*. at Attached Environmental Routing Study, pp. 50 and 52. Mr. John McBride, Esquire, provided public witness testimony for Beazer Homes on September 5, 2024. He asserted two homes planned to be constructed in Belmont Park are within the proposed ROW of Route 1AA. When counsel for Dominion asked Mr. McBride if he was aware Dominion worked with Beazer Homes to shift the ROW to avoid overlapping the two homes, Mr. McBride indicated he was aware of that accommodation. He continued to support undergrounding for the Aspen-Golden Project, claiming this would avoid negative impacts to the 163 homes Beazer Homes plans to build and stating if the Updated Hybrid Proposal is approved, "there will be no acquisition cost through Belmont Park." Tr. at 110-16. The quotation is located at Tr. at 112.

Table 6.1-14: Residences within 60 Feet of the Right-of-Way and within 100 Feet, 250 Feet, and 500 Feet of the Centerline of the Aspen-Golden Lines

Route Name	Structure Type	Structures within 60 Feet of ROW	Structures within 100 Feet of Centerline	Structures within 250 Feet of Centerline	Structures within 500 Feet of Centerline
Route 1	Single-Family Residence	0	0	1	2
	Multi-Family Residence	0	0	0	0
Belmont Park Variation A	Single-Family Residence	0	0	0	0
	Multi-Family Residence	0	0	0	1 (48 units)
Belmont Park Variation B	Single-Family Residence	0	0	0	0
	Multi-Family Residence	0	0	3 (112 units)	10 (334 units)
Broad Run Variation A	Single-Family Residence	0	0	0	0
	Multi-Family Residence	0	0	0	0
Broad Run Variation B	Single-Family Residence	0	0	0	0
	Multi-Family Residence	0	0	0	0

Table 6.1-15: Planned Residences within 60 Feet of Right-of-Way and 100 Feet, 250 Feet, and 500 Feet of the Centerline of Route 1 and the Variations

Route Name	Structure Type	Structures within 60 Feet of ROW	Structures within 100 Feet of Centerline	Structures within 250 Feet of Centerline	Structures within 500 Feet of Centerline
Route 1	Single-Family Residence	0	0	0	11
	Multi-Family Residence	0	0	27 (54 units)	89 (428 units)
Belmont Park Variation A	Single-Family Residence	4	3	34	57
	Multi-Family Residence	0	0	0	33 (66 units)
Belmont Park Variation B	Single-Family Residence	0	0	0	28
	Multi-Family Residence	0	0	0	0
Broad Run Variation A	Single-Family Residence	0	0	0	0
	Multi-Family Residence	0	0	0	0
Broad Run Variation B	Single-Family Residence	0	0	0	0
	Multi-Family Residence	0	0	0	0

The Environmental Routing Study reported numerous non-residential and commercial buildings are within 500 feet of the centerlines of Route 1, Belmont Park Variations A/B, and Broad Run Variations A/B, but no such buildings are within the ROWs themselves. These buildings could be temporarily impacted during the Aspen-Golden Project's construction, but the project would not impact their operation or use. The study contended, "In accordance with SCC Guidelines, crossing these commercial and industrial areas is preferred to crossing residential areas as doing so can minimize potential conflicts with existing and planned land uses."[581]

[581] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 53-54.

Wetlands. The various portions of the Aspen-Golden Route have a medium to high probability of impacting wetlands on the following acreages:

- Route 1 16.5 acres
- Belmont Park Variation A 0.8 acres
- Belmont Park Variation B 2.5 acres
- Broad Run Variation A 6.6 acres
- Broad Run Variation B 13.9 acres

Most potential direct impacts are associated with project construction and would be temporary. Dominion designed the Aspen-Golden Project to keep structures out of wetlands to the extent practicable. Permanent direct impacts to wetlands would occur with structure placement in wetlands if such cannot be avoided. Other impacts include permanent conversion of wetlands within ROW to contain shorter woody vegetation.[582]

The Aspen-Golden Route also crosses multiple waterbodies, with Route 1 crossing 32 waterbodies and Broad Run Variations A/B crossing 5 and 6 waterbodies, respectively. Route 1 would cross three perennial waterbodies: Sycolin Creek, Goose Creek, and Russell Branch. Broad Run Variation A would cross two perennial waterbodies: Beaverdam Run and Broad Run. Broad Run Variation B would cross three perennial waterbodies: Beaverdam Run, Broad Run, and Cabin Branch. No transmission structures would be placed in waterbodies. The Environmental Routing Study claimed that where waterbodies are crossed, permanent impacts will be the conversion of riparian buffer from tree cover to herbaceous vegetation within maintained ROW. Removal of trees and woody shrubs within 100 feet of a stream will be done by hand, with no grubbing of stumps. The study confirmed Dominion will obtain needed permits from DEQ and USACE for work in wetlands and waterbodies to ensure compliance with the Clean Water Act.[583]

Among other impacts, the Aspen-Golden Route impacts one ecological core with a rank of C4 (moderate) and four ecological core fragments with a rank of C5 (general), for a total crossing length of 1.2 miles of Route 1, 0.2 miles of Broad Run Variation A, and 1.1 miles of Broad Run Variation B. As for the core ranked C4, it was already altered between June 2022 and Spring 2023 by clear-cutting of approximately 26.3 acres. All but one of the cores ranked C5 generally are fragmented by power lines and/or access roads already. One core ranked C4 is mostly unfragmented forest. The Aspen-Golden Project impacts no ecological cores of high, very high, or outstanding value.[584]

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[582] *Id*. at Attached Environmental Routing Study, pp. 103-06. As for wetland acreages with a medium to high probability of being impacted, *see also* Ex. 30 (Aspen-Golden DEQ Report) at attached letter from Michelle Henicheck, PWS, Senior Wetland Ecologist, Office of Wetlands & Stream Protection at DEQ to Rachel Studebaker, Environmental Specialist III at Dominion (dated Feb. 28, 2024).

[583] Ex. 4 (Aspen-Golden Application) at Attached DEQ Supplement, pp. 12-13, and at Environmental Routing Study, pp. 106-08. *See also* Ex. 30 (Aspen-Golden DEQ Report) at 7-10.

[584] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 111-14. *See also* Ex. 30 (Aspen-Golden DEQ Report) at 19 and attached Memorandum from Allison Tillett, Environmental Impact Review Coordinator at DCR, to Janine Howard, Office of Environmental Impact Review at DEQ (dated Apr. 17, 2024).

As for protected fauna, the Green Floater has a confirmed presence within a 3.9-mile search radius of the Aspen-Golden Project due to the presence of Goose Creek in the study area. Occurrences of the Wood Turtle, and Henslow's Sparrow also have been documented within the same radius. The Peregrine Falcon was confirmed present in the study area in 2019 and 2020. ERM does not anticipate impacts to the Henslow's Sparrow or to Peregrine Falcon nests. The Environmental Routing Study reported Dominion will need to coordinate with DWR to determine whether surveys or construction windows are needed to protect the Wood Turtle and Green Floater. Additionally, one Bald Eagle nest is present in the study area, which last was known to be occupied in 2023. Though the Aspen-Golden Project is not anticipated to impact Bald Eagle nests, Dominion has committed to working with regulatory agencies to minimize potential impacts to this species. Finally, the study reported Broad Run Variation B has the potential to intersect habitat adjacent to the Great Blue Heron rookery. However, since Variation B is approximately 1,180 feet from the nearest nest in the rookery, the Company already complies with DWR's recommendations for construction near this species.[585]

As for protected flora, six rare plant species, including one state-threatened species, have the potential to exist in the Aspen-Golden Project area. The Environmental Routing Study reported it is unlikely the species of concern would be present. However, it noted Dominion will work with regulatory agencies as necessary to minimize impacts to these species.[586]

ERM studied anticipated impacts of the Aspen-Golden Project on resources designated as visually sensitive, concluding there will be an overall moderate impact from Route 1, Belmont Park Variations A/B, and Broad Run Variations A/B. While the study acknowledged transmission line structures are likely to change visual conditions, the moderate rating accounts for common human influences and structures in the area; limited opportunities for foreground views because of existing elements of visual disturbance such as existing buildings and vegetated areas; and the changing nature of the area from rural to a more suburban/urban setting. The study also concluded there potentially would be a moderate to high impact on certain user groups: local residents and workers, commuters and other through-travelers, and those in the area for recreation and tourism.[587]

No archaeological resources were identified proximate to the Aspen-Goose Creek Line, Belmont Park Variations A/B, or the Line Loop. Of four archaeological sites in the ROW of Route 1, two are not eligible for listing on the NRHP. A third site has not been evaluated for eligibility on the NRHP. A report from a 2022 survey indicated up to 24% of this site has been destroyed. A fourth site, potentially eligible for NRHP listing, is a historic farmstead. No transmission structures are planned for placement within the boundaries of either the third or fourth sites.[588]

There are multiple archaeological resources along Broad Run Variations A/B. Along Variation A, there are five such resources, but four have been determined not eligible for listing

[585] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 118-20, 122.
[586] *Id*. at Attached Environmental Routing Study, p. 121.
[587] *See generally*, *id*. at Attached Environmental Routing Study, pp. 128-56, in particular pp. 154-56.
[588] *Id*. at Attached Environmental Routing Study, pp.158-60. *Accord*, Ex. 30 (Aspen-Golden DEQ Report) at 20-21 and attached letter from Jenny Bellville-Marrion, Project Review Archaeologist, Review and Compliance Division at DHR to Janine Howard, Office of Environmental Impact Review at DEQ (dated Apr. 24, 2024).

on the NRHP. The fifth site, which is eligible for the NRHP, is a historic farmstead. It sits within Loudoun Water's property, and Broad Run Variation A would intersect this site for 334 feet. Dominion does not plan any transmission structures for placement on this site.[589]

Broad Run Variation B intersects three archaeological sites that have been determined not eligible for listing on the NRHP, and two sites that have not been evaluated for listing. These are both temporary encampments. No transmission structures are planned for placement on either site.[590]

The Aspen-Golden Project is expected to impact historic resources as follows:[591]

Resource	Impact
African American Burial Ground for the Enslaved at Belmont	Route 1 – Moderate Belmont Park (A or B) – Moderate
Belmont Chapel and Cemetery	Route 1 – Minimal Belmont Park (A or B) – Minimal
Belmont Manor	Route 1 – Moderate Belmont Park (A or B) – Moderate
Cooke's Mill	Route 1 – Minimal Aspen-Goose Creek Line #5002 - Minimal
Janelia/Howard Hughes Research Center	Route 1 – Moderate Belmont Park (A or B) – Moderate
W&OD Railroad Historic District	Route 1 – Minimal Broad Run (A or B) – Minimal Aspen-Goose Creek Line #5002 - Minimal

There are 11 airports, airstrips, and heliports within 10 nautical miles of the Aspen-Golden Project facilities, including the Inova Loudoun Hospital helipad, approximately 0.2 miles north of Belmont Park Variation B, and Leesburg Executive Airport, approximately 1.1 miles west of the proposed Aspen Substation site. The FAA must receive notification pertaining to the project's impact on Leesburg Executive Airport, though no structures associated with the Aspen-Golden Route or any substation would penetrate restricted airspace surfaces of this airport. The FAA does not regulate the Inova Loudoun Hospital helipad since it is privately owned. Belmont Park Variation B is approximately 980 feet south of this helipad, and there are four planned

[589] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp.158-60. *Accord*, Ex. 30 (Aspen-Golden DEQ Report) at 20-21 and attached letter from Jenny Bellville-Marrion, Project Review Archaeologist, Review and Compliance Division at DHR to Janine Howard, Office of Environmental Impact Review at DEQ (dated Apr. 24, 2024).

[590] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 158-59, 161. *Accord*, Ex. 30 (Aspen-Golden DEQ Report) at 20-21 and attached letter from Jenny Bellville-Marrion, Project Review Archaeologist, Review and Compliance Division at DHR to Janine Howard, Office of Environmental Impact Review at DEQ (dated Apr. 24, 2024).

[591] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 161-72. *Accord*, Ex. 30 (Aspen-Golden DEQ Report) at 20-21 and attached letter from Jenny Bellville-Marrion, Project Review Archaeologist, Review and Compliance Division at DHR to Janine Howard, Office of Environmental Impact Review at DEQ (dated Apr. 24, 2024). Note that DHR information (reported in the letter) shows different impacts on the W&OD Railroad Historic District. For that resource, DHR reported a minimal impact from Route 1, Belmont Park Variations A and B, Broad Run Variation A, and the Aspen-Goose Creek Line.

structures within 1,600 feet of the helipad. Belmont Park Variation A is approximately 1,400 feet south of this helipad, and there are two planned structures within 1,600 feet of the helipad. Dominion and Inova Loudoun Hospital discussed this matter on at least two occasions, and Inova Loudoun Hospital provided email correspondence indicating that "while we believe 195-foot transmission lines adjacent to the hospital are suboptimal, [Belmont Park] Variation A is acceptable. [Belmont Park] Variation B is not acceptable given it is not conducive to helicopter takeoff/landing." The correspondence included a request for marker balls on the transmission lines to add visibility for pilots. Dominion stated it will coordinate with the hospital regarding the visual markers.[592]

The Environmental Routing Study addressed impacts to numerous other resources, including resources to certain easements. Specifically, the Route 1 segment of the proposed Aspen-Golden Lines crosses two adjacent Board of Supervisors open space easements in the area south of Russell Branch Parkway and north of Broad Run. The Route 1 ROW would overlap approximately 3.7 acres of these easements, with the major impact being clearing of forest within the project ROW. Dominion has discussed this matter with Loudoun County officials, who have indicated they will work with Dominion to obtain rights to cross these easements.[593]

Another potential easement of concern is the Belmont Viewshed Easement. Both Route 1 and Belmont Park Variation A/B cross this easement. The project crosses the easement between Belmont Manor and Route 7, over open land parallel to the road and the Belmont Country Club driving range. Dominion anticipates two structures will be placed in the easement area since it is not possible to completely avoid the easement. When the extension of Russell Branch Parkway is completed as planned, the proposed Aspen-Golden Lines would run between the south side of Route 7 and Russell Branch Parkway (instead of between Route 7 and the Belmont Country Club driving range). The Application asserted that transmission lines and utilities are exempt from the easement's restrictions.[594]

A third potential easement of concern is the Lansdowne Scenic Easement. Belmont Park Variation B crosses the Lansdowne Scenic Easement along the north side of Route 7. The Application asserted the conditions of the easement do not restrict new utility infrastructure. Moreover, Belmont Park Variation A avoids the Lansdowne Scenic Easement.[595]

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[592] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 96-102; *Id*. at Attached Appendix, pp. 451, 453-55. The quotation is located *id*. at Attached Appendix, p. 454. *See also* Ex. 30 (Aspen-Golden DEQ Report) at 23-25 for a discussion of the Aspen-Golden Project's impacts on the Leesburg Executive Airport and the Dulles International Airport.

[593] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, p. 77.

[594] *Id*. at Attached Environmental Routing Study, p. 78. *See also* Ex. 10 (Ruling ¶ 2 Exhibit Map) at Page 2 of 5A (showing Route 1 in blue, between Route 7/Leesburg Pike and Russell Branch Parkway (Planned) in white). Note that ¶ 2 of the Belmont Viewshed Easement allows multiple activities and structures within the easement area, including "public utilities/stormwater management facilities." Ex. 52 (Belmont Viewshed Easement) at 3.

[595] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, p. 78. *See also* Second Amended and Restated Declaration for Lansdowne dated August 14, 1998, recorded in Loudoun County Deed Book 1601, Page 0908. Ex. 15 (Jeavons Direct) at Attached Exhibit TJ-1. Section 8.2 (k) of this document reads in pertinent part: "[N]o water pipe, sewer pipe, gas pipe, drainage pipe, television cable or other similar transmission line shall be installed or maintained upon any [l]ot above the surface of the ground." *Id*. at Attached Exhibit TJ-1, pp. 47-48.

Preliminary Routing Determination

Dominion has provided sufficient evidence that existing rights of way are being used for the Aspen-Golden Project where possible but that existing rights of way cannot meet the needs for the majority of the Aspen-Golden Project.[596] The record supports approval of Route 1AA with the JKLH Belmont Landbay KK Variation (including flexibility to microsite the Aspen-Golden Lines' route and structures on the JKLH Belmont Property); the Community Church Proposed Modified Segment; and the ability to work with Allan Myers to determine possible siting solutions on Allan Myers' property. With these modifications, I find Route 1AA superior to Routes 1AB, 1BA, and 1BB. Route 1AA incorporates Belmont Park Variation A and Broad Run Variation A, as discussed further below.

Between Belmont Park Variations A and B, the evidence in this record shows that Variation A is preferable. Among other reasons, Variation A spans the Belmont Viewshed Easement but does not physically impact the Lansdowne Scenic Easement, whereas Variation B would impact both easements.[597] There are also considerably more multi-family residences within 500 feet of the ROW of Variation B than Variation A, and some such residences within 250 feet; Variation A has no residences within 250 feet of the ROW.[598] Perhaps most importantly, Variation A is preferred by Inova Loudoun Hospital, which indicated "Variation B is not acceptable given it is not conducive to helicopter takeoff/landing" and which feared Variation B would interfere with the hospital's County zoning approval.[599] Staff also regarded Belmont Park Variation B as less favorable because of its potential impacts to hospital helipad operations.[600] The Conservancy and at least one public witness also favored Variation A over Variation B.[601]

Though Broad Run Variation B was included in the Aspen-Golden Application and Staff did not object to it,[602] some participants expressed a preference for Broad Run Variation A.[603] Broad Run Variation B also would have more environmental impacts – to forested acreage, wetlands, perennial waterbodies, and ecological cores – than Broad Run Variation A. Broad Run Variation B also is closer to the Great Blue Heron rookery than Broad Run Variation A.[604]

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[596] Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 5 ("[T]he source for Loudoun County's [Data Center Alley] is to the west with a significant presence of residential development in between. The routing of new infrastructure for the source to the load is limited by the number of west-to-east corridors.") and pp. 173-74.
[597] *Id*. at Attached Environmental Routing Study, pp. 78-80.
[598] *Id*. at Attached Environmental Routing Study, p. 50.
[599] *Id*. at Attached Appendix, pp. 454-55; Comments of Susan Carroll at 2 (filed Sept. 11, 2024).
[600] Ex. 38 (Aspen-Golden Staff Report) at 38.
[601] *See, e.g.*, Ex. 15 (Jeavons Direct) at 8-10; Tr. at 176-81 (Zalan).
[602] Ex. 38 (Aspen-Golden Staff Report) at 37.
[603] *See, e.g.*, Tr. at 93-96 (Glass); Response to Motion to Receive and Consider Proposed Stipulation of the Piedmont Environmental Council (filed Sept. 5, 2024).
[604] *See generally*, Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 41, 103-08, 111-14, and 118-22.

Additionally, the costs for each of the route options range from $170.2 million to $179.1 million in 2023 dollars. Route 1AA is the second-lowest cost option, at approximately $171.1 million.[605]

Updated Hybrid Proposal

Description of the Proposal

Through respondent testimony, Loudoun County proposed an underground alternative to Dominion's proposed overhead Aspen-Golden Lines. This alternative is the Updated Hybrid Proposal, as set forth in RLC's August 12, 2024 document titled "500kV & 230kV XLPE Dual Circuit Underground Transmission Lines Summary Estimate." This document was explained by, and attached to the pre-filed direct testimony of, Brian Conroy of RLC, testifying on behalf of Loudoun County.[606] Loudoun County proposed the Updated Hybrid Proposal as a revision of the Initial Hybrid Proposal, taking into consideration Dominion's comments on that effort.

A map of the Updated Hybrid Proposal is included in the summary of Loudoun County Witness Conroy's testimony.[607] Essentially, the Updated Hybrid Proposal comprises an approximately three-mile underground portion of the Aspen-Golden Lines. Undergrounding would start with a transition station at the Belmont Innovation property (Campus B in the Apollo-Twin Creeks Application), follow the northern portion of that property, cross Belmont Ridge Road and then cross JKLH's Belmont Property to reach Route 7. The underground route would follow Route 7 for a short while, then dip south, crossing a planned section of Russell Branch Parkway and crossing the Belmont Viewshed Easement between the Belmont Country Club and Route 7. The route would proceed between the Belmont Park (approved) and Belmont Cove (planned) neighborhoods, then cross the property of the Belmont Chapel and Cemetery. Continuing east, the route would cross Claiborne Parkway (south of its intersection with Route 7), cross the northern tip of the Ashburn Chase development and clip the Intersport Performance

[605] *Id*. at Attached Appendix, p. 55. As updated for 2024 dollars, the cost spread among options is $176.4 million to $184.9 million, with Route 1AA costing approximately $176.9 million. *See* August 23, 2024 *Errata* to the Aspen-Golden Application, marked as part of Exhibit 4.

[606] *See generally*, Ex. 20 (Conroy Direct) at 8-17 and Attached Exhibit BC-3.

[607] By ruling of September 11, 2024, I directed Dominion to "prepare, and present during the hearing, an exhibit with a map illustrating the Company's proposed Aspen-Golden and Apollo-Twin Creeks Lines, the approximately 8.5-mile underground Aspen-Golden Route developed by Black & Veatch for the Company, and Loudoun County's proposed Underground Hybrid Project Proposal for a three-mile portion of the Aspen-Golden Lines." (Ruling at 2.) The exhibit also was to show all respondent properties adjacent to these routes, Inova Loudoun Hospital, Lansdowne Scenic Easement and Belmont Viewshed Easement, and several historic resources. The Ruling instructed, "To the extent Dominion's preparation of this exhibit requires input from Loudoun County regarding its proposal, Dominion shall consult with Loudoun County." (Ruling at 2.) Dominion provided this document, which was marked and admitted as Exhibit 10 into the record. Dominion incorporated the Updated Hybrid Proposal using a "higher resolution image of Figure 1" from the Updated Hybrid Proposal document provided to the Company by County Witness Conroy. Tr. at 784 (Nielsen); *accord*, Tr. at 481 (Rosenberg). Counsel for the County noted "the shape files didn't get to the Company in time" and asserted "the exact alignment of the line can't be trusted," (Tr. at 783-84 (Winston)). However, when provided an opportunity specifically to cross-examine Company Witness Rosenberg on Exhibit 10, the map made without the shape files, the County asked no cross-examination questions. Tr. at 625, 654 (Winston). Figure 1 of the Updated Hybrid Proposal document, a map of the underground route, is blurry. (Ex. 20 (Conroy Direct) at Attached Exhibit BC-3, p. 2.) Where possible, this Report refers to both Exhibit 10 and to the Illustrative Plan of the underground route. (Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.).

auto repair property, once again joining the southern edge of Route 7. The route would proceed eastward along the south side of Route 7, across the top of the JKLH Telos Property and Community Church, and end with another transition station on the property of BF Saul Real Estate.[608]

RLC estimated the Updated Hybrid Proposal would cost $1.112 billion, approximately $423 million more than Dominion estimated for the Aspen-Golden Project.[609] RLC asserted the Updated Hybrid Proposal addressed the issues Dominion raised in the February 15, 2024 meeting on the Initial Hybrid Proposal.[610]

Dominion's Rejection of the Proposal

Dominion rejected the Updated Hybrid Proposal. Company witnesses expressed numerous concerns, including:

- How future delivery points would be served;[611]
- The absence of some transition station costs in the Updated Hybrid Proposal cost estimate;[612]
- The consideration of environmental permitting risks and ability to obtain certain permits;[613]
- The failure to account for environmental resources, such as those on the JKLH Belmont Property;[614]
- Possible disruption to unidentified burials near, but not on, the African American Cemetery property;[615]
- The Updated Hybrid Proposal's plan to use a permanent ROW of only 60 feet, not 85 to 115 feet as the Company would have allowed;[616]
- The failure to incorporate additional ROW at micro-tunneling and/or horizontal directional drilling locations;[617]
- The use of only four, not five, cables per phase for the 500 kV line, meaning that larger ROW would likely be needed in an already space-constrained area;[618]
- Inclusion of too little trenchless excavation for road crossings and the failure to consult with VDOT as to road crossings;[619]

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[608] *See* Ex. 20 (Conroy Direct) at Attached Exhibit BC-3, p. 2 and Attached Exhibit BC-4. *See also* Ex. 10 (Ruling ¶ 2 Exhibit Map) at pages 1 of 2C and 2 of 2C. *See* Tr. at 674-75 (Rosenberg) for verification that the site of the eastern transition station is the property of BF Saul Real Estate.
[609] Ex. 20 (Conroy Direct) at Attached Exhibit BC-3, p. 1.
[610] *Id*. at 11 and Attached Exhibit BC-3.
[611] *See, e.g*., Tr. at 1202-04 (Joshi); Ex. 47 (Moulton Rebuttal) at 17-18.
[612] Tr. at 1209-10, 1217-20, 1251-52 (Joshi).
[613] *Id*. at 1358-61, 1380-82, 1387-89 (Young).
[614] *Id*. at 1375-79 (Young).
[615] *Id*. at 1393-95 (Young).
[616] *Id*. at 1461-64 (Moulton); Ex. 47 (Moulton Rebuttal) at 8-10 and Rebuttal Schedules 4 and 5.
[617] Ex. 47 (Moulton Rebuttal) at 9-10.
[618] *Id*. at 10-12.
[619] *Id*. at 12-13; Tr. at 1481-83 (Moulton).

