**What is Mass Appraisal?**

Mass appraisal is the process of valuing a group of properties as of a given date, using common data, standardized methods, and statistical testing. Mass appraisal models attempt to represent the market for a specific type of property in a specified area. Valuation models developed for mass appraisal purposes must represent supply and demand patterns for groups of properties rather than a single property.

**Collecting and Maintaining Property Data**

The accuracy of values depends first and foremost on the completeness and accuracy of property characteristics and market data. Data collected is stored in a Computer Assisted Mass Appraisal System (CAMA), for PAD this is the ORION system. The CAMA system also provides storage and processing of relevant sales, cost, and income and expense data.

- Geographic Data
  Accurate, up-to-date cadastral maps (also known as assessment maps, tax maps, parcel boundary maps, and property ownership maps) are maintained. These maps allow PAD staff to identify and locate all parcels, both in the field and in the office. The geographic information system (GIS) maintained by PAD permits graphic displays of sale prices, assessed values, inspection dates, work assignments, land uses, and much more. In addition, this system permits high-level analysis of nearby sales, neighborhoods, and market trends.

- Property Characteristics Data
  The property assessment division must also collect and maintain property characteristics data sufficient for classification and valuation. The following property characteristics are usually important in predicting residential property values:
  - Improvement Data
    - Living area
    - Construction quality or key components thereof (foundation, exterior wall type, and the like)
    - Effective age or condition
    - Building design or style
    - Secondary areas including basements, garages, covered porches, and balconies
    - Building features such as bathrooms and central air-conditioning

- Significant detached structures including guest houses, boat houses, and barns
  - Land Data
    - Lot size
    - Available utilities (sewer, water, electricity)
  - Location Data
    - Market area
    - Submarket area or neighborhood
    - Site amenities, especially view golf course or water frontage
    - External nuisances, (e.g., heavy traffic, airport noise, or proximity to commercial uses).

Collecting property characteristics data is a critical and expensive phase of reappraisal. A physical inspection is necessary to obtain initial property characteristics data. Depending on the data required, an interior inspection might be necessary. At a minimum, a comprehensive exterior inspection should be conducted. Measurement is an important part of data collection.

Property characteristics data should be continually updated in response to changes brought about by new construction, new parcels, remodeling, demolition, and destruction. We rely on ongoing, periodic field inspections to identify changes and update our property information. Where available, building permits are used to identify construction activity. We are looking into the use of aerial photography to help in identifying new or previously unrecorded construction and land use.

- Sales Data
  PAD obtains sales price data on all transfers of real property from Realty Transfer Certificates (RTC) collected by the local county clerk and recorder. All potentially valid sales are verified as to whether they are valid arms-length transactions; meaning the sales were not affected by unreasonable or unusual influence, control, or motivation by either party. Sales verification includes confirmation of:
  - sales price
  - sale was an open market arm's length transaction
  - date of sale or the date the price was agreed upon
  - terms of the sale
  - buyers and sellers were knowledgeable about the market
  - buyers were aware of the property's condition
  - any additions or improvement that were made to the property after the sale

- property characteristics

Verification can be obtained on-site, by mail, by telephone or using multiple listing services (if available) and internet listings to ensure accuracy of information on the RTC and the property characteristics. Potential additional sources of verification information for commercial and industrial property may include the buyer's and seller's websites, financial documents, and press releases along with industry publications and news articles.

- **Income and Expense Data**
  Income and expense data must be collected for income-producing property and reviewed by qualified appraisers to ensure their accuracy and usability for valuation analysis.

  Every two years, the department relies on commercial property owners to voluntarily provide their income and expense data for the previous two years. The department analyzes the data submitted online to determine typical market rents, expense percentages and capitalization rates of similar commercial properties. This data is used to develop property type income models used statewide in the mass appraisal process.

