Exhibit No.:_____
Issues: Negative Impacts to Farming
And Land on Property Value
Witness: Kurt C. Kielisch
Sponsoring Party: Show-Me Concerned Land Owners
Type of Exhibit: Rebuttal Testimony
Case No.: EA-2014-0207
Date Testimony Prepared: September 15, 2014

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity Authorizing it to Construct, Own, Operate, Control, Manage, and Maintain a High Voltage, Direct Current Transmission Line and an Associated Converter Station Providing an interconnection on the Maywood-Montgomery 345 kV Transmission Line	)	Case No. EA-2014-0207

REBUTTAL TESTIMONY OF
KURT C. KIELISCH
ON BEHALF OF THE
SHOW ME CONCERNED LANDOWNERS

SEPTEMBER 15, 2014

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I. Qualifications and Purpose of Testimony

Q1. What is your name, profession, and business address?

A. My name is Kurt C. Kielisch, I am a real estate appraiser and I work for the Forensic Appraisal Group, Ltd, 116 E. Bell Street, Neenah, Wisconsin.

Q2. What is your position with the Forensic Appraisal Group?

A. I am the president and senior appraiser.

Q3. How many employees work for Forensic Appraisal Group?

A. We have seven employees.

Q4. What geographical area do you and your company provide appraisal services?

A. I am currently licensed and provide real estate appraisal services in five states, Kansas, Michigan, Minnesota, Virginia and Wisconsin. In the past I have completed appraisal services for properties located in Alaska and Colorado, Illinois, Indiana, Iowa, Mississippi, Missouri, North Dakota, Ohio and Wyoming.

Q5. What is a "forensic appraiser"?

A. Forensic simply means "giving testimony to a unique body of knowledge". A forensic appraiser is an appraiser who specializes in a certain field of appraisal and is utilized as an expert witness testifying to that unique body of knowledge.

Q6. What areas do you and your company specialize in?

A. Our appraisal services are focused in: eminent domain, utility easements, avigation easements, rails-to-trails, valuation disputes, estates, stigmatized properties and impact studies.

Q7. What is your educational background?

A. I have three college degrees, a bachelor's degree in Business Administration with a minor in economics, a bachelor's degree in Biology with a minor in natural sciences (chemistry and physics), and a master's degree in education focusing on the adult learner.

Q8. What is your professional educational background?

A. Aside from my business and economics courses completed in the degree programs, I have completed 28 appraisal courses and 40 appraisal continued education seminars.

Q9. Do you have any advanced designations awarded to you through appraisal organizations or associations?

A. Yes. I have four advanced designations. They are: ASA (urban) designation from the American Society of Appraisers, IFAS (senior) designation from the National Association of Independent Fee Appraisers, SR/WA (senior) designation from the International Right-of-Way Association (IRWA) and the R/W-AC (appraisal certified) designation from the IRWA.

Q10. In what states have you given expert testimony?

A. I've given testimony in state courts and commissioner hearings in Kansas, North Dakota, Minnesota, Ohio, and Wisconsin.

Q11. Have you ever given testimony in a federal court?

A. Yes. I've given testimony in federal court cases in Ohio and Wisconsin.

Q12. Have you testified before a regulatory commission before?

A. Yes. I have testified before the Wisconsin Senate Committee on the impact of wind farms to property value, before the Wisconsin Public Service Commission on both the impacts of wind farms and high voltage transmission lines on property value, before the Illinois Wind Siting Counsel, and before the Wyoming Industrial Siting Counsel.

Q13. Has any of your testimony been involved in State Supreme Court decisions?

A. Yes. My testimony was directly cited in two Wisconsin Supreme Court decisions: Waller v. American Transmission Corporation, and Spielberg v. Wisconsin Department of Transportation.

Q14. Have you ever given presentations relating to eminent domain to attorneys?

A. Yes. I was a faculty member in the annual ALI-CLE eminent domain conference in 2013 and 2014, and a faculty member in the Eminent Domain Institute CLE in Cleveland in 2013.

Q15. Do you have a curriculum vitae?

A. Yes. It is attached as Schedule KCK-1.

Q16. What is the purpose of your testimony on this docket?

A. I am to give testimony on the impact that high voltage transmission lines (HVTL) have on agricultural property value.

II. Testimony to the Negative Impacts that HVTLs Have on Property Value

Q17. What is market value?

A. Market Value is defined, in layman's terms, as the value a property would sell for at a given date considering an open market. An open market assumes that the property is available for purchase by the public, being properly marketed for maximum exposure, and that the buyer and seller are well informed, fully knowledgeable and acting in their best interest. Included in this definition is that the buyer has full knowledge of the pros and cons of the property, and then acts with that knowledge in a way that will benefit them. Essentially, the value of a property is based on the perception of the

buyer. Understanding that perception drives value is the foundation in analyzing the effect that electric transmission lines have on property value.

Q18. Is this perception based on facts?

