



Real Property Tax Administration
Office of Tax and Revenue
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Washington, DC 20024

Office of the Chief Financial Officer
Office of Tax and Revenue
Real Property Tax Administration

Real Property Assessment Division

2011 GENERAL REASSESSMENT PROGRAM

APPRAISER'S
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February 2010

Disclaimer:

This publication represents a selected compilation of materials developed and used by the Real Property Assessment Division of the Office of Tax and Revenue during the 2011 revaluation of real property in the District of Columbia. As such, it does not purport to be an exhaustive collection of all assessment administration documents and materials. Its primary purpose is designed to be a quick reference guide for the real property appraiser in his/her day-to-day work activities.

Please feel free to call or e-mail your comments or suggestions to the contact below. Thank you.

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OFFICE OF TAX AND REVENUE
REAL PROPERTY TAX ADMINISTRATION
INTEROFFICE MEMORANDUM

TO: REAL PROPERTY ASSESSMENT DIVISION
FROM: DAVID W. FITZGIBBON, CHIEF APPRAISER
SUBJECT: TAX YEAR 2011 REASSESSMENT EFFORT
DATE: 2/24/2010

Once again the staff of the Real Property Assessment Division was faced with a difficult task in preparing the valuations for the proposed 2011 tax year. Foreclosures continued to increase in number at an alarming rate while the value of property actually being sold tracked a different course. Values in some areas of the District actually increased instead of decreased and analyzing the market took on new dimensions as we struggled to determine where foreclosed property was affecting the market values and by how much. Some areas had few or no foreclosure sales while other areas sales consisted of a great number of foreclosure sales. Defining the sub-neighborhoods that were affected was difficult, to say the least, but we feel the result of the additional effort has produced values that are fair and equitable and represent as close as possible the actual Fair Market Value of properties in the District as of January 1, 2010. Recent media reports quote several sources reporting sale prices increasing slightly toward the end of the year.

The condominium market seemed to be one of the bright spots. Increased sales activity helped absorb the inventory of available units and created speculation that we may soon see an increase in construction of new units and conversions. Commercial office space saw increased vacancy rates aided by completion of over one and one half million square feet of new or renovated space during the 4th quarter of 2009 and rental rates declined slightly during 2009.

The staff of the Real Property Assessment Division responded to the challenges with increased research and analysis in order to produce values that are reflective of the market as of our January 1st appraisal date. They also recognized the volatility of market conditions and made every effort to account for any trends affecting value. For the extra effort during a very difficult year, I congratulate the staff and offer the thanks of the management team at OTR.

The difficult task of defense of these values begins in April and I have every reason to believe the staff will be better prepared to provide supporting evidence of the valuations due to the increased focus on the changing market during our valuation period. I have great confidence in the professionalism and ethics of our staff and in their ability to thoroughly explain the process to the public throughout the appeals season.

RPAD has continued to develop and utilize modern technology to assist us in the gathering and processing of information. Online services will aid both us and the public in obtaining data for comparison and equalization of values. With this year's total parcel count topping 195, 000 the use of modern technology has become a necessity instead of a desirable tool. We encourage everyone, within RPAD as well the public to utilize all available resources in the review of this year's values.

Explanation of Residential Market-oriented Cost Method

Note: The market-oriented cost approach to valuation is further explained and illustrated in the document, *Vision Residential Valuation Process*.

The market-oriented cost approach involved the following:

1. Extracting the CAMA data from approximately 8,800 qualified sales and importing it into SPSS.
2. Building a preliminary regression model that reflects the variables of the CAMA cost approach.
3. Reviewing the results of the preliminary regression to identify candidate market areas where the data was such to allow for successful regression analysis.
4. Eliminating outliers in the candidate areas to better ensure accuracy of the regression results.
5. Establishing time adjustment factors in order to analyze sale prices as of a specific point in time. The city was divided into 4 major market areas for time adjusting sale prices. Market data indicated monthly time adjustment factors over 33+ months (1/1/2007 through 10/5/2009) as follows:

	1/1/07 - 12/31/07	1/1/08 - 12/31/08	1/1/09 – 9/30/09
“Southeast” Neighborhoods (2, 3, 16, 18, 22, 28, 32, 33, 43)	+ 0.10% /mo	- 0.80% /mo	- 1.00% /mo
“Northeast” Neighborhoods (5, 6, 7, 12, 14, 15, 17, 19, 31, 35, 36, 42, 47, 48, 49, 51, 52, 56, 66)	0.00% /mo	- 1.00% /mo	- 0.30% /mo
“Northwest” Neighborhoods (1, 4, 8, 11, 13, 21, 23, 24, 25, 26, 27, 29, 30, 34, 37, 38, 41, 50, 53, 54, 55)	+ 0.10% /mo	- 0.10% /mo	- 0.30% /mo
“Downtown” Neighborhoods (9, 10, 20, 39, 40, 46)	+ 0.10% /mo	- 0.60% /mo	0.00% /mo

6. Building a final regression model, using the time-adjusted sale price as the dependant variable.
7. Calibrating that model using non-linear multiple regression. Variables were included to extract land values from the market.
8. Reviewing the regression predicted values and removing extreme outliers.
9. Examining the predicted-values-to-time-adjusted-sale-price ratios for equitability with respect to lot size, building area, age, use, grade, and location.
10. Entering the coefficients indicated by the regression analysis back into the CAMA program’s cost model.
11. Applying the cost model in CAMA and reviewing the resulting values to ensure they agreed with the predicted values produced by the regression.
12. Performing sales analysis to determine if acceptable levels of assessment were achieved and adjusting rates as necessary.
13. Applying model to inventory and producing old-to-new (outlier) reports and percent change detail analysis reports for assessor review.
14. Incorporating oversight of the computer aided procedure by our professional staff cited in the *2011 Valuation Review Process*. All projected market value changes are submitted to the staff for their review, refinement, and adjustments.

Explanation of Residential Condominium Valuation Methods

Regression:

The sales comparison approach using multiple regression analysis involved the following:

1. Extracting the CAMA data of qualified sales and importing it into SPSS.
2. Reviewing data to determine what regimes were candidates for regression analysis. As a rule, regimes could be valued using regression where the physical data attributes were complete and adequate sales data existed. Regimes without adequate sales, but with complete data, could be clustered with regimes having similar profiles to allow regression to be used.
3. Exploring the data to determine what variables would likely contribute to the model.
4. Building a base model.
5. Reviewing the results of the base model and eliminating outliers in the candidate regimes to better ensure the accuracy of the regression results.
6. Establishing time adjustment factors in order to analyze sale prices as of a specific point in time.
7. Building a final regression model, using the time-adjusted sale price as the dependant variable.
8. Calibrating that model using multiple regression analysis.
9. Applying the model to the sales, reviewing the predicted values and removing extreme outliers.
10. Performing sales analysis to determine if acceptable levels of assessment were achieved and adjusting rates as necessary.
11. Extracting condominium inventory data and importing into SPSS.
12. Applying model to inventory, and exporting the values back to CAMA, allocating 30% of predicted value to land and 70% of predicted values to improvements.
13. Producing percent change reports for assessor review.
14. Identifying necessary corrections to data and location adjustments.
15. Repeating process of extracting data, applying model, and exporting back to CAMA to include corrections.

Final Assessor Review:

At the conclusion of the valuation, several reports are produced showing the results of the reassessment. These reports, reflecting proposed market value changes, are submitted to the assessment staff for their review, refinement and adjustment in accordance with the processes outlined in the 2011 Valuation Review Process document.

The Condominium Regression Model:

ESP= (338.05 * SIZE * SIZE_ADJ * EFFIC_ADJ * COND_ADJ * VIEW_ADJ * BATH_ADJ + PARK_ADJ) * LOC_ADJ.

Estimated Sale Price (ESP) – the value predicted by the model for the parcel, given the variables in the model, the coefficients of those variables and the attributes of the subject unit.

Base Rate (338.05) – base size rate (constant)

Size – the square footage of the unit

Size Adj. – the adjustment for the unit's size being larger or smaller than the base size

The base unit size is 800 sf. The formula for calculating the size adjustment is:
 $((\text{SIZE}^{.6950})/\text{SIZE})/.13081$, where $.13081 = (800^{.6950})/800$. See graph titled Condominium Size Curve.

Efficiency Adj. – if the unit is an efficiency unit, a 0.95 adjustment is applied.

Condition – adjustment for the unit's physical condition

(1) Poor	.75
(2) Fair	.89
(3) Average	1.00
(4) Good	1.06
(5) Very Good	1.10
(6) Excellent	1.16

View – adjustment for the unit's view

(1) Poor	.87
(2) Fair	.95
(3) Average	1.00
(4) Good	1.05
(5) Very Good	1.10
(6) Excellent	1.15

Bath Adj. – adjustment for the unit's number of baths more than one.

$$\text{BATH_ADJ} = 1 + (((\text{FULLBATH} - 1) + (.5 * \text{HALFBATH})) * .08)$$

Example: $2 \frac{1}{2} \text{ baths: } 1 + (((2 - 1) + (.5 * 1)) * .08) = 1.112$
 $3 \text{ baths: } 1 + (((3 - 1) + (.5 * 0)) * .08) = 1.16$

Parking – adjustment for Limited Common Element parking

<u>Outdoor</u>	<u>Covered</u>	<u>Indoor</u>	subject to location adjustment
15200	20260	30400	

Location – adjustment for unit's geographic location

Location adjustments were made for neighborhood, sub-neighborhood, cluster of regimes, or unique regime. The actual location adjustment for any unit may be the combination of one or more of those location factors.

Explanation of Cooperative Valuation Method

Cooperatives are a type of residential property. In a cooperative, a corporation owns the property and the shareholders can use the unit or units represented by their shares. In Washington, DC, cooperatives are assessed according to statute by either of three methods. The first method is by calculating the cumulative value of the leasehold interests (by sales). The second method is to treat the project as if it was a condominium project and reduce the value by 30%. After arriving at either of these values, we further reduce the value an additional 35% according to the statute. The third method is available only to Limited Equity Cooperatives.

Limited-equity cooperatives (LEC) are defined in the DC official Code in § 47-802 (11) as, “one required by a government agency or non-profit to limit the resale price of membership shares to keep the housing affordable for low and moderate income buyers.” The assessed value of the improved real property owned by an LEC is the lesser previously described approaches or the annual amount residents pay in carrying charges (excluding subsidies), divided by an appropriate capitalization rate as determined by the Office of Tax and Revenue (OTR).

For 2011, we reviewed all the complexes with sales information and calculated the sales prices per square foot. No time adjustments were deemed necessary for this period. For previous years matched pairs sales were used to calculate the typical percentage increase per month. Multiplying the square footage of the units by the adjusted rates (occasionally they were adjusted for view or parking as sales indicated) would result in the aggregate values which were further reduced for personal property and the result multiplied by 65% to arrive at the assessment.

In complexes where there were no sales, we treated them as if they were condominiums. To do this we would find a condominium as similar as possible to the subject and use the square foot rate that seemed to be appropriate to the square foot of the units or the estimated square footage. We would adjust the square foot rate if the complexes weren't in similar condition or location. We would multiply the rate times the square footage and reduce the result by 30% and then by 35%. The complexes without sales were usually limited equity coops or very small complexes.

2011 Valuation Review Process

As part of the valuation process, initial assessments for all properties will be estimated and preliminary report will be generated summarizing the results of the valuation effort. Your review, modification and approval of the proposed assessments indicate that they are representative of the estimated market value.

The Valuation Review Process is designed to allow for a thorough review of the new values for the upcoming tax year before notices are sent to property owners.

The purpose of this review is two-fold. First, it allows us the opportunity to correct any errors that may have occurred in the valuation process before they cause administrative difficulties (i.e. public relations problems, unnecessary appeal activity, and the like). Second, the process provides feedback to the CAMA modeling and calibration process.

The process involves examining all assessments with particular attention given to the outliers in a relatively short period of time. As such, the appraiser is primarily concerned with arriving at a reasonable final value estimate for all accounts by focusing attention to the properties on the outlier list, known as the Old-to-New Report. Briefly, the process involves the appraiser of record reviewing a selected group of properties in their neighborhood that, on first inspection, appear to be over or under appraised based on previously determined criteria such as sales price, percent change reports, etc. When this review indicates correct values, no records are changed; however, if the value requires modification, the appraiser will make changes in the CAMA record and on the PRC to correct the situation. If he/she discovers minor discrepancies in the data, it should be noted and corrected or revisited during another inspection program at the discretion of the appraiser. The purpose of this program is not to engage in a detailed analysis of accounts but rather to expeditiously review outlier accounts to improve our estimate of market value.

NOTE: It is advisable that the appraiser has a solid knowledge of CAMA valuation before proceeding with the review process. Please refer to the most current version of the "*CAMA Residential Construction Valuation Guideline*." Along with the report entitled "VISION CAMA Valuation," the guideline will serve as a tutorial for the methodology employed within CAMA for valuing residential property.

Following are some general guidelines to consider while conducting review activity.

1. The valuation review process begins with CAMA producing two reports for each (sub) neighborhood. The first report is the "Old to New" report that shows the old value, new value, percent and dollar change in value from the current assessment to the proposed assessment for specific properties that constitute outliers in the (sub) neighborhood. Included are the individual PRCs for each corresponding account listed in the report where the proposed value increased 10 percentage points or more above the median percent change for the (sub)

neighborhood or decreased 10 percentage points or more below the median percent change. The second report, Percent Change Detail Analysis, contains more specific detail about all of the accounts in the selected (sub) neighborhood.

2. The appraiser will be provided these two individual reports for each of the assigned (sub) neighborhoods, along with individual PRCs from the Old-to-New report.
3. Before individual reviews of the Old-to-New report begins, the appraiser will examine the Percent Change Detail Analysis report for signs of irregularities or general discrepancies based on their knowledge of their neighborhoods. The review entails several tasks as follows:
 - A. Review the "A/S Ratio", when present. The ratios are calculated based on sales over a long period of time. Pay particular attention to sales that occurred during calendar year 2009. These sales will give a better picture of the most recent assessment/sales ratio reflective of the current market conditions. Where the assessed values are not close to the sales prices, fully examine the record, and consider making appropriate changes. The "VC" flag can be used to indicate that a sale has been previously disqualified, possibly rendering an unusual ratio less meaningful. Additionally the review of the "VC" code with an unusual ratio may indicate that a previously qualified sale needs to be now disqualified.
 - B. Examine the "Grade" of the accounts. If there is a two or more departure of grade between the account and the typical grade in the (sub) neighborhood, the appraiser may be concerned.
 - C. Look for extremes in the "Cond" and "% Good" data. Again, on average, these should be relatively consistent throughout the (sub)neighborhood.

The preferred process to follow when conducting individual reviews of accounts contained on the Old-to-New report (residential only) is as follows:

1. The appraiser will examine each record that appears on the "Old to New" report. Each record has been selected for inclusion because the proposed value decreased 3 percentage points or more below the median percent change for the (sub) neighborhood or increased 10 percentage points or more above the median percent change for the (sub) neighborhood. However, PRCs were printed for records where the proposed value decreased 10 percentage points or more below the median percent change for the (sub) neighborhood or increased 10 percentage points or more above the median percent change for the (sub) neighborhood. As a result, there will probably be more accounts listed on the "Old to New" report than printed PRCs. These records constitute the "outliers" of

the (sub) neighborhood. The values may be correct or erroneous, and the purpose of this process is to make that determination.

2. The appraiser, exercising his or her professional skill and judgment, first will conduct a “desk review” of each account appearing on the report. If the value does not seem reasonable perform the following actions:
 - A. Examine the PRC for any missing or incorrectly coded data contained in the Construction Detail section.
 - B. In the Building Summary Section, check the sq. ft. sizes of the areas listed for accuracy and reasonableness.
 - C. Check the Building Cost Section for correct Effective Area, Special Feature RCN and % Good. If any are erroneous, examine their respective sections for details.
 - D. Examine the Special Features/Amenities and Detached Structures sections for accuracy.
 - E. On the front of the PRC, check the Land Line Valuation Section for proper size and value.
 - F. Make use of the Pictometry tool available in the Mobile Video Viewer or the Mapping Apps folder.
3. Several results may occur from the desk review:
 - A. The desk review indicates the value is correct. In this case, note in the column adjacent to the account “OK”, your initials and the date.
 - B. The desk review indicates an erroneous value discovered by examining various reports and records (i.e. Percent Change, CAMA record, etc). In this case, the appraiser makes the correction in the CAMA record, notes the changes made on the PRC in red, notes on the Old-to-New report the new amount, your initials and the date.
 - C. The desk review is inconclusive and a field inspection is in order.

An example may help illustrate scenario “A”, the first situation. Let’s say the Old-to-New report indicates an account has jumped 400%, from \$300,000 to \$1,200,000! That amount of increase seems absolutely erroneous. To determine a possible explanation, the appraiser begins the review by locating the account on the Percent Change Detail Analysis report. After finding the account, the appraiser notices that the properties close to the account have only increased by approximately 20%, the median for the neighborhood. They are approximately similar to the account in size, grade, and condition, but their prior year’s value was \$900,000, while the outlier was only \$300,000. The appraiser would be safe to conclude that the account was grossly under-assessed last year. The low “old” value caused the large increase in value, not an over-assessed new value. To complete the desk review, the appraiser notes on the Old-to-New report, “OK”, his/her initials and the date.

Scenario “B”, the second situation, may find the appraiser reviewing an account that also appears to be over-assessed based on the large increase from old to new value. The appraiser again locates the account on the Percent Change Detail Analysis report and reviews the account in context to other (sub)neighborhood properties. The appraiser discovers that most of the data about the account is similar to the other properties – same use code, similar size, percent good, etc. However, where most of the properties are listed at Grade 4, the account is Grade 7. This would help explain the likelihood that the account is over-assessed. The appraiser would make the change to the grade in the CAMA system, note the new value, make the change on the PRC in red, and document the change on the Old-to-New report by writing the new value, his/her initials and the date in the far right column of the report next to the account.

The last scenario, “C”, results when the appraiser can not immediately explain the reason an account appears on the Old-to-New report. He/she should set aside accounts that will require field inspection and at a point, go to the field for inspection. Upon conclusion of the inspection, the appraiser will document the results in a similar manner to the desk reviews. The actual schedule for field- work will vary and will be coordinated by the appraiser and his/her supervisor.

Records Retention , Old-to-New Reports (residential only) and Percent Change Detail Analysis Reports (residential, residential condominium, commercial) are to be retained for two years, so that the current and proposed years are readily available for review. The retained reports will reflect all necessary dates and initials, indicating the required review and approval. The supervisor for each unit will be responsible for ensuring compliance with the review process within their unit, and for the retention of their unit’s reports for the appropriate period of time. Reports may be discarded when they are no longer the current or proposed year. For example, upon the completion of the tax year (TY) 2011 revaluation, the TY 2009 reports may be discarded, and the reports from TY 2010 (current) and TY 2011 (proposed) must be on file.

Assessment Roll and Property Owner Notification

Upon completion of the annual reassessment and following the detailed final edit by appraisers, the CAMA manager runs a series of edit programs that makes final edits and consistency checks of all accounts. Any problems are returned to appraisers for review or correction. Following corrections, the CAMA Manager completes a final edit and uploads the required information via CAMA extract to the Integrated Tax System.

Annual Assessment Notices to notify property owners may be printed from ITS in batch mode or an extract may be produced for an outside vendor to produce assessment notices.

Market Approach to Land Valuation in Costed Neighborhoods

A non-linear regression model was used to calibrate the residential cost model. It was developed from citywide market analysis of qualified sales. One of the variables calibrated by the model was the land rate. Base land rates were adjusted for location in each sub-neighborhood. Regression analysis calibrated the land and building components of the model at the same time using the same market data. Additionally, the analysis established three size curves for land area. The three size curves indicate that as lot sizes increase, values also increase. However, with land size curve “3” values increase more rapidly with size as compared to land size curve “2”. Land size curve “1” increases at the smallest rate. In all three cases, land rates decrease as land area increases. Market data supports both curves up to approximately 5 times the standard lot size. However, in application, rates are assumed to continue similar decreases beyond that point. Each sub-neighborhood was assigned to one of the three land size curve groups based upon analysis of the qualified sales data. It is important to keep in mind, that land value is only one component of a number of variables that contribute to a property’s sale price and/or estimated market value. In practical terms, it is the combination of all of a property’s attributes, nuances in the market, and buyer preference that contribute to the final market value of a property. It is difficult to isolate some of the contributory elements and value them separately with certainty. Nevertheless, it is required in the District of Columbia that land and building values be separated for assessment purposes. Because of this requirement, it is necessary to create land rate tables for use in the District’s CAMA product. These rates were developed in the regression analysis referred to above. The results of the analysis are applied to the market-oriented cost model in the Vision CAMA system.

Land is calculated in Vision using the following algorithm:

Area * ((Base Rate * Size Adj) + \$ Special Adj 1 + \$ Special Adj 2) * % Special Adj 1 * % Special Adj 2

Where:

Area is the lot size expressed in square feet.

Base Rate is the market-derived rate for each sub-neighborhood.

Size Adj is the market-derived adjustment made for the lot size as it relates to the standard size lot for the sub-neighborhood. The look-up along the size curve is based on the ratio of the subject lot size to the standard lot size.

% Special Adj is any adjustment present that is expressed and applied as a percentage adjustment to the rate.

\$ Special Adj is any adjustment present that is expressed and applied as a dollar adjustment to the rate.

Land Rate Development Example

A hypothetical example may help illustrate how regression analysis develops the base land rates and subsequent adjustments to the rates. Suppose two properties in a neighborhood were recently sold. The first, comprised of just a house without land, sold for \$400,000. The second property had the identical house but with a lot of 2,000 square feet (sf.), the typical size for that neighborhood. It sold for \$600,000. In a process similar to adjusting comparables in the sales comparison approach to value, regression analysis identifies the contributory value of the lot to the second property and sets its value to \$200,000. The base land rate of \$100 per sf ($\$200,000/2,000$ sf) will be the basis for lot values for all other properties in that (sub)neighborhood.



Sold for \$ 400,000
(no lot)



Sold for \$600,000
w/ 2,000 SF Lot
(Land = \$200,000)

Next, let us assume another house sells. In this instance, the house is identical to the previous sale in all respects, except the lot size was 4,000 sf instead of the “standard” (base lot) size of 2,000 sf. This house recently sold for \$700,000, \$100,000 more than a property with the standard lot size. The land component of this sale is \$300,000.



Sold for \$600,000
w/ 2,000 SF Lot
(Land = \$200,000)



Sold for \$700,000 w/ 4,000 SF Lot
(Land = \$300,000)

This sale helps develop size adjustments for non-standard lots in the neighborhood. If no adjustment was made to the land rate, the land component of this sale would be \$400,000 ($4,000$ sf * \$100). The appraisal would overstate the value of the property by \$100,000. An adjustment to the base land rate is necessary to recognize the market response to the departure from the standard lot size. Regression analysis would calculate the appropriate land size adjustment necessary to properly determine the contributory value of the larger lot. Dividing the market-indicated value of the lot by the unadjusted appraised value of the lot ($\$300,000/\$400,000$) yields a factor of 0.75. In this example, CAMA would follow the model:

$$\text{Appraised land value} = \text{Area} * (\text{Base Rate} * \text{Size Adj})$$

or

$$\$300,000 = 4000\text{sf} * (\$100 * .75)$$

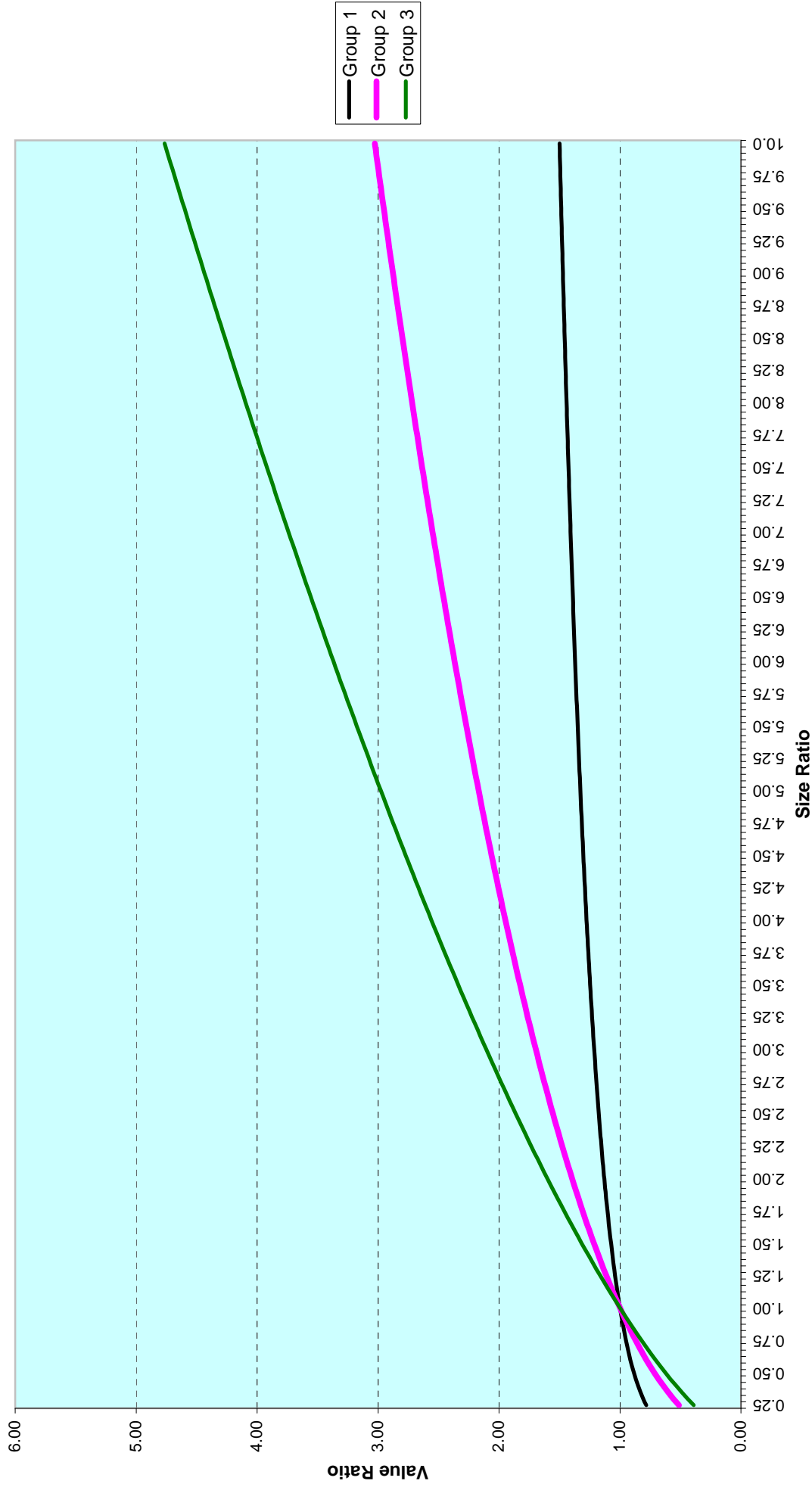
Residential Base Land Rates By Neighborhood

NBHD	Base Lot Size	Base Rate	Base Lot Value	Size Curve
1A	4000 sf	\$86.24	\$344,960	LG1
1B	5000 sf	\$71.17	\$355,850	LG1
1C	5000 sf	\$72.99	\$364,950	LG1
2A	2000 sf	\$60.63	\$121,260	LG1
2B	2000 sf	\$66.20	\$132,400	LG1
3	2000 sf	\$54.45	\$108,900	LG1
4A	6700 sf	\$77.45	\$518,920	LG2
4B	10000 sf	\$80.67	\$806,700	LG3
4C	8000 sf	\$85.54	\$684,320	LG3
5A	1700 sf	\$85.09	\$144,650	LG1
5B	1700 sf	\$78.69	\$133,770	LG1
6A	4000 sf	\$54.82	\$219,280	LG1
6B	4000 sf	\$50.14	\$200,560	LG1
6C	2000 sf	\$84.30	\$168,600	LG1
6D	4000 sf	\$51.64	\$206,560	LG1
6E	3000 sf	\$58.14	\$174,420	LG1
7A	2000 sf	\$77.59	\$155,180	LG1
7B	3000 sf	\$54.38	\$163,140	LG1
7C	3000 sf	\$58.79	\$176,370	LG1
7D	5000 sf	\$38.60	\$193,000	LG1
7E	2000 sf	\$83.68	\$167,360	LG1
8A	2000 sf	\$177.70	\$355,400	LG1
8B	2000 sf	\$193.03	\$386,060	LG1
9A	1400 sf	\$223.39	\$312,750	LG2
9B	1400 sf	\$224.13	\$313,780	LG2
9C	1400 sf	\$223.72	\$313,210	LG2
10	1400 sf	\$295.09	\$413,130	LG1
11A	5000 sf	\$68.99	\$344,950	LG1
11B	5000 sf	\$70.37	\$351,850	LG1
11C	5000 sf	\$69.21	\$346,050	LG1
11D	5000 sf	\$65.72	\$328,600	LG1
11E	5000 sf	\$59.83	\$299,150	LG1
12	4000 sf	\$48.14	\$192,560	LG1
13	5000 sf	\$120.11	\$600,550	LG3
14	9000 sf	\$30.84	\$277,560	LG1
15A	1800 sf	\$133.48	\$240,260	LG1
15B	1800 sf	\$114.43	\$205,970	LG1
15C	1800 sf	\$100.07	\$180,130	LG1
15D	1800 sf	\$121.30	\$218,340	LG1
15E	1800 sf	\$126.63	\$227,930	LG2
16A	2400 sf	\$52.44	\$125,860	LG1
16B	2400 sf	\$47.25	\$113,400	LG1
16C	2400 sf	\$46.94	\$112,660	LG1
17	6000 sf	\$50.48	\$302,880	LG1
18A	3000 sf	\$44.08	\$132,240	LG1
18B	3000 sf	\$41.42	\$124,260	LG1
18C	3000 sf	\$41.53	\$124,590	LG1

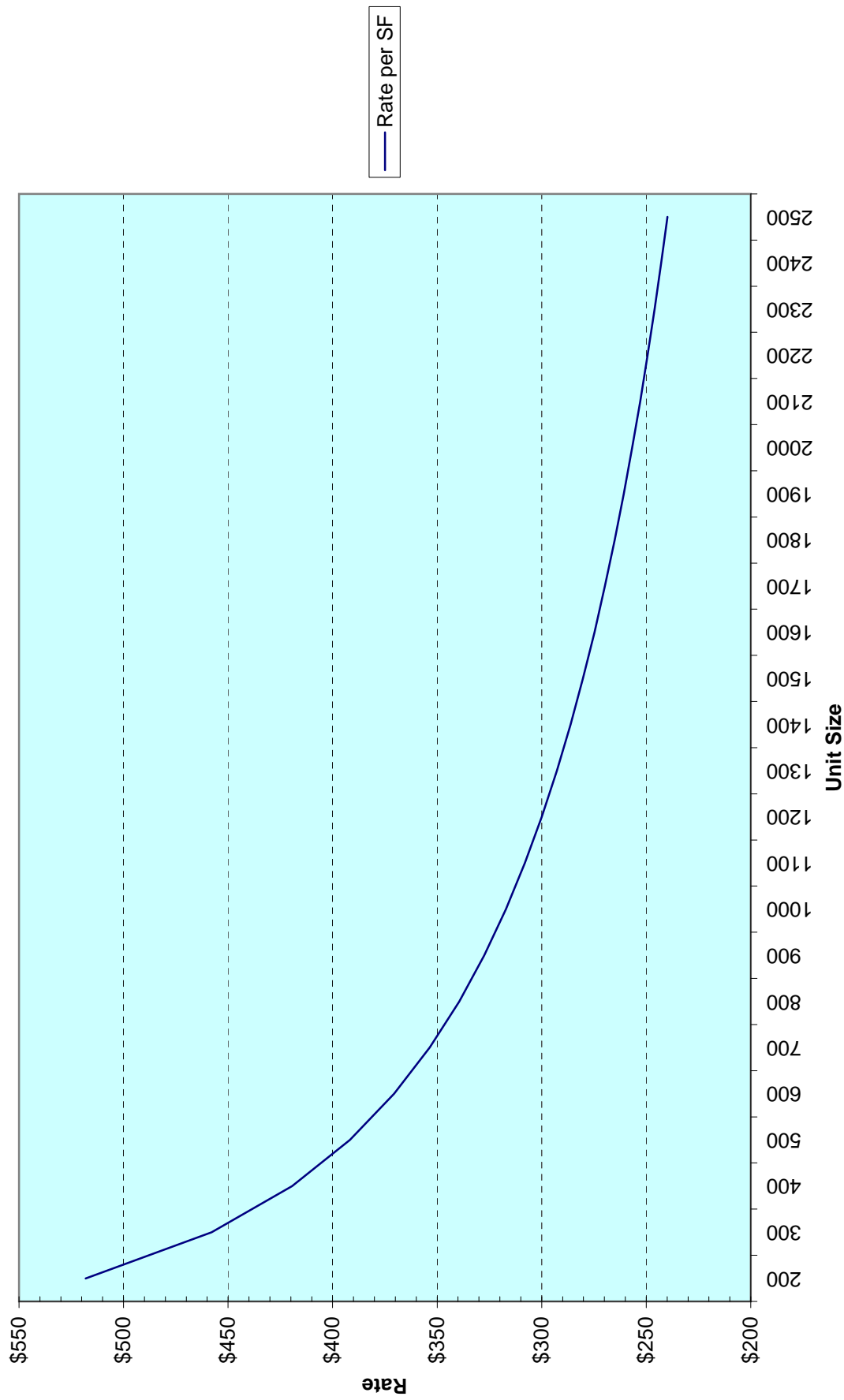
NBHD	Base Lot Size	Base Rate	Base Lot Value	Size Curve
18D	3000 sf	\$41.31	\$123,930	LG1
18E	3000 sf	\$41.69	\$125,070	LG1
19A	1800 sf	\$114.33	\$205,790	LG1
19B	1800 sf	\$95.15	\$171,270	LG1
20	1000 sf	\$342.28	\$342,280	LG1
21	9000 sf	\$74.00	\$666,000	LG2
22A	3000 sf	\$45.46	\$136,380	LG1
22B	2400 sf	\$52.84	\$126,820	LG1
22C	3000 sf	\$44.30	\$132,900	LG1
22D	2400 sf	\$56.97	\$136,730	LG1
23	2500 sf	\$134.28	\$335,700	LG1
24	2400 sf	\$161.99	\$388,780	LG2
25A	1800 sf	\$205.28	\$369,500	LG2
25B	1800 sf	\$271.36	\$488,450	LG2
25C	1800 sf	\$225.53	\$405,950	LG2
25D	1800 sf	\$235.06	\$423,110	LG2
25E	1800 sf	\$270.84	\$487,510	LG3
25F	2000 sf	\$249.29	\$498,580	LG3
25G	2000 sf	\$245.52	\$491,040	LG2
25H	2000 sf	\$228.74	\$457,480	LG3
25I	800 sf	\$371.57	\$297,260	LG3
25J	1200 sf	\$301.45	\$361,740	LG3
26	1700 sf	\$202.48	\$344,220	LG1
27	9000 sf	\$33.99	\$305,910	LG1
28A	2400 sf	\$56.61	\$135,860	LG1
28B	5000 sf	\$32.67	\$163,350	LG1
28C	5000 sf	\$33.48	\$167,400	LG1
29A	2000 sf	\$203.37	\$406,740	LG3
29B	2000 sf	\$208.38	\$416,760	LG3
29C	2000 sf	\$188.11	\$376,220	LG2
30A	5000 sf	\$90.47	\$452,350	LG3
30B	5000 sf	\$97.12	\$485,600	LG3
30C	7000 sf	\$84.17	\$589,190	LG3
31A	1800 sf	\$113.71	\$204,680	LG1
31B	1800 sf	\$116.57	\$209,830	LG1
32A	5000 sf	\$28.57	\$142,850	LG1
32B	2000 sf	\$62.14	\$124,280	LG1
33	2000 sf	\$60.79	\$121,580	LG1
34	9000 sf	\$99.20	\$892,800	LG3
35	5000 sf	\$37.58	\$187,900	LG1
36A	2000 sf	\$143.07	\$286,140	LG1
36B	2000 sf	\$151.97	\$303,940	LG2
36C	1600 sf	\$178.46	\$285,540	LG1
37	3000 sf	\$127.24	\$381,720	LG2
38	5000 sf	\$113.49	\$567,450	LG3
39A	1500 sf	\$151.74	\$227,610	LG1
39B	1500 sf	\$172.72	\$259,080	LG1

NBHD	Base Lot Size	Base Rate	Base Lot Value	Size Curve
39C	1500 sf	\$189.62	\$284,430	LG1
39D	1500 sf	\$160.27	\$240,410	LG1
39E	1200 sf	\$173.18	\$207,820	LG1
39F	1200 sf	\$187.88	\$225,460	LG1
39G	1500 sf	\$124.86	\$187,290	LG1
39H	1500 sf	\$107.75	\$161,630	LG1
39J	1500 sf	\$175.21	\$262,820	LG1
39K	1500 sf	\$196.05	\$294,080	LG1
39L	1200 sf	\$157.87	\$189,440	LG1
39M	1500 sf	\$188.29	\$282,440	LG1
40A	1400 sf	\$153.33	\$214,660	LG1
40B	1400 sf	\$171.41	\$239,970	LG1
40C	1600 sf	\$193.19	\$309,100	LG2
40D	1600 sf	\$247.61	\$396,180	LG2
40E	1600 sf	\$220.87	\$353,390	LG2
40F	1200 sf	\$233.33	\$280,000	LG2
40G	1600 sf	\$180.50	\$288,800	LG1
41	5000 sf	\$87.77	\$438,850	LG2
42A	1800 sf	\$100.21	\$180,380	LG1
42B	1800 sf	\$101.05	\$181,890	LG1
42C	1800 sf	\$96.71	\$174,080	LG1
43A	2000 sf	\$62.02	\$124,040	LG1
43B	2000 sf	\$61.87	\$123,740	LG1
43C	2000 sf	\$59.39	\$118,780	LG1
46	1200 sf	\$213.00	\$255,600	LG1
47	3000 sf	\$55.66	\$166,980	LG1
48	5000 sf	\$46.05	\$230,250	LG1
49A	3000 sf	\$75.31	\$225,930	LG1
49B	3000 sf	\$70.76	\$212,280	LG1
49C	3000 sf	\$62.79	\$188,370	LG1
50A	10000 sf	\$58.01	\$580,100	LG2
50B	6000 sf	\$83.64	\$501,840	LG2
50C	14000 sf	\$52.90	\$740,600	LG2
50D	15000 sf	\$60.71	\$910,650	LG2
51	3000 sf	\$55.86	\$167,580	LG2
52A	1800 sf	\$84.18	\$151,520	LG1
52B	1600 sf	\$88.86	\$142,180	LG1
52C	1600 sf	\$86.91	\$139,060	LG1
53	5000 sf	\$72.26	\$361,300	LG1
54A	6000 sf	\$110.78	\$664,680	LG3
54B	1000 sf	\$265.88	\$265,880	LG1
55	6000 sf	\$84.14	\$504,840	LG2
56A	5000 sf	\$36.13	\$180,650	LG1
56B	5000 sf	\$30.90	\$154,500	LG1
56C	5000 sf	\$33.36	\$166,800	LG1
56D	5000 sf	\$28.50	\$142,500	LG1
66	5000 sf	\$33.62	\$168,100	LG1

Residential Land Size Curves



Condominium Size Curve



Vision[®] CAMA Residential Valuation Process

The market-derived cost approach to the valuation of real estate follows the generic formula of **Market Value = ((RCN-LD) + land value)**, where **RCN** is Replacement Cost New of the improvements and **LD** means Less Depreciation. When properly developed and calibrated, this approach is a reliable indicator of market value especially suited to mass-appraisal CAMA systems.

