

**OFFICE OF CHIEF FINANCIAL OFFICER
OFFICE OF TAX AND REVENUE
REAL PROPERTY TAX ADMINISTRATION
REAL PROPERTY ASSESSMENT DIVISION**



**TY 2021 GENERAL REASSESSMENT PROGRAM
APPRAISER REFERENCE MATERIALS
MARCH 2020**



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 2021 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 their day-to-day work activities. Please feel free to call or email your comments or suggestions using the contact details below. Thank you.

*Standards & Services Unit
Real Property Assessment Division
1101 4th Street, SW, Suite W550
Washington, DC 20024
Phone: (202) 442-6643
Email: assessmentdivision@dc.gov*

TY 2021 Appraiser Reference Materials

Table of Contents

TOPIC	PAGE
Chief Appraiser's Memo: TY 2021 Reassessment	1
Explanation of Residential, Condo and Co-op Valuation Methods	3
TY 2021 Valuation Review Process	7
Market Approach to Land Valuation in Costed Neighborhood	12
Land Rate Development Example	13
Table: Residential Base Land Rates by Neighborhood	14
Graph: Residential Land Size Curves	15
Graph: Condominium Size Curve	16
Vision CAMA Residential Valuation Process	17
Vision CAMA Commercial Valuation Process	48
Vision CAMA Income Approach Valuation Process	75
Guidelines for Non-Market Multifamily(Apartment) Assessments	91
Vision CAMA Income Approach Appraisal PRC Example	95
TY 2021 CAMA Guides: Residential, Commercial Rates & Adjustments	98
Table: Cost Occupancy / Use Code	102
Table: Use Codes	104
Table: TY 2021 Base Cost Rates	108
Table: RPTA TY 2021 Base Change Reports	113
Table: Parcel Count per Neighborhood	118
Preliminary TY 2021 Performance Report	119
Sales Ratio Report Using Current Ty 2020 and Proposed TY 2021 Values	120
Map: Residential Change by Wards	128
Map: Single-Family Change by Neighborhood	129
Map: All Residential Change by Neighborhood	130
Map: Commercial Change by Wards	131
Map: Commercial Change by Neighborhood	132
Map: Assessment Neighborhoods and Wards	133



**OFFICE OF TAX AND REVENUE
REAL PROPERTY TAX ADMINISTRATION
INTER OFFICE MEMORANDUM**

TO: Real Property Assessment Division

FROM: Olufemi A. Omotoso, Chief Appraiser

SUBJECT: Tax Year 2021 Reassessment

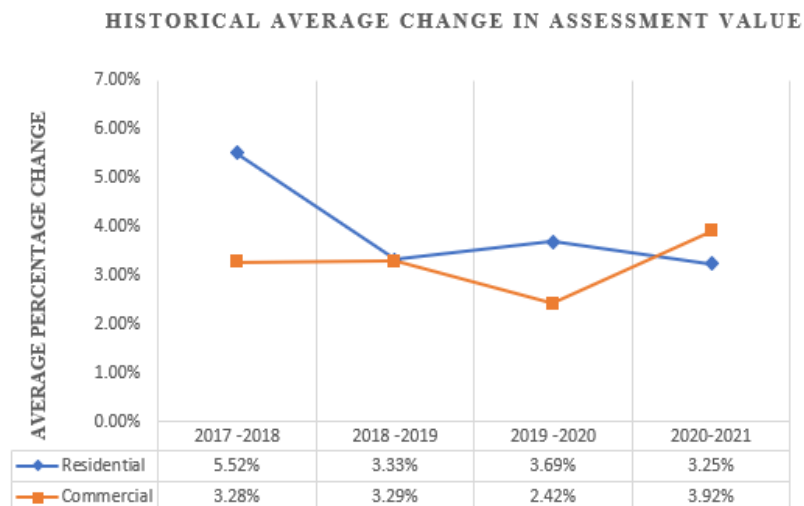
DATE: 2/27/2020

Dear Colleagues:

It is with great pleasure that I report to you that we have completed the TY 2021 reassessment for *ad valorem* taxes of all real properties in the District of Columbia. As of January 1, 2020, we have established a fair market value for a total of 203,191 Parcels. These parcels include 188,512 residential properties, 9,270 commercial properties, and 5,409 exempt properties. The result of TY 2021 reassessment compared to values of TY 2020 assessment is summarized in the table below:

Property Type	TY 2020 Value	TY 2021 Value	Base Change [\$]	% Change
Residential [Class 1]	\$134,930,511,255	\$139,315,758,428	\$4,385,247,173	3.25%
Commercial [Class 2]	\$107,289,003,020	\$111,498,789,286	\$4,209,786,266	3.92%
Total Taxable	\$242,219,514,275	\$250,814,547,714	\$8,595,033,439	3.55%
Exempt	\$28,112,153,667	\$29,533,957,675	\$1,421,804,008	5.06%
All Properties	\$270,331,667,942	\$280,348,505,389	\$10,016,837,447	3.71%

The District of Columbia real estate market continues to experience steady value increase. The TY 2021 value increase is consistent with prior years value increase when compared with last three years of property reassessment. The chart below represents average year-over-year assessment value changes in the prior three years and current year.



We also completed the second-half TY 2020 supplemental reassessment last December. That reassessment assignment resulted in approximately \$1.4 billion additional assessed value of the District properties.

Residential Unit

Tax Class	Count	Current	Proposed	Change
001	791	\$465,206,430	\$761,663,870	\$296,457,440
002	1	\$776,530	\$879,040	\$102,510
Exempt	19	\$4,441,450	\$6,763,130	\$2,321,680
	811	\$470,424,410	\$769,306,040	\$298,881,630

Commercial Unit

Tax Class	Count	Current	Proposed	Change
001	12	\$406,214,650	\$539,971,730	\$133,757,080
002	57	\$547,356,557	\$1,498,256,322	\$950,899,765
Exempt	3	\$15,545,800	\$56,755,030	\$41,209,230
	72	\$969,117,007	\$2,094,983,082	\$1,125,866,075

Your dedication and hard work in fulfilling our mandate to the citizens of the District of Columbia show with these results, and it is highly commendable.

I want to take this opportunity to remember our colleagues that departed this world last year. Ms. Shawndra D. Willis and Mr. Darryl A. Broadus; I missed them every day. I ask that we continue to hold the families they left behind in our thoughts and prayers.

The International Association of Assessing Officers (IAAO), at the 85th conference in Ontario, Canada, awarded us the Certificate of Excellence in Assessment Administration, making the District of Columbia one of the forty-eight (48) assessment jurisdictions in the United States of America that have this award. This achievement is a direct result of our rigorous adherence to best appraisal practices. We should all be proud of this achievement.

In furtherance of our continuous improvement towards becoming the best in class assessment jurisdiction in the U.S, we upgraded our CAMA system to the latest version last summer. We are actively seeking a mobile/field assessment technology. This technology will further enhance our capability to work more efficiently and even work *SMARTER!* The procurement of the technology is anticipated this fiscal year and its deployment to production not later than the next fiscal year.

Likewise, the focus on enhancing our human capital is getting a boost with a new Cross-Training Program. It is a new initiative that creates in-house knowledge transfer that will strengthen our technical capacity and expertise. I encourage us to embrace this initiative for successful implementation.

In conclusion, it is an understatement that our work is vital to the fiscal well-being of the District of Columbia. The transformation of the city's landscape, at least in the built environment, is direct evidence of your creativity and professionalism in discharging your duties daily to the citizens of the District of Columbia. You are part of those that consistently make D.C one of the best places to live and do business in this United States – Thank You!

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 11,750 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 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 (1/1/2017 through 9/30/2019) as follows:

	1/1/17 – 12/31/17	1/1/18 – 12/31/18	1/1/19 – 9/30/19
“Southeast” Neighborhoods (2, 3, 16, 18, 22, 28, 32, 33, 43)	0.60% /mo	0.50% /mo	0.20% /mo
“Northeast” Neighborhoods (5, 6, 7, 12, 14, 15, 17, 19, 31, 35, 36, 42, 47, 48, 49, 51, 52, 56, 66)	0.30% /mo	0.30% /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)	0.20% /mo	0.20% /mo	0.30% /mo
“Downtown” Neighborhoods (9, 10, 20, 39, 40, 46)	0.40% /mo	0.30% /mo	0.30% /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 appraiser review.
14. Incorporating oversight of the computer aided procedure by our professional staff cited in the *2021 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 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 appraiser 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 Appraiser 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 2021 Valuation Review Process document.

The Condominium Regression Model:

ESP= (386.78 * 800 * 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 (386.78) – base size rate (constant)

Base Size (800) – base unit size (constant)

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:

Unit size up to 2000 sf: $(\text{SIZE}/800)^{.681748}$

Unit size larger than 2000 sf: $(2000/800)^{.681748} * (\text{SIZE}/2000)^{.928349}$

See graph titled Condominium Size Curve.

Efficiency Adj. – if the unit is an efficiency unit, a 0.93 adjustment is applied.

Condition – adjustment for the unit's physical condition

(1) Poor	.75
(2) Fair	.90
(3) Average	1.00
(4) Good	1.07
(5) Very Good	1.16
(6) Excellent	1.22

View – adjustment for the unit's view

(1) Poor	.85
(2) Fair	.93
(3) Average	1.00
(4) Good	1.05
(5) Very Good	1.11
(6) Excellent	1.16

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: $2 \frac{1}{2} \text{ baths: } 1 + (((2 - 1) + (.5 * 1)) * .08) = 1.12$
 $3 \text{ baths: } 1 + (((3 - 1) + (.5 * 0)) * .08) = 1.16$

Parking – adjustment for Limited Common Element parking

<u>Outdoor</u>	<u>Covered</u>	<u>Indoor</u>	subject to location adjustment
12,400	13,900	20,100	

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 one 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 tax year 2021, we reviewed all the complexes with sales information and calculated the sales prices per square foot taking into consideration remodeling and renovations from building permits and information from listings. Sale information is collected from the Recorder of Deeds (Transfer of Economic Interest Tax Return Cooperative Only forms and the Multiple Listing Service). Only minor 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 typically limited equity coops or very small complexes.