A. This perception does not have to be based on a scientific or engineering fact, it based on what a buyer believes. An example of perception driving value based solely on belief is the haunted house. A home cannot be proven scientifically to be haunted. Yet, there are several homes throughout the nation thought to be "haunted" which stigmatizes the property resulting in a diminished selling price. The same holds true with environmental factors.

The market has shown that a previously contaminated property that has satisfactorily removed the contamination receiving a clean bill of health from the scientists and engineers still suffers a loss of value. Why? Because there is a perception in the market that once a property is contaminated the issue may reappear and the fear of this reality will stay with it for an unknown period of time. Therefore, the buyer demands a discounted price to protect them of this event.

Q19. On what do the buyers base this perception?

A. Buyer's perception is based on what they hear, see and read. We are a nation that has multiple forms of communication, however the dominate forms are: what we see on television, cable or the internet, what we hear on the radio and from others, and what we read, mainly in newspapers, magazines and on the internet.

Q20. Have you researched what buyers see, hear and read in regards to HVTLs?

A. Yes. In 2013 we completed a literature study investigating the number of articles that were printed regarding HVTLs safety, health issues, EMFs and rural living. (Schedule

KCK-2, attached.) This study showed that an overwhelming number of printed articles were negative toward HVTLs with regards to health, view shed, EMF concerns and their impact on agricultural land uses.

The internet plays a large part shaping our perception on issues. You can search a vast array of topics quickly finding information in printed form, videos, news casts and the like. A very popular search engine is Google. When I typed in the search "do high voltage power lines pose a risk to health?" the first page had ten entries of which nine suggested they do, or might, and one said they do not. (See Schedule KCK-3, attached.) Of particular interest was the Zillow entry which was following a chat of various individuals on Zillow about this topic. Nearly all participants indicated they had a concern that high voltage power lines do cause health risks. Many cited old studies (and some new) that suggested there was a direct link between health risk (mainly rare cancers or childhood cancers) and proximity to HVTLs. A similar question on YouTube had a similar result. Such searches are common place in today's modern world of communication. I did a test search on Sunday, September 14, 2014, inserting the search "do high voltage power lines cause health risks?" The first page had twenty entries of which one was images of power lines, two were safety videos from the State of Virginia's Department of Labor & Industry, one from American Transmission Corporation leaving the balance of sixteen videos stating, or suggesting, that HVTLs do cause health risks. (See Schedule KCK-4, attached.) These are just a sampling of what a person would find using these resources. And, all play into the notion that seeing, hearing and reading that HVTLs do cause (or may cause) negative

health issues and other harm influence the perception that a typical buyer would have regarding HVTLs on a property.

Q21. Your focus in this testimony is on agricultural properties. Is a buyer of agricultural property different from any other type of buyer?

A. In appraising a property the appraiser attempts to reflect the potential buyer of the subject property and estimate their action as to the subject property with all its advantages and disadvantages (knowledgeable buyer). To accurately reflect this buyer, the appraiser must determine the typical profile of such a buyer of the property in question.

For properties that are utilized for agricultural purposes, the most likely buyer would be one who: (1) prefers the rural lifestyle over the urban lifestyle; (2) typically generates their income from working in the agricultural field; (3) would be sensitive to environmental issues that affect the uses of the land and the view shed of the land; and (4) would be sensitive to health and safety issues relating to the land and its use. It is most likely that such a person, when confronted with an electric transmission line traversing the property, would be concerned with the aesthetics, health issues, disruption to rural lifestyle and how it would impact the use of the land for agricultural purposes.

Q22. What common concern does an agricultural property buyer have regarding HVTLs?

A. Agricultural properties are a mix of land uses. They include crop land, pasture land, animal husbandry, recreation and single family homes. Each land use has its unique set of concerns regarding HVTLs. However, a common concern is the negative impact to the aesthetics or view shed caused by HVTLs. It is a false notion that the

farmer only cares about production, not what the land looks like. A farmer in North Dakota summed it up when he and I were in his field, looking at hundreds of acres of flat land, few trees and row after row of half-grown corn. He asked me: "Do you have an office? Yes," I replied. "Does that office have windows? Yes. Do you pay a higher rent for windows and a view? Yes I do." Gesturing towards his wide open expanse he said, "This is my office."

Q23. Is the presence of electric and magnetic forces, commonly referred as EMFs a concern?

A. Definitely. Though the electric utility companies present engineering studies showing there is little to no health risks posed by EMFs radiating from HVTLs, it appears the buying public do not buy it as indicated by the USA Today public survey, 1996, which listed EMFs as the "number one environmental concern." The literature study we completed in 2013 (Schedule KCK-2, attached) stressed the concern that people have about being in close proximity to HVTLs and their corresponding EMFs. This concern is real, though it may not be supportable by scientific laboratory studies. The fear is mainly in the areas of leukemia, rare cancers, and other such diseases believed to be associated with the presence of HVTLs. Working near, or under HVTLs, is considered not to be a healthy choice by the general public.

