

A SIMPLE, PRACTICAL PROTOCOL FOR ASSIGNING RENTAL VALUE TO LAND

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**THE RENTAL VALUE OF LAND**

*Land is used by all people at all times. It is something that we all require and share. It is nature's free gift to mankind, which enables life to continue.*

*Economic land rent can be defined as the value paid or imputed for the use of land and other natural resources. Since land is fixed in supply, the economic rent is perfectly inelastic. As demand increases or decreases, the economic rent parallels the demand, since there is no true increase or decrease in supply.*

*The collection of land rent by the public, returns the advantage an individual receives from the exclusive use of a land site, to the balance of the community who allow its exclusive use. Most countries recapture, only a portion of the economic rent of land. The balance is capitalized into a market value (purchase price), which is paid to an owner for releasing his rights for the use of the land. Market Value is the rental value of land divided by a capitalization rate. Rental Value is the highest annual fee individuals would be willing to pay for the exclusive use of a land site. The capitalization rate, is the rate of return which would attract an individual to invest. The mathematical relationship is simple:*

$$\text{Market Value} = \frac{\text{Rental Value}}{\text{Capitalization Rate}}$$

$$\text{Rental Value} = \text{Market Value} \times \text{Capitalization Rate}$$

*With any two factors known, the third can be calculated. For this paper, it will be assumed that all or most of the economic rent of land, is collected for the benefit of the public at large. Therefore, the term rental value (economic rental value of land) will be used instead of market value. The formula indicates how simple it would be to translate market value to rental value or vice versa.*

**Theory of Value**

*The assessor must base his estimates of land rental value upon a theory of value and basic economic principles which serve as the foundation of the valuation process. Since an appraisal is essentially an opinion of value, the assessor/appraiser must present a supportable opinion--one which has a solid basis in theory and economic principles. The assessor must first develop and use specific terminology suitable and pertinent to land appraisal.*

*Land Value* - Value is generally defined as the relationship between an object desired and a potential lessee or purchaser. When considering land, factors other than price and cost must be examined. In this case it is necessary to give weight to such factors as advancement in knowledge and technology, changes in desires of users, inventions and the development of new products and changes in land use and possession concepts.

For land to have value, it must have utility, be scarce and there must be a desire for the land. These are the ingredients which constitute value - utility, scarcity and desirability. These three factors must be present for land to have value in use.

An object which lacks utility can not have value, since utility arouses desire for use or possession and has the power to give satisfaction. The air we breathe generally is considered valuable, since it sustains and nourishes life. In the economic sense, air is not valuable because there is no scarcity; there is enough for everyone. This concept of air and scarcity may not be valid in the future, for the awareness of air pollution and its effect on human health has shown that clean and breathable air may become scarce and subsequently valuable.

Utility and scarcity, by themselves, do not confer value on land unless desire by a user or purchaser. This desire must be backed up by the ability to pay in order to constitute effective demand. The potential user must be able to participate in the market to satisfy his desire.

Four forces are at work to affect land value - physical, economic, legal (governmental) and social. The physical attributes of land include quality of location, fertility, climate; convenience to shopping, schools, parks; availability of water, sewers, utilities, public transportation; absence of bad smells, smoke, noise; patterns of land use, frontage, depth, topography, streets, lot sizes and numerous other factors. The economic forces include rent and income levels, growth and new construction, vacancy and availability of land.

The legal or governmental forces include type and amount of taxation, zoning and building laws, planning and restrictions. The social factors include population growth and decline, changes in family sizes, typical ages, attitudes toward law and order, prestige and education levels. It is the influences of these forces being expressed independently and in relation to one another which helps the assessor measure value.

The proper system of assessment and taxation of land can provide for the proper economic use of the land. Land sites, must be made available to the users who can make the highest and best use of the site and maximize the site benefits for all people. A land tax can also provide the major source of public revenue which the local governing body would use for the benefit of all people.

