DIRECT TESTIMONY
OF
WILLIAM C. HARVEY, II, CCIM, MAI
AND
RICHARD N. OLSEN, MAI
ON BEHALF OF
LOUDOUN COUNTY, VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NOS. PUR-2024-00032 AND PUR-2024-00044
(COLLECTIVELY, THE CONSOLIDATED CASES)

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?

A. Richard N. Olsen, MAI
William C. Harvey, CCIM, MAI
William C. Harvey & Associates, Inc.
605 South Talbot Street, Unit 5
Saint Michaels, Maryland 21663

Q. WHAT IS YOUR EDUCATION AND PROFESSIONAL EXPERIENCE?

A. Mr. Harvey and I have extensive specialized education and training in the fields of real estate appraisal and appraisal review. We are both professional certified general real estate appraisers, certified to practice in the Commonwealth of Virginia. Mr. Harvey was awarded the MAI (Member, Appraisal Institute) designation from the Appraisal Institute in 1986 and the CCIM (Certified Commercial Investment Member) from the Commercial Investment Real Estate Institute, an affiliate of the National Association of Realtors, in 1998. Mr. Harvey is also a certified instructor and certified to teach real estate-appraisal-related courses and seminars in the Commonwealth of Virginia. Mr. Harvey was awarded the AQB Certified USPAP Instructor designation from the Appraisal Foundation in 2003 and is certified to teach the current edition in effect, USPAP, 2024 edition. Mr. Harvey's curriculum vitae is attached as **Exhibit WH-1**.

I was awarded the MAI (Member, Appraisal Institute) designation from the Appraisal Institute in 1986. My curriculum vitae is attached as **Exhibit WH-2.**

Q. WHAT IS YOUR FIELD OF EXPERTISE?

A. Mr. Harvey and I are both recognized as experts in the fields of real estate appraisal and appraisal review with a specialty in dealing with complex appraisal assignments.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. Counsel for the Respondents listed in the heading of this document ("Respondents") asked us to develop a combination of mass and single property appraisals in connection with Virginia Electric and Power Company's ("Dominion Energy Virginia" or "Dominion") Applications for Approval and Certification of Electric Transmission Facilities in Case No. PUR-2024-00032 for the 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) and Case No. PUR-2024-00044 for the 230 kV Apollo-Twin Creeks Lines, and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations (collectively, the "Consolidated Cases" per the Hearing Examiner's Ruling dated May 15, 2024).

The mass appraisal was to reflect the unimpaired and impaired value, if any impairment was found, of residential properties located along the approximate 4.5-mile-long Route 7 segment of Harry Byrd Highway (Route 7) near Loudoun County Parkway to Belmont Ridge Road and the approximate 2.0-mile-long segment of Harry Byrd Highway (Route 7) near Ashburn Village Boulevard to Belmont Ridge Road in Loudoun County, Virginia that are expected to be affected by Class 5 (External Conditions)

Detrimental Conditions caused by the planned 500/230 kV lines included in the Consolidated Cases as "overhead aerial lines and towers."

Counsel for the Respondents also requested that we opine on the expected economic benefit of the planned 500/230 kV lines included in the Consolidated Cases as "underground lines" along the same approximate 2.0-mile-long segment of Harry Byrd Highway (Route 7) near Ashburn Village Boulevard to Belmont Ridge Road in Loudoun County, Virginia.

The purpose of my testimony is to explain how we performed these analyses and to report our conclusions and opinions.

Q. HAVE YOU EVER UNDERTAKEN THIS TYPE OF ANALYSIS?

A. Yes, we have previously undertaken the valuation of transportation and utility corridors including damage estimates caused by Class 5 (External Conditions) Detrimental Conditions such as high voltage overhead transmission lines (HVOTLs) and underground gas transmission lines (UGTLs).