The following exercise will attempt to illustrate how the Vision[®] CAMA system utilized by the District of Columbia, calculates values using the above model. The first section will illustrate the development of the Replacement Cost New of a typical residence, the second will show the steps involved in determining the amount of depreciation that has accrued to the residence, and the last section will illustrate land or lot valuation.

Replacement Cost New

The Vision[®] CAMA system arrives at a RCN value for residential properties based on a market-calibrated hybrid cost model. The hybrid nature of the model simply means that the model employs both additive and multiplicative variables in its design and specification. The nature of the model will become clearer as we proceed through this exercise. Please also be aware that a model is dynamic in both its specifications and calibration. The specifications, those cost elements that comprise the model, may change from time to time based upon research and market conditions. *As you may discover, the dollar rates, or calibrations, contained here most likely are different from the current model in use.* The model used in this exercise is as follows:

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * \text{Effective Area} * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

Where:

RCN = Replacement Cost New

Base Rate = \$ rate based on use code

ABRV = Additive Base Rate Variables

Effective Area = Adjusted SF area of improvement

Size Adjustment = Adjustment factor for deviation from base size

AFRV = Additive Flat Rate Variables

MV = Multiplicative Variables

Several items will be helpful while examining the features of the cost model and they are collected as Appendix "A" of this document. You will need to refer to them often during this exercise. They include the following:

- Sample home's Property Record Card (PRC)
- Cost.dat printout of the sample home
- 2007 CAMA Residential Construction Valuation Guideline

1. First, let's illustrate the calculation of the Effective Area of our sample home.

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * \text{Effective Area} * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

Illustration 1 shows the CAMA sketch of the sample home we'll be using throughout this exercise.

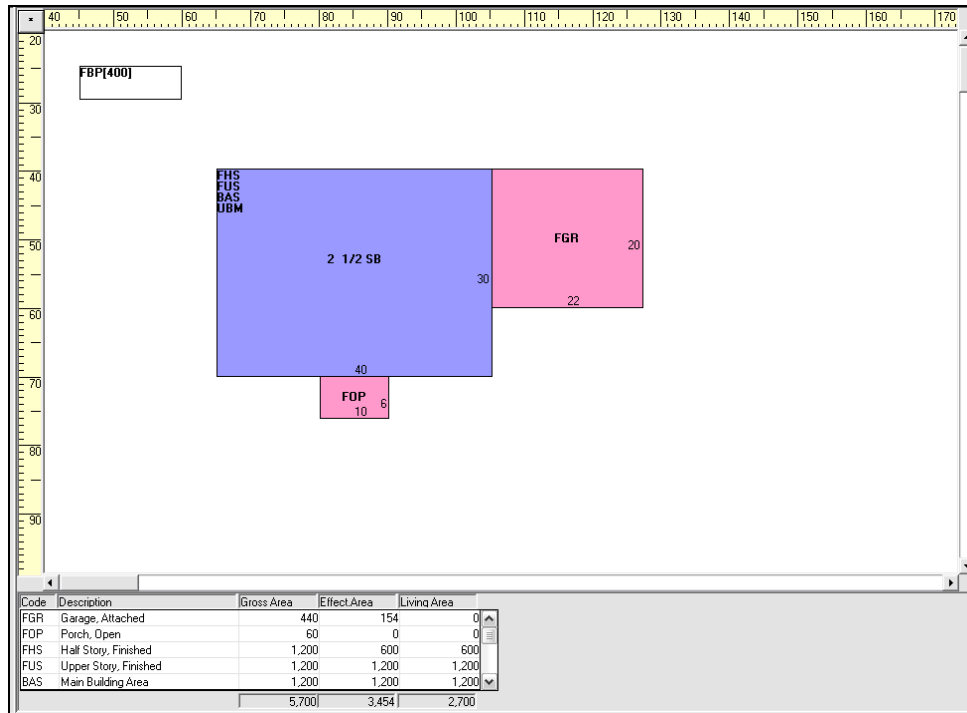


Illustration 1

It is described as a 2½ story single-family detached residence, with basement. It is brick veneer, frame construction with a two-car garage and small porch across the front. The bottom of the sketch screen in CAMA provides the information about the sizes of the various areas of the house.

Code	Description	Gross Area	Effect Area	Living Area
FGR	Garage, Attached	440	154	0
FOP	Porch, Open	60	0	0
FHS	Half Story, Finished	1,200	600	600
FUS	Upper Story, Finished	1,200	1,200	1,200
BAS	Main Building Area	1,200	1,200	1,200
UBM	Basement, Unfinished	1,200	300	0
FBP	Basement, Finished, Partn	400	0	0
		5,700	3,454	2,700

Illustration 2

The Effective Area is comprised of the totals of the base area (Main Building Area @ 1,200 SF), the finished second floor area (Upper Story, Finished @ 1,200 SF), the adjusted area of the finished half story (Half Story, Finished @ 50% of 1200 SF), the adjusted area of the garage (Garage, Attached @ 35% of 440 SF), and the adjusted area of the unfinished basement (Basement, Unfinished @ 30% of 1,200 SF).

The adjustments to the finished half story, garage and unfinished basement take into account these areas are not as expensive as the finished main building area. For example, if the base rate for the finished main building area is \$100/SF, the rate for the garage area may only be \$35/SF. The RCN value of the garage would be calculated as follows:

$$\text{RCN of Garage} = \$15,400 \text{ or } (440 \text{ SF} * \$35)$$

Another way to state the same situation is to adjust the size of the garage to 40% of its measured size and then multiply the resulting, *or effective*, size by the base rate of \$100/SF:

$$\text{RCN of Garage} = \$15,400 \text{ or } [(440 * .35) * \$100]$$

Both methods arrive at the same value for the garage. The first method is more intuitive and easier to explain to taxpayers as it adjusts for the differences in costs for the various areas. The second method again provides the same results but is much easier to model and calculate within a CAMA system, thus the effective area calculations shown here represent the methodology employed in the Vision[®] CAMA system.

Let's take a moment to examine the treatment of the basement in this house. The house has a full-sized basement comprised of 1,200 SF. In addition, the basement contains a finished area (400 SF), and the balance as unfinished. Illustration 3 shows the contribution of the unfinished portion to the effective area calculation. However, notice that the finished portion of the basement is not included in the effective area calculations. The value attributed to this finished area is accounted for as an Additive Flat Rate Variable later in the valuation model. The reason for this methodology is to ensure that the effective area is not erroneously overstated by the amount of any finished area in the basement.

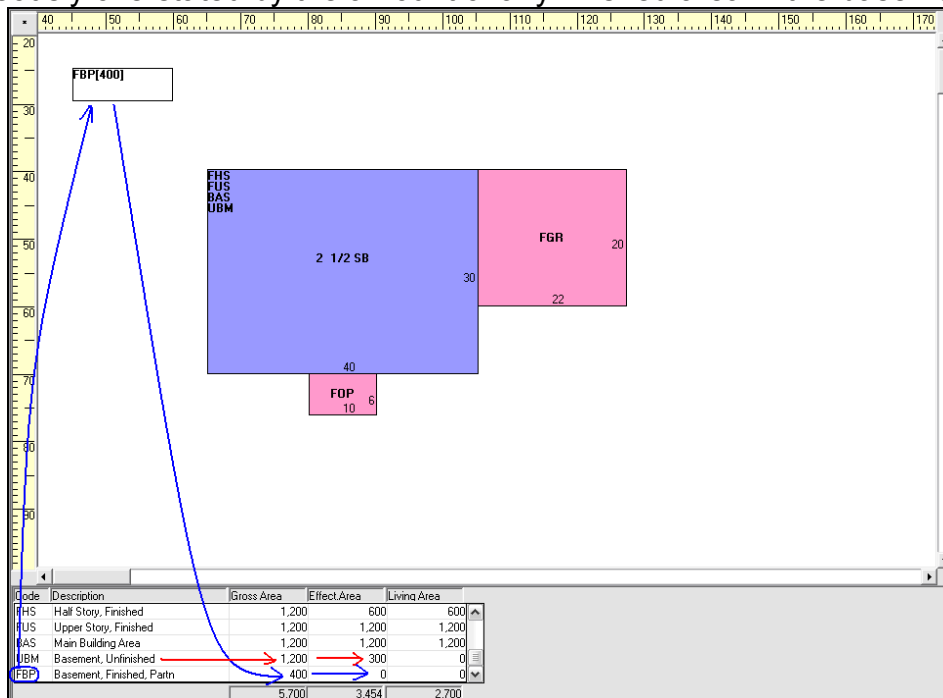


Illustration 3

Finally, the Gross Area shown in Illustration 2 is the total unadjusted size of all the areas that are a part of, and attached to, the home. The Living Area is the unadjusted size of the actual finished living area of the home.

With the inclusion of the Effective Area calculation, our cost model now looks like this:

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * 3,454 * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

Effective Area

2. Next, let's look at the selection of the Base Rate for the sample home.

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * \text{Effective Area} * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

The Base Rate is the dollar rate per square foot used in the valuation model that is derived from market analysis and selected based on the Use Code of the building. Our sample home is a "Use Code 012 - Detached", corresponding to a Residential-Detached-Single Family residence. The Base Rate is automatically selected by the CAMA system and the appropriate base rate for the sample home is \$ 149.27. Now the cost model looks like this:

$$\text{Building RCN} = [(\text{\$149.27} + \sum \text{ABRV}_n) * 3,454 * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

Base Rate Effective Area

3. The Base Rate of the home is just the start of the valuation process and it will be further modified as more specific features about the home are taken into consideration. Let's look at the first of two types of modifications that will affect the Base Rate, the Additive Base Rate Variables (ABRV).

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * \text{Effective Area} * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

Additive Base Rate Variables represent a variety of features found in residential improvements. For example, the value for air conditioning and floor covering are such features. The typical characteristic of these ABRVs is that the features are usually an integral part, and therefore an integral cost, of the whole house. As such, the value of the particular ABRV is added to the Base Rate. Each ABRV incrementally increases the Base Rate by its own square foot rate. So therefore, the $\sum \text{ABRV}_n$ literally means the sum of all the rates for individual features are added to the Base Rate.

Highlighted in Illustration 4 are all the fields in the Construction Detail CAMA screen that can modify the selected Base Rate as ABRVs.

Construction Detail - Residential

Value Source: C	Living Area/GFA: 3,000	Regression: 0
Primary Occ: 012	Effective Area: 3,454	Income: 0
Structure Class: R	Percent Good: 87	RCNLD: 626,350

Model: 01 Single Family	Total Rooms: 8	Fireplaces: 1	Park Spaces: 0
Style: 6 2.5 Story Fin	Bedrooms: 4		
Stories: 2.5	Bathrooms: 2		
Building Type: 1 Single	Half Baths: 2	Xtra Fixtures: 3	
Roof Cover: 3 Shingle	Bath Style: 2 2 2		
Foundation: 2 Average	Kitchens: 1		
Exterior Wall: 15 Face Brick	Eat In Kith: 0 Default		
Exterior Condn: 4 Good	Kitchen Style: 2 0 0		
Heat Type: 1 Forced Air	Grade: 4 Above Average		
AC Type: Y Yes	Overall Condn: 4 Good		
Floor Cover: 11 Hardwood/Carp	View: 3 Average		
Interior Condition: 4 Good	No. Units: 1		

Illustration 4

The Cost.dat sheet of our sample home lists each ABRV under the heading Base Rate Adjustments as follows:

*****Base Rate Adjustments*****
 AIR CONDITIONING Y (Yes) = 1.8 + BaseRate
 EXTERIOR WALL 15 (Face Brick) = 3.95 + BaseRate
 FLOOR COVER 11 (Hardwood/Carp) = 4.67 + BaseRate
 ROOF COVER 3 (Shingle) = .68 + BaseRate

The sum, Σ , is \$11.10 (1.80+3.95+4.67+0.68). This will be added to the Base Rate of \$149.27 to give a modified Base Rate of \$160.37.

Our model now looks like this:

$$\text{Building RCN} = [(\text{\$149.27} + \text{\$11.10}) * 3,454 * \text{Size Adjustment} + \Sigma \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

Base Rate Σ ABRV_n Effective Area

4. Next, let us turn our attention to the second type of modification to the Base Rate - the Size Adjustment.

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * \text{Effective Area} * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

The Size Adjustment modifies the Base Rate to account for the size difference between the “standard size” for the “typical” house in the model and the actual size of the sample house. The “standard” size of 1,800 SF for the “typical” house, consisting of a 2-story frame residence, is used as the basis for establishing the initial Base Rates used in CAMA. The adjustment in the Base Rate allows the proper square foot rate to be applied to a house based on its size. It is reasonable to expect that as a house becomes larger than typical, the rate per square foot would decrease and conversely, if the house were smaller than typical, the rate would be higher. This Size Adjustment variable is the component in the model that adjusts for this situation. Our sample home’s Size Adjustment is 0.93906 as listed on the Cost.dat sheet. Now our Base Rate is calculated to be \$150.60 $((149.27+11.10) * 0.93906)$.

Because the adjustment is less than 1.00, it would be proper to conclude that our sample home is larger than the typical 2-story home in the District of Columbia. Had the sample home been smaller than 1,800 SF, the Size Adjustment would have been greater than 1.00. The use of size adjustments eliminates the need for the traditional cost tables based on size.

The cost model continues to grow, and now looks like this:

$$\text{Building RCN} = [(\text{\$149.27} + \text{\$11.10}) * 3,454 * 0.93906 + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

Base Rate
 \sum ABRV_n
Effective Area
Size Adjustment

5. We are finished establishing the Base Rate for our sample home and now turn to the Additive Flat Rate Variables (AFRV). This portion of the cost model is relatively straightforward. The individual Additive Flat Rate Variables are summed and the added to the product of the previous calculations.

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * \text{Effective Area} * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

Here is where we make allowances for individual extra features contained in the sample house. Illustration 5 shows some of those features that constitute Additive Flat Rate Variables in the cost model:

Construction Detail - Residential		
Value Source: C	Living Area/GFA: 3,000	Regression: 0
Primary Occ: 012	Effective Area: 3,454	Income: 0
Structure Class: R	Percent Good: 87	RCNLD: 626,350
Model:	01 Single Family	Total Rooms: 8
Style: 6	2.5 Story Fin	Bedrooms: 4
Stories: 2.5		Bathrooms: 2
Building Type: 1	Single	Half Baths: 2
Roof Cover: 3	Shingle	Xtra Fixtures: 3
Foundation: 2	Average	Bath Style: 2 2 2
Exterior Wall: 15	Face Brick	Kitchens: 1
Exterior Condrn: 4	Good	Eat In Kith: 0
Heat Type: 1	Forced Air	Kitchen Style: 2 0 0
AC Type: Y	Yes	Grade: 4
Floor Cover: 11	Hardwood/Carp	Overall Cndtn: 4
Interior Condition: 4	Good	View: 3
		No. Units: 1
		Fireplaces: 1
		Park Spaces: 0

Illustration 5

Unlike the Additive Base Rate Variables (ABRV) described earlier, most of these features are not an integral portion of the whole house, but stand alone, so to speak. Examples include such items as fireplaces, extra bathrooms, and extra kitchens. Again, as with other variables in the cost model, the values of these features are derived from market analysis.

Our sample home has several Additive Flat Rate Variables (AFRVs), including additional bathrooms and a fireplace. The cost for one full bath and one kitchen is always included in the original base rate. Any bathrooms or kitchens over and above the first are accounted for as AFRVs.

The value of an additive flat rate variable is calculated by multiplying the number of "units" by the dollar rate per unit. For example, illustration 5 shows our sample home also has two half baths. The AFRV for the half baths is \$21,440 (2 "units" X \$10,720 per unit) as shown in a portion of the Cost.dat file below.

Also included in the AFRVs are the partitioned finished basement and the small open porch on the front of the house. Recall that in illustration 3, neither of these areas was included in the calculation of the effective area of the house, therefore, their valuations are included here, as AFRVs.

The partitioned finished basement is calculated to be \$18,000. In this case, "units", the gross square footage of 400 SF (shown in the sketch area of the record), are multiplied by the rate of \$45 per SF. The open porch is calculated in a similar manner.

*****Flat Value Additions*****

- FULL BATHS OVER 1 = 16000 + RCN
- HALF BATHS = 21440 + RCN
- FIREPLACES = 7100 + RCN
- PARTITIONED FINISHED BASEMENT = 18000 + RCN
- OPEN PORCH = 801 + RCN

The sum, Σ , is \$63,341 (16,000+21,440+7,100+18,000+801) that will be added to the product of the previous portions of the cost formula.

The cost model is almost finished for our sample home, and now looks like this:

$$\text{Building RCN} = [(\$149.27 + \$11.10) * 3,454 * 0.93906 + \$63,341] * (MV_0 * MV_2 * \dots * MV_n)$$

Base Rate
 Σ ABRV_n
Effective Area
Size Adjustment

Σ AFRV_n

6. The last portion of the cost model used to calculate the RCN are the multiplicative variables (MV).

$$\text{Building RCN} = [(\text{Base Rate} + \Sigma \text{ABRV}_n) * \text{Effective Area} * \text{Size Adjustment} + \Sigma \text{AFRV}_n] * (MV_0 * MV_2 * \dots * MV_n)$$

This portion of the formula can have the largest influence on the cost model. Each multiplicative variable modifies *all* of the cost data that has preceded it. These variables modify the Base Rate, the sum of all the increases to the Base Rate (Σ ABRV_n), the Size Adjustment, and the sum of all the Flat Rate Variables (Σ AFRV_n). This is where such important characteristics as the building grade, building condition, remodeling, and location factors have their impact.

The sample home is graded "Above Average - 4", and consequently has a 1.10 multiplicative factor. This one variable, grade, is going to increase the RCN value of the sample home by 10%. Grade can have a sizable impact on the final value of the building. For example, a "Superior - 8" increases the final rate by 48% over that of an "Average Quality - 3" house.

The condition of the building is also accounted for by the multiplicative variables. The interior, exterior and overall conditions of our sample home are each "Good" and the corresponding multiplicative variable for each is 4.8%. The level of condition may be different for each of the three variables and therefore the coefficients may be different. Please refer to the *2007 CAMA Residential Construction Valuation Guideline --RPAD* for these and all other coefficients used in the valuation model.

Just as construction grade has a significant impact on the final value of a house, so does condition. For example, a house in overall "Poor" condition throughout will have its value reduced by 20.6%, whereas a house in excellent condition throughout will have its value increased by 10.5%. That's a range of over 31%.

Illustration "6" shows a portion of the features that constitute the multiplicative variables in the cost model:

Construction Detail - Residential

Value Source: C Living Area/GFA: 3,000 Regression: 0
 Primary Occ: 012 Effective Area: 3,454 Income: 0
 Structure Class: R Percent Good: 87 RCNLD: 626,350

Model: 01 Single Family Total Rooms: 8 Fireplaces: 1 Park Spaces: 0

Style: 6 2.5 Story Fin Bedrooms: 4
 Stories: 2.5 Bathrooms: 2
 Building Type: 1 Single Half Baths: 2 Xtra Fixtures: 3
 Roof Cover: 3 Shingle Bath Style: 2 2 2
 Foundation: 2 Average Kitchens: 1
 Exterior Wall: 15 Face Brick Eat In Kith: 0 Default
 Exterior Condn: 4 Good Kitchen Style: 2 0 0
 Heat Type: 1 Forced Air Grade: 4 Above Average
 AC Type: Y Yes Overall Cndtn: 4 Good
 Floor Cover: 11 Hardwood/Carp View: 3 Average
 Interior Condition: 4 Good No. Units: 1

Illustration 6

Another important multiplicative variable, Remodel Type, takes into account whether or not the house has been remodeled and to what extent. In addition, the age of the remodel factors into the amount of adjustment applied by this multiplicative variable.

Our sample home was remodeled in 2001. The portion of the CAMA record that captures this information is shown in Illustration 7 below.

Depreciation

Value Source: C Living Area/GFA: 3,000 Regression: 0
 Primary Occ: 012 Effective Area: 3,454 Income: 0
 Structure Class: R Percent Good: 87 RCNLD: 626,350

Year Built: 1937
 CDU: AV
 Remodel Rating: 4
 Year Remodeled: 2001
 Effective Year Built: 1950 Override EYB
 Status: 0
 Percent Complete: 100

Value	Type	Rsn	Date
% Good Ovr			
Misc. Improv			
Cost To Cure			

Remodel Rating

0	Default	
1	Unknown	20%
2	Gut Rehab	
3	Major Renov	11%
4	Remodel	5%
5	Addition	
6	Cosmetic	2%

OK Cancel

Illustration 7

Obviously, a "Gut Rehab" would increase the value of property more than "Cosmetic" changes, and the coefficients listed in the above illustration demonstrate this. Our sample home was remodeled in 2001, indicating that the MV should be five percent. Five percent would be the correct amount if the remodel occurred in 2005, but it actually occurred in 2001, four years earlier. The CAMA model takes into consideration how long ago a remodel occurred and reduces its impact, as it becomes older. The rate of reduction of the MV is five percent per year. After twenty years, a remodel has no affect on value. In this example, our sample home's remodel occurred four years ago and thus the MV is reduced by twenty percent to 4.0% (5%*.80).

The last multiplicative variable, "Sub-Neighborhood Adj A", is the local neighborhood multiplier established within the particular neighborhood where the sample home is located. This variable is going to lower the RCN value of the sample home by 6.3%. The "Sub-Neighborhood Adj" reflects the market-derived fact that location is a very significant factor in the value of real estate. Two otherwise identical homes can have a substantial difference in value based on their locations.

The variables for our sample home are summarized in the Cost.dat file as follows:

```
*****Factor Adjustments*****
OVERALL CONDITION 4 (GOOD) = 1.048 x RCN
EXTERIOR CONDITION 4 (GOOD) = 1.048 x RCN
GRADE 40 (Above Average) = 1.1 x RCN
INTERIOR CONDITION 4 (GOOD) = 1.048 x RCN
REMODEL FACTOR 4 = 1.04 x RCN
SUB-NEIGHBORHOOD ADJ A = .937 x RCN
```

Each MV is multiplied together to determine the combined, or overall, MV. The sample home's MV is 1.2338132 (1.048*1.048*1.1*1.048*1.04*.937).

7. Finally, the Building RCN model is complete and contains the specific data of the sample home used in this demonstration. The market-derived cost model for the sample home is as follow:

<p>Building RCN = [(Base Rate + \sum ABRV_n) * Effective Area * Size \$ 719,947 = [(\$149.27 + \$11.10) * 3,454 * .93906 Adjustment + \sum AFRV_n] * (MV₀ * MV₂ * ... * MV_n) + \$63,341] * (1.2338132)</p>

The Cost.dat file shows a summary of the same information.

```

*****Building #1 Calc Start*****
Cost Calculation for pid, bid = 182803,173587
Account Number = 9999 9999
Use Code = 012
Cost Rate Group = R12
Model ID: R06

Section #
Base Rate: 149.27
Size Adjustment: .93906
Effective Area: 3454
Adjusted Base Rate = (149.24 + 11.1) * .93906
Adjusted Base Rate: 150.6
RCN = ((150.6 * 3454) + 63341) * 1.23381334499738
RCN: 719947

```

The replacement cost new for our sample home is \$719,947. There is still one thing left to address before we turn our attention to depreciation. Our sample home has a built-in sauna in the basement. This item was not costed as a component of the sample home, but rather as a Special Building Feature, with its own unit price of \$ 12,680. Also, note that the depreciation applied to the Special Building Features is identical to the amount applied to the main building. See illustration 6 below.

Special Building Features									
Value Source: C		Living Area/GFA: 3,000		Regression: 0					
Primary Occ: 012		Effective Area: 3,454		Income: 0					
Structure Class: R		Percent Good: 87		RCNLD: 626,350					
S#	Code	Sub	Description	UOM	Units	Unit Price	Gra	RCN	RCNLD
▶ 1	SN		SALUNA	Count	1	13250	4	14575	12680

Illustration 8

We now know the total replacement cost new (RCN) of our sample home, including the sauna, is \$ 733,197 (\$719,947 + \$13,250).

If the sample home were brand new, we'd be finished, but it was actually built in 1937.

Next, we need to address accrued depreciation . . .

Depreciation

Depreciation is defined as a loss in the upper limits of value from all sources. Typically, three types of depreciation can affect real estate - physical deterioration, functional obsolescence and economic obsolescence. This next portion of the demonstration will illustrate how Vision[®] calculates the amount of depreciation accrued to our sample home.

Several terms come into use when discussing depreciation in CAMA. They are defined as follows:

- Actual Age: The mathematical difference between the Base Year and the actual year the improvement was built to completion.
- Actual Year Built (AYB): The earliest time the main portion of the building was built. It is not affected by subsequent construction.
- Base Year: The year, usually the current year, that the depreciation table is calibrated, such that the age of a building built during the base year would be 0 years old.
- Depreciation Table: A market-driven table that lists the amount of depreciation corresponding to an Effective Year Built and the Base Year predicated upon a specific economic life.
- Effective Age: The mathematical difference, in years, between the Base Year and the Effective Year Built.
- Effective Year Built (EYB): The calculated or apparent year, that an improvement was built that is most often more recent than AYB. The EYB is determined by the condition and quality of the improvement. Subsequent renovation, additions, upgrades and the like, extend an improvements remaining economic life and therefore cause the EYB to be closer to the Base Year than the AYB.
- Percent Good: The mathematical difference between 100 percent and the percent of depreciation. $(100\% - \text{depreciation } \%) = \text{percent good}$

The RCN model used above indicated that our sample home has an RNC of \$733,197. As stated earlier, the home was built in 1937 so there should be some depreciation to deduct from the RCN. We'll use a five-step process to depreciate improvements:

1. Calculate the Actual Age of the improvement
2. Determine the Effective Age of the improvement
3. Determine the improvement's Effective Year Built
4. Look-up Percent Good corresponding to EYB on depreciation table
5. Apply selected depreciation to RCN to determine RCNLD

1. Our first step is to calculate the Actual Age of our sample home. As you are aware, a valuation is always qualified as of a specific date. For ad valorem purposes in the District of Columbia, the valuation date is January 1 immediately preceding the tax year. In our example, the tax year is 2007; therefore, the valuation date is January 1, 2006. This date is also significant in terms of the depreciation accrued to improvements. In the past, the nature of triennial assessments required that base years within a Tri-Group remain unchanged for a period of three years. Now, however, with the return to annual assessments, the base year coincides with the valuation date. The Base Year is used to determine the Actual Age of the sample home. In this case, the sample home's Actual Age is 69 years (2006-1937).

2. The next step is to determine the sample home's Effective Age. Effective Age may or may not represent actual or chronological age. The premise is simple but the application can be confusing. If a home is built and never maintained (painting, re-roof, etc.) or remodeled, the home would quickly depreciate from physical deterioration. The CAMA system would depreciate the home at the fastest rate possible based on the selected Depreciation Table. For example, CAMA uses a 75-year Economic Life Depreciation Table for residential property. If the home were left to rot, the Effective Age would most likely be the same as the Actual Age.

Let's say the owners of our sample home have completely neglected their property from the time it was built in 1937 to the present. Their home would have an effective age of 69 years as indicated on the Depreciation Table below:

Depreciation Table			
Base Year 2006			
Effective Age of Building	% Depr.	% Good	Effective Year Built
0	0	100	2006
1	1	99	2005
2	2	98	2004
3	2	98	2003
4	3	97	2002
5	3	97	2001
6	4	96	2000
7	4	96	1999
8	4	96	1998
9	4	96	1997
10	5	95	1996
11	5	95	1995
12	5	95	1994
13	5	95	1993
14	6	94	1992
15	6	94	1991
16	6	94	1990
17	6	94	1989
18	6	94	1988
44	11	89	1962
45	11	89	1961
46	11	89	1960
47	11	89	1959
48	12	88	1958
49	12	88	1957
50	12	88	1956
51	12	88	1955
52	12	88	1954
53	12	88	1953
54	13	87	1952
55	13	87	1951
56	13	87	1950
57	13	87	1949
58	13	87	1948
59	13	87	1947
60	14	86	1946
61	14	86	1945
62	14	86	1944
63	14	86	1943
64	14	86	1942
65	14	86	1941
70	15	85	1936
75	16	84	1931

Illustration 1

The Actual Year Built (1937) and the Effective Year Built (1937) would be the same and consequently the Effective Age is 70 years. Moving across the table,

we see that a home with an EYB of 1937 has 15 percent depreciation and therefore is 85 Percent Good (100%-15%). If the RCN of our sample home is \$ 733,197, the depreciated value, RCNLD, is only \$ 623,217 (733,197* 0.85).

Note: The depreciation table moves in 5-year periods towards its end; this explains the apparent inconsistencies in 70 years v. 69 years. The Cost.dat file represents the actual numbers used in calculations.

The situation described above rarely, if ever, occurs in the market. People do maintain and renovate their homes and in doing so, extend the home's useful or remaining economic life. As homeowners repair roofs, paint siding, replace windows and furnaces, they *prolong* the life of the home and consequently *decrease* its Effective Age.

Along with the actual age of the sample home, the illustration below shows which variables within CAMA affect the calculation of effective year built.

Construction Detail - Residential

Value Source: C	Living Area/GFA: 3,000	Regression: 0
Primary Occ: 012	Effective Area: 3,454	Income: 0
Structure Class: R	Percent Good: 87	RCNLD: 626,350

Model:	01 Single Family	Total Rooms:	<input type="text" value="8"/>	Fireplaces:	<input type="text" value="1"/>	Park Spaces:	<input type="text" value="0"/>
Style:	<input type="text" value="6"/> 2.5 Story Fin	Bedrooms:	<input type="text" value="4"/>				
Stories:	<input type="text" value="2.5"/>	Bathrooms:	<input type="text" value="2"/>				
Building Type:	<input type="text" value="1"/> Single	Half Baths:	<input type="text" value="2"/>	Xtra Fixtures:	<input type="text" value="3"/>		
Roof Cover:	<input type="text" value="3"/> Shingle	Bath Style:	<input type="text" value="2"/> <input type="text" value="2"/> <input type="text" value="2"/>				
Foundation:	<input type="text" value="2"/> Average	Kitchens:	<input type="text" value="1"/>				
Exterior Wall:	<input type="text" value="15"/> Face Brick	Eat In Kith:	<input type="text" value="0"/>	Default:			
Exterior Cndtn:	<input type="text" value="4"/> Good	Kitchen Style:	<input type="text" value="2"/> <input type="text" value="0"/> <input type="text" value="0"/>				
Heat Type:	<input type="text" value="1"/> Forced Air	Grade:	<input type="text" value="4"/> Above Average				
AC Type:	<input type="text" value="Y"/> Yes	Overall Cndtn:	<input type="text" value="4"/> Good				
Floor Cover:	<input type="text" value="11"/> Hardwood/Carp	View:	<input type="text" value="3"/> Average				
Interior Condition:	<input type="text" value="4"/> Good	No. Units:	<input type="text" value="1"/>				

Illustration 2

All of the features or variables dealing with depreciation, highlighted in Illustration 2 are multiplicative variables. As such, they are multiplied one by the other and then the Actual Age is multiplied by the product of the MVs. Below is the portion of the Cost.dat file that summaries these MV for our sample home.

```
*****Effective Age Adjustments*****
BATH STYLE 2 (Semi-Modern) = .95 * Age
EFF AGE GRADE 40 (Good Quality) = .95 * Age
KITCHEN STYLE 2 (Semi-Modern) = .9 * Age
```

The product of each of these MV adjustments is calculated to be 0.81225 (0.95 * 0.95 * 0.9). This product is then multiplied by the Actual Age to calculate the Effective Age. Recall our sample home's Actual Age is 69 years. The Effective Age is calculated to be 56 years (69 * 0.81225). Instead of CAMA using 69 chronological years to calculate depreciation, it will use 56 years. Below is a portion of the Cost.dat file that shows these calculations.

```
*****
Actual Year Built: 1937
Effective Age = 69 * .81225
Effective Age: 56
Percent Good = 87
RCNLD: 626350
```

3. We're almost finished. Knowing the Effective Age makes the calculation of the Effective Year Built for our sample home very simple. The Effective Year Built is 1950 (2006 – 56).

4. Having established the Effective Year Built, we look up 1950 on the 75-Year Economic Life Depreciation Table and find that the Percent Good is 87% for that year. See Illustration 3 below.