  Income and expense data is also gathered during the sales verification process and when department appraisers are on-site to complete a new construction property inspection or a property review for an informal review or appeal. During the sales verification process, department staff request income and expense data along with the sales verification information.

  The department also uses Integra, a national commercial property publication, and the database CoStar, a commercial real estate listing service, as references for sales information, income and expense data and capitalization rates.

- **Cost and Depreciation Data**
  Current cost and depreciation data adjusted to the local market are required for the cost approach. Local construction cost data is collected statewide on all property types for developing cost tables to calculate accurate estimates of replacement cost new.

  Department staff collect labor costs from the Montana Department of Labor and Industry. Localized costs are obtained from building contractors, lumber yards and retail outlets that provide materials, such as lumber, plumbing fixtures, and

electrical components to contractors. New construction cost information is gathered during on-site reviews and from the collection of sales data of newly constructed properties.

The department also uses nationally accepted appraisal cost manuals such as Marshall & Swift Residential Cost Handbook, Marshall & Swift Valuation Service Cost Manual, RS Means Building Construction Cost Manual and Online Data Services and Mining Cost Service to estimate comparative and unit-in-place costs for the development of base cost tables.

**Valuation**
- Three Approaches to Value
    - The **sales comparison approach** estimates the value of a subject property by statistically analyzing the sale prices of similar properties. This approach is usually the preferred approach for estimating values for residential and other property types with adequate sales.
    - The **cost approach** can be used to appraise all types of improved property and is frequently used to value unique properties. The cost approach is used for parcels with non-typical circumstances and when there is insufficient sales data and a reliable market model cannot be developed.
    - In general, for income-producing properties, the **income approach** is the preferred valuation approach when reliable income and expense data are available.

**How is Mass Appraisal Done?**
OK, that was a high-level overview of mass appraisal is, the approaches to value and the data that we collect and maintain, now, how are property values determined?

Robin Rude, PAD Regional Manager will provide an overview of actually doing mass appraisal.

**Neighborhoods and Market Areas**
A market area is the broadest area from which comparable sales are selected in the sales comparison approach.

Market areas may be broken up into various subsets of properties called clusters, neighborhood groups, neighborhoods, and sub-neighborhoods. Neighborhoods within a cluster or neighborhood group do not need to be highly homogenous but do need to have similar factors that affect their values (e.g., urban neighborhoods, recreational neighborhoods, and farming communities).

A neighborhood is a collection of properties defined by natural, man-made or political boundaries which share locational and physical similarities. Physical, economic, governmental, and social influences directly affect a property's value.

Department staff review and analyze existing market areas' neighborhood boundaries and characteristics during the timeframe leading up to a valuation cycle. This ensures the boundaries are accurately established and the properties within the market area boundaries are affected by similar influences. New market areas, clusters, groups, or neighborhoods may be added as necessary.

**Region 3 Neighborhood and Cluster Diagram:**

MJ3301 REGION 3 LAUREL COMMUTER

MJ3301 CLUSTER 1 REGION 3 LAUREL COMMUTER

MJ3301 NG 1 CARBON

MJ3301 NG 1 STILLWATER

MJ3301 NG 1 YELLOWSTONE

210.004.1 Laurel Commuter Area-Res Sales: 38

232.004.1K Laurel Commuter-Condos Sales: 0

203.004.1 Laurel Commuter Area Sales: 25

232.004.1T Laurel Commuter-TH Sales: 0

232.105.T Park City-TH Sales: 0

232.105 Park City-Res Sales: 43

232.004.1 Laurel Commuter-Res Sales: 65

**The Modeling Process**

**Land Model Development**
Credible market land valuation is dependent on strong land models created from vacant and improved sales data. Land values must reflect market value in each neighborhood or market area.

The sales comparison approach is the primary land valuation method used by the department.

Department staff analyze vacant land sales and make time of sale adjustments to the land sales prices to January 1, 2018 to reflect either inflationary or recessionary trends in the market. January 1, 2018 is the valuation date for the 2019-2020 valuation cycle. Department staff may sometimes use valid improved sales in the time trend analysis for the creation of land models to produce reliable and predictive land values as of the valuation date.

