Massachusetts Department of Revenue
Division of Local Services/Bureau of Local Assessment

GUIDELINES ON CAMA SYSTEM ACQUISITIONS

Current State of the Art

A computer-assisted mass appraisal (CAMA) system is an automated system for maintaining property data, valuing property, notifying owners, and ensuring tax equity through uniform valuations. Such systems were made possible by computers and have grown rapidly in functionality and price performance with improvements in computer hardware and software. CAMA systems were developed on mainframe computers, but now are available on mini-computers and PCs as well. CAMA systems can be designed to operate independently or on a stand-alone basis or can be part of a automated network, with the ability to interact electronically with other departments (see attachments on network designs).

There are four essential features of a CAMA system: data management, valuation, performance analysis, and administration. A good CAMA system will perform these functions in an effective, easy-to-use manner.

Data Management

The success of any CAMA system is dependent on reliable data. Required data elements include property ownership, tax map reference, current use and highest and best use (zoning), physical property characteristics for both land and buildings, site data (access and utilities), sales data, income and expense data, and other pertinent market data. The system must provide for the efficient collection, storage, maintenance, and security of the data Important features of a modem data management system include:

(1) The ability of users to define which variables (data items) to collect and maintain. Important variables can vary among communities.

(2) Edit capabilities. The system should include range and consistency edits to help ensure the integrity of the data.

(3) Multi-year processing. Users should be able to update records for at least the current and forthcoming assessment years simultaneously. Otherwise, all changes for the current year would have to be completed before new buildings and data changes can be processed for the upcoming year.

(4) Data security. There should be various provisions for password protection and data backup, so that data is not lost and can only be changed by authorized users.

(5) Audit trail. The system should keep track of the last several changes to a property, including what was changed and by whom. Values from at least the previous year should be available for comparison with the current value.

(6) Sketching capabilities. Modem systems have the ability to enter and print building perimeter sketches, so that these do not have to be hand drawn on field cards. The system should also be able to calculate building areas from the sketches.

(7) Sales codes. There should be a series of codes for indicating whether real estate sales are valid indicators of market value and, if not, why.

(8) Separate sales file. The system should logically separate production and sales data, so that a "snapshot' can be maintained of properties at time of sale.

(9) Tracking system for building permits, abatements, ATB cases (including potential abatement liabilities), changes in use, lot splits, lot assemblage, etc. tied into the audit trail and a reporting function.

(10) Income and expense data. The system should provide for the maintenance of income and expense data, so that the income approach to value can be automated.

(11) Inquiry and reporting. Users should have the ability to make ad hoc queries to the system, for example;

- parcels contributing to tax base growth
- abated parcels and ATB filings
- selected property reports
  - retrieve all homes built between 1950 and 1970
  - list all properties with more than 3 dwelling units

The user should be able to build reports for the selected parcels or to export the data to a file for external analysis, for example, with a spreadsheet program.

Valuation

In mass appraisal, valuation involves automated applications of the sales comparison, cost, and income approaches to value. A good system should support all three approaches. Some specific desirable features include the following:

(1) A replacement cost module tied to commercially available cost manuals, so that costs can be routinely updated.

(2) Flexibility in depreciation schedules, so that users can develop and modify the schedules by property type, building quality and neighborhood as appropriate.

(3) Cost trend capabilities that allow users to adjust cost values to the market by at least property type and neighborhood.

(4) A land valuation module that allows the user to determine units of comparison (acre, square feet, front feet, depth, site), standard unit values, and site, topographic or neighborhood adjustments.

(5) Standard statistical procedures, including measures of dispersion and graphics, that can be used to compute typical sales price per unit and help develop benchmark values, depreciation schedules, and market adjustments.

(6) A sales comparison module that will retrieve a desired number of the most comparable properties to a given subject property based on a mathematical algorithm. Optionally, the system may adjust the comparables to the subject.

(7) A multiple regression feature for use by jurisdictions with adequate sales. Adaptive estimation procedure (AEP or "feedback") can also be used.

(8) A spreadsheet module for use in income and expense analysis.

Performance Analysis

Performance analysis is the process of analyzing values to ensure that they meet required standards and are supportable. There are two broad aspects of assessment performance: (1) level, which relates to the overall ratio of appraised values to market values, and (2) equity, which relates to the consistency and uniformity of values.

Assessment performance is largely evaluated through sales ratio studies, which compare appraised (assessed) values with recent sales prices. Because of the crucial importance of appraisal performance, a good CAMA system must have a good performance analysis system. Some specific aspects include:

(1) Ability of the user to specify sale date range and other parameters (e.g., sale codes) for parcels to use in analyses.

(2) Standard measure of assessment performance, including median, mean, weighted mean, coefficient of dispersion (COD), and price-related differential (PRD).

(3) Ability to stratify data by neighborhood, size ranges, age groups, and so forth.

(4) Graphics capabilities, including bar charts and scatter diagrams, for displaying results.

(5) Ability to analyze values by "value source," so that one can, for example, compare the performance of values based on the comparable sales approach versus the cost approach.

Assessment Administration

Assessment administration includes a variety of functions related to preparation of the assessment roll (commitment) and general administrative activities. They include processing exemptions, generating form letters and assessment notices, computing use-value assessments, processing abatements, and preparing miscellaneous reports. In addition, some systems perform tax billing and collection functions. Recent developments include computerized tax mapping, interface with geographic information systems (GIS), and video imaging, in which pictures of properties can be retrieved on-line for use in, say, value review and the evaluation of abatements.

Software Alternatives

Jurisdictions have three basic alternatives in acquiring a CAMA system. The first is in-house development, in which the jurisdiction's data processing department would develop the software. The primary advantage of this approach is that the system can be customized to fit the jurisdiction's specific needs. However, there are substantial disadvantages. First and foremost is the required time and expense. This approach can take several years and requires expert programming support. In general, this is not a practical approach for most Massachusetts municipalities.

The second alternative is acquisition of a commercially available system. This approach avoids the need to "reinvent the wheel" and is a practical alternative for most jurisdictions. On the negative side, however, the jurisdiction becomes dependent on the vendor for software upgrades, modifications, and support. Also, costs of software licenses and upgrades can become substantial.

Third, sophisticated jurisdictions can adapt generic software to support CAMA functions, or a consultant can be hired to develop the system. Database, statistical, and spreadsheet software provide the necessary templates. This alternative is attractive for several reasons. First, such software is proven and usually highly functional and user friendly. Second, the programs can be easily modified without professional programming support. Third, at least at the PC level, such software is remarkably inexpensive, perhaps only $1,000. The primary drawback is the required

skill in the chosen software. Jurisdictions must be careful of not being overly dependent on one person familiar with the software.

Of course, jurisdictions need not rely entirely on any one of these three alternatives. In particular, a vendor-supplied system can be supplemented with generic software. For example, data can be exported to spreadsheet and statistical software for analysis and modeling. Also, an in-house tax billing system can be linked to a vendor-supplied or generic-based assessment system.

The Bureau of Local Assessment staff are available to work with you on reviewing your automation needs and designing a CAMA acquisition plan that presents a solution for your community.