



UTILITY

VERSUS PROXIMITY

A systematic approach to measuring the impact of electric transmission line easements on residential properties

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The valuation of easement interests ranks among the most complex assignments that appraisers encounter. All easement acquisitions are, by definition, partial acquisitions requiring consideration of remainders as well as the property interest taken. Since the effect of each easement on its larger parcel is unique, easement valuations are performed using the before and after methodology.

Many easement valuation problems involve distinguishing between direct and indirect impacts. Direct impacts of the easement are within the defined

easement area itself, such as restrictions on use or the elimination of a structure or site improvements. Indirect impacts affect the area outside of the easement area, including reduction in utility. Restrictions within the easement area itself may make efficient use of adjoining land impractical. It also includes a diminution in market appeal to the remainder, such as objections to aesthetics or health and safety concerns that apply to the entire property.

In the November/December 2014 issue of Right of Way Magazine, Donnie Sherwood's article on

“The Valuation of Easements” presented factors to consider when valuing an easement and investigating its impact on property. We applied similar concepts to improved residential properties where an easement was acquired for a 345-kilovolt electric transmission line. By developing an evaluation matrix to systematically consider the impact of the easement to the encumbered land and to the remainder, we were able to maintain consistency in our evaluation while recognizing that each property is unique.

The Assignment

Our appraisal company was contracted to estimate the value of easements needed from properties located along a 48-mile segment of a proposed 345-kilovolt electric transmission line crossing three counties in western Wisconsin. The three-wire transmission line will be supported by steel monopoles that are spaced approximately 800 to 1,000 feet apart with heights of up to 190 feet. The width of the easement right of way is typically 150 feet which is often split between adjoining private properties and/or public roads.

The project required that we appraise 32 improved residential properties as well as vacant recreational, residential and agricultural land. Sixteen of the 32 improved residential properties were subject to an existing 161-kV transmission line easement. The improved residential properties were primarily in rural locations, with only four of the 32 served by municipal utilities.

Easement rights to be acquired are typical of high-voltage electric transmission line projects. The landowners are not permitted to construct any buildings, structures or other objects or plant trees in the easement area without written permission from the utility. The utility has the right to construct, operate, maintain, use, upgrade, rebuild, relocate, or remove the transmission line facilities; install additional equipment and facilities for the distribution of energy, light, and communication impulses; remove any trees located in the easement area; and to trim or remove any trees located adjacent to the easement area that may interfere with the electric line.

Literature Review

A number of studies have been conducted on the implications of high-voltage electric transmission lines (HVTs) for residential property values. About half of the studies found that HVTs negatively impact the value of nearby properties, while the other half of the studies found no statistically significant or systematic impacts on property values. In those studies where a negative effect on value has been quantified, it was almost always less than 10 percent, usually falling somewhere between three percent and six percent.

Most of the early studies made no distinction between effects on properties that are proximate to a transmission line and those subject to an actual easement encumbrance. A common assumption is that buyers discount the prices they are willing to pay for dwellings proximate to an HVT based on aesthetic objections, as well as health and safety concerns. Proximity may involve properties under a transmission line, properties adjacent to but not under a transmission line, or properties simply near a transmission line. Utility, on the other hand, is an attribute specific to properties that are subject to easement restrictions. Owners of land under an

easement may be prohibited from planting trees and erecting buildings or other structures. The utility of that part of their property under an easement is reduced to at least some degree.

In addressing the proximity versus utility issue, a 2008 study conducted by economists and real estate appraisers James Chalmers and Frank Voorvaart examined the impact of a 345-kV line on rural and suburban residential properties in Connecticut and Massachusetts. A multiple regression analysis was used to determine the influence of several factors on one dependent variable (sales price). Four study areas were delineated, with the number of sales in each study area ranging from 153 to 475. The study found no systematic effects of proximity on sales price. Encumbrance or utility, however, was shown to have a systematic effect on price, and that effect was estimated to be -1 percent of the total property value.