- Failure to substantiate the $5 million estimate for 1,000 feet of trenchless excavation;[620]
- The use of linear feet, not cubic yards, to estimate rock removal and the underestimation of rock removal's impact to project cost and construction schedule;[621]
- A low total cost estimate of $478 million for undergrounding, which included no additional assumptions for acquisition of ROW and included only 10% contingency;[622] and
- The use of a 20-month construction timeline that Dominion feared would not allow it to meet PJM's June 1, 2028 in-service date for the Aspen-Golden Project.[623]

Dominion also distinguished the Updated Hybrid Proposal from Southern California Edison's Chino Hills project. In addition to noting the Chino Hills project more than doubled its own estimated construction schedule, the Company distinguished several features of the Chino Hills project, as follows:[624]

Category	Chino Hills	Aspen-Golden
Length	3.7 miles	3.0 miles (Updated Hybrid)
Size	500 kV, 2 cables per phase	500 kV, 5 cables per phase 230 kV, 4 cables per phase
Ampacity	2,300 amps	9,000 amps
Location	Entirely in company-owned ROW	Will require all new ROW
Purpose	To connect a renewable facility to load to meet a legislative requirement	For reliability purposes; has an in-service date of June 1, 2028

Analysis of the Updated Hybrid Proposal: Strongest Reasons for Undergrounding

The strongest reasons, in my opinion, offered in support of the Updated Hybrid Proposal are: (1) public input, (2) the viewshed easement analysis, and (3) conformance with the County's zoning ordinance and comprehensive plan. However, when the layers of these contentions and assertions are pulled back, they are not as strong as they at first appear. Additionally, multiple concerns about the proposal, in my view, outweigh the benefits the proposal is alleged to provide. On the evidence in this case, I do not recommend the Commission adopt the Updated Hybrid Proposal for the reasons explained below.

(1) As discussed at length elsewhere in this Report, most public commenters and public witnesses support undergrounding all or part of the Aspen-Golden Lines. Though their reasons vary, common themes include concerns about health impacts from the overhead lines, concerns about homes' values declining from overhead lines, the desire to preserve the beauty of the area, and a belief that underground lines are impervious to weather and are more reliable. Health impacts from transmission lines is a topic addressed elsewhere in this report.

[620] Tr. at 1483-85 (Moulton).
[621] *Id*. at 1487-89, 1520-21 (Moulton); Ex. 47 (Moulton Rebuttal) at 13-14.
[622] Tr. at 1490-93 (Moulton); Ex. 47 (Moulton Rebuttal) at 15-16.
[623] Ex. 47 (Moulton Rebuttal) at 5, 14-16.
[624] *See, e.g*., Ex. 50 (Rosenberg Rebuttal) at 37-38; Ex. 47 (Moulton Rebuttal) at 18-19.

(1)(a) Residential home values. The impact to property values if the Aspen-Golden Lines were installed overhead, and the consequent value preserved by undergrounding a portion of the Aspen-Golden Lines, is subject to debate.[625] County Witness Olsen claimed home values would decrease on average by 8.2%.[626] He calculated an overall impact of $252 million on home values from constructing the Aspen-Golden Lines overhead, with the negative impact dropping to just $133 million in lost home values if the Updated Hybrid Proposal were constructed.[627] Dominion Witness Colorito recalculated Mr. Olsen's analysis, largely to change an assumed value related to floor space, and determined any impact on home values from overhead lines would be negligible.[628] The Company took issue with several other aspects of Mr. Olsen's analysis as well, and ultimately Mr. Colorito asserted Mr. Olsen's analysis was unreliable.[629]

I do not place much weight on Mr. Olsen's analysis, given the lack of similarity between control and case sales in the paired sales analysis,[630] the fact that the already existing transmission line used for comparison was not measured (bringing into question its value as a comparison tool),[631] and the number of assumptions made that seemed to rely on judgment without a factual foundation relative to Loudoun County or other relevant real estate markets. For example, Mr. Olsen assumed an across-the-board value of $50 per above-ground square foot in a home, without basing this value on the price of square footage in the current Loudoun County real estate market.[632]

Additional evidence for the impact to home values from overhead transmission lines was provided by two public witnesses. Ms. Brown, a realtor, testified that overhead transmission lines decrease a home's value by 10%, at least, based on her experience.[633] Mr. Robins, a banking professional, estimated that property values decrease by 10% to 30% due to the presence of overhead transmission lines.[634] Neither witness provided back-up documentation for their estimations, nor were they, as public witnesses, subject to the discovery process.

This conflicting evidence reveals an apparent negative perception of transmission lines near homes in the Loudoun County real estate market. How much of a decline in home values is attributable to this negative perception is unsubstantiated on the record. Additionally, there is evidence the business community fears it will lose business from the overhead lines, though quantification of such loss, and documentation therefor, is lacking.[635]

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[625] *See generally,* Ex. 24 (Olsen Direct) and Ex. 45 (Colorito Rebuttal).
[626] Tr. at 1137-42 (Olsen).
[627] Ex. 24 (Olsen Direct) at 17-18.
[628] Tr. at 1413-19 (Colorito Rebuttal); Ex. 46 (Revised Paired Sales Analysis for $150/Square Foot).
[629] *See, e.g.*, Ex. 45 (Colorito Rebuttal) at 7-15; Tr. at 1420-26 (Colorito).
[630] *See, e.g.*, Ex. 45 (Colorito Rebuttal) at 9-12 (explaining that most of Mr. Olsen's sales pairings required five to six adjustments to account for differences in homes before the effect for presence of a transmission line could be isolated, and explaining, "The greater the number and degree of differences requiring adjustment that must be considered before the feature/condition in question can be isolated, the weaker the conclusion.").
[631] Tr. at 1134-35 (Olsen).
[632] *See id*. at 1168-70 (Olsen); Ex. 24 (Olsen Direct) at Attached Exhibit WH-8, p. 125. *See also* Tr. at 1413-15 (Colorito) (explaining that the value of $50 per square foot is not market oriented).
[633] Tr. at 140-43 (K. Brown).
[634] *Id*. at 163-68 (Robins).
[635] *Id*. at 26-29 (Carter). *See also* Comments of Kevin Carter at 1 (filed Aug. 27, 2024) ("[O]ur $60 million a year revenue for the local economy will inescapably suffer a decline because of the powerlines.").

(1)(b) Members of the community are concerned about the tarnish of the viewshed from their homes and decks. Certainly, the Updated Hybrid Proposal's viewshed impacts are different than overhead Route 1AA. And undoubtedly, if Route 1AA is built, people who live along Route 7 will see tall structures with conductors running between them.[636] For example, in response to concerns from two witnesses during the August 6, 2024 hearing, Company Witness Rosenberg provided photo renderings of views from the Regency at Belmont community if Route 1AA were constructed. This community sits south of Route 7, just west of the JKLH Telos property, Virginia Academy, and Community Church.[637] From 35 feet above ground (*i.e.*, a residence a few floors above ground level) the Aspen-Golden Lines are clearly visible in the near distance. There are also several lower utility poles in the immediate vicinity.[638]

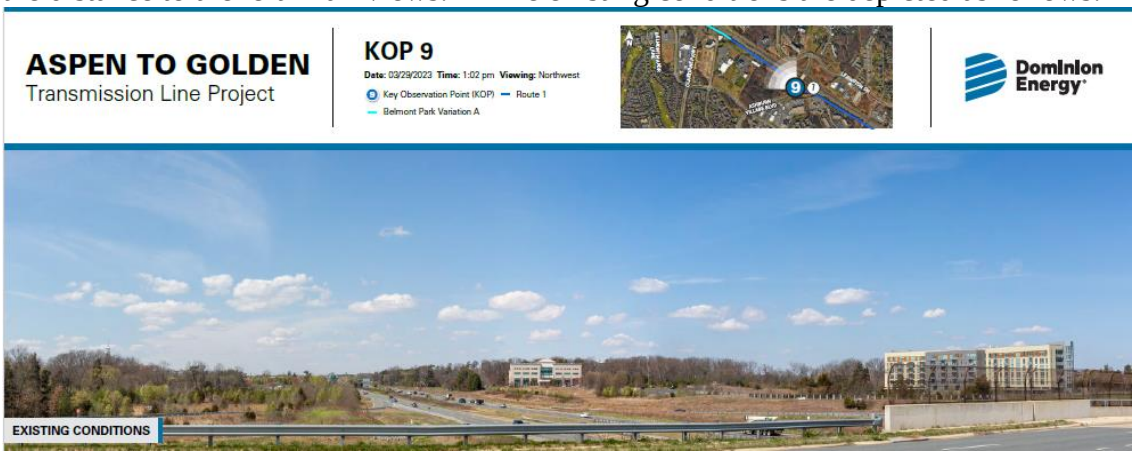
Undergrounding transmission lines does not fully erase their visual impacts. Specific to this case, the Updated Hybrid Proposal would reduce the presence of overhead transmission lines along Route 7 from a 3.5-mile stretch to a 2-mile stretch[639] and would add a transition station along Route 7 just east of Community Church. Some communities, such as One Loudoun, would still be impacted by overhead lines because they are outside the stretch of Route 7 proposed for underground lines altogether.[640]

The County provided evidence of viewpoints with and without the underground portion of the Updated Hybrid Proposal. The County's renditions of these views, however, were actually photos of current views taken at an unknown time. There was no attempt to depict altered landscaping from the underground lines' ROW, for example, or what a view of the transition station by Community Church would be.[641] Mr. Rosenberg provided photo simulations showing the visual impact of transition stations, including a transition station as it might appear by Community Church.[642]

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[636] *See generally*, Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study Appendix G.
[637] *See* Ex. 20 (Conroy Direct) at Attached Exhibit BC-4 for the location of Regency at Belmont.
[638] Ex. 50 (Rosenberg Rebuttal) at 46-47 and Rebuttal Schedule 15.
[639] Overhead Route 1AA would proceed along Route 7 from approximately milepost 2.4 to milepost 5.9, 3.5 miles. Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 164-67. If substituted for part of Route 1AA, the Updated Hybrid Proposal would keep the Aspen-Golden Lines off Route 7 from approximately milepost 2.4 to approximately milepost 3.9, ending with the transition station east of Community Church. From there, overhead Route 1AA would continue along Route 7 from approximately mileposts 3.9 to 5.9. *Compare* Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 1 of 2C and p. 2 of 2C, and Ex. 20 (Conroy Direct) at Attached Exhibit BC-4, *with* Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 164-65. *See also* Report Attachment.
[640] *See, e.g.*, Tr. at 158-61 (Fisher).
[641] *See, e.g.*, Ex. 20 (Conroy Direct) at Attached Exhibit BC-2; Tr. at 750-54 (Conroy).
[642] Ex. 50 (Rosenberg Rebuttal) at 26-28 and Rebuttal Schedule 12.

The record contains one set of photo renderings showing conditions as existing, with Dominion's proposed overhead lines, and with the Updated Hybrid Proposal. This view is from the Ashburn Village Boulevard area, looking northwest, approximately 920 feet from where the transition station by Community Church would be. The Community Church steeple is visible in the distance to the left in all views.[643] The existing conditions are depicted as follows:



The view below of overhead Route 1AA shows a cleared ROW section beside Route 7 (indicating loss of some vegetation), and tall steel transmission structures with multiple conductors strung between them along Route 7.



The view below with the 500 kV/230 kV transition station shows a cleared ROW section, again indicating loss of vegetation along Route 7. This view also includes a very tall structure with lines going to a shorter structure inside a fenced area that houses more infrastructure, visible above the fencing but considerably shorter than the other poles. Beyond the transition station, there are no more poles or conductor depicted along Route 7.



[643] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study 137-38 and Appendix G, KOP 9 (pages unnumbered); Ex. 50 (Rosenberg Rebuttal) at Rebuttal Schedule 12, Viewpoint 3.

From a purely aesthetic standpoint, whether the underground-with-overhead-transition-station option is preferable to an all-overhead-lines option likely depends on personal preference and, most importantly, where a person lives in relation to the underground section and the transition station along Route 7. Some may prefer undergrounding, even if they can see the transition station.

(1)(c) There is a common conception that electric service will be more reliable with underground transmission lines. The record in the Combined Cases identifies several reliability disadvantages associated with underground installation. Company Witness Moulton testified that when millisecond outages are removed, on a per-mile basis, the Company experienced 5.28 more times sustained outages on underground transmission lines than overhead transmission lines in 2022.[644] Underground lines are not impervious to foul weather, particularly at transition stations and at manholes where cables are spliced together.[645] Though there are generally fewer unplanned outages on underground lines, those that occur last longer; what would be a two-to-three-day fix if overhead could take weeks to months if underground. The record indicates that it takes longer to diagnose a fault in an underground line, and there are fewer readily available materials to make repairs.[646]

Additionally, the record reflects Dominion's experience is that its routine and corrective maintenance costs for underground lines "have historically been as much as six-times higher" than for similar work on overhead lines "on an annual per circuit mile basis."[647]

(2) The Updated Hybrid Proposal appears to better preserve the view protected by the Belmont Viewshed Easement than Route 1AA would. The Belmont Viewshed Easement was established for "preserving and maintaining an unobstructed view of the historic Belmont Manor House from Route 7."[648] It allows public utilities and stormwater management facilities in the easement area, including allowance of "[e]xcavation, dredging, mining and removal of loam, gravel, soil, rock, sand, coal and other materials" for construction and maintenance of such facilities.[649] Route 1AA would cross the Belmont Viewshed Easement over open land parallel to the road and the Belmont Country Club driving range. Dominion anticipates two structures will be placed in the easement area.[650] The Updated Hybrid Proposal crosses the Belmont Viewshed

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[644] Tr. at 1547-49 (Moulton).
[645] *Id*. at 1564-65 (Moulton).
[646] Ex. 47 (Moulton Rebuttal) at 20-21, 23-24. There is conflicting evidence as to how much any part of an underground transmission line can continue providing service if another portion becomes inoperable. County Witness Conroy testified that individual cables can be isolated such that line flow could be maintained for all unaffected cables while repairs are made to the faulted cable. He testified that in a four-cable system, approximately 75% of functionality could be preserved. Ex. 20 (Conroy Direct) at 10. Company witness Moulton testified that faulted cables can be isolated only in certain circumstances, when there is switching equipment at both ends of an underground line and the damaged cables do not share a manhole with other cables. He further stated most underground cable failures occur at termination points, close to electrical hazards, meaning it is not likely uncompromised cables can remain energized during a repair to a faulted cable. Ex. 47 (Moulton Rebuttal) at 24-25.
[647] Ex. 47 (Moulton Rebuttal) at 22.
[648] Ex. 52 (Belmont Viewshed Easement) at 2. (Note this exhibit does not have a page 1.).
[649] *Id*. at 3, ¶¶ 2, 5.
[650] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, p. 78. *See also* Ex. 10 (Ruling ¶ 2 Exhibit Map) at Page 2 of 5A (showing Route 1 in blue, between Route 7/Leesburg Pike and Russell Branch Parkway (Planned) in white).

Easement in an area slightly south of Route 7. Given the goal of the Belmont Viewshed Easement is to preserve the view of the Belmont Manor House from Route 7, Route 1AA would clutter the view with transmission lines[651] while the Updated Hybrid Proposal would not incorporate above-ground transmission lines in the easement area.[652]

The Lansdowne Scenic Easement was established in 1988 for "creating or perpetuating in the Easement Area a visual corridor of natural or planted vegetation or land contour" to reduce the impact of Xerox Realty Corporation's development "as viewed from Route 7 and to preclude intense development to the edge of the Route 7 right of way."[653] Counsel for the Conservancy argued the "utility of which" the Lansdowne Scenic Easement "is predicated" would be ruined by "the very nature of a 200-foot transmission tower."[654] A person living in Lansdowne across from the Belmont Viewshed Easement will benefit, visually speaking, from not having overhead transmission lines along the south side of Route 7. That said, neither Route 1AA nor the Updated Hybrid Proposal is planned to encroach upon the Lansdowne Easement. There is therefore no disturbance to the "visual corridor of natural or planted vegetation or land contour" on the north side of Route 7 no matter which option is constructed. Further, to the extent the purpose of the Lansdowne Easement is to reduce the impact of development "as viewed from Route 7," *i.e.*, to provide drivers on Route 7 looking toward Lansdowne a scenic view, both the Updated Hybrid Proposal and Route 1AA are on the south side of Route 7, not between drivers on Route 7 and Lansdowne, which is situated to the north of Route 7.

(3) As for conformance with Loudoun County's zoning ordinance and comprehensive plan, County Witness Giglio described the portion of Route 7 between Goose Creek and Route 28/Sully Road as a "gateway corridor" according to the County's zoning ordinance. Neither the zoning ordinance itself, nor relevant portions thereof, were introduced into evidence. However, Mr. Giglio included in pre-filed testimony a copy of a letter from a County official to Dominion specifically referencing Zoning Ordinance § 7.04.02 and stating, "The ***Loudoun County Zoning Ordinance*** (Zoning Ordinance) requires a 100-foot Gateway Corridor Buffer with enhanced landscaping along this segment of Leesburg Pike, in addition to a 125-foot parking and 200-foot building setback from the roadway."[655] Mr. Giglio explained the setbacks in the area along Route 7 between Goose Creek and Route 28/Sully Road are designed to provide "a landscaped corridor as you enter into Leesburg."[656] Mr. Giglio testified that the County allows utilities in gateway corridors. He nevertheless asserted that "[t]he proposed overhead route and the presence of the proposed 180-feet transmission poles are in direct conflict with the intent and purpose of the County's Gateway Corridor Buffer adjoining Route 7 which are to provide a landscaped buffer between the roadway and existing uses."[657] Based on this evidence, it appears to me Route 1AA would be compliant with the letter, but not the spirit, of the zoning ordinance.

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[651] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study Appendix G, KOPs 5 and 6.
[652] *See, e.g.*, Ex. 20 (Conroy Direct) at Attached Exhibit BC-4 (showing the transition station east of Community Church and outside the Belmont Viewshed Easement).
[653] Ex. 50 (Rosenberg Rebuttal) at Rebuttal Schedule 17, pp. 1-2.
[654] Tr. at 323-34 (B. Turner).
[655] Exhibit 22 (Giglio Direct) at Attached Exhibit WPG-4, p. 2.
[656] *Id.* at 13; Tr. at 838-39 (Giglio).
[657] Ex. 22 (Giglio Direct) at 13.

Code § 56-46.1 A requires the Commission to "receive and give consideration to" local comprehensive plans of the locality where an electrical facility will be built, if the locality so requests.[658] The portions of the 2019 General Plan in the record do not mention gateway corridors, much less define the portion of Route 7 between Route 28 and Goose Creek as such.[659] Nor did Mr. Giglio or counsel for the County provide a citation to the section of the 2019 General Plan labeling this section of Route 7 as a gateway corridor. Nevertheless, Mr. Giglio testified this road segment "has been identified in iterations of the County's Comprehensive Plan as an important gateway corridor."[660] Mr. Giglio confirmed the path of both Route 1AA and the underground portion of the Updated Hybrid Proposal along Route 7 are in this corridor.[661]

Mr. Giglio asserted that "[t]he proposed Aspen-Golden Route is the first and only greenfield route in eastern Loudoun that is proposed to bisect areas that are designated as the Suburban Mixed Use and Suburban Residential Place Types in the 2019 General Plan."[662] According to this plan, "Place type categories define not only the basic expected land uses for specific areas in the County, but also preferred development patterns, streetscapes, and design features that make places and environments visually distinctive and functional for people."[663] Mr. Giglio provided an exhibit showing that the area proposed for undergrounding in the Updated Hybrid Proposal crosses the Suburban Mixed Use and Suburban Residential place types.[664] He testified, "The proposed introduction of an overhead, high-voltage transmission corridor will significantly impact the visual characteristics and sense of place of those existing communities within the Route 7 Corridor and is not in keeping with the community characteristics envisioned for the Suburban Mixed Use or Residential Neighborhood Place Types."[665]

If approved, overhead Route 1AA would proceed along Route 7 for approximately 3.5 miles.[666] If substituted for part of Route 1AA, the Updated Hybrid Proposal would keep the Aspen-Golden Lines off Route 7 for approximately 1.5 miles.[667] Thus, assuming the area of Route 7 between Route 28 and Goose Creek is a gateway corridor, even if the Updated Hybrid Proposal is approved, this gateway corridor is interrupted for approximately two miles along

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[658] Through the testimony of Mr. Giglio, one focus of whose testimony is the alleged non-conformance of overhead Aspen-Golden Lines with the 2019 General Plan (one part of the County's current comprehensive plan (Ex. 22 (Giglio Direct) at 4-5)), I believe the County has made the request for the Commission to consider its comprehensive plan per Code § 56-46.1 A.

[659] *See* Ex. 22 (Giglio Direct) at Attached Exhibits WPG-2 and WPG-3. Dominion took issue with the characterization of Route 7 as a gateway corridor. *See, e.g.*, Tr. at 1864 (Link) ("Finally, claims that this stretch of Route 7 [is] protected greenfield corridor are not true. The existence of setbacks and buffers does not make it a protect[ed] greenway in any way.").

[660] Ex. 22 (Giglio Direct) at 13.

[661] Tr. at 840 (Giglio).

[662] Ex. 22 (Giglio Direct) at 10.

[663] *Id*. at Attached Exhibit WPG-2, pp. Chapter 2-8 to Chapter 2-9.

[664] *Id*. at 12 and Attached Exhibit WPG-5.

[665] *Id*. at 2.

[666] Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 164-67 (showing Route 1AA along Route 7 generally from mileposts 2.4 to 5.9). *See also* Report Attachment.

[667] Generally, the Updated Hybrid Proposal would avoid having above-ground structures along Route 7 until the transition station to the east of Community Church, at approximately milepost 3.9 of Route 1AA. *Compare* Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 1 of 2C and p. 2 of 2C, and Ex. 20 (Conroy Direct) at Attached Exhibit BC-4, *with* Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 164-65. *See also* Report Attachment.

Route 7. In other words, considering only the Aspen-Golden Lines (and not any other infrastructure that may be present along Route 7), those driving from Route 28 to Goose Creek (*i.e.*, following the gateway corridor to Leesburg) will experience either:

- In the case of Route 1AA: No transmission structures or conduit → Transmission structures with conduit and lines for approximately 3.5 miles (between the Visa property and the area just before the African American Cemetery) → No transmission structures or conduit to Goose Creek.

- In the case of the Updated Hybrid Proposal: No transmission structures or conduit → Transmission structures with conduit for approximately 2 miles (starting around the Visa property), then ending at a transition station with structures between 35 and 120 feet tall[668] (just before drivers reach Community Church) → No transmission structures or conduit to Goose Creek.

From the perspective of the place type concept, I struggle to find a meaningful difference between interrupting the design features of this gateway corridor for two miles versus interrupting it for 3.5 miles. If the purpose of undergrounding is to preserve the "context – the look and feel of places, their form and their character,"[669] it is difficult to see how having two miles of 180-foot transmission structures, with conductors strung between them, plus a transition station, will better preserve the look and feel of the surrounding place types than having 3.5 miles of 180-foot transmission structures, with conductors strung between them, and no transition station. Presumably, for the few who inhabit the 1.5 miles of the gateway corridor and who would enjoy the undergrounding (should the Commission approve it), such as the Conservancy and Community Church,[670] the Updated Hybrid Proposal may save the look and feel of their environment. For everyone else, such as those who live and/or work in One Loudoun,[671] and for drivers traveling through this gateway area to Leesburg, it is hard to see how they would experience the Updated Hybrid Proposal as having preserved the context of the place types in keeping with the 2019 General Plan.