Our experience in developing both mass and single property appraisals involving transportation and utility corridors in Virginia and the mid-Atlantic region includes the Alexandria Renew's RiverRenew Tunnel Project (Old Town Alexandria, VA), Atlantic Coast Pipeline (numerous counties in NC, VA and WV), DC Water's Potomac River Tunnel (NW Washington, DC), Dulles Greenway (Loudoun County, VA), Dulles Toll Road Right-of-Way for Metrorail's Silver Line Extension (Fairfax and Loudoun County, VA), Colonial Pipeline Co.'s gas transmission lines (Fairfax and Loudoun County, VA), Columbia Gas's transmission lines (Fairfax, Loudoun, Prince William, Goochland and Louisa County, VA), Dominion Virginia Energy's distribution and transmission lines

(Fairfax, Loudoun, Prince William and Rappahannock County, VA), and TRANSCO's transmission lines (Fairfax County, VA).

We have substantial experience in mass appraisals conducted for easements and rights-of-way in eminent domain proceedings for public road and utility projects as well as conservation easements for private charitable contributions.

Q. HAVE YOU EVER TESTIFIED AS AN EXPERT WITNESS ON PROPERTY VALUATION ISSUES?

A. Yes, both Mr. Harvey and I have both qualified and testified as an expert witness in the fields of real estate appraisal and appraisal review. Mr. Harvey has testified in the Circuit Court for Albemarle County, Virginia; Circuit Court for the City of Alexandria, Virginia; Circuit Court for Arlington County, Virginia; Circuit Court for Augusta County, Virginia; Circuit Court for Fairfax County, Virginia (numerous cases); Circuit Court for Goochland County, Virginia; Circuit Court for Loudoun County, Virginia (numerous cases); Circuit Court for Montgomery County, Maryland; Circuit Court for Prince Georges County, Maryland; Circuit Court for Prince William County, Virginia (numerous cases); Circuit Court for Stafford County, Virginia; Circuit Court for Washington County, Maryland; General District Court for Loudoun County, Virginia; Superior Court of the District of Columbia; United States Bankruptcy Court for the District of Maryland; United States Bankruptcy Court for the Eastern District of Virginia (numerous cases); United States Bankruptcy Court for the District of New Jersey; United States Bankruptcy Court for the Southern District of New York; United States Court of Federal Claims (court-appointed expert); United States District Court for the Eastern District of Virginia; and United States House of Representatives, House Committee on Financial Services.

Mr. Harvey has also served as an expert witness on numerous real estate valuation matters for clients such as Atlantic Coast Pipeline, Columbia Gas Transmission, Dominion Virginia Energy, Maryland State Highway Administration, Metropolitan Washington Airports Authority, State Highway and Transportation Commissioner of Virginia, and Virginia State Corporation Commission.

I have testified in the Circuit Court for Loudoun County, Virginia (several times), and the Circuit Court for Prince William County, Virginia.

I have also served as an expert witness on numerous real estate valuation matters for clients such as Alexandria Renew, Columbia Gas Transmission, Dominion Virginia Energy, Maryland State Highway Administration, and State Highway and Transportation Commissioner of Virginia.

Q. DO APPRAISERS HAVE TO MEET ANY SPECIFIC REQUIREMENTS?

A. Yes, per the *Code of Virginia*, Title 54.1, Chapter 20.1, §§ 54.1-2009-2019, appraisers must be licensed and are regulated by the Virginia Real Estate Appraiser Board (VREAB). The VREAB rules and regulations are set forth in the *Virginia Administrative Code*, Chapter 20, §§ 18 VAC 130-20-10 through 130-20-250.

18 VAC 130-20-170 requires a Virginia-licensed real estate appraiser to comply with the Uniform Standards of Professional Appraisal Practice (USPAP) in effect at the time the appraisal is developed. USPAP consist of the standards promulgated by the Appraisal Standards Board of The Appraisal Foundation for use by all appraisers in the development and preparation of appraisal reports. The edition currently in effect is USPAP, 2024 edition.

