CONTAINS REDACTED INFORMATION

DIRECT TESTIMONY
OF
WILLIAM C. HARVEY, II, CCIM, MAI
PIEDMONT ENVIRONMENTAL COUNCIL
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NOS. PUE-2007-00031 AND PUE-2007-00033

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

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Q. WHAT IS YOUR EDUCATION AND PROFESSIONAL EXPERIENCE?

A. I have extensive specialized education and training in the fields of real estate appraisal, appraisal review, appraisal consulting, and brokerage. I am a professional certified general real estate appraiser, certified to practice in the Commonwealth of Virginia. I 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. I am also a certified instructor and certified to teach real estate-appraisal-related courses and seminars in the Commonwealth of Virginia. I was awarded the AQB Certified USPAP Instructor designation from the Appraisal Foundation in 2003. My curriculum vitae is attached as **Exhibit WH-1**.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. Counsel for the Piedmont Environmental Council asked me to analyze and calculate the extent of uncompensated monetary loss that would be experienced by property owners in the vicinity of the 500 kilovolt (kV) transmission line that Dominion Virginia Power

(DVP) and Trans-Allegany Interstate Line Co. (TrAILCo) propose to construct from the 502 Junction substation to the Loudoun substation, across Northern Virginia. The purpose of my testimony is to explain how I performed this analysis and calculation and to report my conclusions.

Q. HAVE YOU EVER BEFORE UNDERTAKEN THIS TYPE OF ANALYSIS?

A. Yes. I have undertaken the analysis of real estate damages caused by detrimental conditions in a number of recognized categories. While hundreds of detrimental conditions exist in the marketplace, certain common attributes arise to suggest distinct groupings. The Bell Chart organizes all detrimental conditions into ten standard categories. Real Estate Damages, 16 (1999).

My experience in analyzing detrimental conditions includes both mass and single property appraisals involving nine of the ten recognized categories – Class I (Benign Condition), Class II (Nonmarket Premium), Class III (Market Condition), Class IV (Temporary Condition), Class V (Imposed Condition), Class VI (Building Construction Condition), Class VII (Geotechnical Construction Condition), Class VII (Environmental Condition), and Class X (Incurable Condition).

Notable among my previous assignments involving the analysis of detrimental conditions through mass appraisals include the Mantua Community (Fairfax County, VA), Paw Creek Community (Charlotte, NC), Riggs Park Community (Washington, DC), and Sugarland Run Community (Loudoun County, VA).

Notable among my previous assignments involving corridor valuation include the Dulles Greenway (Loudoun County, VA), MWAA Dulles Toll Road Right-of-Way (Loudoun County, VA), and William Center (Prince William County, VA).

I also have substantial experience in 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 BEFORE TESTIFIED AS AN EXPERT WITNESS ON PROPERTY VALUATION ISSUES?

A. Yes. I have qualified and testified as an expert witness in the fields of appraisal, appraisal consulting, appraisal review and real estate brokerage before the Circuit Court for the City of Alexandria, Virginia, Circuit Court for Arlington County, Virginia, Circuit Court for Fairfax County, Virginia, Circuit Court for Goochland County, Virginia, Circuit Court for Loudoun County, Virginia, Circuit Court for Montgomery County, Maryland, Circuit Court for Prince William County, Virginia, Circuit Court for Washington County, Maryland, General District Court for Loudoun County, Virginia, U.S. Bankruptcy Court for the District of Maryland, U.S. Bankruptcy Court for the Eastern District of Virginia, U.S. Bankruptcy Court for the District of New Jersey, U.S. Bankruptcy Court for the Southern District of New York, U.S. Court of Federal Claims (*court-appointed expert*), U.S. District Court for the Eastern District of Virginia, and the U.S. House of Representatives, House Committee on Financial Services.

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 Virginia Administrative Code, Chapter 20, §§ 18VAC 130-20-10 through 130-20-250.

18VAC 130-20-170 requires a Virginia-licensed real estate appraiser to comply with the Uniform Standards of Professional Appraisal Practice (USPAP) when performing a real estate appraisal.