The 2019 General Plan also more broadly addresses electrical service. The plan recognizes electrical services are regulated by state and federal agencies, stating "For example, the County regulates the location of electrical substations but not the high voltage distribution lines to and from the substations."[672] Fiscal Policy 6 in the plan calls for the County to support expanded electrical capacity with generating facilities that use clean-burning fuels and energy efficient designs. Under this policy, Strategy 6.1 is to "[e]ncourage local electrical generation in appropriate locations throughout the County." Actions listed under Strategy 6.1 are:[673]

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[668] Ex. 26 (Joshi Rebuttal) at 3.
[669] Ex. 22 (Giglio Direct) at Attached Exhibit WPG-2, p. Chapter 2-7.
[670] *See, e g.*, Ex. 15 (Jeavons Direct) at 6; Ex. 16 (Whitlow Direct) at 5-7 (explaining the impact of overhead transmission lines on the church's steeple, a community landmark).
[671] *See* Tr. at 158-61 (Fisher).
[672] Ex. 22 (Giglio Direct) at Attachment WPG-3, p. Chapter 6-10.
[673] *Id.* at Attachment WPG-3, pp. Chapter 6-23 through Chapter 6-24.

> A. Establish zoning regulations and design standards that permit alternative electrical generation such as wind and solar generation by and for individual users.
> B. Encourage the safe grouping and burying of utility lines and facilities.
> C. Work with electrical providers to identify potential high voltage distribution lines and substation locations that minimize impacts on key travel corridors, sensitive cultural and historic resources, and existing residential communities, or to place high voltage distribution lines underground when approaching such areas; and where possible, use existing transmission corridors and substation sites to expand capacity.
> D. Encourage the use of design techniques that will minimize the visual impact of electrical substations adjacent to major travel corridors or residential communities including the use of stealth design techniques.
> E. Continue to monitor and minimize energy use in County facilities and create a program that would encourage benchmarking energy use in private buildings.

The Updated Hybrid Proposal would appear to comply with Actions B and C if the above can be interpreted as general electric policies of the County's 2019 General Plan. The structure of this section of the plan, however, seems notable. Actions A through E are all actions to accomplish a strategy, which is expanding local electric generation. The strategy is one part of a broader fiscal policy, which is also to expand electric generation, specifically generation using clean burning fuels and energy efficient design. If Actions B and C, then, are only applicable in the context of electric generation policies, they are not applicable to the Aspen-Golden Project, which involves new transmission lines and does not propose any sort of electric generation facility, clean burning, energy efficient, or otherwise.

From his testimony, County Witness Giglio does not interpret Actions B and C to be limited to the context of the fiscal policy in which they are enumerated in the 2019 General Plan.[674] Under the broader view that Mr. Giglio takes, and assuming the term "high voltage distribution lines" in Action C is a reference to 230 kV and 500 kV transmission lines,[675] the Updated Hybrid Proposal is more compliant with the 2019 General Plan than Route 1AA because the former incorporates burying of the Aspen-Golden Lines for approximately three miles. Nevertheless, even the Updated Hybrid Proposal envisions substantial infrastructure along Route 7, in the form of a transition station plus approximately two miles of overhead transmission structures with conductor between them (since, beyond the easternmost transition station, the Updated Hybrid Proposal follows Dominion's overhead route).[676] And as discussed further below, the Updated Hybrid Proposal's impact on sensitive cultural and historic resources is unclear from the record.

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[674] *See, e.g., id*. at 2-3.
[675] Dominion made the latter assumption. Ex. 50 (Rosenberg Rebuttal) at 51, n.15.
[676] *See, e.g.*, Ex. 20 (Conroy Direct) at 5 ("At that point, a second transition station is proposed, with the remaining route to Golden Substation following Dominion's proposal.").

To summarize this portion of my analysis, based on the record in the Combined Cases, I conclude:

- There appears to be a negative perception of transmission lines near homes in the Loudoun County real estate market. How much of a decline in home values is attributable to this negative perception is unsubstantiated in the record.
- Undergrounding transmission lines does not erase all visual impacts; which impacts are better or worse (*i.e.*, visual impacts from overhead or underground lines) is a matter of personal preference.
- Underground lines are not necessarily more reliable, and may be less reliable, than overhead lines. Underground lines also have higher routine and corrective maintenance costs.
- The Updated Hybrid Proposal better preserves the view protected by the Belmont Viewshed Easement than Route 1AA would.
- Neither Route 1AA nor the Updated Hybrid Proposal is planned to encroach upon the Lansdowne Scenic Easement. Nonetheless, a person living in Lansdowne across from the Belmont Viewshed Easement will benefit, visually speaking, from not having overhead transmission lines along the south side of Route 7.
- Though Route 1AA complies with the letter of the zoning ordinance, the Updated Hybrid Proposal appears to comply with both the letter and spirit of the zoning ordinance.
- Whether undergrounding would preserve the context of the Suburban Mixed Use and Suburban Residential place types in the 2019 General Plan may depend on where a person lives and how they experience Route 7 in relation to the underground portion of the Aspen-Golden Lines.
- The Updated Hybrid Proposal also may better comply with Action B and the undergrounding part of Action C in Fiscal Policy 6 of the 2019 General Plan, depending on one's interpretation of this section of the plan.

Analysis of the Updated Hybrid Proposal: Routing and Environment

Code § 56-46.1 B requires the Commission to consider "that the corridor or route chosen for the line will avoid or reasonably minimize adverse impact to the greatest extent reasonably practicable on the scenic assets, historic resources recorded with the Department of Historic Resources, and environment of the area concerned." Unlike the Company's proposal, the Updated Hybrid Proposal was not offered with a DEQ Supplement, environmental routing study, or similar analysis.

The County declares the Updated Hybrid Proposal "generally follow[s] the proposed [overhead] line route,"[677] and thus may believe the scenic, historic, and environmental studies the Company provided with the Aspen-Golden Application suffice. However, maps depicting the Updated Hybrid Proposal show distinct deviations from the path of Route 1AA in two areas: (i) from the Belmont Innovation property through a portion of JKLH's Belmont Property

[677] *See, e.g., id*. at 14.

(roughly in the area of what would be mileposts 1.6 to 2.4 if one were following the overhead Route 1AA); and (ii) from the Belmont Viewshed Easement down to the Intersport Performance business (roughly mileposts 2.7 to 3.4, where Route 1AA follows along the south side of Route 7 and the Updated Hybrid Proposal weaves below Route 7).[678] So for about 1.5 miles of a three-mile route, the Updated Hybrid Proposal does not follow Route 1AA. These deviations mean the Updated Hybrid Proposal has a significant chance of differently impacting environmental, scenic, cultural, and historic resources in the area. Moreover, the County admitted that overhead and underground transmission lines may have different, and potentially more, impacts on a property. One of the reasons County Witness Giglio gave for the County not pursuing undergrounding of the Apollo-Twin Creeks Lines is that this project "is in a location where there [are] significant environmental features there, so an underground route may have additional impacts there."[679]

The County tried to put the Black & Veatch plan, the Updated Hybrid Proposal, and the Company's Aspen-Golden Application on the same footing by characterizing them each as a "conceptual plan."[680] As to routing, however, the Updated Hybrid Proposal and the Aspen-Golden Route proposed in the Application are not equally developed. For Route 1AA (and alternatives), the Aspen-Golden Application provided specific starting and ending points, including an explanation of where the 500 kV and 230 kV lines would individually begin and end at the proposed Aspen and Golden Substation sites. The Application also included routing markers at each 1/10 of a mile.[681] In contrast, County Witness Conroy testified that the Updated Hybrid Proposal is not "a detailed construction plan" but was designed "to prove the feasibility and to provide an estimate of cost" of undergrounding.[682] It is not even clear from the record that RLC believes the route in the Updated Hybrid Proposal is an optimal way to underground the Aspen-Golden Lines since RLC did not develop it. Rather, "the proposed underground routing of the [p]roject has been established and provided to RLC by the client," *i.e.*, Loudoun County.[683] There is no indication who from the County established this route, including no indication of whether any engineer was involved in the route's selection.

The lack of clarity as to the Updated Hybrid Proposal's route is apparent in multiple sections of the record. One of the most prominent such places concerns the starting point for the underground section. The underground segment requires a transition station on either end to take the conductor from overhead to underground and vice versa.[684] Loudoun County Witness Conroy referred to transition station locations as "[c]ritical routing and location decisions."[685]

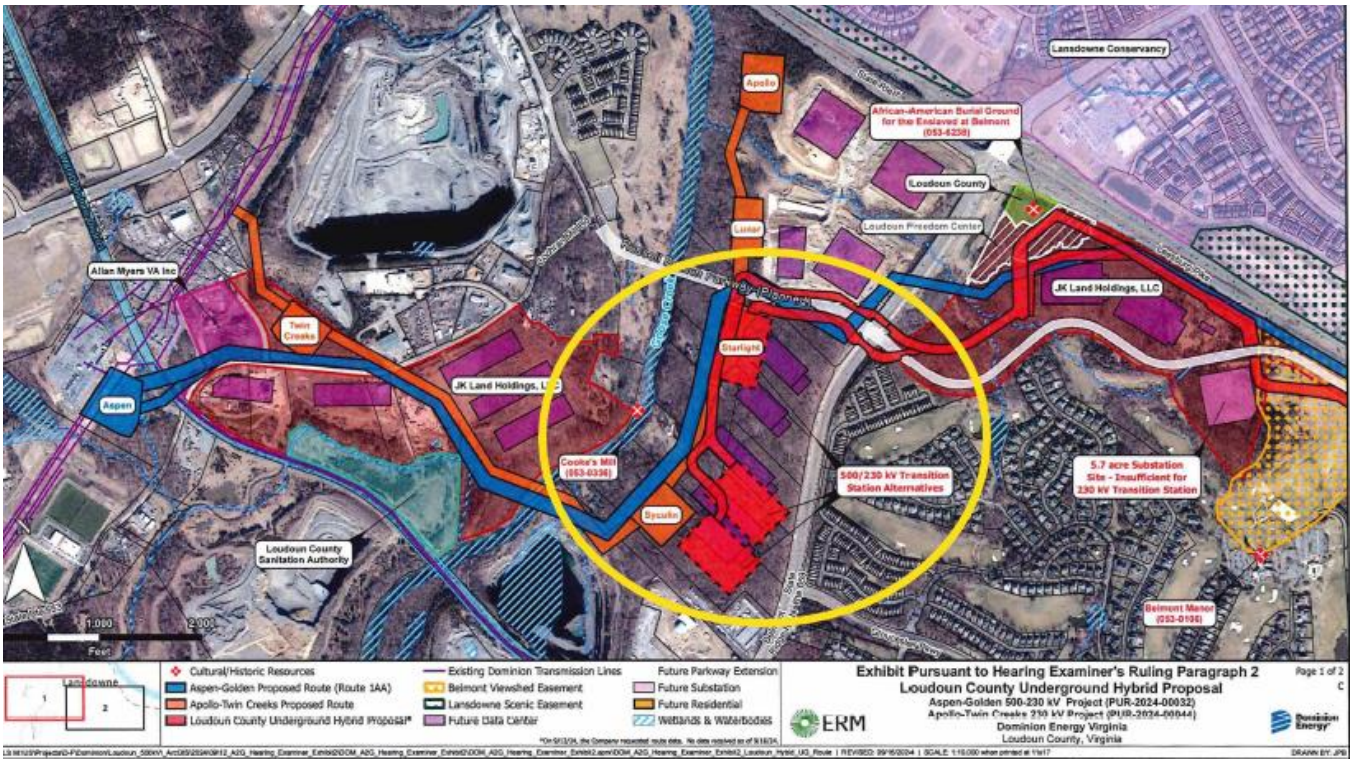
In pre-filed direct testimony, Mr. Conroy described the location of the westernmost transition station ("Western Station") as "nearby the proposed Sycolin [Creek] Substation."[686]

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[678] *See, e.g.*, Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 1 of 2C and p. 2 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.
[679] Tr. at 878 (Giglio).
[680] *Id.* at 688-89 (Conroy).
[681] Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 163-70.
[682] Tr. at 688 (Conroy).
[683] Ex. 20 (Conroy Direct) at Attached Exhibit BC-3, p. 1.
[684] *See, e.g.*, Tr. at 706-07, 719 (Conroy).
[685] Ex. 20 (Conroy Direct) at 17.
[686] *Id.* at 14.

During the hearing, he clarified the Western Station would be on Sentinel's Belmont Innovation property.[687] The Updated Hybrid Proposal provided three options for the Western Station's placement.[688] When asked about accommodating space for the Western Station, Mr. Conroy explained RLC proposed "several alternates to try to find one with minimal impact with what we knew at the time or what was preliminary. So, we understood it was going to be tight, and that's why we provided alternatives."[689] When asked if he had located a site plan for the Belmont Innovation property, Mr. Conroy answered, "[W]e knew there were things going on there and development being planned. I don't know how final or whatever it was, so, again, trying to find alternatives, we made three alternatives trying to find something that might work."[690]

The Belmont Innovation property is planned to have several buildings that Loudoun County has approved through its own legislative process.[691] The three Western Station alternatives appear to encroach upon, or overlap, these buildings and/or land earmarked on the Belmont Innovation property for the proposed Starlight Substation. (See circled area.)[692]



[687] Tr. at 775 (Conroy). *See also id*. at 848 (Giglio).
[688] Ex. 20 (Conroy Direct) at Attached Exhibit BC-3, p. 2 (Figure 1). *See also id*. at Attached Exhibits BC-4 and BC-5 (each figure/map depicting three boxes – in red, orange, and orchid – representing the possible Western Station).
[689] Tr. at 776 (Conroy).
[690] *Id*. at 777 (Conroy).
[691] *Id*. at 848 (Giglio).
[692] Ex. 50 (Rosenberg Rebuttal) at 20-22 and Rebuttal Schedule 9. The diagram is from Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 1 of 2C. The Hearing Examiner added the yellow circle for reference.

Whether the planned buildings can be moved or made smaller without further action from the County depends on how such changes would be classified between the options of "substantial and minor revisions."[693] Mr. Giglio testified that the County's building and development department would make the determination of whether a change is substantial or minor.[694] Of note, Mr. Giglio testified the Western Station could not be moved further west on the Belmont Innovation property to avoid the planned buildings "because … the steep slopes and the setbacks related to Goose Creek would not allow a building in that area."[695]

In a letter attached to the rebuttal testimony of Company Witness Rosenberg, the property owner, Sentinel, opposed all three options for the Western Station's placement on the Belmont Innovation property. Sentinel claimed, "All three of these transition stations overlap with future planned data center buildings and/or substations."[696] Sentinel noted the "Belmont Innovation Campus received a vested approval from Loudoun County, and the [Updated Hybrid] Proposal only shows the site plan for the first phase of development, which is less than 40 percent of the approved data center density."[697] Sentinel asserted any taking of one of the three proposed areas for the Western Station "would cause irrevocable economic harm and result in a substantial loss in revenue to Loudoun County."[698]

In summary, there is no secured starting point for the Updated Hybrid Proposal. The Western Station is proposed to be situated on land neither the County nor Dominion owns, and which the County has approved for another use. The property owner does not desire for its property to house the Western Station and asserts both it and the County will experience economic harm if the Western Station is placed on the Belmont Innovation property. Given the uncertain location of the Western Station, which the County admits is a critical routing and location decision, it is unclear from the record where the Updated Hybrid Proposal would place all the infrastructure needed to allow the Aspen-Golden Lines to transition from overhead to underground and to actually enter the earth.

Other issues with the routing of the underground portion of the Updated Hybrid Proposal were pointed out during the hearing. These include:

- A question about a portion of the underground line that appears to cross an area proposed for 20 homes in the Belmont Cove neighborhood.[699] Since buildings are not allowed in the ROW of any underground transmission line, it appears these homes would not be able to be built.[700] Loudoun County Witness Conroy suggested "we

[693] Tr. at 835, 848 (Giglio).
[694] *Id*. at 1024-25 (Giglio).
[695] *Id*. at 1020 (Giglio). Mr. Giglio also could not otherwise explain how the Western Station would fit with the data center buildings on the Belmont Innovation campus. *See id*. at 1015-17 (Giglio).
[696] Ex. 50 (Rosenberg Rebuttal) at Rebuttal Schedule 10, p. 1.
[697] *Id*.
[698] *Id*.
[699] Tr. at 500-02 (Rosenberg); Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4. While Belmont Cove is not on the map in Mr. Conroy's testimony, both maps show Belmont Park, situated just to the northeast across Russell Branch Parkway from Belmont Cove.
[700] Tr. at 1372-73 (Young) (testifying that turf and grass are allowed in the ROW of an underground transmission line).

look at the routing and the microadjustments … and perhaps follow the path of the Black & Veatch [line] going under that section at the end of Russell Branch Parkway."[701]

- A question about the Updated Hybrid Proposal's impact on the Belmont Chapel and Cemetery, specifically the impact to a manufactured building on the property that the underground line appears to cross.[702] The County confirmed its proposal is closer to this historic property than overhead Route 1AA. County Witness Conroy testified that "we would minimize conflicts in the final design and thread through between the residential development and the existing church building."[703] The record does not include a depiction or description of how this threading would be accomplished.

- A question about the underground line seeming to encroach on the Intersport Performance Auto Repair Service & Storage building.[704] Loudoun County answered that these impacts could be resolved either by microadjustments or by following the Black & Veatch route (which is situated behind this building, not between this building and Route 7).[705]

- A question about the placement of the easternmost transition station on property owned by BF Saul Real Estate east of Community Church.[706] How this transition station would be situated on the property was not resolved during the hearing.[707]

Despite the paucity of analysis concerning the Updated Hybrid Proposal's impact on scenic, historic, and cultural resources, there are a few impacts that are known, and multiple impacts that need to be known, including the following:

- The Updated Hybrid Proposal includes two options for crossing the JKLH Belmont Property. One option would bring the underground line closer to the African American Cemetery than either the other underground option or overhead Route 1AA.[708] It appears there would be some impact to this resource; how much and what type of impact are undetermined.

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[701] *Id*. at 694 (Conroy); Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 5B.
[702] Tr. at 736 (Conroy) and 502 (Rosenberg). *See also* Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4. Belmont Chapel and Cemetery is marked on the map that is part of Mr. Conroy's testimony with the word "Cemetery."
[703] Tr. at 782-83 (Conroy).
[704] *Id*. at 503 (Rosenberg). *See also* Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.
[705] Tr. at 696 (Conroy); *Compare* Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 5B *with* p. 2 of 2C *and with* Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.
[706] Ex. 50 (Rosenberg Rebuttal) at 22 and Rebuttal Schedule 12; Tr. at 649-53 (Rosenberg). *See also* Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.
[707] *See, e.g.*, Tr. at 670-72 (Rosenberg) and 1732-35 (Gardner).
[708] *Id*. at 485-86 (Rosenberg); Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 1 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.

- The same option that drifts closer to the African American Cemetery also crosses and re-crosses property designated for the Loudoun Freedom Center,[709] which JKLH plans to donate to Pastor Michelle Thomas for development provided the JKLH Belmont Landbay KK Variation is approved.[710] The extent of impact of this underground option to the Loudoun Freedom Center has not been studied.

- Both underground options cross the JKLH Belmont Property,[711] which is home to three streams, wetlands, and a stormwater pond[712] and would impact that property differently than overhead Route 1AA.[713] Impacts to this property would differ still depending on whether the County proposes to use trenched or trenchless excavation to cross these resources.[714] It appears there would be impact to this property; how much and what type of impact are undetermined.

- The Updated Hybrid Proposal provides one route across the Belmont Viewshed Easement.[715] Overhead Route 1AA crosses this easement along its edge on the south side of Route 7, and two transmission poles will be placed in the easement.[716] The underground line crosses the easement on the south side of the planned Russell Branch Parkway Extension and slightly closer to Belmont Manor.[717] It appears the underground line would impact Belmont Manor, and the easement property more generally, in a different manner than overhead Route 1AA. These impacts are not in the record.

- The Updated Hybrid Proposal crosses the property of Belmont Chapel and Cemetery,[718] location of over 200 graves and a chapel ruin, nearby to St. David's Episcopal School and Church.[719] Route 1AA does not cross this property.[720] It appears the underground line would impact this historic resource. The exact path of the Updated Hybrid Proposal through this resource has not been determined,[721] and nothing in the record indicates impacts from the underground line on this resource have been studied. At a minimum, a building cannot sit atop an easement for an

[709] Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 1 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4. The latter does not distinguish the African American Cemetery from the Loudoun Freedom Center.
[710] Ex. 11 (Tock Direct) at 14-18 and Attached Exhibit 1; Ex. 12 (Yudd Direct) at 22-25, 27.
[711] Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 1 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.
[712] Tr. at 485 (Rosenberg).
[713] *Cf*. Ex. 50 (Rosenberg Rebuttal) at 27 ("Wetlands suffer the worst outcomes with any trenched underground installation because they are permanently destroyed in the course of excavation and fill. In contrast, an overhead route can cross a forested wetland and, albeit denuded of trees, the underlying wetland complex can be converted to shrub-scrub type that still retains ecological function.").
[714] *Id*. at 27, 32.
[715] Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.
[716] Ex. 4 (Aspen-Golden Application) at Attached DEQ Supplement, p. 54; Tr. at 1665-66 (Rosenberg).
[717] Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 2 C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.
[718] Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 2C; Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.
[719] Ex. 4 (Aspen-Golden Application) at Attached DEQ Supplement, Attachment 2.I.1, p. 34.
[720] Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 5A.
[721] Tr. at 782-83 (Conroy).

underground transmission line,[722] and any impact assessment should address if any structures and/or graves would be relocated or demolished to make way for the underground line, as well as how far from the underground line's ROW any structures and the cemetery would be.

- The Updated Hybrid Proposal's transition station on the BF Saul Real Estate property is on property that includes wetlands, and possibly a water body and stormwater features.[723] Route 1AA crosses the edge of this property, where it abuts the south side on Route 7.[724] The transition station would take up an approximately 7-acre footprint of this parcel.[725] The record does not indicate how much, and what type of, impact to these wetlands will result from construction and presence of the transition station.

- Dominion consulted Inova Loudoun Hospital about potential impacts to its helipad operations given two to four of the overhead Aspen-Golden Lines' standing structures are within 1,600 feet of the helipad.[726] The underground line portion of the Updated Hybrid Proposal will not have tall structures that may interfere with the helipad's operations. On September 11, 2024, Susan Carroll, President of Inova Loudoun Hospital, file comments stating, "If undergrounding were approved for Variation A on the south side of Route 7, it would eliminate the risk to Inova's emergency services helicopter operations and the potential risk of zoning noncompliance for Inova."[727]

Analysis of the Updated Hybrid Proposal: Other Concerns

Based on this record, a variety of additional questions about the Updated Hybrid Proposal and/or about undergrounding all or part of the Aspen-Golden Project in general bubble to the analytical surface. Those that weigh heaviest on my decision to recommend overhead Route 1AA, instead of the Updated Hybrid Proposal, follow.[728]

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[722] The Company does not permit buildings in easements for overhead transmission lines. *See* Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 191. *Cf.* Ex. 50 (Rosenberg Rebuttal) at 23 ("A basic principle of routing, however, is to avoid placing new rights-of-way through occupied buildings.").
[723] *See, e.g.*, Tr. at 649-50, 652-53 (Rosenberg).
[724] Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 2C.
[725] Tr. at 649-50 (Rosenberg).
[726] Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, p. 101.
[727] Comments of Susan Carroll at 2 (filed Sept. 11, 2024).
[728] In addition to the questions in the numbered list, I note there may be a procedural notice question with the Updated Hybrid Proposal. Code § 56-46.1 B establishes a notice requirement for a utility proposing a line of 138 kV or more. Before the Commission can approve a line, the owners of property within the route of the proposed line must receive 30 days' advance notice of the proposed line. This may be effected by "causing to be sent a copy of the notice by first class mail to all owners of property within the route of the proposed line, as indicated on the map or sketch of the route filed with the Commission." The notices must include both a written description of the line's proposed route and a map or sketch of the route. Further, Code § 56-46.1 E provides that "[i]n the event that … it appears to the Commission that consideration of a route or routes significantly different from the route described in the notice is desirable, the Commission shall cause notice of the new route or routes to be published and mailed in accordance with subsection B." Whether additional notice of the Updated Hybrid Proposal is warranted based on the particular facts and circumstances of the Aspen-Golden Case is a matter for the Commission's consideration. In at least one previous case, Dominion was directed by a Hearing Examiner to provide additional notice of an underground option for a previously noticed overhead transmission line, where the underground option

(1) The Aspen-Golden Project is an unprecedented undergrounding project. Undergrounding even a portion of the Aspen-Golden Lines would put this project in a class by itself. The Chino Hills line constructed by Southern California Edison, the most comparable underground 500 kV line to the Aspen-Golden Project, consists of one 500 kV line, with two cables per phase and a maximum current of 2,300 amps. By contrast, the Updated Hybrid Proposal calls for undergrounding a 500 kV line with five cables per phase, plus undergrounding a 230 kV line with four cables per phase, and a total maximum current of 9,000 amps.[729] For perspective, even Black & Veatch, which worked on the Chino Hills project,[730] proclaimed the loading requirements for these 500 kV and 230 kV lines to be "unusually high for underground transmission."[731] Loudoun County Witness Conroy described the requirements for this line as "you're approaching a quarter of the peak load of all of New England's electricity demand in the capacity of this line."[732]

(2) The Aspen-Golden Project is a reliability project that impacts far more customers than a few data centers whose service can be postponed. The Aspen-Golden Project is a reliability project; it is not optional. The Conservancy has characterized the Aspen-Golden Application as "a massive distribution line application to feed one industry that is very well-funded."[733] Counsel for the County asserted similarly that "[t]he need for Aspen-Golden is there, but it is driven by a capacity problem, not a true reliability problem, despite how it's characterized by PJM."[734] While data centers are one driver of the need for this project,[735] the evidence in this case does not support the claim that the Aspen-Golden Project is a distribution project masquerading under a "transmission reliability" label.

