Impacts on Residential Property Values Along Transmission Lines

An Update Study of Three Pacific Northwest Metropolitan Areas

This article is a sequel to one published in the Sep/Oct 1996 issue (Volume 43, Number 5) of *Right of Way*, using updated, paired sales in three metropolitan areas in the Pacific Northwest (Portland, Vancouver USA and Seattle) to measure the impact of transmission lines on residential property values. Analysis of the sales data indicates that high-voltage transmission lines had minimal impacts on residential property values in these areas. This updated study uses sales for the years 1994 and 1995, and uses the same data gathering techniques and analysis used in the foregoing study.

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Data Collection

Data was collected in pairs, with the subject being directly adjacent to a transmission line. Comparables (comps), somewhat distant from a transmission line, were closely matched, feature by feature to subjects. Adjustment of the sales, as in a typical appraisal, was deemed unnecessary due to the close matches and the large number of pairs.

The following data was gathered and compared for each pair:

Owner name	**Number of bedrooms**
Property address	**Number of bathrooms**
Sale date	Unfinished space
Sale terms	**Car storage size/type**
Sale price	**Landscaping quality**
Time on market	Other improvements
Lot size	Residence to conductor distance
Topography	Residence to structure distance
Viewshed	Transmission visibility from residence
Residence size	**Zoning**
Residence condition	Parcel number
Residence age	Deed reference
Number of rooms	

The attributes above in bold script type were required to be highly similar when matching a comparable with its subject. The comparable sale date was to be within nine months before or after the subject sale date. In addition, the sales were to be arm's-length, functionally equivalent, located in similar neighborhoods, and capable of contributing to a comparable style of living. Matching a large number of pairs in this manner allowed comparison of the properties without a typical appraisal adjustment process.

Study Results

Table 1 (on following page) shows how closely the subjects and comps were matched. Included are the average number of days between sale of the subject and comps (referred to as "Sale Time Difference" in the table). The arithmetic sign of the difference in sale time indicates whether, on average, the comps sold before (+) or after (-) the subjects. The overall average transaction time difference ranged from 35 days in Vancouver to 49 days in Portland with the composite average for the study being 42 days.

TABLE 1	Metro	Number r	Sale Diff.	Size (sq ft)		Bedrooms		Bathrooms		Bathrooms	
	Area	of Pairs	(days)	Subj.	Comp	Subj.	Comp	Subj.	Comp	Subj.	Comp
	Portland	100	+49	1787	1772	1986	1986	3.3	3.3	2.3	2.2
	Vancouver	54	+35	1717	1703	1981	1981	3.2	3.3	2.0	2.0
	Seattle	106	+39	2001	1993	1985	1985	3.4	3.4	2.3	2.3
	All Areas	260	+42	1860	1848	1985	1984	3.3	3.3	2.2	2.2

TABLE 1. Sale Time Difference and Home Characteristics for Subjects and Comps

Table 2 shows the average sale price, dollar difference, and percent difference for the paired sales contained within the three metropolitan area samples. The average percent difference is the arithmetic mean of the individual percentages (average of ratios). Transmission lines had the smallest impact on homes in Portland at -0.04 percent, which is lower than the prior study results of +1.46 percent. The Vancouver area recorded a reduction in value of -1.03 percent compared to the prior study results of -1.05 percent.

The Seattle area recorded a loss in value of -2.05 percent compared to -1.00 percent in the earlier study. The greatest change occurred in the Portland area where the dollar difference changed from a positive to a negative conclusion.

The data show comps were worth slightly more than the subjects in all three geographic areas. Seattle homes were the most valuable, Vancouver the least. All three geographic areas showed increases in value over the last study data; however this is not directly comparable since they were not all the same homes.

TABLE 2	Metro Area $	Average Sale Price - Subjects ($)	Average Sale Price - Comps ($)	Average Dollar Difference $	Percent Difference (percent)
	Portland	151,557	151,517	+40	-0.04
	Vancouver	135,512	136,126	-614	-1.03
	Seattle	176,065	179,174	-3109	-2.05
	All Areas	158,216	159,596	-1380	-1.07

TABLE 2.* Average Sale Price, Difference in Sale Price, and Percentage Difference for subjuect and Comp homes.

*Data based on unique pairs only (N=260)

Table 3 shows descriptive statistics and the statistical significance for the data. The Portland and Vancouver data showed no statistical difference (95 percent probability level) between the average difference and zero.

This is shown by the lower and upper confidence intervals 'bounding' zero. The Seattle data, however, does show the comps were statistically different than the subjects - the interval does not include zero, but the average difference of -2.05 percent is still relatively small.

TABLE 3	Metro Area	Average percent Difference	Maximum Percent	Maximum Difference $	Standard Difference (percent)	95 percent Confidence Intervals (lower)	(upper)
	Portland	-.0.04	-25	+29	7.18	-1.46	+1.39
	Vancouver	-1.03	-21	+10	6.94	-2.92	+0.87
	Seattle	-2.05	-28	-28	7.47	-3.49	-0.61
	All Areas	-1.07	-28	-29	7.28	-1.95	-0.18

TABLE 3.* Description Statistis for the Difference Between Subjects and Comps

*Dollar differences are expressed as a percent of the subject sale price.

Discussion and Conclusions

The results are similar to those of the 1996 study. The first table shows close agreement between the subject and comp housing characteristics as per the size, year built, and number of bedrooms/bathrooms. The average time difference between the sales was a little over a month for all three geographic areas; the comps tended to be sold before the subjects.

A review of this data confirms the findings of the earlier study in that overhead, high-voltage transmission lines have minimal impact on residential property value in the metropolitan areas studied. All areas now recorded small decreases in property values (-0.04 percent to -2.05 percent). The Portland and Vancouver data showed no statistical pair differences (95 percent probability level) while the Seattle study did not include 0, thereby skewing the overall study below a 95 percent level. However, this magnitude of difference remains consistent with the findings from other similar studies thereby indicating that impacts, when detected, are generally small.

Studies of impacts during periods of physical change, such as new transmission line construction or structural rebuilds, have revealed greater short term impacts. However, most studies have concluded that other factors such as location of the property, type and condition of improvements, and the level of real estate activity are far more important criteria than the presence of transmission lines in determining the value of residential property. Regression analysis showed that the percent differences were not well correlated with home and sale characteristics measured in this study. Distance from the subject residence to the line and to the nearest structure did not generate differences in sale price for this study. These findings did not differ from the prior studies results.

One caution about the data: Readers should be aware that the sample of subjects comprised all known arm's-length sales of properties adjacent to Bonneville Power Administration (BPA) overhead lines in the surveyed areas. Comps were restricted to the same geographic communities. County data was loosely aggregated into three metropolitan areas; however, no claims are made that this data represents the entire population of residential real estate adjacent to overhead transmission lines in the Portland, Vancouver and Seattle markets.

Finally, this data should be helpful to both the public and electric utilities in objectively characterizing property value impacts from overhead transmission lines. BPA will continue to monitor real

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estate activities along its transmission corridors with a long-term objective of fully understanding the potential impacts on property values. ■

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