USPAP are the standards promulgated by the Appraisal Standards Board of the Appraisal Foundation for use by all appraisers in the preparation of appraisal reports. USPAP, 2006 ed., is currently in effect.

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

A. Yes. USPAP contains different standards for the appraisal of single properties and a universe of properties as well as appraisal review.

USPAP Standards 1 and 2 are controlling on the development and reporting of a single property appraisal.

USPAP Standard 3 is controlling on the development and reporting of an appraisal review.

USPAP Standard 6 is controlling on the development and reporting of a mass appraisal dealing with a universe of properties.

In essence, valuation models developed for mass appraisal purposes must reflect supply and demand patters for groups of properties rather than for a single property.

Q. WHAT DO VALUATION MODELS DO, MR. HARVEY?

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

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

Q. HOW IS QUALITY MEASURED?

A. Quality is measured differently in mass and single-property appraisal. In mass appraisal, statistical methods are used to measure deviations of all sales in the population database from their mass-appraised values. In single-property appraisal, quality has usually been judged by a direct comparison with a limited set of comparable sales. A Guide to Appraisal Valuation Modeling, 6 (2000).

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

A. I followed the valuation process to answer my client's questions regarding the impact of the proposed high-voltage transmission lines (HVTL) on proximate properties. 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, 49 (12th ed. 2001).

The steps in the valuation process are illustrated on attached **Exhibit WH-2**.

Q. HOW DID YOU DESIGN THE ANALYSIS THAT YOU PERFORMED FOR PIEDMONT'S COUNSEL?

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 involves an analysis of the impact of a proposed HVTL on properties proximate to it. To solve the appraisal problem, my scope of work included identifying and viewing a random sample of properties along existing HVTLs, defining the market area of consistent behavior that applies to the impact, if any, of the potential detrimental condition – here, a visual disamenity – caused by the proposed HVTLs on proximate properties, conducting market surveys of market participants in the subject neighborhoods to determine what their perspectives and perceptions are relating to the

effect on value, if any, that may be caused by the proposed HVTLs on proximate properties, developing and calibrating sale comparison model(s) – linear and multiple regression analyses – that quantify the impact, if any, caused by the proposed HVTLs on the market value of the proximate properties; and lastly applying the conclusions reflected in the model(s) to the characteristics of the properties being appraised.

Q. HOW DOES THE VALUATION PROCESS ADDRESS DETRIMENTAL CONDITIONS IN REAL ESTATE?

A. Each detrimental condition must be analyzed on a case-by-case basis because a variety of impacts can result. The impact of detrimental conditions on property values is ultimately an empirical question that requires the application of one or more of the three traditional approaches as set forth in the valuation process.

The Detrimental Condition Model graphically illustrates all possible stages that can cause a wide variety of impacts on value. However, many detrimental conditions do not include all of the stages shown in the Detrimental Condition Model.

The stages in the Detrimental Condition Model are illustrated on attached **Exhibit WH-3**.

Q. WHICH CLASS OF DETRIMENTAL CONDITIONS DO YOU BELIEVE APPLIES TO THE PROPOSED HVTLS IN THIS CASE?

A. Class V (Imposed Conditions) detrimental conditions involve adverse external factors by another person or entity that affect the value of property. Class V detrimental condition apply to transmission lines and eminent domain.

These situations often involve a *conditions adjustment*, which may be determined from the marketplace. For example, if comparing homes under an airport flight corridor with similar homes that are not indicates a 10% loss attributable to being under the flight corridor, then that conditions adjustment is -0.10. Real Estate Damages, 79 (1999).

Class V imposed conditions reflect a sudden drop in value upon the occurrence of the detrimental condition and a permanent loss in value as a result of the imposed condition.

The graph on attached **Exhibit WH-4** illustrates the permanent loss that often results from a Class V detrimental condition.

Q. WHAT ARE THE IDENTIFIED IMPACTS ON REAL ESTATE VALUES CAUSED BY HVTLS?

A. Most high-voltage transmission lines in the United Sates are rated between 115 and 765 kilovolts (kV). Lines carrying voltages below 345 kV are ordinary high-voltage lines; above 345 kV are *extra high-voltage* lines. For some 500kV lines, the maximum magnetic field of about 140mG directly under the line will drop to about 3.0 mG at approximately 300 feet, depending on the amount of current within the line. Real Estate Damages, 79 (1999).