When there is not an acceptable number of vacant land sales in a neighborhood or market area, improved sales can be used to determine land value using the following methods:

*ABSTRACTION/EXTRACTION METHOD*
In the abstraction/extraction method, improvement values obtained from a cost estimation model are subtracted from the sales prices of improved parcels to arrive at a land value estimate. The method is particularly useful in highly developed areas where there are few, if any, vacant land sales.

*ALLOCATION METHOD*
The allocation method is also known as the land ratio method. For a given type of property and area, there tends to be a consistent overall relationship between land and improvement values. When there are insufficient vacant land sales in a given area, department appraisers look to other comparable areas with sufficient land sales, determine the typical ratio of land value to total value, and apply the ratio to sales of improved parcels in the subject area.

The first step to building land models is to stratify the valid land sales into neighborhoods with similar highest and best use, location, and market conditions. Further analysis is then conducted to determine which valid sales will make up each model. Units of comparison such as square feet, acreage and front feet are determined for each market area. Sales are also reviewed for influences that are different than the base and that appear to impact value such as location desirability, view, and water frontage.

Once sales have been collected, adjusted, neighborhood stratified, units of comparison determined, and influential characteristics identified, a land valuation model can be built. The models may be built using regression analysis, a statistical technique for estimating unknown data based on known available data.

**Market (Sales Comparison) Models**
Residential properties are valued using either the sales comparison approach or cost approach with the sales comparison approach being the preferred valuation method. The income approach is usually not an applicable and relevant approach to value as the highest and best use of residential properties is in most cases, as a residence.

**SALES COMPARISON MODELS - DEVELOPMENT**
Processes completed to develop the residential sales comparison models include:
- Verification of sales
- Analysis of market areas
- Review and QA of verified valid improved sales data stored in a sales history extract file in the CAMA system to look for data errors or anomalies that should be corrected before determining if the sale should be excluded.
- Development of market condition (time of sale) adjustments that reflect either inflationary or recessionary trends in the market from the time of sale to January 1, 2018, the valuation date for the 2019-2020 valuation cycle.
- Extraction of sales by market area. Sales comparison models can contain 40 to 3,000 or more sales depending on available data for that area.
- Calibration of models. Using multiple regression analysis (MRA), a statistical tool which calculates the sale adjustment factors of various property characteristics such as living area square footage, age, and quality grade. The factors are used to adjust the comparable sales to the subject property.
- Application of selection rules and adjustments. These rules and adjustments are added to the model to help select the most comparable properties.
- Testing and finalization of sales comparison models in the CAMA system. Model results are reviewed by appraisal staff and sales ratio studies are performed, comparing sales prices to regressed model values. IAAO standard on ratio results are between .90 and 1.10.

**Model Testing and Quality Assurance**
As noted above the last step of the modeling process is testing and finalization. However, prior to this step, during the modeling process, models are presented to appraisers within the market areas to review and validate. At the land modeling stages, appraisers are asked to identify influences that may be impacting the sale prices of certain properties to determine if an adjustment due to that influence should be

applied, if neighborhood assignments are correct or if an acre or square foot valuation method is best for the set of data.  Testing for land models also includes analyzing valuation differences from one reappraisal cycle to the next.  Why did the value of certain properties change more or less than anticipated?  Does an adjustment need to be made to the model or the property in some way?

Once land models are developed, tested, and finalized, they are entered into the CAMA system and land values are assigned to all properties.  Sales comparison models can now be developed.

Appraisers are also an integral part of the testing and verification of the sales comparison models.  They are asked to review variables used in the models, the amount of the adjustments as well as set their desired selection rules in their market areas to choose the most appropriate comparable sold properties.  Once models have been approved by the appraisers, comparable sales are applied to all subject properties in the CAMA system.  Further review is completed on the values generated to determine if any last adjustments should be made to the models.  No changes are made to the models once they are finalized in the CAMA system's production environment for the valuation cycle.

