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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. EA-2014-0207

**SURREBUTTAL TESTIMONY OF
THOMAS PRIESTLEY, Ph.D.**

**ON BEHALF OF
GRAIN BELT EXPRESS CLEAN LINE LLC**

October 14, 2014

TABLE OF CONTENTS

I.	WITNESS INTRODUCTION AND PURPOSE OF TESTIMONY	1
II.	QUALIFICATIONS AND BACKGROUND RELATIVE TO THE IMPACT OF ELECTRIC TRANSMISSION LINES ON PROPERTY VALUES	3
III.	ANALYSIS OF THE TESTIMONY OFFERED BY KURT KIELISCH AND BOYD HARRIS	13
IV.	ANALYSIS OF THE REBUTTAL TESTIMONY OF BOYD L. HARRIS ON BEHALF OF MATTHEW AND CHRISTINA REICHERT	23

1 **I. WITNESS INTRODUCTION AND PURPOSE OF TESTIMONY**

2 **Q. Please state your name, present position and business address.**

3 A. My name is Thomas Priestley. I am a Senior Environmental Planner with CH2M HILL.
4 My business address is 1000 Wilshire Boulevard, Los Angeles, CA 90017.

5 **Q. What is your educational background?**

6 A. I have a bachelor's degree in urban planning from the University of Illinois at Urbana-
7 Champaign. At the College of Environmental Design at the University of California at
8 Berkeley I earned a master's degree in landscape architecture with an emphasis in
9 environmental planning; a master's degree in city and regional planning; and a Ph.D. in
10 environmental planning.

11 **Q. What research have you conducted regarding the impact of transmission lines on
12 property values?**

13 A. I have extensive experience in researching the impact of transmission lines on property
14 values. For example, in the late 1980s I became part of a research team that searched for
15 and reviewed all of the available research on transmission line property value impacts. In
16 1992, Dr. Cynthia Kroll and I prepared a systematic summary and critical review of this
17 literature, which was published as a report by the Edison Electric Institute.¹ Our research
18 team designed and executed a study that analyzed over 960 sales in six suburban residential
19 neighborhoods and that assessed the impact of proximity to transmission lines on property
20 values. We analyzed the relevant data using hedonic modeling, which made it possible to
21 identify the property value effects of a range of factors, including proximity to the
22 transmission line.

¹ Kroll, C., and T. Priestley, 1992. *The Effects of Overhead Transmission Lines on Property Values*. Edison Electric Institute Siting and Environmental Planning Task Force, Washington, D.C., 101 pp.

1 I have continually updated the research review Dr. Kroll and I prepared in 1992. For
2 example, I updated the research review in 1995 in preparation for expert witness testimony
3 on the impacts of transmission lines on property values I gave to the Emerging Technology
4 Issues Advisory Committee of the Virginia General Assembly Joint Commission on
5 Technology and Science.² Also, I updated the literature review in 2008 when I prepared an
6 analysis of property value issues associated with a proposed 400 kV DC transmission line in
7 upstate New York.³ In addition, I updated the literature review in 2010 when I prepared an
8 analysis of the property value effects of a proposed 500 kV AC line in Montana and Idaho.⁴

9 **Q. Do you have a curriculum vitae?**

10 A. Yes. It is attached as Schedule TP-1.

11 **Q. What is the purpose of your surrebuttal testimony?**

12 A. I am responding to certain issues presented in the rebuttal testimonies of Kurt Kielisch
13 (pages 3-27) and Boyd Harris (pages 2-6) regarding their opinions and conclusions on the
14 effect of the Grain Belt Express Project on land values and land use.

² Priestley, Thomas. *Transmission Lines and Property Values: Review of the Research and Summary of Key Findings: Report to the Emerging Technology Issues Advisory Committee of the Virginia General Assembly Joint Commission on Technology and Science*. July, 2005.

³ Priestley, Thomas. *Transmission Lines and Property Values: Review of the Research and Summary of Key Findings*. Prepared for New York Regional Interconnection, Inc., May, 2007.

⁴ Priestley, Thomas. *Transmission Lines and Property Values: Review of the Research and Summary of Key Findings*. Prepared for the Montana Department of Environmental Quality, June, 2009.

1 **II. BACKGROUND REGARDING THE IMPACT OF ELECTRIC TRANSMISSION**
2 **LINES ON PROPERTY VALUES**

3 **Q. What kinds of studies have been conducted regarding the potential effects of**
4 **transmission lines on property values and what methods do they use?**

5 A. The research that has been done on the property value impacts of transmission lines falls
6 into three broad categories:

7 1. Appraiser Studies.

8 2. Attitudinal Surveys.

9 3. Statistical Analyses.

10 **Q. What does the term appraiser studies mean?**

11 A. The earliest studies that attempted to evaluate the influence of transmission lines on property
12 values were conducted by appraisers, who were responsible for almost all the transmission
13 line property value impact studies done before 1975. The appraisal technique used for this
14 research involves paired-sales analysis, which entails comparing sales prices for properties
15 located close to the transmission line of interest with the sales prices of carefully matched
16 properties located in areas outside of the transmission line's zone of influence, and then
17 noting any price differences, which are assumed to be related to the property's physical
18 relationship to the transmission line. Traditionally, descriptive statistics have been used to
19 compare sales in the two areas to determine the effect of the transmission line on sales price.
20 In recent years, some studies have applied statistical tests in an effort to establish the
21 significance of the relationships.