Before the introduction of extra high-voltage transmission lines, the concern about transmission lines was their impact on the landscape's aesthetic appearance.

However, with the increased use of extra high-voltage lines, the public has shown concerns over the stronger electromagnetic fields (EMF) they produce and potential health hazards from direct exposure.

The role of the appraiser is to examine real-estate market data to determine whether there is any evidence of effects on property value as a result of the various concerns the public may have regarding aesthetic appearance and health effects.

Q. WHAT IS THE FACTUAL BASIS FOR YOUR ANALYSIS?

A. I studied real estate activity along existing HVTL corridors in Northern Virginia in order to collect factual data for the purposes of my analysis. For the most part, the existing HVTLs I studied involved lower tower heights (52' to 100') than those proposed for

much of the DVP/TrAILCo 500kV HVTLs (118' to 140'). Nonetheless, the observations I gleaned from the market serve as a legitimate factual basis upon which I can reasonably predict market activity that should result from the installation of the DVP/TrAILCo 500kV HVTLs.

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

A. I found limited data involving property transactions in the immediate vicinity of a HVTL. I consider such properties to represent limited-market properties. Limited-market properties can cause special problems for appraisers.

Despite the paucity of data, I was able to collect, verify and analyze sufficient data to measure the effects that HVTLs can have on property values.

Real estate markets differ significantly from the markets for other goods and services and have never been considered truly efficient markets.

Real estate market analysis focuses on the motivations, attitudes, and interaction of market participants as they respond to the particular characteristics of real estate and to external influences that affect its value. The Appraisal of Real Estate, 98 (12th ed. 2001).

By analyzing real estate transactions in the immediate vicinity of HVTLs, one can reasonably ascertain how this type of external influence affects property value.

Q. HOW WILL THE HIGHER TOWER HEIGHTS ALONG THE PROPOSED 500 KV HVTLS AFFECT YOUR ANALYSIS?

A. The higher tower heights along parts of the proposed DVP/TrAILCo 500kV HVTLs will cause the angle of the bulk plane by which the towers can be seen from adjacent properties to increase, which will result in the visual disamenity being extended to a greater distance from the HVTL. Thus, more properties will be adversely affected by the visual disamenity.

Bulk plane is an imaginary inclined plane rising over a lot, drawn at a specific angle from the vertical, or bottom side of which is coincidental with the lot line(s) of the lot.

Q. HOW DID YOU ASCERTAIN THE PERSPECTIVES AND PERCEPTIONS OF NORTHERN VIRGINIA RESIDENTS THAT PROPOSED HVTLS MAY AFFECT?

A. Before collecting, verifying and analyzing market data, I conducted a survey of market participants to ascertain their perspectives and perceptions regarding the proposed HVTLs. I surveyed four discrete groups: property owners, real estate agents, mortgage lenders and land trusts.

The most significant issue in addressing the impacts of a detrimental condition on residential property values is the general predisposition of many people to believe that detrimental conditions affect value.

If the detrimental condition is going to affect value, it must be of such significance that buyers and sellers give it significant weight in decision-making so that it has a material affect on price. Likewise, if buyers and sellers are not overly concerned about the detrimental condition, then one would expect to not see a material affect on price. Thus, the results of a market survey assist the appraiser in forming a hypothesis regarding the detrimental condition under study that can then be analyzed through market data to see if it is true or false.

Q. WHAT DID YOUR MARKET SURVEYS SHOW, MR. HARVEY?

A. The results of my market surveys showed a fairly consistent and elevated concern regarding the perceived negative impact the proposed HVTLs will have on property values. A summary of the responses is presented below.