As members of the Appraisal Institute, Mr. Harvey and I are also required to conform our work to the Appraisal Institute's Code of Ethics and Standards of Valuation Practice.

Q. DO APPRAISERS FOLLOW DIFFERENT RULES WHEN ANALYZING A GROUP OF PROPERTIES VERSUS A SINGLE PROPERTY?

A. Yes, USPAP has different standard rules for single property appraisal, appraisal review and mass appraisal. The development and reporting of a single property appraisal must conform to USPAP Standards 1 and 2; whereas, USPAP Standards 3 and 4 are controlling on the development and reporting of an appraisal review.

A mass appraisal involving a universe of properties must conform to USPAP Standards 5 and 6. While mass appraisals are more commonly performed for ad valorem property taxation purposes, any group of properties can be the subject of a mass appraisal.

Q. ARE YOU FAMILIAR WITH THE CONSOLIDATED CASES INCLUDING THE VARIOUS ROUTES THAT HAVE BEEN PROPOSED FOR THE 500/230 KV LINES?

A. Yes, I am familiar with Dominion's PUR Applications for Case Nos. PUR-2024-00032 and PUR-2024-00044 and the routes that have been brought into this case; however, the focus of our analysis was limited to the approximate 4.5-mile-long Route 7 segment of Harry Byrd Highway (Route 7) near Loudoun County Parkway to Belmont Ridge Road and the approximate 2.0-mile-long segment of Harry Byrd Highway (Route 7) near Ashburn Village Boulevard to Belmont Ridge Road in Loudoun County, Virginia that the Respondents propose to be undergrounded.

Q. PLEASE DESCRIBE WHAT YOU DID TO FAMILIARIZE YOURSELF WITH THE CONSOLIDATED CASES?

A. The scope of work we followed for this assignment included a careful reading of Dominion's Applications for Case Nos. PUR-2024-00032 and PUR-2024-00044, monitoring the SCC's docket for Case Nos. PUR-2024-00032 and PUR-2024-00044, collecting and analyzing public records for the residential parcels along the approximate 4.5-mile-long Route 7 segment of Harry Byrd Highway (Route 7) near Loudoun County Parkway to Belmont Ridge Road and the approximate 2.0-mile-long segment of Harry Byrd Highway (Route 7) near Ashburn Village Boulevard to Belmont Ridge Road in Loudoun County, Virginia, and physically inspecting a sampling of those subject parcels.

Q. WHAT WAS YOUR PURPOSE IN VALUING THE REAL ESTATE ASPECTS OF THE CONSOLIDATED CASES?

A. The purpose was twofold. First, to study and analyze the affect that existing high voltage overhead transmission lines ("HVOTLs") have on residential property values in the Loudoun County submarket and to apply the results of such studies to the residential properties located along the approximate 4.5-mile-long Route 7 segment of Harry Byrd Highway (Route 7) near Loudoun County Parkway to Belmont Ridge Road and the approximate 2.0-mile-long segment of Harry Byrd Highway (Route 7) near Ashburn Village Boulevard to Belmont Ridge Road that will have a view of the planned 500/230kV lines and towers along that segment.

Second, to study and analyze the expected economic benefit of undergrounding the planned 500/230 kV lines along the 2.0-mile-long segment.

Q. DID YOU CONDUCT YOUR VALUATION WITH RESPECT TO EACH OF THE ROUTES THAT ARE BEING CONSIDERED IN THESE CONSOLIDATED CASES?

A. No, our valuation was limited to Dominion's proposed route along the approximate 4.5-mile-long Route 7 segment of Harry Byrd Highway (Route 7) near Loudoun County Parkway to Belmont Ridge Road and the approximate 2.0-mile-long segment of Harry Byrd Highway (Route 7) near Ashburn Village Boulevard to Belmont Ridge Road in Loudoun County, Virginia.

