

## OFFICE OF THE STATE ASSESSOR

DEPARTMENT OF COMMERCE, COMMUNITY  
AND ECONOMIC DEVELOPMENT

### Property Taxation 101 – The Basics

Or...  
How does this thing really work?

January 25, 2016

## Property Tax 101

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The following presentation and content are intended to illustrate the fundamental basics of the property tax system. As such, this is a “bare bones” example provided to illustrate fundamental mathematics of the property taxes. In practice, property taxation and budgeting are more complex and include many more complex topics that are not covered or discussed here.

## PART I CALCULATING YOUR PROPERTY TAX BILL!!

Property Taxes are based upon a relatively simple equation.

$$\text{Assessed Value} \times \text{Millage Rate} = \text{Tax Bill}$$

The only information needed to calculate your property tax bill are some definitions for three terms; Appraised Value, Assessed Value and Millage Rate.

### Appraised Value

This is the market value of your property as determined by the local assessor. The appraised value of your property varies as the market for real estate fluctuates. If market values decrease, appraised values will decrease and if market values increase your appraised value will increase. Ultimately, the appraised value of your property is a function of transactions of real estate in the local market.

### Assessed Value

This is the taxable value of your property. This will often differ from the appraised or “market value” of a property due to exemptions. For example, the appraised value of a property may be \$200,000, but if the property is 10% exempt, the assessed value would only be \$180,000. Property taxes are calculated on the assessed value, not the appraised value.

### Millage Rate

The tax rate that is applied to the assessed value. The millage rate or “mill rate” is usually an expression of dollars of tax levied per every \$1,000 of value. So a millage rate of 12.5 would mean that for every \$1,000 of assessed value, the taxpayer would pay \$12.50 in tax. A mill rate of 12.5 can also be expressed as 1.25% or 0.0125 in decimal form.

### Calculating the Tax Bill

So what would the tax bill be for a property with an appraised value of \$200,000, an exemption of 10% and a millage rate of 12.5?

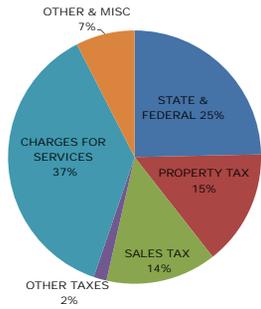
### The Tax Bill

Appraised Value: \$200,000  
 - 10% Exemption: -\$20,000  
 Assessed Value: \$180,000  
 X Millage Rate 0.0125  
 = Property Tax Bill \$2,250

## PART II DETERMINING THE TAX RATE!

The Tax Rate is determined during the budget process of the local taxing authority. In Alaska, this will be your borough and or city. Each year your community will set a budget that details the expenditures they will make and the sources of revenue that will be collected and used to fund that budget. A current example of the revenue sources for a major Alaska community follows.

### REVENUES BY SOURCE

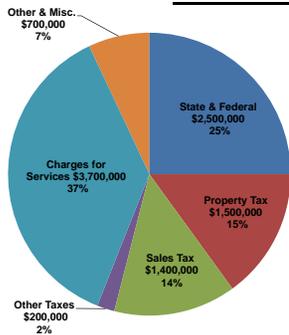


The sources of revenue vary from community to community for various reasons. For example, some communities have a sales tax and some do not. Others may have oil and gas properties and some do not. Some may receive fish taxes or obtain substantial revenue from tourism related businesses. However, for this presentation we will use the revenue "mix" provided here, with property taxes set at 15% of the revenues collected.

Now, just for purposes of example, let's create a new community and their budget. Let's call it.....

## ALASKAVILLE!

### ALASKAVILLE REVENUES BY SOURCE



Alaskaville Revenues	Amount	Percent
State & Fed	\$2,500,000	25%
Property Tax	\$1,500,000	15%
Sales Tax	\$1,400,000	14%
Other Taxes	\$200,000	2%
Charges for Services	\$3,700,000	37%
Other & Misc	\$700,000	7%
Total	\$10,000,000	100%

Alaskaville has just completed it's budget. Total expenditures in the budget are set at \$10,000,000 for the fiscal year. Of this amount, city officials estimate that they will receive \$8,500,000 in revenues from various sources and \$1,500,000 or 15% of the total budget will come from local property taxes.