Awareness of DVP/TrAILCo's 500kV Application:

Property Owners: 81% aware
Real Estate Agents: 92% aware
Mortgage Lenders: 61% aware
Land Trusts: 93% aware

Perception that DVP/TrAILCo 500kV HVTL on Property Will Affect Value:

Property Owners: 88% believe property values affected
Real Estate Agents: 90% believe property values affected
Mortgage Lenders: 94% believe property values affected
Land Trusts: 86% believe property values affected

Perception of Amount that DVP/TrAILCo 500kV HVTL on Property Will Affect Value:[A]

Property Owners: 85% believe property values affected by -25% or more
Real Estate Agents: 55% believe property values affected by -25% or more
Mortgage Lenders: 40% believe property values affected by -25% or more
Land Trusts: N/A – Insufficient responses

[A] Based on responses that included quantified answers.

Perception that DVP/Trailco 500kV HVTL Near Property Will Affect Value:

Property Owners: 67% believe property values affected
Real Estate Agents: 97% believe property values affected
Mortgage Lenders: 82% believe property values affected
Land Trusts: 83% believe property values affected

Perception of Amount that DVP/Trailco 500kV HVTL Near Property Will Affect Value:[B]

Property Owners: 73% believe property values affected by -25% or more
Real Estate Agents: 35% believe property values affected by -25% or more
Mortgage Lenders: 40% believe property values affected by -25% or more
Land Trusts: N/A – Insufficient responses

[B] Based on responses that included quantified answers.

These responses to the surveys suggest that buyers and sellers would give significant weight to the perceived negative affect that the DVP/TrAILCo 500kV HVTL will have on property value. Accordingly, I developed a hypothesis that market data from the Northern Virginia submarket would show a measurable negative impact for properties

with a HVTL within it and a slightly less negative impact for properties with a HVTL proximate to it.

The survey responses and graphic analyses are illustrated on attached **Exhibit WH-5**.

Q. HOW DID YOU ANALYZE YOUR HYPOTHESIS REGARDING THE PERCEIVED NEGATIVE AFFECT ON PROPERTY VALUES THAT IS EXPECTED TO RESULT FROM THE PROPOSED HVTLS?

A. I developed the sales comparison approach to analyze my hypothesis regarding the impact of the proposed HVTLs on property values. The sales comparison approach is one of the three traditional approaches to value; it utilizes market data with and without the detrimental condition. This approach may not always be easy to apply because of the difficulty of finding relevant market data, but it still is a very strong approach in quantifying the value issues in a detrimental conditions assignment. Real Estate Damages, 19 (1999).

I used multiple regression analysis to analyze large groups of property data and paired sales analysis to analyze single property data.

Regression analysis has increased in popularity and use with the advent of personal computers and because of its inherent elegance as a way to relate and interpret the relationships between two or more variables. Another reason for the popularity of regression analysis is because it is a robust process adaptable to any number of scientific and business applications to enhance decision making abilities. A Guide to Appraisal Valuation Modeling, 47 (2000).

The sales comparison approach utilizes market data with and without the detrimental condition. This approach may not always be easy to apply because of the difficulty of finding relevant market data, but it still is a very strong approach in quantifying the value

issues in a detrimental conditions assignment. One of the most useful applications of this approach is paired sales analysis.

All else being equal, sale comparison is the preferred method of extracting and supporting adjustments. The technique requires that the appraiser find properties with and without a feature, and then isolate the price difference by comparing total property process. The strengths of the sales comparison approach are that it is easy to understand, easy to use, and logical. The weaknesses are that the data are sometimes difficult to find and the conclusions can be clouded by unknown factors. Valuation by Comparison: Residential Analysis and Logic, 57 (2007).

Q. WHAT RESULTS DID YOU GET FROM THE MULTIPLE REGRESSION ANALYSES YOU DEVELOPED?

A. I used multiple regression analysis (MRA) to measure the impact HVTLs have on property values within 500 linear feet of an HVTL.

The MRAs were developed with Minitab Release 14 Statistical Software for Windows (Version 14.02). A summary of the MRA model used to value the subject property is as follows:

Modeling Areas:	Selected neighborhoods in Fauquier, Loudoun, Prince William and Warren Counties.
Sales Files:	Sale files were created for the above modeling areas that spanned from 2002 through 2007. Stepwise regression was used to identify the most statistically relevant variables in each model and outliers were eliminated wherever possible.
Regression Model Equation:	$y = b_0 + b_1x_1 + b_2x_2 + ... + b_kx_k + e$, where: y = response, x = predictors, b_k = population regression coefficients, and

e = error term with a normal distribution, mean of 0, and standard deviation of s.