**Final Determination of Value**
Department appraisers use their experience, expertise and professional judgment to resolve differences among the value estimates derived from the application of the approaches to value.  This process requires *all* properties be reconciled and a final value determined.  The greatest weight is given to the approach to value that is most credible given the available data.

The sales comparison approach is the preferred approach to value for most residential properties and is given greatest weight.  The cost approach is used for residential parcels with non-typical circumstances, when comparability adjustment points are too high or if the appraiser feels that the comparable properties are not similar.

The income approach is the preferred approach to value for commercial property. The cost approach is used when valuing a unique property or when an income model does not exist for a property's use type.

All vacant land and improved agricultural properties are set at the cost approach to value. Typically, mixed use commercial and residential properties, as well as industrial properties also use the cost approach to value.

## Montana's Appraisal Cycles:

- Per Montana statute, residential, commercial, and agricultural properties must be revalued every two years.  This process involves updating all the data making up the mass appraisal models and the production and commodity price variables for ag. land.

- Forest/timber properties are reappraised every 6 years and timber sales are analyzed and productivity zones updated.

- Prior to TY 2015 All Property valued on 6-year cycle.  Rapidly changing real estate prices caused "sticker shock".

## Reappraisal Timeline:

REAPPRAISAL

**Reappraisal Cycle:**



Sales Verification Begins → Collection of Income and Expense Data Begins → Developing Cost Tables Begins → Develop Local Value Indexes → Neighborhood Review and Deliniation → Build and Test Land Models → Sales Verification Ends → Test & Finalize Cost Tables → Analyze and Calculate Time Value Trends → Cost Table Developement Ends → Load Land Models into CAMA → Benchmark Sales & Residential Market Modeling Developement → Develope ECF's-Market/Cost Ratio → Sales Ratio Analysis for QA → Finalize ECF's → Commercial Final Determination of Values → Residential Final Determination of Values

Inner cycle: June 2021 → September 2021 → December 2021 → March 2022 → June 2022 → September 2022 → December 2022 → March 2023 → June 2023

**Montana's Assessment Cycle:**
- Steps to completing annual assessment
    - o Identify properties to be appraised (new construction, destruction, land splits, combinations, & new parcels)
        - ▪ On Average we receive 26,000 building permits/year

    - o Ownership and deed changes
        - ▪ On Average we receive 45,000 ownership changes/year

    - o Assessment notices sent to taxpayers
        - ▪ Real property = 467,463 notices representing 753,000 parcels
        - ▪ Mobile homes = 39,702 notices representing 45,000 homes

    - o Informal Reviews and defending appeals
        - ▪ 8,097 Appeals in TY 2021
        - ▪ 9,383 Appeals in TY 2019
        - ▪ 9,308 Appeals in TY 2017
        - ▪ 17,970 Appeals in TY 2015

# Annual Assessment Cycle:



**Months (clockwise):** January/December, February, March, April, May, June, July, August, September, October, November

**Cycle steps:**

- General Assessment Date
- CAMA System updates to ownership and valuation data
- Personal Property Returns aggregated and worked
- Annual New Construction site reviews
- P.P. Mobile Home Assessments sent to TP and Counties
- Strict Personal Property Assessment Notices sent to TP and Counties
- Real Property Assessment Notices sent to TP and Counties
- Deadlines for requests for review (AB-26)
- Certification of Values to all jurisdictions
- Jurisdictions calculate mills needed to levy budget
- Counties report all mill calculations to DOR
- DOR calculates taxes levied report and sends to Treasurers and Clerk & Recorders
- County Treasurers produce and mail tax bills
- DOR calculates taxes levied report and sends to Treasurers and Clerk & Recorders
- All CTAB & MTAB hearings complete