2021 Valuation Review Process

As part of the valuation process, initial assessments for all properties will be estimated and preliminary reports 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 2015. 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) 2018 revaluation, the TY 2016 reports may be discarded, and the reports from TY 2016 (current) and TY 2018 (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 four size curves for land area. The four 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. On this occasion, 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

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

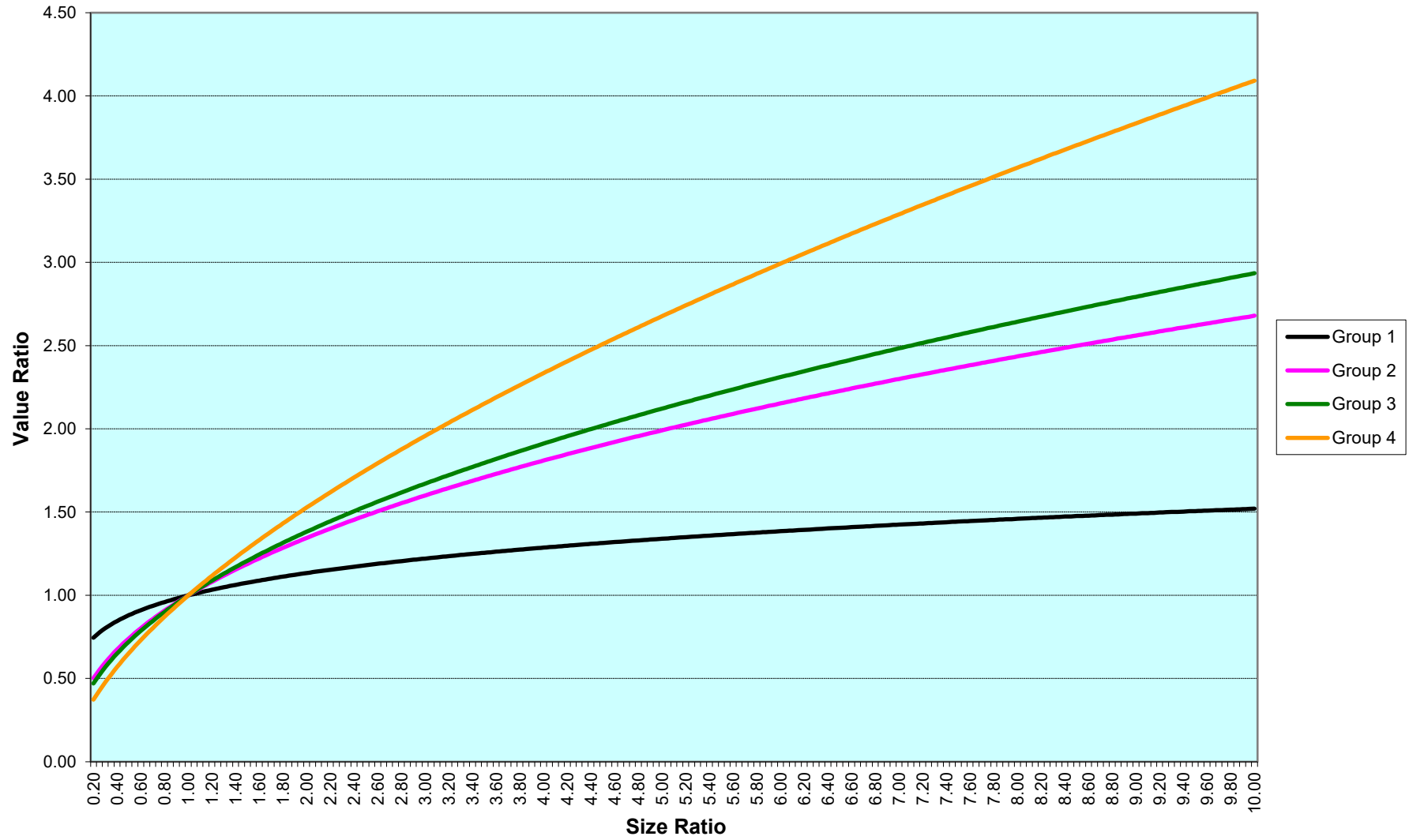
Residential Base Land Rates By Neighborhood

NBHD	Base Lot Size	Base Rate	Base Lot Value	Size Curve
1A	4000 sf	\$128.02	\$512,080	LG1
1B	5000 sf	\$109.59	\$547,950	LG1
1C	5000 sf	\$110.93	\$554,650	LG1
2A	2000 sf	\$68.61	\$137,220	LG1
2B	2000 sf	\$66.36	\$132,720	LG1
3	2000 sf	\$65.81	\$131,620	LG1
4A	6700 sf	\$113.66	\$761,520	LG3
4B	10000 sf	\$99.68	\$996,800	LG4
4C	8000 sf	\$117.85	\$942,800	LG4
5A	1700 sf	\$146.00	\$248,200	LG1
5B	1700 sf	\$150.84	\$256,430	LG1
6A	4000 sf	\$81.14	\$324,560	LG1
6B	4000 sf	\$81.64	\$326,560	LG1
6C	2000 sf	\$142.57	\$285,140	LG1
6D	4000 sf	\$81.01	\$324,040	LG1
6E	3000 sf	\$98.81	\$296,430	LG1
7A	2000 sf	\$138.57	\$277,140	LG1
7B	3000 sf	\$97.62	\$292,860	LG1
7C	3000 sf	\$106.66	\$319,980	LG1
7D	5000 sf	\$69.31	\$346,550	LG1
7E	2000 sf	\$164.38	\$328,760	LG1
8A	2000 sf	\$269.02	\$538,040	LG1
8B	2000 sf	\$276.80	\$553,600	LG1
9A	1400 sf	\$412.78	\$577,890	LG2
9B	1400 sf	\$447.55	\$626,570	LG2
9C	1400 sf	\$436.97	\$611,760	LG2
10	1400 sf	\$531.21	\$743,690	LG1
11A	5000 sf	\$110.36	\$551,800	LG1
11B	5000 sf	\$109.82	\$549,100	LG1
11C	5000 sf	\$109.40	\$547,000	LG1
11D	5000 sf	\$101.73	\$508,650	LG1
11E	5000 sf	\$94.48	\$472,400	LG1
12	4000 sf	\$75.93	\$303,720	LG1
13	5000 sf	\$176.16	\$880,800	LG4
14	9000 sf	\$53.18	\$478,620	LG1
15A	1800 sf	\$254.50	\$458,100	LG1
15B	1800 sf	\$238.52	\$429,340	LG1
15C	1800 sf	\$232.27	\$418,090	LG1
15D	1800 sf	\$250.40	\$450,720	LG1
15E	1800 sf	\$270.22	\$486,400	LG3
16A	2400 sf	\$49.36	\$118,460	LG1
16B	2400 sf	\$52.72	\$126,530	LG1
16C	2400 sf	\$47.60	\$114,240	LG1
17	6000 sf	\$85.74	\$514,440	LG1
18A	3000 sf	\$47.43	\$142,290	LG1
18B	3000 sf	\$44.06	\$132,180	LG1
18C	3000 sf	\$43.90	\$131,700	LG1
18D	3000 sf	\$43.57	\$130,710	LG1