Depreciation Table			
Base Year 2006			
Effective Age of Building	% Depr.	% Good	Effective Year Built
0	0	100	2006
1	1	99	2005
2	2	98	2004
3	2	98	2003
4	3	97	2002
5	3	97	2001
6	4	96	2000
7	4	96	1999
8	4	96	1998
9	5	95	1997
10	5	95	1996
11	5	95	1995
12	6	94	1994
13	6	94	1993
14	6	94	1992
15	7	93	1991
16	7	93	1990
17	7	93	1989
18	7	93	1988
19	8	92	1987
20	8	92	1986
21	8	92	1985
22	8	92	1984
23	9	91	1983
24	9	91	1982
25	9	91	1981
26	9	91	1980
27	10	90	1979
28	10	90	1978
29	10	90	1977
30	10	90	1976
31	11	89	1975
32	11	89	1974
33	11	89	1973
34	11	89	1972
35	11	89	1971
36	12	88	1970
37	12	88	1969
38	12	88	1968
39	12	88	1967
40	12	88	1966
41	12	88	1965
42	13	87	1964
43	13	87	1963
44	13	87	1962
45	13	87	1961
46	13	87	1960
47	13	87	1959
48	14	86	1958
49	14	86	1957
50	14	86	1956
51	14	86	1955
52	14	86	1954
53	14	86	1953
54	15	85	1952
55	15	85	1951
56	15	85	1950
57	15	85	1949
58	15	85	1948

Illustration 3

5. The last step in the process is to simply multiple the RCN by 0.87 and we have RCN LD. The depreciated, market-derived cost approach value of the sample home used in this demonstration is \$ 626,350.

Some closing comments regarding depreciation are in order. Recall from the outset that we defined depreciation as a loss in value resulting from physical deterioration, functional and/or economic obsolescence. The demonstration above dealt only with depreciation attributed to the physical deterioration of the sample home. This, by far, is the most common type of depreciation that exists in residential property. However, occasions may require additional depreciation because of excessive physical deterioration, functional and/or economic obsolescence. One must use caution when invoking these types of depreciation. The market must support any decision regarding the extent of these adjustments. Below illustrates our sample home with an additional ten percent economic obsolescence. A gas station was built across the street from the home, and a recent sale of the next-door neighbor's house showed the impact of this situation.

Depreciation

Value Source: **C** Living Area/GFA: **3,000** Regression: **0**
 Primary Occ: **012** Effective Area: **3,454** Income: **0**
 Structure Class: **R** Percent Good: **77** RCNLD: **554,360**

Year Built:
 CDU:
 Remodel Rating:
 Year Remodeled:
 Effective Year Built: Override EYB
 Status:
 Percent Complete:

	Value	Type	Hsn	Date	ID	Comment
% Good Ovr						
Misc. Improv						
Cost To Cure						

Illustration 4

The actual mechanics of adjusting depreciation for functional or economic obsolescence within CAMA are briefly discussed below. If the situation occurs, seek guidance from your supervisor and/or CAMA manager.

Illustration 5 shows the portion of the CAMA screen used to allow for additional depreciation. It is not necessary to make adjustments in the "CDU" field or to override the EYB field. Nor is it necessary to enter information on the lower 1/3 of the screen. The "Status" and "Percent Complete" fields are the only two fields that are utilized to account for additional depreciation.

Depreciation

Value Source: **C** Living Area/GFA: **3,000** Regression: **0**
 Primary Occ: **012** Effective Area: **3,454** Income: **0**
 Structure Class: **R** Percent Good: **77** RCNLD: **554,360**

Year Built: 1937
 CDU: AV
 Remodel Rating: 4
 Year Remodeled: 2001
 Effective Year Built: 1950 Over
 Status: E
 Percent Complete: 10

	Value	Type	Rsn	Da
% Good Ovr				
Misc. Improv				
Cost To Cure				

Status

- 0 Default
- A Abandoned/Boarded
- B Burned Out
- C Commercial New Const
- E Economic Dep**
- F Functional Dep
- G Gut Rehab
- H Data Change
- L Limited Equity
- M Demolition
- N N/A
- NO Normal
- OV Overall Depreciation
- P Physical Depr
- PA Partial Abandon
- R Renovation

OK Cancel

Illustration 5

The “Status” field’s pick-list is expanded in Illustration 6 to show only those types of items that have a direct affect on depreciation and the nature of the affect. Notice that only a limited number of Status Codes are functional within CAMA and their affect on depreciation is either to **replace** the existing amount in the “% Good” field or **decrease** the “% Good.” The corresponding numeric amount that will affect the “% Good” is entered in the field called “Percent Complete.” Please note that the field name “Percent Complete” is somewhat erroneous because the word “Complete” has no meaning in this context. This is the field that you will enter the amount to either decrease the existing “% Good” or replace the existing “% Good,” based on the Status Code selected.

Status

Status Codes		
Code	Description	Affect on % Good
0	Default	NONE
A	Abandoned/Boarded	NONE
B	Burned Out	NONE
C	Commercial New Const	REPLACE
E	Economic Dep	DECREASE
F	Functional Dep	DECREASE
G	Gut Rehab	NONE
H	Data Change	NONE
L	Limited Equity	NONE
M	Demolition	NONE
N	N/A	NONE
NO	Normal	NONE
OV	Overall Depreciation	REPLACE
P	Physical Depr	DECREASE
PA	Partial Abandon	NONE
R	Renovation	NONE
T	Order of Taking	NONE
V	Vacant	NONE

Illustration 6

Recall our example of the gas station. The Percent Complete field has “10” as it’s value. Based on the “E” Status Code, we know that the original depreciation will increase by ten percent resulting in a decrease in Percent Good to 77% (87-10).

Another comment regarding depreciation concerns the impact that the quality of design, material and workmanship have on depreciation. The grade assigned to a home obviously makes a considerable difference in the final RCN, but it also plays a substantial part in determining the amount of depreciation accrued to the home. It is easy to understand that if all other things were equal, a home built with better material and workmanship would age better than one with poorer materials and workmanship. The higher quality the home the more slowly it will deteriorate. Conversely, a shoddily built home will age more quickly than the average home.

Lot Valuation

Now that we've calculated RCN in the first section and the amount of depreciation in the second section, we know the value of our improvements from the formula RCN-LD to be \$639,030.

Next let's turn our attention to the final portion of the process – land or lot valuation. There are several aspects or characteristics to land that affect its value. Needless to say the old adage “Location, Location, Location!” is certainly true, but beyond that there are considerations for such things as lot size, shape, frontage, topography, view, restrictions and the like that influence the final value of land.

Let's once again return to our sample home and examine the details on the PRC to get our first look at the lot valuation.

LAND LINE VALUATION SECTION																
B#	Occ	Description	Zone	Frontage	Depth	Units	SF	I Factor	LT	Price	Size Adj	Site Rating	Adjustments: Special Use	Notes	Land Value	
1	012	Residential Detached Single Fa				6,000	SF	P	1.00	63.14	0.8630	1.00	T:90%	N:0	Poor topo in back; River view	375,060

Illustration 1

Notice that the detail tells us the lot size, the price per unit, and any adjustments that affect the lot. The model used to calculate the value of lots in CAMA is as follows:

$$\text{Lot Value} = [\text{Lot Size} * ((\text{Base Rate} * \text{Size Adjustment}) + \sum \text{Dollar Adjustments}) * \sum \text{Percent Adjustments}]$$

The formula represents the following steps:

1. *Determine the base rate for the particular neighborhood where the lot is located and multiply that rate by the 'size adjustment factor';*
2. *Next, add the adjusted rate in step one to the sum of all dollar amount adjustments;*
3. *Next, multiply the results by the lot size;*
4. *Lastly, multiply that result by the product of all percentage adjustments.*

Most of this activity can be seen in the Land.Dat file in Appendix A of this document. You may wish to refer to it as we go through this exercise.

Let's expand the discussion and follow the steps of the process to explain the lot valuation of our sample home in more detail.

1. *“Determine the base rate for the particular neighborhood where the lot is located and multiply that rate by the 'size adjustment factor'.”*

The residential base land rates are different for each (sub)neighborhood in the District. Each year, the current base rates are updated in CAMA and published in the *Appraiser Reference Materials*. In addition to the base rates, the base lot sizes and size curves are included. Our property is located in Chevy Chase, and below shows the portion of the land rate table for that neighborhood:

NBHD	Base Lot Size	Base Rate	Base Lot Value	Size Curve
11 A	5,000 sf	\$73.16	\$365,800	LG 1

Illustration 2

The base rate for our property is \$ 73.16 per sf.

The size adjustment factors are also incorporated in CAMA. These factors make allowances for lots whose sizes differ from the standard “base” size for the lots in that particular (sub)neighborhood. Recall that as the size or area of a building or lot increases, the dollar rate per unit typically goes down from the base rate, and conversely, the dollar rate typically increases over the base rate when the area or size is smaller than the standard base rate.

Recall that our lot is 6,000 sf in size. The table states that the Base Lot Size is 5,000, so a size adjustment will be necessary. Intuitively, one would expect that the size adjustment would be less than 100% because the actual lot is larger than the base size lot. CAMA contains the algorithms to calculate the proper size adjustment. Essentially, it determines which “land size curve” is to be used as the basis for determining the adjustment, then it mathematically interpolates and extrapolates the factor from the particular size table associated with the curve based on the amount of difference between the standard size and the actual size.

In the case of our sample home, the size curve is LG 1. This curve is one of the four curves existing in CAMA and its effect on rates is the lowest of the curves. Based on the difference between the base size and the actual size of the lot, CAMA has selected a factor of 0.863 as the adjustment. If the lot were smaller, say 4,000, sf the selected factor would have been 1.198.

So, to finish step 1, we multiply the (sub)neighborhood base land rate by the calculated size adjustment factor to arrive at a size adjusted rate of \$ 63.14 ($\$73.16 * 0.863$).

2. *“Next, add the adjusted rate in step one to the sum of all dollar amount adjustments.”*

If there are any dollar-amount adjustments to the rate, this is the time to make them. For example, you may choose to lower the rate by \$10 per sf on a particular lot in a neighborhood because it is on a busy street corner. In our example, the rate is increased by \$15 per sf because the property has an

excellent view of the river not enjoyed by the other lots in the neighborhood. This adjustment increases the rate to \$78.14 (\$63.14 + \$15.00).

Use caution when making any adjustments to the calculated rates. If adjustments are warranted, seek guidance from your supervisor or CAMA manager.

3. "Next, multiply the resulting rate by the lot size."

This is an easy step. The land value at this point is \$468,822 (\$78.14 * 6,000).

4. "Lastly, multiply that result by the product of all percentage adjustments."

As before, here's where we can reflect adjustment to the lot for such things as topography, view, shape irregularity, and the like. There may be an easement across the back of the lot that affects value. Again be certain that the adjustment is peculiar to just the subject or a few lots in the (sub)neighborhood, otherwise the condition would have been already accounted for in the calculations done by the multiple regression analysis process that generated the original base rates, size curves and standard lot sizes.

Our sample lot had a steep drop-off across the back that the appraiser accounted for by adjusting the final rate by 80 percent. This is the last calculation to determine the subject property's lot value. The final value of our lot is \$ 375,060 (468,822 * 0.80).

The illustrations below summarize much of the information discussed in this land valuation exercise. Illustration 3 shows a portion of the data entry screen in Vision[®] CAMA and the second, illustration 4, is the Land.dat file with selected information highlighted.

The screenshot displays the Vision CAMA software interface. The main window shows property information for 99 9999 ST NW, with an assessed value of 936,890 and a legal land area of 99,999 SF. The 'Property Factors' section includes fields for Topography (1 Level), Mlt Front (0 Default), Alley Access (2 No), and Landscaping (0 Default). The 'Land Valuation Neighborhoods' section is highlighted with a red box, showing Res. NBHD: 11, Sub NBHD: A, and Comm. NBHD: 11. The 'Building Classification and Land Line Valuation' section contains a table with one row: Bldg # 1, Line # 1, Occupancy Residential Detached Single Fa, Land Units 6000, Appraised Value SF 375060, and Assessed Value 375060. The 'Land Detail' window is open, showing various input fields. The 'Units' field is set to 6000, 'Unit Type' is SF, and 'Unit Price' is 63.14. The 'Size Adjust' field is set to 0.8630. The 'Adjustments (Special Use)' section shows 'T \$0 80 %' and 'V \$15 100 %'. The 'Total' section shows 'Appraised: \$375,060' and 'Assessed: \$375,060'. The 'Notes' field contains 'Poor topo in back; River view'. The 'Override Land Line Value' checkbox is unchecked. The 'Next', 'Add', 'Delete', and 'Close' buttons are visible at the bottom.

Illustration 3

```

OUTPUT FROM STORED PROCEDURE
REPORT GENERATED ON 31-JAN-2006 AT 11:03
Account Number = 9999 9999
Use Code = 012
Recalc Land for PID 182803: Begin
*****
Recalc Land for BldgNum #1 (BID = 173587) Land Line #1
*****
Check for any special use value overrides
Land Use Code = 012
Special Use Value = 0
Special Use Percent = 95
Base District = 9
*****
Find the region for a group and district
Land Group = R
Region = District, Region not defined
Base SubDist = A
ZContour = 0
District Standard Size = 1400
District BasePrice = 238.37
District Size Adjustment = LG2
Land Group based Value Source = C
SizeRatio = 1500 / 1400 * 10000
SizeRatio = 10714.286
*****
Interpolate/Extrapolate from Size adj curve table
HighUnitsSz = 11000
HighPricesSz = .95
LowUnitsSz = 10500
LowPricesSz = .974
adj = .974 + ((.95 - .974) / (11000 - 10500)) * (10714.286 - 10500)
SizeAdj = .9637
District pricing based unit val = 229.72
TotalAdj_a = 1 * 1 * 1 * 1
TotalAdj_a = 1
*****
Special Use adjustment #1
AdjPrice1 = 229.72
TotalAdj1 = .95
*****
Special Use adjustment #2
AdjPrice2 = 244.72
TotalAdj2 = .95
LandVal = 232.48 * 1500
LandVal(Rounded) = 348720

```

Neighborhood 9A

From Land Rate Table

Internal calculations to arrive at adjustment for non-standard base lot size.

Base rate multiplied by size adjustment.
 $(238.37 * 0.9637 = 229.72)$

Adjustments (add \$15/SF for "View" and lower 5% for "Topo")
 $((229.72+15) * 0.95) = 232.48$

Final adjusted rate * Lot size = Land Value

Illustration 4

Some Final Thoughts

We have introduced you to some of the most elementary aspects of property valuation using the District's Vision[®] CAMA system. We have developed the RCN of a fictitious home, reduced its value by the accrued depreciation and finally added the land value component to complete the appraisal. This guideline is merely a small window, a first step, in the complex field of CAMA mass appraisal. A CAMA system robust enough to appraise 180,000 different properties will necessarily be comprehensive and complex. As you explore and utilize the program make certain that you fully understand the ramifications and results of your actions. Your supervisor and/or CAMA manager will always be available to assist you.

Appendix A

1. Property Record Card, SSL 9999 9999
2. Cost.dat print-out, SSL 9999 9999
3. Land.dat print-out, SSL 9999 9999
4. 2008 CAMA Construction Valuation Guideline – Residential

ACCOUNT #: 9999 9999 Internal ID: 182803 Property Location: 9999 9999 ST NW WASHINGTON, DC 99999		Bldg #: 1 of 1 Card 1 of 1 Batch #: Print Date: 02/09/2006 14:45																																																				
CURRENT OWNER JOSEPH TAXPAYER JANE DOE-TAXPAYER 626 BREAKAWAY DR WASHINGTON, DC 20000 Additional Owners:		CURRENT ASSESSMENT <table border="1"> <tr> <th>Description</th> <th>Use</th> <th>Assessed Value</th> </tr> <tr> <td>RESIDENTIAL</td> <td>012</td> <td>567,040</td> </tr> <tr> <td>RES LAND</td> <td>012</td> <td>375,060</td> </tr> <tr> <td colspan="2">Value Source: C</td> <td>Total: 942,100</td> </tr> </table>		Description	Use	Assessed Value	RESIDENTIAL	012	567,040	RES LAND	012	375,060	Value Source: C		Total: 942,100																																							
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RES LAND	012	375,060																																																				
Value Source: C		Total: 942,100																																																				
APPEALS <table border="1"> <tr> <th>Appeal #</th> <th>Decision</th> <th>Amount</th> <th>Revised AV</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Appeal #	Decision	Amount	Revised AV					RES District of Columbia Real Property Assessment Division																																												
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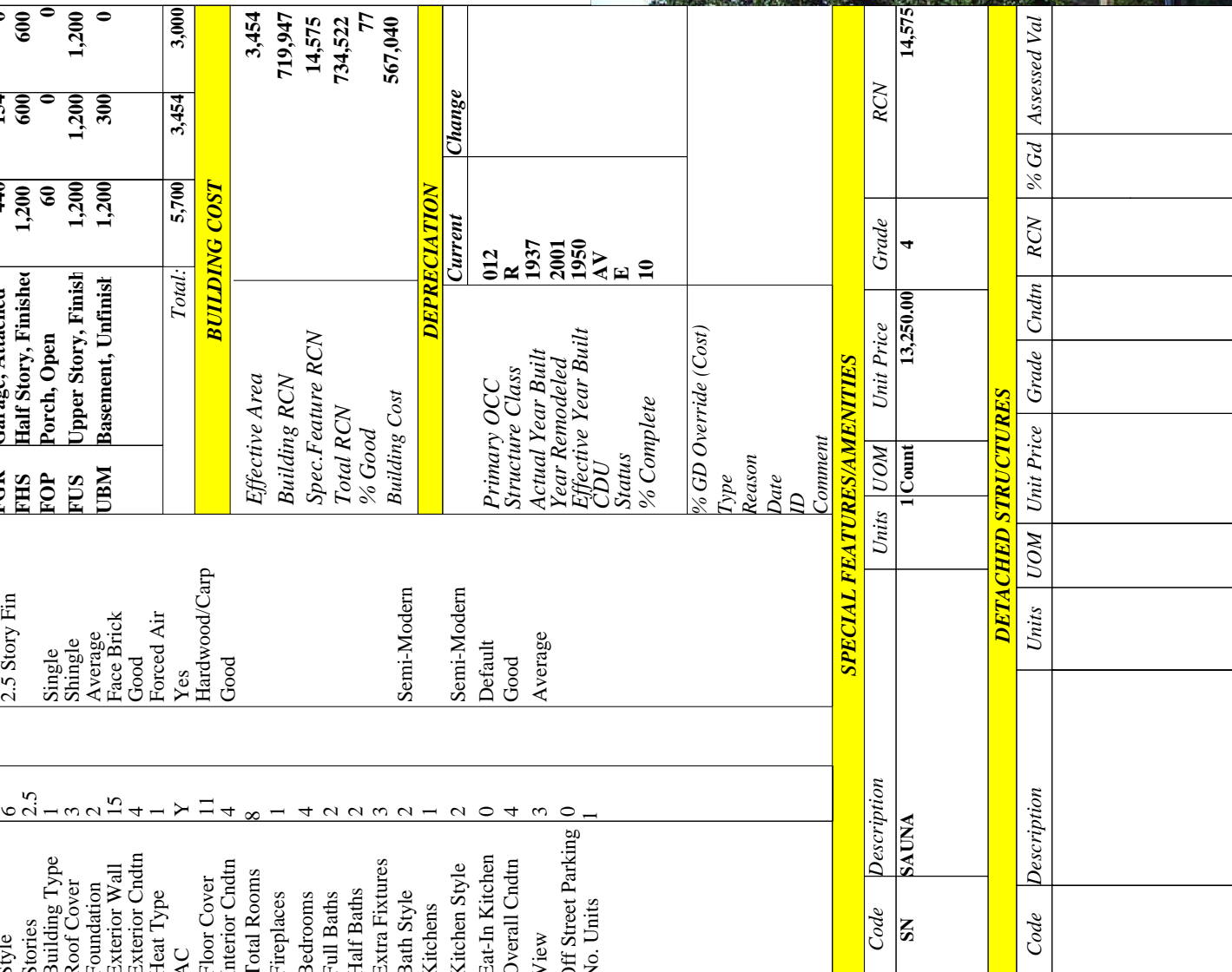
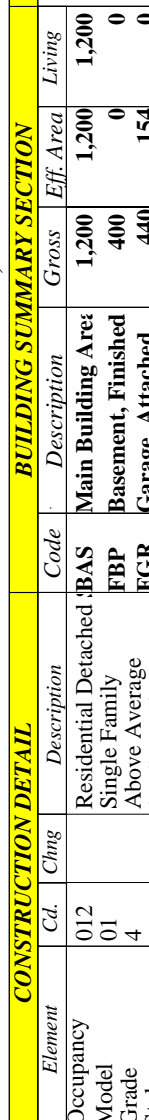
CONSTRUCTION DETAIL			BUILDING SUMMARY SECTION					
Element	Cd.	Chng	Description	Code	Description	Gross	Eff. Area	Living
Occupancy	012		Residential Detached	BAS	Main Building Area	1,200	1,200	1,200
Model	01		Single Family	FBP	Basement, Finished	400	0	0
Grade	4		Above Average	FGR	Garage, Attached	440	154	0
Style	6		2.5 Story Fin	FHS	Half Story, Finishes	1,200	600	600
Stories	2.5		Single	FOP	Porch, Open	60	0	0
Building Type	1		Shingle	FUS	Upper Story, Finish	1,200	1,200	1,200
Roof Cover	3		Average	UBM	Basement, Unfinish	1,200	300	0
Foundation	2		Face Brick					
Exterior Wall	15		Good					
Exterior Cndtn	4		Forced Air					
Heat Type	1		Yes					
AC	Y		Hardwood/Carp			5,700	3,454	3,000
Floor Cover	11		Good					
Interior Cndtn	4							
Total Rooms	8							
Fireplaces	1							
Bedrooms	4							
Full Baths	2							
Half Baths	2							
Extra Fixtures	3							
Bath Style	2							
Kitchens	1							
Kitchen Style	2							
Eat-In Kitchen	0							
Overall Cndtn	4							
View	3							
Off Street Parking	0							
No. Units	1							

BUILDING COST		
Effective Area		3,454
Building RCN		719,947
Spec.Feature RCN		14,575
Total RCN		734,522
% Good		77
Building Cost		567,040

DEPRECIATION		
	Current	Change
Primary OCC	012	
Structure Class	R	
Actual Year Built	1937	
Year Remodeled	2001	
Effective Year Built	1950	
CDU	AV	
Status	E	
% Complete	10	

SPECIAL FEATURES/AMENITIES						
Code	Description	Units	UOM	Unit Price	Grade	RCN
SN	SAUNA	1	Count	13,250.00	4	14,575

DETACHED STRUCTURES									
Code	Description	Units	UOM	Unit Price	Grade	Cndtn	RCN	% Gd	Assessed Val



cost

OUTPUT FROM STORED PROCEDURE
REPORT GENERATED ON 06-FEB-2006 AT 01:23

*****Building #1 Calc Start*****

Cost Calculation for pid, bid = 182803, 173587
Account Number = 9999 9999
Use Code = 012
Cost Rate Group = R12
Model ID: R07

Section #

Base Rate: 149.27
Size Adjustment: .93906
Effective Area: 3454
Adjusted Base Rate = (149.27 + 11.1) * .93906
Adjusted Base Rate: 150.6
RCN = ((150.6 * 3454) + 63341) * 1.23381334499738
RCN: 719947

*****Base Rate Adjustments*****

AIR CONDITIONING Y (Yes) = 1.8 + BaseRate
EXTERIOR WALL 15 (Face Brick) = 3.95 + BaseRate
FLOOR COVER 11 (Hardwood/Carp) = 4.67 + BaseRate
ROOF COVER 3 (Shingle) = .68 + BaseRate

*****Flat Value Additions*****

FULL BATHS OVER 1 = 16000 + RCN
HALF BATHS = 21440 + RCN
FIREPLACES = 7100 + RCN
PARTITIONED FINISHED BASEMENT = 18000 + RCN
OPEN PORCH = 801 + RCN

*****Factor Adjustments*****

OVERALL CONDITION 4 (Good) = 1.048 x RCN
EXTERIOR CONDITION 4 (Good) = 1.048 x RCN
GRADE 4 (Above Average) = 1.1 x RCN
INTERIOR CONDITION 4 (Good) = 1.048 x RCN
REMODEL FACTOR 4 = 1.04 x RCN
SUB-NEIGHBORHOOD ADJ A = .937 x RCN

*****Effective Age Adjustments*****

BATH STYLE 2 (Semi-Modern) = .95 * Age
EFF AGE GRADE 4 (Above Average) = .95 * Age
KITCHEN STYLE 2 (Semi-Modern) = .9 * Age

Actual Year Built: 1937
Effective Age = 69 * .81225
Effective Age: 56
Percent Good = 87
RCNLD: 626350

Land

OUTPUT FROM STORED PROCEDURE

REPORT GENERATED ON 06-FEB-2006 AT 10:37

Account Number = 9999 9999

Use Code = 012

Recalc Land for PID 182803: Begin

Recalc Land for BldgNum #1 (BID = 173587) Land Line #1

Check for any special use value overrides

Land Use Code = 012

Special Use Value = 0

Special Use Percent = 80

Base District = 11

Find the region for a group and district

Land Group = R

Region = District, Region not defined

Base SubDist = A

ZContour = 0

District Standard Size = 5000

District BasePrice = 73.16

District Size Adjustment = LG1

Land Group based Value Source = C

SizeRatio = 6000 / 5000 * 10000

SizeRatio = 12000

Interpolate/Extrapolate from size adj curve table

SizeAdj = .863

District pricing based unit val = 63.14

Total Adj_a = 1 * 1 * 1 * 1

Total Adj_a = 1

Special Use adjustment #1

Adj Price1 = 63.14

Total Adj 1 = .8

Special Use adjustment #2

Adj Price1 = 78.14

Total Adj 1 = .8

LandVal = 62.51 * 6000

LandVal (Rounded) = 375060

2007 CAMA Residential Construction Valuation Guideline -- RPAD

USECODE

(Selects Base Rate)

No.	Description	Value
011	Row	\$126.65
012	Detached	\$149.27
013	Semi-Detached	\$124.27
015	Mixed Use	\$126.65
019	Miscellaneous	\$126.65
023	Small Apt. Bldg.	\$ 84.56
024	Conversion	\$127.45
097	Vacant & Aban.	\$126.65

CONSTRUCTION DETAIL

No.	Description	Value
Style	(Descriptive)	
1	1 Story	
2	1.5 Story Unfin	
3	1.5 Story Fin	
4	2 Story	
5	2.5 Story Unfin	
6	2.5 Story Fin	
7	3 Story	
8	3.5 Story Unfin	
9	3.5 Story Fin	
10	4 Story	
11	4.5 Story Unfin	
12	4.5 Story Fin	
13	Bi-Level	
14	Split Level	
15	Split Foyer	

Foundation (Descriptive)

0	No Data
4	Pier
5	Wood
6	Concrete

View (Descriptive)

0	Typical
1	Poor
2	Fair
3	Average
4	Good
5	Very Good
6	Excellent

Building Type (Descriptive)

0	Default	
1	Single	
2	Multi	
6	Row End	\$2.00
7	Row Inside	
8	Semi-Detached	

Roof (Add to Base Rate)

0	Typical	
1	Comp Shingle	
2	Built Up	
3	Shingle	\$0.68
4	Shake	\$0.79
5	Metal-Pre	\$0.50
6	Metal Sms	\$0.50
7	Metal-Cpr	\$0.50
8	Composition Roll	-\$0.43
9	Concrete Tile	\$1.88
10	Clay Tile	\$2.93
11	Slate	\$2.86

12	Concrete	\$1.88
13	Neoprene	\$0.00
15	Wood- FS	\$0.68

Exterior Finish (Add to Base Rate)

0	Default	
1	Plywood	
2	Hardboard Lap	
3	Metal Siding	
4	Vinyl Siding	
5	Stucco	
6	Wood Siding	
7	Shingle	
8	SPlaster	
9	Rustic Log	
10	Brick Veneer	\$3.95
11	Stone Veneer	\$9.38
12	Concrete Block	
13	Stucco Block	
14	Common Brick	\$3.95
15	Face Brick	\$3.95
16	Adobe	
17	Stone	\$9.38
18	Concrete	\$3.95
19	Aluminum	
20	Brick/Stone	\$6.67
21	Brick/Stucco	\$1.98
22	Brick/Siding	\$1.98
23	Stone/Stucco	\$4.69
24	Stone/Siding	\$4.69

Heat Type (Add to Base Rate)

0	No Data	
1	Forced Air	
2	Air-Oil	\$0.55
3	Wall Furnace	-\$1.27
4	Electric Rad	-\$0.29
5	Elec Base Brd	-\$0.20
6	Water Base Brd	\$1.42
7	Warm Cool	
8	Ht Pump	
9	Evp Cool	
10	Air Exchnng	
11	Gravity Furnace	
12	Ind Unit	
13	Hot Water Rad	

AC Type (Add to Base Rate)

0	Default	
N	No	
Y	Yes	\$1.80

Floor Covering (Add to Base Rate)

0	Default	\$2.50
1	Resilient	\$2.63
2	Carpet	\$2.17
3	Wood Floor	\$6.06
4	Ceramic Tile	\$8.53
5	Terrazzo	\$8.30
6	Hardwood	\$7.17
7	Parquet	\$8.15
8	Vinyl Comp	\$1.64
9	Vinyl Sheet	\$2.86
10	Lt Concrete	\$0.75
11	Hardwood/Carp	\$4.67

Per Unit Adjustment (Flat Rate Add)

Full Bath (over 1)	\$16,000
Half Bath	\$10,720

Fireplace	\$ 7,100
Kitchen	\$10,440
Finished Basement (Basic)	\$30.00/sf
Finished Basement (Partition)	\$45.00/sf
Basement Garage	\$30.00/sf
Carport	\$26.71/sf
Stoop	\$13.35/sf
Open Porch	\$13.35/sf
Covered Open Porch	\$28.93/sf
Screen Enclosed Porch	\$35.61/sf
Glass Enclosed Porch	\$40.06/sf
Fully Enclosed Porch	\$44.51/sf
Deck	\$17.80/sf
Patio	\$ 5.97/sf

Grade (Multiplies Base, Add & Flat)

0	Default	
1	Low Quality	0.50
2	Fair Quality	0.80
3	Average Quality	1.00
4	Above Average Quality	1.10
5	Good Quality	1.20
6	Very Good Quality	1.25
7	Excellent Quality	1.35
8	Superior Quality	1.48
9	Extraordinary – A	1.65
10	Extraordinary – B	2.00
11	Extraordinary – C	2.20
12	Extraordinary – D	2.50

Interior Condition (Multiplies Base, Add & Flat)

0	Typical	
1	Poor	.794
2	Fair	.909
3	Average	1.000
4	Good	1.048
5	Very Good	1.091
6	Excellent	1.105

Exterior Condition (Multiplies Base, Add & Flat)

0	Default	
1	Poor	.794
2	Fair	.909
3	Average	1.000
4	Good	1.048
5	Very Good	1.091
6	Excellent	1.105

Overall Condition (Multiplies Base, Add & Flat)

0	Default	
1	Poor	.794
2	Fair	.909
3	Average	1.000
4	Good	1.048
5	Very Good	1.091
6	Excellent	1.105

Remodel Type (Multiplies Base, Add & Flat)

0	Default	
1	Unknown	
2	Gut Rehab	1.20
3	Major Renov	1.11
4	Remodel	1.05
5	Addition	
6	Cosmetic	1.02

The effect of this multiplier diminishes at a rate of 5% per year based on the **Remodel Year**.

2007 CAMA Residential Construction Valuation Guideline -- RPAD

DEPRECIATION DETAIL

No.	Description	Value
Grade (Adjust EYB)		
0	Default	
1	Low Quality	20%
2	Fair Quality	10%
3	Average Quality	--
4	Above Average	-05%
5	Good Quality	-10%
6	Very Good Quality	-15%
7	Excellent Quality	-25%
8	Superior Quality	-35%
9	Extraordinary – A	-45%
10	Extraordinary – B	-50%
11	Extraordinary – C	-50%
12	Extraordinary – D	-50%
Bath Style (Adjust EYB)		
0	Default	
1	No Remodeling	
2	Semi-Modern	- 05%
3	Modern	- 10%
4	Luxury	- 20%
Kitchen Style (Adjust EYB)		
0	Default	
1	No Remodeling	
2	Semi-Modern	- 10%
3	Modern	- 20%
4	Luxury	- 40%

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * \text{Effective Area} * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

Where:

RCN = Replacement Cost New
 Base Rate = \$ rate based on use and style
 ABRV = Additive Base Rate Variables
 Effective Area = Adjusted SF area of improvement
 Size Adjustment = Adjustment factor for deviation from base size
 AFRV = Additive Flat Rate Variables
 MV = Multiplicative Variables

Depreciation Table			
Base Year 2006			
<i>Effective Age of Building</i>	<i>% Depr.</i>	<i>% Good</i>	<i>Effective Year Built</i>
0	0	100	2006
1	1	99	2005
2	2	98	2004
3	2	98	2003
4	3	97	2002
5	3	97	2001
6	4	96	2000
7	4	96	1999
8	4	96	1998
9	4	96	1997
10	5	95	1996
11	5	95	1995
12	5	95	1994
13	5	95	1993
14	6	94	1992
15	6	94	1991
16	6	94	1990
17	6	94	1989
18	6	94	1988
19	7	93	1987
20	7	93	1986
21	7	93	1985
22	7	93	1984
23	7	93	1983
24	8	92	1982
25	8	92	1981
26	8	92	1980
27	8	92	1979
28	8	92	1978
29	9	91	1977
30	9	91	1976
31	9	91	1975
32	9	91	1974
33	9	91	1973
34	9	91	1972
35	10	90	1971
36	10	90	1970
37	10	90	1969
38	10	90	1968
39	10	90	1967
40	10	90	1966
41	11	89	1965
42	11	89	1964
43	11	89	1963

44	11	89	1962
45	11	89	1961
46	11	89	1960
47	11	89	1959
48	12	88	1958
49	12	88	1957
50	12	88	1956
51	12	88	1955
52	12	88	1954
53	12	88	1953
54	13	87	1952
55	13	87	1951
56	13	87	1950
57	13	87	1949
58	13	87	1948
59	13	87	1947
60	14	86	1946
61	14	86	1945
62	14	86	1944
63	14	86	1943
64	14	86	1942
65	14	86	1941
70	15	85	1936
75	16	84	1931

Vision Commercial CAMA Valuation Process

The market-derived cost approach to the valuation of real estate follows the generic formula of **Market Value = ((RCN LD) + land value)**, where **RCN** is Replacement Cost New of the improvements and **LD** means Less Depreciation. When properly developed and calibrated, this approach is a reliable indicator of market value especially suited to mass-appraisal CAMA systems.

The following exercise will attempt to illustrate how the Vision[®] CAMA system utilized by the District of Columbia, calculates values using the above model. The first portion will illustrate the development of the Replacement Cost New of a small commercial building, and the last portion will show the steps involved in determining the amount of depreciation that has accrued to the building. Land valuation is not discussed in this exercise.

Replacement Cost New

The Vision[®] CAMA system arrives at a RCN value for commercial properties based on a market-calibrated hybrid cost model. The hybrid nature of the model simply means that the model employs both additive and multiplicative variables in its design and specification. The nature of the model will become clearer as we proceed through this exercise. Please also be aware that a model is dynamic in both its specifications and calibration. The specifications, those cost elements that comprise the model, may change from time to time based upon research and market conditions. The calibration of the model is primarily derived from information provided by the Marshall and Swift Valuation Service, a company that provides building cost data necessary for real estate cost valuations and is widely considered the authority on the cost approach to valuation. *As you may discover, the dollar rates, or calibrations, contained here most likely are different from the current model in use.* The model used in this exercise is as follows:

$$\begin{aligned} \text{Building RCN} = & [\text{Section}_1 (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * \\ & (\text{MV}_1 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\text{Section}_n (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * \\ & (\text{MV}_1 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\sum \text{Special Building Features}] \end{aligned}$$

Where:

RCN = Replacement Cost New

Base Rate = \$ rate based on occupancy (use) code and construction class

Section_n = Each separate building or section of building

Effective Area = Adjusted SF area of improvement

Size Adjustment = Adjustment factor for deviation from base size

MV = Multiplicative Variables

Several items will be helpful while examining the features of the cost model and they are collected as Appendix “A” of this document. You will need to refer to them often during this exercise. They include the following:

- Sample building’s Property Record Card (PRC)
- Cost.dat printout of the sample building
- Depreciation Schedule
- 2007 CAMA Construction Valuation Guideline – Commercial

The commercial building designed for this exercise is typical of a small commercial property in the District. It consists of a one-story full service restaurant and an adjoining two-story building. The two-story section consists of a package goods store and a small apartment on the second floor. The building is of good quality and is constructed of brick veneer over concrete block. For this exercise, the building has been logically sectioned into two sections. Section 1 covers the restaurant and Section 2 covers the package goods/apartment portion.