Note that this is a fairly typical analysis. Local officials have limited control over many sources of revenue such as sales tax or federal and state money. The amount of local sales tax depends on consumer purchases. Federal & state funding is decided by federal and state officials. While these sources can be estimated, they cannot be fixed. Only the amount of the property tax is truly under local control. So, the property tax is often used as the final building block to close and balance the budget.



### What's the Millage Rate?

As noted earlier, Alaskaville has set its budget at \$10,000,000. To fund and balance this budget, they have dedicated \$1,500,000 in property taxes. This is commonly referred to as the Property Tax Levy.



So, the question is....

**What tax rate must Alaskaville set to collect \$1,500,000 in property taxes?**



To answer this question one must know the basic formula for calculating property tax rates.

$$\frac{\text{Property Tax Levy}}{\text{Property Tax Base}} = \text{Millage Rate}$$



We've already discussed the Property Tax Levy, but what is the Property Tax Base?

**Property Tax Base: The sum of all Assessed Values in the jurisdiction.**

And we must remember, that Assessed Values are used, not the Appraised Values which can be substantially different.



And now let's return to Alaskaville.

The Assessor tells us that assessed values of the tax roll for Alaskaville add up to \$120,000,000 for the tax year. This is the Property Tax Base for the current tax year.

So what is the required millage or "mill" rate for Alaskaville?



Let's fill in the blanks in the formula!

$$\frac{\text{Property Tax Levy}}{\text{Property Tax Base}} = \text{Millage Rate}$$
$$\frac{\$1,500,000 \text{ (Levy)}}{\$120,000,000 \text{ (Base)}} = 0.0125 \text{ Mill Rate}$$

So we know Alaskaville needs a millage rate of 0.0125, which could also be stated as 1.25% or \$12.50 per \$1,000 of assessed value.



### Scenarios

Given these basics of how property taxes work, we can also portray different scenarios of what the tax rate and taxes would be given different situations for Alaskaville.



Scenario: Original levy and tax base, no changes.

$$\frac{\$1,500,000 \text{ (Levy)}}{\$120,000,000 \text{ (Base)}} = 0.0125 \text{ Mill Rate}$$

Taxes on a property assessed at \$100,000:

$$\$100,000 \times 0.0125 = \$1,250$$



Scenario: Tax Base (Values) increased by 5%

$$\frac{\$1,500,000 \text{ (Levy)}}{\$126,000,000 \text{ (Base)}} = 0.0119 \text{ Mill Rate}$$

Taxes on a property assessed at \$100,000: As values have increased by 5%, the property has also increased to \$105,000.

$$\$105,000 \times 0.0119 = \$1,250$$



Scenario: Tax Base (Values) decreased by 5%

$$\frac{\$1,500,000 \text{ (Levy)}}{\$114,000,000 \text{ (Base)}} = 0.0132 \text{ Mill Rate}$$

Taxes on a property assessed at \$100,000: As values have decreased by 5%, the property has also decreased to \$95,000.

$$\$95,000 \times 0.0132 = \$1,254$$



Scenario: Property Tax Levy increased by 5%

$$\frac{\$1,575,000 \text{ (Levy)}}{\$120,000,000 \text{ (Base)}} = 0.0131 \text{ Mill Rate}$$

Taxes on a property assessed at \$100,000:

$$\$100,000 \times 0.0131 = \$1,310$$



Scenario: Property Tax Levy decreased by 5%

$$\frac{\$1,425,000 \text{ (Levy)}}{\$120,000,000 \text{ (Base)}} = 0.0119 \text{ Mill Rate}$$

Taxes on a property assessed at \$100,000:

$$\$100,000 \times 0.0119 = \$1,190$$



## PART III WHAT ABOUT EXEMPTIONS?



### How do exemptions work?

What overall effects do property tax exemptions have on property taxes? Let's take a look at a very simple example that more or less applies to everyday life.



It's John's Birthday! You and 8 other friends (ten people total) decide to take him out for a steak dinner to celebrate. That was as many people as we could get to attend since John is the property tax assessor and not to popular.



The steakhouse down the street says that for \$500 they will serve us all. So...

$$\$500 \div 10 \text{ people} = \$50$$

Simple enough!