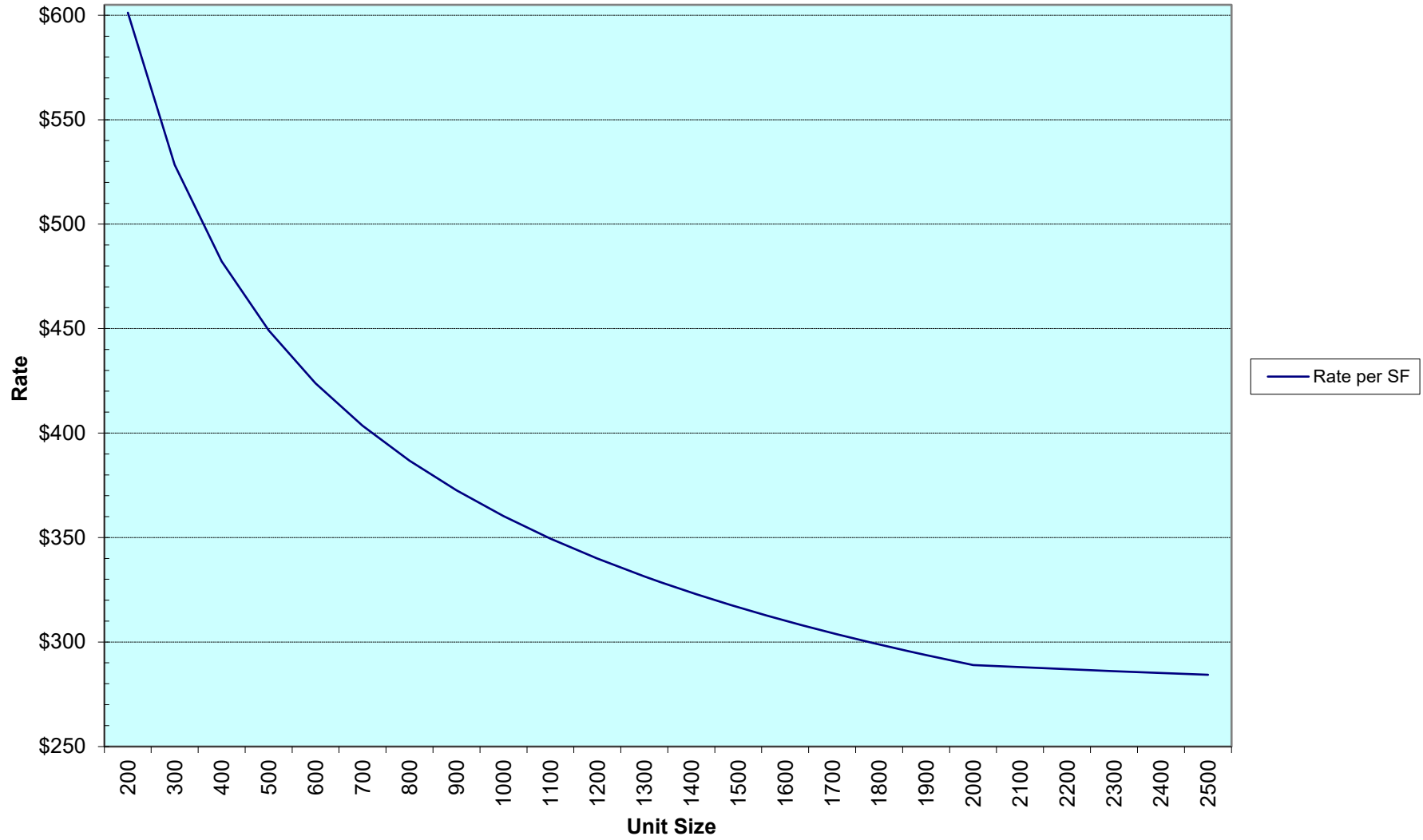
NBHD	Base Lot Size	Base Rate	Base Lot Value	Size Curve
18E	3000 sf	\$46.53	\$139,590	LG1
19A	1800 sf	\$274.16	\$493,490	LG1
19B	1800 sf	\$221.67	\$399,010	LG1
20	1000 sf	\$591.57	\$591,570	LG1
21	9000 sf	\$91.83	\$826,470	LG3
22A	3000 sf	\$46.47	\$139,410	LG1
22B	2400 sf	\$53.47	\$128,330	LG1
22C	3000 sf	\$43.92	\$131,760	LG1
22D	2400 sf	\$56.47	\$135,530	LG1
23	2500 sf	\$201.45	\$503,630	LG1
24	2400 sf	\$271.63	\$651,910	LG1
25A	1800 sf	\$339.31	\$610,760	LG3
25B	1800 sf	\$434.53	\$782,150	LG3
25C	1800 sf	\$409.07	\$736,330	LG3
25D	1800 sf	\$379.71	\$683,480	LG3
25E	1800 sf	\$472.08	\$849,740	LG4
25F	2000 sf	\$458.07	\$916,140	LG4
25G	2000 sf	\$444.40	\$888,800	LG3
25H	2000 sf	\$407.37	\$814,740	LG4
25I	800 sf	\$656.22	\$524,980	LG3
25J	1200 sf	\$551.76	\$662,110	LG4
26	1700 sf	\$320.01	\$544,020	LG1
27	9000 sf	\$55.67	\$501,030	LG1
28A	2400 sf	\$57.84	\$138,820	LG2
28B	5000 sf	\$33.67	\$168,350	LG1
28C	5000 sf	\$35.07	\$175,350	LG1
29A	2000 sf	\$364.56	\$729,120	LG4
29B	2000 sf	\$339.58	\$679,160	LG4
29C	2000 sf	\$351.81	\$703,620	LG3
30A	5000 sf	\$133.01	\$665,050	LG4
30B	5000 sf	\$143.16	\$715,800	LG4
30C	7000 sf	\$114.87	\$804,090	LG4
31A	1800 sf	\$289.89	\$521,800	LG1
31B	1800 sf	\$281.36	\$506,450	LG1
32A	5000 sf	\$29.30	\$146,500	LG1
32B	2000 sf	\$64.51	\$129,020	LG1
32C	2000 sf	\$72.21	\$144,420	LG1
33A	2000 sf	\$63.19	\$126,380	LG1
33B	2000 sf	\$57.56	\$115,120	LG1
34	9000 sf	\$135.80	\$1,222,200	LG4
35	5000 sf	\$62.41	\$312,050	LG1
36A	2000 sf	\$272.79	\$545,580	LG1
36B	2000 sf	\$279.09	\$558,180	LG3
36C	1600 sf	\$307.76	\$492,420	LG1
37	3000 sf	\$196.28	\$588,840	LG3
38	5000 sf	\$168.46	\$842,300	LG4
39A	1500 sf	\$289.69	\$434,540	LG1
39B	1500 sf	\$309.10	\$463,650	LG1

NBHD	Base Lot Size	Base Rate	Base Lot Value	Size Curve
39C	1500 sf	\$368.93	\$553,400	LG1
39D	1500 sf	\$285.26	\$427,890	LG1
39E	1200 sf	\$356.67	\$428,000	LG1
39F	1200 sf	\$357.38	\$428,860	LG1
39G	1500 sf	\$247.82	\$371,730	LG1
39H	1500 sf	\$239.44	\$359,160	LG1
39J	1500 sf	\$337.63	\$506,450	LG1
39K	1500 sf	\$366.58	\$549,870	LG1
39L	1200 sf	\$382.62	\$459,140	LG1
39M	1500 sf	\$368.74	\$553,110	LG1
40A	1400 sf	\$314.16	\$439,820	LG1
40B	1400 sf	\$381.65	\$534,310	LG1
40C	1600 sf	\$402.66	\$644,260	LG2
40D	1600 sf	\$451.13	\$721,810	LG2
40E	1600 sf	\$458.54	\$733,660	LG2
40F	1200 sf	\$447.23	\$536,680	LG2
40G	1600 sf	\$372.75	\$596,400	LG1
41	5000 sf	\$128.86	\$644,300	LG2
42A	1800 sf	\$231.64	\$416,950	LG1
42B	1800 sf	\$212.23	\$382,010	LG1
42C	1800 sf	\$209.43	\$376,970	LG1
43A	2000 sf	\$71.06	\$142,120	LG1
43B	2000 sf	\$65.39	\$130,780	LG1
43C	2000 sf	\$72.27	\$144,540	LG1
43D	2000 sf	\$61.90	\$123,800	LG1
46	1200 sf	\$409.77	\$491,720	LG1
47	3000 sf	\$97.54	\$292,620	LG1
48	5000 sf	\$78.45	\$392,250	LG1
49A	3000 sf	\$135.75	\$407,250	LG1
49B	3000 sf	\$127.48	\$382,440	LG1
49C	3000 sf	\$123.34	\$370,020	LG1
50A	10000 sf	\$83.48	\$834,800	LG3
50B	6000 sf	\$112.55	\$675,300	LG2
50C	14000 sf	\$72.71	\$1,017,940	LG3
50D	15000 sf	\$90.75	\$1,361,250	LG3
51	3000 sf	\$102.02	\$306,060	LG2
52A	1800 sf	\$217.30	\$391,140	LG1
52B	1600 sf	\$215.80	\$345,280	LG1
52C	1600 sf	\$191.59	\$306,540	LG1
53	5000 sf	\$124.91	\$624,550	LG1
54A	6000 sf	\$147.87	\$887,220	LG4
54B	1000 sf	\$408.73	\$408,730	LG1
55	6000 sf	\$140.47	\$842,820	LG2
56A	5000 sf	\$60.26	\$301,300	LG1
56B	5000 sf	\$58.28	\$291,400	LG1
56C	5000 sf	\$55.11	\$275,550	LG1
56D	5000 sf	\$57.63	\$288,150	LG1
66	5000 sf	\$58.37	\$291,850	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.

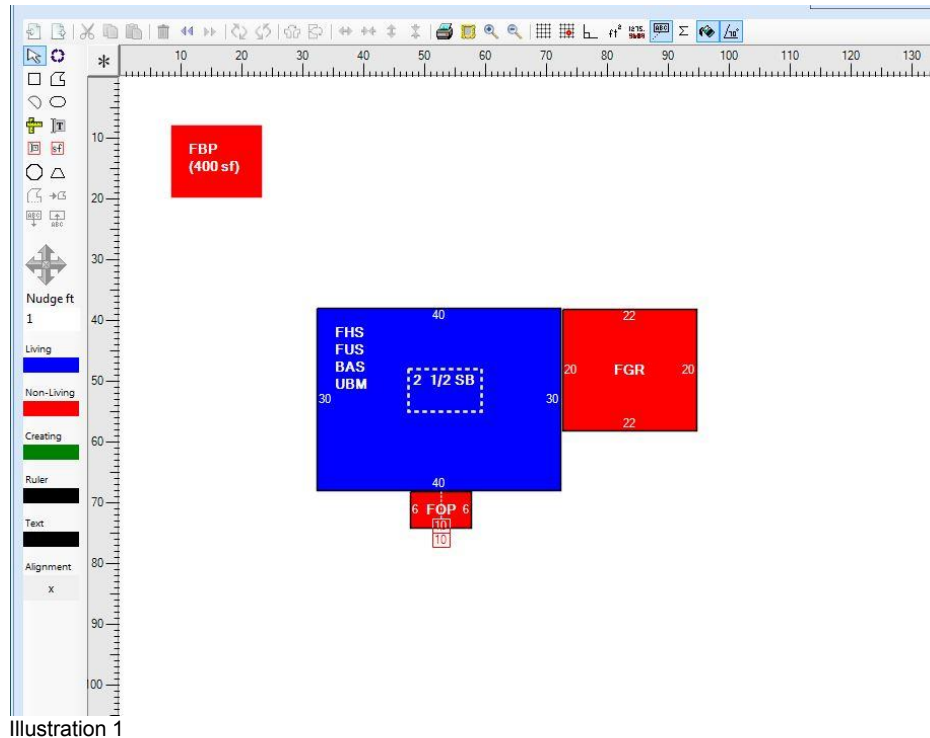


Illustration 1

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. CAMA provides the information about the sizes of the various areas of the house in the depreciation section.