Below shows the Construction Detail in the CAMA record of the building. The first illustration depicts Section 1 – the restaurant and the second represents Section 2 – the package goods store and apartment.

Construction Detail - Commercial

Value Source: C Living Area/GFA: 5,400 Regression: 0
 Primary Occ: 045 Effective Area: 8,460 Income: 3,770,600
 Structure Class: C Percent Good: 74 RCNLD: 835,630

Model: 94 Commercial Section #:
 Bldg Stories:

Section Detail

Occupancy: Store-Restaurant Group: RS1
 Stories: # Units: Base Rate: 109.26
 Structure Class: Brick/Concr Adj Base Rate: 107.98
 Exterior Finish: Brick Veneer Effective Area: 3,600
 Grade: Good RCN: 583,795

Section Area Summary			
Code	Description	Gross	GFA
▶ BAS	Main Building An	1800	1800
BM5	Basement, Full F	1800	0

1st Floor Occ: Store-Restaurant
 Wall Height:
 Shape/Peri: Rectangular

Illustration 1

Construction Detail - Commercial

Value Source: C Living Area/GFA: **5,400** Regression: 0
 Primary Occ: 045 Effective Area: **8,460** Income: **3,770,600**
 Structure Class: C Percent Good: 74 RCNLD: **835,630**

Model: 94 Commercial Section #: Add Section
 Bldg Stories: 2 2 Remove Section

Section Detail

Occupancy: 049 Commer-Retail-Misc Group: RT1
 Stories: 2 # Units: 1 Base Rate: 75.62
 Adj Base Rate: 74.73
 Structure Class: C Brick/Concr Effective Area: 4,860
 RCN: 545,438

Exterior Finish: BV Brick Veneer

Grade: 40 Good

1st Floor Occ: 047 Store-Super Market

Wall Height: 14

Shape/Peri: 2 Rectangular

Section Area Summary			
Code	Description	Gross	GFA
BAS	Main Building Ar	1800	1800
BM4	Basement Semi-f	1800	0
FUS	Upper Story, Fini	1800	1800

Illustration 2

Illustration 3 shows the CAMA sketch of the sample building we'll be using throughout this exercise.

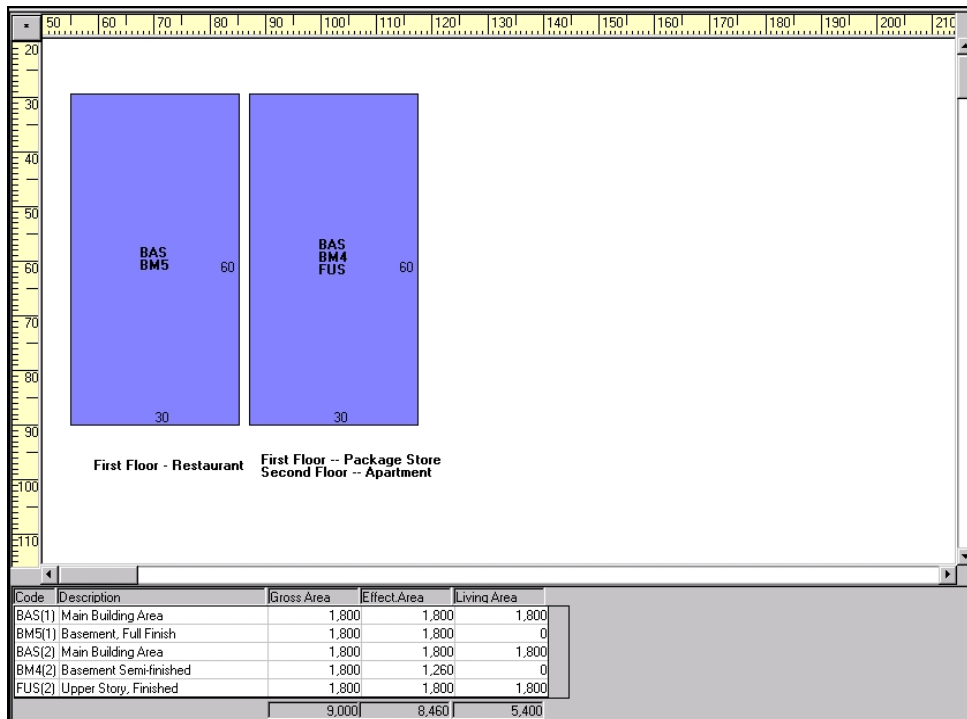


Illustration 3

The bottom of the sketch screen in CAMA provides the information about the sizes of the different areas that comprise the two sections of the building. Each section is denoted as (1) or (2) under the Code column.

Code	Description	Gross Area	Effect.Area	Living Area
BAS(1)	Main Building Area	1,800	1,800	1,800
BM5(1)	Basement, Full Finish	1,800	1,800	0
BAS(2)	Main Building Area	1,800	1,800	1,800
BM4(2)	Basement Semi-finished	1,800	1,260	0
FUS(2)	Upper Story, Finished	1,800	1,800	1,800
		9,000	8,460	5,400

Illustration 4

1. First, let's illustrate the calculation of the Effective Area of our sample building's first section, the restaurant.

$$\text{Building RCN} = [\text{Section}_1 (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + [\text{Section}_n (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + [\sum \text{Special Building Features}]$$

Code	Description	Gross Area	Effect.Area	Living Area
BAS(1)	Main Building Area	1,800	1,800	1,800
BM5(1)	Basement, Full Finish	1,800	1,800	0
BAS(2)	Main Building Area	1,800	1,800	1,800
BM4(2)	Basement Semi-finished	1,800	1,260	0
FUS(2)	Upper Story, Finished	1,800	1,800	1,800
		9,000	8,460	5,400

Illustration 5

The Effective Area is comprised of the totals of the Bas(1) Main Building Area @ 1,800 SF and the BM5(1) Basement, Full Finish @ 1,800 SF for a total of 3,600 SF.

The second section's Effective Area is calculated in the same manner.

Code	Description	Gross Area	Effect.Area	Living Area
BAS(1)	Main Building Area	1,800	1,800	1,800
BM5(1)	Basement, Full Finish	1,800	1,800	0
BAS(2)	Main Building Area	1,800	1,800	1,800
BM4(2)	Basement Semi-finished	1,800	1,260	0
FUS(2)	Upper Story, Finished	1,800	1,800	1,800
		9,000	8,460	5,400

Illustration 6

BAS(2) Main Building Area, BM4 (2)Basement Semi-finished, and FUS (2) Upper Story, Finished total 4,860 SF. The adjustment to the semi-finished basement takes into account this area is not as expensive as the finished main building area. For example, if the base rate for the finished main building area is \$100/SF, the rate for the semi-finished basement area may only be \$70/SF. The RCN value of the basement would be calculated as follows:

$$\text{RCN of Basement} = \$126,000 \text{ or } (1800 \text{ SF} * \$70)$$

Another way to state the same situation is to adjust the size of the basement to 70% of its measured size and then multiply the resulting, *or effective*, size by the base rate of \$100/SF:

$$\text{RCN of Basement} = \$126,000 \text{ or } [(1800 * .70) * \$100]$$

Both methods arrive at the same value for the basement. The first method is more intuitive and easier to explain to taxpayers as it adjusts for the differences in costs for the various areas. The second method again provides the same results but is much easier to model and calculate within a CAMA system, thus the effective area calculations shown here represent the methodology employed in the Vision[®] CAMA system.

The Gross Area shown in Illustration 2 is the total unadjusted size of all the areas that are a part of the building. The Living Area is more properly called “Gross Floor Area” and is the unadjusted size of the actual finished floor area above grade in the building.

With the inclusion of the Effective Area calculation, our cost model now looks like this:

$$\begin{aligned} \text{Building RCN} = & [\text{Section}_1 (\text{Base Rate} * \mathbf{3600} * \text{Size Adjustment}) * \\ & \text{Effective Area} \\ & (MV_0 * MV_2 * \dots * MV_n)] + \\ & [\text{Section}_n (\text{Base Rate} * \mathbf{4860} * \text{Size Adjustment}) * \\ & \text{Effective Area} \\ & (MV_0 * MV_2 * \dots * MV_n)] + \\ & [\sum \text{Special Building Features}] \end{aligned}$$

2. Next, let’s look at the selection of the Base Rate for the sample building. There will be two rates because there are two different sections. Each section’s RCN will be independently calculated.

$$\begin{aligned} \text{Building RCN} = & [\text{Section}_1 (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * \\ & (MV_0 * MV_2 * \dots * MV_n)] + \\ & [\text{Section}_n (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * \\ & (MV_0 * MV_2 * \dots * MV_n)] + \\ & [\sum \text{Special Building Features}] \end{aligned}$$

The Base Rate is the dollar rate per square foot used in the valuation model that is derived from tables within the CAMA system. It is selected based on the building’s Building Occupancy (Use) Code and Construction Class. Our sample’s first section is a “45-Store-Restaurant” constructed as a Class “C”, concrete block/brick building. Based on this information, the Base Rate of \$ 109.26 is automatically selected.

The second section, “49-Commercial Retail-Misc.”, also constructed as a Class “C”, concrete block/brick building, has a Base Rate of \$75.62.

With the inclusion of the selected Base Rates, our model now looks like this:

$$\begin{aligned}
 \text{Building RCN} = & [\text{Section}_1 (\text{\$109.26} * \text{3600} * \text{Size Adjustment}) * \\
 & \text{Base Rate Effective Area} \\
 & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\
 & [\text{Section}_n (\text{\$75.62} * \text{4860} * \text{Size Adjustment}) * \\
 & \text{Base Rate Effective Area} \\
 & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\
 & [\sum \text{Special Building Features}]
 \end{aligned}$$

3. Next, let us turn our attention to a modification to the Base Rate - the Size Adjustment.

$$\begin{aligned}
 \text{Building RCN} = & [\text{Section}_1 (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * \\
 & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\
 & [\text{Section}_n (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * \\
 & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\
 & [\sum \text{Special Building Features}]
 \end{aligned}$$

The Size Adjustment modifies the Base Rate to account for the size difference between the “standard size” for the “typical” building of a particular occupancy type and the actual size of the sample building. The comparison is based on the building’s “gross floor area.” The “standard” size of 5,000 square feet for the “typical” restaurant is used as the basis for establishing the initial Base Rates used in Section 1 of this appraisal. The “standard” size of 4,000 square feet for the “typical” retail-misc. is used as the basis for establishing the initial Base Rates used in Section 2.

The adjustment in the Base Rate allows the proper square foot rate to be applied to a building based on its size. It is reasonable to expect that as a building becomes larger than typical, the rate per square foot would decrease and conversely, if the building were smaller than typical, the rate would be higher. The Size Adjustment variable is the component in the model that adjusts for this situation. Our sample building’s size, the “gross floor area,” is the total area of both sections, 5,400 square feet. Our building is only slightly larger than the standard size of 5,000 square feet. The Size Adjustment is 0.98825. Now our Adjusted Base Rate is calculated to be \$107.98(109.26 * 0.98825) for Section 1 and \$ 74.73 (75.62 * 0.98825) for Section 2 of our example.

Because the adjustment is less than 1.00, it would be proper to conclude that our sample building is larger than the typical building of its type in the District of Columbia. Our sample building was compared to the larger of the two “standard” sizes, 5,000 square feet. Had the sample building been smaller than 5,000

square feet, the Size Adjustment would have been greater than 1.00. The use of size adjustments eliminates the need for the traditional cost tables based on size.

The cost model continues to grow, and now looks like this:

$$\begin{aligned} \text{Building RCN} = & [\text{Section}_1 (\text{\$109.26} * \text{3600} * \text{0.98825}) * \\ & \text{Base Rate Effective Area Size Adjustment} \\ & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\text{Section}_n (\text{\$75.62} * \text{4860} * \text{0.98825}) * \\ & \text{Base Rate Effective Area Size Adjustment} \\ & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\sum \text{Special Building Features}] \end{aligned}$$

4. The next portion of the cost model used to calculate the RCN are the multiplicative variables (MV).

$$\begin{aligned} \text{Building RCN} = & [\text{Section}_1 (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * \\ & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\text{Section}_n (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * \\ & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\sum \text{Special Building Features}] \end{aligned}$$

This portion of the formula can have the largest influence on the cost model. Each multiplicative variable modifies *all* of the cost data that has preceded it. These variables modify the Base Rate and Size Adjustment. This is where such important characteristics as the CDU (condition, desirability, utility), building grade, local cost multipliers, Neighborhood and Sub Neighborhood location factors have their impact.

The CDU, or Condition Desirability Utility, is the first of our multiplicative variables. This variable is used to account for a property's general overall physical condition and to a lesser extent the desirability and the utility of the property. Our sample building has been listed as "Good" and the appropriate multiplicative variable is 1.15. Stated a different way, the "Good" CDU will increase the RCN of our building by 15%. This one variable, CDU, can have a profound impact on the RCN of a building. The range can increase the RCN for an "Excellent" building by 35% all the way down to a 90% reduction in RNC for an "Unsound" building.

The sample building is graded "Good Quality - 4", and consequently has a 1.12 multiplicative variable. This one variable, grade, is going to increase the RCN value of the sample building by 12%. Another MV, "DC Local Multiplier C" modifies costs to account for the small additional costs incurred in construction of "C" class buildings in the in the DC area. The other multiplicative variable, "COMM NBHD 9", is the local neighborhood multiplier established for the particular neighborhood where the sample building is located. This variable is

going to increase the RCN value of the sample building by 10%. The “COMM NBHD” adjustment reflects the market-derived fact that location is a very significant factor in the value of real estate. Two otherwise identical buildings can have a substantial difference in value based on their locations.

These four variables are summarized in the Cost.dat file as follows:

```
*****Factor Adjustments*****
CONDITION DESIRABILITY UTILITY G = 1.15 X RCN
GRADE 40 (Good) = 1.12 x RCN
DC LOCAL MULTIPLIER C = 1.06 x RCN
COMM NBHD 9 = 1.1 x RCN
```

Each MV is multiplied together to determine the combined, or overall, MV. The sample building’s MV is 1.501808 (1.15 * 1.12 * 1.06 * 1.1).

5. Except for the Special Building Features, our RCN model is complete and contains the specific data for the sample building used in this demonstration. The RCN cost model for the sample building is as follow:

<p>Building RCN = [Section₁ (\$109.26 * 3600 * 0.98825) * Base Rate Effective Area Size Adjustment (1.501808)] + Multiplicative Variables [Section_n (\$75.62 * 4860 * 0.98825) * Base Rate Effective Area Size Adjustment (1.501808)] + Multiplicative Variables [∑ Special Building Features]</p>
--

The RCN for Section 1, the restaurant is \$ 583,795 (\$109.26 * 3600 * 0.98825 * 1.501808). The package goods store’s RCN is \$423,520 (\$75.62 * 4860 * 0.98825 * 1.501808).

The Cost.dat file shows a summary of the same information as follows:

```
Section #1
Base Rate: 109.265
Size Adjustment: .98825
Effective Area: 3600
Adjusted Base Rate = (109.26 + 0) * .98825
Adjusted Base Rate: 107.98
RCN = ((107.98 * 3600) + 0) * 1.501808
RCN: 583795
Section #2
Base Rate: 75.62
Size Adjustment: .98825
Effective Area: 4860
Adjusted Base Rate = (75.62 + 0) * .98825
Adjusted Base Rate: 74.73
RCN = ((74.73 * 4860) + 0) * 1.501808
RCN: 545438
```

So far, the RCN of the building is \$ 1,129,233 (583,795+545,438). We still have Special Features to add to complete the cost model.

6. The Special Features component is the last portion of the cost model. This is the place where such things as sprinklers and HVAC systems are accounted for and valued in the building.

$$\text{Building RCN} = [\text{Section}_1 (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + [\text{Section}_n (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment}) * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + [\Sigma \text{Special Building Features}]$$

Take a look at illustration 7. Here we see that both sections are sprinklered and heated and cooled with a complete HVAC system. Both of these Special Building features are calculated based on the size, in square feet, of the area affected. Their value is determined by the size, dollar rate and quality grade for each feature. Finally, the Special Building Features are depreciated at the same rate as the main buildings.

Special Building Features											
Value Source: C		Living Area/GFA: 5,400		Regression: 0							
Primary Occ: 045		Effective Area: 8,460		Income: 3,770,600							
Structure Class: C		Percent Good: 74		RCNLD: 835,630							
S#	Code	Sub	Description		UOM	Units	Unit Price	Gra	RCN	RCNLD	
1	HVAC	617	(HVAC) Heating	Cmplt HVAC	SF	1800	5.4	4	12150	8990	
1	SPRK	683	Sprinklers	Wet	SF	1800	2.5	4	5625	4160	
2	HVAC	617	(HVAC) Heating	Cmplt HVAC	SF	3600	5.4	4	24300	17980	
2	SPRK	683	Sprinklers	Wet	SF	1800	2.5	4	5625	4160	

Illustration 7

Illustration 8 shows the data-entry screen, as it would look if we were to add an elevator to the building.

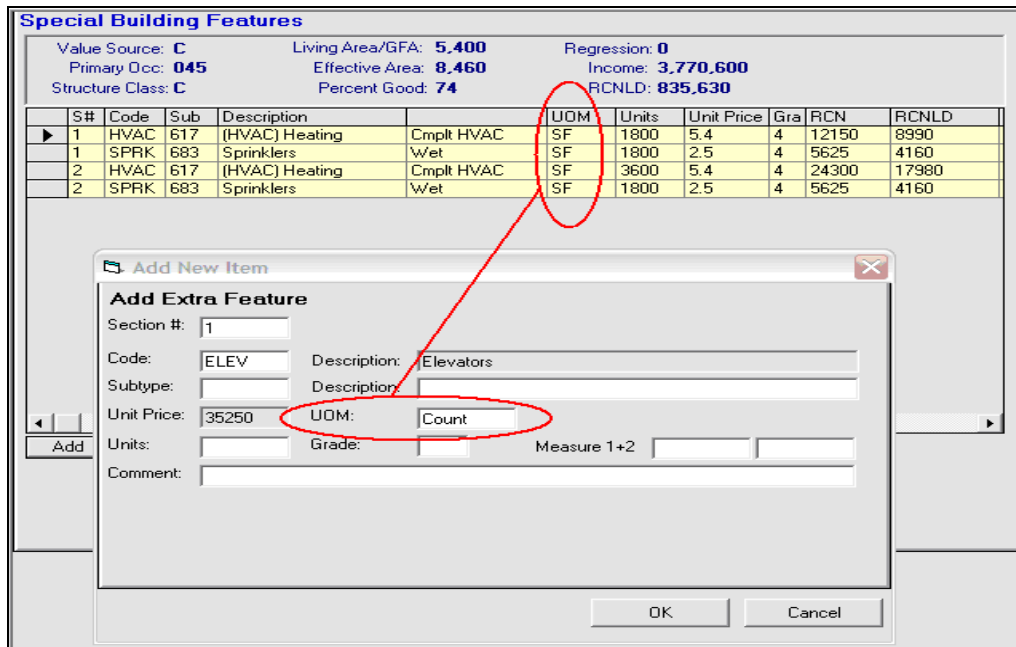


Illustration 8

Note that this extra feature's UOM (unit of measurement) is by count and not SF. For each count, the unit price is \$35,250. Be sure that the UOM is proper for the individual special feature included in the building.

The total RCN of the Special Feature in this sample is \$ 47,700 (Σ Special Building Features = 12,150 + 5,625 + 24,300 + 5,625).

We now know the total replacement cost new (RCN) of our sample building, including Special Features, is \$ 1,176,933 (\$1,129,233 + \$47,700).

$$\begin{aligned}
 \text{\$1,176,933} &= [\text{Section}_1 (\text{\$109.26} * \text{3600} * \text{0.98825}) * \\
 \text{Building RCN} &\quad \text{Base Rate} \quad \text{Effective Area} \quad \text{Size Adjustment} \\
 &\quad (\text{1.501808})] + \\
 &\quad \text{Multiplicative Variables} \\
 &[\text{Section}_n (\text{\$75.62} * \text{4860} * \text{0.98825}) * \\
 &\quad \text{Base Rate} \quad \text{Effective Area} \quad \text{Size Adjustment} \\
 &\quad (\text{1.501808})] + \\
 &\quad \text{Multiplicative Variables} \\
 &[\text{\$47,700}] \\
 &[\Sigma \text{ Special Building Features}]
 \end{aligned}$$

If the sample building were brand new, we'd be finished, but it was actually built in 1953.

Next, we need to address accrued depreciation . . .

Depreciation

Depreciation is defined as a loss in the upper limits of value from all sources. Typically, three types of depreciation can affect real estate - physical deterioration, functional obsolescence and economic obsolescence. This next portion of the demonstration will illustrate how Vision[®] calculates the amount of depreciation accrued to our sample building.

Several terms come into use when discussing depreciation in CAMA. They are defined as follows:

- Actual Age: The mathematical difference between the Base Year and the actual year the improvement was built to completion.
- Actual Year Built (AYB): The earliest time the main portion of the building was built. It is not affected by subsequent construction.
- Base Year: The year, usually the current year, that the depreciation table is calibrated, such that the age of a building built during the base year would be 0 years old.
- Depreciation Table: A market-driven table that lists the amount of depreciation corresponding to an Effective Year Built and the Base Year predicated upon a specific economic life.
- Economic Life: The useful life span for a structure based on its occupancy (use) code and its construction class.
- Effective Age: The mathematical difference, in years, between the Base Year and the Effective Year Built.
- Effective Year Built (EYB): The calculated or apparent year, that an improvement was built that is most often more recent than AYB. The EYB is determined by the condition and quality of the improvement. Subsequent renovation, additions, upgrades and the like, extend an improvements remaining economic life and therefore cause the EYB to be closer to the Base Year than the AYB.
- Percent Good: The mathematical difference between 100 percent and the percent of depreciation. $(100\% - \text{depreciation } \%) = \text{percent good}$

The RCN model used above indicated that our sample building has an RNC of \$1,176,933. As stated earlier, the building was built in 1953, so there should be some depreciation to deduct from the RCN. We'll use a seven-step process to depreciate the improvements:

1. Calculate the Actual Age of the improvement.
2. Determine the Effective Age of the improvement.
3. Determine the improvement's Effective Year Built.
4. Look-up Depreciation corresponding to EYB on depreciation table.
5. If required, modify the depreciation by the amount given for obsolescence.
6. Apply final depreciation to RCN to determine RCN-LD.

1. Our first step is to calculate the Actual Age of our sample building. As you are aware, a valuation is always qualified as of a specific date. For ad valorem purposes in the District of Columbia, the valuation date is January 1 immediately preceding the tax year. In our example, the tax year is 2007, therefore the valuation date is January 1, 2006. This date is also significant in terms of the depreciation accrued to improvements. In the past, the nature of triennial assessments required that base years within a Tri-Group remain unchanged for a period of three years. Now, however, with the return to annual assessments, the base year coincides with the valuation date. The base year is used to determine the Actual Age of the sample building. In this case, the Actual Age of the sample building is 53 years (2006-1953).

2. The next step is to determine the sample building's Effective Age. Effective Age may or may not represent actual or chronological age. The premise is simple but the application can be confusing. If a building is built and never maintained (painting, re-roof, etc.) or remodeled, the building would quickly depreciate from physical deterioration. The CAMA system would depreciate the building at the fastest rate possible based on the selected Depreciation Table. For example, our building has an economic life of sixty years. If the building were left to rot, the Effective Age would most likely be the same as the Actual Age.

Let's say the owners of our sample building have completely neglected their property from the time it was built in 1953 to the present. Their building would have an effective age of 53 years as indicated on the Depreciation Table below:

Economic Life Depreciation Tables							
Base Year 2006		70 Year Economic Life		60 Year Economic Life		50 Year Economic Life	
Age of Building	Effective Year Built	Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good
0	2006	0	100	0	100	0	100
1	2005	0	100	0	100	0	100
2	2004	1	99	1	99	2	98
3	2003	1	99	1	99	2	98
48	1958	46	54	58	43	77	23
49	1957	47	53	59	41	78	22
50	1956	49	51	61	39	82	18
51	1955	51	49	64	36		
52	1954	52	48	66	34		
53	1953	54	46	68	33		
54	1952	55	45	69	31		
55	1951	57	43	71	29		
56	1950	58	42	73	28		
57	1949	60	40	75	25		
58	1948	61	39	76	24		
59	1947	63	37	79	21		
60	1946	64	36	80	20		
61	1945	65	35				
62	1944	67	33				
63	1943	68	32				
64	1942	70	30				
65	1941	71	29				
70	1940	76	24				
75	1932	80	20				

Illustration 9

The Actual Year Built (1953) and the Effective Year Built (1953) would be the same and consequently the Effective Age would be 53 years. Moving across the table, we see that a building with an EYB of 1953 has 68 percent depreciation and therefore is 32 Percent Good (100%-68%). If the RCN of our sample building is \$1,176,933, the depreciated value, RCN-LD, is only \$ 376,619 (1,176,933* 0.32).

The situation described above rarely, if ever, occurs in the market. People do maintain and renovate their buildings and in doing so, extend the building's useful or remaining economic life. As building owners repair roofs, paint siding, replace windows and furnaces, they *prolong* the life of the building and consequently *decrease* its Effective Age.

A recent building remodel, renovation or rehabilitation will go a long way to extend its useful life. As the useful life is extended, the Effective Age is reduced and therefore the Effective Year Built is more recent than the building's Actual Year Built.

Our sample building had a major renovation done in 1998. The portion of the CAMA record that captures this information is shown in Illustration 10 below.

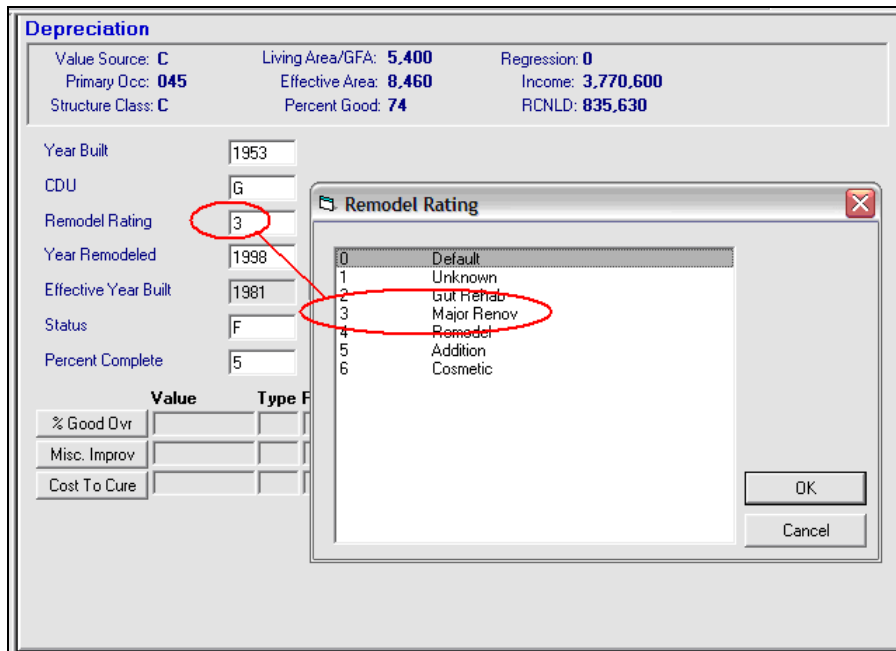


Illustration 10

Two factors come together to determine the impact a remodel has on the amount of depreciation calculated for the building – the Remodel Rating and the Year Remodeled. How extensive the remodel is and how recently it has occurred combines to determine its overall affect on its effective year built, and in turn, the building’s depreciation. A brand-new gut rehab would substantially decrease the effective age of a building much more so than an older remodel. Conversely, an older remodel may have little or no affect on the depreciation.

We’ll see the significance of that renovation in a moment, but first, back to our sample building’s Effective Age calculation.

The construction class of the building also affects the calculation of Effective Age. It is only natural that an “A” class structure would have a longer economic life than a “D” class building (recall the story of the three little pigs). The Structure Class Age Factor makes allowance for this situation by reducing the effective age of an “A” class building by more than, say, a “D” building. As an example, CAMA reduces the effective age by 20% for “A” buildings, 15% for “B” structures, 10% on “C” buildings, and no adjustment for the “D” class buildings.

The features or variables dealing with the effective age calculation are multiplicative variables. As such, they are multiplied one by the other and then the Actual Age is multiplied by the product of the MVs. Below is the portion of the Cost.dat file that summaries these MV for our sample building.

```
*****Effective Age Adjustments*****
REHAB FACTOR 3 = .45 * Age
STRUCTURE CLASS AGE FACTOR C = .9 * Age
REHAB YEAR = 1.15 * Age
```

The product of each of these MV adjustments is calculated to be 0.46575 ($0.45 * 0.90 * 1.15$). This product is then multiplied by the Actual Age to calculate the Effective Age. Recall our sample building's Actual Age is 53 years. The Effective Age is calculated to be 24 years ($53 * 0.42525$). Instead of CAMA using 53 chronological years to calculate depreciation, it will use 24 years, based on the building's quality and renovation. The portion of the Cost.dat file that illustrates this information is below:

```
*****  
Actual Year Built: 1953  
Effective Age = 53 * .46575  
Effective Age: 24  
Percent Good = 74  
RCNLD:835630
```

Back to our renovation, the 1998 major renovation done to the building reduced the effective age to 51.75% (Rehab Factor 3 = $.45 * Rehab Year = 1.15$) of the 53 years of actual age, resulting in an effective age of 27 years old. What impact on the effective age would there be if just a small remodel occurred in 1990? We would expect the effective age not to shorten, or decrease, as much. Let's see what happens.

As you know, CAMA has many calibrated variables associated with all of the calculations it makes to determine the RCN and calculate depreciation. Again, the two variables that come into play here are the Rehab Factor and the Rehab Year. We've just seen the values of those variables were with regard to the recent major renovation example. For the 1990 remodel the values are: Rehab Factor 4 = 0.55 and Rehab Year = 1.15. This combination will reduce the effective age to 63.25% ($0.55 * 1.15$) of the 53 years of actual age, as a result, making the effective age now 34 years old.

The difference between the two scenarios is seven years. Without doing all math, the difference in the appraised value as a result an effective age of 31 years versus 24 years is about \$100,000 on a building with a RCN of \$1,769,933. The proper documentation of remodel activity is significant when arriving at proper appraised values.

3. We're almost finished. Knowing the Effective Age makes the calculation of the Effective Year Built for our sample building very simple. The Effective Year Built is 1982 ($2006 - 24$).

4. Having established the Effective Year Built, we look up 1982 on the *60 Year Economic Life Depreciation Table* and find that the Depreciation is 20% for that year. See Illustration 11.

Economic Life Depreciation Tables							
Base Year 2006		70 Year Economic Life		60 Year Economic Life		50 Year Economic Life	
Age of Building	Effective Year Built	Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good	Percent of Depreciation	Percent Good
0	2006	0	100	0	100	0	100
1	2005	0	100	0	100	0	100
20	1986	13	87	16	84	22	78
21	1985	13	87	16	84	22	78
22	1984	14	86	18	83	23	77
23	1983	16	84	19	81	25	75
24	1982	16	84	20	80	27	73
25	1981	17	83	21	79	28	72
26	1980	18	82	23	77	30	70
27	1979	19	81	24	76	32	68
28	1978	20	80	25	75	33	67
29	1977	21	79	26	74	35	65
30	1976	22	78	28	72	37	63
31	1975	23	77	29	71	38	62

Illustration 11

You may notice that there is a conflict between the Cost.dat file and the depreciation table with regards to “Percent Good.” The Cost.dat file report that our building’s percent good is 74, whereas the depreciation table says it’s 80. The explanation is addressed in step 5, dealing with obsolescence and direct adjustments to depreciation, not effective year built calculations.

5. If the assessor notes any obsolescence, this is where it is addressed. Recall from the outset that we defined depreciation as a loss in value resulting from physical deterioration, functional and/or economic obsolescence. The demonstration up to this point has dealt only with depreciation attributed to the physical deterioration of the sample building. This, by far, is the most common type of depreciation that exists in commercial property. However, occasions may require additional depreciation because of excessive physical deterioration, functional and/or economic obsolescence. One must use caution when invoking these types of depreciation. The market must support any decision regarding the extent of these adjustments.

Our sample building is suffering from a small amount of functional obsolescence. The assessor has noted that the interior design of the building contains many support columns interrupting the efficient use of the floor space. As a result, the restaurant has a few less tables and the package goods store does not have a good aisle layout. Consequently, it is appropriate to allow for a small amount of functional obsolescence – five percent.

Illustration 12 shows the results of this additional allowance for functional obsolescence. Whereas the depreciation table in illustration 3 shows the percent good for 20 years at 80%, by subtracting the 5% attributed to functional obsolescence, we are left with 74% (rounding error) as the percent good for our building. This matches the figure shown in the Cost.dat file.

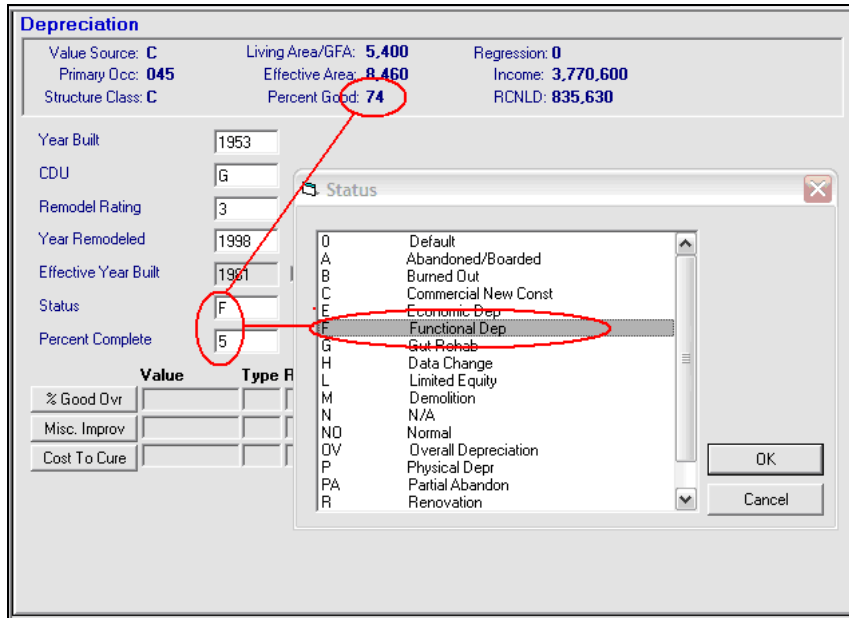


Illustration 12

The actual mechanics of adjusting depreciation for functional or economic obsolescence within CAMA are briefly discussed below. If the situation occurs, seek guidance from your supervisor and/or CAMA manager.

The “Status” field’s pick-list is expanded in Illustration 13 to show only those types of items that have a direct affect on depreciation and the nature of the affect. Notice that only a limited number of Status Codes are functional within CAMA and their affect on depreciation is either to **replace** the existing amount in the “% Good” field or **decrease** the “% Good.” The corresponding numeric amount that will affect the “% Good” is entered in the field called “Percent Complete.” Please note that the field name “Percent Complete” is somewhat erroneous because the word “Complete” has no meaning in this context. This is the field that you will enter the amount to either decrease the existing “% Good” or replace the existing “% Good”, based on the Status Code selected.

Status Codes		
Code	Description	Affect on % Good
0	Default	NONE
A	Abandoned/Boarded	NONE
B	Burned Out	NONE
C	Commercial New Const	REPLACE
E	Economic Dep	DECREASE
F	Functional Dep	DECREASE
G	Gut Rehab	NONE
H	Data Change	NONE
L	Limited Equity	NONE
M	Demolition	NONE
N	N/A	NONE
NO	Normal	NONE
OV	Overall Depreciation	REPLACE
P	Physical Depr	DECREASE
PA	Partial Abandon	NONE
R	Renovation	NONE
T	Order of Taking	NONE
V	Vacant	NONE

Illustration 13

6. The last step in the process is to simply multiple the RCN by 0.74 and we have RCN LD of the building. Knowing the total RCN of our sample building is \$1,176,933, the RCN LD is \$870,920 (1,176,933 * 0.74). Below is a portion of the Property Record Card that illustrates this information.