To heighten the health concerns, are warnings by heart doctors and pacemaker equipment manufacturers. A publication by CIGNA, entitled *Heart Problems Living with a Pacemaker* (November 2012), warned that pacemakers are affected negatively by strong electrical fields and put high voltage transmission lines on the "stay away"

list, recommending to keep at least 25ft away (it did not clarify the easement or actual line).

The Mayo Clinic Family Health Book (3d edition (2013) speaks about pacemakers and has this warning with regards to HVTLs: "avoid electromagnetic fields such as those found near high voltage transmission lines or substations." (Chp 26, pg 769)

American Transmission Corporation (ATC) ,a large electrical transmission company in the Midwest, contacted Metronic USA Inc, CRM Technical Services, to complete a risk analysis of a property owner who had a heart pace maker (Kappa DR 902) and his property was being subject to the installation of a 345kV HVTL. Metronic's technical advisor Gregg Duetsch advised ATC that the property owner would need to stay at least 50ft distant from the centerline of the power line to remain reasonably safe. Previously, the property owner's heart physician recommended 600ft.

The BPA power line safety brochure addresses this issue with the following comments: "Under some circumstances, voltages and currents from power lines and electrical devices can interfere with the operation of some implanted cardiac pacemakers. However, we know of no case where a BPA line has harmed a pacemaker patient."

"As a precaution, people who may have reason to be very near high-voltage facilities should consult with a physician to determine whether their particular implant may be susceptible to power line interference."

Q24. Are irrigation systems impacted by HVTLs?

A. Yes, they can be. The placement of poles can interfere with the radius of the boom swing of a center pivot irrigation system. This interference would require either reprograming of the pivot operations or replacement of the system to one more compatible with

maneuvering around the obstacle. In some cases the pivot system is rendered useless, requiring the land to revert to non-irrigated status. Such a loss will reduce property value. Our analysis using USDA records of property value between irrigated and non-irrigated showed an average of 21% difference.

In addition to pole interference the irrigation system would need to make certain it did not spray water as a continuous stream on the electric lines. The HVTL electric lines are not insulated. Therefore, a stream of water could provide conduction to the irrigation system causing harm to the electrical components of the system, operator, and potential harm to the electric line (which is a violation of the easement condition).

The government-run Bonneville Power Administration (BPA) has a brochure on high voltage transmission line safety entitled *Living and Working Safely around High Voltage Power Lines* (October 2007). In this brochure the following guidelines are given for the safe handling of center pivot irrigation systems:

"In addition, central pivot circular irrigation systems installed near or under power lines can develop hazardous shock potentials during operation and maintenance. To eliminate these hazards:

- Provide a good electrical ground for the pivot point.
- Do not touch the sprinkler pipe or its supporting structures when the system is operating under, or parallel to, and near a power line.
- Perform repairs/maintenance of the system with the sprinkler pipe perpendicular to the power line."

The cost to reprogram or install a new device would need to be under the impact of value loss to be curable within the scope of eminent domain.

Q25. Many agricultural crops are utilizing aerial spraying to combat pests and disease that can ruin a crop. Do HVTLs impact the use of aerial spraying?

A. Yes they do. High voltage transmission towers and a 345kV power line running across a property present obstacles for aerial spraying pilots. Typically these pilots like to get as low as they can to the ground before releasing their chemical spray on the plants. This ensures accuracy, reduces waste, and prevents float of the spray. Often these pilots will get near the tassel tops of corn, a height of 8-10ft or so from the surface. Many pesticides require a minimum distance of ten feet above the plants to achieve the maximum application. The plane itself can be 10-12ft tall from landing gear to tip of the tail (e.g. M-18 Dromader (12'1"), Grumman Ag Cat (12'1"), and Thrush 510P (9'4")). A power line typically has a minimum distance of 20-24ft above ground at the low sag point. Flying under a power line at a speed of 120-145mph is a high risk and potentially deadly business. Therefore, it is not a practice endorsed by professional spray operators, nor their insurance companies. In addition, many spray planes operate with a differential GPS guidance system, which we discussed earlier may be affected by the presence of HVTLs.

Even with these difficulties many fields near HVTLs can benefit from aerial spraying. However, the drawbacks are that the spray will not get near the HVTLs due to safety and if the HVTLs are bisecting, diagonal cutting, or crisscrossing the field there may be substantial areas of the field that cannot be serviced from the air.

The farmer is left with only one option if a field cannot be serviced with aerial spraying, that is, mechanical spraying. This is a more costly method of herbicide application that often causes crop loss due to the vehicle trampling the plants resulting in a reduction of the

profitability of the parcel. In some cases the plants are too tall for a mechanical sprayer and the crops go unprotected.

Q26. Do HVTLs affect the use of GPS systems on the farm?

A. There has been much conversation about HVTLs interfering with GPS signals. This is a concern for all agricultural land owners since nearly all farm equipment works in conjunction with a GPS signal of some kind. The loss of this signal or inaccurate readings would impact crop production and labor.

