

Valuers' Perceptions On The Value Of The Properties Located Proximate To Transmission Lines

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Abstract

The perception regarding the value of property located proximate to transmission lines is believed to change dramatically due to public awareness and articles in daily press. It is agreed that transmission lines imposed a significant negative impact on the desirability, hence the value of the property adjacent to it. This paper highlights the results of a questionnaire surveys amongst valuers in Klang Valley. The survey was intended to explore the issues and attempts to prove it or otherwise. The types of properties covered in this paper are landed properties - commercial, industrial, and residential. The findings showed that features like visual unattractiveness, increases of public awareness, long-term health problem (stigma), unsafe, disturbing sound, and electrical equipment interference contribute to the loss of value. In-term of percentage, commercial properties are highly declined, while residential properties are the least. There is more awareness towards the relationship between transmission lines and property values, although there is not much local publication on the matter.

Keywords: Property, loss of value, transmission lines, proximate location

1.0 Introduction

The stigma associated with properties that are proximate to transmission lines might influence potential buyers into deciding whether to buy them or not. There seems to be some kind of fear among the society at large, of the danger living in these properties. As such, this could lead to a negative effect on the value of the properties. This negative implication was due to the numerous studies done regarding transmission lines which found little or negligible impact on the values of properties located proximate to them. The word transmission line which is used throughout this paper, includes the transmission lines, the distribution lines and the substations.

The transmission lines produce electromagnetic field (EMF). The EMF is found to cause miscarriages, leukemia, brain cancer, Lou Gehrig's disease, breast cancer, Alzheimer disease, suicide and heart problems. These are the findings of a recent \$7 million evaluation conducted by the California Department of Health Science¹. However, there is an ongoing debate among researchers in the valuation field, whether there have been any difficulties in selling properties proximate to these lines. Also, are there any difficulties to determine the value of properties proximate to high voltage lines? If there are, then there is, indeed, a cause for concern.

Besides being paranoid of unproven scientific study of health effect from EMF emitted by the transmission lines, the unsightly visual impact of such lines will also be considered by potential property buyers before actually buying them. This paper seeks to find out perception of valuers in Malaysia on properties which is proximate to a transmission lines. The paper also studies if there is any impact on the values of

these properties and the measurement approaches used by the valuers to reach into the conclusion of the loss of value of such properties.

2.0 Scope and Objectives of the Study

The objectives of this study are:

- i. To gain better understanding on issues of transmission lines and their effects on property values.
- ii. To seek the valuers' opinion about properties located near transmission lines and whether they have any impact on property values.
- iii. To find out the opinion of the valuers, the features that penalize the value of that property proximate to transmission lines.

This study focused on properties in the Klang Valley. Proximity to transmission lines means the property lying approximately 5 to 30 meters from the transmission lines (from the lowest, 132kV to the highest 500kV) and not directly under the transmission lines². This includes property with easement from Tenaga Nasional Berhad and in close proximity of the transmission lines. The study is limited to valuers in Klang Valley. The study will cover all landed properties including agricultural land.

3.0 Stigma that Creates an Impact on Property Values

Electromagnetic Field (EMF) has been identified as one type of "stigma" that can influence the value of the property negatively (Elliot and Wadley, 2001). The stigma is due to potential health problem.

¹ www.powerlinefacts.com

² Tenaga Nasional Berhad., 2003. *Annual Report Year 2003*. Copies Issued to Stakeholder., TNB, Kuala Lumpur.

However, using the expectation of future health problem as the basis of “fear” is new to our literature in Malaysian context. A correct definition and measurement of this new concept is critical as it can be a part of future evidence in any stigmatized property.

Although the tool to measure stigmatized income properties has been presented in the recent literature as the discounted loss of adjusted net operating income (Elliot and Wadley, 2001), little agreement exists on the best estimation technique for residential properties. This literature review examines the issues that have been covered in a number of current cases to estimate the loss in residential value from fear. This information is critical to property valuation in future appraisal assignment near transmission lines and to lenders who have loans on these properties. (Bryant, 1998)

The court has difficulties in dealing with EMF, the reason being, scientific research has not been conclusive. Many conflicting studies have been carried out. However, it has been established that low frequency magnetic field can produce changes in biological systems. The public controversy surrounding transmission lines began in the United State following the publication of an epidemiological study by Weitheimer and Leeper (1979)³ linking childhood cancer to the proximity of electric transmission lines to residences. While the Weitheimer and Leeper study has been criticized and was not conclusive, it raised public concern. Additional studies while not proving that EMFs cause cancer, certainly give enough credibility to a possible risk that a reasonable person could be concerned. (Bryant, 1998)

There are three basic rules applied by the courts with respect to severance damages in transmission lines condemnation cases. The first rule does not allow compensation for fear.