ACCOUNT #: 9999 8888		Property Location: 9999 9TH ST NW									
Internal ID: 183145		WASHINGTON, DC 2001									
CONSTRUCTION DETAIL											
Sect	Code	Occupancy Description	Story Hgt	# of Units	Structure Class	Ext. Fin	Grade	First Floor Data Occ	Wall HT	Eff. Area	Section RCN
1	045	Store-Restaurant	1	0	C	BV	40	045	12	1,800	583,795
2	049	Commer-Retail-Misc	2	1	C	BV	40	047	14	3,600	545,438
BUILDING SUMMARY						BUILDING COST SUMMARY					
Sect #	Code	Description	GBA	Eff. Area	SFLA	Effective Area	Building RCN	Spec. Feature RCN	Total RCN	Building Cost	
1	BAS	Main Building Area	1,800	1,800	1,800	8,460	1,129,233	47,700	1,176,933	74	
1	BMS	Basement, Full Finish	1,800	1,800	0						
2	BAS	Main Building Area	1,800	1,800	1,800						
2	BMS	Basement Semi-finished	1,800	1,260	0						
2	FUS	Upper Story, Finished	1,800	1,800	1,800						
Total:			9,000	8,460	5,400						
BUILDING INFORMATION & DEPRECIATION											
Total Bldg Stories		2		Primary Occ		045		Structure Class		C	
Actual Year Built		1953		Year Renovated		1998		Renodel Rating		3	
Effective Year Built		1981		CDU		C		Status		F	
% Complete		F		% Good Override		F		Type		F	
Reason		Comment		Type		Reason		Comment			
COST VALUE SUMMARY											
Land Value	300,000	Type									
Building Value	870,920	Reason									
Detached Structures	0	Data									
Misc. Improvements	0	Comment									
Cost to Cure (-)	0										
Final Cost Value	1,170,920										
BUILDING SPECIAL FEATURES/AMENITIES											
Sect #	Code	Description	Units	UOM	Unit Price	Grade	RCN				
1	HVAC 617	(HVAC) Heating Cmpit HVAC	1,800	SF	5.40	4	12,150				
1	SPRK 683	Sprinklers Wet	1,800	SF	2.50	4	5,625				
2	HVAC 617	(HVAC) Heating Cmpit HVAC	3,600	SF	5.40	4	24,300				
2	SPRK 683	Sprinklers Wet	1,900	SF	2.50	4	5,625				
DETACHED STRUCTURES											
Code	Description	Units	UOM	Unit Price	Grade	Cndtm	RCN	% Gd	Assessed Val		

Illustration 14

Conclusion

This exercise has been prepared to assist the commercial assessor understand some of the concepts, features and techniques employed by the Vision® CAMA system in arriving at a cost approach to valuation of commercial properties in the District of Columbia. It does not serve as an exhaustive training manual. Any specific questions regarding the features and operations of this CAMA should be directed to your supervisor or the CAMA manager.

Appendix “A”

1. Vision[®] Property Record Card, SSL 9999 8888.
2. “Cost.dat” printout of sample building.
3. Economic Life Depreciation Tables, Base Year 2006.
4. 2007 CAMA Commercial Construction Valuation Guideline.

CURRENT OWNER		ACCOUNT INFORMATION				CURRENT ASSESSMENT				DISTRICT OF COLUMBIA REAL PROPERTY ASSESSMENT DIVISION					
Property Location: 9999 9TH ST NW WASHINGTON, DC 2001		Use Type	Use Code	Lot SF	Status Code	Description	Use	Assessed Value	COMM						
Batch #: 9999 8888 Internal ID: 183145		C	045	999,999	F	COMMERCL COMLAND	045 045	870,920 300,000							
Bldg #: 1 of 1 Card 1 of 1		VISIT/CHANGE HISTORY				Value Source: C		Total: 1,170,920	PREVIOUS ASSESSMENTS (HISTORY)						
Print Date: 02/14/2006 07:53		Date	ID	Type	Inf. Source	Code	Description	Yr.				Use	Type	Val Source	Land Value
OWNERSHIP HISTORY		INSTRUMENT #	SALE DATE	q/u	v/i	SALE PRICE	A.C.	2007	045	C	C	300,000	870,920	1,170,920	
MIXED USE		APPEALS				ASSOCIATED PARCELS									
Code	Description	%	Appeal #	Decision	Amount	Revised AV	Primary SSL								Total Value
	Res Land	%					USE								
	Res Building	%					SSL								
	Cmrcd Land	%					Lot Size								
	Cmrcd Building	%					Lot Size								
TAX TYPE		SUPPLEMENTAL DATA				COMMENTS									
Year	Type	Description	Type	Neighborhood	Description	Total Value									
				Part Part											
				Mixed Use											
				Vent Lnd Use											
				Model Type											
				Base Lot Val											
				Abbutt Lot											
				Sketch Flag											
PARCEL LOCATION SUMMARY		BUILDING PERMIT INFORMATION				LAND LINE VALUATION SECTION									
SSL	NBHD	SUB NBHD	ZONING	WARD	GROUP	ARN	Insp. Date								
			0			457									
Permit ID	Issue Date	Type	Amount	Description											
Pocket NBHD: 0		LAND LINE VALUATION SECTION				Total Land Value: 300,000									
B#	Occ	Description	Zone	Frontage	Depth	Units	S.I.	I. Factor	LT	Price	Size Adj	Site Rating	Adjustments/Special Use	Notes	Land Value
1	045	Store-Restaurant				10,000	SF	0	1.00	30.00	0.00000				300,000
Total Land Units:		10,000				SF				Total Land Value:				300,000	

CONSTRUCTION DETAIL

Sect	Occupancy		Story Ht	# of Units	Structure Class	Ext. Fin	Grade	First Floor Data		Eff. Area	Section RCN
	Code	Description						Occ	Wall HT		
1	045	Store-Restaurant	1	0	C	BV	40	045	12	1,800	583,795
2	049	Commer-Retail-Misc	2	1	C	BV	40	047	14	3,600	545,438

BUILDING SUMMARY

Sect #	Code	Description	GBA	Eff. Area	SFLA	Effective Area	Section RCN
1	BAS	Main Building Area	1,800	1,800	1,800	8,460	
1	BM5	Basement, Full Finish	1,800	1,800	0	1,129,233	
2	BAS	Main Building Area	1,800	1,800	1,800	47,700	
2	BM4	Basement Semi-finished	1,800	1,260	0	1,176,933	
2	FUS	Upper Story, Finished	1,800	1,800	1,800	74	
						Building Cost	870,920

BUILDING INFORMATION & DEPRECIATION

Total Bldg Stories	2
Primary Occ	045
Structure Class	C
Actual Year Built	1953
Year Renovated	1998
Remodel Rating	3
Effective Year Built	1981
CDU	G
Status	F
% Complete	5
% Good Override	
Type	
Reason	
Comment	

COST VALUE SUMMARY

Land Value	300,000
Building Value	870,920
Detached Structures	0
Misc. Improvements	0
Cost to Cure (-)	0
Final Cost Value	1,170,920

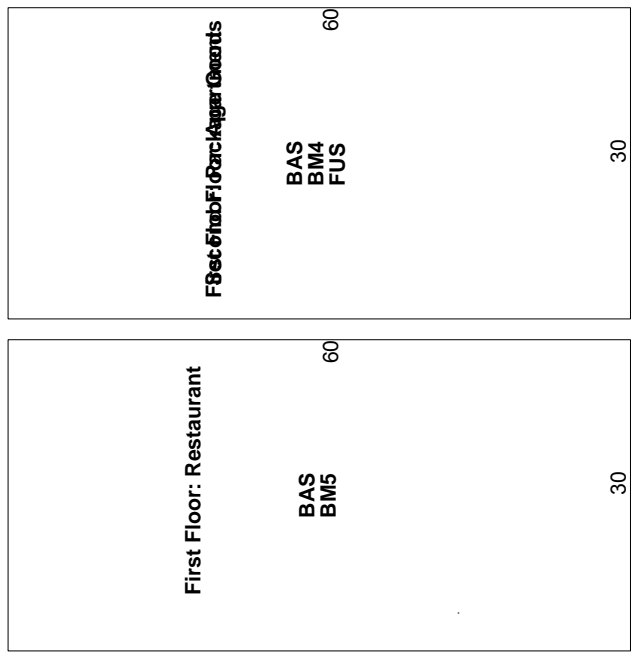
BUILDING SPECIAL FEATURES/AMENITIES

Sect #	Code	Description	Units	UOM	Unit Price	Grade	RCN
1	HVAC 617	(HVAC) Heating Cmpl't HVAC	1,800	SF	5.40	4	12,150
1	SPRK 683	Sprinklers Wet	1,800	SF	2.50	4	5,625
2	HVAC 617	(HVAC) Heating Cmpl't HVAC	3,600	SF	5.40	4	24,300
2	SPRK 683	Sprinklers Wet	1,800	SF	2.50	4	5,625

DETACHED STRUCTURES

Code	Description	Units	UOM	Unit Price	Grade	Cndm	RCN	% Gd	Assessed Val

No Photo On Record



SKETCH

INCOME APPROACH

Bldg #	Style	Style Desc	FL	Tenants	# of Units	Use Adj	Loc Adj	Rent/Unit	Gross Income	Vac Adj	Vacancy %	Exp Adj	Expense %	NOI
1	3	Retail	GL	3	6,000	A	A	12.00	72,000	A	.15	A	0.08	56,304
1	1	1 BR	UL	1	10	A	A	18,000.00	180,000	A	.1	A	0.10	145,800
1	2	2 BR	UL	1	10	A	A	21,600.00	216,000	A	.1	A	0.10	174,960

INCOME NOTES

INCOME SUMMARY

Primary Occ	045
Total Rentable Units	468,000
Total Gross Income	468,000
Vacancy \$	50,400
Expense \$	40,536
Total NOI	377,064
Cap Code	001
Cap Adj.	A
Cap Rate	0.1000
Income Value	3,770,600
Excess Land	0
Total Income Value:	3,770,600

cost

OUTPUT FROM STORED PROCEDURE
REPORT GENERATED ON 14-FEB-2006 AT 07:45

*****Building #1 Calc Start*****

Cost Calculation for pid, bid = 183145, 173784
Account Number = 9999 8888
Use Code = 045
Cost Rate Group = RS1
Occupancy Type = 045 (Store-Restaurant)
Model ID: DCC

Section #1

Base Rate: 109.26
Size Adjustment: .98825
Effective Area: 3600
Adjusted Base Rate = (109.26 + 0) * .98825
Adjusted Base Rate: 107.98
RCN = ((107.98 * 3600) + 0) * 1.501808
RCN: 583795

*****Factor Adjustments*****

CONDITION DESIRABILITY UTILITY G = 1.15 x RCN
GRADE 40 (Good) = 1.12 x RCN
DC LOCAL MULTIPLIER C = 1.06 x RCN
COMM NBHD 9 = 1.1 x RCN

Section #2

Base Rate: 75.62
Size Adjustment: .98825
Effective Area: 4860
Adjusted Base Rate = (75.62 + 0) * .98825
Adjusted Base Rate: 74.73
RCN = ((74.73 * 4860) + 0) * 1.501808
RCN: 545438

*****Factor Adjustments*****

CONDITION DESIRABILITY UTILITY G = 1.15 x RCN
GRADE 40 (Good) = 1.12 x RCN
DC LOCAL MULTIPLIER C = 1.06 x RCN
COMM NBHD 9 = 1.1 x RCN

*****Effective Age Adjustments*****

REHAB FACTOR 3 = .45 * Age
STRUCTURE CLASS AGE FACTOR C = .9 * Age
REHAB YEAR = 1.15 * Age

Actual Year Built: 1953
Effective Age = 53 * .46575
Effective Age: 24
Percent Good = 74
RCNLD: 835630

Economic Life Depreciation Tables

Base Year 2006	
Age of Building	Effective Year Built
0	2006
1	2005
2	2004
3	2003
4	2002
5	2001
6	2000
7	1999
8	1998
9	1997
10	1996
11	1995
12	1994
13	1993
14	1992
15	1991
16	1990
17	1989
18	1988
19	1987
20	1986
21	1985
22	1984
23	1983
24	1982
25	1981
26	1980
27	1979
28	1978
29	1977
30	1976
31	1975
32	1974
33	1973
34	1972
35	1971
36	1970
37	1969
38	1968
39	1967
40	1966
41	1965
42	1964
43	1963
44	1962
45	1961
46	1960
47	1959
48	1958
49	1957
50	1956
51	1955
52	1954
53	1953
54	1952
55	1951
56	1950
57	1949
58	1948
59	1947
60	1946
61	1945
62	1944
63	1943
64	1942
65	1941
70	1940
75	1932

70 Year Economic Life	
Percent of Depreciation	Percent Good
0	100
0	100
1	99
1	99
2	98
2	98
3	97
4	96
4	96
5	95
5	95
6	94
6	94
7	93
8	92
8	92
9	91
10	90
10	90
11	89
12	88
12	88
13	87
13	87
14	86
15	85
15	85
16	84
16	84
17	83
17	83
18	82
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19	81
19	81
20	80
20	80
21	79
21	79
22	78
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55	45
55	45
56	44
56	44
57	43
57	43
58	42
58	42
59	41
59	41
60	40
60	40
61	39
61	39
62	38
62	38
63	37
63	37
64	36
64	36
65	35
65	35
70	24
70	24
75	20
75	20

60 Year Economic Life	
Percent of Depreciation	Percent Good
0	100
0	100
1	99
1	99
2	98
2	98
3	97
3	97
4	96
4	96
5	95
5	95
6	94
6	94
7	93
7	93
8	92
8	92
9	91
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10	90
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57	43
57	43
58	42
58	42
59	41
59	41
60	40
60	40
61	39
61	39
62	38
62	38
63	37
63	37
64	36
64	36
65	35
65	35
70	24
70	24
75	20
75	20

50 Year Economic Life	
Percent of Depreciation	Percent Good
0	100
0	100
1	98
1	98
2	97
2	97
3	96
3	96
4	95
4	95
5	94
5	94
6	93
6	93
7	92
7	92
8	91
8	91
9	90
9	90
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21	78
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25	74
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26	73
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60	39
60	39
61	38
61	38
62	37
62	37
63	36
63	36
64	35
64	35
65	34
65	34
70	24
70	24
75	18
75	18

2007 CAMA Commercial Construction Valuation Guideline -- RPAD

CONSTRUCTION DETAIL

Section Detail

No. Description Value

Building Stories

As Indicated.

Occupancy

As Indicated.
Select from list.

Stories and #Units

As Indicated.

Structure Class

- 0 Default
- A Fireproof Steel
- B Reinforced Concrete
- C Con. Block/Solid Brick
- D Wood Frame
- P Wood Pole
- S Steel/Sheet Metal

Exterior Finish

- 0 Typical
- AS Asphalt Siding
- BR Brick (Solid)
- BV Brick Veneer
- C Concrete
- CB Concrete Block
- MS Metal Siding
- S Stone
- SU Stucco
- SV Stone Veneer
- WS Wood Siding

Grade (Multiplies Base, Features)

- 0 Default --
- 0 Poor Quality -30%
- 15 Poor+ Quality -20%
- 20 Fair Quality -10%
- 25 Fair+ Quality -05%
- 30 Average Quality --
- 35 Average+ Quality 06%
- 40 Good Quality 12%
- 45 Good+ Quality 21%
- 50 Very Good Quality 30%
- 55 Very Good + Quality 38%
- 60 Excellent 45%

Story Height (Multiplies Base)

Currently not in use

Wall Height (Adds to Base Rate)

Currently not in use

CDU Condition, Desirability, Utility (Multiplies Base, Features)

- EX Excellent 35%
- VG Very Good 30%
- G Good 15%
- AV Average --
- F Fair -25%
- P Poor -50%
- VP Very Poor -70%
- US Unsound -90%

DEPRECIATION DETAIL

No. Description Value

Structure Class (Adjust EYB)

- 0 Default 0
- A Fireproof Steel -20%
- B Reinforced Conc. -15%
- C Con. Block/Brick -10%
- D Wood Frame 0
- S Steel/Sheet Metal 0

Remodel Rating (Adjusts EYB)

- 0 Default --
- 1 Unknown -10%
- 2 Gut Rehab -70%
- 3 Major Renovation -55%
- 4 Remodel -45%
- 5 Addition -30%
- 6 Cosmetic -10%

Year Remodeled (Adjust EYB)

- 2002-2005 0%
- 2000-2001 5%
- 1995-1999 15%
- 1990-1994 25%
- Earlier -1990 50%

Extra Features (Flat and Sq Ft Add)

- BL Balcony Flat
- ELEV Elevators Flat
- HVAC Heat & Cool Sq. Ft.
- MZ Mezzanines Sq. Ft.
- SPRK Sprinklers Sq. Ft.

Building RCN = [Section₁ (Base Rate * Effective Area * Size Adjustment) * (MV₀ * MV₂ * ... * MV_N)] + [Section_n (Base Rate * Effective Area * Size Adjustment) * (MV₀ * MV₂ * ... * MV_N)] + [Σ Special Building Features]

Where:

- RCN** = Replacement Cost New
- Base Rate** = \$ rate based on occupancy (use) code and construction class
- Section_n** = Each separate building or section of building
- Effective Area** = Adjusted SF area of improvement
- Size Adjustment** = Adjustment factor for deviation from base size
- MV** = Multiplicative Variables

Construction Detail - Commercial

Value Source: C Living Area/GFA: 5,400 Regression: 0
 Primary Occ: 045 Effective Area: 8,460 Income: 0
 Structure Class: C Percent Good: 79 RCNLD: 524,690

Model: 94 Commercial Section #: 1

Bldg Stories: 2

Occupancy: 045 Store-Restaurant
 Stories: 1 # Units: 0
 Structure Class: C Brick/Concr
 Exterior Finish: BV Brick Veneer
 Grade: 40 Good
 1st Floor Occ: 045 Store-Restaurant
 Wall Height: 10
 Shape/Peri: 2 Rectangular

Group: RS1
 Base Rate: 73.90
 Adj Base Rate: 73.03
 Effective Area: 3,600
 RCN: 343,337

Section Area Sur
 Code Description
 BAS Main Building Ar 180
 BM5 Basement, Full F 180

Depreciation

Value Source: C Living Area/GFA: 5,400 Regression: 0
 Primary Occ: 045 Effective Area: 8,460 Income: 0
 Structure Class: C Percent Good: 79 RCNLD: 524,690

Year Built	CDU	Remodel Rating	Year Remodeled	Effective Year Built	Status	Percent Complete	Value	Type	Rsn	Date	ID	Comment
1953	G	3	1998	1982	F	5						
							% Good Dvr					
							Misc Improv					
							Cost To Cure					

Vision® CAMA Income Approach Valuation Process

The income approach to the valuation of real property follows the generic formula of **Market Value = NOI/Capitalization Rate**, where **NOI** is the net operating income of the property and the **Capitalization Rate** is a market-derived overall direct capitalization rate. When properly developed and calibrated, this approach is a reliable indicator of market value of income producing properties within a mass-appraisal CAMA system.

The following exercise will attempt to illustrate how the Vision® CAMA system utilized by the District of Columbia calculates values using the above model. The first section will illustrate the traditional development of a market value estimate for a typical apartment building. This example will serve to provide a practical foundation for understanding the concepts of the income approach to valuation as well as an understanding of the major components of the Vision® CAMA methodology. The second section will illustrate the actual CAMA valuation of the apartment building described in the first section.

Income Approach to Value

An understanding of the income capitalization approach to value is essential in order to utilize the Vision® CAMA system's income model. Of the three traditional approaches to value (cost, market, income), the income approach is most often the appropriate approach when appraising property owned for its ability to produce income to the owner. An owner anticipates future income production and the income approach quantifies the present value of the income derived from the ownership of the property. There are several varieties or forms of the income approach used to quantify or convert income into an estimate of value. The most widely used approach is direct capitalization. Direct capitalization involves converting one year's stabilized net operating income into an estimate of value in one direct step using an appropriate rate. The direct capitalization method is rooted in the market. The rate used to convert income into value represents the relationship between value and income through the following formula:

$$\frac{I}{R \times V}$$

Where, I = Income
R = Rate
V = Value

Formula 1

To determine an estimate of value, divide the income by the rate. The income is the net operating income (NOI) and the rate is the direct capitalization rate. For example, if a property generates an NOI of \$50,000 per year and the market-derived capitalization rate is 8 percent, the indicated value would be \$625,000 ($\$50,000/.08$).

Where do these two numbers come from? The first number, NOI, is determined by a combination of things. First, the income and expenses of the particular property are analyzed and “re-constructed” to produce the NOI. Re-constructing simply means that we analyze the income and more particularly the expenses to ensure that we have a true understanding and estimate of the amount of net operating income annually produced by the property. Oftentimes an income report will detail some expenses not directly associated with the property. For example, the debt service of a loan on the property may be subtracted from the gross income. This is not a proper expense as it is a function of the owner’s financing and not an operating expense of the property. Another example may be a large “expense” taken against gross income that should be more properly spread over several years, or capitalized. Expense ratios are calculated for the various categories of expenses.

Another source for determining the NOI of a property is the analysis of many other similar properties for their income levels and expense levels or ratios. If the subject property’s income and expenses are typical for similar properties, the actual NOI of the property becomes the amount to be capitalized by the rate. If, on the other hand, the property exhibits unusual income or expenses based on comparison of the ratios, some actual amounts of income or expenses may be substituted with the amounts represented by more typical ratios. The goal is to establish the typical level of NOI that a prudent investor would anticipate deriving from the property each year.

Where does the rate come from? The rate is the overall direct capitalization rate. This is the rate for the overall property used to convert a single year’s income into an indication of value of the overall property using the IRV formula shown above. The rate is derived through sales analysis. Ideally, where arms-length sales of similar properties occur and the income and expense data are well known, a direct capitalization rate can be derived using the IRV formula. For example, suppose the subject property is office building and a similar office building recently sold for \$750,000. The reconstructed income and expense analysis indicated that at the time of sale the property was producing an annual net operating income of \$60,000. Using the IRV formula, the capitalization rate of the property was 8 percent ($\$60,000/\$750,000$). Reliable capitalization rates are the result of the analysis of many sales of income producing properties.

The following illustration is an example of a reconstructed income and expense statement for our sample property. The property, Breakaway South, is a high-rise apartment complex consisting of a one eight story concrete block building. The building has 164 rental units, a management office, laundry facility and on-site surface parking. It is located in the area of Saint Elizabeth’s in SE

Washington, DC. We'll use this property both here and in the example within Vision® CAMA in the second part of this tutorial.

Breakaway South Apartments	
- December 31, 2006-	
Potential Gross Income	\$1,419,600
Vacancy & Collection Loss (4%)	- 56,784
Miscellaneous Income (laundry)	<u>+ 54,000</u>
Effective Gross Income	\$1,416,816
Expenses	
Operating:	
Management (11%)	\$155,850
Insurance (10%)	141,682
Salaries (7%)	99,177
Utilities (9%)	127,513
Yard and Snow (4%)	56,673
Marketing (3%)	<u>42,505</u>
<i>Sub-total (44%)</i>	\$623,400
Reserves for Replacements:	
Roof (5%)	\$ 70,840
Parking (4%)	56,673
Redecorating (7%)	99,176
Appliances (4%)	<u>56,673</u>
<i>Sub-total (20%)</i>	\$283,362
Total Expenses (64%)	\$906,762
Net Operating Income (36%)	<u>\$510,054</u>
Capitalization Rate:	6.0%
Indicated Market Value	<u>\$8,500,900</u>

Illustration 1

As you examine the statement, you'll notice a few terms we have not discussed. The **potential gross income** is defined as the maximum amount of income the property can produce if fully rented at market rent before any expenses are deducted. There will always be some amount to deduct from the potential gross income in the form of **vacancy** and **collection loss**. Even if the property is fully leased, the appraiser must take some vacancy allowance to acknowledge tenant

turn-over and inevitable vacancies. It is unrealistic not to allow for some vacancy. Collection loss is that amount deducted from the potential gross income for nonpayment of rent.

In addition to rent, a property may have other sources of income. This **miscellaneous income** can come from such sources as an on-site laundry facility, furniture rental, community room rentals, and the like.

When an amount for vacancy and collection loss is subtracted, and an amount for miscellaneous income is added to the gross potential income, the result is the **effective gross income** of the property. Expenses are subtracted from, and expense ratios are calculated based upon, the effective gross income.

Expenses usually fall into two categories: **operating expenses** and **reserves for replacement**. Sometimes operating expenses may be further divided between variable and fixed expenses. Operating expenses are those legitimate expenses necessary to support the property's ability to produce effective gross income. The sample shows some of the more typical expenses incurred by an apartment building. Notice the calculation of the expense ratios mentioned earlier. As an example, the expense ratio for management is eleven percent of the effective gross income ($\$155,850/\$1,416,816$). These actual ratios are compared to typical ratios to see if any expenses are out of the ordinary.

Reserves for replacements are a category of expenses that are designed to set aside funds for long lived items that periodically need to be replaced. The amount of the expense is based on the item's economic life and the estimated cost to replace it in the future. Let's say that appliances must be replaced every five years at an estimated cost of \$1,728 per unit. With 164 units, we need to accumulate \$ 283,392 over a five year period. Charging \$56,673 per year to the reserves for replacement expense allows us to set aside enough money to replace the appliances according to the five year schedule. It is always appropriate to set aside reserves for replacements, even though in practice a property may not have done so. This is another aspect to "re-constructing" the income statement.

Subtracting the total expenses from the effective gross income leaves us with the net operating income of the property. The NOI of the property is the "I" in the IRV formula that will be converted to an indication of value using a capitalization rate.

As mentioned earlier, we employ the direct capitalization of income to produce an estimate of value. Again, the capitalization rates are determined by the analysis of sales of similar properties where the NOI is known. Capitalization rates vary between and within different categories of income-producing properties. Extensive analysis is necessary to determine the proper rate to apply to the different properties. For example, a capitalization rate for a high quality office building in a prime location will be lower than a capitalization rate for a lower quality office in a less desirable location. With all other things remaining equal and no unusual externalities, capitalization rates for offices are generally less

than rates for motels or shopping centers. It all harkens back to the level of return the buyer's expect to receive on their investment in commercial real estate. One of their considerations is that the more risk involved with the property, the more return they require thereby raising the capitalization rate resulting in a lower valuation.

We have selected a capitalization rate of 6 percent for our example property. Based on the information we now have available we can estimate the market value of the subject apartment to be \$8,500,900 ($\$510,054/0.06$).

The above discussion has been presented as a review of the income approach to valuation, more specifically the direct capitalization technique. Included was an example of the valuation of an apartment building. In the next section, we'll again value the same apartment building but conduct the valuation from within the District's CAMA system. Although the work flow may appear different, the underlying IRV formula should generate the same results.

Vision's® CAMA Income Approach to Value

In addition to the market-calibrated cost approach utilized by CAMA to value the residential property in the District, CAMA also has the capability to value commercial property using the more appropriate approach – the income capitalization approach. The discussion in this section will serve to illustrate the manner in which a commercial property, an apartment building, is valued based on the income approach.

To effectively value property, complete and accurate property characteristic must be known. Although the physical characteristics such as wall type, roof type, building style and the like are important, the most important information regarding commercial property subject to the income approach are characteristics of the property dealing with its ability to produce income. In an office building, for example, the gross building area or net leaseable area are important. In hotels and motels the significant measure is the number of rooms available. And in apartment buildings it would be the number and style of the units for rent.

We'll begin our appraisal of Breakaway South by identifying the "mix" of units in the building. The table below represents this information.

The mix of units is as follows:

No. of Bedrooms	1 Bed	2 Bed	3 Bed
No. of Bathrooms	1 Bath	1 Bath	2 Bath
No. of Units	62	76	26

Table 1

From our previous discussion of the income approach, we know that there are three “key” areas having to do with the income approach to value:

- Gross Income
- Vacancy & Expenses
- Capitalization Rate

The illustration below highlights the location of these key areas on the data entry screen within CAMA.

Economic Income Valuation Selected Economic Acct Exclude from Land Residual Rep Year: 2005

Land Use: 21 Residential
 Occupancy: 22
 Year Built: 1980
 Cost Value: 24,754,540
 Value / Bldg SF: 150942.32

Assng NBHD: 67
 Rent Curve: 005
 Cap Code: A5 APTS, SOUTHEAST
 Cap Adj: 4 GOOD
 Cap Rate: .06
 Override

Gross	1,473,600
Vac.	56,784
Exp.	906,762
Net	510,054

Leasable Area/Units
 Ground Level:
 Upper Level:
 Lower Level:
 Total Area/Units: 104

Notes
 Breakaway South, elevator apartment, 8 story building, NW corner of Cherry St and Dogwood St. SE. Recently remodeled. Close to Congress Heights Metro

Key Areas on Income Screen

Inc. Value: 8,500,900
 Exc Land: 0
 Total Value: 8,500,900
 Per SF/Unit: 51,834.76

Gross Rent | Vacancy & Expenses

#	B #	S #	Style	Description	# Tenants	SF/Unit	Base Rate	FL	Use	Loc	\$/Unit	DV?	Gross Rent	Adj Table
1	1	1	1101	1BR, 1BA	0	62	7200		3	3	7200	No	446400	1
2	1	1	2101	2BR, 1BA	0	76	8700		3	3	8700	No	661200	1
3	1	1	3201	3BR, 2BA	0	26	12000		3	3	12000	No	312000	1
4	1	1	5000	APT MISC INCOME	0	0			3	3	0	Yes	54000	6

Add Denotes that field has a pick key Denotes that the field is locked

Illustration 2

Gross Rent

Recall we will be appraising the same apartment property from the example in the first section. Let’s first turn our attention to the Gross Rent tab on the data entry screen. We’ll be entering information about the complex in the Gross Rent table, using one line for each *style* of apartments. By style, we mean the unit of comparison designated for apartment buildings – 1 bed-1 bath, 2 bed w/den-1 bath, 3 bed-2 bath, and the like.

Let's look at the first line of the table:

		Vacancy & Expenses													
	#	B #	S #	Style	Description	# Tenants	SF/Unit	Base Rate	FL	Use	Loc	\$/Unit	OV?	Gross Rent	Adj Table
▶	1	1	1	1101	1BR, 1BA	0	62	7200		3	3	7200	No	446400	1
	2	1	1	2101	2BR, 1BA	0	76	8700		3	3	8700	No	661200	1
	3	1	1	3201	3BR, 2BA	0	26	12000		3	3	12000	No	312000	1
	4	1	1	5000	APT MISC INCOME	0	0			3	3	0	Yes	54000	6

Illustration3

Our first line will account for the 1 bedroom-1 bath units in the complex. The style code "1101" is selected from a pick-list that describes the different styles available for apartments. Please refer to the illustration below for a partial list of Income Style for apartments.

Economic Income Valuation

Land Use: 21 Residential
Occupancy: 22
Year Built: 1980
Cost Value: 24,754,540
Value / Bldg SF: 150942.32

Leasable Area/Units
Ground Level: []
Upper Level: []
Lower Level: []
Total Area/Units: 64

Income Style

- 0000 JR. EFFICIENCY
- 0101 EFFICIENCY
- 0102 EFFICIENCY, SM
- 0103 EFFICIENCY, LG
- 1101 1BR, 1BA
- 1102 1BR, 1BA, SM
- 1103 1BR, 1BA, LG
- 1111 1BR+DEN, 1BA
- 1113 1BR+DEN 1BA, LG
- 2101 2BR, 1BA
- 2102 2BR, 1BA, SM
- 2103 2BR, 1BA, LG
- 2111 2BR+DEN, 1BA
- 2113 2BR+DEN 1BA, LG
- 2201 2BR, 2BA
- 2202 2BR, 2BA, SM

OK Cancel

		Vacancy & Expenses													
	#	B #	S #	Style	Description	# Tenants	SF/Unit	Base Rate	FL	Use	Loc	\$/Unit	OV?	Gross Rent	Adj Table
▶	1	1	1	1101	1BR, 1BA	0	62	7200		3	3	7200	No	446400	1
	2	1	1	2101	2BR, 1BA	0	76	8700		3	3	8700	No	661200	1
	3	1	1	3201	3BR, 2BA	0	26	12000		3	3	12000	No	312000	1
	4	1	1	5000	APT MISC INCOME	0	0			3	3	0	Yes	54000	6

Add Denotes that field has a pick key Denotes that the field is locked

Illustration 4

Recall that there are sixty-two 1BR, 1BA units and that number is recorded in the "SF/Unit" column of the table. In addition to recording the style and number of units, the appraiser may choose to modify the Gross Rent by taking into consideration both the tenant desirability and the location of the apartment. The two columns labeled "Use" and "Loc" account for these adjustments, respectively. The adjustments are percentage increases or decreases to the

Gross Income from the default value of “average.” Both the “Use” and “Loc” allow for the same percent adjustment each, as shown in the illustration below.

Illustration 5

The amount of adjustment is based on the table below:

Rating	Description	Location	Use
1	POOR	0.8	0.8
2	FAIR	0.9	0.9
3	AVERAGE	1	1
4	GOOD	1.1	1.1
5	EXCELLENT	1.25	1.25
A	AVERAGE	1	1

Table 2

In our example, we chose not to make any adjustments for location or desirability to any of the apartment units in this property.

The Base Rate shows the annual rent for each unit of the particular style “1101” – 1BR, 1BA. In this example the rent is \$ 600 per month or \$7,200 on an annual basis as shown in the base rate column. This value has been selected from a table in CAMA. The table has been calibrated based upon extensive market analysis of current rents segmented by location and style, throughout the District. Below is an excerpt of a table that illustrates the rents for our particular property.

			SOUTHEAST
Code	Description	Monthly Rent	
0000	JR. EFFICIENCY	416	
0101	EFFICIENCY	520	
0102	EFFICIENCY, SM	468	
0103	EFFICIENCY LG	572	
1101	1BR, 1BA	600	
1102	1BR, 1BA, SM	540	
1103	1BR, 1BA, LG	660	
1111	1BR+DEN, 1BA	825	
1113	1BR+DEN 1BA, LG	908	
2101	2BR, 1BA	725	
2102	2BR, 1BA, SM	653	
2213	2BR+DEN 2BA, LG	1100	
3101	3BR, 1BA	900	
3102	3BR, 1BA, SM	810	
3103	3BR, 1BA, LG	990	
3111	3BR+DEN, 1BA	1150	
3113	3R+DEN 1BA, LG	1265	
3201	3BR, 2BA	1000	

Table 3

Notice that our subject property is located in the Southeast market. The District of Columbia is divided into nine separate commercial markets for modeling purposes. The market influences within the Southeast are, for example, different from the influences within Central Business District or the Northwest market. Separate rent schedules exist for each separate market.

As we continue with our example, we account for the other two styles of units in a similar manner. At this point, the gross rent has been calculated to be \$1,419,600. But, if you recall from the income and expense statement, the property generated an additional \$54,000 in non-rental income. We need to include this amount to determine to total gross income.

To account for the miscellaneous income, select “5000 APT MISC INCOME” as the style and enter the actual amount directly into the Gross Rent column. We want to be sure to set the “OV?”(override), column to “Yes.” By doing so, we ensure that the amount does not get adjusted for vacancy and collection loss discussed in the next section. Typically, only rental income is subjected to vacancy and collection loss. See the illustration below:

Gross Rent														Vacancy & Expenses	
#	B #	S #	Style	Description	# Tenants	SF/Unit	Base Rate	FL	Use	Loc	\$/Unit	DV?	Gross Rent	Adj Table	
1	1	1	1101	1BR, 1BA	0	62	7200		3	3	7200	No	446400	1	
2	1	1	2101	2BR, 1BA	0	76	8700		3	3	8700	No	661200	1	
3	1	1	3201	3BR, 2BA	0	20	12000		2	2	12000	No	240000	1	
4	1	1	5000	APT MISC INCOME	0	0			4	4	0	Yes	54000	6	

Add Denotes that field has a pick key Denotes that the field is locked

Illustration 6

This concludes our discussion of the Gross Rent tab in the CAMA system. We have accounted for all of the rent attributable to the property and concluded that the Gross Rent is the sum of \$ 1,473,600, the same amount as shown on the income and expense sheet from section one. Next, we'll turn to the Vacancy & Expenses portion of the record.