Q. WHAT PROCEDURE DID YOU FOLLOW TO ANSWER THE APPRAISAL PROBLEM AT ISSUE?

A. We followed the valuation process to answer our client's question regarding the potential impact the planned 500/230 kV lines and towers will have on residential real estate located along the approximate 4.5-mile-long Route 7 segment of Harry Byrd Highway (Route 7) near Loudoun County Parkway to Belmont Ridge Road and the approximate 2.0-mile-long segment of Harry Byrd Highway (Route 7) near Ashburn Village Boulevard to Belmont Ridge Road in Loudoun County, Virginia. The valuation process is a systematic procedure that can be adapted to a wide variety of questions that relate to value.

The valuation process is accomplished through specific steps. The number of steps followed depends on the nature of the appraisal assignment and the available data. The model provides a pattern that can be used in any appraisal assignment to perform market research and data analysis, apply appraisal techniques, and integrate the results of these activities into an opinion of defined value. The Appraisal of Real Estate, 31 (15th ed. 2020).

The steps in the valuation process we used to develop the valuation of the residential properties along the segment of the planned route at issue are illustrated on attached **Exhibit WH-3**.

Q. HOW DO APPRAISERS EVALUATE DETRIMENTAL CONDITIONS AFFECTING REAL ESTATE?

A. The current appraisal body of knowledge, which is composed of appraisal-related courses, seminars, standards and textbooks, is the authoritative source of recognized methods and techniques for valuation practitioners and includes the tools for detrimental condition analysis. "The basic tools for detrimental condition analysis are:

- The detrimental condition matrix
- The detrimental condition model
- The Bell Chart
- The three approaches to value" Real Estate Damages, 19 (3rd ed. 2016).

"The detrimental condition matrix addresses the life cycle of the effects on real estate with three potential stages: 1) the assessment stage (before repair), 2) the repair stage (during repair), and 3) the ongoing stage (after repair), along with cost, use, and risk issues that could potentially impact value during each stage. However, not every stage is necessarily relevant to every detrimental condition." *Id.* 20. For example, when a HVOTL is developed near a residential neighborhood, there is typically only an ongoing stage and no assessment or repair stage.

The detrimental condition (DC) model includes all possible stages and the variety of patterns that may occur on a property's value over the detrimental condition's life cycle and are illustrated on attached **Exhibit WH-4**. The variety of patterns are reflected as A,

B, C, D E & F on the illustration with each leg representing a change in the value pattern. Again, it is important to note that many detrimental conditions do not include all of the stages that are depicted. In the example involving a HVOTL developed near a residential neighborhood, the unimpaired value (A) becomes impaired once the HVOTL is constructed (B) and the impairment is permanent (C).

The Bell Chart organizes all detrimental conditions into ten standard categories: (1) general conditions, (2) transactional conditions, (3) distress and sociological conditions, (4) legal conditions, (5) ***external conditions***, (6) building and manufacturing conditions, (7) site and infrastructure conditions, (8) environmental and biomedical conditions, (9) conservation conditions, and (10) natural and climate conditions (emphasis added). *Id.*, 137.

In the example involving a HVOTL developed near a residential neighborhood, the Bell Chart classifies that situation as a Class 5 (External Conditions) detrimental condition, which includes "many different types of neighborhood nuisances, such as prisons, tunnelling projects under properties, power plants, sewage treatment plants, landfills, airport noise, ***transmission lines***, cellular towers, and ***view diminution*** and privacy issues (emphasis added)." *Ibid.*

Q. WHAT GENERALLY ACCEPTED APPRAISAL METHOD DID YOU USE TO ESTIMATE THE REAL ESTATE VALUES FOR THE ROUTE SEGMENT AT ISSUE?