22 **Q. What are the limitations of appraiser studies?**

23 A. One limitation of the paired sales approach is that appraisers have to use subjective
24 judgment to identify identical properties, and it is often difficult to find a sufficient number

1 of pairs to provide a representative sample of the market.⁵ A critical concern is that the
2 paired sales approach may not provide statistically reliable results because differences not
3 perceived by the researcher between the properties in the pairs may contribute to the price
4 differences between the properties.⁶

5 **Q. What are attitudinal studies?**

6 A. Attitudinal surveys are studies that have been used to determine how property owners or real
7 estate professionals perceive the effect of transmission lines on property sale values. In
8 some cases, this data reflects the public's perceptions of the full range of a transmission
9 line's potential impacts. In other cases, the surveys are restricted to property value issues.
10 Occasionally, the data is collected and used as part of a contingent valuation modeling
11 process that attempts to quantify likely purchasing behavior by potential buyers.

12 **Q. What are the limitations of attitudinal studies?**

13 A. The results of attitudinal surveys must be treated with great caution because what residents
14 and even real estate professionals say about what they think the effects of transmission lines
15 might be on property values may, in fact, be quite different from the actual effects that
16 occur.

17 For example, in their summary of the results of an advanced analysis of a
18 comprehensive survey of perceptions of those living near transmission lines, Priestley and
19 Evans found respondents may have a tendency to overstate the transmission line's effects.⁷

20 In a 1994 conference paper, William Kinnard and colleagues point out that there can be a

⁵ Kinnard, W., and S. Dickey. 1995. A primer on proximity impact research: residential property values near high-voltage transmission lines. *Real Estate Issues* 20 (1):23-29.

⁶ Kroll, C., and T. Priestley. 1992. *The Effects of Overhead Transmission Lines on Property Values*. Edison Electric Institute Siting and Environmental Planning Task Force, Washington, D.C., 101 pp.

⁷ Priestley, T., and G. Evans. 1996. Resident perceptions of a nearby electric transmission line. *Journal of Environmental Psychology* 16: 65-74.

1 significant divergence between opinions expressed in the abstract in response to a survey
2 question and actual behavior.⁸ For example, Kinnard et al. cite their findings in a study of
3 the property value impacts of a transmission line in Orange County, New York, in which
4 they interviewed real estate professionals active in the local market and owners of properties
5 adjacent to the transmission lines, in addition to conducting statistical analyses of the actual
6 effect of the transmission line on sales prices. They found that the real estate professionals
7 had a more negative perception of the transmission line's effects on property values than the
8 owners of the properties alongside the line, and that these perceptions of negative effect
9 were not supported by the analysis of the actual sales prices, which found no statistically
10 significant reduction in the sales prices of properties located alongside the transmission
11 line.⁹

12 **Q. Please explain statistical analyses.**

13 A. In this context, the term "statistical analysis" is used to refer to studies that have used large
14 samples of sales data and have analyzed them using multiple regression analysis. Since the
15 mid-1970s, there has been an increasing reliance on the use of multiple regression analysis
16 in the hedonic pricing model format for transmission line property value studies. Regression
17 analysis is a statistical method by which the changes in a variable of interest, known as the
18 dependent variable (which in a property value study would be the sales prices of the

⁸ Kinnard, W., M. Geckler, and S. Dickey. 1994. *Fear (As A Measure of Damages) Strikes Out: Two Case Studies Comparisons Of Actual Market Behavior With Opinion Survey Research*. A Paper Prepared for Presentation at the 1994 Annual Conference American Real Estate Society. Santa Barbara, California. April 16.

⁹ Kinnard, W. N. Jr., J. K. Geckler, J. B. Kinnard, and P. S. Mitchell. 1988. *Effects of Proximity to High-Voltage Electric Transmission Lines on Sales Prices and Market Values of Vacant Land and Single-Family Residential Property: January 1978 - June 1988, (An Analysis of Real Estate Market Activity in Penobscot County, Maine)*. Storrs, Connecticut: Real Estate Counseling Group of Connecticut. December.

1 properties in the study area) are explained as a function of changes in other factors that are
2 known as explanatory variables or regressors. Regression analysis allows the relationship
3 between the dependent variable and each of the explanatory variables to be displayed in a
4 model and estimated, providing a numerical estimator for each relationship.

5 The hedonic pricing model format is commonly used to structure the regression
6 model. It assumes that the amount paid for the purchase of a property reflects the value
7 placed on specific attributes of the home and property. Using this approach allows the
8 relationship between property value and the variables that determine it to be statistically
9 isolated, and the relative contribution to property value of each of the explanatory variables
10 to be identified.

11 The use of the multiple regression approach requires a large data set of sales in the
12 area of potential impact and in a control area. For each sale, data is required for variables
13 related to the broad spectrum of factors potentially affecting sales price, including variables
14 that measure the distance from and the visibility of the transmission line. Through use of
15 multiple regression analysis in the hedonic pricing model format, it is possible to identify
16 each variable that has a statistically significant effect on property sales value in the study
17 area and to identify the percentage of the total sales value that can be attributed to each of
18 the variables.

19 **Q. Has the statistical analysis approach relying on regression/hedonic modeling become**
20 **the preferred approach for conducting transmission line property value impact**
21 **studies?**

22 A. Yes. The multiple regression/hedonic modeling approach is now the approach that is
23 favored by academic researchers and professionals as the means to identify the effects of

1 transmission lines on sales prices.¹⁰ Hedonic modeling is also in widespread use for
2 evaluating the effects of environmental and other variables on property value. Hedonic
3 modeling can also take into account neighborhood factors, such as location relative to roads,
4 public transportation, and airports, as well as school quality, crime levels, and water
5 amenities.¹¹

6 **Q. Why is the statistical analysis approach that relies on regression/hedonic modeling now**
7 **preferred over the other approaches for conducting transmission line property value**
8 **impact studies?**

9 A. The value of the multiple regression/hedonic modeling studies is that because they reflect
10 the prices that buyers actually pay, rather than speculation about what buyers might do under
11 hypothesized conditions, they more reliably reflect actual transmission line effects than the
12 attitudinal surveys. In addition, the multiple regression/hedonic modeling studies remove
13 the subjectivity inherent in appraiser paired sales analyses and the use of large sample sizes
14 and advanced statistical techniques makes the results considerably more reliable than those
15 of the paired sales studies. Furthermore, there is some evidence that the results of the
16 multiple regression/hedonic modeling studies can be transferred from one market area to
17 another.¹²

¹⁰ Kinnard, W., and S. Dickey. 1995. A primer on proximity impact research: residential property values near high-voltage transmission lines. *Real Estate Issues* 20 (1):23-29.