We contacted manufacturers of GPS units, which are used in agriculture, about this issue. GPS signals are bounced off satellites orbiting in space. By the time the signal is received on Earth it is relatively weak and any major obstacle can distort it. Product Test and Support Specialist Max Forest of Hemisphere GPS (Calgary, Alberta, Canada) had this response to the question if HVTLs impact GPS signals: "Since GPS signals come from outer space, by the time they reach us on Earth the signal is quite weak. When using your HVTLs in close proximity with GPS receivers you will see that you will lose position and heading. My recommendation would be to set the GPS antenna as well as the receiver as far away as possible from any HVTL."

Chad Ostring of Ag Express Electronics (Des Moines, Iowa) had this to say about the impact of HVTLs on GPS units used in farm machinery and on board computers: "HVTLs can interfere with the GPS guided systems up to 300 yards away and HVTLs have an impact of computer-driven machinery, especially in close proximity. Our shop is close to an HVTL and we have had issues with our electronics due to them." (Not exact quotes, but summarized statements from a phone conversation.)

Independent studies about these phenomena are rare. One such study was completed by Peter Gibbings, Lecturer, Faculty of Engineering and Surveying at the University of Southern Queensland, Australia. In his study, *Assessing the Accuracy and Integrity of RTK GPS Beneath High Voltage Power Lines,* Mr. Gibbings attempted to discover the reason for the anomalies of data accuracy in survey instruments under or in close proximity of a HVTL. His conclusions were more qualitative than quantitative and found that electronic interference did occur within 30 meters from the center of a 275kV transmission line. Translated into the English system, that would be approximately 98ft.

Farms utilize the RTK systems on their farms for row planting guidance, pesticide and fertilizer applications and harvest information so they may manage their farms to the maximum productivity. It has been stated by electric utility engineers that it is a near impossibility for HVTLs themselves, in reference to the wires and corona, can cause signal distortions. Often the argument is the only potential interference that HVTLs could cause in signal loss would be the blocking of the signal by a pole. However, this statement is made with the words "unlikely" which is not a certainty that the marketplace desires. Similar to the EMF argument, uncertainty breeds doubt which the market reacts equal uncertainty heightening the perception that there may be more to the story.

Anecdotal evidence suggests that farmers have experienced malfunctions of GPS systems in close proximity to the HVTLs. Indeed, conversations with farmers in many states have revealed to me that this is a common concern and there is a perception that HVTLs do, or could, impact the accuracy of GPS systems which farmers, and potential buyers are uncomfortable with.

Q27. Does working around and in close proximity of HVTLs require the farmer to use extra caution due to potential shock hazards?

A. The potential of shocks and electrical arcing near high voltage power lines is real. A training video presented to electrical engineering students at the School of Engineering, University of Wisconsin (Madison) instructed the students that an electrical arc can reach across as much as 45ft from the power line to an object. Testimony from an engineer for American Transmission Corporation (Wisconsin) indicated that it is recommended to attach grounding chains on all vehicles that are working under or in close vicinity to a HVTL and that storing equipment and vehicles or refueling under or in close proximity of a HVTL is not recommended.

BPA's brochure on high voltage transmission line safety states the following in relation to electric shocks and arcing:

"The most significant risk of injury from a power line is the danger of electrical contact. Electrical contact between an object on the ground and an energized wire can occur even though the two do not actually touch. In the case of high-voltage lines, electricity can arc across an air gap. The gap distance varies with the voltage at which the line is operated. Unlike the wiring in a home, the wires of overhead power lines are not enclosed by electrical insulating material.

BPA does not recommend that anyone attempt to calculate how close they can come to a power line. As a general precaution, when under a line, never put yourself or any object any higher than 14 feet above the ground.

Under some high-voltage lines, vehicles can collect an induced voltage. This is particularly true if the vehicle is parked on a nonconductive surface such as asphalt or dry rock. You

can drain the voltage from your vehicle to the ground by attaching a chain that reaches the ground or by leaning a metal bar against your vehicle. The only way to be sure you won't get shocked is to park your car away from the high-voltage power line.

These types of shocks are caused by a voltage induced from the power line into the nearby metallic objects. Typically the shocks can be avoided when the nearby metallic objects are grounded or connected to earth. The severity of these shocks depends on the operating voltage of the power line, the distance from the conductor, the size or length of the object, its orientation to the line and how well the object is grounded. Normally, shocks do not occur when BPA's guidance is followed (see the following sections).

However, under certain conditions, non-hazardous nuisance shocks can still occur and possibly cause discomfort. The severity of nuisance shocks can vary in sensation from something similar to a shock you might receive when you cross a carpet and then touch a door knob to touching the spark-plug ignition wires on your lawnmower or car. The nuisance shock, however, would be continuous as long as you are touching the metallic object. Such objects include vehicles, fences, metal buildings or roofs and irrigation systems that are near the line or parallel the line for some distance."

Q28. Is soil compaction as a result of the construction and maintenance of a HVTL a concern for farmers?