A. The mass appraisal developed for this assignment was based on the sales comparison approach to value, which is one of the three traditional approaches used to value improved property. The mass appraisal was developed using a property valuation

model that extended the 2024 assessments for the properties at issue in order to reflect their unimpaired value as of a current date by employing calibrated parameters. Said 2024 assessments were originally developed by the Loudoun County Commissioner of the Revenue's office with an effective date of January 1, 2024. We brought those values current to today by adjusting the data using an assessment-to-sales ratio that was developed using recent sales and comparing their prices to their assessments at the time of sale.

The single property appraisals were also developed by the sales comparison approach using the paired sales analysis, which is a recognized quantitative technique used to identify and measure adjustments to the sale prices of comparable properties. To apply this technique, sales data on nearly identical properties, or adjusted data, is compared to isolate and estimate a single characteristic's effect on value. In this instance, the single characteristic that was isolated was the view disamenity that will be caused by Dominion's planned 500/230 kV lines and towers along the approximate 4.5-mile-long Route 7 segment of Harry Byrd Highway (Route 7) near Loudoun County Parkway to Belmont Ridge Road and the approximate 2.0-mile-long segment of Harry Byrd Highway (Route 7) near Ashburn Village Boulevard to Belmont Ridge Road in Loudoun County, Virginia.

This type of analysis compares properties impacted by HVOTLs with unimpaired properties in the same location that share comparable characteristics. If a legitimate detrimental condition exists, there is a measurable and consistent difference between the two sets of market data; if not, there is no significant difference between the two sets of data.

Q. HOW IS THE SALES COMPARISON APPROACH DEVELOPED FOR A MASS APPRAISAL INVOLVING A GROUP OF PARCELS?

A. Mass appraisal builds on the same basic principles as single-property appraisal. However, because it involves the appraisal of many properties as of a common date, mass appraisal techniques emphasize equations, tables, and schedules, collectively called models. Property Appraisal and Assessment Administration, 310 (1990).

Simply stated, single-property appraisal is the valuation of a particular property as of a given date; mass appraisal is the valuation of many properties as of a given date, using standard procedures and statistical testing. The principal differences are in scale and quality control. *Id.*, 88.

Q. WHAT DO VALUATION MODELS DO?

A. Valuation models attempt to perform several related functions, including to:

1. predict, replicate, or explain the fair market value of properties from real estate data; and
2. represent the forces of supply and demand within particular markets; and replicate one of the three traditional valuation approaches – the cost approach, the sales comparison approach, or the income approach.

Q. HOW DID YOU DESIGN THE ANALYSIS THAT YOU PERFORMED AT THE REQUEST OF THE RESPONDENTS?

A. Solving an appraisal problem that arises from a client's question or concerns about the value of a property involves a three-step process. The steps are:

1. Identify the problem.
2. Plan the solution.
3. Apply the solution.

An appraiser's scope of work encompasses all of the steps taken in the appraisal development process to answer the client's question. Every appraisal assignment must begin with a clear understanding of seven parameters – client, intended users, intended use, type of opinion, effective date, relevant characteristics about the assignment, and assignment conditions.

The appraisal problem at issue involved an analysis of the impact the planned 500/230 kV lines and towers may have on the residential properties along the route segments at issue. To solve the appraisal problem, our scope of work included identifying and viewing a sample of the subject properties along the route at issue, collecting, verifying and analyzing residential real estate transactions, developing and calibrating the sale comparison models for the mass and single property appraisals that quantified the comparative units value for the subject properties; and lastly applying the conclusions reflected in the models to the characteristics of the properties that we appraised.

Q. DID YOU HAVE SUFFICIENT DATA TO COMPLETE YOUR ANALYSIS?

A. Yes, we found an ample supply of recent transactional data involving property transactions for the purposes of developing the sales comparison models necessary for credible assignment results. By analyzing real estate transactions comparable to the subject properties along the route segment at issue, we were was able to reasonably ascertain the impact that planned 500/230 kV lines and towers may have on nearby residential properties along that same segment.

