

*“The tax upon land values is the most just and equal of all taxes. It falls only upon those who receive from society a peculiar and valuable benefit, and upon them in proportion to the benefit they receive. It is the taking by the community, for the use of the community, of that value which is the creation of the community. It is the application of the common property to common uses. When all rent is taken by taxation for the needs of the community, then will the equality ordained by nature be attained. No citizen will have an advantage over any other citizen save as is given by his industry, skill, and intelligence; and each will obtain what he fairly earns. Then, but not till then, will labour get its full reward, and capital its natural return.”*

*Henry George*

## *Twelve Formulas*

### *For Converting a One-Rate to a Two-Rate Property Tax*

*in order to*

- (1) Maintain private property in land*
- (2) Maintain governmental revenue*
- (3) Tax building assessments less, land assessments more*

*by  
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## Introduction

Let us say you have convinced a Mayor and City Council that a two-rate tax, with a higher rate on land assessments coupled with a lower rate on building assessments, is a worthwhile reform (keeping in mind that the city will raise the same revenue for the city from this two-rate tax as from its current one-rate property tax). These are the benefits you could mention:

(1) The two-rate tax will lower taxes for most homeowners as compared to what they are currently paying with the one-rate tax. As for tenants (residential, retail, commercial and industrial) will eventually all pay less in space rent than they now pay; hence, they'll be better off.

(2) The two-rate tax will increase new construction and rehabilitation at no extra cost to the taxpayers (since only a tax shift from buildings to land is being proposed); many empirical studies substantiate this claim;

(3) The two-rate property tax will reduce the city revenue loss from successful appeals which reduce building assessments;

(4) The two-rate property tax is the only way to end urban sprawl into the clean-and-green countryside.

Suppose then a city official says to you, "OK, I like the idea, but how do I convert our current, one-rate property tax to a two-rate property tax raising the same revenue for the city?"

Simple - use the following formulas. At first glance, they may be daunting, but they are all derived from the following simple formula:

$$\text{Revenue} = \text{Assessments} \times \text{rate.}$$

A further simplification: **Formula #1 and #10 below are the only ones you really have to know.** You should be familiar with the other

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formulas so that if you need the information they contain, you'll know where to find it. But memorize #1 and #10.

One last word: You may wish to convert the current land-and-building tax to a land-only property tax in one fell swoop, eliminating the intermediate two-rate steps. If the one-rate is low enough (as it is, for instance, in many southern U.S. states), then it may indeed be possible to go from taxing land-and-buildings to land-only. But if the present one-rate is substantial, then this may not be advisable. A too-sudden shift will bankrupt building owners who cannot pay a much-increased land value tax; they couldn't easily move their buildings to more appropriate locations, and so they'll face bankruptcy. Politicians might therefore balk at such a sudden shift. So, for both political and humanitarian reasons, you'll have to go two-rate for at least a year, probably more.

We suggest you arbitrarily choose a building tax rate that's about 3/4s of the current rate; your proposed building tax rate can be less than 3/4s if the current property tax rate is low, or it will have to be more than 3/4s if overly cautious mayors and city councilmen insist. Of course, you'll want to go as fast as possible in transferring the property tax on buildings to land. In another C.S.E. pamphlet entitled "How a Land Tax Law Can Avoid ALL Special-Case Hardships" (available on request from HQ), you can find ways to make the transition to a land value tax smoother and quicker.

If a city is so fortunate as to be able to reduce its one-rate property tax for next year, then it could reduce its property tax rate on building assessments only (such a reduction would then be greater on buildings than if the reduction were applied to both land and buildings).

If a city must get more property tax revenue for the ensuing year, then suggest to city officials that they increase the tax rate on land-only rather than on both land and buildings. In this way, their city could more readily avail itself of the above-mentioned two-rate benefits.

## The Formulas

And now to the formulas. Remember, keep your eye particularly on Formula #1 and #10:

**1. Here's how to figure the land tax rate coupled with your arbitrarily chosen building tax rate.** First obtain the citywide building assessments (BA) and land assessments (LA). Here's the two rates which will yield the same revenue for the city as the current property tax rate (PTRc):

$$LTRp = (PTRc - BTRp) \times (BA/LA) + PTRc$$

[where BTRp is your proposed building tax rate (usually about 3/4s of PTRc), BA is citywide building assessments, LA is citywide land assessments, and LTRp is the proposed land tax rate].

If the locality is already on the two-rate system, then use this formula:

$$LTRp = (BTRo - BTRp) \times \frac{BA}{LA} + LTRo$$

(where LTRo is the old or currently existing land tax rate, and BTRo is the old or currently existing building tax rate)

**2. Here's how to figure the land tax rate coupled with your arbitrarily chosen building tax rate when the total citywide property tax revenue is known.** Once again, you'll want this two-rate tax to yield the same revenue for the city as its current one-rate property tax. Use the city's revenue requirement to be produced by the property tax before discounts, penalties and delinquency estimates:

$$LTRp = \frac{\text{Revenue} - (BA \times BTRp)}{LA}$$

Formulas #1 and #2 serve the same purpose. You may wish to check your math by using both formulas. Use an 8-digit (or preferably 10-digit) calculator, since these numbers can get large and the calculations can get complicated.