¹¹ Boyle, M., and K. Kiel. 2001. A survey of house price hedonic studies of the impact of environmental externalities. *Journal of Real Estate Literature* 9 (2): 117-144.

¹² Kinnard, W., and S. Dickey. 1995. A primer on proximity impact research: residential property values near high-voltage transmission lines. *Real Estate Issues* 20 (1):23-29.

1 **Q. Is the research that has been done on the property value effects of transmission lines**
2 **helpful?**

3 A. Yes. Although the research that has been done to date on the question of transmission line
4 effects on property values is not unanimous in its conclusions; taken as a whole, it provides
5 a frame of reference for understanding possible transmission line/property value
6 relationships, and it brackets the range of magnitudes of any potential effects. Research
7 studies have examined how the presence of high-voltage overhead transmission lines affect
8 the values of properties, including single-family residences, vacant residential land,
9 recreational property, and agricultural land. These studies have also examined the role of
10 distance and time on the transmission line/property value relationship. Questions that are
11 typically asked during the research efforts include: If effects are present, what are the
12 direction and magnitude of those effects? Are there differences in effect related to type of
13 property? Are there characteristics of the line or right-of-way that appear to be associated
14 with the effects?

15 **Q. Does the presence of high voltage overhead transmission lines on or near a single**
16 **family property affect the value of that property?**

17 A. Most of the research studies based on paired sales analysis have found that transmission
18 lines have no effect on the value of nearby single-family residences. These studies include
19 Blanton;¹³ Bottemiller, Cahill, and Cowger;¹⁴ Cowger, Bottemiller, and Cahill;¹⁵ Earley and

¹³ Blanton, Herman W. 1980. *A Study of Transmission Line Effects on Subdivisions in Harris County, Texas*.

¹⁴ Bottemiller, S., J. Cahill, and J. Cowger. 2000. Impacts on residential property values along transmission lines; an update study of three Pacific Northwest metropolitan areas. *Right of Way* 18 (July August): 18-20, 55.

1 Earley,¹⁶ and Rhodeside and Harwell and A. White.¹⁷¹⁸¹⁹ In addition, a number of the
2 analyses using multiple regression analysis, including Kinnard et al. (1984), Kinnard (1988),
3 Kinnard, Geckler, and DeLottie (1997), Kinnard et al. (1997) and Wolverton and
4 Bottemiller (2003), found that transmission lines do not have a significant effect on the sales
5 prices of nearby properties, including single-family homes.²⁰ A few of the paired-sales

¹⁵ Cowger, J., S. Bottemiller, and J. Cahill. 1996. Transmission line impact on residential property values; a study of three Pacific Northwest metropolitan areas. *Right of Way* 43 (September/October): 13-17.

¹⁶ Earley, Edward M., and Michael H. Earley. 1988. *Real Estate Market Data Analysis* (for a proposed 230 kV Electrical Transmission Line, Transylvania County, North Carolina; prepared for Duke Power Company), Golden, Colorado.

¹⁷ Rhodeside and Harwell and A. White. 1992. *Transmission Line Impact on Property Values*. Prepared for Virginia Power. Alexandria, Virginia: Rhodeside and Harwell

¹⁸ Rhodeside and Harwell and A. White. 1995. *Transmission Line Impact on Property Values; Supplemental Study: Visibility*. Prepared for Virginia Power. Alexandria, Virginia: Rhodeside and Harwell.

¹⁹ In two of the three Virginia regions analyzed, Rhodeside and Harwell found no effect on the value of properties located adjacent to transmission line rights-of-way. In the Eastern region, they found that location adjacent to a right-of-way was associated with an increase in property value.

²⁰ Kinnard, W. N. Jr., M. B. Geckler, J. K. Geckler, J. B. Kinnard, and P. S. Mitchell. 1984. *An Analysis of the Impact of High Voltage Electric Transmission Lines on Residential Property Values in Orange County, New York*. Storrs, Connecticut: Real Estate Counseling Group of Connecticut. May.

Kinnard, William N. Jr. 1988. *The Effect of High-Voltage Overhead Transmission Lines on Sales Prices and Market Values of Nearby Real Estate: An Annotated Bibliography and Evaluative Analysis*. Prepared for Central Maine Power Company by The Real Estate Counseling Group of Connecticut, Inc. September.

Kinnard, W., M. Geckler, and J. DeLottie. 1997. *Post-1992 Evidence Of EMF Impacts On Nearby Residential Property Values. Price Effects from Publication of and Widespread Publicity About the Floderus and Ahlborn-Feychting Studies in Sweden*. A Paper Presented at the 1997 Annual Conference American Real Estate Society. Sarasota, Florida. April 16-19.

Kinnard, W., S. Bond, P. Syms, and J. DeLottie. 1997. *Effects Of Proximity To High Voltage Transmission Lines On Nearby Residential Property Values: An International Perspective On Recent Research*. A Presentation at the 1997 International Conference American Real Estate and Urban Economics Association, University of California at Berkeley, Berkeley, California. May. 1997.