Section Summary					
Group	R11			Effective Area	3498
Base Rate	133.84			RCN	\$1,881,638
Eff Base Rate	\$474.10			Bldg % Good	91
Net Other Adj	\$223,227.29			RCNLD	\$500
Living Area/GBA 3000					
Code	Description	Gross	Living	Eff Area	
FHS		1200	600	600	
FUS		1200	1200	1200	
BAS		1200	1200	1200	
UBM		1200	0	300	
FGR		440	0	198	
FBP		400	0	0	

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 @ 45% of 440 SF), and the adjusted area of the unfinished basement (Basement, Unfinished @ 25% 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 \$45/SF. The RCN value of the garage would be calculated as follows:

$$\text{RCN of Garage} = \$19,800 \text{ or } (440 \text{ SF} * \$45)$$

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:

$$\text{RCN of Garage} = \$19,800 \text{ or } [(440 * .45) * \$100]$$

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.

Code	Description	Gross	Living	Eff Area
FHS		1200	600	600
FUS		1200	1200	1200
BAS		1200	1200	1200
UBM		1200	0	300
FGR		440	0	198
FBP		400	0	0
FOP		60	0	0

Illustration 3

Finally, the Gross Area shown in Illustration 3 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:

$$\text{Building RCN} = [(\text{Base Rate} + \sum \text{ABRV}_n) * 3,498 * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

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:

$$\text{Building RCN} = [(\$157.85 + \sum \text{ABRV}_n) * 3,498 * \text{Size Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

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.

Parcel Information
 SSL: 9999// // 9999// Primary Use: 011 Use Type: R1 Internal ID: 182803 Work In Prog: 0 Living Area: 3000
 Location: 9999 9TH ST NW #999999999 Total Assess: \$374,630 Land Acres: 5,000 \$SF/ Liv/GBA 124.88

Base Rate Values
 Value Source C Living Area/GBA 3,000 RCN \$1,881,638 Regression 229220
 Prim Bldg Use 11 Effective Area 3,498 Bldg % Good 0.00 Income \$0
 Style 6 size Adjustment .89128 RCNLD \$500
 Bldg * XF RCN for All Bldgs \$2,629,919

Building #: 1 of 1 Section: 1 of 1

Style: 6: 2.5 Story Fin
 Model: 01: Single Family
 Grade: 12: Exceptional-D Overall Cndtn: 6: Excellent
 Stories: 12 Park Spaces: 0
 Foundation: 2: Average
 Exterior Wall: 15: Face Brick
 Exterior Condtn: 4: Good
 Building Type: 1: Single
 Roof Cover: 3: Shingle
 Floor Cover: 11: Hardwood/Carp
 Interior Condition: 4: Good
 View: 3: Average
 No. Units: 1
 Heat Type: 1: Forced Air
 Eat in Kith: 0: Default
 AC Type: Y: Yes
 Bedrooms: 10
 Bathrooms: 4
 Half Baths: 2
 Total Rooms: 8
 Bath Style: 2: Semi-Modern
 Kitchen Style: 2: Semi-Modern
 Kitchens: 1
 Fireplaces: 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 \$157.85 to give a modified Base Rate of \$168.95.

Our model now looks like this:

$$\text{Building RCN} = [(\text{\$157.85} + \text{\$11.10}) * 3,498 * \text{Size Adjustment} \\ + \text{\$11.10} * \text{Effective Area} \\ + \Sigma \text{ ABRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

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 0.89128 as listed on the Cost.dat sheet. Now our Base Rate is calculated to be \$150.58 $((157.85+11.10) * 0.89128)$.

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:

$$\text{Building RCN} = [(\text{\$157.85} + \text{\$11.10}) * 3,498 * 0.89128 + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

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:

Parcel Information			
SSL:	9999/ / / 9999 Primary L 011	Use Type R1	Internal I 182803
Location:	9999 9TH ST NW #999	Total Ass \$374,630	Land Acr 5,000
			Living Ar: 3000
			SSF/ Liv/ 124.88
Base Rate Values			
Value Source C	Living Area/GBA 3,000	RCN \$1,881,638	Regression 229220
Prim Bldg Use 11	Effective Area 3,498	Bldg % Good 0.00	Income \$0
Style 6	size Adjustment .89128	RCNLD \$500	
Bldg+XF RCN for All Bldgs \$2,629,919			
Building #: 1 of 1		Section: 1 of 1	
Style	6: 2.5 Story Fin	Overall Cndtn	4: Good
Model:	01: Single Family	Park Spaces	0
Grade	4: Above Average		
Stories:	2.5		
Foundation	2: Average		
Exterior Wall	15: Face Brick		
Exterior Cndtn	4: Good		
Building Type:	1: Single		
Roof Cover:	3: Shingle		
Floor Cover	11: Hardwood/Carp		
Interior Condition	4: Good		
View	3: Average		
No. Units	1		
Heat Type	1: Forced Air		
Eat in Kith	0: Default		
AC Type	Y: Yes		
Bedrooms	4		
Bathrooms	2		
Half Baths	2		
Total Rooms	8		
Bath Style	2: Semi-Modern		
Kitchen Style	2: Semi-Modern		
Kitchens	1		
Fireplaces	1		

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 \$16,250 (2 "units" X \$8,125 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 \$22,000. 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 \$55 per SF. The open porch is calculated in a similar manner.

*****Flat Value Additions*****
 FULL BATHS OVER 1 = 12500 + RCN
 HALF BATHS = 16250 + RCN
 FIREPLACES = 8000 + RCN
 PARTITIONED FINISHED BASEMENT = 22000 + RCN
 OPEN PORCH = 1320 + RCN

The sum, Σ , is \$60,070 (16,000+22,000+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:

$$\text{Building RCN} = [(\text{\$157.85} + \text{\$11.10}) * 3,498 * 0.89128 + \text{\$60,070}] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)$$

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).

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

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 1.091 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 *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:

Parcel Information	
SSL: 9999/ / / 9999/ /	Primary Use: 012
Use Type: R1	Internal ID: 182803
Work In Prog: 0	Living Area: 3000
Location: 9999 9TH ST NW #999999999	Total Assess: \$920,160
Land Acres: 5,000	SSF/ Liv/GBA: 306.72
Base Rate Values	
Value Source C	Living Area/GBA 3,000
Prim Bldg Use 12	Effective Area 3,498
Style 6	size Adjustment .89128
RCN \$754,788	Regression 229220
Bldg % Good 86.00	Income \$0
RCNLD \$649,120	
Bldg+XF RCN for All Bldgs \$1,278,094	
Building #: 1 of 1	Section: 1 of 1
Style: 6: 2.5 Story Fin	Model: 01: Single Family
Grade: 4: Above Average	Overall Cndtn: 4: Good
Stories: 2.5	Park Spaces: 0
Foundation: 2: Average	
Exterior Wall: 15: Face Brick	
Exterior Condtm: 4: Good	
Building Type: 1: Single	
Roof Cover: 3: Shingle	
Floor Cover: 11: Hardwood/Carp	
Interior Condition: 4: Good	
View: 3: Average	
No. Units: 1	
Heat Type: 1: Forced Air	
Eat in Kith: 0: Default	
AC Type: Y: Yes	
Bedrooms: 4	
Bathrooms: 2	
Half Baths: 2	
Total Rooms: 8	
Bath Style: 2: Semi-Modern	
Kitchen Style: 2: Semi-Modern	
Kitchens: 1	
Fireplaces: 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.

Parcel Information								
SSL:	9999/ / / 9999	Primary L 011	Use Type R1	Internal I 182803	Work In F 0	Living Ar: 3000		
Location:	9999 9TH ST NW #999			Total Ass \$374,630	Land Acri 5,000	SSF/ Liv/c 124.88		
Base Rate Values								
Value Source C	Living Area/GBA 3,000		RCN \$1,881,638		Regression 229220			
Prim Bldg Use 11	Effective Area 3,498		Bldg % Good 0.00		Income \$0			
Style 6	size Adjustment .89128		RCNLD \$500		Bldg+XF RCN for All Bldgs \$2,629,919			
Building #: 1 of 1				Section: 1 of 1				
Section Level Depreciation								
Year Built	1937			Section Summary				
Effective Year Built	1950 <input type="checkbox"/> Ovr EYB			Group	R11			
Functional Obsol				Base Rate	133.84			
Economic Obsol				Eff Base Rate	\$161.67			
Condition				Net Other Adj	\$75,176.55			
Percent Complete				Living Area/GBA	3000			
Depreciation Code				Code	Description	Gross	Living	Eff Area
Remodel Rating	4: Remodel			BAS	Main Building Area	1200	1200	1200
Year Remodeled	2001			FBP	Basement, Finished, Partn	400	0	0
Override Value	500			FGR	Garage, Attached	440	0	198
	Override Initials 203: WANDA							
Value	Type	Reason Code	Date	ID	Comment			
% Good	Remove		Select a date					
Misc. Improve	Remove		Select a date					
Cost to Cure	Remove		Select a date					
Override Appraised	Override Assessed	cns_override_initial						

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% ($5\% \cdot .80$).