But as we said, its John's Birthday! So we are all going to "chip in" and pay for John's meal.

***We are going to exempt John from paying.***

So what is the "math" now?



Originally the math was....

$$\$500 \div 10 \text{ people} = \$50$$

But here is the math now....

$$\$500 \div 9 \text{ people} = \$55.56$$

So that John can be exempted from paying, we must each pay \$5.56 more for the math to work.



Now let's go back to Alaskaville and see how it works with property taxes.

Remember our original calculations for the Alaskaville budget and property tax rate?



Scenario: Original

$$\frac{\$1,500,000 \text{ (Levy)}}{\$120,000,000 \text{ (Base)}} = 0.0125 \text{ Mill Rate}$$

Taxes on a property assessed at \$100,000:

$$\$100,000 \times 0.0125 = \$1,250$$



Now, what if we decided to assess all residential property at 50% of value and keep commercial property valued at 100%.

This is not allowed in Alaska, however similar property tax policies do exist in the Lower 48. Such policies are called "Fractional Assessments".



John, remember he's the assessor, tells us that residential property is 75% of the tax roll. So, in the original Tax Base...

Residential would be...  
$$\$120,000,000 \times 75\% = \$90,000,000$$

And Commercial would be...  
$$\$120,000,000 \times 25\% = \$30,000,000$$



But if we exempt 50% of the value of residential property our tax base would look like this.

Residential would be:  
$$\$90,000,000 \times 50\% = \$45,000,000$$

Commercial would still be: \$30,000,000

And the "new" Tax Base would be the sum of the two or..... \$75,000,000



Scenario: 50% Exempt on Residential

$$\frac{\$1,500,000 \text{ (Levy)}}{\$75,000,000 \text{ (Base)}} = 0.0200 \text{ Mill Rate}$$

The required millage rate has increased dramatically due to the change in the Property Tax Base. But, what's happened to the actual tax bills?



Taxes on a residential property previously assessed at \$100,000: Now valued at \$50,000!

$$\$50,000 \times 0.0200 = \$1,000$$

Taxes on a commercial property which would still be assessed at \$100,000:

$$\$100,000 \times 0.0200 = \$2,000$$

And remember that prior to the exemption, both properties would have paid the same property tax of:

**\$1,250**



And what has happened to the total Property Tax Levy?

Taxes on Residential properties:

$$\$45,000,000 \times 0.0200 = \$900,000$$

Taxes on Commercial properties:

$$\$30,000,000 \times 0.0200 = \$300,000$$

So the total Property Tax Levy would be: **\$1,500,000**

**Which is exactly what the Property Tax Levy was prior to the exemption.**



Now, let's summarize our results!

- The original millage rate of \$12.5 per \$1,000 of assessed value increased to \$20.00 per \$1,000 of assessed value. The residential exemption shrank the tax base such that a 60 percent increase was required in the millage rate.
- Residential properties were assessed at 50 percent less, but due to the much higher millage rate their taxes decreased by only 20 percent.
- Commercial properties were assessed just as before, so the tax bill for these properties increased by 60 percent.



And here's a quick summary of the numbers for Alaskaville showing the results before and after implementing such an policy.

50% RESIDENTIAL EXEMPTION DATA	VALUE BEFORE	VALUE AFTER	VALUE CHANGE	TAX BEFORE	TAX AFTER	TAX CHANGE
PROPERTY TAX LEVY	\$1,500,000	\$1,500,000	0.0%	N/A	N/A	N/A
PROPERTY TAX BASE	\$120,000,000	\$75,000,000	-37.5%	N/A	N/A	N/A
MILL RATE	0.0125	0.0200	60.0%	N/A	N/A	N/A
\$100K RESIDENTIAL	\$100,000	\$50,000	-50.0%	\$1,250	\$1,000	-20.0%
\$100K COMMERCIAL	\$100,000	\$100,000	0.0%	\$1,250	\$2,000	60.0%



# PART IV CAPPING THE MILLAGE RATE



Various efforts to modify the basic premise of Property Taxation have been attempted over the years. One approach has been to set a fixed or capped millage rate. So what are the impacts to capping the millage rate?