As discussed above, NERC, the entity tapped by FERC to be the electric reliability organization for the United States, has established mandatory reliability standards under federal law. PJM, Dominion, and Staff have all conducted load flow modeling that identified reliability thermal violations expected to occur by summer 2028. These projected violations would occur under both N-1 studies, meaning a violation occurs from the loss of only a single generation or transmission component, and Generation Deliverability studies, meaning the transmission system's ability to send output from generating units to the load requiring electricity is impacted.[736] In its 2022 Open Window #3, PJM sought projects that would address baseline

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was proposed to be situated in the same ROW as the overhead alternative. *Application of Virginia Electric and Power Company, d/b/a Dominion Virginia Power, For a certificate of public convenience and necessity for facilities in Stafford County: Garrisonville 230 kV Transmission Line and 230 kV-34.5 kV Garrisonville Switching Substation*, Case No. PUE-2006-00091, 2008 S.C.C. Ann. Rep. 343, Final Order (Apr. 8, 2008). *See also* the March 22, 2007 Hearing Examiner's Ruling in that case.

[729] *See, e.g.*, Ex. 50 (Rosenberg Rebuttal) at 37-38; Ex. 47 (Moulton Rebuttal) at 18-19.

[730] Tr. at 1507-08 (Moulton).

[731] Ex. 47 (Moulton Rebuttal) at Rebuttal Schedule 1, p. 4.

[732] Tr. at 790 (Conroy).

[733] *Id*. at 319 (B. Turner).

[734] *Id*. at 1784 (Winston). *But see, id*. at 1037 (Rizer) (responding, when asked his opinion of what is driving the need for the Aspen-Golden Project, "Well, I don't doubt that there's [a] resiliency part of it, but I think it's a capacity issue as well.")

[735] *See, e.g.*, Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 3, 6; Tr. at 407 (Amare).

[736] *See* Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 3; Ex. 38 (Aspen-Golden Staff Report) at 5 and n.11.

violations in 2027-2028 associated with (i) local constraints from serving data center loads in both the Allegheny Power Systems and Dominion zones; (ii) regional constraints resulting from imports to load centers; (iii) needed reactive power reinforcements; and (iv) reliability impacts from 11 gigawatts of generation being deactivated.[737] Both PJM's and Dominion's studies "have confirmed that by summer 2028, projected load growth will produce multiple contingency conditions that would cause thermal overloads in several parts of the system."[738]

PJM ultimately approved Dominion's proposal, including the components of the Aspen-Golden Project, for inclusion in the 2023 Regional Transmission Expansion Plan.[739] PJM designated the Aspen-Golden Project as a baseline project designed to address the identified NERC reliability thermal violations.[740] According to the PJM Staff White Paper submitted to the Transmission Expansion Advisory Committee, "Baseline analysis identifies *system violations* to reliability criteria and standards, determines the potential to improve the market efficiency and operational performance *of the system*, and incorporates any public policy requirements."[741]

The Aspen-Golden Project will support far more than a few high wattage use customers. Evidence in the record is that the project will (i) resolve NERC reliability violations expected by summer 2028; (ii) provide for future load growth in the Eastern Loudoun Load Area; and (iii) provide for future load growth in the regional transmission system as a whole.[742] There is evidence that absent the project, Dominion's ability to provide reliable service to its customers in the Eastern Loudoun Load Area – which is the Company's statutory duty – will be compromised.[743] Staff Witness Dodson explained:[744]

> If a transmission owner or utility fails to meet [the] in-service date for resolving NERC reliability corporation or NERC electric reliability corporation, reliability violations, it can lead to significant consequences, including financial penalties and heightened risk of power outages or system instability.
>
> ….
>
> In this case, according to the Company and PJM, if the Aspen-Golden [Lines are] not built by June 1st, 2028, it could result in major damage to the system should specific events occur. This major damage can include overloading the transmission system, which could result in outages that could last an extended period until the overload is rectified. Damage to breakers, switches,

[737] Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 62.
[738] *Id*. at Attached Appendix, p. 4.
[739] *Id*. at Attached Appendix, pp. 3-4. *See also id.* at Attached Appendix, pp. 66-68 for a description of the entire proposal of which the Aspen-Golden Project is a part.
[740] *Id*. at Attached Appendix, p. 3.
[741] *Id*. at Attached Appendix, pp. 78, 81 (emphases added).
[742] *Id*. at Attached Appendix, pp. 4, 13-16.
[743] *Id*. at Attached Appendix, p. 4. *See also* Code § 56-234 ("It shall be the duty of every public utility to furnish reasonably adequate service and facilities … to any person, firm or corporation along its lines desiring same.").
[744] Tr. at 1288-89 (Dodson).

> transformers, and conductors could occur, and many of these items are very long lead-time items, which would cause extended outages and affect thousands of customers in the Loudoun County area and beyond due to the 500 kV system serving most of Virginia.

Thus, the overarching reason for the Aspen-Golden Project is not to provide electric service to a few data centers whose needs can be postponed. Rather, the project is needed to address identified NERC violations, and their potential consequences to electric service for a large segment of customers, by June 1, 2028.

(3) The Updated Hybrid Proposal does not provide a realistic ROW, particularly during construction. County Witness Conroy defined ROW as a "critical routing and location decision[]."[745] Under RLC's proposal, the underground portion of the Aspen-Golden Lines would have a 100-foot ROW throughout its length, including a 60-foot permanent ROW and a 40-foot temporary ROW. At splice vault locations, the ROW would expand to 150 feet.[746] Dominion determined this ROW would be adequate only "under very specific, best-case-scenario conditions," and asserted these conditions "most likely do not apply to even a small percentage of the Updated Hybrid Route, let alone the three-mile route in its entirety" due to field conditions and thermal resistivity of soil.[747] To account for these conditions, such as having to underground below existing utilities, Dominion stated it would estimate an 85- to 115-foot permanent ROW for the Aspen-Golden Project. Company Witness Moulton also claimed that where a situation requires trenchless excavation, a much wider temporary and permanent ROW would be needed.[748]

The Updated Hybrid Proposal's ROW estimate seems unrealistically optimistic, given a 100-foot ROW is only adequate in highly favorable circumstances. Additionally, the undergrounding study conducted by Black & Veatch, which worked on the Chino Hills project, proposed a 115-foot wide permanent and construction ROW for XLPE trenched duct bank installation and much wider ROW for trenchless installation of an XLPE system. According to the study, micro-tunneling, the trenchless option using the least amount of ROW, still would require a permanent ROW of 220 feet and a construction ROW of 265 feet for a combined 500 kV/230 kV installation supporting a maximum load of 9,000 amps.[749] Commission Staff also expressed concerns about RLC's ROW estimate. Staff particularly focused on the additional ROW that would likely be needed for trenchless excavation in the area of the Route 7/Claiborne Parkway intersection. Staff Witness Dodson explained, "The increased right-of-way would be needed to accommodate large drilling rigs, entry/exit pits, cable storage, and materials, while also providing safe access for construction vehicles and crews."[750]

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[745] Ex. 20 (Conroy Direct) at 17.
[746] *See, e.g.*, Ex. 20 (Conroy Direct) at 7; Ex. 47 (Moulton Rebuttal) at 8.
[747] Ex. 47 (Moulton Rebuttal) at 8-9 and Rebuttal Schedule 5.
[748] *Id*. at 9-10.
[749] *Id*. at Rebuttal Schedule 1, pp. 2-3 through 2-5. *See also* Tr. 1507-08 (Moulton) (discussing Black & Veatch's work on the Chino Hills project).
[750] Tr. at 1289-90 (Dodson).

Also problematic is County Witness Conroy's assertion that "the [Updated Hybrid Proposal] uses substantially the same right-of-way as that proposed by Dominion."[751] Given the deviations of the underground route of the Updated Hybrid Proposal from the comparable portion of Route 1AA, I do not agree with this assessment. Further, the Updated Hybrid Proposal "[a]ssumed all ROW and real estate rights are existing, and allow for transmission lines installation."[752] Mr. Conroy claimed "[t]he procurement of right-of-way would be substantially equivalent to the proposed [overhead] route."[753] Questions of whether any ROW Dominion has procured for this project includes rights to underground, and whether the cost for these rights is the same as the cost of rights to install overhead poles, were not answered in the record.

(4) The timing of the need for the Aspen-Golden Project calls into question the feasibility of undergrounding. "The Commission, pursuant to Code § 56–46.1(B), determines whether a need for the proposed infrastructure exists. In doing so, … the Commission must assess the magnitude and timing of any such need."[754] The Aspen-Golden Project will not avert the above-described potential reliability repercussions if it is not constructed in a timely manner.

There is evidence in the record that undergrounding in the area proposed by the Updated Hybrid Proposal, and undergrounding transmission lines generally, can face multiple opportunities for schedule delays and cost increases. These include, but are not limited to:

> Rock. There is testimony in the record identifying the presence of diabase rock in Loudoun County and potentially along the route of the Updated Hybrid Proposal.[755] For example, during ground penetrating radar activities to search for unmarked burials on the JKLH Belmont Property near the African American Cemetery, the equipment, calibrated to detect down to 18 feet below the surface, could not actually penetrate beyond eight feet. Company Witness Rosenberg explained, "[T]he farthest that [ground penetrating radar] could penetrate into the ground was approximately … eight feet, and that's where it was actually bouncing off bedrock, unable to go down. So, in this area at least where they surveyed, it showed that that bedrock was no more than eight feet in depth through this area."[756] The area subject to radar was close to the path of the proposed Updated Hybrid Proposal where it crosses JKLH's property as it travels northward to Route 7.[757]
>
> In constructing both the Idylwood-Tysons 230 kV line in Fairfax County and the Haymarket Hybrid Route 230 kV line in Prince William and Loudoun Counties, Dominion experienced "significant hard rock" that caused "delays and

[751] Ex. 20 (Conroy Direct) at 13.
[752] *Id*. at Attached Exhibit BC-3, p. 6.
[753] *Id*. at 13.
[754] *BASF Corp. v. State Corp. Comm'n*, 289 Va. 375, 394, 770 S.E.2d 458, 468 (2015).
[755] *See, e.g.*, Ex. 50 (Rosenberg Rebuttal) at 18-19 and Rebuttal Schedules 7 and 8.
[756] Tr. at 1584-88 (Rosenberg). The quotation is located *id*. at 1588. *See also* Ex. 14 (Forrest Direct) at 4-7 and Attached Exhibit B.
[757] *Compare* Ex. 14 (Forrest Direct) at Attached Exhibit B, p. 6 (unnumbered) *with* Ex. 20 (Conroy Direct) at Attached Exhibit BC-4.

cost increases."[758] Rock has thus aggravated the schedules of two past undergrounding projects in Northern Virginia that used a combination of trenched and trenchless installation methods, as is anticipated with the Updated Hybrid Proposal.[759] Dominion Witness Moulton also testified that crews constructing the Beaumeade-NIVO 230 kV line in Loudoun County could not trench more than 50 feet per day for two duct banks approximately four feet wide, significantly smaller than the duct banks that would be required for the Aspen-Golden Project.[760]

The amount of rock that would be encountered when constructing the Updated Hybrid Proposal is unknown. RLC assumed the project would encounter 30% rock, an estimate Dominion Witness Moulton testified is "a good starting point."[761] RLC's estimate was based on its study of available geotechnical reports of properties in the area, which revealed a depth to bedrock varying between 2.5 and 13.5 feet. RLC noted, "The depth of bedrock will have an impact on the ease of excavation."[762] Dominion Witness Moulton also touched on the importance of geotechnical information, explaining that before undergrounding a line, the Company will take boring samples of the ground every 200-500 feet along the path of excavation to try to determine a percentage of rock that will be encountered during construction. He testified that "inevitably in my experience, we always get change orders because they encounter more rock than we had originally assumed."[763]

Sufficient time for excavating rock, or trenching under it, is therefore an essential component of the Aspen-Golden Project's schedule, if any portion of the project were to be undergrounded. RLC allotted 20 months of construction time, which incorporated a 30% rock assumption. Dominion advocated for a 36-month construction period put forward by its consultant Burns & McDonnell, which Dominion claimed was based on the information from the pace of excavation Dominion experienced with the Beaumeade-NIVO Project in Loudoun County.[764]

Crew and Equipment Availability. The record establishes is that some aspects of undergrounding work require specialized crews and equipment. Dominion Witness Moulton testified that trenchless transmission line installation adds risk to the schedule "because it's a very unique installation type. Getting the

[758] Ex. 49 (230+ kV Underground Chart). Note, however, that the Pleasant View-Hamilton 230 kV Line and Beaumeade-NIVO 230 kV line encountered hard rock, and the record does not indicate the presence of such rock caused project delays. Both of these projects were constructed in 2010 and appear to be completely trenched.
[759] *Id*. *See also, e.g*., Ex. 20 (Conroy Direct) at 16 (indicating the Updated Hybrid Proposal allows for trenchless construction under certain roadways); Ex. 21 (Underground Transmission Line Estimate Worksheet) (reflecting estimated costs for horizontal directional drilling (a form of trenchless excavation) were included in RLC's cost estimate for the Updated Hybrid Proposal).
[760] Tr. at 1474-75 (Moulton).
[761] Ex. 20 (Conroy Direct) at Exhibit BC-3, p. 6; Tr. at 1490 (Moulton).
[762] Ex. 20 (Conroy Direct) at 16.
[763] Tr. at 1475-76, 1489-90 (Moulton). The quotation is located *id*. at 1490.
[764] Ex. 20 (Conroy Direct) at 15; Ex. 47 (Moulton Rebuttal) at 15; Tr. at 1474-75 (Moulton).

contractors and equipment is one hurdle. You can't always get them when you want them, because they are limited."[765] He further stated that undergrounding a 500 kV line is "as technical as it gets," meaning "there's a smaller and smaller pool of technicians who can actually – who are certified to work on this type of equipment," and coordinating these crews, "who work all around the world," with a project's construction schedule adds complexity.[766]

Managing Existing Underground Infrastructure. Both the Company and the County acknowledged the presence of existing underground utilities (such as water, sewer, and fiber optic cables) in the Aspen-Golden Project area. There was dispute as to how many there are, though the evidence indicated there are at least 27 utilities the Updated Hybrid Proposal would cross or upon which it would encroach.[767] In such instances, the installer may need to move the existing utilities, impacting a project's cost estimate, schedule, and even an underground transmission line's route if not studied and coordinated in advance.[768] Alternatively, whether an installer may be able to go around or under existing utilities is situation-dependent. Company Witness Young testified to difficulties going around or under a stormwater pond, for example.[769]

RLC's projected schedule for the Updated Hybrid Proposal seems particularly ambitious given the project's variables and RLC's lack of detailed investigation into the project. For example, the schedule assumes engineering activities can be completed within 15 months, from October 1, 2024, through December 31, 2025.[770] RLC developed this time window without knowing how many existing utilities it would need to account for, which Mr. Conroy testified is an engineering activity.[771] Since Dominion determined there were multiple existing utilities[772] in the area proposed for undergrounding, it is unclear why RLC also could not have made this same determination. Mr. Conroy also stated that RLC did no environmental permitting or inspections along the proposed route, so it is unclear how RLC determined a permitting/approval schedule of March 1, 2024, through October 1, 2026.[773] RLC also provided no documentation showing how it derived the estimated timeframes for any of the major scheduling categories of engineering, permitting/approvals, cable procurement, and construction.[774]

Staff also expressed concern about the timing of constructing the Updated Hybrid Proposal. Mr. Dodson noted the Chino Hills project took twice as long to construct as

[765] Tr. at 1477-78 (Moulton).
[766] *Id*. at 1478-79 (Moulton).
[767] *See*, *e.g*., *id*. at 620-21 (Rosenberg) and 689-91 (Conroy). The evidence of 27 underground utilities is found in Ex. 50 (Rosenberg Rebuttal) at 17.
[768] Ex. 50 (Rosenberg Rebuttal) at 17-18.
[769] *See*, *e.g*., Tr. at 1356-58 (Young).
[770] Ex. 20 (Conroy Direct) at Attached Exhibit BC-3, p. 6.
[771] Tr. at 808 (Conroy) ("But, again, we've progressed, understanding now there's an estimated 27 conflicts in this path that would be during the engineering phase.").
[772] Ex. 50 (Rosenberg Rebuttal) at 16-18.
[773] Tr. at 816-17 (Conroy).
[774] *Id*. at 812 (Conroy).

anticipated, in a scenario where the constructing utility owned all the ROW needed for the project.[775]

(5) Undergrounding provides less flexibility to serve future customers. There is uncertainty how the Updated Hybrid Proposal would accommodate requests for power from two future data centers, on the JKLH Belmont Property and the JKLH Telos Property. These properties have reserved 5.7 acres and 2.7 acres, respectively, for future substations, which could be used to receive power from overhead lines. The record reflects these acreages are too small to each accommodate a 230 kV transition station plus the additional transmission and distribution infrastructure required to serve the customer.[776] The County contended these properties could be served from underground using gas insulated switchgear, which is more space-saving than serving the data centers from overhead. Such service "would be planned into the underground design."[777] However, the Updated Hybrid Proposal is not currently designed for such interconnections.[778] Additionally, if another property along the route would need delivery point service in the future, it is unknown whether gas insulated switchgear could be added or if the additional property would have to be served from overhead.

Analysis of the Updated Hybrid Proposal: Final Thoughts

I recognize the public pressure to underground the Aspen-Golden Project and transmission lines in this area more generally. There is evidence that Loudoun County is feeling the tension from its commitment "to maintaining its status as the epicenter of the world-wide data center industry while balancing its appeal as a historical and rural escape from its urbanized neighbors."[779] Keeping this dual commitment is perhaps exacerbated where the Aspen-Golden Lines are planned to proceed along Route 7, since the area originally "was supposed to be in [the County's] previous plans called a keynote employment area, and this is where [the County] envisioned large-scale office, you know, international companies; however, … things changed, and that's why [the County's] comprehensive plan now designates it as a suburban mixed used and also suburban employment area."[780] However, these pressures and commitments, among other evidence in the record, do not lead me to conclude the Updated Hybrid Proposal satisfies the applicable statutory criteria and thus should be approved to keep, from Route 7 and the surrounding area, overhead transmission lines that may be unwanted by many, but that satisfy the applicable statutory criteria and are needed.

According to the evidence in the Combined Cases, neither Dominion nor any other utility in the United States, has undergrounded a double circuit 500 kV/230 kV line with a maximum current of 9,000 amps. To undertake such a project and construct it so expediently and seamlessly to avoid reliability violations and possibly area-wide outages by June 1, 2028, would

[775] *Id*. at 1296-97 (Dodson).
[776] Ex. 26 (Joshi Rebuttal) at 4-5.
[777] Tr. at 699-701 (Conroy). *Accord, id*. at 703-04 ("So to design an interface to provide 230 kV service to these plots, we would have to design the vaults, one to be able to go in and out of the substation. So the vault locations and even perhaps the tapping vault configuration would have to be designed to accommodate that ahead of time. It needs to be planned into the detail design.").
[778] *See* Tr. at 740-41 (Conroy).
[779] Ex. 23 (Rizer Direct) at 1-2.
[780] Tr. at 939 (Giglio).

be a tall order if the Company had, in hand today, an undergrounding plan with a fully vetted route. But the Updated Hybrid Proposal does not contain a fully vetted route, nor does it contain analysis of how such route would impact the African American Cemetery, Loudoun Freedom Center, Belmont Chapel and Cemetery, wetlands, waterbodies, and other scenic, historic, and cultural resources, nor does it address environmental justice impacts. As Staff Witness Dodson testified, "[T]he proposal is not complete enough for an actual project."[781] RLC even admitted as much when Mr. Conroy stated, concerning the Updated Hybrid Proposal, that "We were demonstrating feasibility and providing a conceptual-level cost estimate."[782]

The Conservancy and County assert the Updated Hybrid Proposal "only needs to address the conceptual feasibility of undergrounding," and "All that is necessary is that we have a conceptually feasible plan to underground."[783] The provisions of Code §§ 56-46.1 and 56-265.2 are not so simplistic, requiring instead that the Commission undertake multifactorial balancing, including factors such as the magnitude and timing of the need the project is offered to meet; verification of the analysis the applicant provided to justify the project and its methods of installation; construction cost; environmental factors; reliability of service; and engineering feasibility, with the goal of determining "what best serves the 'total public interest.'"[784]

The record of this case illustrates numerous concerns about the viability of the Updated Hybrid Proposal, as discussed above. Given the concerns about the Updated Hybrid Proposal's route, constructability, and cost (as discussed below), and given the lack of environmental analysis and environmental justice analysis, I do not find that this proposal meets the applicable statutory criteria for CPCN issuance. Nor do I find, based on the record in this case, that the total public interest is best served by a project that, to protect viewshed and the place types of an area, would jeopardize electric reliability for a swath of people across a much wider area.

The proposed Aspen-Golden Project, with overhead Route 1AA, in contrast, is a fully developed proposal ready for Commission approval. There is a start and an end to these lines. Every structure has been plotted, subject to final engineering.[785] The environmental, cultural, and scenic impacts have been considered. Environmental justice has been analyzed. Impacts to historic resources and protected species have been considered. There is evidence this project is achievable in the time allotted to prevent projected violations of NERC Reliability Criteria. In Staff's words, "[T]he overhead route remains the only feasible and economical option for the Aspen-Golden lines to address the need identified in the Company's [Aspen-Golden A]pplication."[786]

Notably, Loudoun County also supports overhead Route 1AA. In a letter to Dominion dated March 21, 2024, the County stated, "The County supports the construction of Route 1, Belmont Park Variation A, and the Broad Run Variation A route which parallel Leesburg Pike

[781] *Id*. at 1296-97 (Dodson).
[782] *Id*. at 699 (Conroy).
[783] *Id*. at 1704 (B. Turner) and 1731 (Winston).
[784] *BASF v. State Corp. Comm'n*, 289 Va. 375, 394-95, 770 S.E.2d 458, 468 (2015) (citing and quoting *Board of Supervisors v. Appalachian Power Co*., 216 Va. 93, 104, 215 S.E.2d 918, 926 (1975)). 925 (1975) (emphasis added).
[785] *See, e.g*., Ex 4 (Aspen-Golden Application) at Attached Appendix, pp. 224-32.
[786] Tr. at 1297-98 (Dodson).

(Route 7) and Loudoun County Parkway (Route 607) as it provides the most direct route and results in the least impact on environmental resources."[787] During the hearing, County Witness Giglio confirmed this statement remains the County's position.[788]

Scenic Assets, Historic Resources, and Environmental Concerns

In recommending Aspen-Golden Route 1AA for Commission approval, I considered whether this route "will avoid or reasonably minimize adverse impact to the greatest extent reasonably practicable on the scenic assets, historic resources recorded with the Department of Historic Resources, and environment of the area concerned," in keeping with Code § 56-46.1 B. On May 13, 2024, DEQ filed the DEQ Report, summarizing the Aspen-Golden Project's potential impacts to natural and cultural resources in Virginia.[789] In addition to requirements of local, state, or federal law, the DEQ Report included several recommendations made by the reviewing agencies for the Commission's consideration.

