

Appendix C: Vacant Land Studies

Author	Brown, D.J.A. (1975)
Title	The Effect of Power Line Structures and Easements on Farm Land Values
Source	<i>Right of Way</i>
Publication Date	December 1975/January 1979
Studied Geography	Saskatchewan, Canada
Studied Transmission Lines	Predominantly 138 kV lines on H-frame wood structures.
Additional Data Description	Quarter section sales (136 to 199 acres) and half section sales (200 to 350 acres).
Number of Observations	411 quarter section sales and 377 half section sales
Studied Time Period	1965 to 1970
HVTL Measurements	Number of HVTL crossing the property
Methodology	Multiple regression and paired sales
Independent Variables	Non-arable acres/total acres, weighted productivity index, miles to shipping point, number of HVTL
Dependent Variables	Selling price per cultivated acre adjusted for waste land, pasture land or improvements.
Summary/Result	<ol style="list-style-type: none"> 1. <u>Regression Analysis</u> The HVTL variable was not significant for either the quarter section or the half section sale samples. The author concluded that HVTL structures and easements do not have a big enough adverse effect on entire parcels of land to be reflected in the selling price of such parcels. 2. <u>Paired Sales Analysis</u> Given the large number of sales and their relative homogeneity, the author found 32 pairs of quarter section sales and 16 pairs of half section sales for which one of the pair was crossed by a HVTL, the other was not crossed. In both cases, the encumbered parcels sold for more than the unencumbered parcels indicating no adverse effect of the HVTL on market value. Although the effect is apparently so small it doesn't show up in market value, the author does identify several components that may contribute to an operating loss.

Author	Chalmers, J. A, (2012a)
Title	Transmission Lines and rural Property Values
Source	<i>Right of Way</i>
Publication Date	May/June 2012
Studied Geography	Central Montana
Studied Transmission Lines	Double Circuit 500 kV line on 185 foot, self-supporting steel lattice structures
Additional Data Description	The study area is a large rural subdivision, Aspen Valley Ranches, consisting of 156 twenty acre lots located about 23 miles south of Helena Montana. The 500 kV line bisects the subdivision with 26 lots crossed by the easement, many other lots with views of the line but many also completely shielded from the line by topography or vegetation.
Number of Observations	183 transactions (several of the lots sold more than once over the study period)
Studied Time Period	1987 to 2011
HVTL Measurements	Distance measured from the center of the lot to the easement boundary, area encumbered by the easement and a visual intrusion variable based on field inspection and measured as a categorical variable from 0-3, i.e. not intrusive at all to highly intrusive.
Methodology	Log-linear regression.
Independent Variables	Year of sale, HVTL visual intrusion, presence of riparian habitat, lot quality, encumbered area, distance to HVTL and quality of access to the lot.
Dependent Variables	Natural log of sale price.
Summary/Result	<p>The distance and visual intrusion variables measure many of the same things and didn't have enough independent effects to be used together in the regression equation. Therefore, a distance model and a visual intrusion model were estimated.</p> <p>The distance model showed discounts of about 15% for lots within 1000 feet of the HVTL relative to lots beyond 1000 feet. Since the 20 acre lots averaged 660 by 1320 feet, this implies that lots on either side of the line were likely affected but the results probably didn't extend beyond that.</p> <p>The visual intrusion models showed discounts of about 10% for lots where the HVTL were highly intrusive. The other visual intrusion variables were not significant.</p> <p>The fact of a 10 to 15% effect on lot sales price is not surprising.</p>

	<ul style="list-style-type: none">• Even though the lots are relatively large, the combination of topography and location of access roads means that there is little flexibility with respect to the location of the building site for many of the lots. Given the location of the building site and that of the 185 foot, double circuit structures, there were many cases where the HVTL was the dominant characteristic of the viewshed.• Although some lots had a few acres of grazing potential, the use of most of the lots was purely residential.• There were always plenty of substitutes available in the market - some affected by the lines, some not. <p>Finally, since the transaction data base included the original sales by the developer, the relative desirability of the lots was studied by regressing the year of sale on the same set of independent variables, i.e. did the higher quality lots sell first, the HVTL lots later, etc. The result was that not one of the independent variables was correlated with date of sale. The implication is that the pricing of the lots must have been a fair reflection of the market's evaluation of the relative strengths and weaknesses of the individual lots. For example, the 15% HVTL discount was apparently sufficient to make the market indifferent between the less than 1,000 feet and greater than 1,000 feet lots and hence there was no difference in the rate at which they sold.</p>
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Author	Chalmers, J.A. (2012b)
Title	High-Voltage Transmission Lines and Rural, Western Real Estate Values
Source	<i>The Appraisal Journal</i>
Publication Date	Winter 2012
Studied Geography	Montana
Studied Transmission Lines	500 kV lines from the Colstrip Power Plants west to the Idaho border. About half of the line is parallel, single circuit 500 kV lines on 120 to 130 foot guyed steel lattice structures and half is double circuit 500 kV lines on 185 foot self-supporting steel lattice structures.
Additional Data Description	The study examined the universe of sales occurring over the period 2000 to 2011 for properties within 500 feet of the centerline of the HVTL.
Number of Observations	49 individual transactions and 7 subdivisions representing about 140 lot sales.
Studied Time Period	2000 to 2011
HVTL Measurements	Location of the HVTL relative to the property, effects on use or utility of the property, interviews with transaction participants.
Methodology	The 49 individual transactions were studied using a case study approach based on description of the property, location of the HVTL, implications for use or utility of the property, interviews with transaction participants and retrospective appraisal of the property based on sale comparables unaffected by a HVTL. The 7 subdivision studies looked at the timing and pricing of lot sales given the location of the lots relative to the HVTL.
Independent Variables	NA
Dependent Variables	NA
Summary/Result	<ol style="list-style-type: none"> <u>49 individual transactions</u> <ul style="list-style-type: none"> Production Agriculture – 19 transactions. No evidence of price effects due to HVTL. Productivity and operating costs are the dominant consideration.. Agricultural Lands with recreational influence – 4 transactions. No evidence of price effects due to the HVTL. The parcels are large, uses diverse and general absence of perfect substitutes unaffected by HVTL. Agricultural lands with High Amenity Recreation and Natural Features – 3 Transactions. No apparent HVTL effects. Very large parcels, highly unique, HVTL not even a consideration. Rural Residential Subdivisions – Lot size less than 5 Acres – 2 transactions. No effect of the HVTL. Rural residential Subdivision – Lot size greater than 5 acres – 3 transactions. One case where the HVTL were highly intrusive and