*The staff would be trained to assign a preliminary land rent based upon the comparative usefulness and desirability of the site. Initially, this could be accomplished in a very general manner, with the understanding that refinements would be made to reflect reality, new information and public opinion. In an area with no systems or data in place, simple relationships could be drawn for permitted use(zone) and distance to amenities (location). Individual adjustments would be made for physical characteristics (size, topography, view, etc.) and other significant factors.*

*The preliminary land rent assessment, which has been estimated for each site, could be displayed. Public examination and analysis of the land rents for land sites would clarify any over assessments and under assessments.*

*Land rent assessment should reflect the attitudes of the individuals who could make the best use of the site. They would be willing to pay more than individuals with an inferior use. This ensures the optimal and equitable use of land sites. Those not requiring or willing to pay for a superior site would use the best site which met their desire and budget.*

## **2. A SIMPLE SYSTEM WITH LIMITED DATA ON A COMPUTER**

*Many government agencies have already collected limited data about land on a computer system. When I was the City Assessor in Southfield, Michigan, the only land valuation data available on the computer system was the original land value estimate, made years earlier. By analyzing trends, new value estimates were made with a simple factor entry for each neighborhood.*

*The entire country of Denmark, can have assessments updated regularly by computer data entries. In Denmark the valuation law defines land value as the market value of the land as if it were vacant. By this definition, land value for improved land is always equal to the land value of a vacant, but otherwise identical plot.*

*In 1981, a simple model was used for computer calculation of land values for 1,200,000 residential land sites. The model, which included the size of the plot, the number of building lots into which the original plot can legally be divided, and the location of the plot, was based on analysis of the sales prices for 6,000 residential lots.*

*In this model, the land rental value could be estimated by multiplying the land value by the appropriate capitalization rate. A country adopting a system of land rentals, would have actual data for every site in use and could estimate rental value for the unused sites.*

For each neighborhood, the local valuation committee decides the Constant lot value and the Constant lot size.

If in a certain area the market value of a plot of 800 square meters is DKR 200,000, the constant value is Dkr 100,000, and the value proportional to the size is Dkr 1,000, Dkr 125 per square meter. (One square meter = 10.76 square feet. One Dkr = \$0.12.) The value of a plot of 1,000 square meters in the same area can then be calculated as:

Constant value	Dkr 100,000
Size value: 1,000 square meter at Dkr 125	<u>Dkr 125,000</u>
Land value	Dkr 225,000

The value of a plot of 600 square meters can be calculated as:

Constant value	Dkr 100,000
Size value: 600 square meter at Dkr 125	<u>Dkr 75,000</u>
Land value	Dkr 175,000

The value of a plot of 1,700 square meters plot in the same area divisible into two plots can be calculated as:

2 X Constant value	Dkr 200,000
Size value: 1,700 square meter at Dkr 125	<u>Dkr 212,500</u>
Land value	Dkr 412,500

The rationale for the model is the fact that in the same area small vacant plots are sold at higher prices per square meter than larger vacant plots. Much work could be saved if one model could be used to calculate the land value for both small and large plots in the same areas.

In most areas this problem was solved for large plots by using one price per square meter for the first 800 square meters and a lower price for the remaining square meters. However, this did not solve the problem for small plots.

The theory behind the model is that part of the value of a plot is independent of the size of the plot. This value can be interpreted as the value of the right to build one single-family home of normal size on this plot. Another part of the value will vary with the size of the plot and this can be interpreted as the value of being able to build a larger building and of having a larger garden.

*The selection of the most appropriate unit, or combination of units, is of importance. It is a decision which can only be made after a careful analysis of the rental market.*

*Land is not necessarily leased on the same basis but rather on the value in the eyes of the user. No amount of mathematics or manipulation can override the main objective of achieving economic rent, as reflected by market behavior. This relegates the unit of measure to the role of a means to an end, but one which can be used to good effect in the interpretation and transposition of rental evidence of the few sites to the necessary valuation of many.*

*The choice of a particular Unit of Measure in the Assessment Valuation process will be dictated by expediency. In urban land valuation, most of parcels to be valued will be of nominal sizes and arranged in more-or-less orderly rows on streets, avenues, boulevards and cul-de-sacs. Many will be of identical size and area with minor departures arising from topography and shape. The appraiser will probably wish to adopt a Standard Lot rent for the particular area under review - standard both as to probable rental value and to frontage and overall dimensions.*

*The standard lot rent will respond well to a rent **Per Front-foot** or to a rent **Per Parcel**. Once the rental rate per front-foot has been established for the standard lot frontage representative of the area, the rate will become a base to which all other lots will relate. For those lots which are not identical to the standard lot, it will be necessary to make appropriate adjustments for variations in width, depth and other attributes differing from the standard lot. The total departures from standard rental can be expressed as an adjusted frontage. It is against this adjusted frontage that the adopted front-foot rate will be applied.*