A. Yes it its. Soil that is compressed under heavy pressure will compact. As a result, compacted soil will not drain properly nor absorb moisture, readily creating an area of dry soil. Plants attempting to grow on such a compacted soil will have shallow roots and be susceptible to drought-like symptoms when there is adequate ground moisture. Such plants typically have a stunted growth and often do not mature or produce the same as the non-

compacted soil areas. The only way to cure this condition is by having a soil specialist test the compactness of the soil and the depth of the substance. Typically, a deep plow technique is recommended that will turn the soil and loosen the soil substrates. However, even after the cure it often takes a few crop cycles to return to the field to its original state. Use of heavy vehicles such as dump trucks, concrete mixers, cranes, bulldozers, and the repeated traffic of pickup trucks along the same route can create soil compaction.

Q29. Some farms have dairy cows and other animal product units as their main source of income. Are there concerns relating to raising animals in near proximity to HVTLs?

A. Yes there is and it is typically focused on stray voltage. Stray voltage has gotten a lot of press within the agricultural industry. Stray voltage occurs when an electrical current leaks onto metal objects and a current is carried by that object. When an animal or person has contact with that object they get a shock. This shock can be small, felt as a tickle, or more severe including severe discomfort. An animal that experiences this shock will no longer make contact with the object. This is of particular concern among dairy farmers. When their cows are subjected to stray voltage they tend to stop drinking, which negatively changes the content and quality of their milk, reducing the cell counts that are needed to continue with Grade A labels. The farmer is not only at risk of losing this grading of his milk product, which would reduce his income, but he is at risk of losing the cows affected by the stray voltage.

Stray voltage can be caused by a number of factors including poor wiring, errant distribution lines, and such. However, the general belief in the dairy industry is that stray voltage can be caused by HVTLs in close proximity.

Q30. Does it matter where the HVTL is located on a property?

A. Yes it does. We have found different impacts on property value due to location of the HVTL on the property and have developed a hierarchy of sorts as a result.

The diagonal cut is the most severe of all the locations. Such a division creates triangular-shaped remainder lands. An angular cut impacts the largest expanse of area causing the most disruption of planting, field maintenance, harvesting, GPS units, and machinery that travel under the lines, irrigation, and aerial spraying. Typically, a diagonal location has poles located in the fields, reducing tillable acreage and requiring the operators to work around the obstacles, thus creating more work time, overlap, and safety concerns. Aesthetically, it is the most dominant of all locations impacting the view shed. This location would pose the greatest health concern considering its expanse and the necessity of having to work near and under it. Residential impact is great since the HVTL is a dominant feature in the view shed and would most likely be in close proximity to the residence.

The bisection would be the next tier under a diagonal cut. Cutting a parcel in two east-to-west, or north-to-south, leaves two rectangular shaped remainders is bisection. The rectangular shape is easier to work around than a triangular shape. However, this cut has the same issues as a diagonal cut since the easement is located in the field disrupting the maximization of the parcel. Typically there are poles located in the field. Aesthetically, the dominance of the HVTL in the view shed ranks slightly behind the diagonal cut. The health concerns would be the same as with the diagonal location. Residential impact is similar to the diagonal.

Located at the front of the parcel is the next tier under the bisection. This location runs parallel along the property line that abuts the access road and sometimes encumbers a

portion of the road's right-of-way. Though less disruptive than a bisection it does cause issues with the operation of agricultural machinery, GPS signals, sometimes aerial spraying if the pilot cannot run parallel to the line, irrigation pivot units, which must exercise caution not to hit the poles with the boom, or bare electric lines with the water spray. Aesthetically this location has a dominant position similar to the bisection due to it being along the road at the entry point of the parcel and must always be gone under to enter into the property. The health concerns would be slightly less than the bisection due to less exposure. Residential land use is negatively impacted similar to a bisection and diagonal cut.

The fence line location is the most common location for HVTLs and ranks slightly under the front of the parcel location. This location would be along the rear or side fence line (or quarter section line), often sharing the easement with an abutting property owner. Typically, the poles are not in the field to disrupt field work. However, this location has the same disruptive concerns as that of the front of parcel easement location. Aesthetically this location has less of an impact due to running along the rear or side of a property, the side position being more noticeable. Health concerns would be a result of living and working in close proximity to an HVTL. Residential property use is found on such properties and the impact depends on the view shed and proximity to the structures.

The corner nip is last location and has the tendency to have the least impact. This location is best described as a brief intrusion into the property by nipping a corner. The nip is usually in a diagonal fashion, but not dividing the property, per se. Most nipping locations are at the rear of the property, which is the least intrusive in position and view shed. Often poles are not located on the property, and if they are, they are typically in the corner potentially

creating issues with equipment turns, row planting, or irrigation equipment. Health concerns and residential land use are the lowest at this location.

Q31. What is the best way to measure the impact of HVTLs on property value?

A. The best method to measure the impact HVTLs have on property value is to use comparable sales. Comparable sales are sales of properties that are in most respects equally substitutable to the subject property. To extract an impact of the HVTL on property value, an appraiser would find comparable sales of that property which do not have an HVTL, make adjustments for those things that are different, and then compare the indicated value of the subject property derived from the comparable sales. The difference in value is attributed to the one factor that this analysis has isolated, that is the presence of the HVTL.