	<p>marketing time was long and the lot ultimately sold at a 20 to 25% discount. No effect in the other two cases.</p> <ul style="list-style-type: none"> • Large Acreage Rural Residential Tracts – 4 transactions. No apparent effect of HVTL on marketing time or price. • Rural Recreational Tracts/Cabin Sites – 14 transactions. No effect due to the HVTL with some ambiguity in 2 of the 14 sales. <p>2. <u>7 Subdivision Studies</u></p> <ul style="list-style-type: none"> • There was a single subdivision, Brown’s Estates, where a 350 foot corridor with three HVTL and no screening was the undisputed dominant feature of eleven lots. There were both price and marketing time effects. • In three other subdivisions, there were very limited price effects. In one case, a single abutting lot was discounted; in another, two encumbered lots sold for the same price as the other lots in the subdivision, but they were larger. In the third, a lot was discounted in full for the extent of its encumbrance. • Of the remaining 3 subdivisions, one had insufficient data to evaluate price effects and the other two had no price effects. • In total, of the 140 or so lots in the studied subdivisions, 12 showed price effects, 2 lots sold for the same price but were larger and one was fully discounted for the extent of the easement on the property. • With the exception of Brown’s Estates, marketing time effects were rare. <p>3. <u>Summary</u></p> <p>Overall, price and marketing time effects of the HVTL were rare. Where there were effects, the contributing factors seemed to be small lots with little flexibility in the siting of improvements, anticipated use limited to residential and a good supply of equally desirable substitute properties without the influence of the HVTL.</p>
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Author	Jackson, T. (2010)
Title	Electric Transmission Lines: Is there an Impact of Rural Land Values?
Source	<i>Right of Way</i>
Publication Date	November/December 2010
Studied Geography	Wisconsin
Studied Transmission Lines	115 kV to 345 kV with the majority 345 kV
Additional Data Description	Online sales all had easements on the property. Once the Online sales were selected, for each online sale, local appraisers found 3 to 4 offline sales that were similar in all respects except for the HVTL.
Number of Observations	88 online sales and 297 offline sales
Studied Time Period	2002 – 2008
HVTL Measurements	Online parcels were crossed by a HVTL. Offline properties were at least ¼ mile from a HVTL.
Methodology	Regression
Independent Variables	Location, land cover (wooded, open, wetlands), purchaser (public, private)
Dependent Variables	Price per acre
Summary/Result	No statistically significant effect on sale price associated with the HVTL easement.

Author	Mitchell, P. and Kinnard, W. N. Jr. (1996)
Title	Statistical Analysis of High-Voltage Overhead Transmission Line Construction on the Value of Vacant Land
Source	<i>Valuation</i>
Publication Date	June 1996
Studied Geography	Hamptonburgh and Wawayanda, Orange County, NY
Studied Transmission Lines	Marcy South 345 kV line.
Additional Data Description	The study period covers the before, during and after construction periods. The final announcement and filing of route maps was in September, 1985. Construction was largely in 1987 with construction completed in August 1987.
Number of Observations	376 vacant land sales
Studied Time Period	January 1, 1983 to December 31, 1987
HVTL Measurements	Distance of property from centerline (0-300 feet, 301-2000 feet and 2001-4000 feet)
Methodology	Regression
Independent Variables	School district, Land use (single family, PUD, Nonresidential and agricultural), size, distance zones to HVTL, time, pre-filing date/post filing date
Dependent Variables	Inflation adjusted sale price per acre
Summary/Result	Announcement and construction of the Marcy 345 kV line apparently had no effect on the market value of adjacent vacant land.

Author	Rigdon, G.J. (1991)
Title	138 kV Transmission Lines and the Value of Recreational Land
Source	<i>Right of Way</i>
Publication Date	December, 1991
Studied Geography	Marquette County, Michigan
Studied Transmission Lines	138 kV
Additional Data Description	Recreational parcels ranging from 10 to 160 acres.
Number of Observations	46 transaction
Studied Time Period	January 31, 1986 to January 30, 1991
HVTL Measurements	Distance to the HVTL
Methodology	Regression
Independent Variables	Size, topography, distance to county road, distance to HVTL
Dependent Variables	Sale price per acre
Summary/Result	No effect on sale price of proximity to the HVTL.