The record identifies efforts by Dominion to minimize impacts to the local area. Among other things, the Company has prioritized avoiding existing residences and has worked with developers such as Beazer Homes to minimize impacts to an approved residential development.[790] Dominion has worked with JKLH and Pastor Thomas to minimize impacts to the JKLH Belmont Property and preserve the opportunity for JKLH to donate land for the Loudoun Freedom Center, located beside the African American Cemetery. The Company has also worked to modify its transmission structures to minimize impacts to Community Church's property along the edge of Route 7, preserving both the church's visibility to the community and Virginia Academy's plans to develop an athletic field in the transmission line right of way.[791] The Company also strategized the Aspen-Golden Project's crossing of Goose Creek with that of the Apollo-Twin Creeks Project to minimize impacts to this resource as much as possible.[792] Moreover, the selection of Route 1AA limits the Aspen-Golden Project's impacts to homes north of Route 7 as well as the Inova Loudoun Hospital helipad and impacts the lesser amount of wetlands in the Broad Run portion of the route.[793] The route avoids all physical impact to the Lansdowne Scenic Easement and limits its impact on the Belmont Viewshed Easement to only two transmission structures.[794] Moreover, Dominion has developed this project within the constraints that load growth is toward the eastern portion of Loudoun County, generation is located to the west, and there are limited options for west-to-east corridors in this area.[795]

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[787] Ex. 22 (Giglio Direct) at Attached Exhibit WPG-4, p. 6.
[788] Tr. at 975-76 (Giglio).
[789] Ex. 30 (Aspen-Golden DEQ Report) at Cover Letter, p. 1 (unnumbered).
[790] *See, e.g.*, Ex. 4 (Aspen-Golden Application) at Attached Environmental Routing Study, pp. 50 and 52. *See also* Tr. at 110-16 (discussion between Mr. John McBride, Esquire, representing Beazer Homes, and counsel for the Company).
[791] For a discussion of the JKLH Belmont Landbay KK Variation and the Community Church Proposed Modified Segment, *see generally*, Ex. 41 (Vinson Rebuttal).
[792] *See, e.g.*, Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 197-98.
[793] *See, e.g., id*. at Attached Appendix, pp. 452-55 and at Attached Environmental Routing Study, p. 50.
[794] *Id*. at Attached Environmental Routing Study, p. 78. *See also* Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 2 of 5A (showing Route 1 in blue, between Route 7/Leesburg Pike and Russell Branch Parkway (Planned) in white).
[795] Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 5.

On this record, I find that Aspen-Golden Route 1AA avoids or reasonably minimizes adverse impacts to the greatest extent reasonably practicable to environmental, historic, and scenic resources.

DEQ Report Recommendations

Code § 56-46.1 A directs the Commission to consider the effect of proposed transmission line projects "on the environment and establish such conditions as may be desirable or necessary to minimize adverse environmental impact." I find it desirable or necessary to establish the uncontested recommendations of the Aspen-Golden DEQ Report as conditions for approval of the Aspen-Golden Project.

I discuss below the DEQ Report recommendations contested by Dominion. Where the same issues arise with respect to the Apollo-Twin Creeks DEQ Report, I address the matter as pertaining to both projects here, for convenience.

Locating Wells. The VDH Office of Drinking Water recommended Dominion field-verify locations of wells within a 1,000-foot radius of the Aspen-Golden Project site to protect them from accidental damage during construction.[796] The Company took issue with this requirement. Company Witness Young explained that water wells within the 1,000-foot radius may be beyond the transmission line corridor and on private property, in which case Dominion has no ability or right to field-mark them.[797] According to the DEQ Supplement, in August 2021 the Company and VDH's Office of Drinking Water discussed this matter in regard to another Dominion project. In that situation, Dominion proposed to plot and call out the wells on erosion and sediment control plans. The agency agreed this approach was reasonable.[798] For the Aspen-Golden Case, the Company requested to follow this same approach. Mr. Young confirmed Dominion will coordinate with VDH's Office of Drinking Water as needed.[799]

Based on this evidence, I conclude Dominion's proposed method is reasonable. I note the Commission has adopted this method for other transmission projects as well.[800]

Petroleum Release Sites. In the Aspen-Golden and Apollo-Twin Creeks DEQ Reports, DEQ-DLPR requested that Dominion further evaluate five and three petroleum release sites,

[796] Ex. 30 (Aspen-Golden DEQ Report) at 22.
[797] Ex. 43 (Young Rebuttal) at 31; Ex. 4 (Aspen-Golden Application) at Attached DEQ Supplement, p. 61.
[798] Ex. 4 (Aspen-Golden Application) at Attached DEQ Supplement, pp. 61-62 and Attachment 2.P.2.
[799] Ex. 43 (Young Rebuttal) at 31.
[800] *See, e.g., Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: 500-230 kV Wishing Star Substation, 500 kV and 230 kV Mars-Wishing Star Lines, 500-230 kV Mars Substation, and Mars 230 kV Loop*, Case No. PUR-2022-00183, 2023 S.C.C. Ann. Rep. 295, 299, Final Order (Apr. 5, 2023).

respectively, to determine the location, nature, and extent of release, as well as the potential to impact one or both projects.[801] The petroleum release sites are:[802]

Aspen Report?	Apollo Report?	Pollution Complaint No.	Occurrence or Report Date	Date Closed
Yes	No	19901824	June 5, 1990	1994
Yes	No	19910186	August 1990[803]	1995
Yes	Yes	20223034	August 29, 2021	March 2022
Yes	Yes	19880981	May 19, 1988	June 1995
Yes	Yes	19921766	Nov. 26, 1991	1993

As the chart above reflects, the record indicates these petroleum release sites are all closed and that all but one has been closed for more than 29 years. Based on the record, I do not find Dominion should be required to further evaluate these closed sites. I note the Commission has acted similarly in the past.[804]

Ecological Cores. Both the Aspen-Golden and Apollo-Twin Creeks DEQ Reports include a recommendation from DCR-DNH that the Company avoid impacts to ecological cores and, when avoidance is unachievable, minimize the impact area and concentrate any impact at the edges of cores.[805] Dominion Witness Young asserted Dominion already tries to avoid ecological cores where feasible and to minimize impacts where they are unavoidable or impracticable. The record evidence in this case is that impacts to cores along both projects' routes or route variations are, however, unavoidable.[806]

All ecological cores crossed by the projects' proposed and alternate routes or within a substation site are ranked as C4 (Moderate) or C5 (General), the lowest two rankings of ecological integrity.[807] Moreover, all ecological cores impacted by the Apollo-Twin Creeks Project are in locations where future development is planned, which will remove vegetation.[808] Similarly, the DEQ Supplement attached to the Aspen-Golden Application explains, "Most cores crossed are fragmented by either tree clearing or existing transmission or distribution lines. The selected route will segment portions of the cores crossed; however, it is unlikely the core rank

[801] Ex. 30 (Aspen-Golden DEQ Report) at 15-16 and attached memorandum from Nikolas I. Churchill, DLPR Review Coordinator, to Janine Howard, Office of Environmental Impact Review at DEQ (dated Apr. 23, 2024); Ex. 29 (Apollo-Twin Creeks DEQ Report) at 14-15 and attached memorandum from Nikolas I. Churchill, DLPR Review Coordinator, to Megan Black, Office of Environmental Impact Review of DEQ (dated Apr. 29, 2024).
[802] Ex. 43 (Young Rebuttal) at 6-9, 11-13. *See also, e.g.*, Ex. 30 (Aspen-Golden DEQ Report) at 16; Ex. 29 (Apollo-Twin Creeks DEQ Report) at 15.
[803] Mr. Young states this petroleum release occurred on August 8, 1990. Ex. 43 (Young Rebuttal) at 7. DEQ-DLPR records this release as occurring on August 20, 1990. Ex. 30 (Aspen-Golden DEQ Report) at 16.
[804] *See, e.g., Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: Lines #2019 and #2007 Rebuild Project*, Case No. PUR-2023-00023, 2023 S.C.C. Ann. Rep. 386, 390-91, Final Order (Aug. 24, 2023).
[805] Ex. 30 (Aspen-Golden DEQ Report) at 19; Ex. 29 (Apollo-Twin Creeks DEQ Report) at 19.
[806] Ex. 43 (Young Rebuttal) at 15-16.
[807] *Id*. *See also* Ex. 4 (Aspen-Golden Application) at Attached DEQ Supplement, pp. 31-33; Ex. 5 (Apollo-Twin Creeks Application) at Attached DEQ Supplement, pp. 21-22.
[808] Ex. 5 (Apollo-Twin Creeks Application) at Attached DEQ Supplement, p. 22. *See also* Ex. 43 (Young Rebuttal) at Rebuttal Schedule 1.

will decrease significantly due to the presence of existing transmission/distribution lines or clearing within the cores."[809] Additionally, Dominion has collocated the Aspen-Golden and Apollo-Twin Creeks Lines together and has collocated portions of these lines along existing infrastructure such as roads and buried utility lines to minimize the fragmentation of ecological cores or forests.[810]

The evidence indicates the Company already is making efforts to avoid and minimize fragmentation of ecological cores where it can. Moreover, the evidence shows that several of the ecological cores already have been fragmented or will be subject to disturbance by developers. Accordingly, I recommend the Commission not condition approval of the Aspen-Golden and Apollo-Twin Creeks Projects on avoidance of impacts to ecological cores and, when avoidance is unachievable, to minimize the impact area and concentrate any impact at the edges of cores.[811]

Rare Species. The record indicates some confusion between DCR-DNH and the Company as to what should occur concerning rare species.[812] Dominion took issue with DCR's statement in each DEQ Report that "when rare species are possible within the project area, DCR-DNH recommends that experts survey for rare species, rather than informing construction crews about the rare species and requesting they identify them in the field as suggested by the applicant, to prevent detrimental impacts to these species."[813] The Company asked the Commission to reject this suggestion for both the Combined Cases and for future projects. Company Witness Young asserted that since rare species are not endangered or threatened, they do not enjoy protection by regulation. He claimed that requirements for a survey, and for the Company to use a botanist to identify rare species, would lead to additional project costs and delays. He confirmed Dominion will coordinate with required agencies during the ultimate project design stage.[814]

My reading of the DEQ Reports suggests DCR is not requesting a survey for non-listed rare plants for the Aspen-Golden and/or Apollo-Twin Creeks Projects. Rather, DCR appeared to be attempting to clarify what it believed were misrepresentations about its position regarding the projects, as reported in the projects' DEQ Supplements. Nevertheless in the Apollo-Twin Creeks

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[809] Ex. 4 (Aspen-Golden Application) at Attached DEQ Supplement, p. 33. *See also* Ex. 43 (Young Rebuttal) at Rebuttal Schedule 1.

[810] Ex. 4 (Aspen-Golden Application) at Attached DEQ Supplement, pp. 19-20; Ex. 5 (Apollo-Twin Creeks Application) at Attached DEQ Supplement, pp. 4 and 29.

[811] The Commission has declined to adopt a similar DCR-DNH recommendation in the past. *See, e.g., Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: 500-230 kV Unity Switching Station, 230 kV Tunstall-Unity Lines #2259 and #2262, 230.36.5 kV Tunstall, Evans Creek, Raines Substations, and 230 kV Substation Interconnect Lines*, Case No. PUR-2022-00167, 2023 S.C.C. Ann. Rep. 269, 274, Final Order (June 14, 2023) ("Because the evidence shows impacts to core habitats are unavoidable along any of the Project's Proposed or Alternative routes, and because the Company has demonstrated that its Proposed Routes were designed to minimize, to the extent practicable, impacts to cores with very high to outstanding ecological integrity, while at the same time responding to concerns raised by the impacted Counties and local communities, the Commission declines to adopt [DCR-DNH's] broad recommendation for the Company to avoid or minimize impacts to ecological cores and to further investigate direct and indirect impacts to the cores." (Internal citation omitted.)).

[812] *Compare, e.g.*, Ex. 4 (Aspen-Golden Application) at Attached DEQ Supplement, pp. 24-30, *with* Ex. 30 (Aspen-Golden DEQ Report) at 18-19.

[813] Ex. 30 (Aspen-Golden DEQ Report) at 18-19; Ex. 29 (Apollo-Twin Creeks DEQ Report) at 19.

[814] Ex. 43 (Young Rebuttal) at 20-22.

DEQ Report, DCR acknowledged "that the area of diabase with the Proposed Apollo-Twin Creeks Lines Route 1 project is poor habitat and a survey is not recommended for the associated rare plants."[815] Similarly, in the Aspen-Golden DEQ Report, DCR stated that "based on a DCR biologist's review of the refined project area (Proposed Route 1AA), a survey is not recommended for the associated resources."[816]

Given that DCR does not recommend surveys for non-listed rare plants for the Aspen-Golden and Apollo-Twin Creeks Projects, no finding or recommendation appears needed in this Report as to the adequacy, or inadequacy, of Dominion informing construction crews about rare species versus hiring a botanist to perform a survey for these plants. There is potential for one state-listed threatened plant, Torrey's Mountain Mint, to occur in the Apollo-Twin Creeks Project study area.[817] But Torrey's Mountain-mint is not just a rare plant; it is listed in the Virginia Department of Agriculture and Consumer Services' regulations as state-threatened.[818] Accordingly, Dominion must follow any laws or regulations, and obtain any relevant permits, concerning the avoidance and/or handling of this species, including surveys by botanists or other scientists if such is required.

Invasive Species Management Plan. In each DEQ Report, DCR-DNH recommended Dominion develop and implement an invasive species management plan as part of its ROW maintenance practices. DCR-DNH also recommended that such plan include an invasive species inventory for the relevant project area.[819] Dominion balked at these recommendations and requested the Commission to reject them, explaining the Company already has an Integrated Vegetation Management Plan ("IVMP") that incorporates multiple methods to control vegetation, including invasive species. Company Witness Young asserted the IVMP is consistent with the standards of national organizations and incorporates mowing and/or selective approved herbicide applications to destroy vegetation threatening the transmission system while promoting the retention of desirable flora. He averred developing a separate invasive species plan for the Aspen-Golden and Apollo-Twin Creeks Project areas could increase costs and create project delays. He confirmed the Company and DCR-DNH have been in communications about an addendum to Dominion's IVMP addressing invasive species. DCR provided a response to Dominion's proposed addendum in January 2024, and the addendum is not yet finalized.[820]

The Commission has rejected this DCR-DNH request several times.[821] I recommend the same, consistent with Commission precedent.

ROW Restoration and Maintenance. DCR-DNH recommended, for both the Aspen-Golden and Apollo-Twin Creeks Projects, that Dominion's ROW restoration and maintenance

[815] Ex. 29 (Apollo-Twin Creeks DEQ Report) at 18.
[816] Ex. 30 (Aspen-Golden DEQ Report) at 18.
[817] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, pp. 64-73.
[818] 2 VAC 5-320-10 (C) (13).
[819] Ex. 30 (Aspen-Golden DEQ Report) at 19; Ex. 29 (Apollo-Twin Creeks DEQ Report) at 19.
[820] Ex. 43 (Young Rebuttal) at 24-26.
[821] *See, e.g., Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: 500-230 kV Unity Switching Station, 230 kV Tunstall-Unity Lines #2259 and #2262, 230.36.5 kV Tunstall, Evans Creek, Raines Substations, and 230 kV Substation Interconnect Lines*, Case No. PUR-2022-00167, 2023 S.C.C. Ann. Rep. 269, 274-75, Final Order (June 14, 2023).

practices include revegetation using native species, with robust monitoring and an adaptive plan if initial revegetation attempts are unsuccessful or an outbreak of invasive species emerges.[822] The Company asserted its IVMP already addresses revegetation and maintenance of transmission ROWs. The Company maintained additional monitoring or planning would duplicate current efforts and potentially increase project costs. The Company requested the Commission reject this recommendation.[823]

I agree, in keeping with Commission precedent, that requiring these measures beyond what is in the Company's IVMP is duplicative.[824] I recommend the Commission reject this DCR-DNH recommendation.

Cost

The Aspen-Golden Application represented the cost of Route 1AA, in 2023 dollars, is $688.6 million, composed of $171.1 million for transmission-related work ($61 million of which is for real estate costs) and $517.5 million for substation-related work.[825] The costs for work related to the 230 kV transmission lines would be allocated to the PJM DOM Zone and ultimately paid by customers in, or served by, that transmission zone. Costs for the 500 kV portion of the overhead project would be shared by customers in all transmission zones across PJM.[826] The reasonableness of the estimated cost of the Aspen-Golden Project, utilizing Route 1AA, is not disputed and, in my assessment, is supported by the evidence.[827]

County Witness Conroy provided a cost estimate for the Updated Hybrid Proposal. He calculated a cost of $478 million for the underground portion of the line, which is $423 million more expensive than a three-mile portion of the overhead lines Dominion proposed. In total, Mr. Conroy estimated the Aspen-Golden Project with the Updated Hybrid Proposal would cost approximately $1.112 billion, compared to $689 million for the overhead route only.[828] Staff testified the three-mile underground segment of the Updated Hybrid Proposal would cost approximately 8.7 times the cost to install those same three miles overhead.[829]

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[822] Ex. 30 (Aspen-Golden DEQ Report) at 19; Ex. 29 (Apollo-Twin Creeks DEQ Report) at 19.
[823] Ex. 43 (Young Rebuttal) at 26-27.
[824] *See, e.g., Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: 230 kV Altair Loop and Altair Switching Station*, Case No. PUR-2022-00197, 2023 S.C.C. Ann. Rep. 310, 314-15, Final Order (June 7, 2023).
[825] Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 55; Tr. at 1341 (Vinson). *See also* Ex. 42 (Company Response to JKLH Set 2-1). The costs were later updated to 2024 dollars: $700.1 million for the Aspen-Golden Project, including $176.9 million for transmission costs and $523.2 million for substation work. This update was made by *errata* Dominion filed on August 23, 2024, which was incorporated into Exhibit 4.
[826] Tr. at 1330-32 (Amare).
[827] Dominion does not anticipate changes to transmission-related conceptual costs due to the JKLH Belmont Landbay KK Variation or the Community Church Proposed Modified Segment. Ex. 41 (Vinson Rebuttal) at 3-5.
[828] *See, e.g.*, Ex. 20 (Conroy Direct) at 16 and Attached Exhibit BC-3, p. 1. Dividing 9.4 miles into $171.1 million total for transmission-related work equates to a cost of $18.2 million per mile. Since three miles of the overhead route would be replaced by the Updated Hybrid Proposal, Mr. Conroy determined the underground option would supplant approximately $55 million ($18.2 million x 3 miles = $54.6 million) of Dominion's projected costs for the overhead route. *See id.* at Attached Exhibit BC-3, p. 1; Tr. at 719-21 (Conroy).
[829] Tr. at 1294 (Dodson).

Dominion questioned several aspects of the Updated Hybrid Proposal's underground cost estimate. Among other reasons, Dominion faulted this estimate for not including costs for shunt reactors and their associated breakers, disconnect switches, and surge arrestors, which would cost approximately $21.4 million per transition station, for a total of $42.8 million missing from Mr. Conroy's estimate.[830] The Company also questioned RLC's estimated cost for excavation if, during undergrounding, the Company were to encounter rock for up to 30% of the route. Dominion claimed RLC vastly underestimated the cost to excavate this amount of rock. Instead of $5 million, Dominion estimated that excavating the rock would cost between $53 million and $77 million. Dominion Witness Moulton also testified the Company uses an overall 30% to 40% contingency for underground projects, not 10% as RLC assumed. After making all its adjustments, Dominion estimated the cost for the Updated Hybrid Proposal alone to be $830 million, before calculating the -50% to +200% tolerance range.[831] Based on this evidence, I find the cost estimate for the Updated Hybrid Proposal is understated.

Staff Counsel did not question the cost of the Updated Hybrid Proposal but cited a FERC case finding that it was not just and reasonable for wholesale transmission customers in the DOM Zone, but located outside Virginia, to be allocated the incremental costs of undergrounding three projects. FERC held:[832]

> All three projects were undergrounded pursuant to either Virginia state legislation or at the direction of the [Virginia State Corporation Commission]. Parties provide no indication that the Projects were constructed underground for reliability reasons, and each of the Projects incurred substantially higher costs than the feasible estimated overhead alternative. It follows that, as a consequence of these initiatives by the Commonwealth of Virginia, only Virginia customers benefit from the incremental cost of undergrounding the facilities. The North Carolina customers do not receive benefits from the undergrounding of the Projects that justify allocating the substantially higher costs of undergrounding to these customers.

The implications of this FERC ruling suggest that should the Commission approve the Updated Hybrid Proposal, Virginia customers will likely bear the full weight of the cost of undergrounding.

Numerous public witnesses requested that the Commission require data centers and/or other high-wattage users to pay for the cost to underground the Aspen-Golden Project. The Commission decides retail cost allocation and/or rate design issues *(e.g.*, who pays the costs of a transmission line project) in ratemaking proceedings separate from the Commission's consideration in CPCN proceedings of whether a proposed transmission line meets the statutory

[830] *See, e.g.*, Ex. 21 (Underground Transmission Line Estimate Worksheet); Tr. at 1217-20 (Joshi).
[831] Tr. at 1486-94 (Moulton).
[832] *Old Dominion Elec. Coop. and North Carolina Elec. Membership Corp. v. Virginia Elec. & Power Co.*, Docket No. EL10-49-000, 146 F.E.R.C. 61200, 61967-61968, Order on Reserved Issue (Mar. 20, 2014).

criteria for approval.[833] I agree with counsel for Visa that this case is not the proper venue for making such a rate determination.[834] As the Commission has held in a prior case, the "comparison of the proposed routes for purposes of applying the statutory criteria for transmission line approval is separate from subsequent questions regarding cost allocation and rate design – which may change over time – applicable to the ultimate recovery of transmission costs from retail rate classes."[835] One option is for the Commission to require Dominion to address the matter of a potential high-wattage user rate in an applicable rate proceeding.

On October 2, 2024, the Commission established a proceeding to comprehensively explore "current and projected future challenges presented by serving various types of large-use, hyperscale customers from the perspective of utility consumer services cooperatives …, investor-owned electric utilities …, existing customers, and potential new load."[836] Among the questions the Commission may examine through this proceeding are questions concerning "[w]hether the Commission should establish, on a going-forward basis, a tariff framework applicable to these large-use customers and the specific terms of service that it should include," as well as whether certain generation and/or transmission costs should be directly assigned to large-use customers.[837] Thus, though I do not address cost allocation and rate design questions pertaining to the Aspen-Golden and Apollo-Twin Creeks Projects in this Report, the Commission is considering these types of questions in Case No. PUR-2024-00144.

Finally, Ms. Ghiorzi requested the Commission deny the Aspen-Golden Application to "[p]lace the data center energy demand issue squarely back onto the shoulders of the Loudoun County Board of Supervisors and the representatives of Loudoun and the Virginia legislature." She stated that with such denial, "[s]pecific legislation can be drafted such as was done for the Haymarket underground project."[838] As noted earlier, however, I find the Aspen-Golden Project is needed to meet projected load in the Eastern Loudoun Load Area and to prevent projected NERC reliability violations. I therefore conclude it would be imprudent to deny the Aspen-Golden Application pending future and uncertain Board of Supervisors or General Assembly action as to cost.[839]

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[833] *See Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: Haymarket 230 kV Double Circuit Transmission Line and 230-34.5 kV Haymarket Substation*, Case No. PUE-2015-00107, 2017 S.C.C. Ann. Rep. 295, 301, Interim Order (Apr. 6, 2017).
[834] Tr. at 1738-39 (Khaira).
[835] *Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: Haymarket 230 kV Double Circuit Transmission Line and 230-34.5 kV Haymarket Substation*, Case No. PUE-2015-00107, 2017 S.C.C. Ann. Rep. 295, 301, Interim Order (Apr. 6, 2017).
[836] *Commonwealth of Virginia, ex rel. State Corporation Commission, Ex Parte: Electric Utilities and Load Growth*, Case No. PUR-2024-00144, Scheduling Order and Notice of Technical Conference at 1-2 (Oct. 2, 2024).
[837] *Id.* at 2.
[838] Tr. at 1752 (Ghiorzi).
[839] The County already could have acted to establish a special tax district to pay for the additional cost of undergrounding the Aspen-Golden Lines or some part thereof. Code § 15.2-2404 F provides such a vehicle. Mr. Rogers, County Attorney for Loudoun County, represented that "[t]he need is being generated by the high wattage users elsewhere, and those high wattage users should be paying for this. … We cannot tax high wattage users to underground a transmission line in this area. It does not fit under 2404." Tr. at 938. This Code provision nonetheless could be viewed as a viable option for the situation presented by the Aspen-Golden Project. Within implementation of a special tax district, those Loudoun County property owners (including data centers themselves) who enjoy the purported benefits of undergrounding would pay the costs for such while others in the County, whose lines would be overhead, would not have to share the additional costs for undergrounding.