Vacancy and Expenses

Our work in the Vacancy and Expenses tab will be similar to what we did in the Gross Income tab. However, in this table we'll account for four items:

- Vacancy amount
- EGI (Effective Gross Income) calculation
- Expense amount
- NOI (Net Operating Income) calculation

The sum of the NOI calculated here will be the basis for the final valuation using the IRV formula, after selecting a rate. See below:

Economic Income Valuation Selected Economic Acct Exclude from Land Residual Rep Year: 2005

Land Use: 21 Residential Assng NBHD: 67
 Occupancy: 22 Rent Curve: 005
 Year Built: 1980 Cap Code: A5 APTS, SOUTHEAST
 Cost Value: 24,754,540 Cap Adj.: 4 GOOD
 Value / Bldg SF: 150942.32 Cap Rate: .06
 Override

Gross 1,473,600
 Vac. 56,784
 Exp. 906,762
 Net 510,054

Leasable Area/Units **Notes**
 Ground Level: Breakaway South, elevator apartment, 8 story building.
 Upper Level: NW corner of Cherry St and Dogwood St, SE. Recently
 Lower Level: remodeled. Close to Congress Heights Metro.
 Total Area/Units: 164

Inc. Value: 8,500,900
 Exc Land: 0
 Total Value: 8,500,900
 Per SF/Unit 51,834.76

Gross Rent Vacancy & Expenses

#	Style	Vac	Vac %	OV?	Vac Amount	EGI	Exp Adj	Exp %	OV?	Exp Amount?	NOI	Adj Table
1	1101	4	.04	No	17856	428544	3	.64	No	274268	154276	1
2	2101	4	.04	No	26448	634752	3	.64	No	406241	228511	1
3	3201	4	.04	No	12480	299520	3	.64	No	191693	107827	1
4	500C	3	0	No	0	54000	3	.64	Yes	34560	19440	6

Denotes that field has a pick key Denotes that the field is locked

Illustration 7

A Vacancy and Expenses line is automatically created for each style shown on the Gross Rent tab. The values assigned by CAMA are based on the market location of the property and are derived from extensive market analysis. Recall that our apartments are located in the Southeast market. CAMA populates the

Vac% column and the Exp% column with the market rates appropriate for Southeast; in this case it would be based on this table:

	OLD CITY #2	SOUTHEAST	SOUTHWEST	UPTOWN EAST	UPTOWN WEST
Vacancy Ratio:	7%	8%	5%	7%	5%
Expense Ratio:	48%	64%	50%	64%	48%

Table 4

You may have noticed that the Vacancy % in the table and on the tab does not agree. We have examined the property and concluded that the vacancy rate should be less than the typical of 8 percent, to reflect the true status of the property. To make this adjustment, change the value in the column named “Vac” to an appropriate number. In this case, the vacancy is “Good”, thereby changing the Average, 8 percent to a lesser amount of 4 percent. See the illustration below:

Economic Income Valuation - Selected Economic Acct. - Exclude from Land Residual Rep. - Year: 2005

Land Use: 21 Residential
 Occupancy: 22
 Year Built: 1980
 Cost Value: 24,754.
 Value / Bldg SF: 150942

Adjustment Ratings

- 1 POOR
- 2 FAIR
- 3 AVERAGE
- 4 GOOD
- 5 EXCELLEN
- A AVERAGE

473,600
 56,784
 906,762
 510,054
 500,900
 0
 500,900
 1,834.76

OK
 Cancel

#	Style	Vac	Vac %	OV?	Vac Amount	EGI	Exp Adj	Exp %	OV?	Exp Amount?	NOI	Adj Table
1	110	4	.04	No	17856	428544	3	.64	No	274268	154276	1
2	210	4	.04	No	26448	634752	3	.64	No	406241	228511	1
3	320	4	.04	No	12480	299520	3	.64	No	191693	107827	1
4	500C	3	0	No	0	54000	3	.64	Yes	34560	19440	6

Denotes that field has a pick key Denotes that the field is locked

Illustration 8

The amount of adjustment for both vacancy and expense are shown in the table below. Whereas the typical vacancy for the Southeast market area is 8 percent, selecting “Good”, modifies the vacancy ratio by appropriate multiplier in the adjustment table. The adjusted amount is 4 percent (0.08 * 0.50).

Rating	Description	Vacancy	Expense
1	POOR	2	1.25
2	FAIR	1.5	1.1
3	AVERAGE	1	1
4	GOOD	0.5	0.9
5	EXCELLENT	0.25	0.75
A	AVERAGE	1	1

Table 5

By subtracting the vacancy amount calculated here from the Gross Income from the Gross Rent, the result is the EGI, as shown.

The Expense % may be adjusted in a similar manner, but in this case we'll leave it set to the typical percent associated with the Southeast market of sixty-four percent. By subtracting the Exp. Amount from the EGI, we get the NOI of the property. CAMA has calculated the NOI to be \$510,054, identical to our earlier income and expense report.

We're almost done. The last piece of the valuation puzzle is the capitalization rate.

Capitalization Rate

The capitalization rate is assigned to the property based on its market location. Neighborhood 67, Saint Elizabeth's, is located in the Southeast market area.

Economic Income Valuation Selected Economic Acct. Exclude from Land Residual Rep. Year: 2005

<p>Land Use: 21 Residential</p> <p>Occupancy: 22</p> <p>Year Built: 1980</p> <p>Cost Value: 24,754,540</p> <p>Value / Bldg SF: 150942.32</p>	<p>Assng NBHD: 67</p> <p>Rent Curve: 005</p> <p>Cap Code: <input type="text" value="A5"/> APTS, SOUTHEAST</p> <p>Cap Adj: <input type="text" value="4"/> GOOD</p> <p>Cap Rate: <input type="text" value=".06"/></p>	<p>Gross 1,473,600</p> <p>Vac. 56,784</p> <p>Exp. 906,762</p> <p>Net 510,054</p>
---	---	--

Override

<p>Leasable Area/Units</p> <p>Ground Level:</p> <p>Upper Level:</p> <p>Lower Level:</p> <p>Total Area/Units: 164</p>	<p>Notes</p> <p>Breakaway North, elevator apartment, 8 story building, NW corner of Cherry St and Dogwood St, SE. Recently remodeled. Close to Congress Heights Metro.</p>	<p>Inc. Value: 8,500,900</p> <p>Exc Land: <input type="text" value="0"/></p> <p>Total Value: 8,500,900</p> <p>Per SF/Unit 51,834.76</p>
--	---	--

		Gross Rent		Vacancy & Expenses									
#	Style	Vac	Vac %	OV?	Vac Amount	EGI	Exp Adj	Exp %	OV?	Exp Amount?	NOI	Adj Table	
▶ 1	1101	4	.04	No	17856	428544	3	.64	No	274268	154276	1	
2	2101	4	.04	No	26448	634752	3	.64	No	406241	228511	1	
3	3201	4	.04	No	12480	299520	3	.64	No	191693	107827	1	
4	500C	3	0	No	0	54000	3	.64	Yes	34560	19440	6	

Denotes that field has a pick key
 Denotes that the field is locked

Illustration 9

Capitalization rates may vary across the District based on the class of property (office, retail, apartments, etc.) and its location (market area). The assigned capitalization rate for apartments in the Southeast market is 0.069 or 6.9 percent.

Upon analysis of the property and its income and expenses, an adjustment to the cap rate is warranted. Instead of 'average', we want to adjust the rate down to reflect the property's overall good performance. Its good performance appears to be attributed, in part, to its close location to the hospital and the Congress Heights Metro stop. This adjustment is accomplished by the Cap Rate adjustment dialog box. See below.

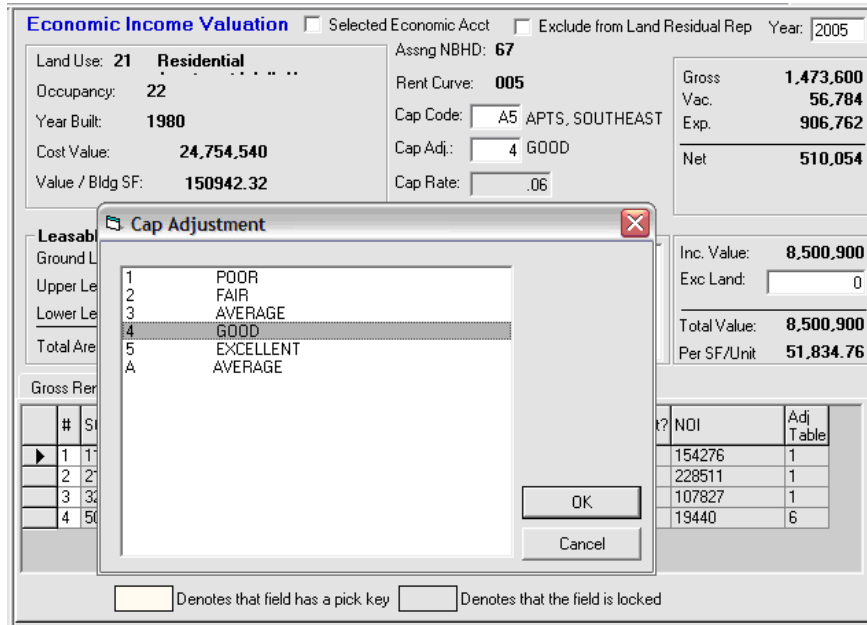


Illustration 10

The typical market capitalization rate was to be 0.069. The adjustment to good changed the rate to 0.060 or 6 percent. This was accomplished by multiplying the assigned rate by the appropriate adjustment factor, in this case 0.87.

Had we determined that the property was inferior and the cap rate needed to be adjusted to "Fair", the resulting rate would have been 0.079 or 7.9 percent. Remember IRV tells us that, all other things being equal, the lower the cap rate the higher the property value and visa versa. The table below shows the capitalization rate adjustment factors.

Cap Rating	Description	Adjustment
1	POOR	1.29
2	FAIR	1.15
3	AVERAGE	1
4	GOOD	0.87
5	EXCELLENT	0.75
A	AVERAGE	1

Table 6

Valuation

We have finally come to the end of our example and exercise. One simple division remains. Knowing that the NOI is \$510,054 and that the overall direct capitalization rate is 0.06, we can calculate the estimated value of Breakaway South to be \$8,500,900 ($\$510,054/0.06$). Again, this is identical to the amount estimated in the first section of the exercise. The final results are highlighted below.

Economic Income Valuation Selected Economic Acct Exclude from Land Residual Rep Year: 2005

Land Use: 21 Residential
 Occupancy: 22
 Year Built: 1980
 Cost Value: 24,754,540
 Value / Bldg SF: 150942.32

Assng NBHD: 67
 Rent Curve: 005
 Cap Code: A5 APTS, SOUTHEAST
 Cap Adj: 4 GOOD
 Cap Rate: .06

Gross: 1,473,600
 Vac: 56,784
 Exp: 906,762
 Net: 510,054

Leasable Area/Units
 Ground Level:
 Upper Level:
 Lower Level:
 Total Area/Units: 164

Notes
 Breakaway North, elevator apartment, 8 story building. NW corner of Cherry St and Dogwood St, SE. Recently remodeled. Close to Congress Heights Metro.

Inc. Value: 8,500,900
 Exc Land: 0
 Total Value: 8,500,900
 Per SF/Unit: 51,834.76

Gross Rent Vacancy & Expenses

#	Style	Vac	Vac %	DV?	Vac Amount	EGI	Exp Adj	Exp %	DV?	Exp Amount?	NOI	Adj Table
1	1101	4	.04	No	17856	428544	3	.64	No	274268	154276	1
2	2101	4	.04	No	26448	634752	3	.64	No	406241	228511	1
3	3201	4	.04	No	12480	299520	3	.64	No	191693	107827	1
4	500C	3	0	No	0	54000	3	.64	Yes	34560	19440	6

Denotes that field has a pick key Denotes that the field is locked

Illustration 11

Some Final Thoughts

We have introduced you to some of the most elementary aspects of property valuation using the District's Vision[®] CAMA system. We have developed the estimated market value of a fictitious apartment complex, utilizing the direct capitalization income approach to value. This guideline is merely a small window, a first step, in the complex field of mass appraisal. A CAMA system robust enough to appraise 184,000 different properties will necessarily be comprehensive and complex. Additionally, an initial valuation generated by CAMA is always subject to the review and approval of a qualified, professional appraiser before it becomes a final value. As you explore and utilize the program make certain that you fully understand the ramifications and results of your actions. Your supervisor and/or CAMA manager will always be available to assist you.

2011 CAMA Residential Construction Valuation Guideline -- RPAD

USECODE

(Selects Base Rate)

No.	Description	Value
011	Row	\$124.80
012	Detached	\$147.86
013	Semi-Detached	\$131.98
015	Mixed Use	\$124.80
019	Miscellaneous	\$124.80
023	Small Apt. Bldg.	\$ 96.30
024	Conversion	\$125.59

CONSTRUCTION DETAIL

No.	Description	Value
Style (Descriptive)		
1	1 Story	
2	1.5 Story Unfin	
3	1.5 Story Fin	
4	2 Story	
5	2.5 Story Unfin	
6	2.5 Story Fin	
7	3 Story	
8	3.5 Story Unfin	
9	3.5 Story Fin	
10	4 Story	
11	4.5 Story Unfin	
12	4.5 Story Fin	
13	Bi-Level	
14	Split Level	
15	Split Foyer	
Foundation (Descriptive)		
0	No Data	
4	Pier	
5	Wood	
6	Concrete	
View (Descriptive)		
0	Typical	
1	Poor	
2	Fair	
3	Average	
4	Good	
5	Very Good	
6	Excellent	
Building Type (Descriptive)		
0	Default	
1	Single	
2	Multi	
6	Row End	\$2.50
7	Row Inside	
8	Semi-Detached	
Roof (Add to Base Rate)		
0	Typical	
1	Comp Shingle	
2	Built Up	
3	Shingle	\$0.68
4	Shake	\$0.79
5	Metal-Pre	\$0.50
6	Metal Sms	\$0.50
7	Metal-Cpr	\$0.50
8	Composition Roll	-\$0.43
9	Concrete Tile	\$1.88
10	Clay Tile	\$2.93
11	Slate	\$2.86
12	Concrete	\$1.88
13	Neoprene	\$0.00
15	Wood- FS	\$0.68

Exterior Finish (Add to Base Rate)

0	Default	
1	Plywood	
2	Hardboard Lap	
3	Metal Siding	
4	Vinyl Siding	
5	Stucco	
6	Wood Siding	
7	Shingle	
8	SPlaster	
9	Rustic Log	
10	Brick Veneer	\$3.95
11	Stone Veneer	\$9.38
12	Concrete Block	
13	Stucco Block	
14	Common Brick	\$3.95
15	Face Brick	\$3.95
16	Adobe	
17	Stone	\$9.38
18	Concrete	\$3.95
19	Aluminum	
20	Brick/Stone	\$6.67
21	Brick/Stucco	\$1.98
22	Brick/Siding	\$1.98
23	Stone/Stucco	\$4.69
24	Stone/Siding	\$4.69

Heat Type (Add to Base Rate)

0	No Data	
1	Forced Air	
2	Air-Oil	\$0.55
3	Wall Furnace	-\$1.27
4	Electric Rad	-\$0.29
5	Elec Base Brd	-\$0.20
6	Water Base Brd	\$1.42
7	Warm Cool	
8	Ht Pump	
9	Evp Cool	
10	Air Exchng	
11	Gravity Furnace	
12	Ind Unit	
13	Hot Water Rad	

AC Type (Add to Base Rate)

0	Default	
N	No	
Y	Yes	\$1.80

Floor Covering (Add to Base Rate)

0	Default	\$2.50
1	Resilient	\$2.63
2	Carpet	\$2.17
3	Wood Floor	\$6.06
4	Ceramic Tile	\$8.53
5	Terrazzo	\$8.30
6	Hardwood	\$7.17
7	Parquet	\$8.15
8	Vinyl Comp	\$1.64
9	Vinyl Sheet	\$2.86
10	Lt Concrete	\$0.75
11	Hardwood/Carp	\$4.67

Per Unit Adjustment (Flat Rate Add)

Full Bath (over 1)	\$15,900
Half Bath	\$10,650
Fireplace	\$ 9,000
Kitchen	\$11,500
Finished Basement (Basic)	\$24.00/sf
Finished Basement (Partition)	\$45.00/sf
Basement Garage	\$35.00/sf
Carport	\$28.88/sf
Stoop	\$16.85/sf
Open Porch	\$16.85/sf
Covered Open Porch	\$33.70/sf

Screen Enclosed Porch	\$36.11/sf
Glass Enclosed Porch	\$40.92/sf
Fully Enclosed Porch	\$48.14/sf
Deck	\$24.07/sf
Patio	\$ 6.26/sf

Grade (Multiplies Base, Add & Flat)

0	Default	
1	Low Quality	0.50
2	Fair Quality	0.80
3	Average Quality	1.00
4	Above Average Quality	1.12
5	Good Quality	1.21
6	Very Good Quality	1.32
7	Excellent Quality	1.47
8	Superior Quality	1.65
9	Extraordinary – A	1.90
10	Extraordinary – B	2.10
11	Extraordinary – C	2.40
12	Extraordinary – D	2.70

Interior Condition (Multiplies Base, Add & Flat)

0	Typical	
1	Poor	.794
2	Fair	.909
3	Average	1.000
4	Good	1.077
5	Very Good	1.145
6	Excellent	1.170

Exterior Condition (Multiplies Base, Add & Flat)

0	Default	
1	Poor	.794
2	Fair	.909
3	Average	1.000
4	Good	1.077
5	Very Good	1.145
6	Excellent	1.170

Overall Condition (Multiplies Base, Add & Flat)

0	Default	
1	Poor	.794
2	Fair	.909
3	Average	1.000
4	Good	1.077
5	Very Good	1.145
6	Excellent	1.170

Remodel Type (Multiplies Base, Add & Flat)

0	Default	
1	Unknown	
2	Gut Rehab	1.22
3	Major Renov	1.15
4	Remodel	1.05
5	Addition	
6	Cosmetic	1.02

The effect of this multiplier diminishes at a rate of 5% per year based on the **Remodel Year**.

2011 CAMA Residential Construction Valuation Guideline -- RPAD

DEPRECIATION DETAIL

No.	Description	Value
Grade (Adjust EYB)		
0	Default	
1	Low Quality	20%
2	Fair Quality	10%
3	Average Quality	--
4	Above Average	-05%
5	Good Quality	-10%
6	Very Good Quality	-15%
7	Excellent Quality	-25%
8	Superior Quality	-35%
9	Extraordinary – A	-45%
10	Extraordinary – B	-50%
11	Extraordinary – C	-50%
12	Extraordinary – D	-50%

Bath Style (Adjust EYB)

0	Default	
1	No Remodeling	
2	Semi-Modern	- 05%
3	Modern	- 10%
4	Luxury	- 20%

Kitchen Style (Adjust EYB)

0	Default	
1	No Remodeling	
2	Semi-Modern	- 10%
3	Modern	- 20%
4	Luxury	- 40%

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * \text{Effective Area} * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_N)$$

Where:

RCN = Replacement Cost New
 Base Rate = \$ rate based on use and style
 ABRV = Additive Base Rate Variables
 Effective Area = Adjusted SF area of improvement
 Size Adjustment = Adjustment factor for deviation from base size
 AFRV = Additive Flat Rate Variables
 MV = Multiplicative Variables

Depreciation Table

Base Year 2010			
Effective Age of Building	% Depr.	% Good	Effective Year Built
0	0	100	2010
1	1	99	2009
2	2	98	2008
3	2	98	2007
4	3	97	2006
5	3	97	2005
6	4	96	2004
7	4	96	2003
8	4	96	2002
9	4	96	2001
10	5	95	2000
11	5	95	1999
12	5	95	1998
13	5	95	1997
14	6	94	1996
15	6	94	1995
16	6	94	1994
17	6	94	1993
18	6	94	1992
19	7	93	1991
20	7	93	1990
21	7	93	1989
22	7	93	1988
23	7	93	1987
24	8	92	1986
25	8	92	1985
26	8	92	1984
27	8	92	1983
28	8	92	1982
29	9	91	1981
30	9	91	1980
31	9	91	1979
32	9	91	1978
33	9	91	1977
34	9	91	1976
35	10	90	1975
36	10	90	1974
37	10	90	1973
38	10	90	1972
39	10	90	1971
40	10	90	1970
41	11	89	1969
42	11	89	1968
43	11	89	1967
44	11	89	1966
45	11	89	1965

46	11	89	1964
47	12	88	1963
48	12	88	1962
49	12	88	1961
50	12	88	1960
51	12	88	1959
52	12	88	1958
53	12	88	1957
54	13	87	1956
55	13	87	1955
56	13	87	1954
57	13	87	1953
58	13	87	1952
59	13	87	1951
60	14	86	1950
61	14	86	1949
62	14	86	1948
63	14	86	1947
64	14	86	1946
65	14	86	1945
70	15	85	1940
75	16	84	1935

2011 CAMA Commercial Construction Valuation Guideline -- RPAD

CONSTRUCTION DETAIL

Section Detail

No. Description Value

Building Stories

As Indicated.

Occupancy

As Indicated.
Select from list.

Stories and #Units

As Indicated.

Structure Class

- 0 Default
- A Fireproof Steel
- B Reinforced Concrete
- C Con. Block/Solid Brick
- D Wood Frame
- P Wood Pole
- S Steel/Sheet Metal

Exterior Finish

- 0 Typical
- AS Asphalt Siding
- BR Brick (Solid)
- BV Brick Veneer
- C Concrete
- CB Concrete Block
- MS Metal Siding
- S Stone
- SU Stucco
- SV Stone Veneer
- WS Wood Siding

Grade (Multiplies Base, Features)

- 0 Default --
- 0 Poor Quality -30%
- 15 Poor+ Quality -20%
- 20 Fair Quality -10%
- 25 Fair+ Quality -05%
- 30 Average Quality --
- 35 Average+ Quality 06%
- 40 Good Quality 12%
- 45 Good+ Quality 21%
- 50 Very Good Quality 30%
- 55 Very Good + Quality 38%
- 60 Excellent 45%

Story Height (Multiplies Base)

Currently not in use

Wall Height (Adds to Base Rate)

Currently not in use

CDU Condition, Desirability, Utility (Multiplies Base, Features)

- EX Excellent 35%
- VG Very Good 30%
- G Good 15%
- AV Average --
- F Fair -25%
- P Poor -50%
- VP Very Poor -70%
- US Unsound -90%

DEPRECIATION DETAIL

No. Description Value

Structure Class (Adjust EYB)

- 0 Default 0
- A Fireproof Steel -20%
- B Reinforced Conc. -15%
- C Con. Block/Brick -10%
- D Wood Frame 0
- S Steel/Sheet Metal 0

Remodel Rating (Adjusts EYB)

- 0 Default --
- 1 Unknown -10%
- 2 Gut Rehab -70%
- 3 Major Renovation -55%
- 4 Remodel -45%
- 5 Addition -30%
- 6 Cosmetic -10%

Year Remodeled (Adjust EYB)

- 2006-2008 0%
- 2003-2005 5%
- 2000-2002 15%
- 1997-1999 25%
- Earlier -1997 50%

Extra Features (Flat and Sq Ft Add)

- BL Balcony Flat
- ELEV Elevators Flat
- HVAC Heat & Cool Sq. Ft.
- MZ Mezzanines Sq. Ft.
- SPRK Sprinklers Sq. Ft.

Building RCN = [Section₁ (Base Rate * Effective Area * Size Adjustment) * (MV₀ * MV₂ * ... * MV_N)] + [Section_n (Base Rate * Effective Area * Size Adjustment) * (MV₀ * MV₂ * ... * MV_N)] + [Σ Special Building Features]

Where:

- RCN** = Replacement Cost New
- Base Rate** = \$ rate based on occupancy (use) code and construction class
- Section_n** = Each separate building or section of building
- Effective Area** = Adjusted SF area of improvement
- Size Adjustment** = Adjustment factor for deviation from base size
- MV** = Multiplicative Variables

Construction Detail - Commercial

Value Source: C Living Area/GFA: 5,400 Regression: 0
 Primary Occ: 045 Effective Area: 8,460 Income: 0
 Structure Class: C Percent Good: 79 RCNLD: 524,690

Model: 94 Commercial Section #: 1

Bldg Stories: 2

Occupancy: 045 Store-Restaurant
 Stories: 1 # Units: 0
 Structure Class: C Brick/Concr
 Exterior Finish: BV Brick Veneer
 Grade: 40 Good
 1st Floor Occ: 045 Store-Restaurant
 Wall Height: 10
 Shape/Peri: 2 Rectangular

Group: RS1
 Base Rate: 73.90
 Adj Base Rate: 73.03
 Effective Area: 3,600
 RCN: 343,337

Section Area Sur
 Code Description Group
 BAS Main Building Area 180
 BM5 Basement, Full F 180

Depreciation

Value Source: C Living Area/GFA: 5,400 Regression: 0
 Primary Occ: 045 Effective Area: 8,460 Income: 0
 Structure Class: C Percent Good: 79 RCNLD: 524,690

Year Built	Year Remodeled	Effective Year Built	Status	Percent Complete	Value	Type	Rsn	Date	ID	Comment
1953						G				
						3				
	1998									
		1982	F							
				5						

Override EYB

% Good Dvr
 Misc Improv
 Cost To Cure

2011 Cost Occupancy / Use Codes

Occ. Code	Land Class	Description	Bldg. Model	Bldg. Occ.	Cost Group	Cost Adjustment	Size Adj. Table	Standard Size	Standard Wall Height	Wall Height Adjustment	Run Cost?
001	C	Non-conform residential-single	94	001	RH1	1	S90	2000	8	0.015	-1
002	R	Non-conform residential-multi-	03	002	AP1	1	S90	1500	8	0.02	-1
003	R	Residential Transient	05	003	RH1	1	S90	8000	10	0.015	-1
004	C	Commercial-Retail (NC)	94	004	RT1	1	S90	5000	12	0.01	-1
005	C	Commercial-Office (NC)	94	005	OF1	1	S90	6000	10	0.015	-1
006	C	Commercial-Spec Purpose (NC)	94	006	GS1	1	S90	6000	8	0.015	-1
007	C	Industrial (NC)	96	007	MN2	1	S90	20000	8	0.015	-1
008	C	Special Purpose (NC)	94	008	GS1	1	S90	8000	8	0.015	-1
011	R	Residential Row Single Family	01	011	R11	1	SG3	1800	8	0.015	-1
012	R	Residential Detached Single Fa	01	012	R12	1	SG3	1800	8	0.015	-1
013	R	Residential-Semi-Detached Sing	01	013	R13	1	SG3	1800	8	0.015	-1
014	R	Residential Garage	00	014		1	S90	10000	0	0.015	-1
015	R	Residential-Mixed Use	01	015	R15	1	SG3	1800	8	0.02	-1
016	R	Residential-Condo-Horizontal	05	016	CND	1	S90	1000	8	0.015	-1
017	R	Residential-Condo-Vertical	05	017	CON	1	CDU	800	8	0.015	-1
018	R	Residential-Condo-Parking	00	018		1	S90	10000	8	0.015	-1
019	R	Residential-Single Family-Misc	01	019	R19	1	SG3	1800	8	0.015	-1
021	C	Residential Apartment-Walk-Up	94	021	AP1	1	S90	10000	8	0.02	-1
022	C	Residential-Apartment-Elevator	94	022	AP2	1	S90	50000	8	0.015	-1
023	R	Res Flats-Less than 5 Units	03	023	R23	1	SG4	3000	8	0.015	-1
024	R	Res-Coverions less than 5 Uni	02	024	R24	1	SG3	1800	8	0.015	-1
025	C	Res-Coverions 5 Units	94	025	MRC	1	S90	10000	8	0.02	-1
026	C	Res-Cooperative-Horizo	94	026	AP2	1	S90	10000	8	0.015	-1
027	C	Res-Cooperative-Verical	94	027	AP2	1	S90	50000	8	0.015	-1
028	C	Res-Conversions-mr than 5	94	028	MRC	1	S90	20000	8	0.015	-1
029	C	Res-Multi-family Misc	94	029	AP2	1	S90	50000	8	0.015	-1
031	C	Hotel-Small	94	031	HT1	1	S90	20000	9	0.01	-1
032	C	Hotel-Large	94	032	HT2	1	S90	135000	9	0.01	-1
033	C	Motel	94	033	HT1	0.8	S90	20000	9	0.01	-1
034	C	Private Club	94	034	GS1	1	S90	4000	14	0.015	-1
035	C	Tourist Homes	94	035	RH1	1	S90	8000	10	0.015	-1
036	C	Dormitory	94	036	RH2	1	S90	8000	8	0.015	-1
037	C	Inn	94	037	MRC	0.8	S90	12000	10	0.01	-1
038	C	Fraternity/Sorority House	94	038	RH2	1	S90	8000	10	0.015	-1
039	C	Res-Transient Misc	94	039	RH1	1	S90	5000	8	0.015	-1
041	C	Store-Small 1 Story	94	041	RT1	1	S90	10000	14	0.01	-1
042	C	Store-Misc	94	042	RT1	1	S90	4000	14	0.01	-1
043	C	Store-Department	94	043	RT3	1	S90	40000	14	0.01	-1
044	C	Store-Shopping Center/Mall	94	044	RT2	1	S90	60000	18	0.01	-1
045	C	Store-Restaurant	94	045	RS1	1	S90	5000	12	0.01	-1
046	C	Store-Barber/Beauty Shop	94	046	RT4	1	S90	4000	14	0.01	-1
047	C	Store-Super Market	94	047	RT2	0.88	S90	22000	14	0.01	-1
048	C	Commer-Retail-Condo	94	048	RT1	1	S90	3000	14	0.01	-1
049	C	Commer-Retail-Misc	94	049	RT1	1	S90	4000	14	0.01	-1
051	C	Commercial-Office-Small	94	051	OF1	1	S90	6000	10	0.015	-1
052	C	Commercial-Office-Large	94	052	OF3	1	S90	60000	10	0.015	-1
053	C	Commercial-Planned-Development	94	053	OF3	1	S90	300000	10	0.015	-1
056	C	Office-Condo-Horizontal	94	056	OF1	1	S90	3000	10	0.015	-1
057	C	Office-Condo-Vertical	94	057	OF1	1	S90	3000	10	0.015	-1
058	C	Commercial-Office-Condo	94	058	OF3	1	S90	6000	10	0.015	-1
059	C	Commercial-Office-Misc	94	059	OF2	1	S90	6000	10	0.015	-1
061	C	Commercial-Banks_ Financial Svc	94	061	BN1	1	S90	3000	14	0.015	-1
062	C	Commercial-Garage_ Vehicle Sal	94	062	PK1	1	S90	5000	8	0.015	-1
063	C	Commercial-Parking Garage	94	063	PK2	1	S90	55000	8	0.015	-1
064	C	Parking Lot Special Purpose	00	064		1	S90	25000	0	0	-1
065	C	Vehicle Svc Station_ Vintage	94	065	SV1	1	S90	5000	12	0.01	-1
066	C	Theaters_ Entertainment	94	066	GS2	1	S90	20000	22	0.01	-1
067	C	Commercial-Restaurant	94	067	RS1	1	S90	5000	12	0.01	-1
068	C	Commercial-Restaurant-Fast Foo	94	068	RS2	1.1	S90	3000	12	0.01	-1
069	C	Commercial-Specific Purpose	94	069	RT1	1	S90	10000	14	0.01	-1
071	C	Industrial-Raw Material	94	071	MN1	1	S90	15000	14	0.015	-1



Use Codes

Code Description	Long Description
001 Residential-Single Family (NC)	(CLASS 1) : Single-family residential property which normally would receive a use code, 11-19, 23-24 but has non-conforming use. (Assigned to Commercial)
002 Residential-Multi-Family (NC)	(CLASS 1) : Multi-family residential property which normally would receive a use code, 21-22 or 25-29, but has a non-conforming use. (Assigned to Residential)
003 Residential-Transient (NC)	(CLASS 1) : Transient residential property which normally would receive a use code, 31-39, but has a non-conforming use. (Assigned to Residential)
004 Commercial-Retail (NC)	(CLASS 2) : Retail commercial property which normally would receive a use code, 41-49, but has non-conforming use. (Assigned to Residential)
005 Commercial-Office (NC)	(CLASS 2) : Commercial office property which normally would receive a use code, 51-53,57-59, but has non-conforming use. (Assigned to Residential)
006 Commercial-Specific Purpose (NC)	(CLASS 2) : Commercial property which normally would receive a specific purpose use code, 61-69, but has non-conforming use. (Assigned to Residential)
007 Industrial (NC)	(CLASS 2) : Industrial property which normally would receive a use code, 71-79, but has non-conforming use. (Assigned to Residential)
008 Special Purpose (NC)	(CLASS 2) : Special purpose property which normally would receive a use code, 81-89, but has non-conforming use. (Assigned to Residential)
011 Residential-Row-Single-Family	(Class 1) : Single-family dwelling with 2 walls built as common walls with another structure, 2 exposed walls; primarily used as place of abode.
012 Residential-Detached-Single-Fa	(CLASS 1) : Free-standing dwelling with open space around it and in all exterior walls; primarily used as abode.
013 Residential-Semi-Detached-Sing	(CLASS 1) : Structure used primarily as accessory to single-family residence; no living quarters; on an individual lot.
014 Residential-Garage	(CLASS 1 or 2) : Single-family property with commercial (usually office) space in part of house. If use is mostly single-family, lot may be eligible for a Homestead Deduction.
015 Residential-Mixed Use	(CLASS 1) : Enclosed space of 1 or more rooms, occupying all or part of 1 or more floors; entrance no higher than 3 floors; single-family use; may/may not have parking, laundry, patio, etc.
016 Residential-Condo-Horizontal	(CLASS 1) : Enclosed space of 1 or more rooms, occupying all/part of 1 or more floors; in structure with elevator; more than 3 floors. Original primary use single-family. May have parking, laundry, patio, etc.
017 Residential-Condo-Vertical	(CLASS 1) : Specific space, enclosed or not, for vehicle parking or storage; use is accessory to single-family residential; no living quarters; individually located to be freely exchanged independently of another unit.
018 Residential-Condo-Garage	(CLASS 1) : All other residential-single family uses not otherwise coded.
019 Residential-Single-Family-Misc	(CLASS 1) : Structure of 6 or more units; 1 owner; owner's motivation is to earn net investment income; no units higher than 3rd floor; no elevator; may have accessory uses.
021 Residential-Apartment-Walk-Up	(CLASS 1) : Structure with 12 or more units; 1 owner; elevator, more than 3 floors; may have accessory uses (parking, laundry, etc.). Owner's motivation is investment income.
022 Residential-Apartment-Elevator	(CLASS 1) : Structure with more than 1 single family unit, less than 5; usually self-contained, under 1 roof; few accessory uses; in some cases, owner occupies 1 unit; built for this use.
023 Residential Flats-Less than 5	(CLASS 1) : Structure with more than 1 single-family unit, but less than 5; usually self-contained, under 1 roof; few accessory uses; 1 unit may be owner-occupied; original primary use not multi-family.
024 Residential-Conversions-Less t	(CLASS 1) : Structure with 5 units, usually not self-contained but under 1 roof; with few accessory uses; 1 unit may be owner-occupied; original primary use not multi-family.
025 Residential-Conversion-5 Units	(Class 1) : Structure with more than 1 unit, of 1 or more rooms; 1 corporate ownership accounts for benefit of all tenant-shareholders, or lease from shareholders; entrance no higher than 3 floors; may have accessory uses.
026 Residential-Cooperative-Horizontal	(Class 1) : Structure with more than 1 unit, each with 1 or more rooms; 1 corporate ownership accounts for benefit of all tenant-shareholders; lease from shareholders; elevator; more than 3 floors; may have accessory uses.
027 Residential-Cooperative-Vertical	(CLASS 1 or 2) : All other residential multi-family uses not otherwise noted.
029 Residential-Multifamily, Misc	(CLASS 2) : Structure providing a temporary or semi-permanent residence; sleep accommodations, personal services, usually eating/drinking facilities; may include entertainment; 150 rooms or less.
031 Hotel-Small	(CLASS 2) : Structure providing temporary or semi-permanent residences; full personal services; eating/drinking facilities, entertainment, retail, banquet /conference capabilities; more than 150 rooms.
032 Hotel-Large	(CLASS 2) : Structure used primarily as temporary residence; may include personal services, restaurant facilities, adequate parking; sleep accommodations may be open to building's exterior.
033 Motel	

Use Codes

Code Description	Long Description
034 Club-Private	(CLASS 2): Structure used primarily as meeting place for members of an association organized for promotion of a common social/other objective; limited to members/guests. May include meals, residential suites.
035 Tourist Homes	(CLASS 2) : Structure or part-structure used primarily for temporary sleep accommodations; no other services; may provide limited parking.
036 Dormitory	(CLASS 2) : Structure or part-structure used as resident hall with sleep accommodations; may provide other services, such as food/beverage facilities.
037 Inn	(CLASS 2) : Structure used primarily as a temporary residence. Rooms/suites may include kitchens; no guest central dining other than continental breakfast. No commercial adjuncts, function rooms.
038 Fraternity/Sorority House	(CLASS 1): Resident hall with sleep accommodations; may provide other services, such as food/beverage facilities.
039 Residential-Transient, Misc	(CLASS 2): All other residential transient not otherwise coded.
041 Store-Small 1-Story	(CLASS 2): Structure used primarily for retail sales; row, attached, or detached; with/without accessory uses; with/without living quarters.
042 Store-Misc	(CLASS 2): Structure used primarily for ground-level retail sales; row, attached, or detached; with/without other uses; with/without living quarters.
043 Store-Department	(CLASS 2): Structure used primarily for sales of combination of retail products; no living quarters; except custodial staff.
044 Store-Shopping Center/Mall	(CLASS 2) : Structure/combination of structures, enclosed/hot; with combination of retail businesses located to present a unified cluster of similar uses with common elements: parking, entrances, pedestrian areas.
045 Store-Restaurant	(CLASS 2): Structure used primarily for retail sales of food/drink prepared for carry-out or on-site consumption; in row; with/without other uses.
046 Store-Barber/Beauty Shop	(CLASS 2): Structure used primarily for retail sales/individual grooming services; on ground level; row, attached, or detached; other uses may occupy parts.
047 Store-Super Market	(CLASS 2): Structure used primarily for retail grocery sales; ground level; row, attached, or detached; with/without accessory uses.
048 Commercial-Retail-Condo	(CLASS 2): Unit in a predominately residential condo complex used for retail sales/service business.
049 Commercial-Retail-Misc	(CLASS 2): All other retail commercial land uses not otherwise coded.
051 Commercial-Office-Small	(CLASS 2): Structure without elevators used primarily for offices; secondary use may be retail sales, services, parking.
052 Commercial-Office-Large	(CLASS 2) : Structure with elevator; used predominantly for offices, secondarily for retail sales, services, parking.
053 Commercial-Planned Development	(CLASS 2): Structure/combination of structures designed to incorporate several coordinated commercial endeavors into 1 closely-grouped unit; may include mall, offices, theaters, hotels, etc.
056 Office-Condo-Horizontal	(CLASS 2): Structure with more than 1 unit; entrance no higher than 3 floors above ground level; designed primarily for office use; may have accessory uses such as parking, etc.
057 Office-Condo-Vertical	(CLASS 2): Structure with more than 1 unit, elevator, and more than 3 floors; designed primarily for office use; accessory uses such as parking, etc.
058 Commercial-Office-Condo	(CLASS 2): Unit in a predominantly residential condo complex used as a commercial office.
059 Commercial-Office-Misc.	(CLASS 2): All other commercial office uses which have not been otherwise coded.
061 Commercial-Banks, Financial	(CLASS 2): Structure with service facility devoted to transactions dealing with money as a commodity.
062 Commercial-Garage, Vehicle Sale	(CLASS 2): Structure with facility for motor vehicle repair; devoted to retail/ wholesale motor vehicle sales.
063 Commercial-Parking Garage	(CLASS 2): Structure used primarily for public storage of motor vehicles; repair, greasing, washing, or similar services incidental uses.
064 Parking Lot-Special Purpose	(CLASS 2) : Lot used primarily for public storage of motor vehicles; any repair is incidental use; may have attendance booth, storage lifts, residential parking space if on separate lot/paved.
065 Vehicle Service Station-Vintage	(CLASS 2): Structure used for retail sale of motor fuel, lubricants. Incidental services such as lubrication, hand-carwashing; sale, installation, minor repair of tires, batteries, other auto accessories.
066 Theaters, Entertainment	(CLASS 2): Structure with primary use for live, on-screen, or audience-participation entertainment.
067 Commercial-Restaurant	(CLASS 2): Structure used primarily as public eating place for retail sale of food/drink prepared/consumed on-site; secondary accessory uses.
068 Commercial-Restaurant-Fast Food	(CLASS 2): Structure used for retail sale of food/drink (non-alcoholic), cooked/heated in-structure for carry-out or on-site, usually specializing in a particular food.
069 Commercial-Specific Purpose, Misc	(CLASS 2) : All other specific purpose commercial uses not otherwise coded.
071 Industrial-Raw Material Handling	(CLASS 2) : Property used primarily to receive, store, handle, ship industrial bulk raw material, normally processed/used at another location.
072 Industrial-Heavy Manufacturing	(CLASS 2): Structure containing processing/manufacturing equipment which handles raw material; may change the material into a finished product for public use or for assembly operation; use limited to structure.

