 **Town of Rochester**

 Board of Assessors

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 **MASS APPRAISAL EXPLAINED**

**GENERAL INFORMATION**

The primary responsibility of assessors is to value all real and personal property in Rochester each year for tax assessment purposes. These values are reviewed and certified every year by the Department of Revenue, and must meet specific, legal statistical standards.

Rochester Assessors are required by Massachusetts law to assess all property at its fair cash value as of January 1 of each year. Fair cash value means fair market value, the price a willing buyer and a willing seller would settle upon in an open market transaction. i.e., they expended reasonable time and effort to determine a price, and there are no special circumstances involved.

Assessors nationwide use what are commonly referred to as "Mass Appraisal Techniques" in the valuation of property. Mass appraisal is a widely accepted tool for the valuation of property for the purposes of taxation. It differs markedly from appraisal techniques utilized by fee appraisers, who are concerned with the valuation of one specific property only. Both mass appraisal and fee appraisal have techniques available to estimate value utilizing cost, income, and market approaches. Massachusetts Department of Revenue requires assessors to use mass appraisal analysis for municipal assessment purposes.

**MASS APPRAISAL**

Mass appraisal is defined as the use of standardized procedures for collecting data and appraising property to insure that all properties within a municipality are valued uniformly and equitably. It is the process of valuing a group of properties as of a given date, using common data, employing standardized methods and conducting statistical tests to ensure uniformity and equity in the valuations.

Since property has to be valued in order to be assessed, mass appraisal techniques were developed to value property. Computer systems and software with large data storage and sophisticated analytical capability make possible utilization of sales information, property characteristics, and statistical techniques to estimate the value of individual properties using sales information from many properties. This capability is the basis of the modern Computer Assisted Mass Appraisal system (CAMA) employed nearly universally by Assessors nationwide.

**BRIEF SUMMARY OF MARKET-BASED COMPUTER ASSISTED MASS APPRAISAL (CAMA)**

The building of a market-based CAMA model involves three basic steps:

1. Data collection. Data is collected concerning both sold and unsold properties. This includes inventory of property characteristics, location, and other factors that may affect value. Sales information concerning sale date, dollar amounts, non-real property items included in the sale price, financing, unusual circumstances concerning the sale, and other pertinent information is collected. From this information, an accurate inventory of each property, sold and unsold, is derived. Also, a sales list of “valid," meaning arms-length, sales transactions is developed.

2. CAMA modeling. The assessor developing a CAMA model uses various techniques in order to develop an appraisal model that replicates the market in assigning value to the various features of a property. Such techniques may include linear or multiple regression statistical analysis, trend analysis, other statistical techniques, or modification of existing or accepted models. A key part of the modeling process involves continual testing of the model to determine if it is accurately predicting the value of properties. This is generally done by comparing the sale price of properties with the value assigned by the model to the property. The statistical tests that the model must meet are part of Massachusetts valuation regulations and will be discussed below.

3. Application of the model. Once a CAMA model is developed by the assessor for a class or subclass of property, it is then applied to all properties, sold and unsold, in that class or subclass. This assures that all properties in the class or subclass are treated equitably; it is also required by Massachusetts law and property assessment regulations.

**STATISTICALLY TESTING THE CAMA MODEL**

Not only is testing of the CAMA appraisal model necessary to insure relative accuracy in valuation, statistical compliance is required under Massachusetts assessment regulation. A model that meets Massachusetts requirements is presumed to be valid for purposes of assessment for property taxation. There are two statistical tests that the CAMA model must pass to be valid under Massachusetts regulation. Both tests involve sales ratio analysis under which the CAMA value (also called "Assessed Value") is compared with the sales price of a property.

Definitions:

• *Assessor’s Assessed Value*. The value calculated for a property by the CAMA model. • *Sales Price*. This is the price written on the deed to the property. This price is generally confirmed and qualified by discussions or in writing to the buyer or seller.

• *Sales Ratio*. Assessor's Assessed Value divided by the Sales Price.

• *Data-collection period*. Generally, 12 months prior to the "appraisal date." Assessors may gather information in 6 month increments prior to and subsequent to the 12 month period if additional sales data is needed. Historical information is also utilized.

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Statistical Tests:

1. *Median Sales Ratio*. Calculation of median sales ratio is a fairly straightforward technique. First, a Sales Ratio is calculated for each sale in the sales base. This is done by dividing the Assessor's Assessed Value by the Sales Price (for example, if the Assessor's Actual Value for a property is $95,000 and the Sales Price is $100,000, the Sales Ratio for that property would be .95). Sales Ratios for all qualified sales in the sales base are then arrayed from lowest ratio to the highest and the Median Sales Ratio is calculated. Massachusetts assessment regulations require that the Median Sales Ratio for vacant land, commercial/industrial property, and improved residential property must fall between .90 and 1.10 for each class of property within a town.

2. *Coefficient of Dispersion*. The second statistical test that is applied to a sales base is calculation of the Coefficient of Dispersion (often referred to as COD). This test is to measure assessment uniformity. After the Median Sales Ratio is calculated, it is subtracted from each sold property's Sale Ratio. The result is called the Absolute Deviation (ignoring a positive or negative sign of the sum) for each sold property. For example, if a property's Sales Ratio is 1.05, the Absolute Deviation between it and a Median Sales Ratio of 1.00 would be .05. The Absolute Deviation between a Sales Ratio of .95 and a Median Sales Ratio of 1.00 would also be .05. After all Absolute Deviations are computed, they are added and an Average Absolute Deviation computed. The Average Absolute Deviation is then divided by the Median Sales Ratio. This equals the Coefficient of Dispersion. Massachusetts assessment regulations require that the Coefficient of Dispersion must be less than or- equal to .10 (or 10%) for the improved residential property class and less than or equal to .20 (20%) for vacant land, commercial and industrial commercial property classes within a town.

These two tests are designed to measure two important factors. One is that, to the best means available, the value computed for properties approximates what they sold for in a large number of cases. Second, that the difference between the values computed for properties, and their actual sales price is minimized in a large number of individual cases. The goal is to achieve assessment equity for the largest number of properties; that is, that a computed value approximates the actual sales price for the largest number of cases. Such a model can then be applied with confidence to the unsold properties in the town. While these tests are applied town wide to classes of property to insure compliance with state assessment guidelines, they are often also applied to subclasses of property (i.e: neighborhoods, building types, construction qualities, etc.) to test the CAMA model's prediction of value. While this appraisal methodology differs considerably from a market approach fee-type appraisal, it is similar in its intent in that it utilizes market information to estimate value of subject properties.