Public Health and Safety

Section IV of the Aspen-Golden Application Appendix discusses EMF levels that can be expected from the project and provides a summary of research on the health effects of EMF. The Company reported the consensus of multiple agencies studying this topic, "that the scientific evidence does not confirm that common sources of EMF in the environment, including transmission lines and other parts of the electric system, appliances, etc., are a cause of any adverse health effects."[840]

The Company also provided testimony from Dr. Gabor Mezei. He testified that effects to the general public from EMF have been studied for 50 years, and "[n]one of these agencies that relied on valid scientific methods concluded that EMF exposure encountered by the general public in their environment, including EMF exposure from power lines and substations, is the cause of any adverse health effects."[841] As for concerns about cancer, Dr. Mezei stated, "While some limited evidence based on a statistical association in some of the childhood leukemia epidemiologic studies was recognized by these organizations, they all concluded that chance, bias, and confounding could not be excluded as an explanation for the reported associations; the epidemiologic evidence for all other cancer and non-cancer health outcomes among children or adults were considered inadequate by the above reviews."[842]

According to Dr. Mezei, there are no federal or Virginia-specific standards for 60-Hertz EMF exposure. However, two organizations have developed scientific exposure guidelines. The International Commission on Non-Ionizing Radiation Protection updated its limits in 2010, determining that for the general population, the reference level at 60 Hertz is 4.2 kV/m for electric fields and 2,000 mG for magnetic fields. The International Committee of Electromagnetic Safety updated its limits in 2019 to 5 kV/m for electric fields and 9,040 mG for magnetic fields.[843]

According to the Aspen-Golden Application, EMF levels at the ROW edges for the Aspen-Golden Project, at projected average and peak loading for a typical span, are as follows:[844]

At the left edge of the ROW looking toward the Golden Substation:

Span	Average Loading	Peak Loading

[840] Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 467.
[841] Ex. 34 (Mezei Rebuttal) at 3.
[842] *Id*. at 7. The organizations Dr. Mezei refers to are: the United States National Institute of Environmental Health Sciences, the International Agency for Research on Cancer, the National Radiological Protection Board, the World Health Organization, the International Commission on Non-Ionizing Radiation Protection, the European Union's Scientific Committee on Emerging and Newly Identified Health Risks, and the European Union's Scientific Committee on Health, Environmental and Emerging Risks. *Id*. at 6-7.
[843] *Id*. at 11-13.
[844] Ex. 4 (Aspen-Golden Application) at Attached Appendix, pp. 176-78, 465-66. Note where the Aspen-Golden Lines are not collocated, the ROW varies from 100 to 150 feet. Where the Aspen-Golden Lines and the Apollo-Twin Creeks Lines are collocated, the ROW varies from 200 to 260 feet, for an average of 225 feet. *Id*. at Attached Appendix, pp. 7, 175-78 and n.37. For reference, the Aspen-Golden Application provides diagrams at Attachments II.A.5.a (for the 150-foot ROW), II.A.5.b (for the 225-foot ROW), and II.A.5.c (for the 100-foot ROW). *Id*. at 176-78.

	Electric (kV/m)	Magnetic (mG)	Electric (kV/m)	Magnetic (mG)
Project lines alone (100-foot ROW)	2.422	28.558	2.441	48.251
Project lines alone (150-foot ROW)	1.820	33.537	1.839	56.671
Collocated lines (225-foot ROW average)	0.453	31.273	0.447	52.313

At the right edge of the ROW looking toward the Golden Substation:

Span	Average Loading		Peak Loading	
	Electric (kV/m)	Magnetic (mG)	Electric (kV/m)	Magnetic (mG)
Project lines alone (100-foot ROW)	1.534	66.443	1.533	113.403
Project lines alone (150-foot ROW)	1.820	33.539	1.839	57.675
Collocated lines (225-foot ROW average)	1.545	42.592	1.562	71.921

This data reveals the highest electric field exposures from the Aspen-Golden Lines are at the left edge of the 100-foot ROW, estimated to be 2.422 kV/m at average loading and 2.441 kV/m at peak loading. These figures are substantially lower than the recommended limits of 4.2 kV/m and 5.0 kV/m identified by Dr. Mezei. The highest magnetic field exposures from the Aspen-Golden Lines are at the right edge of the 100-foot ROW, estimated to be 66.443 mG during average loading and 113.403 mG during peak loading. Again, these figures are far lower than the recommended limits of 2,000 mG and 9,040 mG identified by Dr. Mezei.[845]

In response to Laborers' Council Witness Brown's assertion that EMF exposure is reduced by undergrounding transmission lines, Dr. Mezei acknowledged that, compared to overhead transmission lines, magnetic field levels from underground cables dissipate more quickly with distance from the lines. He added, however, that "magnetic[]field levels directly above an underground line may be higher than magnetic-field levels directly under an overhead line."[846] He explained that since magnetic field exposure from the proposed overhead lines already are below scientifically established limits, "Any further reduction in these values is not associated with any proven health benefits because the scientific evidence does not confirm the existence of any adverse health effects in association with magnetic[]field levels below these scientifically established guideline values."[847]

I find there is sufficient record evidence that the public health and safety will not be harmed by the construction and operation of the Aspen-Golden Project, either with overhead or underground lines. Assuming the Commission issues a CPCN for the Aspen-Golden Lines,

[845] *See* Ex. 34 (Mezei Rebuttal) at 13.
[846] *Id*. at 18-19.
[847] *Id*. at 19.

depending on the approved method of installation, Community Church's planned athletic field will be situated either directly below the overhead Aspen-Golden Lines, or directly above the underground Aspen-Golden Lines.[848] Based on Dr. Mezei's testimony as quoted above, users of this athletic field may receive less magnetic exposure if the Aspen-Golden Lines were placed overhead than if the lines were placed underground.

Environmental Justice

Dominion addressed environmental justice, stating it researched the demographics of communities surrounding the Aspen-Golden Project using the U.S. Census Bureau's American Community Survey 5-Year Estimates (2018-2022).[849] This research revealed there are 48 CBGs within the Aspen-Golden Project study area and within one mile of the Aspen-Golden transmission line route options. Dominion determined 12 of the 48 CBGs are crossed by one or more route options. Of these 12 CBGs, four CBGs appear to have populations of color; two CBGs appear to have populations with limited speakers of English; three CBGs appear to have both populations of color and limited speakers of English; and one CBG appears to have populations of color, limited speakers of English, and low-income populations.[850]

The Company stated it engaged extensively with all communities in the Aspen-Golden Project study area. Such engagement included accommodating Spanish and Vietnamese speakers at community meetings, and translating Project information into other languages. Dominion asserted its work has provided for the fair treatment and meaningful involvement of all interested persons, that the Aspen-Golden Project's proposed routes minimize potential impacts to environmental justice communities and other populations, and that the Projects' proposed routes will not disproportionately impact environmental justice communities.[851]

The Aspen-Golden Application described the Company's outreach efforts in relation to the Aspen-Golden Project, including regular meetings with the Loudoun Reliability Engagement Group ("LREG") beginning in November 2022. Other outreach and engagement efforts included meetings with specific affected neighborhoods, providing project information on the Internet, hosting several virtual and in-person community meetings, and providing access to an online tool called GeoVoice, which allows users to review projects' routing options and provide location-based comments. Dominion also indicated it has had discussions with Pastor Thomas on the LREG about the African American Cemetery near the proposed Aspen-Golden Route.[852]

The Company committed that it has been and will continue engaging environmental justice communities and others affected by the Aspen-Golden Project in a way that allows them to meaningfully participate in the project development and approval process so their input can be considered.[853] Dominion provided a copy of its environmental justice policy with the Aspen-Golden Application.[854]

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[848] *See*, *e.g.*, Ex. 16 (Whitlow Direct) at 6.
[849] Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 350.
[850] *Id*.
[851] *Id*.
[852] *Id*. at Attached Appendix, pp. 346-50.
[853] *Id*. at Attached Appendix, p. 351.
[854] *Id*. at Attached Appendix, p. 437.

After reviewing the Company's assertions as to environmental justice, Staff concluded that the Aspen-Golden Project does not appear to adversely impact the goals of the Virginia Environmental Justice Act. Staff recommended Dominion continue engaging the environmental justice communities impacted by the Aspen-Golden Project to address concerns that may be identified as that project progresses.[855]

I find that the Company reasonably considered the requirements of the Virginia Environmental Justice Act in the Aspen-Golden Application.

Respondent-Specific Requests

The Laborers' Council requested that Dominion prioritize hiring local workers and workers from Virginia for the Aspen-Golden Project to "maximize local economic benefits and support workers from environmental justice communities."[856] The Laborers' Council also supported undergrounding of the Aspen-Golden Lines to "help facilitate the ability to engage in more local hiring because undergrounding involves more participation of laborer tasks, which makes it easier to target in your hiring and, therefore, to hire locally if that is one of the goals of the project."[857]

Laborers' Council Witness Brown testified that the Aspen-Golden Project should generate jobs in construction, engineering, and project management particularly during its construction phase. He asserted that hiring local labor provides the economic benefit of keeping money earned from laborers working on the project circulating in the local community. He offered that Laborers' Council members have experience with underground transmission pipelines, which he argued is similar to underground transmission line work because both involve: laying conduit or pipe, backfilling, testing and commissioning of installed infrastructure, and compliance with safety and standards protocols.[858]

Dominion Witness Schuelke responded that it is the Company's practice to solicit bids for construction of projects and/or to use master service agreements from companies Dominion has selected who have shown their capability to perform the work in question. She testified Dominion has agreements with both union and non-union companies. She explained that the companies hired for the work identify and retain the labor needed to construct the project; these personnel may include workers from Loudoun County, the Commonwealth, and/or from environmental justice communities.[859]

I conclude the Commission should decline to approve a specific requirement that construction of the Aspen-Golden Project incorporate any specific amount of labor from Loudoun County, the Commonwealth, and/or environmental justice communities.[860] I note that

[855] Ex. 38 (Aspen-Golden Staff Report) at 46, 48.
[856] Tr. at 345-46 (Petruska).
[857] *Id*. at 346 (Petruska). *See also* Ex. 19 (Brown Direct) at 2.
[858] Ex. 19 (Brown Direct) at 4-5.
[859] Ex. 32 (Schuelke Rebuttal) at 2.
[860] The focus of Mr. Brown's testimony was the Aspen-Golden Project. To the extent this request applies to the Apollo-Twin Creeks Project, I also conclude the Commission should decline to approve a specific requirement that

though I do not recommend undergrounding the Aspen-Golden Project, should the Commission approve the Updated Hybrid Proposal, a local or other specific hiring requirement may be frustrated by the specialized labor needed to perform certain activities related to undergrounding the Aspen-Golden Lines.[861]

The Conservancy requested the Commission approve the Updated Hybrid Proposal with a pilot component to harvest data about permitting, construction, commissioning, operation and maintenance, and other aspects of undergrounding the Aspen-Golden Lines.[862] I do not recommend undergrounding the Aspen-Golden Lines and accordingly conclude this request is moot.[863]

Apollo-Twin Creeks Project

Having considered the Aspen-Golden Project at length, I now turn to the other of the Combined Cases involving the Apollo-Twin Creeks Line, which was largely, though not entirely, uncontested.

Need and Project Alternatives

Dominion explained the Apollo-Twin Creeks Project is needed to provide service to three new data center campuses in the Leesburg Load Area and to serve emerging load in the area. Dominion explained the Northern Virginia area is particularly attractive for data centers, and the data center market is expanding quickly in Virginia.[864] The chart below shows each campus' requested load in 10 years, requested in-service date, the new substation(s) Dominion proposes to build to serve each data center, and whether there is bridging power available from a current substation to temporarily meet that customer's needs.[865]

construction of the Apollo-Twin Creeks Project incorporate any specific amount of labor from Loudoun County, the Commonwealth, and/or environmental justice communities.

[861] *See, e.g.*, Tr. at 1478 (Moulton) (testifying, "So, the more technical you get with this type of equipment, which 500 kV underground is more or less as technical as it gets, there's a smaller and smaller pool of technicians who can actually -- who are certified to work on this type of equipment.").

[862] *Id*. at 1300-09 (Dodson); Ex. 39 (Underground Pilot Data List) (demonstrative only).

[863] Should the Commission approve the Updated Hybrid Proposal, however, I recommend the Commission also approve data collection to inform future undergrounding initiatives. I suggest that, at a minimum, the Company be required to provide a "lessons learned" document like what the Company filed on March 4, 2024, in Case No. PUR-2017-00143, and that the lessons learned cover the broad topics the Conservancy has suggested: permitting, construction, commissioning, and operation and maintenance. *See Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: Idylwood-Tysons 230 kV single circuit underground transmission line, Tysons Substation rebuild and related transmission facilities*, Case No. PUR-2017-00143, Report of Virginia Electric and Power Company on Lessons Learned During Construction of the Project (Mar. 4, 2024).

[864] Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, p. 3.

[865] The chart is located *id*. at Attached Appendix, p. 3. *See also id*. at Attached Appendix, pp. 4-5, 8-9, 12-13.

Campus	Substation	DP Requested Load (as of 10 years)*	DP Requested ISD *Ramp Start Year*	Target Sequencing of Substation In-Service	Bridging Power
A	Twin Creeks	300 MW	Dec. 2024 *2025*	June 2026	Yes—starting late 2024 • Pleasant View Substation (30 MVA)
B	Sycolin Creek	300 MW	Oct. 2023 *2026*	Sept. 2026	No—Customer B is aware that no bridging power will be available
	Starlight	255 MW	June 2028 *2028*	June 2028	
C	Lunar	278 MW	Aug. 2026 *2026*	Feb. 2028	Yes—starting late 2024 • Edwards Ferry Substation (30 MVA)
	Apollo	239 MW	Jan. 2027 *2027*	Mar. 2028	

* DP Requested Load (as of 10 years) is based upon total load requested by the Customer at 10 years, as well as emerging load in the area.

Dominion stated it determined that serving the combined contract loads of these three data centers from the existing Edwards Ferry, Ashburn, and Pleasant View Substations (the three main sources of distribution power in the Leesburg Load Area) would lead to transformer overloads and violations of NERC Reliability Criteria, including violation of the requirement that the total load any one substation can serve must not exceed 300 MW. Additionally, Dominion contended the five substations are needed to maintain the Company's substation transformer contingency plan. Under this plan, Dominion provides a way that customers' loads can be served by other equipment if the transformer regularly serving those customers fails. Dominion claimed that "[i]f the contingency plan creates overloads in other equipment because of the switching, new substation capacity, such as constructing the five new substations … is necessary."[866] Dominion indicated that the proposed Twin Creeks Substation is needed to prevent overloading at the existing Pleasant View Substation that otherwise would be created by Customer A's load. The proposed Sycolin Creek and Starlight Substations are needed to prevent overloading on the Twin Creeks Substation that otherwise would be created by Customer B's load. The proposed Lunar and Apollo Substations are needed to prevent overloading at the existing Edwards Ferry Substation that otherwise would be created by Customer C's load.[867]

Code § 56-46.1 B provides, among other things, that "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." Staff verified the load ramp schedules for Customers A, B, and C; verified the power flows that reflect the impending violations; and verified that the Apollo-Twin Creeks Project would rectify these anticipated violations. Staff's analysis confirmed both that (i) the five planned substations are needed to accommodate projected load demand, meet NERC reliability standards, and avoid electrical overloads; and (ii) the Apollo-Twin Creeks Lines are necessary to interconnect the five substations.[868]

[866] *Id*. at Attached Appendix, p. 15, 17-20. The quotation is found *id*. at Attached Appendix, p. 19.
[867] *Id*. at Attached Appendix, pp. 20-22. *See also id*. at Attached Appendix, pp. 23-33.
[868] Ex. 36 (Apollo-Twin Creeks Staff Report) at 6-7.

Concerning the Apollo-Twin Creeks Project, Dominion did not consider any transmission or distribution alternatives because of the projected overloads and the 300 MW load drop violations that would otherwise occur. The Company also ascertained that neither existing nor incremental demand-side management can meet the needs of the project. Dominion noted the fully built-out loads of Customers A, B, and C total approximately 1,372 MW, while Dominion's demand-side management programs lowered demand by only 404.8 MW (gross) / 264.8 MW (net) in 2022.[869] Staff agreed demand-side management measures will not meet the needs of the project.[870]

Ms. Ghiorzi objected to issuance of a CPCN for the Apollo-Twin Creeks Project. She specifically claimed that the proposed substations "are for the sole use of the data centers on whose property they reside."[871] She suggested the data centers could privately contract to construct "the substations of their own accord and with their own money by requesting an interconnection at the time the substation has been completed."[872]

I find Ms. Ghiorzi's argument unpersuasive. Her position overlooks the networked nature of Dominion's transmission system and infrastructure that would be added by this project. As explained by Dominion, the Apollo-Twin Creeks Project will "maintain reliable service for the overall load growth in the area, and comply with mandatory NERC Reliability Standards."[873] Staff's analysis confirmed both that there would be violations of reliability criteria without the Apollo-Twin Creeks Project and that the project addresses the issues and avoids overloads.[874] Additionally, as discussed above, ratemaking questions regarding cost allocation and rate design raised by the proliferation of data centers may be considered in rate cases and the proceeding recently initiated by the Commission on this topic.

Based on the above, I find there is sufficient evidence that the Apollo-Twin Creeks Project is needed.

Economic Development

The Apollo-Twin Creeks Project is a supplemental project to provide electric power to three new data center developments. The Apollo-Twin Creeks Application represented that Loudoun County's 2019 General Plan points to data center development as a strength and future driver for the County's economic growth.[875] Loudoun County Witness Rizer addressed the importance of data centers to the economy, testifying that in 2023, Virginia data centers "supported over 75,000 jobs and $31.4 billion dollars in economic output."[876] As to the economic impact on Loudoun County specifically, Mr. Rizer explained:[877]

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[869] Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, p. 35.
[870] Ex. 36 (Apollo-Twin Creeks Staff Report) at 7.
[871] Tr. at 349 (Ghiorzi). Ms. Ghiorzi referred to the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations.
[872] *Id*.
[873] *See, e.g.*, Ex. 5 (Apollo-Twin Creeks Project) at Attached Appendix, p. 7.
[874] Ex. 36 (Apollo-Twin Creeks Staff Report) at 6-7.
[875] Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, p. 178.
[876] Ex. 23 (Rizer Direct) at 4.
[877] *Id*. at 5.

> The growth of the data center industry has completely transformed our economy, from being 81 percent dependent on residential taxes for government operations to about 51 percent today. Revenue from data centers have allowed Loudoun to lower the real estate tax rate by 42 cents, per $100 of assessed value, over the last 15 years while allowing for increased spending on roads, schools, county services and education. Data centers represent a significant impact on the County's tax revenues and provide[] for over 12,000 jobs in Loudoun. Data centers have also accelerated the formation of other businesses throughout Northern Virginia.

The evidence demonstrates the Apollo-Twin Creeks Project will ensure reliable electric power delivery to three new data center developments, thereby supporting economic growth in Loudoun County and Virginia.[878]

Cost

The conceptual cost of the Apollo-Twin Creeks Project, in 2024 dollars, is approximately $299.0 million, including approximately $32.7 million for transmission work and $266.3 million for substation work.[879] Customers B and C will pay a portion of the $299.0 million total in excess facilities charges for (i) redundant distribution feed, and (ii) as to Customer C, the extra cost associated with gas insulated switchgear substation equipment.[880] The total conceptual Apollo-Twin Creeks Project cost includes projected real estate costs to acquire property and/or easements for the related route and substations and costs associated with work on Edwards Ferry-Pleasant View Line #203 related to the Apollo-Twin Creeks Project. The approximately $299.0 million total cost excludes: (i) costs for line terminal and protection upgrades within the substation and control enclosures at the existing Edwards Ferry and Pleasant View Substations; and (ii) costs to cut proposed Aspen-Golden Line #2333 into and out of the proposed Starlight Substation, if needed in the future.[881] Project costs not paid by specific customers will be allocated 100% to the DOM Zone.[882]

Staff reviewed the above-described costs.[883] No respondent spoke to the costs for the Apollo-Twin Creeks Project. The reasonableness of the costs for the Apollo-Twin Creeks Project is undisputed and, in my assessment, supported by the evidence.

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[878] Additionally, Staff opined that there will be some minimal additional operations and maintenance work for the Apollo-Twin Creeks Project after its construction, creating a negligible impact on long-term job creation. Ex. 36 (Apollo-Twin Creeks Staff Report) at 17.
[879] Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, p. 41. The Apollo-Twin Creeks Application as filed provided costs in 2023 dollars, but Dominion updated the cost figures to 2024 dollars by *errata* filed on August 23, 2024. The updated figures are incorporated into Ex. 5 (Apollo-Twin Creeks Application).
[880] *Id*. at Attached Appendix, pp. 19, 131 n.33. *See also* Ex. 36 (Apollo-Twin Creeks Staff Report) at 13 and n.60 (noting that the excess facilities charges amounted to $24.9 million of the $280.7 million total, in 2023 dollars).
[881] Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, pp. i-ii, iv n.10, p. 14 n.15, and p. 131.
[882] *Id*. at Attached Appendix, p. 42.
[883] Ex. 36 (Apollo-Twin Creeks Staff Report) at 13-14.

Routing and ROW

There is no controversy about the routing of the Apollo-Twin Creeks Lines. When developing the route of these lines, Dominion considered existing ROW corridors. Dominion found these unacceptable because of ROW constraints and because these routes are not in the right locations to host the substations that will serve Customers A, B, and C.[884] More specifically, the following were considered:[885]

- An approximately 1.4-mile corridor along Belmont Ridge Road, from the existing road crossing of Dominion Lines #227 and #274 to the intersection with Route 7. This route was rejected because it does not feasibly connect the proposed Sycolin Creek, Starlight, Lunar, and Apollo Substations, whose sites are fixed; it separates existing and planned development; and it would interfere with Customer B's data center building footprints and impact this customer's ability to provide an open space buffer along Goose Creek.

- A corridor adjacent to the W&OD Trail from the Aspen Substation to Belmont Ridge Road. This route was rejected because multiple space constraints inhibit the ability to expand the Company's existing transmission corridor by 75 feet to accommodate the Apollo-Twin Creeks Lines; the lines would require approval from NOVA Parks; the lines' construction would require closures of the W&OD Trail during tree clearing and construction activities; and this corridor does not reasonably access the Apollo-Twin Creeks' delivery points.

- A corridor beginning north of the existing Pleasant View Substation and following a 1.2-mile portion of Crosstrail Boulevard where there are other Dominion transmission lines, continuing to the intersection with Route 7. This route also was rejected due to insufficient space; overlap with VDOT ROWs, which could present operational and maintenance impacts and could negatively impact roads and traffic during construction and maintenance; the requirement of an additional crossing of Goose Creek separate from the crossing of the Aspen-Golden Lines; and impracticality of connecting the Apollo-Twin Creeks Substations.

- An all-underground route. This route was rejected because it would require transition stations or additional land at each of the five proposed substations to connect the underground 230 kV line to the substations; it would more permanently impact wetlands in the area than overhead lines; it would require horizontal directional drilling under Goose Creek, and there is insufficient space for the related equipment and for the wider ROW required for such drilling; and it would jeopardize the in-service dates for Customers A, B, and C.

Because existing transmission corridors are not usable for the Apollo-Twin Creeks Lines, the lines require easements for a new-build transmission line.[886] Nonetheless, the Apollo-Twin

[884] Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, p. 77.
[885] *Id*. at Attached Environmental Routing Study, pp. 13-16, 21.
[886] *Id*. at Attached Appendix, p. 81.