The second rule allows compensation if the fear is reasonable. The third either assumes, the fear is reasonable or that reasonableness is irrelevant. The only relevant issue is the final impact on market value. The first rule which is sometimes referred to as the majority rule is the least followed of the three. The second or intermediate rule has a fairly wide following and has some appeal until it is examined carefully. The third or erroneously named minority rule seems to be the most followed of the three rules (Bryant, 1998). The Charles and Douglas (1992) survey indicated an average decline of about 10% in the value of property located near transmission lines compared to property not so located. It would be logical to expect that some of this decline is related to increased public awareness of the potential adverse health consequences from exposure to EMF (Bryant, 1998).

Four studies used statistical models to determine if transmission lines had a measurable impact on proximate property. Three out of four reported little or no discernible impact (Mundy, 1992a; Brown, 1976; Kinnard et. al., 1984). The lone dissenting study reporting a significant negative impact on value is that of Colwell & Foley, (1979). More recently, another study by Colwell, (1990) finds a negative impact on residential properties in close proximity to transmission lines, declining as distance increases. Further, the negative impact diminishes with time. Colwell (1990), also determines that properties not adjacent to, but within sight of, a utility easement suffer an impact as a result of proximity to transmission lines.

Charles & Douglas (1992), reported that transmission lines can effect residential

³ __, *Cancer Rise Linked to Power Lines*, Available at: <http://www.powerlinefacts.com>

property value to varying degree under certain circumstances and that the market value of these properties is, on average, 10 % lower than the market value of comparable properties not subject to influence of transmission lines.

As a comparative study on stigma issue, Wilson (1994), Patchin (1988; 1991) and Mundy (1992a; 1992b; 1992c), however address this issue of stigma and its importance in the valuation of contaminated land. In terms of definition, Patchin (1991) describes it as a negative intangible, caused by:

- fear of hidden clean up costs
- the trouble factor associated with work involved in clean up
- the fear of public liability, and
- the lack of mortgageability (loan).

Colangelo and Miller (1995) describe stigma in two respects:

- (1) In terms of residual stigma (i.e. the negative impact that results from public perception that environmental contamination is permanent and represents a continuing risk even after environmental cleanup has been completed), and
- (2) As proximity stigma (i.e. the negative result on property values that occurs in properties in close proximity to contaminated sites).

It is suggested that this stigma element can be incorporated into valuations by making an upwards adjustment to the yield figure adopted or by making an end deduction or allowance to the valuation or calculation of worth.

Brown (2003) revealed that from the findings of researches, regardless of methodology, overwhelmingly support the conclusion that stigmatized properties and proximity to transmission lines adversely affects on market value or sale price.

4.0 Research Methodology

The method used in this research is referred to as normative survey research since it determined the status of something at a specific time. The selection of respondents is based on random sampling. Fifty respondents have taken part in this study. Ten respondents were interviewed personally by the author. Forty respondents gave their feedbacks through the post. Although the interviews were conducted with ten different respondents, the questions asked were the same as in the questionnaires.

5.0 Data Analysis

The parameter of data identified in this study is the practicing valuers in the Klang Valley. All data received are considered reliable as only six percent (6% - three respondents) of the total respondents have practiced less than 5 years. Weightings are given for questions that require respondents to rate the answer numerically. The weightage used are:

Weightage (x)	Equivalent to
1	Very Strongly Agree
2	Strongly Agree
3	Agree
4	Disagree
5	Strongly Disagree
6	Very Strongly Disagree