1 studies, and some of the studies that relied on multiple regression analysis, found that
2 transmission lines have an effect on the sales values of nearby single-family residences;
3 generally the effect is not large and ranges from two to ten percent.²¹

4 **Q. Does the presence of high voltage overhead transmission lines on or near a parcel of**
5 **vacant residential land affect the value of that property?**

6 A. In an evaluation of the impacts of transmission lines on the sales prices of vacant residential
7 land in two subdivisions, Blinder found no effect on the value of lots in one subdivision and
8 a negative effect on the value of lots on the other.²² In a study in Maine, Kinnard found that
9 a 345-kV line did not have a statistically significant effect on the sales prices of vacant
10 parcels with potential for development for residential use.²³ A study of vacant land with
11 potential for residential development along the route of the 345-kV Marcy-South line in

Wolverton, M., and S. Bottemiller. 2003. Further analysis of transmission line impact on residential property values. *The Appraisal Journal* July (71 3): 244-252.

²¹ Van Court and Company. 1988. *Real Estate Appraisals: Greenwood-Daniels Park 115/230 KV Conversion--Arapahoe County, Colorado*.

Ignelzi, P., and T. Priestley. 1991. *A Statistical Analysis of Transmission Line Impacts on Residential Property Values in Six Neighborhoods*. Final Report Prepared for Pacific Consulting Services, Albany, CA, 110 pp.

Hamilton, S., and G. Schwann. 1995. Do high voltage electric transmission lines affect property value? *Land Economics* 71 (4): 436-44.

Chalmers, James A. and Frank Voorvart. 2009. High Voltage Transmission Lines: Proximity, Visibility, and Encumbrance Effects. *The Appraisal Journal*. Summer, 2009. Pp 227-245.

²² Blinder, Calvin L. 1981. "The effect of high voltage overhead transmission lines on residential property value," in Tillman, R. E, ed. *Environmental Concerns in Rights of Way Management*, Proceedings of Second Symposium Held October 16-18, 1979. Palo Alto: Electric Power Research Institute.

²³ Kinnard, William N. Jr. 1988. *The Effect of High-Voltage Overhead Transmission Lines on Sales Prices and Market Values of Nearby Real Estate: An Annotated Bibliography and Evaluative Analysis*. Prepared for Central Maine Power Company by The Real Estate Counseling Group of Connecticut, Inc. September.

1 New York State by Kinnard and Mitchell found that the construction of the transmission line
2 did not have a significant effect on the sales value of these properties.²⁴

3 **Q. Does the presence of high voltage overhead transmission lines on agricultural land**
4 **typically affect the value of that property?**

5 A. No. The effect of transmission lines on the sales prices of agricultural properties has
6 received less attention than transmission line effects on single family residences. However,
7 of the eight or so major studies regarding the effects of transmission lines on the sales prices
8 of agricultural lands, approximately half have found that the transmission lines crossing the
9 parcels sold did not have a statistically significant effect on the selling price.²⁵ Other studies
10 found some level of effect. For example, in a study of agricultural sales in Arizona, Thomas
11 A. Ball found a decrease in sales price of two percent.²⁶ In a study of high voltage lines in
12 agricultural areas in Ontario, Woods Gordon found no effects in two out of the six areas

²⁴ Kinnard, William N. Jr., and Philip S. Mitchell. 1988. *Effects of Proximity to Marcy South Transmission Line Right of Way on Vacant Land Sales: Towns of Hamptonburgh and Wawayanda, Orange County, New York, January 1983 - December 1987*. Storrs, Connecticut: Real Estate Counseling Group of Connecticut. May.

Mitchell, P. and W. Kinnard. 1996. Statistical analysis of high-voltage overhead transmission line construction on the value of vacant land. *Valuation* June: 23-29.

²⁵ Brown, Dean J.A. 1976. The effect of power line structures and easements on farm land values. *Right of Way* December 1975 - January 1976: 33-38.

Weber, William V. and Glenn A. Jensen. 1978. *A Study of High Voltage Power Line Easements and their Effect on Farm Land Values in West Central Minnesota*. Luverne, Minnesota: Jensen Management Service.

Jackson, Thomas. 2010. Electric Transmission Lines: Is There an Impact on Rural Land Values? *Right of Way*. November/December 2010. Pp. 32-35

Chalmers, James A. 2012. High Voltage Transmission Lines and Rural, Western Real Estate Values. *The Appraisal Journal*. Winter 2012. Pp. 30-45.

²⁶ Ball, Thomas A. 1989. *A Study of the Economic Effects of High Voltage Electrical Transmission Lines on the Market Value of Real Properties*. Prepared for Salt River Project, Phoenix. Tempe. March.

1 studied and positive effects in two of the other areas.²⁷ In the remaining two areas, where
2 there was potential for residential development, there was a negative effect.

3 **Q. Does the distance of a property from a high voltage overhead transmission lines affect**
4 **the impact of the transmission line on property values?**

5 A. Several of the studies that have found transmission lines to affect property values have
6 concluded that the effects are highest in the areas immediately adjacent to the transmission
7 line (such as within 50 feet of the right-of-way) but taper off quickly with distance, for
8 example, disappearing almost entirely after 200 feet.^{28,29}

9 **Q. What work did you complete in relation to providing this testimony?**

10 A. In preparing this testimony, I reviewed the Grain Belt Express project description and maps
11 to familiarize myself with the physical characteristics of the Project's features and their
12 relationship to their landscape setting. Next, I analyzed the rebuttal testimony by Kurt
13 Kielisch and Boyd Harris, and reviewed the schedules accompanying their testimony. In
14 addition, I updated my collection of literature regarding the effects of transmission lines on
15 property values to include the latest published studies. Then, I compared the statements
16 made by these two witnesses in their testimony with the evidence available in the published
17 literature to identify areas in which the statements they make and the conclusions they reach
18 are not supported by empirical evidence.