Q. WHAT 2024 ASSESSMENT DATA DID YOU DEVELOP AND USE FOR THIS CASE?

A. The 2024 assessment data for the approximately 4,210 residential properties that are located within the likely impact zone affected by Dominion's planned 500/230 kV lines and towers along the approximate 4.5-mile-long Route 7 segment of Harry Byrd Highway (Route 7) near Loudoun County Parkway to Belmont Ridge Road are illustrated on attached **Exhibit WH-5**. The aggregate 2024 assessments total $2,638,614,000 and are effective as of January 1, 2024.

The 2024 assessment data for the approximately 1,830 residential properties that are located within the likely impact zone along the route segment of underground lines at issue are illustrated on attached **Exhibit WH-6**. The aggregate 2024 assessments total $1,391,379,610 and are effective as of January 1, 2024.

In order to bring the 2024 assessments at issue forward to a current value and effective date, we multiplied the aggregate 2024 assessments total of $2,638,614,000 by an assessment-to-sales-ratio of 1.124, or 112.4%, which resulted in a current unimpaired valuation of the residential properties along the Route 7 segment of $2,965,802,136, rounded to $2,965,000,000. The aggregate 2024 assessments total of $1,391,379,610 for the underground route segment at issue was multiplied by the same assessment-to-sales ratio of 1.124, or 112.4%, which resulted in a current unimpaired valuation of $1,563,910,682, rounded to $1,565,000,000. The July 2024 sale data we used to analyze and develop the current assessment-to-sales ratio are illustrated on attached **Exhibit WH-7**.

Q. WHAT CASE STUDIES DID YOU DEVELOP AND USE FOR THIS CASE?

A. We developed paired sales analyses of residential properties located along one of Dominion's pre-existing 500/230 kV lines and towers located in Loudoun County to

analyze the effect that these types of HVOTLs have on property values. The pre-existing 500/230 kV lines and towers that we studied are valid proxies for the likely impact Dominion's planned 500/230 kV lines and towers will have along the route segment at issue in this case.

The case studies revealed a diminution in value due to the proximity of Dominion's pre-existing 500/230 kV lines and towers between -1.0% and -19.2% with an average (mean) diminution of -8.5%.

The residential case studies we developed for this assignment for both the single-family detached and attached residences are illustrated on attached **Exhibit WH-8**.

Q. WHAT PEER-REVIEWED APPRAISAL LITERATURE DID YOU RESEARCH AND RELY UPON FOR THIS CASE?

A. The prior research on the effects of HVOTLs on property value dating back to the 1980s though today has been exhaustively reviewed in peer-reviewed appraisal literature and will not be repeated here ad infinitum. However, we have summarized five peer-reviewed learned treatises on this specialized topic to highlight how consistent their findings have been over the years. In general, the peer-reviewed appraisal literature we relied upon revealed that:

- When negative impacts are evident, studies report an average diminution of between 1% and 10% of property values.
- Where views of the lines and towers are completely unobstructed, negative impacts can extend up to a quarter mile or beyond depending on elevation.
- It has been found that high-end custom homes are generally more sensitive to the negative impacts of HVOTLs than lower-end homes.

- Research has found that the negative impacts on lots adjacent to or with a direct view of a tower may be slightly greater than impacts on lots further from the tower. This is most likely due to the visual obstruction from a tower is more substantial than the lines themselves.

A summary of the peer-reviewed appraisal literature we relied upon for this case is illustrated on attached **Exhibit WH-9**.

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE GEOGRAPHIC AREA THAT WILL BE POTENTIALLY IMPACTED BY DOMINION'S PLANNED 500/230 KV LINES AND TOWERS ALONG THE ROUTE SEGMENT AT ISSUE?

A. As a result of our research and analysis, including the graphic depictions of viewshed analyses provided by Dominion, it is our opinion 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.

The approximate boundaries of the impact zone we analyzed for the Route 7 and 2.0-mile-long segments are shown on attached **Exhibits WH-10 and WH-11, respectively**.