Use Codes

Code Description

Long Description

073 Industrial-Light	(CLASS 2): Structure used to process, assemble, or manufacture raw, semi-finished, or finished materials, and/or completed components; use not limited to structure.
074 Industrial-Warehouse-1-Story	(CLASS 2): Structure used primarily to store materials/finished products; unlimited story height; accessory uses: office and/or retail-wholesale display area, parking.
075 Industrial-Warehouse-Multi-Story	(CLASS 2): Structure used primarily to store materials/finished products; 2 or more floors devoted to structure's primary use; accessory office and retail-wholesale display area.
076 Industrial-Truck Terminal	(CLASS 2): Structure used primarily to store (short-term) and transfer (turn-around) materials/finished products shipped by truck; raised truck level bays for receiving/shipping; accessory office.
078 Warehouse-Condo	(CLASS 2): Structure used primarily to store materials/finished products; unlimited story height, 2 or more floors; accessory office and/or retail/wholesale display area.
079 Industrial-Misc	(CLASS 2): All other industrial uses not otherwise coded.
081 Religious	(CLASS 2): Structure devoted to public worship; housing for and/or education of clergy/officials connected to religious activity; religious communities.
082 Medical	(CLASS 2): Structure devoted to public/private medical or surgical care to the sick or injured; outpatient diagnosis/treatment; education of medical personnel/officials.
083 Educational	(CLASS 2): Structure devoted to any level of public/private instruction. May include administrative, accessory functions; parking, retail sales, secondary use.
084 Public Service	(CLASS 2): Structure used primarily to serve public to protect people or property; utility service; other public service. Accessory uses are secondary.
085 Embassy, Chancery, etc.	(CLASS 2): Structure used primarily as official residence and/or offices of an ambassador or foreign government. Accessory uses secondary.
086 Museum, Library, Gallery	(CLASS 2): Structure for exhibition, display, storage of art works, other displayable chattels; usually open for public enjoyment; accessory uses (parking, retail sales).
087 Recreational	(CLASS 2): Facility primarily used for public viewing of sporting events, training/participation in recreational activities, or any other special sporting or leisure activity.
088 Health Care Facility	(CLASS 2): Structure devoted to public/private medical care/treatment of the sick or injured; may include other medically connected activities, other uses (retail sales, parking).
089 Special Purpose-Misc	(CLASS 2): All other special purpose uses not otherwise coded.
091 Vacant-True	(Class 1): Lot not improved with a structure and Residential vacant land (formerly Class 5).
092 Vacant-with Permit	(CLASS 1): Lot for which an unexpired building permit has been issued.
093 Vacant-Zoning Limits	(CLASS 1): Lot on which DC Zoning regulations prohibit an owner to build as a matter of right.
094 Vacant-False-Abutting	(CLASS 1): Lot assigned no real estate improvement value, but having part of a structure whose value is assigned to another lot.
095 Vacant-Residential Use	(CLASS 1): Lot with relatively permanent structures (storage tanks, railroad tracks), but not buildings, used for residential purposes, making the lot unbuildable.
096 Vacant-Unimproved Parking	(CLASS 1): Unimproved, graveled parking lot with approved parking permit.
097 Vacant-Improved and Abandoned	(Class 3): Residential and commercial improved vacant and abandoned properties (formerly Class 5). No longer in use.
116 Condo-Horizontal-Combined-	(CLASS 1): Unit in a structure with entrance no higher than 3 floors; designed primarily for single family residential use; accessory uses. Abuts primary unit; owner entitled to lower (Class 1) tax rate, but not Homestead Deduction.
117 Condo-Vertical-Combined	(CLASS 1): Unit in structure with entrance no higher than 3 floors, designed primarily for single family residential use; accessory uses. Abuts primary unit; owner entitled to lower (Class 1) tax rate, but not Homestead Deduction.
126 Coop-Horizontal-Mixed Use	(Class 1 or 2): Structure with more than 1 unit, an elevator, more than 3 floors; under 1 corporate ownership which acts to benefit all shareholders-tenants. Additional uses: retail sales, restaurants, offices.
127 Coop-Vertical-Mixed Use	(Class 1 or 2): Structure with more than 1 unit, elevator, more than 3 floors; under 1 corporate ownership which acts to benefit all shareholders-tenants. Additional uses: retail sales, restaurants, offices.
165 Vehicle Service Station-Kiosk	(CLASS 2): Small cashier booth used for to sell motor oil, lubricants, small miscellaneous items (candy, gum, cigarettes).
189 Special Purpose-Memorial	(CLASS 2): Permanent structure other than a building devoted to or available for public use: statues, fountains, pools, etc.

Use Codes

Code Description	Long Description
191 Vacant-True	(CLASS 1, 2): Lot not improved with a structure and Commercial vacant land (formerly Class 5).
192 Vacant-With Permit	(Class 1 & 2): Lot for which an unexpired building permit has been issued.
193 Vacant-Zoning limits	(Class 1 & 2): Lot on which DC Zoning regulations prohibit an owner to build as a matter of right.
194 Vacant-False-Abutting	(CLASS 1 & 2): Lot assigned no real estate improvement value, but having part of a structure whose value is assigned to another lot.
195 Vacant-Commercial Use	(CLASS 1 & 2): Lot with relatively permanent structures (storage tanks, railroad tracks), but not buildings, used for commercial purpose, making the lot unbuildable.
196 Vacant-Unimproved Parking	(CLASS 1 & 2: Unimproved, graveled parking lot with approved parking permit.
197 Vacant-Improved and Abandoned	(CLASS 3): Residential and commercial improved vacant and abandoned properties (formerly Class 5). No longer in use.
214 Garage-Multi-Family	(CLASS 1): Structure used primarily as accessory to multi-family residence; no living quarters; on individual lot.
216 Condo-Investment-Horizontal	(CLASS 1): Unit with entrance no higher than 3 floors above ground level, designed for single- family primary use; accessory uses. Fee owner's presumptive motivation is net investment income.
217 Condo-Investment-Vertical	(CLASS 1): Unit with entrance no higher than 3 floors above ground level; designed for single- family primary use; accessory uses. Fee owner's presumptive motivation is net investment income.
265 Vehicle Service Station-Kiosk	(CLASS 2): Small cashier booth used for retail of motor oil, small miscellaneous items (candy, gum); and provides non-incident services like car washing.
316 Condo-Duplex	(CLASS 1): Enclosed space with 2 piggy-backed units; designed primarily for single-family use; accessory uses: parking, laundry, storage, balcony, etc.
365 Vehicle Service Station-Market	(CLASS 2): Structure used for retail of motor oil, lubricants, incidental items (edibles, household products).
416 Condo-Horizontal-Parking-Unit	(CLASS 1): Condo in regime where ownership of an associated parking space, following condo's sale, is unclear. (Assessor must determine space's status.)
417 Condo-Vertical-Parking-Unit	(CLASS 1): Condo in regime where ownership of an associated parking space, following condo's sale, is unclear. (Assessor must determine space's status.)
465 Vehicle Service Station-Market	(CLASS 2): Structure used to sell motor oil, lubricants, incidental items (edibles, household products); and to provide nonincidental services such as car washing.
516 Condo-Detached	(CLASS 1): Enclosed space of one unit of 1 or more rooms in a structure designed primarily for single- family residential use; accessory uses (parking, laundry, storage space, balcony, etc.)
995 Condo Main (class 1):	

2011 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
AP1	0	\$94.57	5	60	80	99
AP1	A	\$100.31	5	70	80	99
AP1	B	\$99.33	5	70	80	99
AP1	C	\$94.57	5	60	80	99
AP1	D	\$90.74	5	50	80	99
AP1	S	\$93.10	5	50	80	99
AP2	0	\$112.63	5	60	80	99
AP2	A	\$154.47	5	70	80	99
AP2	B	\$146.74	5	70	80	99
AP2	C	\$112.63	5	60	80	99
AP2	D	\$105.30	5	50	80	99
BN1	0	\$212.93	5	60	80	99
BN1	A	\$262.93	5	70	80	99
BN1	B	\$251.72	5	70	80	99
BN1	C	\$212.93	5	60	80	99
BN1	D	\$197.12	5	50	80	99
BN1	S	\$192.49	5	50	80	99
BS1	0	\$197.31	5	60	80	99
BS1	A	\$257.22	5	70	80	99
BS1	B	\$229.03	5	70	80	99
BS1	C	\$197.31	5	60	80	99
BS1	D	\$179.70	5	50	80	99
BS1	S	\$70.47	5	50	80	99
CD	R	\$132.13	5	99	80	99
CND	0	\$294.88	5	50	80	99
CND	A	\$294.88	5	50	80	99
CND	B	\$294.88	5	50	80	99
CND	C	\$294.88	5	50	80	99
CND	D	\$294.88	5	50	80	99
CND	R	\$294.88	5	50	80	99
CND	S	\$294.88	5	50	80	99
CW1	0	\$162.08	5	60	80	99
CW1	A	\$192.04	5	70	80	99
CW1	B	\$183.22	5	70	80	99
CW1	C	\$162.08	5	60	80	99
CW1	D	\$144.47	5	50	80	99
CW1	S	\$144.47	5	50	80	99
ED1	0	\$151.50	5	60	80	99
ED1	A	\$205.31	5	70	80	99
ED1	B	\$201.73	5	70	80	99
ED1	C	\$151.50	5	60	80	99
ED1	D	\$144.25	5	50	80	99
ED1	S	\$148.10	5	50	80	99
GEN	0	\$169.13	5	60	80	99
GEN	A	\$234.47	5	70	80	99
GEN	B	\$215.25	5	70	80	99
GEN	C	\$169.13	5	60	80	99
GEN	D	\$144.14	5	50	80	99
GEN	S	\$144.14	5	50	80	99
GS1	0	\$150.79	5	60	80	99
GS1	A	\$152.15	5	70	80	99
GS1	B	\$156.70	5	70	80	99
GS1	C	\$150.79	5	60	80	99
GS1	D	\$143.16	5	50	80	99
GS1	S	\$104.14	5	50	80	99
GS2	0	\$136.80	5	60	80	99

2011 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
GS2	A	\$214.65	5	70	80	99
GS2	B	\$207.44	5	70	80	99
GS2	C	\$136.80	5	60	80	99
GS2	D	\$128.36	5	50	80	99
GS2	S	\$130.25	5	50	80	99
GS3	0	\$171.14	5	60	80	99
GS3	A	\$249.09	5	70	80	99
GS3	B	\$239.77	5	70	80	99
GS3	C	\$171.14	5	60	80	99
GS3	D	\$160.41	5	50	80	99
GS3	S	\$161.13	5	50	80	99
HT1	0	\$116.62	5	60	80	99
HT1	A	\$140.30	5	70	80	99
HT1	B	\$137.77	5	70	80	99
HT1	C	\$116.62	5	60	80	99
HT1	D	\$108.73	5	50	80	99
HT1	S	\$116.50	5	50	80	99
HT2	0	\$180.88	5	60	80	99
HT2	A	\$191.00	5	70	80	99
HT2	B	\$187.96	5	70	80	99
HT2	C	\$145.86	5	60	80	99
HT2	D	\$135.40	5	50	80	99
HT2	S	\$180.69	5	50	80	99
MC1	0	\$263.01	5	60	80	99
MC1	A	\$354.78	5	70	80	99
MC1	B	\$345.56	5	70	80	99
MC1	C	\$263.01	5	60	80	99
MC1	D	\$244.32	5	50	80	99
MC1	S	\$146.13	5	50	80	99
MC2	0	\$170.41	5	60	80	99
MC2	A	\$222.50	5	70	80	99
MC2	B	\$214.46	5	70	80	99
MC2	C	\$170.41	5	60	80	99
MC2	D	\$159.12	5	50	80	99
MC2	S	\$170.41	5	50	80	99
MLT	R	\$96.34	5	70	80	70
MN1	0	\$64.64	5	60	80	99
MN1	A	\$76.07	5	70	80	99
MN1	B	\$72.26	5	70	80	99
MN1	C	\$64.64	5	60	80	99
MN1	D	\$59.50	5	50	80	99
MN1	S	\$60.42	5	50	80	99
MN2	0	\$139.88	5	60	80	99
MN2	A	\$189.01	5	70	80	99
MN2	B	\$183.57	5	70	80	99
MN2	C	\$139.88	5	60	80	99
MN2	D	\$93.08	5	50	80	99
MN2	S	\$135.75	5	50	80	99
MN4	0	\$186.75	5	60	80	99
MN4	A	\$237.84	5	70	80	99
MN4	B	\$204.36	5	70	80	99
MN4	C	\$186.75	5	60	80	99
MN4	D	\$172.65	5	50	80	99
MN4	S	\$172.65	5	50	80	99
MRC	0	\$135.78	5	75	40	75
MRC	A	\$135.78	5	75	40	75

2011 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
MRC	B	\$135.78	5	75	40	75
MRC	C	\$135.78	5	75	40	75
MRC	D	\$135.78	5	75	40	75
MRC	S	\$135.78	5	75	40	75
OF1	0	\$144.53	5	60	80	99
OF1	A	\$202.80	5	70	80	99
OF1	B	\$194.96	5	70	80	99
OF1	C	\$144.53	5	60	80	99
OF1	D	\$134.16	5	50	80	99
OF1	S	\$135.64	5	50	80	99
OF2	0	\$144.53	5	60	80	99
OF2	A	\$202.80	5	70	80	99
OF2	B	\$194.96	5	70	80	99
OF2	C	\$144.53	5	60	80	99
OF2	D	\$134.16	5	50	80	99
OF2	S	\$135.64	5	50	80	99
OF3	0	\$187.69	5	60	80	99
OF3	A	\$202.80	5	70	80	99
OF3	B	\$194.96	5	70	80	99
OF3	C	\$144.53	5	60	80	99
OF3	D	\$134.16	5	50	80	99
OF3	S	\$135.64	5	50	80	99
OFF	0	\$128.93	5	60	80	99
OFF	A	\$169.46	5	70	80	99
OFF	B	\$158.39	5	70	80	99
OFF	C	\$128.93	5	60	80	99
OFF	D	\$117.88	5	50	80	99
OFF	S	\$117.88	5	50	80	99
PK1	0	\$84.45	5	60	80	99
PK1	A	\$89.50	5	70	80	99
PK1	B	\$89.45	5	70	80	99
PK1	C	\$84.45	5	60	80	99
PK1	D	\$78.58	5	50	80	99
PK1	S	\$63.23	5	50	80	99
PK2	0	\$61.48	5	60	80	99
PK2	A	\$67.98	5	70	80	99
PK2	B	\$65.12	5	70	80	99
PK2	C	\$61.48	5	60	80	99
PK2	D	\$60.82	5	50	80	99
PK2	S	\$36.23	5	50	80	90
PS1	0	\$174.95	5	60	80	99
PS1	A	\$241.30	5	70	80	99
PS1	B	\$234.55	5	70	80	99
PS1	C	\$174.95	5	60	80	99
PS1	D	\$165.45	5	50	80	99
PS1	S	\$157.47	5	50	80	99
PS2	0	\$178.32	5	60	80	99
PS2	A	\$238.68	5	70	80	99
PS2	B	\$229.40	5	70	80	99
PS2	C	\$178.32	5	60	80	99
PS2	D	\$167.87	5	50	80	99
PS2	S	\$123.32	5	50	80	99
R11	R	\$124.80	6	75	80	75
R12	R	\$147.86	6	75	80	75
R13	R	\$131.98	6	75	80	75
R15	R	\$124.80	6	75	80	75

2011 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
R19	R	\$124.80	6	75	80	75
R23	R	\$96.30	6	75	80	75
R24	R	\$125.59	6	75	80	75
RB1	O	\$156.29	5	60	80	99
RB1	A	\$203.50	5	70	80	99
RB1	B	\$207.48	5	70	80	99
RB1	C	\$156.29	5	60	80	99
RB1	D	\$148.96	5	50	80	99
RB1	S	\$150.85	5	50	80	99
RES	R	\$96.10	5	70	80	70
RH1	O	\$131.99	5	70	80	99
RH1	A	\$131.99	5	70	80	99
RH1	B	\$131.99	5	70	80	99
RH1	C	\$131.99	5	70	80	99
RH1	D	\$131.99	5	70	80	99
RH1	S	\$131.99	5	70	80	99
RH2	O	\$181.24	5	60	80	99
RH2	A	\$217.86	5	70	80	99
RH2	B	\$213.91	5	70	80	99
RH2	C	\$181.24	5	60	80	99
RH2	D	\$171.94	5	50	80	99
RH2	S	\$97.92	5	50	80	99
RS1	O	\$147.89	5	60	80	99
RS1	A	\$197.62	5	70	80	99
RS1	B	\$195.61	5	70	80	99
RS1	C	\$147.89	5	60	80	99
RS1	D	\$138.71	5	50	80	99
RS1	S	\$144.41	5	50	80	99
RS2	O	\$159.49	5	60	80	99
RS2	A	\$218.07	5	70	80	99
RS2	B	\$215.85	5	70	80	99
RS2	C	\$159.49	5	60	80	99
RS2	D	\$149.43	5	50	80	99
RS2	S	\$156.34	5	50	80	99
RT1	O	\$99.42	5	60	80	99
RT1	A	\$128.13	5	70	80	99
RT1	B	\$123.76	5	70	80	99
RT1	C	\$100.21	5	60	80	99
RT1	D	\$94.13	5	50	80	99
RT1	S	\$97.52	5	50	80	99
RT2	O	\$96.13	5	60	80	99
RT2	A	\$113.49	5	70	80	99
RT2	B	\$112.33	5	70	80	99
RT2	C	\$96.13	5	60	80	99
RT2	D	\$90.04	5	50	80	99
RT2	S	\$93.24	5	50	80	99
RT3	O	\$149.61	5	60	80	99
RT3	A	\$160.77	5	70	80	99
RT3	B	\$155.40	5	70	80	99
RT3	C	\$124.57	5	60	80	99
RT3	D	\$146.55	5	50	80	99
RT3	S	\$155.43	5	50	80	99
RT4	O	\$94.94	5	60	80	99
RT4	A	\$96.07	5	70	80	99
RT4	B	\$95.09	5	70	80	99
RT4	C	\$94.94	5	60	80	99

2011 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
RT4	D	\$88.39	5	50	80	99
RT4	S	\$90.27	5	50	80	99
SIN	R	\$154.17	5	70	80	70
SS1	0	\$165.55	5	70	80	99
SS1	A	\$173.72	5	70	80	99
SS1	B	\$171.96	5	70	80	99
SS1	C	\$165.55	5	70	80	99
SS1	D	\$162.16	5	70	80	99
SS1	S	\$171.99	5	70	80	99
SS2	0	\$157.61	5	60	80	99
SS2	A	\$165.40	5	70	80	99
SS2	B	\$163.72	5	70	80	99
SS2	C	\$157.61	5	60	80	99
SS2	D	\$151.68	5	50	80	99
SS2	S	\$163.87	5	50	80	99
SV1	0	\$70.75	5	60	80	99
SV1	A	\$78.23	5	70	80	99
SV1	B	\$78.19	5	70	80	99
SV1	C	\$70.75	5	60	80	99
SV1	D	\$62.05	5	50	80	99
SV1	S	\$61.21	5	50	80	99
TM1	0	\$91.61	5	60	80	99
TM1	A	\$112.75	5	70	80	99
TM1	B	\$102.18	5	70	80	99
TM1	C	\$91.61	5	60	80	99
TM1	D	\$84.57	5	50	80	99
TM1	S	\$84.57	5	50	80	99
UT1	0	\$160.32	5	60	80	99
UT1	A	\$181.47	5	70	80	99
UT1	B	\$169.13	5	70	80	99
UT1	C	\$160.32	5	60	80	99
UT1	D	\$137.42	5	50	80	99
UT1	S	\$137.42	5	50	80	99
WH1	0	\$66.37	5	60	80	99
WH1	A	\$100.57	5	70	80	99
WH1	B	\$96.64	5	70	80	99
WH1	C	\$66.37	5	60	80	99
WH1	D	\$59.57	5	50	80	99
WH1	S	\$89.88	5	50	80	99
WH2	0	\$55.93	5	60	80	99
WH2	A	\$85.77	5	70	80	99
WH2	B	\$81.65	5	70	80	99
WH2	C	\$55.93	5	60	80	99
WH2	D	\$50.38	5	50	80	99
WH2	S	\$51.60	5	50	80	99
WH3	0	\$77.91	5	60	80	99
WH3	A	\$82.56	5	70	80	99
WH3	B	\$82.52	5	70	80	99
WH3	C	\$87.64	5	60	80	99
WH3	D	\$55.16	5	50	80	99
WH3	S	\$80.18	5	50	80	99

Real Property Assessment Division
2011 Base Change

All

Neighborhood	Name	Total Base			
		2010	2011	Difference	% Change
001	American University Park	\$2,951,543,281	\$2,885,027,300	-\$66,515,981	-2.25%
002	Anacostia	\$725,073,330	\$696,778,660	-\$28,294,670	-3.90%
003	Barry Farms	\$417,927,150	\$420,759,710	\$2,832,560	0.68%
004	Berkley	\$1,313,275,210	\$1,361,548,600	\$48,273,390	3.68%
005	Brentwood	\$1,118,214,360	\$1,092,898,970	-\$25,315,390	-2.26%
006	Brightwood	\$2,032,250,395	\$1,995,477,210	-\$36,773,185	-1.81%
007	Brookland	\$5,233,875,811	\$5,103,960,860	-\$129,914,951	-2.48%
008	Burleith	\$860,110,840	\$844,348,950	-\$15,761,890	-1.83%
009	Capitol Hill	\$3,453,770,291	\$3,404,207,830	-\$49,562,461	-1.44%
010	Central	\$49,194,235,066	\$42,811,916,220	-\$6,382,318,846	-12.97%
011	Chevy Chase	\$5,549,965,551	\$5,519,787,210	-\$30,178,341	-0.54%
012	Chillum	\$500,633,310	\$468,500,820	-\$32,132,490	-6.42%
013	Cleveland Park	\$2,927,406,127	\$2,830,781,960	-\$96,624,167	-3.30%
014	Colonial Village	\$550,233,880	\$535,188,130	-\$15,045,750	-2.73%
015	Columbia Heights	\$5,805,932,972	\$5,796,084,580	-\$9,848,392	-0.17%
016	Congress Heights	\$1,657,974,317	\$1,582,947,489	-\$75,026,828	-4.53%
017	Crestwood	\$690,168,480	\$690,893,270	\$724,790	0.11%
018	Deanwood	\$1,998,731,294	\$1,837,224,000	-\$161,507,294	-8.08%
019	Eckington	\$1,303,175,225	\$1,224,437,110	-\$78,738,115	-6.04%
020	Foggy Bottom	\$7,063,362,167	\$6,726,586,460	-\$336,775,707	-4.77%
021	Forest Hills	\$3,254,310,174	\$3,230,532,200	-\$23,777,974	-0.73%
022	Fort Dupont Park	\$1,122,304,670	\$1,044,751,980	-\$77,552,690	-6.91%
023	Foxhall	\$286,940,250	\$281,066,960	-\$5,873,290	-2.05%
024	Garfield	\$1,483,256,044	\$1,478,282,610	-\$4,973,434	-0.34%
025	Georgetown	\$7,841,228,835	\$7,607,138,760	-\$234,090,075	-2.99%
026	Glover Park	\$1,266,597,713	\$1,283,245,890	\$16,648,177	1.31%
027	Hawthorne	\$249,077,070	\$243,572,310	-\$5,504,760	-2.21%
028	Hillcrest	\$1,426,451,282	\$1,263,076,000	-\$163,375,282	-11.45%
029	Kalorama	\$4,492,864,182	\$4,440,765,330	-\$52,098,852	-1.16%
030	Kent	\$1,221,996,960	\$1,255,118,860	\$33,121,900	2.71%
031	LeDroit Park	\$1,132,986,280	\$1,114,546,100	-\$18,440,180	-1.63%
032	Lily Ponds	\$560,057,660	\$534,653,960	-\$25,403,700	-4.54%
033	Marshall Heights	\$487,789,890	\$468,201,490	-\$19,588,400	-4.02%
034	Massachusetts Av Heights	\$1,317,223,340	\$1,298,624,100	-\$18,599,240	-1.41%
035	Michigan Park	\$374,725,670	\$363,284,720	-\$11,440,950	-3.05%
036	Mount Pleasant	\$3,200,805,155	\$3,144,333,770	-\$56,471,385	-1.76%
037	North Cleveland Park	\$1,182,686,300	\$1,196,186,620	\$13,500,320	1.14%
038	Observatory Circle	\$2,248,246,079	\$2,171,733,390	-\$76,512,689	-3.40%
039	Old City I	\$12,003,407,846	\$12,040,144,340	\$36,736,494	0.31%
040	Old City II	\$15,079,439,895	\$14,672,485,407	-\$406,954,488	-2.70%
041	Palisades	\$1,045,090,825	\$1,050,053,020	\$4,962,195	0.47%
042	Petworth	\$2,426,895,147	\$2,260,704,940	-\$166,190,207	-6.85%
043	Randle Heights	\$1,303,588,180	\$1,270,095,920	-\$33,492,260	-2.57%
044	R.L.A. NE	\$2,810,093,253	\$2,632,409,620	-\$177,683,633	-6.32%
046	R.L.A. SW	\$6,751,730,982	\$6,263,881,240	-\$487,849,742	-7.23%
047	Riggs Park	\$940,560,435	\$890,911,580	-\$49,648,855	-5.28%
048	Shepherd Park	\$677,816,971	\$657,255,600	-\$20,561,371	-3.03%
049	Sixteenth Street Heights	\$1,305,649,591	\$1,273,969,900	-\$31,679,691	-2.43%
050	Spring Valley	\$1,982,500,840	\$1,920,814,620	-\$61,686,220	-3.11%
051	Takoma	\$421,770,809	\$404,370,060	-\$17,400,749	-4.13%
052	Trinidad	\$981,622,980	\$932,562,160	-\$49,060,820	-5.00%
053	Wakefield	\$662,603,571	\$667,890,680	\$5,287,109	0.80%
054	Wesley Heights	\$1,710,793,110	\$1,672,121,100	-\$38,672,010	-2.26%
055	Woodley	\$347,489,120	\$334,564,220	-\$12,924,900	-3.72%
056	Woodridge	\$1,592,984,355	\$1,512,834,800	-\$80,149,555	-5.03%
059	Rail Road Tracks	\$2,527,390	\$2,527,390	\$0	0.00%
063	North Anacostia Park	\$3,338,830	\$3,335,760	-\$3,070	-0.09%
066	Fort Lincoln	\$293,554,370	\$289,042,190	-\$4,512,180	-1.54%
068	Bolling AFB & Naval Research	\$39,260,086	\$40,861,610	\$1,601,524	4.08%
069	D.C. Village	\$5,790,790	\$5,768,010	-\$22,780	-0.39%
072	Mall	\$0	\$0	\$0	0.00%
073	Washington Navy Yard	\$603,650,190	\$593,647,890	-\$10,002,300	-1.66%
	Totals:	\$181,489,566,177	\$171,640,722,446	-\$9,848,843,731	-5.43%

Preliminary 2011 Performance Report

2009 SALES RATIOS CITY-WIDE

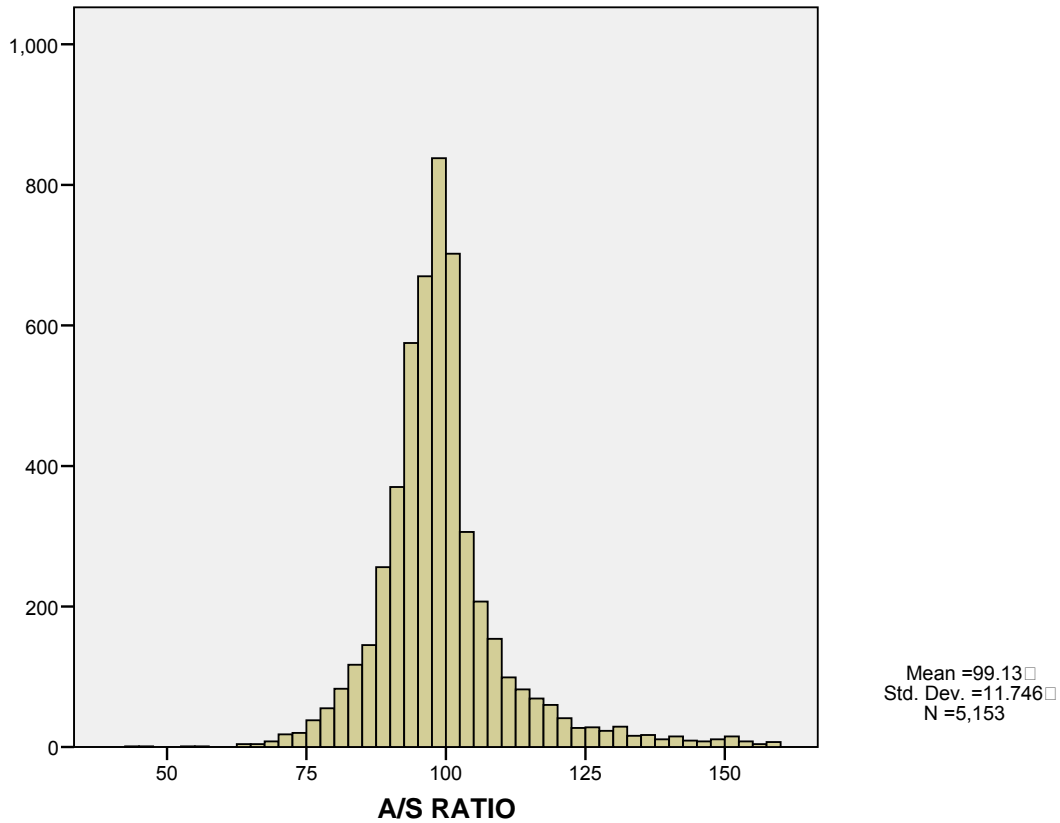
PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
All	5,268	667,190	406,420	98.2	99.0	96.7	8.0	4,298	970	1.02

2009 SALES RATIOS BY PROPERTY TYPE: CITY-WIDE

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Residential	5,153	525,564	402,800	98.2	99.1	97.7	7.7	4,213	940	1.01
Commercial	115	7,013,269	910,000	91.6	91.4	93.2	22.4	85	30	.98