²⁷ Woods Gordon (Management Consultants). 1981. *Study on the Economic Impact of Electric Transmission Corridors on Rural Property Values: Final Report*.

²⁸ Colwell, Peter F. and Kenneth W. Foley. 1979. Electric Transmission Lines and the Selling Price of Residential Property. *The Appraisal Journal*. October, 1979: 490-499.

²⁹ Hamilton, S. and G. Schwann. 1995. "Do high voltage electric transmission lines affect property value?" *Land Economics* 71 (4): 436-44.

1 **III. ANALYSIS OF THE TESTIMONY OFFERED BY KURT KIELISCH**

2 **Q. Do you agree with the general theme of Mr. Kielisch’s rebuttal testimony that high-**
3 **voltage transmission lines (“HVTL”) have a uniformly negative impact on property**
4 **values?**

5 A. No. Much of Mr. Kielisch’s testimony consists of assertions about a series of issues
6 potentially associated with transmission lines that he alleges would have the potential to
7 decrease the value of agricultural properties. In many cases, the assertions he makes about
8 these issues are not entirely accurate and/or are not well supported. In addition, and most
9 importantly, Mr. Kielisch fails to provide evidence needed to establish the link between
10 these issues and their effects on the actual sales prices of properties.

11 **Q. Do you agree with Mr. Kielisch’s statement on page 4 of his rebuttal testimony that**
12 **“[u]nderstanding that perception drives value is the foundation in analyzing the effect**
13 **that electric transmission lines have on property value”?**

14 A. No. This assumption reveals a fundamental flaw in Mr. Kielisch’s approach to the
15 establishment of the effects of transmission lines on property values. What counts in the end
16 is not speculation about how people might perceive various issues that could be associated
17 with transmission lines or what they say they think about transmission lines, but their actual
18 behavior. The statistical studies cited above measure that behavior. In this case, the
19 behavior of importance is the price they actually pay when they buy a property crossed by or
20 near a transmission line. Thus, the foundation in analyzing the effect that transmission lines
21 have on property value is documentation of the actual prices that buyers have paid for
22 properties and rigorous analysis of the data on the sales prices and characteristics of those
23 properties to determine whether the presence of a transmission line has affected sales prices,
24 and if so, what the direction and degree of that effect is.

1 Mr. Kielisch’s assumption that “perception drives value” places him outside of the
2 mainstream of research on the property value impacts of transmission lines. William
3 Kinnard, one of the pioneers of rigorous research on the property value effects of
4 transmission lines and perhaps the most important contributor to the field, was very clear
5 that although perceptions may explain sales prices, they are not predictors. For example, in
6 their landmark article, “A Primer on Proximity Impact Research: Residential Property
7 Values Near High Voltage Transmission Lines,” Kinnard and his colleague Sue Ann Dickey
8 note that “... for identifying and measuring any impact on property, buyers’ attitudes and
9 perceptions about the effect of claimed health and safety hazards are the major influences,
10 not the science. Indeed, what really matters is what people do when confronted with a
11 purchase decision, rather than what they say they will do”³⁰

12 This assessment is reinforced by Thomas Jackson and Jennifer Pitts in their recent
13 review of the literature on the effects of transmission lines on property values. Their
14 evaluation is that, “Although adverse perceptions by the market can lead to sales price
15 effects, potential effects may be offset or mitigated by other factors influencing the pricing
16 decisions and this likely accounts for the lack of such findings when the preferences
17 “revealed” in sales data are analyzed.”³¹

18 **Q. On pages 4 and 5 of his rebuttal, Mr. Kielisch makes mention of and briefly describes**
19 **Schedule KCK-2, which he characterizes as a literature study. What is your**
20 **assessment of this study?**

³⁰ Kinnard, Willilam., and Sue Ann. Dickey. 1995. A primer on proximity impact research: residential property values near high-voltage transmission lines. *Real Estate Issues* 20 (1): p. 26.

³¹ Jackson, Thomas O. and Jennifer Pitts. 2010. The Effects of Electric Transmission Lines on Property Values: A Literature Review, *Journal of Real Estate Literature*. Vol. 18. No. 2., p. 1.

1 A. Although Mr. Kielisch refers to Schedule KCK-2 as a “literature study,” it is not a study in
2 that it lacks focus and rigor. It does not have a clear analytic framework, a statement of
3 hypotheses for testing, or a set of criteria for determining what evidence is appropriate for
4 testing the hypotheses. Instead, it is a somewhat unfiltered compendium of materials of
5 varying relevance and validity. Much of the material included is anecdotal in nature,
6 consisting of references to news clips related to various transmission line issues, rather than
7 actual studies. Except for the section devoted to some of the literature on transmission line
8 property value effects, most of the “study” presents no clear link from the issues discussed
9 in the news clips to any specific effects on property sales prices. The section of the
10 schedule concerned with property value effects includes a small number of the legitimate
11 peer reviewed studies, but these studies included do not at all represent the range and depth
12 of the available body of research. In some cases, the interpretations of the study findings
13 are appropriate, in others, less so. What is troubling about this section is that the findings
14 of the legitimate studies are woven into a narrative that is not entirely critical and includes
15 material from sources of questionable reliability.