Local Market Research

In recent years, our firm has performed several studies of HVT easement impacts on properties within local markets around Wisconsin. In 2013, we studied sales of vacant parcels and improved single-family dwellings in a suburban subdivision located



A preschool playground is located in a 161-kV transmission line easement in western Wisconsin. The house is approximately 25 feet from the edge of the easement.

in western Wisconsin close to the subject area. A 161-kV transmission line mounted on wooden H-frame structures predates this subdivision.

Eight sales of vacant lots occurred between January 2009 and January 2012. Two of these lots that sold were subject to the HVTL easement. A regression model analysis considered the lot size, date of sale, and presence or absence of an easement. The model indicated that vacant lots with the HVTL easement sold for 21 percent *higher* unit prices than for otherwise similar non-easement lots. We then identified sales of improved properties. Three improved properties that sold with HVTL easements were compared to sales of non-encumbered properties within the same subdivision. Standard adjustments were made to the comparable sales. The adjusted sale price of the non-encumbered properties varied from the sale price of the encumbered properties by -6.86 percent to +1.88 percent. This range is consistent with other studies that find little, if any, impact on improved properties subject to an HVTL easement.

Constructing the Evaluation Matrix

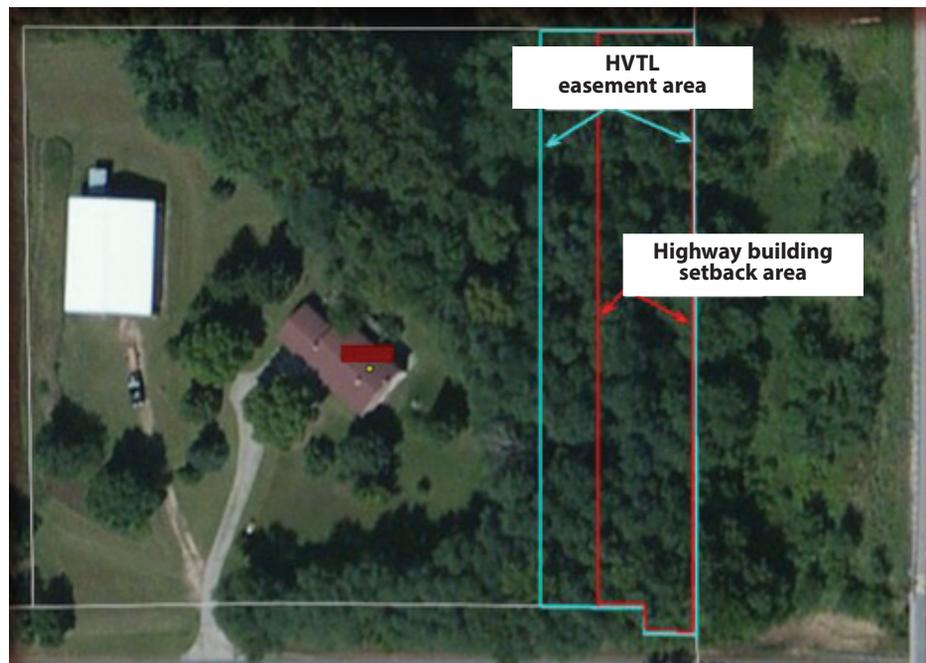
Neither the published studies nor our own study revealed a single percentage point diminution in value that can be applied uniformly to properties subject to a HVTL easement. The various studies have, however, identified factors believed to influence the degree to which any one property might be affected. These factors are:

- Percentage of parcel that is encumbered
- Placement of the easement strip on the parcel
- Loss of vegetation—natural or landscaping
- Loss of screening against external detriments
- Distance from the transmission line to the dwelling
- Visual prominence of the facility

Type of Impact	Area Impacted	Impact Quantified (example terms)
Loss of Land Utility: <ul style="list-style-type: none"> • Loss of Buildable Land • Loss of Landscaping/Wooded Character 	Easement Area	X square feet Natural or cultivated
% Land Encumbered	Remainder	X%
Placement of Easement on Property	Remainder	Edge, corner, bisecting
Living Area Proximity to HVTL Easement: <ul style="list-style-type: none"> • Visual • Pole Proximity • Noise 	Remainder	X feet Wires, poles On/off property Intensity
Screening of External Detriments	Remainder	Busy roads, etc.