Q32. Is this type of analysis easy to accomplish?

A. Typically a new HVTL is the only such line in the county, which is problematic for the appraiser for test of "comparable" sale is not met. When this happens the appraiser will resort to the use of "similar" (but not truly comparable) sales such as lower voltage HVTL impacted property or studies on this topic as a guideline to predict the impact of the proposed HVTL on the subject property. When sales of a lower size HVTL are used the appraiser is establishing a base line of impact which would logically increase with the magnitude of the HVTL. For example, if an appraiser can only find sales involving a 138kV AC line in the market area, but the proposed line is 600kV DC line (such as in this matter), and has found a diminution of value of, say 10% due to the presence of a 138kV line bisection a parcel, then the appraiser can logically make two observations that would be applicable to subject property's situation: (1) HVTLs do have a negative impact on property value (which answers the first "yes, no" question), and (2) the impact is at least -

10%. In this example the base line of -10% impact has been set, however logic would dictate that a larger, more encumbering HVTL would have a greater impact than the base. If such similar (but, not truly comparable) sales are not available, then the appraiser can use studies as a guideline to the impact that the subject property may experience. These studies can be done by the appraiser themselves in another market area that would have similar highest and best use as the subject property (though may not have similar per acre land values) or utilize studies completed by other individuals, or do both.

Q33. Have you completed studies on the impact of HVTLs on agricultural property value?

A. Yes, I and my company have.

Q34. What methodology did you utilize in your studies?

A. Two of the most common study methods utilized in real estate appraisal are the matched pair analysis and the regression analysis. Each have their strengths and weaknesses, but designed correctly they can give good parameters to the appraiser on the impact of an isolated variable. We utilized both methods.

Our paired sales analysis typically are expanded to look more like a sales comparison analysis you would find in an appraisal report, whereas the subject property is placed on the left column and a number of comparable sales are found in the columns to the right making adjustments for the variables that are different ending with an indicated value of the subject property if it did not have the variable you are testing for. Then the sales price of the subject property is compared to the indicated values of the sales comparables and any difference in value is attributed to the variable you are trying to extract – in this case the impact of a HVTL.

The second method we utilized is a simple linear regression analysis. In this analysis we typically complete an independent market trend analysis for the difference in time between the comparable sale date of transaction and the date of valuation (which typically is at a different date). This trend analysis compensates for the change in the market over this period of time to predict what the comparable sale would sell for as of the date of valuation. Once this is completed and all the sales are adjusted for the market trend then their $/acre values are plotted on a graph and a trend line is plotted to achieve the best fit of predictive value. This is done for both the HVTL encumbered sales and then for non-encumbered sales. On conclusion the trend lines are compared to see if there is a difference in predicted value. The difference between the trend lines is the measured impact of the variable, in this case HVTLs. In this method you are isolating one variable after the variable of time has been applied.

Q35. Do you use multiple regression analysis in your studies?

A. No.

Q36. Why not?

A. Multiple regression analysis is a statistical analysis that attempts to use observations (i.e. sales in this case) that have a number of variables which are different from each other, isolating the impact on value of each variable (except the variable being studied), then applying those adjustments to each sale arriving at a mean sale price. (This is similar to the above mentioned technique of paired sales analysis.) Statisticians desire at least 60 observations (sales) to make such a model work, or 15 observations per variable. Unfortunately, the real estate market tends not to have such a magnitude of sales all within a narrow period of time (years) and in the same competitive market (e.g. township). Hence,

such models compensate for this problem by either expanding the time period (which becomes problematic in the accuracy of the trend adjustment as you add more years to the equation) or the geographic market area (which also becomes problematic unless an accurate adjustment can be supported for a difference in locations.)

A simpler method utilizing the power of statistical analysis is the single regression technique. This method does not need the same volume of sales if the sales have high conformity (similarity) to each other. For instance, the Appraisal Institute's Quantitative Analysis Course and in their Real Estate Finance, Statistics and Valuation Modeling course, it is noted that an analysis with 30 observations can be sufficient and sometimes down to 15 observations can still result in a viable statistical study. Of course, the less "other" variables that in the mix the lower the number of observations are needed. This is more real world to the appraisal industry. Often you can find 15 or more sales of comparable properties within a narrow time period (to reduce trend analysis error) and within the competitive geographic market. Another factor is cost. To collect, confirm, and analyze large amounts of sales is expensive and typically beyond the budgets of a self-financed study or an individual property owner.

Q37. How many HVTL impact studies have you completed and in what states?

A. We (when I say "we" I mean my company under my direct supervision) have completed five studies, two in Wisconsin, one in Indiana and two in Kansas.

Q38. In brief, what were the studies and their conclusions?