16 **Q. On page 5, Mr. Kielisch describes the results of an internet search that he suggests**
17 **provides an indication of public concerns about transmission lines that would**
18 **“influence the perception that a typical buyer would have regarding HTLVs on a**
19 **property [page 6].” Do you agree with Mr. Kielisch’s research approach and his**
20 **conclusions?**

21 A. I do not. Quite honestly, I am surprised that a professional appraiser would call this internet
22 search exercise “research” and give it any credence. There is nothing scientific about this
23 search or the interpretation that Mr. Kielisch has given to what he has found. Mr. Kielisch
24 has presented no information that would establish the representativeness and validity of the

1 opinions about transmission lines he has found on the internet, and he provides no basis for
2 establishing how and especially if the information that may be randomly available on the
3 internet would affect the price a buyer would pay for a property crossed by or near a
4 transmission line.

5 **Q. On page 6, Mr. Kielisch presents a profile of the agricultural buyer. Do you agree with**
6 **it?**

7 A. No. Mr. Kielisch's profile of the agricultural buyer is based entirely on conjecture. There is
8 no reference to interviews, surveys, or other sources of data that would verify the assertions
9 Mr. Kielisch makes about the concerns of the agricultural land buyer. In particular, there is
10 no way of telling what the relative importance of the characteristics that Mr. Kielisch
11 mentions would be, and more importantly, how much of a role each of the variables he
12 mentions would actually play at the time a decision is made to purchase a specific piece of
13 property. Even if the list of variables Mr. Kielisch presents were valid, these factors might
14 in the end have little actual influence on the decisions made and prices paid regarding
15 purchase of agricultural properties crossed by or near transmission lines. As the research
16 previously described that compares perceptions and attitudes concerning transmission lines
17 with the actual sales prices of properties crossed by or in proximity to them has found,
18 concerns about transmission lines that are stated in the abstract may well have little
19 influence on the final decision to purchase a property crossed by or near a line.

20 **Q. On pages 7 through 16, Mr. Kielisch describes a range of concerns about EMF and the**
21 **relationship between a transmission line on an agricultural property and agricultural**
22 **activities. Does Mr. Kielisch present any evidence that directly links these concerns to**
23 **effects on property sales prices?**

24 A. No, he does not.

1 **Q. On page 18. Mr. Kielisch states that the comparable sales method is the best way to**
2 **measure the impact of HVTLs on property values. Do you agree?**

3 A. No. As I explained in my overview of the research on the property value impacts of
4 transmission lines, the earliest studies of the effects of transmission on property values were
5 conducted by appraisers who used the comparable sales (i.e. paired sales) analysis method,
6 the traditional tool of the appraisal profession. In reviewing the evolution of research on the
7 property value impacts of transmission lines, William Kinnard observed that the early
8 studies were, with a few exceptions, “nonsystematic and nonscientific” and that:

9 They were not designed to allow for statistical testing of the results for significance
10 and reliability. They generally provide simple comparisons of either pairs or lists of
11 sales prices with the accompanying assertion that the properties are similar. They
12 tend to be descriptive, observational, or anecdotal, without any subsequent analysis
13 of the material provided in the report.³²

14 A specific limitation of the comparable sales approach is that it is often difficult to
15 find many sets of two sales of comparable property, one crossed by or close to a
16 transmission corridor and the other located in an area where there is no transmission line to
17 use as the basis for analysis. Another significant limitation is that a great deal of subjectivity
18 is involved in the comparable sales approach, whereas an analysis based upon multiple
19 regression minimizes that subjectivity.

20 Although the comparable sales methodology may meet the specific needs of the
21 appraisal profession, the method does not lend itself to establishing what the effects of
22 facilities like transmission lines are on the properties that they cross or are in their vicinity.

³² Kinnard, William. 1990. The Impact of High Voltage Transmission Lines on Real Estate Values. 1990. *Journal of Property Tax Management*. Vol. 1, No. 4. P. 45.

1 In support of this point, William Kinnard observed that "... the measurement of market
2 impacts on levels of values (or prices) is not simply the sum of a large number of individual
3 appraisals."³³

4 Starting in the 1970s, the comparable sales approach has been increasingly displaced
5 by use of the more rigorous and statistically powerful hedonic modeling study approach.
6 For some time, the hedonic modeling study approach has been the preferred methodology
7 for property value impact studies.³⁴

8 **Q. On pages 21-25, Mr. Kielisch provides summaries of five transmission line property**
9 **value impact studies he has conducted as well as an appraisal for a property crossed by**
10 **a transmission line and another for which a transmission line crossing has been**
11 **proposed. Do these studies provide an adequate basis for establishing what the**
12 **property value impacts of the Grain Belt Express transmission line would be?**

13 A. No. The five studies of sales of agricultural land that Mr. Kielisch conducted in Wisconsin,
14 Indiana, and Kansas, all entailed paired sales comparisons. I have already described the
15 limitations of the paired sales analysis approach and the reasons why this kind of analysis is
16 not the preferred method for establishing the property value effects of transmission lines.
17 The specifics of the studies Mr. Kielisch describes illustrate the shortcomings of the paired
18 sales approach which have led to it being found as inadequate for establishing transmission
19 line property value effects. For example, the descriptions of the studies do not include a

³³ Kinnard, William. 1990. The Impact of High Voltage Transmission Lines on Real Estate Values. 1990. *Journal of Property Tax Management*. Vol. 1, No. 4. P. 45.

³⁴ See Boyle, M., and K. Kiel. 2001. A survey of house price hedonic studies of the impact of environmental externalities. *Journal of Real Estate Literature* 9 (2): 117-144. and Kinnard, W., and S. Dickey. 1995. A primer on proximity impact research: residential property values near high-voltage transmission lines. *Real Estate Issues* 20 (1): p. 25.