To analyze this, we must return to the basic equation for calculating the millage rate.

$$\frac{\text{Property Tax Levy}}{\text{Property Tax Base}} = \text{Millage Rate}$$



As we applied this formula previously, the property tax base is fixed by the sales prices of real estate in the market and the property tax levy was also fixed via the budget process. Capping the millage rate converts this element of the formula to a fixed value as well.

However, the basic math of the formula will not allow all three variables to remain fixed over time. Or stated another way, if the millage rate is fixed, any change in the property tax levy or the property tax base will nullify the validity of the equation.

A little bit of simple math with our Alaskaville case will help to illustrate the situation.



Our original millage rate calculation for Alaskaville was...

$$\frac{\$1,500,000 \text{ (Levy)}}{\$120,000,000 \text{ (Base)}} = 0.0125 \text{ Mill Rate}$$

And the equation as applied above holds true. That is to say that the equation balances. Now let's presume that Alaskaville fixes the millage rate at 0.0125 from this year into the future.



In the subsequent year, the assessor reports that due to market activity and new construction the property tax base has increased by five percent to \$126,000,000.

$$\frac{\$1,500,000 \text{ (Levy)}}{\$126,000,000 \text{ (Base)}} \neq 0.0125 \text{ Mill Rate}$$

The equation is now in a state of imbalance since the millage rate of 0.0125 when applied to the new tax base produces a property tax levy of \$1,575,000. Yet, Alaskaville only required a property tax levy of \$1,500,000. The city is taxing more than is required and has a surplus in what had been a balanced budget.



But what if the assessor had reported that the property tax base had decreased by five percent to \$114,000,000.

$$\frac{\$1,500,000 \text{ (Levy)}}{\$114,000,000 \text{ (Base)}} \neq 0.0125 \text{ Mill Rate}$$

The equation is again in a state of imbalance since the millage rate of 0.0125 when applied to the tax base produces a property tax levy of \$1,425,000. Yet, Alaskaville still requires a property tax levy of \$1,500,000 to fund the city. The city now has a budget deficit rather than the previous balanced budget.



Looking at the results we can see that the Property Tax Levy, which was previously a fixed element of the formula, has now, by mathematical necessity, become a "floating" number. As well, the very configuration of the formula itself has fundamentally changed.

Uncapped Rate Formula:  $\frac{\text{Property Tax Levy (Fixed by Budget)}}{\text{Property Tax Base (Fixed by Market)}} = \text{Millage Rate (Floating)}$

Capped Rate Formula:  $\text{Millage Rate (Fixed by Mandate)} \times \text{Property Tax Base (Fixed by Market)} = \text{Property Tax Levy (Floating)}$



Also note, that since the millage rate is now fixed, the amount of the property tax levy will only vary when there is a change in the property tax base.

Clearly this change presents some very significant issues for the efforts of Alaskaville to produce a truly balanced budget. Since the property tax levy is now a "moving target", Alaskaville will have a more difficult time in estimating revenues. Thus, their budget will tend to produce surpluses or deficits depending upon the accuracy of the estimates that are used in the budgeting process.



Future surpluses to the property tax levy might be addressed by providing that the millage rate cap be a maximum level. This would allow Alaskaville to use a rate less than the capped rate when a surplus to the property tax levy might result.

## However, what happens with a DEFICIT?



When the tax base decreased by 5 percent, we noted that Alaskaville had a deficit of \$75,000 in their budget. So what can Alaskaville do to rectify this shortfall?

Alaskaville could re-open its budget and eliminate \$75,000 of services that they had previously indicated they would fund.

### And/or...

Alaskaville could re-visit other sources of local revenue such as sales taxes or fees and increase collections from those sources to recover the "missing" \$75,000 of revenue.



In the end, capping the millage rate has increased the difficulty of Alaskaville to produce a dependable, balanced budget since revenue to fund the budget is now less certain.

Budget surpluses and deficits will result as future changes to the tax base arise due to new construction and the value of real estate in the market. As well, it must be remembered that the budgetary needs of Alaskaville will also change as the community grows and future events develop. Regardless, the impact of the millage rate cap will have notable impacts to Alaskaville. How that impact might be addressed by the community can take various forms.



# Thank you for your time and attention!

## ANY QUESTIONS?



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