A. A brief description of each study is found below.

Sales Analysis on the Impact of a 345kV HVTL line on Agricultural Property in Kansas (Kurt C. Kielisch, Forensic Appraisal Group, Ltd, 2014). The first study was in Sedgwick

County. This analysis compared thirteen agricultural land sales that were collected in five related townships from 2010 to 2013. These sales were compared to three HVTL encumbered property sales. Adjustments were made for market conditions, major soil differences, development potential, and dissimilarities between the sales. On conclusion the adjusted sales prices of the unencumbered land sales were compared to the adjusted values of the HVTL encumbered sales to extract a difference in value attributed to the presence of the HVTLs. The final analysis indicated a loss of value of approximately 23%. It should be noted that the HVTL sales all had a 345kV wood H-poles improvement within the easement. These same properties were later subjected to another 345kV line easement known as the Prairie Wind project. However, at the time of the sales the second easement was not in place. It was assumed that the buyers had knowledge of the coming easement had assumed just compensation would be given for the additional easement. The table below summarizes the findings:

SEDGWICH COUNTY ANALYSIS						
average acreage	99.1	acres for non-HVTL	108.7			
average	$ 4,110	per acre for non-HVTL	$ 3,104	per acre for HVTL	difference=	-24%
median	$ 4,095	per acre for non-HVTL	$ 3,117	per acre for HVTL	difference=	-24%

The second study was in Butler County. This analysis compared seven HVTL encumbered sales to twenty-two agricultural land sales. This analysis used a sales comparison method that selected comparable sales for seven of the HVTL sales and then adjusted for market conditions, major soils differences, development potential, and other differences to arrive at an adjusted land value. Then the adjusted land values were compared and a difference in value was extracted and stated as a percentage. The seven comparisons had a range of

loss from a low of 9% to a high of 44%. A preliminary summary of the study is found in the following table:

Butler County Land Sales Analysis			
Diagonal	-19%		
Bisection	-17%		
Fenceline	-34%		
monopole	-22%	on a diagonal	
lattice	-34%	both on fenceline	
H-poles	-20%	mixed locations	
total ave	-24%		
total med	-25%		

Study of the Impact of a 345kV Electric Transmission Line in Clark County, Town of Hendren (Kurt C. Kielisch, Appraisal Group One, 2006, revised 2009). This study was limited to Hendren Township, Clark County, and covered a five-year time period from January 1st, 2002 to June 1st, 2006. This study included 22 land sales of agricultural and recreation land, of which 4 were encumbered with a 345kV electric transmission line having wood H-pole design, 60ft height and 150ft wide easement. The other 18 land sales were considered comparable to the power line encumbered sales. The conclusion of this study was that: (a) the land sales with an electric transmission line sold for 23% less than comparable land sales without a transmission line; and, (b) the more severe the location of the power line the greater was the loss of value.

An Impact Study of a 345kV Electric Transmission Line on Rural Property Value in Marathon County - Wisconsin (Kurt C. Kielisch, Appraisal Group One, 2006). This study focused on the impact a 345kV line, known as the Arrowhead-Weston line, had on property value. This power line was a 345kV electric transmission line, having steel single poles ranging in height from 110ft to 150ft, single and double circuit lines, having a 120ft wide

easement. The study compared sales within a 2 year time period (January 1st, 2004 to December 31st, 2005) in Marathon County, Wisconsin, focusing the area to the Townships of Cassel and Mosinee. This study used 14 land sales, of which 5 were encumbered with the power line and 9 were not. A simple regression technique and matched pair analysis was used to extract the value impact. The study concluded with a finding that when the power line traversed the property along the edge, such as a back fence line, the loss was as low as -15%, and when it bisected a large parcel the loss was as high as -34%. The properties were all raw land sales with either agricultural or residential land use.

An Impact Study of the Effect of High Voltage Power Lines on Rural Property Value in Southwestern Indiana (Kurt C. Kielisch, Appraisal Group One, 2010). This study was based in southwest Indiana in Gibson County. It was focused on large agricultural land and the impact of a high voltage transmission lines (HVTL) varying in size from monopole to large steel lattice towers. The study included 32 land sales of which 10 were HVTL sales. The time period was January 1st, 2006 to December 31st, 2009. Adjustments were made for time, location and other utility easements (if any) and the results were graphed to compare the non-HVTL land sales to the HVTL land sales. The study concluded that the power lines negatively impacted the property with an impact range from -5% to -36% with the average impact being -20%.

Q39. Have you completed any other type of analysis with regards to the impact of a HVTL on agricultural property value?

A. Yes, we have completed a number of appraisals in Minnesota regarding the 345kV CapX line which is running from Fargo, ND to St. Cloud, MN. In these analysis we were able to utilize the comparable sales technique to isolate the impact of the proposed 345kV line on

agricultural properties. In Sterns County we found land sales that were encumbered with a 400kV DC line, and in Clay County we found on 250kV DC line as comparable sales. After completing a sales comparison analysis we found the similar impacts that our studies in other states indicated, i.e. -10% to -20% loss of value.