6.0 Background of the Respondents

6.1 Experiences of the valuers in the real estate

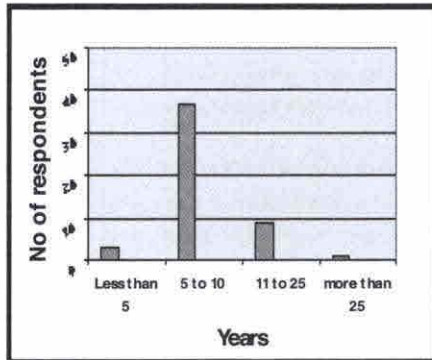


Chart 1: Valuers and their number of years practicing in real estate

The chart 1 above shows that among the respondents, 3 have practiced less than 5 years, 37 respondents practiced between 5 – 10 years, 9 respondents practised between 11 – 25 years and 1 respondent practised more than 25 years.

6.2 Properties Valued by Valuers for the past 5 years

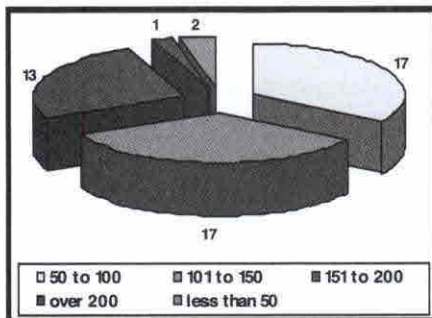


Chart 2: Numbers of properties valued by the respondents for the past 5 years.

In the past 5 years, all 50 respondents have declared how many properties they have valued. Seventy percent (70%) of the respondents have actually valued

properties proximate to transmission lines while the other 30% gave their opinion on other evidence rather than experience of valuing the property. Among the seventy percent (70%) of respondents, six (6) respondents have valued less than ten (10) properties proximate to transmission lines. Twenty six (26) respondents have valued between ten (10) to fifty (50) properties and two (2) respondents have valued between fifty (50) to one hundred fifty (150) properties and finally one (1), have valued similar property between one hundred fifty one (151) to three hundred (300) properties.

Fifty respondents had stated the area of the Klang Valley which they have valued for the past five (5) years as stated in Chart 3.

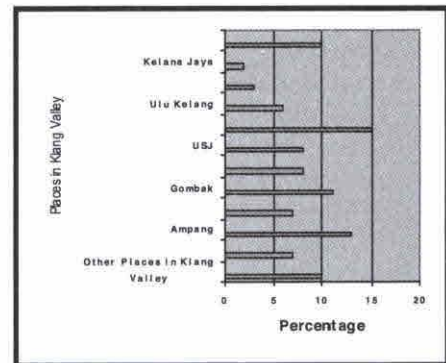


Chart 3: Percentages of respondents who have valued 3 recent places in Klang Valley area

7.0 Research Findings

7.1 Professional Opinion of the Valuers

Eighty percent (80%) of the respondents are of the opinion that property proximate to transmission lines is negatively affected. Twenty percent (20%) respondents opined that transmission lines do not have any effect on property values.

To those valuers opined that transmission lines have no impact on values of property located proximate to it, they were based on the following reasons:

- a. Some properties are located in such 'most wanted' areas that existence of transmission lines makes no difference to the value.
- b. The lower rental value might compensate for the existence of the transmission lines.
- c. The buyers are not aware that there is a relationship between transmission lines and property values and that they are willing to pay the price for these properties.

Whilst the valuers agreed that transmission lines have positive impact on property values due to the extra land given by the developers may increase the value of the property especially the residential properties.

7.2 The Features

The features that contribute to declining property values proximate to transmission lines are; electrical equipment, visual unattractiveness, unsafe, giving off disturbing sound, may cause long term health problem and increases in public awareness.

These features were discussed and the respondents were asked to answer based on a scale ranging from 1 to 6 as stated above. Table 1 explains the mode and mean of the study.

Table 1: Contribution Features

Features	Mode	Mean
i. Visual unattractiveness	1	2.48
ii. Increased Public Awareness	2	2.92
iii. Long Term Health Problem	3	3.56
iv. Unsafe	4	3.74
v. Giving off disturbing sound	5	3.98
vi. Electrical Equipment Interference	6	4.32

According to Table 1, the respondents are very strongly agree that visual unattractiveness of the transmission lines, which was proximate to the property, is the most important factor contributing to the decline of the property values. The mode of this answer is 1 (very strongly agree) with mean point of 2.48 (the minimum).