Creeks Lines collocate for 0.9 miles (48%) of their total 1.9-mile length with the proposed Aspen-Golden Lines. Moreover, the Apollo-Twin Creeks Route overlaps existing and proposed water and sewer utilities for 0.6 miles (31% of their length). The Apollo-Twin Creeks Lines, in total, cross 14 parcels, nine of which are owned by Customers A, B, and C. At least 77% of the Apollo-Twin Creeks Lines' length is on these customers' campuses.[887] Each of the five proposed substations is also on the customers' property, as follows:[888]

- Twin Creeks: on 4.7 acres of Customer A's property;
- Sycolin Creek: on 4.7 acres of Customer B's property;
- Starlight: on 4.5 acres of Customer B's property;
- Lunar: on 4.0 acres of Customer C's property; and
- Apollo: on 5.0 acres of Customer C's property.

The Company contended the route of the proposed Apollo-Twin Creeks Lines "maximizes use of existing and proposed transmission and utility rights-of-way, minimizes conflict between current and planned land use, where practicable, and eliminates the need for a second, non-collocated crossing of the Goose Creek Scenic River."[889] Staff also concluded "that the Proposed Route is the optimal route because it maximizes collocation opportunities and traverses the Customers' properties for much of the [p]roposed [Apollo-Twin Creeks] Route."[890] No respondent questioned the route of the Apollo-Twin Creeks Lines.

I find there is evidence in the record to support Commission approval of the proposed Apollo-Twin Creeks Route. In making this finding, I conclude Dominion has provided sufficient evidence to show existing ROWs cannot meet the needs for this project.

Scenic Assets, Historic Resources, and Environmental Concerns

Code § 56-46.1 B requires the Commission to consider "that the corridor or route chosen for the line will avoid or reasonably minimize adverse impact to the greatest extent reasonably practicable on the scenic assets, historic resources recorded with the Department of Historic Resources, and environment of the area concerned."

In this regard, the Apollo-Twin Creeks Route, approximately 1.9 miles long, requires a construction footprint of 41.6 acres, comprising 18.7 acres associated with the Apollo-Twin Creeks Lines and 22.9 acres associated with the substations.[891] As noted previously, land use in Loudoun County is governed by the 2019 General Plan, part of the County's comprehensive plan. The 2019 General Plan includes "[p]lace types, which characterize permitted land uses within a specific area."[892] County Witness Giglio testified the Apollo-Twin Creeks Lines are "located in those areas that we already identified as industrial and mineral extractive."[893] The

[887] *Id*. at Attached Appendix, p. 72.
[888] *Id*. at Attached Environmental Routing Study, pp. 23-24.
[889] *Id*. at Attached Appendix, p. 89.
[890] Ex. 36 (Apollo-Twin Creeks Staff Report) at 18.
[891] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, pp. 23-24 and Appendix H.
[892] *Id*. at Attached Environmental Routing Study, p. 29.
[893] Tr. at 878 (Giglio).

Suburban Industrial/Mineral Extraction place type includes data centers as a core use.[894] The Environmental Routing Study provided with the Apollo-Twin Creeks Application also indicates this project would cross the Leesburg Joint Land Management Area Employment place type, which allows data centers as a complementary use; the Leesburg Joint Land Management Area Industry/Mineral Extraction place type, which allows data centers as a core use; the Suburban Employment place type, which allows data centers as a conditional use, and the Suburban Mixed Use place type.[895]

The Apollo-Twin Creeks Route impacts approximately 1.0 acres of wetlands. Most impacts are associated with project construction and would be temporary. The route also crosses seven waterbodies: one perennial waterbody (Goose Creek), two intermittent tributaries of Goose Creek, and four non-mapped waterbodies that include two stormwater ponds and two unclassified streams. Dominion does not plan to place any transmission structures within waterbodies.[896] The route crosses approximately 0.2 miles of the Scenic Creek Valley Buffer, over Sycolin Creek and Goose Creek. To mitigate impacts to Goose Creek, the Apollo-Twin Creeks Project was designed to cross this creek at a perpendicular angle adjacent to the Aspen-Golden Lines, resulting in only one crossing of this creek. Additionally, the crossing was designed between two bends in the creek to limit visual impact of the Apollo-Twin Creeks and Aspen-Golden Lines from locations on the creek.[897]

Among other impacts, the Apollo-Twin Creeks Route impacts one ecological core with a rank of C4 (moderate) and one ecological core fragment with a rank of C5 (general), for a total crossing length of 0.9 miles. For the core ranked C5, the Apollo-Twin Creeks Project's crossing is parallel and adjacent to that of the Aspen-Golden Project, meaning there is only one crossing of this core for both projects. This core's condition will already be altered due to impacts from development of Campus A and Milestone Reservoir. As for the core ranked C4, it was already altered between June 2022 and spring 2023 by clear-cutting of approximately 26.3 acres. The developments of Campuses B and C will further remove vegetation from this core. The Apollo-Twin Creeks Project impacts no ecological cores of high, very high, or outstanding value.[898]

As for protected species, the Green Floater has a confirmed presence within a two-mile search radius of the Apollo-Twin Creeks Project due to the presence of Goose Creek in the study area. The Peregrine Falcon also has a confirmed presence in the same radius. ERM does not anticipate impacts to the Peregrine Falcon since the Apollo-Twin Creeks Project does not traverse the steep quarry slopes where this species nests. ERM posited that coordination with

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[894] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, p. 30.
[895] *Id*. The Lunar and Apollo Substations that will serve Campus C, known as Vantage, are in the area designated as the Suburban Mixed Use place type, which does not allow data centers as a core, complementary, or conditional use. *Id*. Vantage is being developed as a by-right data center. *Id*. at Attached Environmental Routing Study, p. 41. For a discussion of by-right data center usage and grandfathering, *see* Ex. 12 (Yudd Direct) at 12-14 (explaining those concepts in relation to the JKLH Belmont Property).
[896] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, pp. 57-60, and at Attached DEQ Supplement, pp. 5-6. *See also* Ex. 29 (Apollo-Twin Creeks DEQ Report) at 8-11.
[897] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, pp. 44-45, 48 and Appendix H.
[898] *Id*. at Attached Environmental Routing Study, pp. 63-64 and Appendix H. *See also* Ex. 29 (Apollo-Twin Creeks DEQ Report) at 16-17 (in which DCR-DNH reports the Apollo-Twin Creeks Project will impact an ecological core of C4 ranking).

DWR may be necessary to determine if surveys or construction timing windows are warranted to avoid impacts to the Green Floater and Wood Turtle, the latter of whom has not been confirmed present in the study area but who has a predicted habitat in the area. As for protected flora, five rare plant species, and one state-threatened species, have the potential to exist in the Aspen-Golden Project area.[899]

There is one building in the ROW, a steel picnic structure that will be either razed or relocated; Dominion is coordinating with Luck Stone as to this structure. There are two non-residential buildings and zero homes within 100 feet of the ROW. There are six non-residential buildings, one dwelling, and three accessory structures (such as sheds, garages, or barns) within 250 feet of the ROW centerline. There are 13 non-residential buildings, one dwelling, and three accessory structures within 500 feet of the ROW centerline.[900] The non-residential buildings house commercial businesses including masonry, towing, asphalt, concrete, and construction. Though construction of the Apollo-Twin Creeks Project may temporarily impact these businesses, their use would not be permanently impacted. ERM acknowledged the Apollo-Twin Creeks Route could create visual impacts on residences more than 500 feet from the route but asserted the proposed transmission lines and structures "would be cohesive with the visual character of the planned data center developments and other industrial operations within the study area."[901]

The Apollo-Twin Creeks Lines would cross Cochran Mill Road in an area where the alignment is adjacent to the Aspen-Golden Lines. The lines also would cross a one-lane private road, Goose Glen Lane, but Customer B plans to remove this road. Additionally, the lines cross two planned road extensions of Gloucester Parkway and Russell Branch Parkway, perpendicularly to the road dedications and adjacent to the proposed Aspen-Golden Lines. The Apollo-Twin Creeks Lines also overlap the ROWs of two existing two-lane roads, Durham Court and Jackpit Lane, for stretches of less than 400 feet each. Construction of the Apollo-Twin Creeks Project is not anticipated to create long-term impacts on these roads.[902]

As for air travel impacts, the Leesburg Executive Airport is approximately 1.4 miles southwest of the Twin Creeks Substation, and the Inova Loudoun Hospital helipad is approximately 1.4 miles east of the Apollo Substation. It appears the Apollo-Twin Creeks Project will require notification to the FAA because the height of its structures and the cranes that would be used to install those structures surpass the FAA notification thresholds for Leesburg Executive Airport. Notably, no structure associated with the Apollo-Twin Creeks Project will penetrate the restricted airspace surfaces of this airport.[903]

According to the Environmental Routing Study, there are four archaeological sites within the Apollo-Twin Creeks ROW, three of which are not eligible for listing on the NRHP, and one of which has not been evaluated. The latter is an artifact scatter associated with a mid-twentieth

[899] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, pp. 69-73. *See also* Ex. 29 (Apollo-Twin Creeks DEQ Report) at 16-18, 23-24.
[900] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, pp. 34-37 and Appendix H.
[901] *Id*. at Attached Environmental Routing Study, pp. 35-36.
[902] *Id*. at Attached Environmental Routing Study, p. 50.
[903] *Id*. at Attached Environmental Routing Study, pp. 51-55. *See also* Ex. 29 (Apollo-Twin Creeks DEQ Report) at 22-23.

century dwelling. In a 2022 survey, it was determined that up to 25% of the site had been destroyed. ERM determined that it is unlikely intact cultural components exist at this site.[904]

The Apollo-Twin Creeks Lines will have a minimal impact on three resources: Cooke's Mill, the African American Cemetery, and the W&OD Railroad Historic District.[905]

The Apollo-Twin Creeks Project will impact visually sensitive resources as follows:[906]

- Goose Creek Scenic River — Moderate to High Impact
- W&OD Trail — Moderate Impact
- Seldons Landing Elementary School — Low to Moderate Impact
- Belmont Country Club — Low Impact
- Keep Loudoun Beautiful Park — Low to Moderate Impact
- Cooke's Mill Ruins — Minor Impact
- African American Cemetery — Negligible to Minor
- Belmont Census Designated Place — Moderate Impact
- Town of Leesburg — Negligible Impact
- Lansdowne Census Designated Place — Low to Moderate Impact

The respondents generally had no concerns with the visual impacts of the Apollo-Twin Creeks Project.[907] The Apollo-Twin Creeks Lines, generally speaking, will be west of Belmont Ridge Road.[908] Loudoun County Witness Giglio testified that "[d]ata centers are permissible to the properties to the west of Belmont Ridge Road, which are suburban industrial and suburban is [sic] employment areas."[909] Mr. Giglio also suggested undergrounding the Apollo-Twin Creeks Lines could have unwanted environmental impacts.[910]

Based upon the foregoing, I conclude the Apollo-Twin Creeks Route avoids or reasonably minimizes adverse impacts to the greatest extent reasonably practicable to environmental, historic, and scenic resources.

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[904] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, pp. 95-96. *See also* Ex. 29 (Apollo-Twin Creeks DEQ Report) at attached memorandum from Jenny Bellville-Marrion, Project Review Archaeologist, Review and Compliance Division of DHR, to Megan Black, Office of Environmental Impact Review of DEQ (dated Apr. 29, 2024).

[905] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, pp. 97-99. *See also* Ex. 29 (Apollo-Twin Creeks DEQ Report) at attached memorandum from Jenny Bellville-Marrion, Project Review Archaeologist, Review and Compliance Division of DHR, to Megan Black, Office of Environmental Impact Review of DEQ (dated Apr. 29, 2024) (noting the Apollo-Twin Creeks project will have no more than a minimal impact on six historic resources within the study area).

[906] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, pp. 88-93.

[907] There was mention that homes in the Belmont area to the east of Belmont Ridge Road would have a view of Apollo-Twin Creeks Lines. Tr. at 984-85 (Giglio). There was confirmation that the Conservancy has no property that will be negatively impacted by the Apollo-Twin Creeks Lines. *Id*. at 661 (Rosenberg).

[908] *See* Ex. 10 (Ruling ¶ 2 Exhibit Map) at p. 1 of 5A.

[909] Tr. at 1008 (Giglio). *See also* Ex. 22 (Giglio Direct) at Attached Exhibit WPG-5.

[910] Tr. at 878 (Giglio).

DEQ Report Recommendations

Code § 56-46.1 A directs the Commission to consider the effect of proposed transmission line projects "on the environment and establish such conditions as may be desirable or necessary to minimize adverse environmental impact."

DEQ filed the DEQ Report, summarizing the Apollo-Twin Creeks Project's potential impacts to natural and cultural resources in Virginia.[911] In addition to requirements of local, state, or federal law, the DEQ Report included several recommendations made by the reviewing agencies for the Commission's consideration. I find it desirable or necessary to establish the uncontested recommendations of the DEQ Report as conditions for approval of the Apollo-Twin Creeks Project.

I discuss below the DEQ Report recommendations contested by Dominion that are specific to the Apollo-Twin Creeks Project. Where the same issues arise with respect to the Aspen-Golden DEQ Report, I addressed the matters as pertaining to both projects above, for convenience.

Work Restrictions during Songbird Nesting Season. DWR recommended Dominion conduct significant tree removal and ground-clearing activities, as related to construction of the Apollo-Twin Creeks Project, outside the primary songbird nesting season of March 15 to August 15.[912] Dominion opposed this recommendation. Company Witness Young averred that, given tree removal and ground clearing are the first construction step, adoption of this recommendation would delay the Apollo-Twin Creeks Project schedule by three months, and such delay could be compounded by time-of-year restrictions related to the Northern Long-eared Bat. Mr. Young contended such a delay could negatively impact Dominion's ability to meet the in-service date for this project and has a high potential to increase project costs. He stated the Company will coordinate with DWR to minimize songbird-related impacts from the project and is committed to complying with regulations designed to protect songbirds and other wildlife.[913]

The Commission has previously directed Dominion to coordinate with DWR to minimize impacts to songbirds, rather than adopting songbird nesting restrictions similar to those proposed by DWR, for the same reasons as those provided here, *i.e.*, impacts to project schedule and cost. I recommend the Commission do the same for the Apollo-Twin Creeks Project.[914]

Recommendation on the Green Floater. The Green Floater is federally proposed as a threatened species and listed in Virginia as a threatened species.[915] To protect the Green Floater, DWR recommended in-stream work in Goose Creek or its tributaries occur outside two restricted timeframes, April 15 through June 15, and August 15 through September 30; that Dominion

[911] Ex. 29 (Apollo-Twin Creeks DEQ Report) at Cover Letter, p. 1 (unnumbered).
[912] *Id.* at 23. *See also* Ex. 31 (DWR Comments About Songbird Nesting).
[913] Ex. 43 (Young Rebuttal) at 5, 32-33.
[914] *See Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: Butler Farm to Clover 230 kV Line, Butler Farm to Finneywood 230 kV Line and Related Projects*, Case No. PUR-2022-00175, 2023 S.C.C. Ann. Rep. 280, 286-87, Final Order (May 31, 2023).
[915] Ex. 5 (Apollo-Twin Creeks Application) at Attached DEQ Supplement, pp. 15-17.

conduct in-stream work during low-flow or no-flow conditions; and that Dominion implement strict erosion and sediment control measures.[916] Company Witness Young affirmed Dominion implements and adheres to strict requirements of erosion and sediment control and stormwater management laws and regulations as required by DEQ. He also clarified Dominion does not anticipate conducting in-stream work for the Apollo-Twin Creeks Project. He confirmed that if such work is required, the Company will coordinate with DWR and DEQ and adhere to requirements associated with the Green Floater through the permitting process. He requested the Commission reject these DWR recommendations.[917]

Under similar circumstances, the Commission has alleviated Dominion from requirements such as DWR seeks to implement here.[918] There is evidence in the Apollo-Twin Creeks case that, due to the presence of the Green Floater, Goose Creek is designated as a Threatened and Endangered Water.[919] Additionally, the Environmental Routing Study submitted as part of the Apollo-Twin Creeks Application suggested coordination with DWR may be warranted because "[w]hile no instream construction would be required for the [Apollo-Twin Creeks] Project, if shade is reduced along the streambank due to right-of-way clearing, the water temperature could increase, potentially impacting the presence of the Green floater."[920]

Based on these additional considerations, I conclude that Dominion should not be required to comply with the in-stream time restrictions, the requirement to conduct in-stream work during low-flow or no-flow conditions, or the requirement to implement strict erosion and sediment control measures beyond those already required by DEQ under Dominion's Annual Standard & Specifications.[921] I also conclude that the Company should be required to coordinate with DWR and DEQ, as appropriate, should either or both of (i) in-stream work in Goose Creek or its tributaries be necessary, or (ii) the Company anticipate that ROW clearing will reduce shade along Goose Creek or its tributaries, to minimize any impact to the presence of the Green Floater. Additionally, the Company has recognized it must procure all necessary permits and adhere to all requirements associated with impacts to the Green Floater as a state threatened species.[922]

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[916] Ex. 29 (Apollo-Twin Creeks DEQ Report) at 24, and attached email correspondence from Tamara Doucette at DWR to Megan Black, Office of Environmental Impact Review of DEQ (dated May 9, 2024).
[917] Ex. 43 (Young Rebuttal) at 5, 33-34.
[918] *Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: 500-230 kV Unity Switching Station, 230 kV Tunstall-Unity Lines #2259 and #2262, 230.36.5 kV Tunstall, Evans Creek, Raines Substations, and 230 kV Substation Interconnect Lines*, Case No. PUR-2022-00167, 2023 S.C.C. Ann. Rep. 269, 273, Final Order (June 14, 2023) ("Nevertheless, although the Project, as planned, does not entail instream work where Unity Route 2 crosses the Meherrin River, the Commission directs the Company to re-coordinate with DCR-DNH and DWR if instream work becomes necessary at the Meherrin River crossings.").
[919] Ex. 29 (Apollo-Twin Creeks DEQ Report) at attached email correspondence from Tamara Doucette at DWR to Megan Black, Office of Environmental Impact Review of DEQ (dated May 9, 2024).
[920] Ex. 5 (Apollo-Twin Creeks Application) at Attached Environmental Routing Study, p. 70.
[921] Ex. 43 (Young Rebuttal) at 33 (explaining Dominion "implements and adheres to strict requirements of the erosion and sediment control/stormwater management laws and regulations, as required by DEQ under the Company's Annual Standard & Specifications," for which DEQ is the regulating authority).
[922] *Id*. at 33-34.

Public Health and Safety

Section IV of the Apollo-Twin Creeks Application Appendix discusses EMF levels that can be expected from the project and provides a summary of research on the health effects of EMF. The Company reported the consensus of multiple agencies studying this topic, "that the scientific evidence does not confirm that common sources of EMF in the environment, including transmission lines and other parts of the electric system, appliances, etc., are a cause of any adverse health effects."[923]

The Company also provided testimony from Dr. Gabor Mezei on the effects to the general public from EMF, as summarized above. According to Dr. Mezei, two organizations have developed scientific exposure guidelines for 60-Hertz EMF exposure. The International Commission on Non-Ionizing Radiation Protection determined that for the general population, the reference level at 60 Hertz is 4.2 kV/m for electric fields and 2,000 milligauss mG for magnetic fields. The International Committee of Electromagnetic Safety updated its limits in 2019 to 5 kV/m for electric fields and 9,040 mG for magnetic fields.[924]

According to the Apollo-Twin Creeks Application, EMF levels at the ROW edges for the project, at projected average and peak loading for a typical span, are as follows:[925]

At the left edge of the ROW looking toward the Apollo Substation:

Span	Average Loading		Peak Loading	
	Electric (kV/m)	Magnetic (mG)	Electric (kV/m)	Magnetic (mG)
Project lines alone (100- to 140-foot ROW)	0.685	35.630	0.681	59.877
Collocated lines (225-foot ROW average)	0.453	31.270	0.447	52.313

At the right edge of the ROW looking toward the Apollo Substation:

Span	Average Loading		Peak Loading	
	Electric (kV/m)	Magnetic (mG)	Electric (kV/m)	Magnetic (mG)
Project lines alone (100- to 140-foot ROW)	0.685	31.450	0.681	52.844

[923] Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, p. 198.
[924] Ex. 34 (Mezei Rebuttal) at 11-13.
[925] Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, pp. 78-80, 196-97. Note where the Apollo-Twin Creeks Lines are not collocated, the ROW varies from 100 to 140 feet. Where the Apollo-Twin Creeks Lines are collocated with the Aspen-Golden Lines, the ROW varies from 200 to 260 feet, for an average of 225 feet. *Id*. at Attached Appendix, pp. 6, 78-80 and n.28.

Collocated lines (225-foot ROW average)	1.545	42.592	1.562	71.921

This data reveals the highest exposure is from the collocated lines at the right edge of the ROW. The highest electric field exposures, 1.545 kV/m at average loading and 1.562 kV/m at peak loading, are far lower than the recommended limits of 4.2 kV/m and 5.0 kV/m identified by Dr. Mezei. Similarly, the highest magnetic field exposures, 42.592 mG at average loading and 71.292 mG at peak loading, are far lower than the recommended limits of 2,000 mG and 9,040 mG identified by Dr. Mezei.[926]

I conclude there is sufficient record evidence that the public health and safety will not be harmed by the construction and operation of the Apollo-Twin Creeks Project.

Environmental Justice

Dominion addressed environmental justice, stating it researched the demographics of communities surrounding the Apollo-Twin Creeks Project using the U.S. Census Bureau's American Community Survey 5-Year Estimates (2018-2022).[927] The Company's research also indicated there are 16 CBGs within one mile of the Apollo-Twin Creeks Route, including the five proposed substations. Of these, two CBGs are crossed by the proposed Apollo-Twin Creeks Route. Both of these CBGs appear to include populations of color but do not meet other thresholds for sensitive populations.[928]

The Company stated it engaged extensively with all communities in the Apollo-Twin Creeks Project study area. Such engagement included accommodating Spanish and Vietnamese speakers at community meetings, and translating project information into other languages. Dominion asserted its work has provided for the fair treatment and meaningful involvement of all interested persons, that the Apollo-Twin Creeks Route minimizes potential impacts to environmental justice communities and other populations, and that the Project's proposed route will not disproportionately impact environmental justice communities.[929]

The Apollo-Twin Creeks Application described the Company's outreach efforts, including regular meetings with the LREG beginning in November 2022. Other outreach and engagement efforts included meetings with specific affected neighborhoods, providing project information on the Internet, hosting several virtual and in-person community meetings, and providing access to an online tool called GeoVoice, which allows users to review projects' routing options and provide location-based comments.[930]

The Company committed that it has been and will continue engaging environmental justice communities and others affected by the Apollo-Twin Creeks Project in a way that allows

[926] *See* Ex. 34 (Mezei Rebuttal) at 13.
[927] Ex. 5 (Apollo-Twin Creeks Application) at Attached Appendix, p. 148.
[928] *Id*.
[929] *Id*.
[930] *Id*. at Attached Appendix, pp. 145-48.

them to meaningfully participate in the project development and approval process so their input can be considered.[931] Dominion provided a copy of its environmental justice policy with the Apollo-Twin Creeks Application.[932]

After reviewing the Company's assertions as to environmental justice, Staff concluded that the Apollo-Twin Creeks Project does not appear to adversely impact the goals of the Virginia Environmental Justice Act.[933]

I find that the Company reasonably considered the requirements of the Virginia Environmental Justice Act in the Apollo-Twin Creeks Application.

FINDINGS AND RECOMMENDATIONS

Based upon the evidence presented, and for the reasons set forth above, I **FIND**:

1. There is sufficient evidence that the Aspen-Golden and Apollo-Twin Creeks Projects are needed.

2. The evidence demonstrates that both the Aspen-Golden and Apollo-Twin Creeks Projects support economic development in Loudoun County and the Commonwealth.

3. Dominion has provided sufficient evidence that existing rights of way would be used for the Aspen-Golden Project where possible but that existing rights of way cannot meet the needs for the majority of the Aspen-Golden Project. The record supports approval of Route 1AA with the JKLH Belmont Landbay KK Variation (including flexibility to microsite the Aspen-Golden Lines' route and structures on the JKLH Belmont Property); the Community Church Proposed Modified Segment; and the ability to work with Allan Myers to determine possible siting solutions on Allan Myers' property.

4. Given the concerns about the Updated Hybrid Proposal's route, constructability, and cost and given the lack of environmental analysis and environmental justice analysis, I do not find the Updated Hybrid Proposal meets the statutory criteria for CPCN issuance, nor do I find that the total public interest is best served by the Updated Hybrid Proposal.