In Michigan we came across a sale of 78.05 acres of agricultural land located on Fairgrove Road, Gilford Township, Tuscola County, Michigan, took place on April 17, 2013 for $490,000. The grantor was Alex Bondarenko Irrevocable Trust, and the grantee was Randall and Judy Humpert. The document was Trustee's Deed #1277/919. This parcel was level, had a crop CPI of 133 and had two barns used for storage. The property also had an ITC 345kV HVTL easement running diagonally through the property, running from the northeast corner to the southwest corner. The easement was 200ft wide. A sales analysis on this property indicated that the impact of the HVTL ranged from -16% to -18%. Mr. Humpert (buyer) confirmed the sale and stated that the presence of the HVTL negatively impacted the property value and its use. He also stated that he has had negative experiences with HVTLs. These findings were consistent with our other studies.

Q40. Are any of these studies published?

A. No they are not. They were not done with a purpose of publication. They were completed to assist our firm in the valuation of agricultural properties that will have a HVTL placed upon them through eminent domain proceedings.

Q41. Are you aware of any published studies that investigated the impact of HVTLs on agriculture land values?

A. Yes I am. The three most cited studies are: 138kV Transmission Lines and the Value of Recreational Land (Glenn J. Rigdon), Right-of-Way Magazine (December, 1991); High

Voltage Transmission Lines and Rural, Western Real Estate Values (James A. Chalmers, Ph.D.), Appraisal Journal (Winter, 2012); and Electric Transmission Lines: is there an impact on rural land values (Thomas Jackson, Ph.D.), Right-of-Way Magazine (November-December 2010).

The Rigdon study is not applicable to agricultural land since it was for recreational forested land and dealt with a 138kV.

The Chalmers study is not applicable since it deals with low grade pasture lands in Montana, used a mix of questionnaires and some sales data for the agricultural properties analysis and had most his "agricultural" properties dominated by recreation land use. Mr. Chalmers found no conclusive evidence that HVTLs had a measurable negative impact on these lands, but interestingly found sizable losses (up to 50%, typical range 20%-30%) when he examined the impact on rural residential land.

The Jackson study would appear on its face to be the only study applicable for agricultural property. However, an examination of this study has revealed many flaws including, but not limited to, a mix of highest and best use (including residential, rural residential, commercial, development land, forest land, recreational land and agricultural land), a mix of a wide array of geographical areas throughout the State of Wisconsin which are not comparable in either land structure, soils nor economics and the comparable sales were hand selected by an appraisal firm under contract with the American Transmission Corporation in a large litigation matter. Further investigation by this firm has found omission of viable comparable sales, omission of HVTL land sales and errors in adjustment of the variables. (Example: Jackson's study indicates there is no $/acre difference between lake front, river front, and trout stream properties, which the market indicates is an absurd

conclusion.) This appraiser has an intimate knowledge of this study having investigated the sales, adjustments, viewed a selection of the comparable sales and have testified to these findings in court proceedings when the study was relied upon by other appraisers or Mr. Jackson had given testimony. Consequently, I do not feel the Jackson study is legitimately represents the actions of a buyer of agricultural lands when encumbered with a HVTL.

Q42. The proposed Grain Belt line is a 600kV DC transmission line. Did any of your studies include a line similar to this?

A. No. The proposed line is unique in this market and we found no studies nor did our studies include a line of this size and magnitude. The closest we got to that was the 400kV DC line in Stearns County, Minnesota.

Q43. Nearly all the studies you mentioned, except for Stearns County, Minnesota, involved an AC transmission line. Do you think a DC line will have a different impact on property value than the AC transmission lines?

A. I do not believe the buying public perceives a difference (or knows the difference) between an AC and DC power line. I base this on my experience in Minnesota whereas the property owners did not express any knowledge that they knew the HVTL on their property was a DC line (400kV DC line in Stearns County and 250/230kV DC line in Clay County). My experience investigating and confirming sales of properties encumbered by HVTLs is that the property owner rarely knows the power rating (kV) of the line or whether it is AC or DC. However, they do observe if the line is big, tall, and has a large easement width, which I believe plays into the overall impact.

Q44. Does this conclude your testimony?

A. Yes it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity Authorizing it to Construct, Own, Operate, Control, Manage, and Maintain a High Voltage, Direct Current Transmission Line and an Associated Converter Station Providing an interconnection on the Maywood-Montgomery 345 kV Transmission Line	)	Case No. EA-2014-0207

AFFIDAVIT OF KURT C. KIELISCH

STATE OF Wisconsin)

) ss

COUNTY OF Winnebago)

Kurt C. Kielisch, being first duly sworn on his oath, states:

1. My name is Kurt C. Kielisch. I am a forensic appraiser and the President of Forensic Appraisal Group. My address is 116 E. Bell Street, Neenah, Wisconsin 54956.

2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of Show Me Concerned Landowners, consisting of 27 pages, all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and accurate to the best of my knowledge, information and belief.

Kurt C. Kielisch

Subscribed and sworn to before me this 15th day of September, 2014.

Notary Public

ANNITA J HOCK
NOTARY
PUBLIC
STATE OF WISCONSIN

My commission expires: June 10, 2018