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) = 1.091 x RCN
EXTERIOR CONDITION 4 (GOOD) = 1.091 x RCN
GRADE 40 (Above Average) = 1.090 x RCN
INTERIOR CONDITION 4 (GOOD) = 1.091 x RCN
```


$$\begin{aligned} \text{REMODEL FACTOR 4} &= 1.03500 \times \text{RCN} \\ \text{SUB-NEIGHBORHOOD ADJ A} &= .878 \times \text{RCN} \end{aligned}$$

Each MV is multiplied together to determine the combined, or overall, MV. The sample home's MV is 1.2338132 (1.091*1.091*1.090*1.091*1.035*.878).

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:

$$\begin{aligned} \text{Building RCN} &= [(\text{Base Rate} + \sum \text{ABRV}_n) * \text{Effective Area} * \text{Size} \\ &\quad \text{\$ 754,788} = [(\text{\$ 157.85} + \text{\$ 11.10}) * \text{3,498} * \text{.89128} \\ &\quad \text{Adjustment} + \sum \text{AFRV}_n] * (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n) \\ &\quad \text{+ \$60,070}] * (\text{1.2862809}) \end{aligned}$$

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: R16

Section #1
Base Rate: 157.85
Size Adjustment: 0.89128
Effective Area: 3498
Adjusted Base Rate = (157.85 + 11.1) * 0.89128
Adjusted Base Rate: 150.58
RCN = ((150.58 * 3498) + 60070) * 1.2862802915416647
RCN: 754788
```

The replacement cost new for our sample home is \$754,188. 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 \$ 13,250. 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.

Parcel Information													
SSL:	9999//	//	9999//	Primary Use:	012	Use Type:	R1	Internal ID:	182803	Work In Prog:	0	Living Area:	3000
Location:	9999 9TH ST NW #99999999				Total Assess:	\$920,160	Land Acres:	5,000				SSF/ Liv/GBA:	306.72
Base Rate Values													
Value Source C	Living Area/GBA 3,000			RCN \$754,788			Regression 229220						
Prim Bldg Use 12	Effective Area 3,498			Bldg % Good 86.00			Income \$0						
Style 6	size Adjustment .89128			RCNLD \$649,120			Bldg+XF RCN for All Bldgs \$2,629,919						
												Building #: 1 of 1	
Special Building Features													
Section	Code	Description	Sub Typ	Sub Type desc	Unit Type	Units	Unit Price	Year	Deprec Rate	Pct Good	Quality	RCN	
1	SN	SAUNA	C	COUNT	Count	1	\$13,250.00	0	86	4		\$14,442.50	
<div style="display: flex; justify-content: space-between;"> Add Extra Features Delete Extra Features </div> <div style="display: flex;"> <div style="flex: 1;"> <p>Primary Extra Feature Information</p> <p>Section: 1</p> <p>Code: SN: SAUNA</p> <p>Sub Type: C: COUNT</p> <p>Unit Price: 13250</p> <p><input checked="" type="checkbox"/> Unit Price Override</p> <p>Unit Type: Count</p> <p>Units: 1</p> <p>Measure 1: 1</p> <p>Measure 2:</p> <p>Comment:</p> </div> <div style="flex: 1;"> <p>Additional Extra Feature Information</p> <p>Quantity:</p> <p>Quality: 4: Above Average</p> <p>Condition:</p> <p>Year:</p> <p>Effective Year: 1950</p> <p><input type="checkbox"/> Effective Year Override</p> <p>Deprec Rate: 0</p> <p>Percent Good: 86</p> <p>Economic Obsol:</p> <p>Functional Obsol:</p> <p>Stories:</p> <p>Basement:</p> </div> </div> <div style="margin-top: 10px;"> <p><input type="checkbox"/> Value Override</p> <p>Appraised Value: 12420 Assessed Value: 12420</p> </div>													

Illustration 8

We now know the total replacement cost new (RCN) of our sample home, including the sauna, is \$ 768,038 (\$754,788 + \$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 \$768,038. 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 78 years as indicated on the Depreciation Table below:

Depreciation Table							
Base Year							
2015							
Effective Age of Building	% Depr.	% Good	Effective Year Built				
0	0	100	2015	54	13	87	1961
1	1	99	2014	55	13	87	1960
2	2	98	2013	56	13	87	1959
3	2	98	2012	57	13	87	1958
4	3	97	2011	58	13	87	1957
5	3	97	2010	59	13	87	1956
6	4	96	2009	60	14	86	1955
7	4	96	2008	61	14	86	1954
8	4	96	2007	62	14	86	1953
9	4	96	2006	63	14	86	1952
10	5	95	2005	64	14	86	1951
11	5	95	2004	65	14	86	1950
12	5	95	2003	70	15	85	1945
13	5	95	2002	75	16	84	1940
14	6	94	2001	78	16	84	1937

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 \$ 754,788, the depreciated value, RCNLD, is only \$ 641,570 ($754,788 * 0.85$).

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.

Parcel Information

SSL: 9999// // 9999// Primary Use: 012 Use Type: R1 Internal ID: 182803 Work In Prog 0 Living Area: 3000
 Location: 9999 9TH ST NW #999999999 Total Assess: \$920,160 Land Acres: 5,000 \$SF/ Liv/GBA 306.72

Base Rate Values

Value Source C Living Area/GBA 3,000 RCN \$754,788 Regression 229220
 Prim Bldg Use 12 Effective Area 3,498 Bldg % Good 86.00 Income \$0
 Style 6 size Adjustment .89128 RCNLD \$649,120
 Bldg+XF RCN for All Bldgs \$1,278,094

Building #: 1 of 1 Section: 1 of 1

Style: 6: 2.5 Story Fin
 Model: 01: Single Family
 Grade: 4: Above Average Overall Cndtn: 4: Good
 Stories: 2.5 Park Spaces: 0
 Foundation: 2: Average
 Exterior Wall: 15: Face Brick
 Exterior Cndtn: 4: Good
 Building Type: 1: Single
 Roof Cover: 3: Shingle
 Floor Cover: 11: Hardwood/Carp
 Interior Condition: 4: Good
 View: 3: Average
 No. Units: 1
 Heat Type: 1: Forced Air
 Eat in Kith: 0: Default
 AC Type: Y: Yes
 Bedrooms: 4
 Bathrooms: 2
 Half Baths: 2
 Total Rooms: 8
 Bath Style: 2: Semi-Modern
 Kitchen Style: 2: Semi-Modern
 Kitchens: 1
 Fireplaces: 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 78 years. The Effective Age is calculated to be 61 years ($75 \text{ max} * 0.81225$). Instead of CAMA using 78 chronological years to calculate depreciation, it will use 61 years. Below is a portion of the Cost.dat file that shows these calculations.

```

*****
Actual Year Built: 1937
Effective Age = 75 * .81225
Effective Age: 61
Percent Good = 86
RCNLD: 649120

```

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			
2015			
Effective Age of Building	% Depr.	% Good	Effective Year Built
0	0	100	2015
1	1	99	2014
2	2	98	2013
3	2	98	2012
4	3	97	2011
5	3	97	2010
6	4	96	2009
7	4	96	2008
8	4	96	2007
9	4	96	2006
10	5	95	2005
11	5	95	2004
12	5	95	2003
13	5	95	2002
14	6	94	2001
15	6	94	2000
16	6	94	1999
17	6	94	1998
18	6	94	1997

46	11	89	1969
47	12	88	1968
48	12	88	1967
49	12	88	1966
50	12	88	1965
51	12	88	1964
52	12	88	1963
53	12	88	1962
54	13	87	1961
55	13	87	1960
56	13	87	1959
57	13	87	1958
58	13	87	1957
59	13	87	1956
60	14	86	1955
61	14	86	1954
62	14	86	1953
63	14	86	1952

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 \$ 641,570.

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.

Base Rate Values

Value Source C Living Area/GBA 3,000 RCN \$754,788 Regression 229220
 Prim Bldg Use 12 Effective Area 3,498 Bldg % Good 86.00 Income \$0
 Style 6 size Adjustment .89128 RCNLD \$649,120
 Bldg+XF RCN for All Bldgs \$1,278,094

Building #: 1 of 1 Section: 1 of 1

Section Level Depreciation

Year Built: 1937
 Effective Year Built: 1954 Ovr EYB
 Functional Obsol:
 Economic Obsol:
 Condition:
 Percent Complete: 100
 Depreciation Code:
 Remodel Rating: 4: Remodel
 Year Remodeled: 2001
 Override Value:
 Override Initials: 239: ROBERT

Section Summary

Group: R12 Effective Area 3498
 Base Rate 157.85 RCN \$754,788
 Eff Base Rate \$193.69 Bldg % Good 86
 Net Other Adj \$77,266.86 RCNLD \$649,120
 Living Area/GBA 3000

Code	Description	Gross	Living	Eff Area
BAS	Main Building Area	1200	1200	1200
FBP	Basement, Finished, Partn	400	0	0
FGR	Garage, Attached	440	0	198

	Value	Type	Reason Code	Date	ID	Comment
% Good	Remove			Select a date	153	
Misc. Improve	Remove			Select a date	153	
Cost to Cure	Remove			Select a date	153	

Override Appraised:
 Override Assessed:
 cns_override_initial:
 Override Value:
 Override Initials: 239: ROBERT

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. The “Status” and “Percent Complete” fields are the only two fields that are utilized to account for additional depreciation.

Section Level Depreciation

Year Built: 1937
 Effective Year Built: 1954 Ovr EYB
 Functional Obsol:
 Economic Obsol:
 Condition:
 Percent Complete:
 Depreciation Code:
 Remodel Rating: 4: Remodel
 Year Remodeled: 2001
 Override Value:
 Override Initials: 239: ROBERT

Section Summary

Group: R12 Effective Area 3498
 Base Rate 157.85 RCN \$754,788
 Eff Base Rate \$193.69 Bldg % Good 86
 Net Other Adj \$77,266.86 RCNLD \$649,120
 Living Area/GBA 3000

Code	Description	Gross	Living	Eff Area
BAS	Main Building Area	1200	1200	1200
FBP	Basement, Finished, Partn	400	0	0
FGR	Garage, Attached	440	0	198

	Value	Type	Reason Code	Date	ID	Comment
% Good	Remove			Select a date	153	
Misc. Improve	Remove			Select a date	153	
Cost to Cure	Remove			Select a date	153	

Override Appraised:
 Override Assessed:
 cns_override_initial:
 Override Value:
 Override Initials: 239: ROBERT

Illustration 5

The “Condition” field’s pick-list is similar to Illustration 6 shows items that have a direct affect on depreciation and the nature of the affect. Notice that a reduced number of Condition 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 its 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.