Dominion's graphic depictions of viewshed analyses along parts of the estimated 2.0-mile impact zone further support our opinions and conclusions, and are illustrated on attached **Exhibit WH-12**.

Q. ARE YOU AWARE OF THE BASIS BY WHICH DOMINION'S REAL ESTATE EXPERTS HAVE ESTIMATED THE IMPACT ON RESIDENTIAL PROPERTY VALUES CAUSED BY HVOTLS?

A. Yes, based upon our view of a publicly available video of a town hall meeting held at Belmont Middle School on August 29, 2023, a Dominion Energy representative, Rob Richardson, asserted that "based upon the real estate experts that they have worked with on numerous occasions, powerlines affecting property values result in a -4%, -5% or -6% impact." "Dominion Power," YouTube, uploaded by @landsdownewoods763, August 29, 2023, https://www.youtube.com/watch?v=-Xw8qwvKgrQ. The range in the diminution of property values due to powerlines that is recognized by Dominion closely parallels that which we found in peer-reviewed appraisal literature as well as the results of the case studies we developed for this case.

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE POTENTIAL IMPACT THE PLANNED 500/230 KV LINES AND TOWERS WILL HAVE ON THE RESIDENTIAL REAL ESTATE ALONG THE ROUTE SEGMENT AT ISSUE?

A. We applied the aforementioned -8.5% adjustment attributable to the comparable Class 5 Detrimental Conditions reflected in the residential case studies to the unimpaired valuation of the subject properties along the Route 7 segment of $2,965,000,000, which resulted in an impaired valuation of the subject properties of $2,712,975,000. The $252,025,000 differential reflects the damages that are likely to result to the subject properties along the Route 7 segment when Dominion's planned 500/230 kV lines and towers along the Route 7 segment are constructed.

We also applied the aforementioned -8.5% adjustment to the unimpaired valuation of the subject properties to the underground route segment at issue of $1,565,000,000, which resulted in an impaired valuation of the subject properties of $1,431,975,000. The $133,025,000 differential reflects the damages that are likely to result to the subject properties for the underground segment at issue.

The above estimate of damages is relatively straightforward and somewhat conservative since the mid-range of the diminution in value of -8.5% was applied solely to the approximately 1,830 residential properties that are located within the likely impact zone affected by Dominion's planned 500/230 kV lines and towers along the route segment at issue. Had we used the upper end of the range of -19.2% to better reflect the impact resulting from Dominion's planned tower heights of up to 180-feet, the estimate of damages would more than double.

Of additional note is the fact that there are several high-rise residential properties located outside of our estimated impact zone that may be impaired due to their unobstructed view of the planned 500/230 kV lines and towers as a result of their higher elevations that increase the angle of an observer's line of sight – i.e., viewshed – as well as the approximately 451 non-residential properties that are located within the likely impact zone but not included in our damage estimate.

Additional damages that are difficult to quantify but are somewhat obvious on a qualitative basis is the impairment to the lands encumbered with conservation and open space easements, residential common areas, and Loudoun County's gateway corridor that fall within our estimated impact zone.

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE ECONOMIC BENEFIT THAT WILL LIKELY RESULT IF THE PLANNED 500/230 KV LINES AND TOWERS ARE PLACED UNDERGROUND ALONG THE ROUTE SEGMENT AT ISSUE?

A. As a result of our research and analysis, it is our opinion that the economic benefit that will likely result if the planned 500/230 kV lines and towers are placed underground along the route segment at issue is not less than $133,025,000.

Q. DO YOU CERTIFY THAT YOUR OPINIONS IN THIS CASE ARE STATED TO A REASONABLE DEGREE OF PROFESSIONAL CERTAINTY?

A. Yes, our signed statement of certification appears on attached **Exhibit WH-13**.

THANK YOU, MR. OLSEN. NO FURTHER QUESTIONS.