1 reference to the protocols and criteria that were used to ensure that all the on-line and off-
2 line properties used in each study were entirely comparable in terms of location; parcel size;
3 percentage of land devoted to forest, wetland, grazing, orchard, row crops, and field crops;
4 soils; drainage; and improvements. In addition, there is no description of any criteria or
5 methods that were used to adjust the data to account for differences of this kind between the
6 properties. As a consequence, it is not at all verifiable whether the impacts to property value
7 that Mr. Kielisch attributes to the presence of a transmission line are related to the
8 transmission line or to some other variable. As an example of the reasons for this concern,
9 the description of the study in the Town of Hendren in Clark County raises red flags. The
10 land included in the study is referred to as “agricultural and recreation land.” This raises
11 many questions. For example, is the mix of agricultural and recreational land on each of the
12 properties the same? Is the nature and quality of the agricultural and recreational lands on
13 each of the properties comparable? A major concern about the Hendren study and the four
14 other studies is that the samples are very small, with the Hendren study entailing analysis of
15 only 22 properties, of which only 4 are crossed by a transmission line. The number of
16 properties used as the basis for the other studies ranges from 14 to 32. These samples are
17 very small, and do not provide for a level of confidence in the generalizability of the results.
18 In contrast, the published, statistical studies described above use many hundreds of sales.
19 An additional and fatal flaw of all of these analyses is that the analyses were performed
20 using only rudimentary, descriptive statistics, and there has been no analysis of the statistical
21 significance of the findings. Given the limitations of these studies, it is not surprising, as
22 verified by Mr. Kielisch, that these studies have not been published. Because of the serious
23 methodological and analytic shortcomings of these five studies, they cannot be accepted as

1 evidence of whether and by how much a transmission line would affect the sales price of an
2 agricultural property.

3 The two appraisals that Mr. Kielisch describes have to be taken as anecdotal at best.
4 In both cases, the appraisals are not described in sufficient detail to provide any confidence
5 in the validity of the findings. In addition, the sample sizes used in conducting these
6 appraisals is so small that there is no basis for statistical testing of the findings and no basis
7 for making generalizations based on the results.

8 **Q. On page 26, Mr. Kielisch makes mention of the Chalmers study of property value
9 impacts in Montana.³⁵ Do you agree with his comments related to the Chalmers study?**

10 A. For the most part, no. Mr. Kielisch declares this study not applicable because the lands
11 evaluated in the study included low grade pasture lands, and that many of the agricultural
12 lands also included recreational land use. He was also concerned about the use of a mixture
13 of questionnaire and sales data. Mr. Kielisch's dismissal of this study was too hasty. Close
14 reading of this study reveals that it is a model of careful, thoughtful research that in a very
15 systematic way develops a framework for understanding the relationship between large
16 transmission lines and a range of kinds of properties and the potential for the transmission
17 lines to affect the sales values of those properties. Mr. Kielisch is correct in saying that
18 Chalmers "... found no conclusive evidence that HVTLs had a measurable negative impact
19 these lands" (i.e. agricultural lands). It should be noted that Chalmers also found that when
20 there were recreational uses on an agricultural property, that "... the effects of increasing
21 recreational influence are not what might be expected" because there are other variables at

³⁵ Chalmers, James A. 2012. High Voltage Transmission Lines and Rural, Western Real Estate Values. The Appraisal Journal. Winter 2012. Pp. 30-45.

1 work that tend to dilute the transmission line's effect.³⁶ Mr. Kielisch's mention that the
2 Chalmers report includes findings of sizable losses to property value that typically range
3 from 20-30% and go up to 50% is a mischaracterization of the study's findings. In brief,
4 what Chalmers found was that on production agricultural lands (a category that includes
5 both cropland and range lands) there was no evidence supporting a transmission line effect
6 on sales price. For agricultural lands with recreational influence (e.g. having a high level of
7 environmental amenity) and agricultural lands with high amenity recreation and natural
8 features (e.g. having a river or trout stream, a historic character, or spectacular views), there
9 was also no evidence of a transmission line effect on sales price. There was also no
10 evidence of a price effect on sales of large acreage rural residential tracts (ranging from 60
11 acres to 591 acres in size) or of recreational tracts and cabin sites. For half of the small lot
12 rural residential subdivisions, no transmission line price effect was found. However, in the
13 others, some level of effect was observed. The property loss figures that Mr. Kielisch cites
14 are observations made about losses to a very limited number of individual small parcels
15 abutting or encumbered by a transmission line and are not reflective of the Chalmers study's
16 overall findings about transmission line effects on residential properties.³⁷

17 **Q. On page 26, Mr. Kielisch makes mention of a study by Thomas Jackson on the impacts**
18 **of transmission lines on agricultural properties.³⁸ Do you agree with his comments**
19 **related to the Jackson study?**

³⁶ Chalmers, James A. 2012. High Voltage Transmission Lines and Rural, Western Real Estate Values. The Appraisal Journal. Winter 2012. Pp. 42-44.

³⁷ Chalmers, James A. 2012. High Voltage Transmission Lines and Rural, Western Real Estate Values. The Appraisal Journal. Winter 2012. P. 40.

³⁸ Jackson, Thomas. 2010. Electric Transmission Lines: Is There an Impact on Rural Land Values? *Right of Way*. November/December 2010. Pp. 32-35

1 A. No. The Jackson study that Mr. Kielisch is referring to is a study by Dr. Thomas Jackson, a
2 Professor of Real Estate at Texas A&M and the president of a real estate research firm. This
3 study used a hedonic modeling approach to analyze 381 sales of agricultural properties in
4 Wisconsin: 88 of the sales were online, and 297 offline. Two models were used to model
5 the data. One of the models had a total of 18 independent variables, and the other had 15.
6 This study found that the presence of a transmission line on an agricultural property had a
7 small effect on the parcel's sales price, reducing it by 1.11% to 2.44%. However, these
8 effects were not found to be statistically significant.