CITY-WIDE

RESIDENTIAL SALES RATIOS



Sales Ratio Report Using Current 2010 Values

2009 SALES RATIOS BY NEIGHBORHOOD: SINGLE-FAMILY

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	75	827,377	780,000	99.8	99.6	98.4	8.5	54	21	1.01
2 ANACOSTIA	15	245,704	259,000	99.2	106	100.8	19.9	9	6	1.05
3 BARRY FARMS	19	284,210	311,000	90.9	93.6	91.8	9.4	17	2	1.02
4 BERKELEY	22	1,458,159	1,359,000	98.4	101	97.8	14.9	13	9	1.03
5 BRENTWOOD	12	262,449	237,950	115.7	118	114.3	12.7	2	10	1.03
6 BRIGHTWOOD	64	421,965	412,500	99.9	104	100.8	14.3	40	24	1.04
7 BROOKLAND	95	345,774	353,990	105.0	106	104.6	9.3	48	47	1.01
8 BURLEITH	17	1,014,238	925,650	97.2	99.1	100.3	8.2	12	5	.99
9 CAPITOL HILL	95	765,084	769,000	92.9	92.4	92.5	8.9	83	12	1.00
10 CENTRAL	7	2,687,571	1,350,000	97.2	92.3	80.6	9.6	6	1	1.15
11 CHEVY CHASE	162	871,893	799,250	96.0	95.9	95.2	8.4	139	23	1.01
12 CHILLUM	13	350,769	330,000	109.0	111	109.0	11.8	4	9	1.02
13 CLEVELAND PARK	42	1,387,711	1,012,500	99.4	100	91.7	14.5	24	18	1.10
14 COLONIAL VILLAGE	12	793,500	715,000	104.9	102	99.1	8.7	7	5	1.03
15 COLUMBIA HEIGHTS	126	455,044	427,750	95.0	99.2	96.5	15.4	93	33	1.03
16 CONGRESS HEIGHTS	35	213,639	210,000	108.5	115	112.0	17.4	13	22	1.03
17 CRESTWOOD	12	805,000	702,000	93.0	94.3	93.2	10.4	10	2	1.01
18 DEANWOOD	81	261,437	249,955	107.9	112	110.8	11.6	33	48	1.01
19 ECKINGTON	36	422,454	397,000	98.8	101	98.9	15.0	26	10	1.02
20 FOGGY BOTTOM	8	756,875	777,500	93.6	97.1	98.4	9.9	6	2	.99
21 FOREST HILLS	16	1,438,875	1,170,000	105.4	105	96.3	15.1	8	8	1.09
22 FORT DUPONT PARK	36	233,353	227,500	105.5	108	105.9	11.0	18	18	1.02
23 FOXHALL	16	764,431	739,500	96.8	97.9	97.0	5.1	15	1	1.01
24 GARFIELD	19	1,016,395	965,000	92.5	94.5	94.8	7.1	17	2	1.00
25 GEORGETOWN	90	1,450,872	1,200,000	98.5	98.7	96.3	11.2	63	27	1.03
26 GLOVER PARK	34	772,563	740,000	96.3	94.7	94.2	8.6	29	5	1.01
27 HAWTHORNE	5	786,675	731,375	97.9	103	103.2	6.9	3	2	1.00
28 HILLCREST	20	372,747	343,605	110.7	115	113.8	12.5	6	14	1.01
29 KALORAMA	23	2,152,917	1,573,000	99.7	96.1	92.9	12.2	16	7	1.03
30 KENT	34	1,504,529	1,130,000	100.7	101	102.5	14.2	22	12	.98
31 LEDROIT PARK	40	480,712	464,250	93.5	98.1	94.6	18.1	26	14	1.04
32 LILY PONDS	12	217,233	221,950	106.5	106	105.8	12.5	5	7	1.00
33 MARSHALL HEIGHTS	67	296,499	315,000	99.2	103	101.6	5.4	56	11	1.01
34 MASS. AVE. HEIGHTS	4	1,558,750	1,480,000	100.3	100	99.6	5.9	3	1	1.01
35 MICHIGAN PARK	10	389,359	386,395	94.9	107	105.6	19.3	6	4	1.01
36 MOUNT PLEASANT	48	690,221	705,000	97.4	99.6	98.7	10.3	35	13	1.01
37 N. CLEVELAND PARK	26	872,377	850,000	97.2	95.8	95.7	8.6	21	5	1.00
38 OBSERVATORY CIRCLE	13	1,030,808	950,000	107.6	110	110.6	8.4	5	8	1.00
39 OLD CITY #1	469	526,044	500,000	95.2	98.5	94.8	15.2	343	126	1.04
40 OLD CITY #2	144	690,266	625,000	96.4	98.5	96.7	12.8	104	40	1.02
41 PALISADES	26	934,846	785,000	101.3	101	99.3	8.0	18	8	1.01
42 PETWORTH	101	356,301	358,000	104.0	111	106.9	15.7	53	48	1.04
43 RANDLE HEIGHTS	27	263,700	245,000	101.7	112	107.5	17.4	16	11	1.05
46 R.L.A. (S.W.)	8	670,000	675,000	104.0	104	103.5	11.6	4	4	1.01
47 RIGGS PARK	32	275,379	275,000	104.6	107	106.1	8.7	17	15	1.01
48 SHEPHERD PARK	13	660,750	650,000	87.4	90.5	89.3	8.4	13	0	1.01
49 16TH STREET HEIGHTS	46	527,468	525,750	93.5	97.2	94.4	15.5	35	11	1.03
50 SPRING VALLEY	24	1,932,958	1,432,500	104.2	105	100.5	8.2	13	11	1.04
51 TAKOMA PARK	12	380,658	330,000	97.0	93.1	87.9	14.7	10	2	1.06
52 TRINIDAD	26	258,801	262,500	110.7	114	109.9	17.2	12	14	1.04
53 WAKEFIELD	6	906,500	918,000	93.1	92.0	91.4	6.5	6	0	1.01
54 WESLEY HEIGHTS	15	1,591,810	1,430,000	94.6	99.1	98.8	10.2	11	4	1.00
55 WOODLEY	11	1,360,818	1,235,000	100.3	99.2	99.3	6.9	8	3	1.00
56 WOODRIDGE	35	340,262	335,000	101.6	107	104.4	13.6	21	14	1.02
66 FORT LINCOLN	33	445,993	450,950	101.3	101	100.6	4.0	28	5	1.00

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Single-Family	2,489	661,932	535,000	99.0	101	97.3	13.0	1,705	784	1.04

Sales Ratio Report Using Current 2010 Values

2009 SALES RATIOS BY NEIGHBORHOOD: CONDOMINIUMS

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	9	462,611	435,000	99.7	102	100.4	7.1	6	3	1.02
2 ANACOSTIA	27	253,781	249,900	114.8	116	116.4	7.2	4	23	1.00
3 BARRY FARMS	5	218,539	221,196	120.4	112	109.7	9.4	2	3	1.02
4 BERKELEY	4	498,500	546,000	95.4	91.7	93.0	5.1	4	0	.99
5 BRENTWOOD	12	177,742	180,950	101.8	109	107.2	8.6	8	4	1.01
6 BRIGHTWOOD	24	279,384	241,950	99.0	95.4	95.0	10.2	20	4	1.00
7 BROOKLAND	34	206,356	179,450	102.9	109	107.2	11.8	19	15	1.02
9 CAPITOL HILL	43	391,552	349,000	99.3	97.2	96.6	7.8	34	9	1.01
10 CENTRAL	285	539,873	399,999	98.5	99.2	96.4	9.7	217	68	1.03
11 CHEVY CHASE	12	681,229	347,000	95.4	95.8	86.7	13.9	9	3	1.11
13 CLEVELAND PARK	72	352,348	342,000	99.1	100	99.4	6.9	57	15	1.01
15 COLUMBIA HEIGHTS	289	351,472	324,000	100.0	98.8	98.5	7.3	234	55	1.00
16 CONGRESS HEIGHTS	12	136,239	154,335	96.3	105	102.7	16.9	8	4	1.03
18 DEANWOOD	7	159,571	139,000	124.6	119	117.4	5.2	2	5	1.01
19 ECKINGTON	23	264,570	242,000	100.0	105	106.1	8.0	17	6	.99
20 FOGGY BOTTOM	32	252,313	215,000	100.3	104	103.4	8.3	23	9	1.00
21 FOREST HILLS	30	322,132	321,500	92.9	93.3	91.4	9.1	25	5	1.02
22 FORT DUPONT PARK	9	214,333	215,000	93.9	93.1	93.1	3.0	9	0	1.00
24 GARFIELD	31	410,706	391,200	96.5	99.1	98.1	7.0	24	7	1.01
25 GEORGETOWN	51	1,010,520	575,000	97.1	99.9	83.9	18.2	31	20	1.19
26 GLOVER PARK	30	288,167	286,000	99.3	97.6	96.3	8.9	22	8	1.01
28 HILLCREST	17	185,488	214,900	100.0	105	101.2	8.2	14	3	1.03
29 KALORAMA	123	441,614	380,000	94.5	93.8	94.6	9.8	109	14	.99
31 LEDROIT PARK	37	327,512	324,450	97.7	96.8	96.0	6.4	33	4	1.01
33 MARSHALL HEIGHTS	16	195,235	169,500	98.6	98.5	96.7	11.5	12	4	1.02
36 MOUNT PLEASANT	95	425,652	405,000	95.6	96.5	95.6	8.7	80	15	1.01
37 N. CLEVELAND PARK	4	361,787	350,075	92.5	95.5	95.6	8.7	3	1	1.00
38 OBSERVATORY CIRCLE	39	399,100	350,000	99.6	101	98.9	10.6	28	11	1.02
39 OLD CITY #1	205	372,134	368,000	98.3	102	100.2	10.3	159	46	1.02
40 OLD CITY #2	881	411,233	392,900	100.0	102	101.0	9.0	606	275	1.01
41 PALISADES	10	251,550	257,250	93.8	96.8	94.9	8.6	9	1	1.02
42 PETWORTH	49	237,489	222,500	108.4	110	108.0	8.0	18	31	1.02
43 RANDLE HEIGHTS	8	159,849	164,450	90.6	88.3	87.8	14.9	7	1	1.01
46 R.L.A. (S.W.)	75	255,664	236,900	100.0	100	98.7	10.7	55	20	1.01
49 16TH STREET HEIGHTS	10	190,567	188,734	118.6	122	122.1	11.2	2	8	1.00
52 TRINIDAD	4	292,500	297,500	102.3	103	103.5	3.2	3	1	1.00
53 WAKEFIELD	12	304,167	293,000	98.7	100	99.4	9.9	7	5	1.01
54 WESLEY HEIGHTS	33	372,339	385,000	100.6	103	101.6	8.4	23	10	1.01
56 WOODRIDGE	2	195,000	195,000	113.2	113	113.5	11.8	1	1	1.00
66 FORT LINCOLN	3	244,717	226,000	110.3	109	105.9	20.6	1	2	1.03

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Condominium	2,664	398,154	359,950	100.0	101	98.4	9.5	1,945	719	1.02

Sales Ratio Report Using Current 2010 Values

2009 SALES RATIOS BY NEIGHBORHOOD: MULTI-FAMILY

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
3 BARRY FARMS	1	2,553,000	2,553,000	82.6	82.6	82.6	.0	1	0	1.00
6 BRIGHTWOOD	1	1,160,000	1,160,000	103.6	104	103.6	.0	1	0	1.00
7 BROOKLAND	1	465,000	465,000	109.1	109	109.1	.0	0	1	1.00
9 CAPITOL HILL	1	975,000	975,000	100.0	100	100.0	.0	1	0	1.00
11 CHEVY CHASE	1	4,625,000	4,625,000	72.8	72.8	72.8	.0	1	0	1.00
15 COLUMBIA HEIGHTS	3	1,203,333	950,000	89.1	81.0	73.4	16.1	3	0	1.10
16 CONGRESS HEIGHTS	1	259,900	259,900	97.3	97.3	97.3	.0	1	0	1.00
18 DEANWOOD	1	650,000	650,000	101.3	101	101.3	.0	1	0	1.00
29 KALORAMA	1	1,000,000	1,000,000	94.9	94.9	94.9	.0	1	0	1.00
33 MARSHALL HEIGHTS	1	2,300,000	2,300,000	75.4	75.4	75.4	.0	1	0	1.00
36 MOUNT PLEASANT	2	2,737,500	2,737,500	94.4	94.4	94.8	1.0	2	0	1.00
39 OLD CITY #1	2	1,112,500	1,112,500	113.6	114	108.3	45.9	1	1	1.05
40 OLD CITY #2	6	1,035,167	1,075,750	90.1	96.7	96.8	12.3	5	1	1.00
43 RANDLE HEIGHTS	2	400,000	400,000	130.5	130	130.5	16.3	0	2	1.00
56 WOODRIDGE	1	590,000	590,000	90.7	90.7	90.7	.0	1	0	1.00
TOTALS:										
PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Multi-Family	25	1,315,956	1,000,000	94.9	97.1	90.0	16.6	20	5	1.08

Sales Ratio Report Using Current 2010 Values

2009 SALES RATIOS BY NEIGHBORHOOD: COMMERCIAL

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
2 ANACOSTIA	1	500,000	500,000	55.4	55.4	55.4	.0	1	0	1.00
5 BRENTWOOD	4	745,000	495,000	76.9	75.4	72.8	25.0	4	0	1.03
6 BRIGHTWOOD	1	1,450,000	1,450,000	54.0	54.0	54.0	.0	1	0	1.00
7 BROOKLAND	4	613,000	425,000	124.0	121	125.1	5.8	0	4	.97
9 CAPITOL HILL	6	1,290,125	1,125,000	49.4	51.7	51.0	6.7	6	0	1.02
10 CENTRAL	17	37,920,619	16254441	97.9	94.3	102.0	13.8	12	5	.92
11 CHEVY CHASE	1	1,500,000	1,500,000	93.9	93.9	93.9	.0	1	0	1.00
12 CHILLUM	2	267,500	267,500	69.5	69.5	71.7	22.7	2	0	.97
15 COLUMBIA HEIGHTS	3	297,500	310,000	98.3	97.9	98.2	9.0	2	1	1.00
16 CONGRESS HEIGHTS	1	180,000	180,000	82.6	82.6	82.6	.0	1	0	1.00
18 DEANWOOD	1	154,100	154,100	64.9	64.9	64.9	.0	1	0	1.00
19 ECKINGTON	2	425,000	425,000	101.4	101	114.7	44.8	1	1	.88
20 FOGGY BOTTOM	1	420,000	420,000	90.2	90.2	90.2	.0	1	0	1.00
24 GARFIELD	1	1,600,000	1,600,000	64.3	64.3	64.3	.0	1	0	1.00
25 GEORGETOWN	4	846,875	900,000	69.5	73.8	70.1	11.4	4	0	1.05
26 GLOVER PARK	1	1,100,000	1,100,000	63.1	63.1	63.1	.0	1	0	1.00
29 KALORAMA	2	945,000	945,000	88.6	88.6	89.0	7.4	2	0	.99
31 LEDROIT PARK	1	470,000	470,000	143.7	144	143.7	.0	0	1	1.00
36 MOUNT PLEASANT	3	2,583,333	2,100,000	84.2	91.6	104.9	37.5	2	1	.87
38 OBSERVATORY CIRCLE	1	62,100,000	62100000	125.5	125	125.5	.0	0	1	1.00
39 OLD CITY #1	5	612,000	725,000	102.7	93.4	87.1	18.9	3	2	1.07
40 OLD CITY #2	11	1,561,818	980,000	89.0	94.8	100.4	18.7	8	3	.94
42 PETWORTH	4	242,500	232,500	114.1	113	113.5	10.6	2	2	1.00
43 RANDLE HEIGHTS	1	2,100,000	2,100,000	91.2	91.2	91.2	.0	1	0	1.00
48 SHEPHERD PARK	1	490,000	490,000	50.3	50.3	50.3	.0	1	0	1.00
49 16TH STREET HEIGHTS	2	450,000	450,000	78.1	78.1	89.5	32.7	2	0	.87
52 TRINIDAD	1	1,200,000	1,200,000	44.5	44.5	44.5	.0	1	0	1.00
56 WOODRIDGE	8	640,579	401,500	113.5	108	92.5	22.4	3	5	1.17
TOTALS:										
PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Commercial	90	8,595,856	850,000	89.8	89.9	102.6	25.9	64	26	.88

Sales Ratio Report Using Proposed 2011 Values

2009 SALES RATIOS BY NEIGHBORHOOD: SINGLE-FAMILY

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	75	827,377	780,000	98.1	98.3	98.1	2.3	73	2	1.00
2 ANACOSTIA	15	245,704	259,000	94.7	101	96.7	17.3	10	5	1.04
3 BARRY FARMS	19	284,210	311,000	86.1	89.4	87.5	9.2	18	1	1.02
4 BERKELEY	22	1,458,159	1,359,000	98.4	98.7	98.5	1.0	22	0	1.00
5 BRENTWOOD	12	262,449	237,950	104.3	109	105.2	12.3	7	5	1.03
6 BRIGHTWOOD	64	421,965	412,500	98.7	103	101.2	7.4	52	12	1.02
7 BROOKLAND	95	345,774	353,990	98.4	99.3	98.4	6.3	75	20	1.01
8 BURLEITH	17	1,014,238	925,650	96.2	97.4	97.1	2.7	16	1	1.00
9 CAPITOL HILL	95	765,084	769,000	96.6	96.3	96.1	5.2	88	7	1.00
10 CENTRAL	7	2,687,571	1,350,000	102.3	101	95.7	4.3	5	2	1.06
11 CHEVY CHASE	162	871,893	799,250	97.5	97.1	96.7	5.0	148	14	1.00
12 CHILLUM	13	350,769	330,000	100.0	101	100.4	3.2	11	2	1.00
13 CLEVELAND PARK	42	1,387,711	1,012,500	99.5	99.7	97.6	7.7	32	10	1.02
14 COLONIAL VILLAGE	12	793,500	715,000	97.6	97.1	95.3	5.5	11	1	1.02
15 COLUMBIA HEIGHTS	126	455,044	427,750	95.9	98.6	96.2	12.3	96	30	1.03
16 CONGRESS HEIGHTS	35	213,639	210,000	98.1	104	102.3	9.7	27	8	1.02
17 CRESTWOOD	12	805,000	702,000	99.6	101	100.4	4.2	10	2	1.00
18 DEANWOOD	81	261,437	249,955	97.5	100	99.0	10.0	57	24	1.01
19 ECKINGTON	36	422,454	397,000	99.1	99.7	99.5	2.1	34	2	1.00
20 FOGGY BOTTOM	8	756,875	777,500	98.5	99.4	99.6	3.9	7	1	1.00
21 FOREST HILLS	16	1,438,875	1,170,000	98.6	100	96.6	7.0	13	3	1.04
22 FORT DUPONT PARK	36	233,353	227,500	96.2	97.4	96.4	10.2	28	8	1.01
23 FOXHALL	16	764,431	739,500	98.4	97.8	97.7	3.3	15	1	1.00
24 GARFIELD	19	1,016,395	965,000	96.0	97.6	97.8	3.8	18	1	1.00
25 GEORGETOWN	90	1,450,872	1,200,000	99.2	99.4	98.2	4.3	80	10	1.01
26 GLOVER PARK	34	772,563	740,000	98.6	98.6	98.3	3.1	33	1	1.00
27 HAWTHORNE	5	786,675	731,375	101.0	100	100.3	1.8	5	0	1.00
28 HILLCREST	20	372,747	343,605	92.5	96.5	95.5	10.7	16	4	1.01
29 KALORAMA	23	2,152,917	1,573,000	99.2	100	98.7	4.5	20	3	1.01
30 KENT	34	1,504,529	1,130,000	98.8	98.3	98.7	2.2	33	1	1.00
31 LEDROIT PARK	40	480,712	464,250	99.5	99.4	99.2	1.1	39	1	1.00
32 LILY PONDS	12	217,233	221,950	98.9	101	100.5	7.6	7	5	1.01
33 MARSHALL HEIGHTS	67	296,499	315,000	95.4	98.9	97.4	5.9	57	10	1.02
34 MASS. AVE. HEIGHTS	4	1,558,750	1,480,000	96.8	97.1	97.3	1.2	4	0	1.00
35 MICHIGAN PARK	10	389,359	386,395	95.4	104	103.4	15.5	6	4	1.00
36 MOUNT PLEASANT	48	690,221	705,000	95.7	96.0	95.4	7.8	41	7	1.01
37 N. CLEVELAND PARK	26	872,377	850,000	98.1	97.2	97.1	4.5	24	2	1.00
38 OBSERVATORY CIRCLE	13	1,030,808	950,000	98.6	99.4	99.3	3.1	11	2	1.00
39 OLD CITY #1	469	526,044	500,000	98.3	101	97.9	10.9	346	123	1.03
40 OLD CITY #2	144	690,266	625,000	98.4	99.2	98.2	9.2	102	42	1.01
41 PALISADES	26	934,846	785,000	99.1	99.1	99.1	1.4	25	1	1.00
42 PETWORTH	101	356,301	358,000	99.3	105	101.1	12.8	64	37	1.03
43 RANDLE HEIGHTS	27	263,700	245,000	94.2	101	96.9	15.5	20	7	1.04
46 R.L.A. (S.W.)	8	670,000	675,000	98.8	98.8	98.5	1.7	8	0	1.00
47 RIGGS PARK	32	275,379	275,000	100.6	102	101.0	7.8	24	8	1.01
48 SHEPHERD PARK	13	660,750	650,000	98.3	94.8	94.5	5.4	12	1	1.00
49 16TH STREET HEIGHTS	46	527,468	525,750	97.0	100	98.2	9.7	36	10	1.02
50 SPRING VALLEY	24	1,932,958	1,432,500	99.1	98.1	98.4	1.6	24	0	1.00
51 TAKOMA PARK	12	380,658	330,000	98.9	98.6	98.6	1.1	12	0	1.00
52 TRINIDAD	26	258,801	262,500	100.2	107	103.2	16.9	16	10	1.04
53 WAKEFIELD	6	906,500	918,000	96.4	97.4	97.5	2.4	5	1	1.00
54 WESLEY HEIGHTS	15	1,591,810	1,430,000	98.5	98.1	98.2	1.7	15	0	1.00
55 WOODLEY	11	1,360,818	1,235,000	96.8	96.1	95.8	4.6	10	1	1.00
56 WOODRIDGE	35	340,262	335,000	99.0	103	101.0	11.7	22	13	1.02
66 FORT LINCOLN	33	445,993	450,950	98.9	98.5	98.2	4.0	31	2	1.00

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Single-Family	2,489	661,932	535,000	98.2	99.6	97.9	7.9	2,021	468	1.02

Sales Ratio Report Using Proposed 2011 Values

2009 SALES RATIOS BY NEIGHBORHOOD: CONDOMINIUMS

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	9	462,611	435,000	98.6	101	99.3	7.1	7	2	1.02
2 ANACOSTIA	27	253,781	249,900	104.5	106	105.8	7.3	15	12	1.00
3 BARRY FARMS	5	218,539	221,196	103.5	102	100.1	6.2	3	2	1.02
4 BERKELEY	4	498,500	546,000	101.8	99.5	100.4	3.4	4	0	.99
5 BRENTWOOD	12	177,742	180,950	100.0	104	102.2	5.2	11	1	1.01
6 BRIGHTWOOD	24	279,384	241,950	93.1	94.4	93.8	8.5	21	3	1.01
7 BROOKLAND	34	206,356	179,450	104.7	106	105.7	8.9	19	15	1.01
9 CAPITOL HILL	43	391,552	349,000	99.3	96.5	95.9	5.6	41	2	1.01
10 CENTRAL	285	539,873	399,999	95.3	96.4	94.4	8.7	239	46	1.02
11 CHEVY CHASE	12	681,229	347,000	98.9	102	104.4	14.2	8	4	.97
13 CLEVELAND PARK	72	352,348	342,000	97.3	99.9	99.4	6.7	55	17	1.00
15 COLUMBIA HEIGHTS	289	351,472	324,000	100.0	99.8	99.7	5.3	243	46	1.00
16 CONGRESS HEIGHTS	12	136,239	154,335	100.2	103	100.5	12.6	8	4	1.02
18 DEANWOOD	7	159,571	139,000	108.9	106	105.7	5.3	2	5	1.01
19 ECKINGTON	23	264,570	242,000	99.5	102	102.9	6.8	20	3	.99
20 FOGGY BOTTOM	32	252,313	215,000	98.1	101	100.7	8.2	26	6	1.01
21 FOREST HILLS	30	322,132	321,500	95.2	94.9	94.9	6.1	28	2	1.00
22 FORT DUPONT PARK	9	214,333	215,000	93.9	91.9	91.8	4.3	9	0	1.00
24 GARFIELD	31	410,706	391,200	96.0	98.9	97.9	6.5	25	6	1.01
25 GEORGETOWN	51	1,010,520	575,000	96.7	101	95.6	12.6	34	17	1.05
26 GLOVER PARK	30	288,167	286,000	97.2	96.8	95.8	7.1	25	5	1.01
28 HILLCREST	17	185,488	214,900	100.0	103	100.4	6.3	14	3	1.03
29 KALORAMA	123	441,614	380,000	97.0	97.2	96.8	6.3	108	15	1.00
31 LEDROIT PARK	37	327,512	324,450	97.7	97.7	97.0	5.5	33	4	1.01
33 MARSHALL HEIGHTS	16	195,235	169,500	98.6	95.9	95.0	7.4	14	2	1.01
36 MOUNT PLEASANT	95	425,652	405,000	96.5	97.3	97.0	5.8	84	11	1.00
37 N. CLEVELAND PARK	4	361,787	350,075	97.1	98.8	98.8	6.9	3	1	1.00
38 OBSERVATORY CIRCLE	39	399,100	350,000	96.7	100	99.6	8.5	30	9	1.00
39 OLD CITY #1	205	372,134	368,000	97.4	98.3	97.7	7.3	171	34	1.01
40 OLD CITY #2	881	411,233	392,900	98.1	98.7	97.7	7.3	727	154	1.01
41 PALISADES	10	251,550	257,250	95.9	98.9	97.3	7.8	9	1	1.02
42 PETWORTH	49	237,489	222,500	97.2	98.9	98.0	7.0	42	7	1.01
43 RANDLE HEIGHTS	8	159,849	164,450	90.8	90.3	90.5	8.6	8	0	1.00
46 R.L.A. (S.W.)	75	255,664	236,900	100.0	98.6	97.5	8.8	62	13	1.01
49 16TH STREET HEIGHTS	10	190,567	188,734	97.0	104	103.3	9.1	6	4	1.00
52 TRINIDAD	4	292,500	297,500	101.1	102	102.0	2.3	3	1	1.00
53 WAKEFIELD	12	304,167	293,000	94.9	96.5	96.2	10.7	8	4	1.00
54 WESLEY HEIGHTS	33	372,339	385,000	98.4	101	100.0	7.4	24	9	1.01
56 WOODRIDGE	2	195,000	195,000	115.7	116	116.1	13.4	1	1	1.00
66 FORT LINCOLN	3	244,717	226,000	100.1	102	99.6	19.4	2	1	1.03

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Condominium	2,664	398,154	359,950	98.2	98.7	97.5	7.5	2,192	472	1.01

Sales Ratio Report Using Proposed 2011 Values

2009 SALES RATIOS BY NEIGHBORHOOD: MULTI-FAMILY

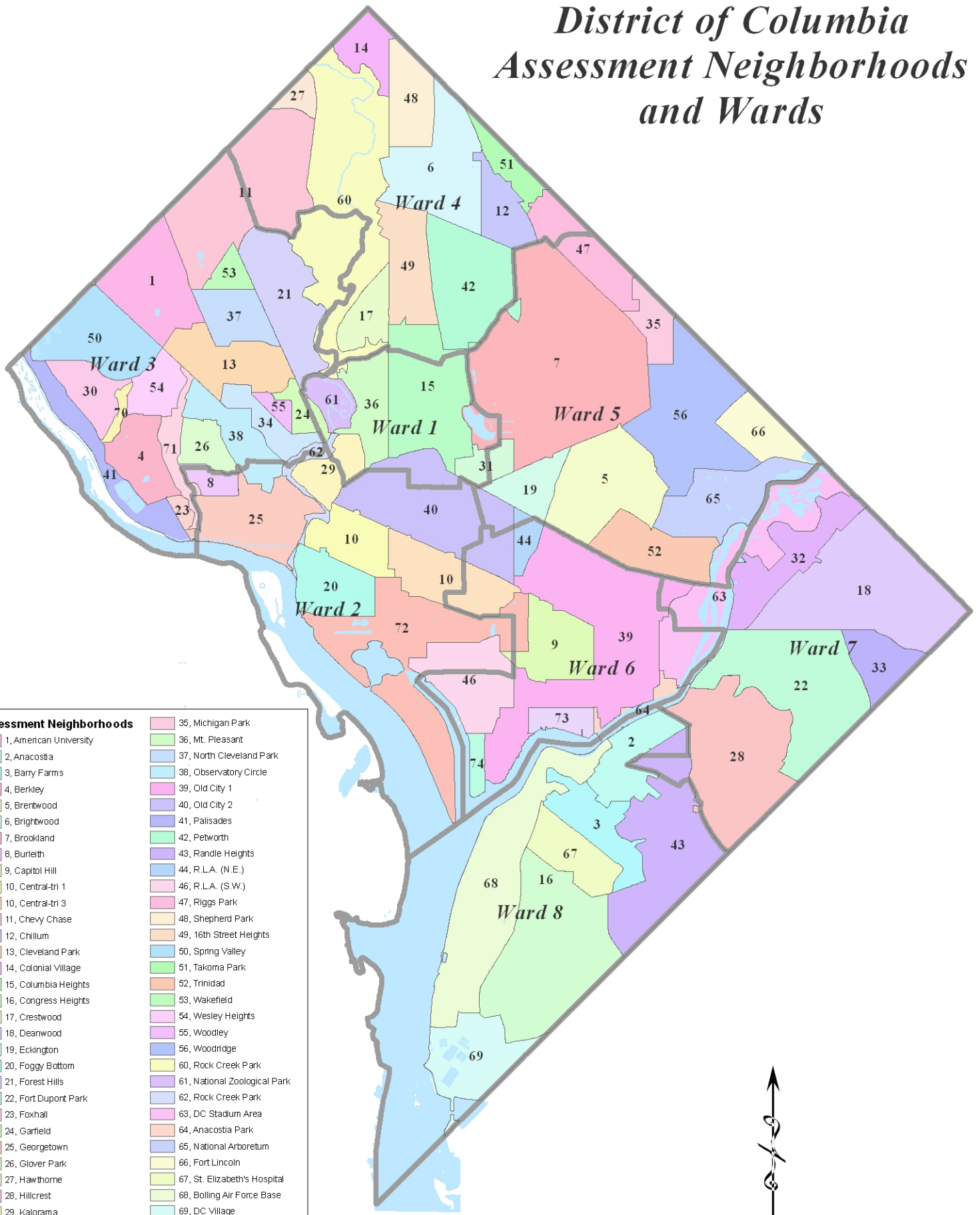
NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
3 BARRY FARMS	1	2,553,000	2,553,000	90.8	90.8	90.8	.0	1	0	1.00
6 BRIGHTWOOD	1	1,160,000	1,160,000	113.9	114	113.9	.0	0	1	1.00
7 BROOKLAND	1	465,000	465,000	119.9	120	119.9	.0	0	1	1.00
9 CAPITOL HILL	1	975,000	975,000	100.0	100	100.0	.0	1	0	1.00
11 CHEVY CHASE	1	4,625,000	4,625,000	77.8	77.8	77.8	.0	1	0	1.00
15 COLUMBIA HEIGHTS	3	1,203,333	950,000	98.2	103	101.0	5.8	2	1	1.02
16 CONGRESS HEIGHTS	1	259,900	259,900	100.6	101	100.6	.0	1	0	1.00
18 DEANWOOD	1	650,000	650,000	111.2	111	111.2	.0	0	1	1.00
29 KALORAMA	1	1,000,000	1,000,000	98.2	98.2	98.2	.0	1	0	1.00
33 MARSHALL HEIGHTS	1	2,300,000	2,300,000	82.7	82.7	82.7	.0	1	0	1.00
36 MOUNT PLEASANT	2	2,737,500	2,737,500	99.1	99.1	101.1	5.7	2	0	.98
39 OLD CITY #1	2	1,112,500	1,112,500	109.4	109	104.5	44.7	1	1	1.05
40 OLD CITY #2	6	1,035,167	1,075,750	100.8	105	102.5	14.3	4	2	1.02
43 RANDLE HEIGHTS	2	400,000	400,000	114.4	114	114.4	12.9	1	1	1.00
56 WOODRIDGE	1	590,000	590,000	99.8	99.8	99.8	.0	1	0	1.00
TOTALS:										
PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Multi-Family	25	1,315,956	1,000,000	99.8	103	97.3	13.6	17	8	1.06

Sales Ratio Report Using Proposed 2011 Values

2009 SALES RATIOS BY NEIGHBORHOOD: COMMERCIAL

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
2 ANACOSTIA	1	500,000	500,000	53.9	53.9	53.9	.0	1	0	1.00
5 BRENTWOOD	4	745,000	495,000	76.2	75.0	72.5	24.9	4	0	1.03
6 BRIGHTWOOD	1	1,450,000	1,450,000	53.7	53.7	53.7	.0	1	0	1.00
7 BROOKLAND	4	613,000	425,000	120.7	119	122.8	6.4	0	4	.97
9 CAPITOL HILL	6	1,290,125	1,125,000	50.3	55.9	57.2	15.6	6	0	.98
10 CENTRAL	17	37,920,619	16254441	85.4	83.8	90.5	15.1	16	1	.93
11 CHEVY CHASE	1	1,500,000	1,500,000	93.0	93.0	93.0	.0	1	0	1.00
12 CHILLUM	2	267,500	267,500	68.2	68.2	70.4	22.6	2	0	.97
15 COLUMBIA HEIGHTS	3	297,500	310,000	94.3	93.6	93.9	12.2	2	1	1.00
16 CONGRESS HEIGHTS	1	180,000	180,000	81.8	81.8	81.8	.0	1	0	1.00
18 DEANWOOD	1	154,100	154,100	91.6	91.6	91.6	.0	1	0	1.00
19 ECKINGTON	2	425,000	425,000	96.6	96.6	108.7	42.4	1	1	.89
20 FOGGY BOTTOM	1	420,000	420,000	86.2	86.2	86.2	.0	1	0	1.00
24 GARFIELD	1	1,600,000	1,600,000	63.2	63.2	63.2	.0	1	0	1.00
25 GEORGETOWN	4	846,875	900,000	72.9	74.9	72.0	10.9	4	0	1.04
26 GLOVER PARK	1	1,100,000	1,100,000	70.3	70.3	70.3	.0	1	0	1.00
29 KALORAMA	2	945,000	945,000	88.6	88.6	89.0	7.4	2	0	.99
31 LEDROIT PARK	1	470,000	470,000	141.7	142	141.7	.0	0	1	1.00
36 MOUNT PLEASANT	3	2,583,333	2,100,000	82.9	92.9	106.0	36.0	2	1	.88
38 OBSERVATORY CIRCLE	1	62,100,000	62100000	125.5	125	125.5	.0	0	1	1.00
39 OLD CITY #1	5	612,000	725,000	101.9	93.7	87.5	18.0	3	2	1.07
40 OLD CITY #2	11	1,561,818	980,000	87.7	96.9	101.5	15.8	8	3	.96
42 PETWORTH	4	242,500	232,500	112.0	111	111.2	11.0	2	2	1.00
43 RANDLE HEIGHTS	1	2,100,000	2,100,000	89.7	89.7	89.7	.0	1	0	1.00
48 SHEPHERD PARK	1	490,000	490,000	50.3	50.3	50.3	.0	1	0	1.00
49 16TH STREET HEIGHTS	2	450,000	450,000	76.1	76.1	87.3	32.9	2	0	.87
52 TRINIDAD	1	1,200,000	1,200,000	43.8	43.8	43.8	.0	1	0	1.00
56 WOODRIDGE	8	640,579	401,500	112.0	107	91.2	23.0	3	5	1.17
TOTALS:										
PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Commercial	90	8,595,856	850,000	85.8	88.1	93.1	24.6	68	22	.95

District of Columbia Assessment Neighborhoods and Wards



Assessment Neighborhoods

1, American University	35, Michigan Park
2, Anacostia	36, Mt. Pleasant
3, Barry Farms	37, North Cleveland Park
4, Berkley	38, Observatory Circle
5, Brentwood	39, Old City 1
6, Brightwood	40, Old City 2
7, Brookland	41, Palisades
8, Burleith	42, Petworth
9, Capitol Hill	43, Randle Heights
10, Central-tri 1	44, R.L.A. (N.E.)
10, Central-tri 3	46, R.L.A. (S.W.)
11, Chevy Chase	47, Riggs Park
12, Chillum	48, Shepherd Park
13, Cleveland Park	49, 16th Street Heights
14, Colonial Village	50, Spring Valley
15, Columbia Heights	51, Takoma Park
16, Congress Heights	52, Trinidad
17, Crestwood	53, Wakefield
18, Deanwood	54, Wesley Heights
19, Eckington	55, Woodley
20, Foggy Bottom	56, Woodridge
21, Forest Hills	60, Rock Creek Park
22, Fort Dupont Park	61, National Zoological Park
23, Foxhall	62, Rock Creek Park
24, Garfield	63, DC Stadium Area
25, Georgetown	64, Anacostia Park
26, Glover Park	65, National Arboretum
27, Hawthorne	66, Fort Lincoln
28, Hillcrest	67, St. Elizabeth's Hospital
29, Kalorama	68, Bolling Air Force Base
30, Kent	69, DC Village
31, Ledroit Park	70, Fort Drive
32, Lily Ponds	71, Glover - Archbold Parkway
33, Marshall Heights	72, Mall/East Potomac Park
34, Massachusetts Avenue Heights	73, Washington Navy Yard
	74, Ft. McNair

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Miles



District of Columbia
Office of Tax and Revenue
Real Property Assessment Division