*The application of a rental rate per square foot to residential lands is not common. A balance of width and depth is more conducive to overall utility than lot area alone. The rent **Per Square-foot** unit of measure will be found to have greater application in estimating rent for commercial and industrial lands where the applied rate will be more constant over the entire parcel.*

*Beyond the limits of the urban area, there will be those parcels which are so much larger that they will not respond well or at all to land rent on a front-foot unit measure. Where these larger parcels are the norm, the unit of measure can best be expressed as a rent **Per Acre**.*

***Per Parcel (site value)** - Rental evidence will frequently indicate that minor variations in lots, whether frontage, depth or size, have little effect on rental. The appraiser should select the standard site, both as to size and value. He will proceed to make judgment decisions in relating other parcels to that selected as standard - rating them as similar, better or inferior.*

The current trend seems to be toward narrower lots with land rentals more than proportionate to standard. In approaching these problems it is suggested that the circumstances should be analyzed only within the environment containing the subject lots.

**Creating A Width Table**

A width table is a series of percentage adjustments greater or less than 1.0 needed to adjust the actual Rental per Front-Foot of any lot and equate it to the Front-Foot rent of the adopted Standard Lot.

To illustrate this, a typical case study involving nine lots will be examined. The lots are all in the same general area of a municipality where a reassessment of land rent program is under way for residential land. The appraiser wishes to know the adjustments needed to frontages which will reflect the market conditions as it relates to the various frontages involved in his study.

**Assumptions:**

Standard Lot for the area is 70 x 120. A number of these sites have rented in the vicinity of \$1,700 - \$1,800 + per year. A typical rental value of \$1,750 or \$25.00 F.F. will be adopted as a base figure.

From his analysis the appraiser has tabulated the following:

**Display of Land Rentals of Differing Frontages**

Rental Number	Rental Rate	Frontage Adj. to 120' Depth	Indicated Front Foot Rental
#1	\$1,650	62'	\$26.70
#2	1,750	70'	25.00
#3	1,820	74'	24.60
#4	1,850	77'	24.00
#5	1,890	81'	23.30
#6	2,010	90'	22.30
#7	2,090	94.5'	22.10
#8	2,190	100.5'	21.90
#9	2,425	118.3'	20.50

*The simplest solution to this aspect of the problem will be to plot the known results thus far obtained on graph or squared paper. The actual or effective frontage will be the base or horizontal axis of the graph, while the adjustment factor (or multiplier) will be the vertical axis.*

*From the case study under discussion the nine adjustment factors (col. 2) are first plotted against the frontages as a series of points or small 'x'. A french curve will link up the indications plotted. It is possible that some of these will be either above or below a projected curving line and this is to be expected - the market is variable and renters do not have value-graphs in their hands when they negotiate their land leases. Allow the curve to follow a median line through these highs and lows. The resulting curve will serve as a "line of tendency" in the value approach.*

*Plotted points which lie wildly above or below an otherwise orderly array of points should be immediately considered suspect and the particular rental data reviewed; if there is an abundance of rents to work from these "odd-balls" can be eliminated - they may be valid but not very typical. This type of graph, once completed, can be arranged in tabular form for quick and easy reference (see example, appendix C).*

*From the graph, the appraiser can estimate relationships for frontages lacking sufficient rental data. Having the knowledge to be able to create the necessary adjustment tables to suit the rental market will create a sense of security, quality and equity coupled with speed in getting the work done (see example, appendix D).*

#### *Display of the Results - The Land Rental Map*

*The rental values which will be applied to the adjusted frontages, should be displayed on a land rental map. This will allow the appraiser to review his rental value conclusions and judge whether equity has been achieved. A field review will allow him to adjust conclusions and finish his project. An example of a metropolitan district rental map (see example, appendix E) and a rural-suburban district rental map (see example, appendix F) have been included to enable the reader to visualize these concepts.*