**3. Percentage (%) of an individual's old one-rate tax bill that he'll be paying under the new two-rate system:**

$$\% = \frac{(LAI \times LTRp) + (BAi \times BTRp)}{(LAI + BAi) \times PTRo}$$

(where "i" is individual, "o" is old)

**4. What is the one-rate property tax which will raise the same revenue as a two-rate tax?**

$$PTR = \frac{(LTR \times LA) + (BTR \times BA)}{BA + LA}$$

**5. Percentage change in an individual's property tax bill if the city already has a two-rate property tax:** first convert it into the equivalent-in-revenue one-rate property tax, using #4 above; then use the formula in #3 above, substituting the result from #4 for PTRo.

**6. How do you determine the percentage of property tax revenue derived from land?**

$$\% = \frac{LTR \times LA}{(LTR \times LA) + (BTR \times BA)} \quad \text{or} \quad \% = \frac{LTR \times LA}{\text{revenue}}$$

**7. How can you determine the LTR, given the need to raise a**

**certain percentage of the total revenue from land assessments?**

$$LTR = \frac{\% \times (LA \times LTR) + (BA \times BTR)}{LA}$$

**8. If your city is to obtain the same revenue from the LTR as from the BTR (50-50 split), then**

$$LTR = \frac{.5 \times \text{revenue}}{LA} \quad \text{or} \quad LTR = \frac{BA}{LA} \times BTR$$

$$BTR = \frac{.5 \times \text{revenue}}{BA}$$

**9. How to figure the land and building tax rates if the building tax rate is a declining percentage of the land tax rate:**

$$BTRp = \% \times LTRp \quad \text{or}$$

$$LTRp = \frac{PTRo \times (BA + LA)}{LA + (\% \times BA)} \quad \text{or} \quad LTRp = \frac{\text{revenue}}{LA + (\% \times BA)}$$

This formula and the one in #10 below are useful for getting a city council to act this year and committing the city for future years, and although future city councils cannot be obligated by a previous one, they are not likely to reverse this year's city council ruling. Acting upon formulas #9 and #10 will make it unnecessary to return to the city each year to win a new spreading of the tax rates. It will also give inefficient land users time to adjust to the new tax system; they are put on notice now of future building-to-land tax shifts, and they have ample time to develop their sites more fully (thereby providing more new construction jobs).

**10. How to figure the land and building tax rates if the**

**proposed building tax rate is a declining percentage of the current building tax rate:**

$$BTR_p = BTR_o \times \%$$

This is an important formula because the last paragraph in #9 above applies here, too, and #10 is easier to understand than #9.

Presumably, the % will decline each year (e.g., 90% this year, then 80%, 70%, 60%, 50%, 40%, 30%, 20%, 10%, 0% in ensuing years). The land tax rate can then be figured as follows:

$$LTR_p = \frac{\text{total property-tax revenue} - (BTR_p \times BA)}{LA}$$

**11. How to estimate the land tax rate if it is to be increased to offset the local government's revenue loss resulting from a reduction in non-building taxes (such as on sales or income).** Experience indicates that the increase in the land value tax rate occasioned by such a shift should be limited by:

$$\text{maximum increase} = \frac{PTR_c \times BA}{5 \quad LA} + PTR_c$$

If you shift faster than this, you are likely to bring about vocal opposition from those who will pay more as a result of this shift.

Be sure to prove each formula by using figures from the locality you are advising.

**12. The switch in the property tax could be expressed as a percentage of revenue to be obtained from each tax rate (instead of as two different percentages).** If the tax rate on both land and building assessments is the same, as is usually the case now, then the percentage of total property tax revenue from buildings is always going to be  $BA/(LA + BA)$ . It is advantageous, however, to propose

rates on land and buildings in terms of the percentage of revenue obtained, as it would seem to the average property owner to be a more moderate change.

Let us assume that we wish to express the annual two-rate property tax shift as a percentage of property tax revenue to be obtained from building and from land assessments. Experience indicates that the percentage of property tax revenue obtained from building assessments ought to be about 80% of  $BA/(LA + BA)$ , or 80% of the equivalent-in-revenue one-rate property tax on buildings, so that in five years the tax rate (and therefore the revenue) on buildings will be zero.

For example, let us assume that a city's tax rate is 2%, the  $LA = \$10$  million and the  $BA = \$30$  million. The total property tax revenue will then be \$800,000 ( $\$40$  million  $\times 2\% = \$800,000$ ), and 75% of the property tax revenue is therefore being obtained from buildings, 25% from land. But the 75% can be reduced to 60% ( $30/[10+30] \times .8 = 60\%$ ), in which case the tax rate on buildings is 1.6% (see Formula #1 above) and the tax rate on land will be 3.2% (Formula #1). The revenue will still be \$800,000, but now 60% or \$480,000 will be coming from the 1.6% tax rate on buildings (from land, \$320,000, or  $3.2\% \times \$10$  million).

**Conclusion:** Memorize formulas #1 and #10, but be familiar with the others.

If you want to determine the percentage of land rent collected by the current property tax, then use this formula:

$$\% = \frac{\text{LTR}}{\text{IR} + \text{LTR}}$$

(where IR = interest rate)

For further information on property tax modernization, contact:

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*“Let no one imagine that he has no influence. Whoever he may be, and wherever he may be placed, the man who thinks becomes a light and a power.”*

*Henry George*