Dependent variable = Sale Price (in all models)

Independent variables = Models included Sale Date, Location, Land Sq. Ft., Improvement Sq. Ft., Quality Grade, Basement/Levels, Year Built, Style, Full/Half Baths, Bedrooms, Fireplaces, Topography, and HVTL Proximity (Zone) where applicable. HVTL Proximity (Zone) was included in all models.

Model Results: The range in R^2 (adj.) of 75.1% and 93.3% is considered good (very high) as the general rule of thumb is that any real estate valuation with an R^2 (adj.) greater than 60% explains a lot. A Guide to Appraisal Valuation Modeling, 50 (2000).

The significance F test of 0.05 or less was met for all models.

The MRAs revealed an average (mean) diminution in value as a result of close proximity (500 Ln. Ft. or less) to a HVTL of **-22.0**% (rounded).

As applied to the DVP HVTL corridors at issue (Preferred and Alternate Routes), the high predictive power of the subject MRAs indicate that property values within 500 linear feet of the HVTLs will be diminished by an average of **-22.0**%.

The results of the multiple regression analyses are illustrated on attached **Exhibit WH-6**.

Q. WHAT RESULTS DID YOU GET FROM THE PAIRED SALES ANALYSES YOU DEVELOPED?

A. I used paired sales analysis to measure the impact HVTLs have on property values beyond 500 linear feet but with a view of an HVTL. The data analyzed included similarly impacted properties, labeled *test areas*, and unimpaired properties, which are labeled *control areas*.

Test and Control Areas: Selected properties in Fauquier, Loudoun, Prince William and Warren Counties.

Sales Files: Sale files were created for the above test and control areas that spanned from 2002 through 2007. Market grids were developed to account for differences in the elements of comparison in order to isolate the price difference caused by proximity and view of a HVTL.

The paired sales analyses revealed an average (mean) diminution in value as a result of proximity (within 500 to 1,000 Ln. Ft.) and a view of a HVTL of -**13.5**% (rounded).

As applied to the DVP HVTL corridors at issue (Preferred and Alternate Routes), the paired sales analyses indicate that property values within 500 to 1,000 linear feet of the HVTLs and with a view of the HVTLs will be diminished by an average of **-13.5**%.

The results of the paired sales analyses are shown on attached **Exhibit WH-7**.

Q. WHAT IS YOUR CONCLUSION REGARDING THE EXTENT OF UNCOMPENSATED MONETARY LOSS THAT WILL BE EXPERIENCED BY PROPERTY OWNERS IN THE VICINITY OF THE PROPOSED 500 KV LINES AT ISSUE?

A. As a result of my research and analysis, it is my opinion the market values of the properties in the vicinity of the proposed 500 kV HVTLs will incur significant monetary losses. Due to the extent of the impact the HVTLs will have on properties along the corridors, most of the owners will not be compensated for the monetary losses as a result of any future takings by DVP.

Moreover, it is also my opinion that the public interest value of the partial interests in properties, such as conservation easements, in the vicinity of the proposed 500 kV HVTLs will also incur significant losses. As these partial interests are noneconomic in nature, I am unable to quantify the extent of the impact the HVTLs will have on the partial interests in properties along the corridors held by the public.

Nonetheless, it is logical to assume the losses will be equally significant and the public will not be compensated for the losses as a result of any future takings by DVP.

Q. DID YOU REVIEW THE APPRAISALS PREPARED FOR DVP'S COUNSEL?

A. [redacted]

Q. WHAT WAS THE SCOPE OF YOUR REVIEW?

A. [redacted]

[redacted].

Q. WHAT CONCLUSION DID YOU REACH REGARDING YOUR REVIEW?

A. [redacted]

THANK YOU, MR. HARVEY, NO FURTHER QUESTIONS.