To judge the impact of the HVTL on each subject property, these factors were categorized in the matrix above. The type of impact includes direct loss of utility, proportion of land encumbered, location of encumbered area, proximity of structures and wires to dwelling, potential for visual or noise disturbance and loss of screening. The area of impact is the defined easement area or the remainder area. The impact quantified indicates how much land is affected and the proximity of the transmission line to the dwelling.

The matrix above addresses both utility and proximity effects. Loss of utility considers the percentage of the entire property encumbered, the position of the easement on the property (edge, corner, bisecting), and any loss of landscaping or natural woods from the easement area itself. Proximity is quantified as the distance of the living area from the edge of the easement, aesthetic effects of pole and wire location, noise from the wires and the loss of screening of external detriments.



Rural residential property in western Wisconsin on 3.47 acres. An HVTL easement was acquired over .70 acres, resulting in the loss of trees that provided screening from a major highway.

The matrix was used to first judge the percentage loss in value to the land under easement. The after land value calculation includes the value of the residual rights for the encumbered land plus the value of the unencumbered remnant. Next, the matrix helped guide the estimation of a percentage diminution in value to the improvements. This percentage was applied as an adjustment to the improved comparable sales in the after condition comparison grid.

By using the matrix in our appraisals, the range of damage conclusions for the 32 properties appraised was 0.91 percent to 12.13 percent of the total property value. Many of the properties at the low end of the range were already subject to an electric transmission line easement in the before condition. Properties at the high end of the range typically had a higher percentage of land under the new easement and/or the transmission line easement was close to the dwelling.

A Prime Example

One of the properties that we appraised is an improved rural residence on 3.47 acres. The parcel adjoins a four-lane highway. The 165 feet between the house and the highway right of way is wooded. The dwelling is a ranch-style home of 1,435 square feet above grade living area with 965 square feet of finished basement area. The home was built in 1981 and is in fair condition. There is an attached two-car garage and a large detached storage shed.

The HVTL easement is over 0.70 acres (20 percent) of the subject's land, and the edge of the easement is 82 feet from the house. This means that more than half of the trees lying between the house and the highway will be removed. One metal pole, 170 feet in height, will be located on the property adjacent to the highway right of way. The completed evaluation matrix for this property is as follows.

More than half of the easement area (0.42 acres) is subject to a highway building setback requirement that prohibits

Type of Impact	Area Impacted	Impact Quantified
Loss of Land Utility: <ul style="list-style-type: none"> • Loss of Buildable Land • Loss of Landscaping/Wooded Character 	Easement Area	0.70 acres 83-foot strip of woods
% Land Encumbered	Remainder	20%
Placement of Easement on Property	Remainder	Edge
Living Area Proximity to HVTL Easement <ul style="list-style-type: none"> • Visual • Pole Proximity • Noise 	Remainder	82 feet Wires, one pole On property Occasional
Screening of External Detriments	Remainder	U.S. Highway

structures. We considered that this land had a 25 percent diminution in value in the before state based on its restricted use. In the after state, with the HVTL easement, it suffered an estimated additional 25 percent loss in value. The additional 0.28 acres subject to the HVTL easement alone was considered to suffer a 50 percent diminution in value. The remaining unencumbered land retains its before unit value as it is of sufficient size to continue its current use.

The landscaping and the dwelling were concluded to suffer losses in value. We estimated a 42 percent loss in the contributory value of the landscaping due to the loss of natural woods that are common in the area. This degree of loss recognizes that the woods function as a screening from the highway. We estimated a two percent loss in value to the dwelling based on its 82-foot proximity to the HVTL easement and visibility of one pole structure. The total damages associated with both the utility and proximity effects of the easement were estimated at 6.62 percent of the before value. The overall damage percentage lies within the range of damages estimated from published studies described earlier.

Summary

Using an evaluation matrix may be beneficial for any appraiser facing a utility easement assignment. It can also be used for valuation of the before state if there is an existing easement on the property. For a multi-parcel linear project, the matrix provided a consistent way to address

factors that might affect each property, while also recognizing that damages are relative between the 32 different properties appraised. Overall, it enabled us to distinguish between the effects of the easement within the easement area itself and the effects on the remainder property. ☘

References

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