The screenshot shows a software window titled "Land Details" with the following fields and values:

Field	Value
Building #	1
Line Num	1
Land Type (Site)	P: Prima
Use Code	012: Residential Detac
Lot Type	1: 1
Zoning	R-5-E
Unit Price	76.41
District	
Land Type Adj (j)	1.00000000
Frontage	40
Site Adj.:	1.00
Depth	150
Neighborhood	
Land Units	6000
Nhbd. Adj.	1.000
Unit Type	SF: Square Feet
SIZE ADJ	1.0000
Special Calcs	
Notes	Poor topo in back; River view
Adjustments (Special)	V: View 0 80 %
Override Appraised Land Value	<input type="checkbox"/>
Override Assessed Land Value	<input type="checkbox"/>
Totals Appraised	458460
Totals Assessed	366770

Buttons at the bottom: Next, Add, Delete, Close.

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 *Assessor 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	\$89.00	\$445,000	LG 1

Illustration 2

The base rate for our property is \$ 89.00 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 0.8585 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 \$ 76.41 ($\$89.00 * 0.8585$).

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 the 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 \$91.41 ($\$76.41 + \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 \$458,460 ($\$76.41 * 6,000$).

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 assessor 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 \$ 366,768 ($458,460 * 0.80$).

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.

Parcel Information

SSL: 9999 / / 9999 Primary L 012 Use Type R1 Internal I 182803 Work In F 0 Living An 3000
 Location: 9999 9TH ST NW #999 Total Ass \$1,197,930 Land Acr 6,000 \$\$\$/ Liv/K 399.31

Property Factors

Topography 1: Level Front 1: 0: Default Alley 1: 2: No Landscape 1: 0: Default
 Topography 2: Front 2: Alley 2: Landscape 2:
 Topography 3: Front 3: Alley 3: Landscape 3:

Land Valuation Neighborhoods

Res NBHD 11 Sub NBHD A GIS Region Lot Factors
 Comm NBHD 11 Sub NBHD A Pocket NBHD Frontage 0 Depth 0 GIS Area 0
 Z Contour Num Frontage 0 Lot Type

Building Classification and Land Line Valuation

Bldg #	Line #	Code	Description	Units	Unit type	Appraised	Assessed	Acre Discount	Zone	Land Type	Land
1	1	012	Residential Detached	6,000	SF	\$458,460.00	\$366,770.00		1	0	0

Land Acres .13774105 Appraised \$458,460.00

Mix Use
 012 Residential Detached Single Fa 100 R

Land Details

Building 1 Line Num 1

Use Code Residential Detached Single Fa Lot Type 1:1 Land Type (Site) P. Prima

Zoning R-S-E Unit Price 76.41
 District Land Type Adj 1.00000000
 Frontage 40 Site Adj: 1.00
 Depth 150 Neighborhood
 Land Units 6000 Nkbd. Adj: 1.000
 Unit Type SF Square Feet SIZE ADJ 1.0000

Special Calcs
 Notes Poor topo in back: River view

Adjustments (Special V: View 0 80 %

Override Appraised Land Value
 Override Assessed Land Value

Totals
 Appraised 458460 Assessed 366770

Next Add Delete Close

Illustration 3

REPORT GENERATED ON 26-Feb-2015 AT 08:36
 Account Number = 9999 9999
 Use Code = 012

 Recalc Land for PID 182803
 Recalc Land for Bldg Num 1 on land line 1

 Check for any special use value overrides
 Land Use Code = 012
 Special Use Value = 0.00
 Special Use Percent = 80.00
 Base District = 11

 Find the region for a group and district
 Land Group = R
 Region = District, Region not defined
 Base Sub District = A
 Z Contour =
 District Standard Size = 5000
 District Base Price Size = 89.00
 District Size Adjustment = LG1
 Land group based Value Source = C
 Size Ratio = 6000.000 / 5000 * 10000
 Size Ratio = 12000.000
 Interpolate/Extrapolate from size adj curve table
 High Unit Size = 120.00
 High Factor = 0.8585
 District pricing based unit_type value = 76.41
 Total adjustment a = 1 * 1.000 * 1.00 * 1 * 1
 Total adjustment a = 1.00000
 Land Value = 76.41 * 6000.000
 Land Value Rounded = 458460

Neighborhood 11A
 From Land Rate Table
 Internal calculations to arrive at adjustments for non-standard base size
 Base rate multiplied by size adjustment (89.00 *.8585)
 Final adjusted rate * lot size = land Value

Illustration 4

Some Final Thoughts

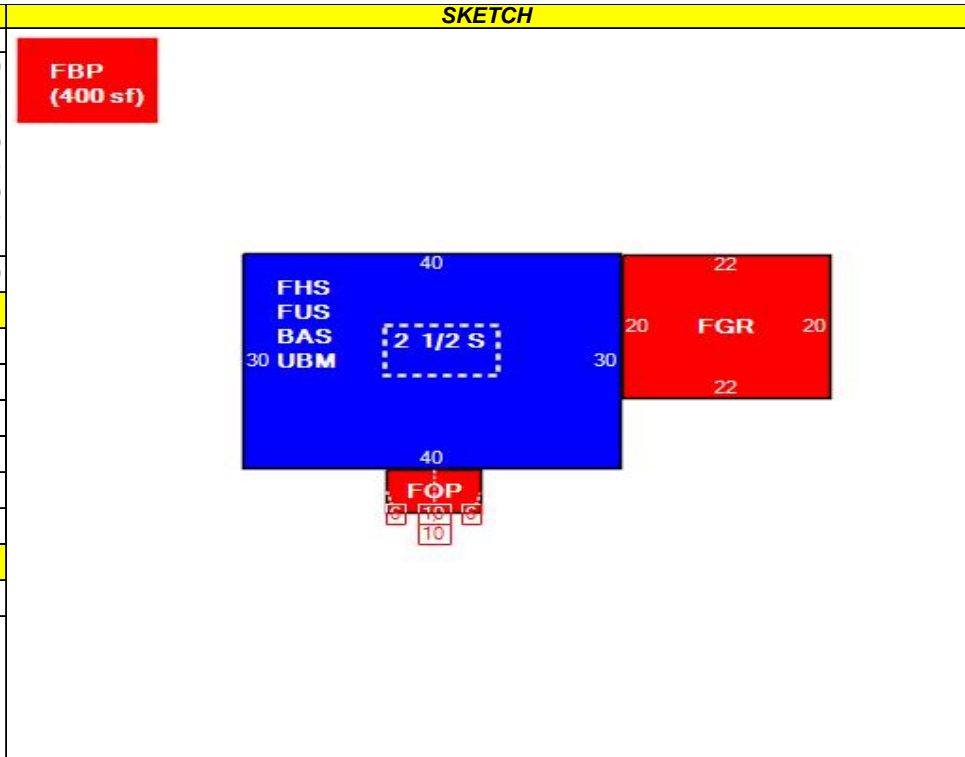
We have introduced you to some of the most elementary aspects of property valuation using the District's Vision[®] CAMA system. We have developed the RCN of a fictitious home, reduced its value by the accrued depreciation and finally added the land value component to complete the appraisal. This guideline 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. CAMA Construction Valuation Guideline – Residential

CURRENT OWNER			ACCOUNT INFORMATION					CURRENT ASSESSMENT									
JANEY TAXREP 9999 9TH ST Washington DC 12345			Use Type	Use Code	Lot SF	Status Code	Description	Code	Assessed Val	RES District of Columbia Real Property Assessment Division							
			R1	012	6,000	A	RES LAND	012	366,770								
VISIT / CHANGE HISTORY							RESIDNTL	012	661,540								
Date	ID	Type	Inf. Source	Code	Description	Value Src:	C	Total:	1,197,930								
11-13-2014	203	C	O	R	Revaluation	Value Date		Value Status									
06-18-2014	203	O	B	B	Sale Verification & Permit	Reg											
03-04-2013	203	C	O	B	Sale Verification & Permit	Cost	02-27-2015	C									
09-14-2012	203	O	O	R	Revaluation												
01-01-2012	379	P	N	R	Revaluation												
09-12-2006	203	M	O	B	Sale Verification & Permit												
OWNERSHIP HISTORY		INSTRUMENT #	SALE DATE	q/u	v/i	SALE PRICE	AC	PREVIOUS ASSESSMENTS (HISTORY)									
JANEY TAXREP	1111/2222	12-31-2011	Q	I	575,000	01	Year	Use	Type	Val Source	Land Value	Building Value	Assess Value				
JOSEPH TAXPAYER	123456	02-29-2000	Q	I	654,321	01	2016	012	R1	C	366,770	831,160	1,197,930				
							2015	011	O		82,120	2,296,630	2,378,750				
							2014	011	R1	C	67,480	2,340,370	2,407,850				
							2013	024	R3	C	287,330	1,632,500	1,919,830				
							2012	012	R1	C	278,210	693,980	972,190				
							2011										
APPEALS				PROPERTY FACTORS													
Appeal #	Decision	Amount	Revised AV	TOPOGRAPHY		MLT FRONT		ALLEY ACCESS		LANDSCAPE							
				1 Level	0 Default	2 No	0 Default	COMMENTS									
THIS IS A NOTE ABOUT THIS HOUSE																	
TAX TYPE			SUPPLEMENTAL DATA				VALUE SUMMARY										
Year	Type	Description	Type	Description	Regress (L&B)		Cost (L&B)										
2007	TX	TAXABLE	Neighborhood	CHEVY CHASE	0		1,289,620										
				Part Part	0												
				Mixed Use	0												
				Vcnt Lnd Use	12												
				Model Type	0												
				Restr Resale													
				Abbutt Lot	0												
				Zone Overlay													
PARCEL LOCATION SUMMARY							DATA ENTRY										
SSL	NBHD	SUB-NBHD	ZONING	WARD	GROUP	ARN	Value Adjust.	Type	Reason	Date	ID						
9999	9999	11	A	R-5-E	6	1	0										
BUILDING PERMIT INFORMATION																	
Permit ID	Issue Date	Type	Amount	Description	Insp Date	Override	Comment										
999999	01-01-2011	NW	500,000	Renovations to Basement	12-31-2011												
1234	05-21-2008	AD	50,000		06-13-2008												
121212		GR	20,000														
000001																	
LAND LINE VALUATION SECTION																	
B #	Occ	Description	Zone	Frontage	Depth	Units	SI	I. Factor	LT	Price	Size Adj	Site Rating	Adjustments/Special Use	Notes	Land Value		
1	012	Residential Detached Single F	R-5-E	40	150	6000.0 SF	P	1.000000	0	76.41	1.0000		V 80.00	Poor topo in back; River vi	458,460		
													000048				
Total Land Units						6,000 SF						Total Land Value	458,460				