Furthermore, the respondents strongly agree that the increased public awareness is an important factor contributing to the decline of property values proximate to transmission lines. This is represented by the mode which is 2 (strongly agree)

Although the feature of long term health problem is considered to be the most important feature in the United Kingdom and United States, but in Malaysia, according to the opinion of the respondents, they represent the third most

important feature contributing to the decline in property values.

The mode of the feature of lack of safe/unsafe is 4, meaning that the respondents disagree that this feature contributes to the decline in property value.

This feature, giving off disturbing sounds, which affect the residential property, the respondents strongly disagree it will contributing to the decline in property values.

The respondent's are very strongly disagree that electrical equipment interference is the feature that contributes to the decline in value for property proximate to transmission lines.

7.3 Types of Properties Most Affected

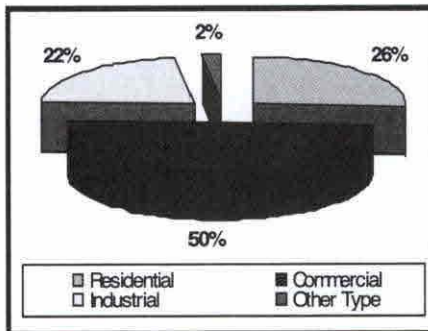


Chart 4: Types of Properties Most Affected

Fifty percent (50%) of the respondent's are of the opinion that commercial properties are highly affected by transmission lines compared to other types of properties. The next most affected is the residential properties with twenty six percent (26%) of respondents agreeing with it. In the opinion of the respondents, twenty two percent (22%) of the industrial types of properties are

thirdly affected by the transmission lines. Two percent (2%) of the respondents in the questionnaires stated that agricultural land could also be affected by transmission lines.

7.4 Declining in Value

Respondents were asked to give their opinion on how much of the property proximate to transmission lines would decline in value. The opinion given by the respondents is based on either one of these measurement methods; paired sales analysis; discussions with developers; market data analysis; or valuer's own judgment. The feedbacks (as average figures) are:

- i. Residential property : 1% - 2%
- ii. Industrial property: 1% - 3%
- iii. Commercial property: 2% - 8%
- iv. Agricultural land: 3% - 5%

7.5 Compensation due to Transmission Lines

In the opinion of the respondents, developers do give compensation towards properties proximate to transmission lines in the form of:

- i. Larger lots, this was reflected by fifty eight percent (58%) of the respondents.
- ii. Ten percent (10%) of the respondents stated that compensation come in the form of landscaping provided by the developers to cover up the vicinity of the transmission lines.
- iii. Some developers provide these properties with buffer zone, this represents twenty six percent (26%) of the respondents

- iv. Other six percent (6%) of respondents, states different form of compensation was given. The developers provide nets below the transmission lines so that buyers are convinced that they have taken safety measures to avoid accidents.

None of the respondent mentioned about any discounts given to the purchasing price of this type of properties as a compensation for proximity to transmission lines.

7.6 Problems in Valuation

When asked if there are any problems encountered when determining value of such properties, seventy four percent (74%) of the respondents respond to *no problem at all*⁴. Another twenty six percent (26%) of the respondents lined out few problems they encountered during the valuation of such properties. The main problem mentioned is, 'in determining how much decline in value for properties proximate to transmission lines. There must be substantial evidence as comparables properties made available, so that the value of such property can be established'.

Twenty six percent (26%) respondents stated that they tackled problems encountered during determination of property proximate to transmission lines value by finding more market evidence of declines in value. Most of the evidences were properties that have been transacted for the past 3 years. In the respondent's opinion, only properties transacted for the past 3 years showed that there is a decline in value for properties proximate to transmission lines.

⁴ *No problem at all* means just normal and routine technical problems normally faced by valuers.

7.6.1 Time As a Factor

When asked whether there are any time factor involved in selling such properties, ninety eight (98%) percent responded by stating that it was *not relevant*⁵ for all type of properties proximate to transmission lines. However, two percent (2%) of the respondents mentioned agricultural land takes 2 months longer to sell when it is located proximate to transmission lines. The sole reason given for this time factor is that, agricultural land use high voltage machinery, suddenly stops due to electromagnet field (EMF) emitted by the transmission lines. This situation lead to a certain portion of the land to be cultivated manually and caused financial burden to them.