9 Mr. Kielisch declares that the Jackson study is flawed, listing a series of property
10 characteristics that he feels were not properly accounted for in the analysis. Mr. Kielisch's
11 criticisms of the Jackson study mirrors many of the criticisms of the study made by John
12 Schmick in a rebuttal piece that was published in *Right of Way* in March/April 2011 a few
13 months after the Jackson study was published in the same journal.³⁹ In the May/June 2011
14 issue of *Right of Way*, Thomas Jackson published a response to John Schmick's criticisms
15 that convincingly explained his study design, procedures, and analytic approach and how
16 they had in fact accounted for the issues about which Mr. Schmick had expressed concern.⁴⁰

17 The issues that Mr. Kielisch raises about the Jackson study are successfully dealt
18 with in Jackson's May/June 2011 *Right of Way* response piece. In brief, the variables that
19 Mr. Kielisch is concerned are not accounted for in the study are in fact taken into account in
20 the model, and the sales included in the analysis were selected in a systematic and
21 evenhanded manner. It appears that Mr. Kielisch's concerns about the Jackson analysis,

³⁹ Schmick, John. 2011. A Rebuttal: Electric Transmission Lines: Is There an Impact on Rural Land Values? *Right of Way*. March/April 2011. Pp. 30-31.

⁴⁰ Jackson, Thomas. 2011. Electric Transmission Lines and Rural Land Values: A Closer Look. *Right of Way*. May/June 2011. Pp. 35-37.

1 like those of John Schnick, may stem from the fact that they are both appraisers, a
2 professional group that has a set of ideas about and methods for conducting property
3 analyses that differ in some important ways from those used by the more academic
4 researchers in the hedonic modeling tradition, whose study designs and analyses entail use
5 of large samples of sales and powerful statistical tools.

6 In any case, I disagree with Mr. Kielisch's criticism of the Jackson study and his
7 assertion that he does not feel that it "... legitimately represents the actions of a buyer of
8 agricultural lands when encumbered with a HVTL." (p.27). As a consequence, my opinion
9 is that Jackson's finding is legitimate that any effect of a transmission line on the value of
10 the properties he studied is likely to be very small, in the vicinity of 0.11% to 2.44%, and
11 not statistically significant.

12 **IV. ANALYSIS OF THE REBUTTAL TESTIMONY OF BOYD L. HARRIS ON**
13 **BEHALF OF MATTHEW AND CHRISTINA REICHERT**

14 **Q. On page 2, Mr. Harris specifies two ways that the proposed power line easement will,**
15 **in his opinion, significantly impact his clients' real estate. What is your response?**

16 A. Mr. Harris's stated opinion is that the proposed power line easement will impact his clients'
17 real estate through loss of income and productivity from the crop land and a lack of demand
18 or use on the bread and breakfast. Both claims are sweeping assertions and absolutely no
19 concrete evidence is provided to demonstrate how the proposed transmission line would
20 create the effects that are alleged, to specify the specific nature and magnitude of the effects,
21 and most importantly, to relate those effects to the property's sales value.

22 **Q. On page 3, Mr. Harris describes efforts to sell rural residential lots on a parcel in**
23 **Randolph County, Missouri. Does this example support his claims related to the**
24 **impacts he asserts that the Grain Belt Express project would have on his clients'**
25 **property.**

1 A. No. The example that Mr. Harris provides is an anecdote, but not evidence. What he
2 describes is a single case that entails a property and situation that is completely different
3 from that of his clients. This sketch of a story about this ill-timed rural residential
4 subdivision doesn't prove anything. There are many reasons why this subdivision may have
5 failed, and Mr. Harris presents no evidence to tie down what they were. This anecdote has
6 no relevance the question of the potential effects of the Grain Belt Express on his clients'
7 property. Mr. Harris' statement that "Our real life example is significantly better than any of
8 the studies" (p.4) is clearly not valid.

9 **Q. On page 4, Mr. Harris makes reference to white papers shared with him by his**
10 **colleagues that find sales that have been adversely impacted by transmission lines.**
11 **What is your response?**

12 A. This is hearsay, not evidence. For the assertions Mr. Harris makes about what he has seen in
13 these white paper to be considered as evidence, the white papers need to be made available
14 to all participating in this proceeding so that they can be carefully scrutinized and the
15 validity and relevance of the data established.

16 **Q. On page 6, Mr. Harris makes reference to a newspaper article from the New**
17 **Hampshire Union leader about a property that would be affected by the Northern Pass**
18 **Transmission Line. What is your response?**

19 A. The newspaper article by reporter Paula Tracy of the New Hampshire Union Leader that
20 appeared in April, 2011, describes the situation of the owners of a 135 acre property in
21 Northern New Hampshire that had the potential to be crossed by one of the alternative routes
22 being considered by the Northern Pass transmission line project.⁴¹ Ms. Tracy reports on the

⁴¹ Tracy, Paula. 2011. Northern Pass Kills land Value. New Hampshire Union Leader. April 25, 2011.

1 results of an appraisal that the owners of this property had prepared that predicted a
2 substantial drop in the value of their property. This article is anecdotal, and involves just
3 one property that is in an environmental setting and circumstances that are very different
4 from those of the property of Mr. Boyd's clients. Furthermore, and most significantly, what
5 the article reports is not an actual property sale, but the results of an appraisal, whose
6 accuracy would be very hard to judge. This newspaper article does not constitute evidence
7 that is either valid or relevant.

8 **Q. Does this conclude your prepared direct testimony?**

9 A. Yes, it does.