CONSTRUCTION DETAIL			BUILDING SUMMARY SECTION					
Element	Cd	Chng	Description	Code	Description	Gross	Eff Area	Living
Prim Bldg Use	012		Residential Detached	BAS	Main Building Ar	1,200	1,200	1,200
Model	01		Single Family	FBP	Basement, Finis	400	0	0
Grade	4		Above Average	FGR	Garage, Attache	440	198	0
Style	6		2.5 Story Fin	FHS	Half Story, Finis	1,200	600	600
Stories:	2.5			FOP	Porch, Open	60	0	0
Building Type:	1		Single	FUS	Upper Story, Fin	1,200	1,200	1,200
Roof Cover:	3		Shingle	UBM	Basement, Unfin	1,200	300	0
Foundation	2		Average	<i>Total:</i>		5,700	3,498	3,000
Exterior Wall	15		Face Brick	BUILDING COST				
Exterior Condt	4		Good	Effective Area		3,498		
Heat Type	1		Forced Air	Building RCN		754,788		
AC Type	Y		Yes	Spec. Feature RCN		14,443		
Floor Cover	11		Hardwood/Carp	Total RCN		769,231		
Interior Condti	4		Good	% Good		86		
Total Rooms	8			Building Cost		661,538		
Fireplaces	1			DEPRECIATION				
Bedrooms	4			Primary OCC	Current	012		
Bathrooms	2				Change			
Half Baths	2				Actual Year Built	1937		
Bath Style	2		Semi-Modern		Year Remodeled	2001		
Kitchens	1				Effective Year Built	1954		
Kitchen Style	2		Semi-Modern	Status				
Eat in Kith	0		Default	% Complete				
Overall Cndtn	4		Good	%GD Override (Cost)				
View	3		Average	Type				
Park Spaces	0			Reason Code				
No. Units	1			Date				
				ID				
				Comment				



SPECIAL FEATURES/AMENITIES						
Code	Description	Units	SF	Unit Price	Quality	RCN
SN	SAUNA	1	Count	13250.0	4	14,443

DETACHED STRUCTURES									
Code	Description	Units	Unit Type	Unit Price	Grade	Cndtn	RCN	% Gd	Ass. Val
DG	Detached Garage	200	SF	63.50	5	5	16,791	85	14,270
PH	POOL HOUSE	1,500	SF	150.07	6	4	194,19	80	155,350



OUTPUT FROM NEW COST MODELING ENGINE
 REPORT GENERATED ON 27-Feb-2015 AT 08:28

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

Cost Calculation for pid, bid = 182803, 173587

Account Number = 9999 9999

Use Code = 012

Cost Rate Group = R12

Model ID: = R16

Section #1

Section Use: Residential Detached Single Fa

Base Rate: 157.85

Size Adjustment: 0.89128

Effective Area: 3498

Adjusted Base Rate = (157.85 + 11.100000) * 0.89128

Adjusted Base Rate: 150.58

RCN = ((150.58 * 3498 + 60070.000000000) * 1.2862802915416647000000000000) + 0

RCN: 754788

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

EXTERIOR WALL 15 = 3.950 + BaseRate

ROOF COVER 3 = 0.680000 + BaseRate

FLOOR COVER 11 = 4.670 + BaseRate

AIR CONDITIONING Y = 1.800 + BaseRate

*****Units Value Additions*****

FULL BATHS OVER 1 = 12500.000 + RCN

HALF BATHS = 16250.000 + RCN

FIREPLACES = 8000.000 + RCN

PARTITIONED FINISHED BASEMENT = 22000.000 + RCN

OPEN PORCH = 1320.000 + RCN

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

GRADE 4 = 1.090 x RCN

INTERIOR CONDITION 4 = 1.091 x RCN

EXTERIOR CONDITION 4 = 1.091 x RCN

OVERALL CONDITION 4 = 1.091 x RCN

REMODEL FACTOR 4 = 1.035000000000 x RCN

SUB-NEIGHBORHOOD ADJ A = 0.878000 x RCN

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

EFF AGE GRADE 4 = 0.950 x Age

BATH STYLE 2 = 0.950 x Age

KITCHEN STYLE 2 = 0.900 x Age

Actual Year Built: 1937

Effective Age = 61

Percent Good = 86

RCNLD: 649120

REPORT GENERATED ON 27-Feb-2015 AT 08:29

Account Number = 9999 9999

Use Code = 012

Recalc Land for PID 182803

Recalc Land for Bldg Num 1 on land line 1

Check for any special use value overrides

Land Use Code = 012

Special Use Value = 0.00

Special Use Percent = 80.00

Base District = 11

Find the region for a group and district

Land Group = R

Region = District, Region not defined

Base Sub District = A

Z Contour =

District Standard Size = 5000

District Base Price Size = 89.00

District Size Adjustment = LG1

Land group based Value Source = C

Size Ratio = $6000.000 / 5000 * 10000$

Size Ratio = 12000.000

Interpolate/Extrapolate from size adj curve table

High Unit Size = 120.00

High Factor = 0.8585

District pricing based unit_type value = 76.41

Total adjustment a = $1 * 1.000 * 1.00 * 1 * 1$

Total adjustment a = 1.00000

Land Value = $76.41 * 6000.000$

Land Value Rounded = 458460

USECODE

(Selects Base Rate)

No.	Description	Value
011	Row	\$133.84
012	Detached	\$157.85
013	Semi-Detached	\$133.66
015	Mixed Use	\$133.84
019	Miscellaneous	\$133.84
023	Small Apt. Bldg.	\$105.55
024	Conversion	\$136.19

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)	\$12,500
Half Bath	\$ 8,125
Fireplace	\$ 8,000
Kitchen	\$11,500
Finished Basement (Basic)	\$20.00/sf
Finished Basement (Partition)	\$55.00/sf
Basement Garage	\$45.00/sf
Carport	\$33.00/sf
Stoop	\$22.00/sf
Open Porch	\$22.00/sf
Covered Open Porch	\$38.50/sf

Screen Enclosed Porch	\$41.25/sf
Glass Enclosed Porch	\$46.75/sf
Fully Enclosed Porch	\$55.00/sf
Deck	\$27.50/sf
Patio	\$ 8.25/sf

Grade (Multiplies Base, Add & Flat)

0	Default
1	Low Quality 0.50
2	Fair Quality 0.75
3	Average Quality 1.00
4	Above Average Quality 1.09
5	Good Quality 1.19
6	Very Good Quality 1.30
7	Excellent Quality 1.43
8	Superior Quality 1.66
9	Extraordinary - A 1.92
10	Extraordinary - B 2.15
11	Extraordinary - C 2.50
12	Extraordinary - D 2.85

Interior Condition (Multiplies Base, Add & Flat)

0	Typical
1	Poor .766
2	Fair .819
3	Average 1.000
4	Good 1.091
5	Very Good 1.179
6	Excellent 1.239

Exterior Condition (Multiplies Base, Add & Flat)

0	Default
1	Poor .766
2	Fair .819
3	Average 1.000
4	Good 1.091
5	Very Good 1.179
6	Excellent 1.239

Overall Condition (Multiplies Base, Add & Flat)

0	Default
1	Poor .766
2	Fair .819
3	Average 1.000
4	Good 1.091
5	Very Good 1.179
6	Excellent 1.239

Remodel Type (Multiplies Base, Add & Flat)

0	Default
1	Unknown
2	Gut Rehab 1.44
3	Major Renov 1.26
4	Remodel 1.10
5	Addition
6	Cosmetic 1.02

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

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%

Building RCN = [(Base Rate + ∑ ABRV_n) * Effective Area * Size Adjustment + ∑ AFRV_n] * (MV₀ * MV₂ * ... * 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 2015			
Effective Age of Building	% Depr.	% Good	Effective Year Built
0	0	100	2015
1	1	99	2014
2	2	98	2013
3	2	98	2012
4	3	97	2011
5	3	97	2010
6	4	96	2009
7	4	96	2008
8	4	96	2007
9	4	96	2006
10	5	95	2005
11	5	95	2004
12	5	95	2003
13	5	95	2002
14	6	94	2001
15	6	94	2000
16	6	94	1999
17	6	94	1998
18	6	94	1997
19	7	93	1996
20	7	93	1995
21	7	93	1994
22	7	93	1993
23	7	93	1992
24	8	92	1991
25	8	92	1990
26	8	92	1989
27	8	92	1988
28	8	92	1987
29	9	91	1986
30	9	91	1985
31	9	91	1984
32	9	91	1983
33	9	91	1982
34	9	91	1981
35	10	90	1980
36	10	90	1979
37	10	90	1978
38	10	90	1977
39	10	90	1976
40	10	90	1975
41	11	89	1974
42	11	89	1973
43	11	89	1972
44	11	89	1971
45	11	89	1970

46	11	89	1969
47	12	88	1968
48	12	88	1967
49	12	88	1966
50	12	88	1965
51	12	88	1964
52	12	88	1963
53	12	88	1962
54	13	87	1961
55	13	87	1960
56	13	87	1959
57	13	87	1958
58	13	87	1957
59	13	87	1956
60	14	86	1955
61	14	86	1954
62	14	86	1953
63	14	86	1952
64	14	86	1951
65	14	86	1950
70	15	85	1945
75	16	84	1940

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
- 2016 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.