7.6.2 Measuring the Effect

In measuring the effect of transmission lines on property values, none of the respondents give clear statement to answer this question. Those, who answered, simply stated that one must have adequate experience to differentiate the factors that are affecting the value contributed by proximity to transmission lines. The negative impact could be compensated by other factors such as the renovation done on the said property. There are no standard measurements for this effect; it is merely based on the experiences of the valuers themselves.

City or the urban area properties proximate to transmission lines are mostly affected in value compared to the sub-urban or village properties, according to ninety seven percent (97%) of the respondents.

Fifty percent (50%) of the respondent believed that only the higher priced properties⁶ are affected by the presence

of transmission lines. This statement, according to them is based on transaction evidences for the past 5 years. However, another fifty percent (50%), believed that all type of properties are effected regardless of the value.

⁵ Not relevant means not apply to all types of property. Only certain type of property is affected.

⁶ Commercial properties used as an office and residential properties which market value more than RM 300,000.

7.7 Suitable Development Near to Transmission Lines

The respondents opined that property which is suitable to be developed proximate to transmission lines is shown below:

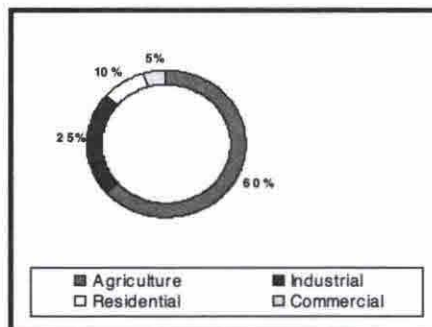


Chart 5: Suitable Property to be develop Proximate to Transmission Lines

Sixty percent (60%) of the respondents stated that suitable property that should be develop is agricultural land, as in their opinion, agricultural land has less human occupation on it.

7.8 Penalization in Value

Three respondents have given their added opinion on this topic, where they generally stated that:

- No conclusive evidence on effected value for property proximate to

transmission lines, so there are no worries for such property for any decline in values.

- Although in the United Kingdom and United States have moved into declining value of properties proximate to transmission lines, in Malaysia real estate market should be strongly established before such penalization can be made.
- Penalization on value of such property can be made if in the opinion of the valuers the property should be penalized for located proximate to transmission lines.

Respondents advise that a property owners and/or investors should be:

- Prudent in acquiring property proximate to transmission lines.
- Cautious in investing properties proximate to transmission lines so as to avoid future losses due to decline in value.

7.9 Suitable Use of Space

The suggested space usages that are suitable to use if a building is already built proximate to a transmission lines to avoid interference with EMF are as shown in the chart below:

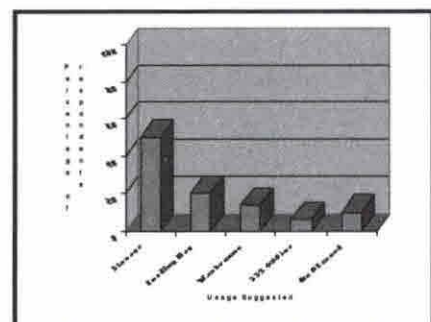


Chart 6: Space usage suggested by the respondent by percentage.

From the chart above, the space usage suggested by fifty percent (50%) respondents is storage. Second most suitable usage is loading / unloading bay followed by washrooms and small scale service office. Ten percent (10%) of respondents opined that there are no interference with the EMF emits by the transmission lines, so space can be used as per planned by the occupier of the building.

8.0 Conclusion

Based on the analysis of the perceptions presented, the researcher found that transmission lines do contribute to the decline of value for property proximate to it. Features like visual unattractiveness, increases of public awareness, and long term health problem (stigma), unsafe, disturbing sound and electrical interference resulting for loss of value. Valuers are also aware that transmission lines do have an effect on property values; hence there are indications that they penalize properties which are proximate to transmission lines, but this was done solely based on valuer's own experience and knowledge. The researcher believe that further study should be conducted on this matter, especially on the quantum being allowed in the process of valuation when valuing property in proximate location to transmission lines. Thorough market evidences need to be analysed in order to sustain credibility of the findings and conclusion.

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