5. Dominion has provided sufficient evidence that existing rights of way cannot meet the needs for the Apollo-Twin Creeks Project, and the record evidence supports Commission approval of the route proposed in the Apollo-Twin Creeks Application.

6. The record establishes that Aspen-Golden Route 1AA and the Apollo-Twin Creeks Route both avoid or reasonably minimize adverse impacts to the greatest extent reasonably practicable to environmental, historic, and scenic resources.

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[931] *Id*. at Attached Appendix, p. 148.
[932] *Id*. at Attached Appendix, p. 175.
[933] Ex. 36 (Apollo-Twin Creeks Staff Report) at 16, 18.

7. It is desirable or necessary to establish the uncontested recommendations of the DEQ Report as conditions for approval of the Aspen-Golden and Apollo-Twin Creeks Projects.

8. Pertaining to the Apollo-Twin Creeks Project only, the Commission should require Dominion to:

- Coordinate with the Department of Wildlife Resources to minimize impacts to songbirds from the project;
- Coordinate with the Department of Wildlife Resources and DEQ, as appropriate, to minimize any impact to the presence of the Green Floater should either or both of (i) in-stream work in Goose Creek or its tributaries be necessary, or (ii) the Company anticipate that right of way clearing will reduce shade along Goose Creek or its tributaries; and
- Follow any laws or regulations, and obtain any relevant permits, concerning the avoidance and/or handling of Torrey's Mountain-mint.

9. Pertaining to the Aspen-Golden Project only, the Commission should adopt as reasonable Dominion's proposal to plot and call out wells and to coordinate with the Virginia Department of Health's Office of Drinking Water as needed.

10. Pertaining to both the Aspen-Golden and Apollo-Twin Creeks Projects, the Commission should:

- Decline to adopt the DEQ recommendation that Dominion further evaluate certain petroleum release sites to determine the location, nature, and extent of release, as well as the potential to impact the projects;
- Decline to condition approval of either project on the DEQ recommendation to avoid and minimize impacts to ecological cores; and
- Decline to adopt the recommendations that Dominion develop and implement an invasive species management plan as part of its right of way maintenance practices, as well as any requirement that these practices include revegetation using native species, with robust monitoring and an adaptive plan if initial revegetation attempts are unsuccessful or an outbreak of invasive species emerges.

11. The Aspen-Golden Project's cost estimate, utilizing Route 1AA, and the Apollo-Twin Creeks Project's cost estimate, are supported by the evidence. The cost estimate for the Updated Hybrid Proposal is not reasonable based on this record.

12. There is sufficient record evidence that the public health and safety will not be harmed by the construction and operation of the Apollo-Twin Creeks Project or the Aspen-Golden Project.

13. The Company reasonably considered the requirements of the Virginia Environmental Justice Act in both the Aspen-Golden and Apollo-Twin Creeks Applications.

14. The Commission should decline to approve a specific requirement that construction of the Aspen-Golden Project incorporate any specific amount of labor from Loudoun County, the Commonwealth, and/or environmental justice communities.

Accordingly, I ***RECOMMEND*** the Commission enter an Order:

1. ***ADOPTING*** the findings above;

2. ***APPROVING*** the Aspen-Golden and Apollo-Twin Creeks Applications subject to the conditions set forth herein;

3. ***GRANTING*** Certificates of Public Convenience and Necessity for: (i) the Apollo-Twin Creeks Project, using the route proposed in that Application; and (ii) the Aspen-Golden Project, using Route 1AA as modified for the JKLH Belmont Landbay KK Variation and the Community Church Proposed Modified Segment, and including the ability to work with Allan Myers to determine possible solutions to site the Aspen-Golden Lines on Allan Myers' property without interfering with this business's future construction plans; and

4. ***DISMISSING*** the Combined Cases 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 ("Rules of Practice")[934] and Code § 12.1-31, any comments to this Report must be filed on or before November 22, 2024. To promote administrative efficiency, the parties are encouraged to file electronically in accordance with 5 VAC 5-20-140 of the Rules of Practice. If not filed electronically, an original and fifteen (15) copies of the comments must be submitted in writing to the Clerk of the Commission c/o 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 certifying that copies have been served by electronic mail to all counsel of record and any such party not represented by counsel.

Respectfully submitted,

Mary Renae Carter

M. Renae Carter
Senior Hearing Examiner

The Clerk of the Commission is requested to send a copy of this Report to all persons on the official Service List in this matter. The Service List is available from the Clerk of the Commission, c/o Document Control Center, 1300 East Main Street, First Floor, Tyler Building, Richmond, Virginia 23219.

[934] 5 VAC 5-20-10 *et seq.*

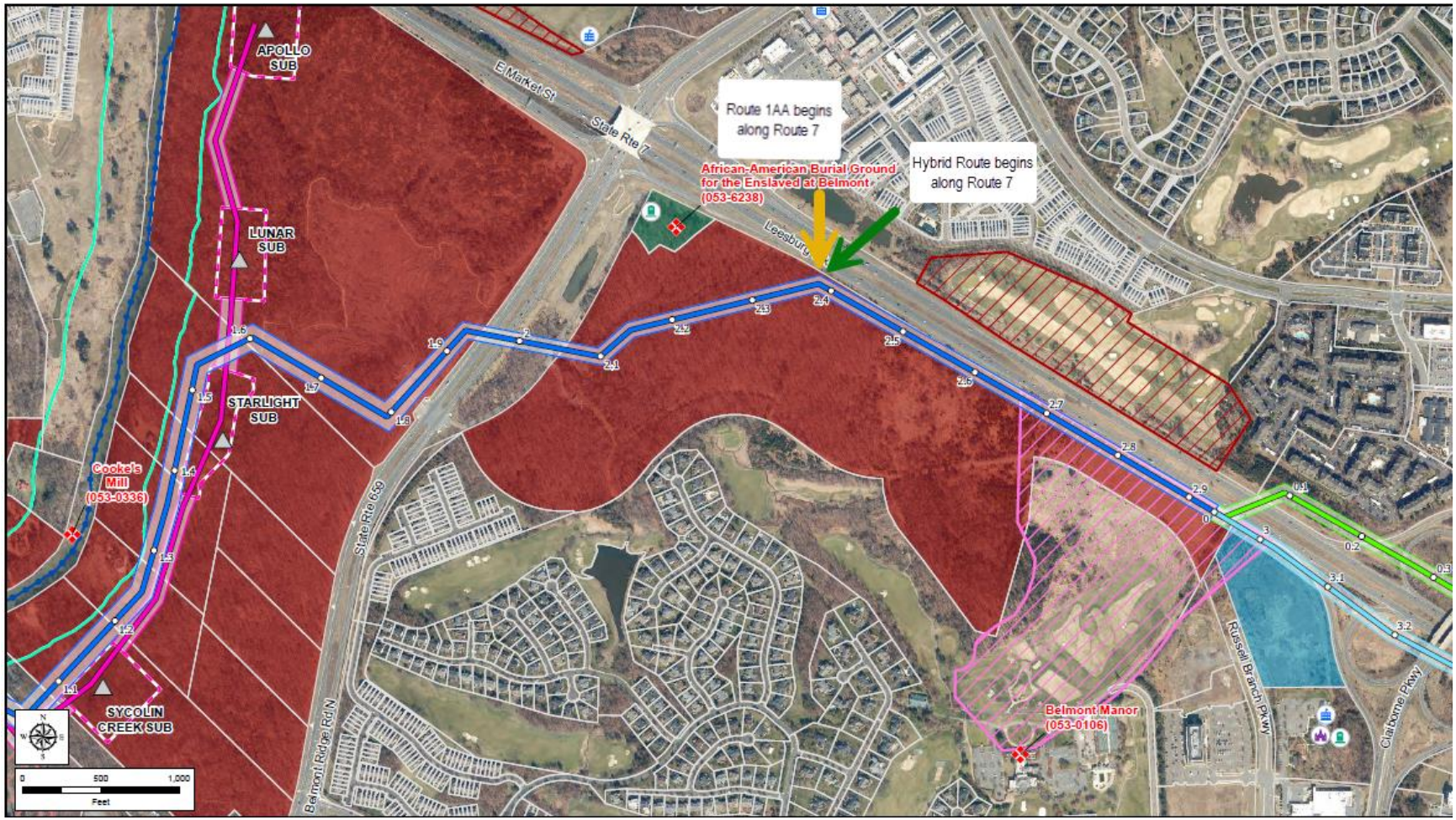
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Report Attachment

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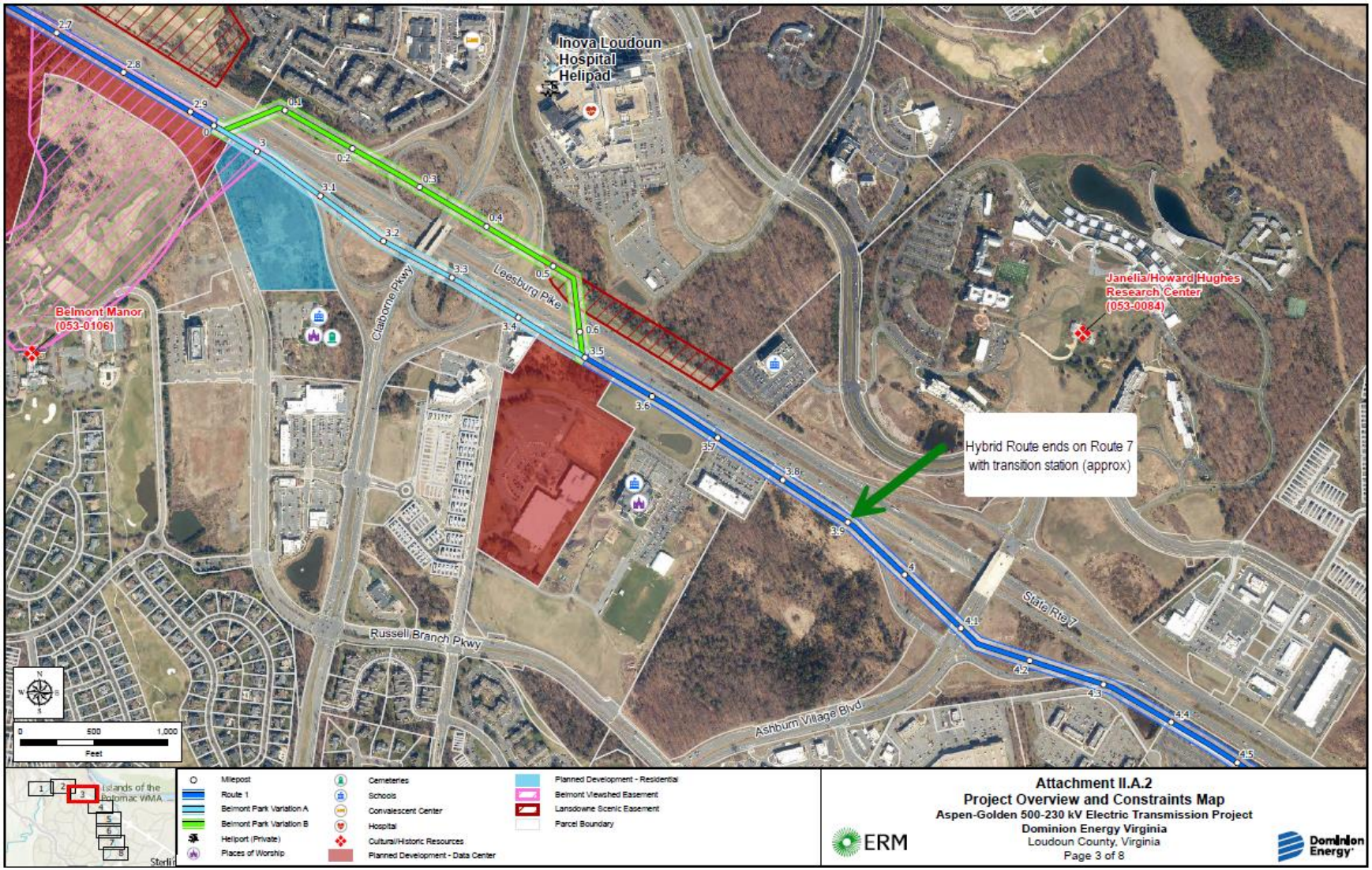
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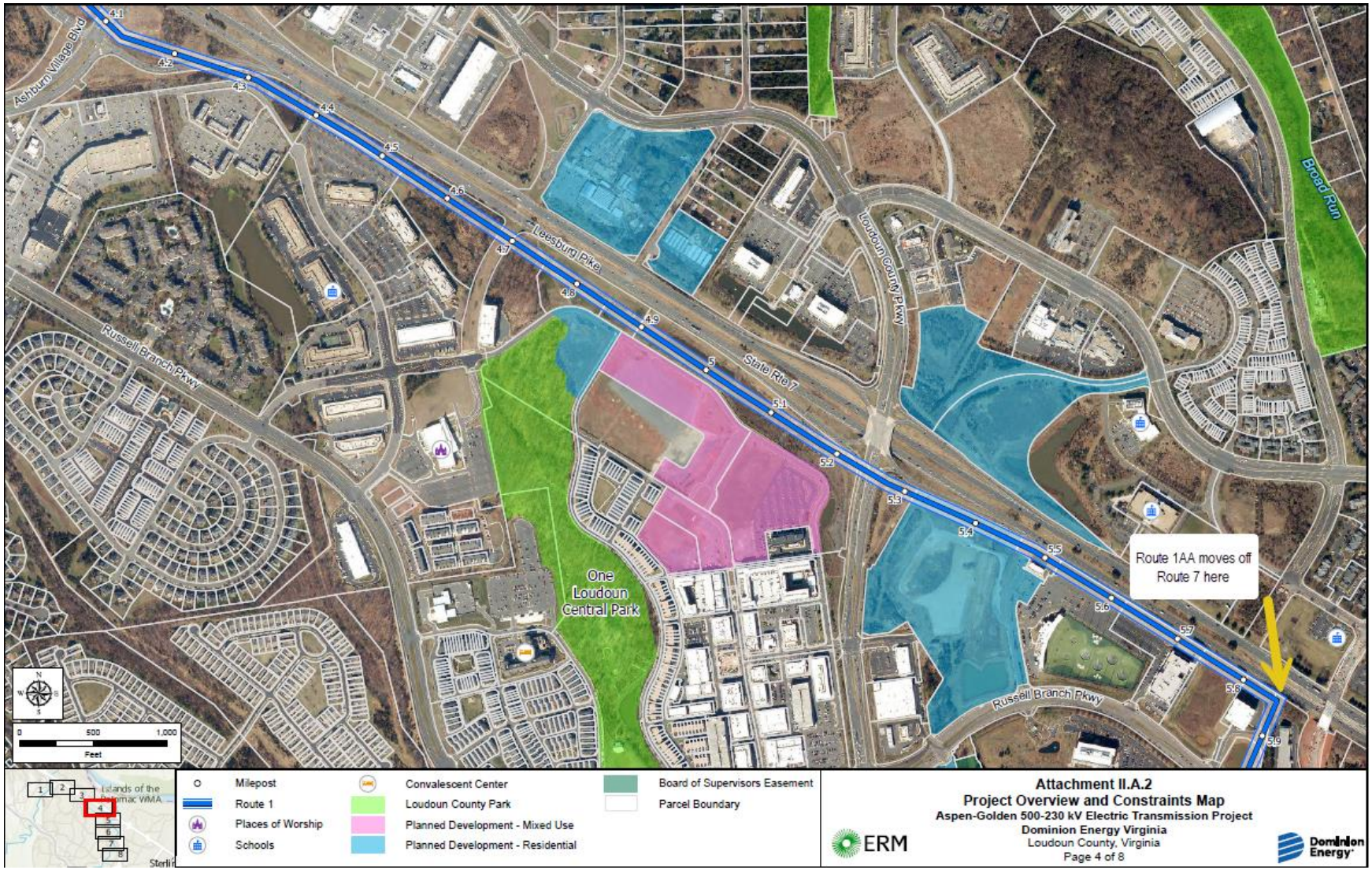
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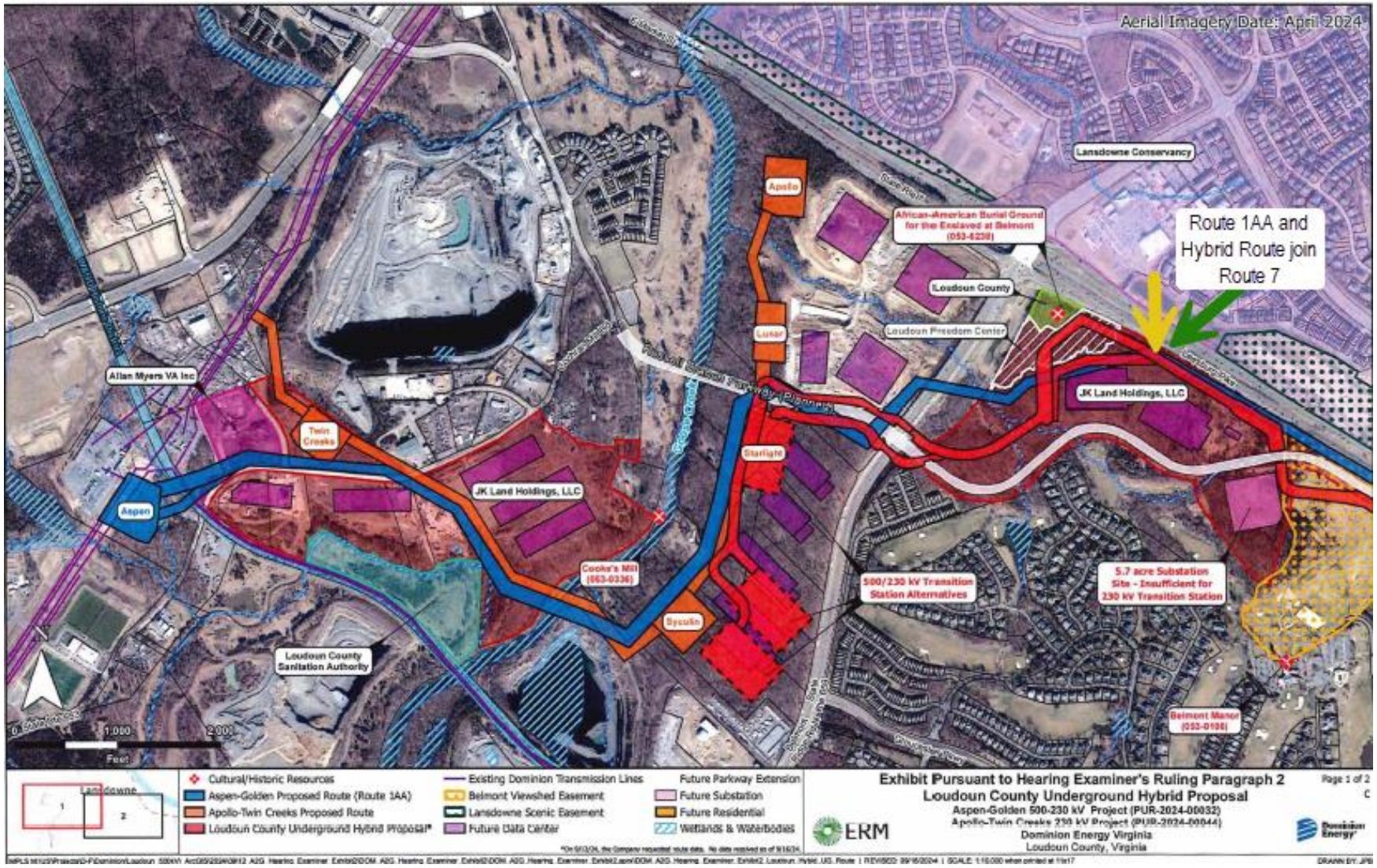
This is a copy of Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 164. The Hearing Examiner added the call-out boxes showing where Route 1AA and the Updated Hybrid Proposal Route begin along Route 7.



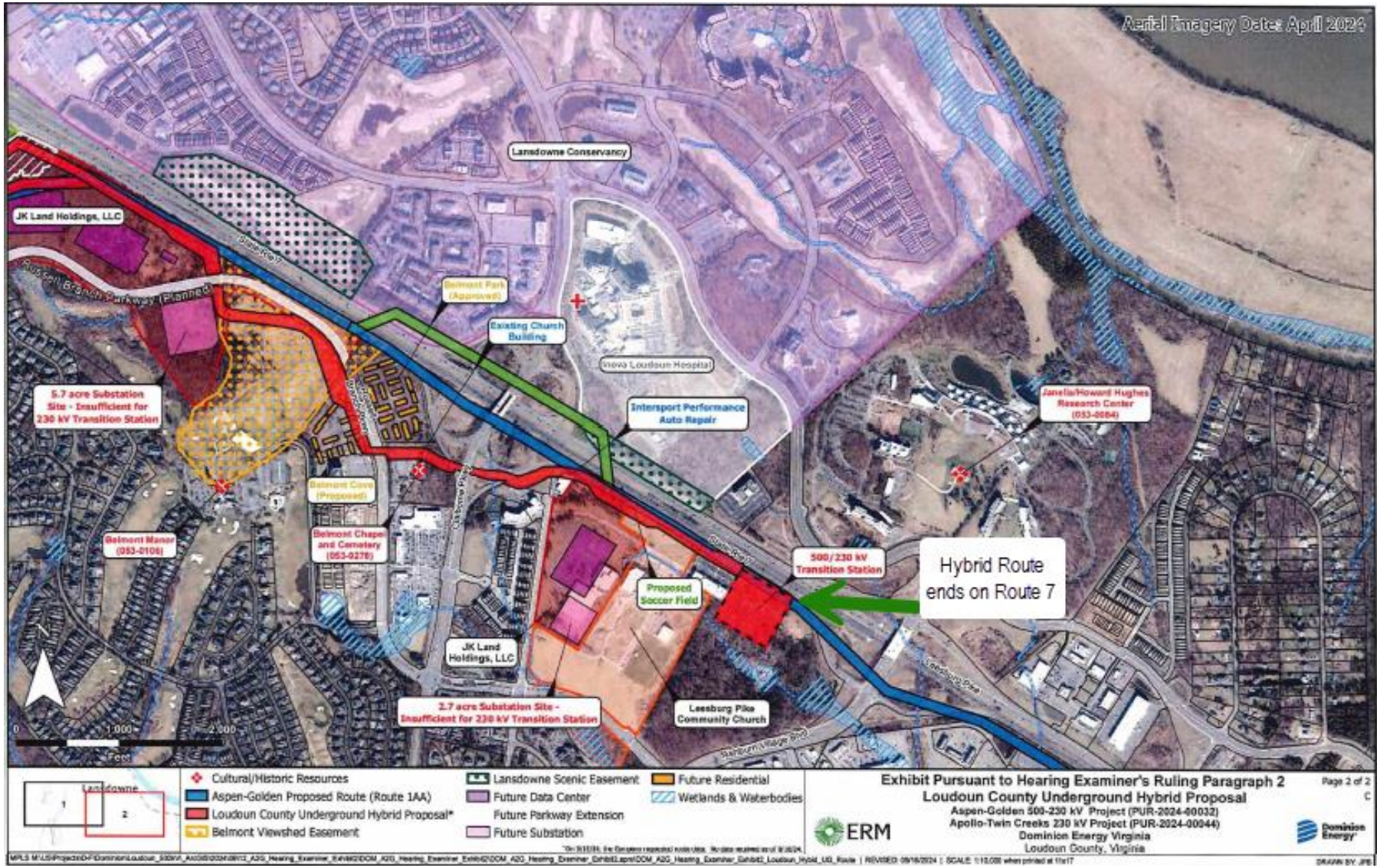
This is a copy of Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 165. The Hearing Examiner added the call-out box showing where the Updated Hybrid Proposal Route ends along Route 7.



This is a copy of Ex. 4 (Aspen-Golden Application) at Attached Appendix, p. 166. The Hearing Examiner added the call-out box showing where Route 1AA leaves Route 7.



This is a copy of Ex. 10, page 1 of 2C. The Hearing Examiner added the call-out box showing where Route 1AA and the Updated Hybrid Proposal Route begin along Route 7. This page corresponds to Report Attachment Page 1.



This is a copy of Ex. 10, page 2 of 2C. The Hearing Examiner added the call-out box showing where the Updated Hybrid Proposal Route ends along Route 7. This page corresponds to Report Attachment Page 2.



This is a copy of Ex. 10, page 3 of 5A. The Hearing Examiner added the call-out box showing where Route 1AA leaves Route 7. This page corresponds to Report Attachment Page 3.