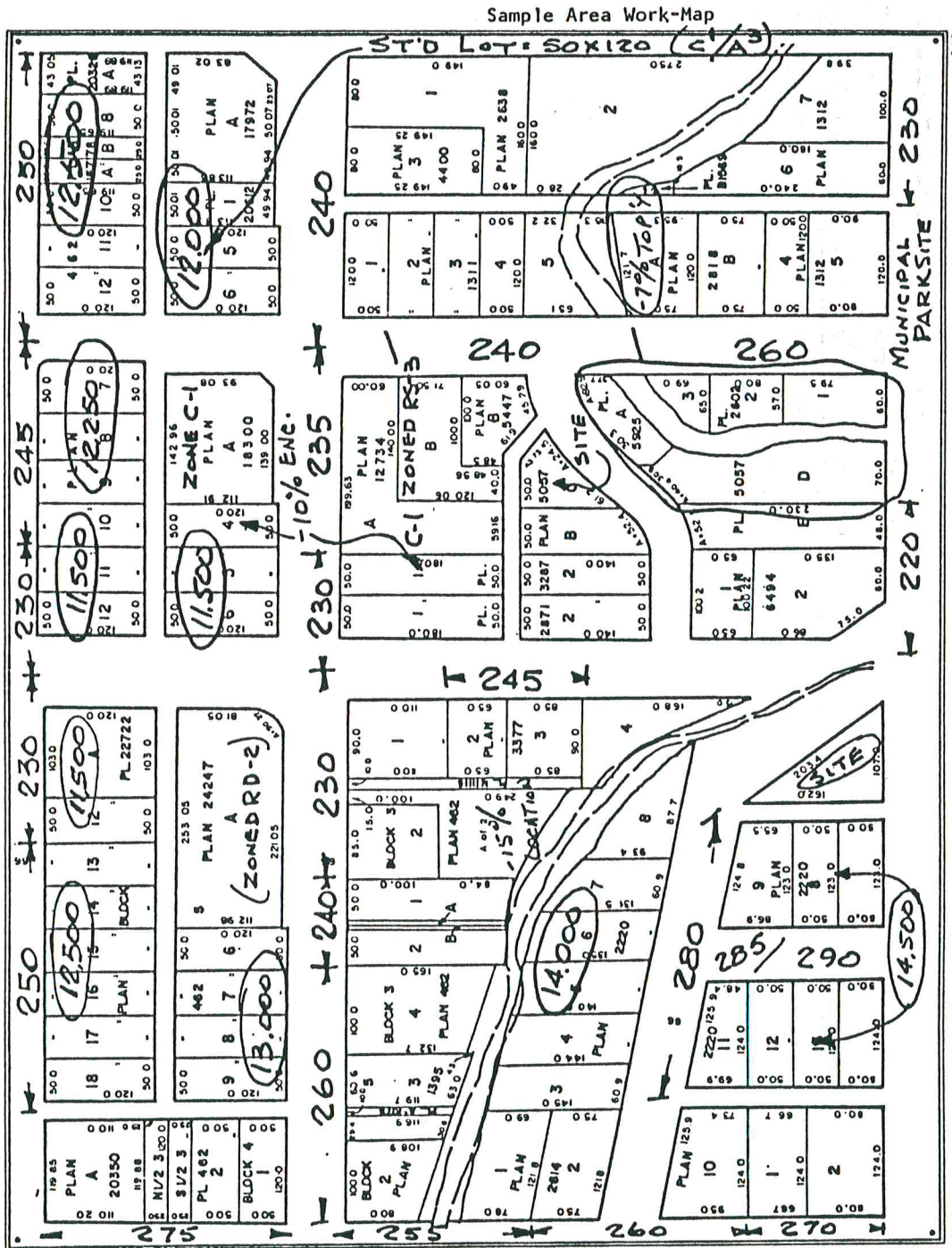
#### **CONCLUSION**

*The art of making an appraisal is like any other art. One can always improve on the result. As more information and skill is acquired, one can do a better job. The importance of properly valuing the economic rent of land is paramount to achieving equity in land use. If one must start with the simplest and limited data, he can achieve workable results. As new data is made available, his results will improve. The public interest will ensure that new data is considered and used.*

PENDIX "B"

Land Rental Value Map

Showing rental per front foot, total standard lot rental, adjustments for location, topography, enclosure and zoning.





WIDTH TABLES - 50' STANDARD

<u>Frontage</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
35	1.110	1.110	1.110	1.110
40	1.057	1.057	1.057	1.057
45	1.020	1.020	1.020	1.020
50	1.000	1.000	1.000	1.000
55	.993	.988	.983	.978
60	.984	.973	.961	.950
65	.973	.955	.937	.920
70	.960	.937	.913	.890
75	.947	.918	.889	.860
80	.932	.898	.864	.829
85	.917	.876	.835	.794
90	.897	.851	.805	.760
95	.876	.827	.778	.728
100	.850	.800	.750	.700