Base Rate Values	
Value Source C	Living Area/GBA 5,400
Prim Bldg Use 45	Effective Area 8,460
Style	size Adjustment 1.2386

Style	C: Brick/Concr
Model:	94: Commercial
Grade	40: Good
Stories	2
# Units	1.00
Shape/Peri	2: Rectangular
CDU	VG: Very Good
1st Floor Occ	045
Prim Bldg Use	045
Exterior Finish	C: Concrete
Wall Height	12.00
Structure Class	C: Brick/Concr

Illustration 1

Base Rate Values	
Value Source C	Living Area/GBA 5,400
Prim Bldg Use 45	Effective Area 8,460
Style	size Adjustment 1.2386

Style	C: Brick/Concr
Model:	94: Commercial
Grade	40: Good
Stories	2
# Units	1.00
Shape/Peri	2: Rectangular
CDU	VG: Very Good
1st Floor Occ	047
Prim Bldg Use	047
Exterior Finish	C: Concrete
Wall Height	14.00
Structure Class	C: Brick/Concr

Illustration 2

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

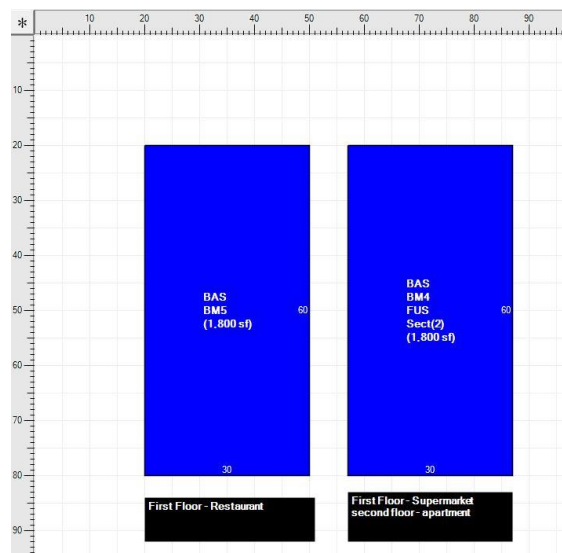


Illustration 3

Living Area/GBA 1,800		RCN \$1,421,526		Regression 0	
Effective Area 3,600		Bldg % Good 72.00		Income \$0	
size Adjustment 1.419		RCNLD \$1,023,500		Bldg+XF RCN for All Bldgs \$337,986,645	
Building #: 1 of 2		Section: 1 of 2			
Section Summary					
Group OF3		Effective Area 3600			
Base Rate 175.43		RCN \$1,421,526			
Eff Base Rate \$383.37		Bldg % Good 72			
Net Other Adj \$41,402.90		RCNLD \$1,023,500			
Living Area/GBA 1800					
Code	Description	Gross	Living	Eff Area	
BAS		1800	1800	1800	
BM5		1800	0	1800	

Illustration 4

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

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

Living Area/GBA 1,800		RCN \$1,421,526		Regression 0	
Effective Area 3,600		Bldg % Good 72.00		Income \$0	
size Adjustment 1.419		RCNLD \$1,023,500		Bldg+XF RCN for All Bldgs \$337,986,645	
Building #: 1 of 2		Section: 1 of 2			
Section Summary					
Group OF3		Effective Area 3600			
Base Rate 175.43		RCN \$1,421,526			
Eff Base Rate \$383.37		Bldg % Good 72			
Net Other Adj \$41,402.90		RCNLD \$1,023,500			
Living Area/GBA 1800					
Code	Description	Gross	Living	Eff Area	
BAS		1800	1800	1800	
BM5		1800	0	1800	

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.

Living Area/GBA 3,600		RCN \$0		Regression 0	
Effective Area 4,860		Bldg % Good 0		Income \$0	
size Adjustment 1.419		RCNLD \$0		Bldg+XF RCN for All Bldgs \$337,986,645	
Building #: 2 of 2		Section: 1 of 1			
Section Summary					
Group	AP1	Effective Area 4860			
Base Rate	113.08	RCN \$0			
Eff Base Rate	\$383.37	Bldg % Good 29			
Net Other Adj	\$41,402.90	RCNLD \$0			
Living Area/GBA 3600					
Code	Description	Gross	Living	Eff Area	
BAS		1800	1800	1800	
BM4		1800	0	1260	
FUS		1800	1800	1800	

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:

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

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.

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

The 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 \$ 180.25 is automatically selected. The second section, "47-Store-Super Market", also constructed as a Class "C", concrete block/brick building, has a Base Rate of \$103.14.

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

$$\begin{aligned} \text{Building RCN} = & [\text{Section}_1 (\text{\$180.25} * \text{3600} * \text{Size Adjustment}) * \\ & \text{Base Rate} \quad \text{Effective Area} \\ & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\text{Section}_n (\text{\$103.14} * \text{4860} * \text{Size Adjustment}) * \\ & \text{Base Rate} \quad \text{Effective Area} \\ & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\sum \text{Special Building Features}] \end{aligned}$$

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 1.16763. Now our Adjusted Base Rate is calculated to be \$223.26 (180.25 *1.23860) for Section 1 and \$ 127.75 (103.14 *1.23860) for Section 2 of our example.

Because the adjustment is larger than 1.00, it would be proper to conclude that our sample building is smaller 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:

$$\begin{aligned} \text{Building RCN} = & [\text{Section}_1 (\text{\$180.25} * \text{3600} * \text{1.23860}) * \\ & \text{Base Rate Effective Area Size Adjustment} \\ & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\text{Section}_n (\text{\$103.14} * \text{4860} * \text{1.23860}) * \\ & \text{Base Rate Effective Area Size Adjustment} \\ & (\text{MV}_0 * \text{MV}_2 * \dots * \text{MV}_n)] + \\ & [\sum \text{Special Building Features}] \end{aligned}$$

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 = 1.150 X RCN
GRADE 40 (Good) = 1.120 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 1.4168 (1.15 * 1.12 * 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:

$$\begin{aligned}
 \text{Building RCN} = & [\text{Section}_1 (\text{\$180.25} * \text{3600} * \text{1.23860}) * \\
 & \quad \text{Base Rate} \quad \text{Effective Area} \quad \text{Size Adjustment} \\
 & (\text{1.4168})] + \\
 & \quad \text{Multiplicative Variables} \\
 & [\text{Section}_n (\text{\$103.14} * \text{4860} * \text{1.23860}) * \\
 & \quad \text{Base Rate} \quad \text{Effective Area} \quad \text{Size Adjustment} \\
 & (\text{1.4168})] + \\
 & \quad \text{Multiplicative Variables} \\
 & [\sum \text{Special Building Features}]
 \end{aligned}$$

The RCN for Section 1, the restaurant is \$ 1,138,733 ($\$180.25 * 3600 + 0$) * 1.23860 * 1.41680). The package goods store's RCN is \$879,642 ($\$103.14 * 4860 * 1.23860 * 1.41680$).

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

Section #1

Base Rate: 180.25
 Size Adjustment: 1.23860
 Effective Area: 5400
 Adjusted Base Rate = (180.25 + 0) * 1.23860
 Adjusted Base Rate: 223.26
 RCN = ((223.26 * (3600 + 0) + 0) * 1.4168
 RCN: 1138733

Section #2

Base Rate: 103.14
 Size Adjustment: 1.23860
 Effective Area: 5400
 Adjusted Base Rate = (103.14 + 0) * 1.23860
 Adjusted Base Rate: 127.75
 RCN = ((127.75 * 4860) + 0) * 1.41680
 RCN: 879642

So far, the RCN of the building is \$ 2,018,375 (1,138,733+879,642). 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												
Section	Code	Description	Sub Typ	Sub Type desc	Unit Type	Units	Unit Price	Year	Deprec Rate	Pct Good	Quality	RCN
1	HVAC	(HVAC) Heating	617	Cmplt HVAC	SF	1800	\$9.19 1978	0	72	3		\$16,542.00
1	SPRK	Sprinklers	683	Wet	SF	1800	\$4.90 1978	0	72	3		\$8,820.00
1	HVAC	(HVAC) Heating	617	Cmplt HVAC	SF	3600	\$9.19 1978	0	72	3		\$33,084.00
2	SPRK	Sprinklers	683	Wet	SF	1800	\$4.90 1978	0	100	3		\$8,820.00

Illustration 7

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

Section	Code	Description	Sub Typ	Sub Type desc	Unit Type	Units	Unit Price	Year	Deprec Rate	Pct Good	Quality	RCN
1	HVAC	(HVAC) Heating	617	Cmplt HVAC	SF	1800	\$9.19	1978	0	72	3	\$16,542.00
1	SPRK	Sprinklers	683	Wet	SF	1800	\$4.90	1978	0	72	3	\$8,820.00
1	ELEV	Private Elevator	652	Power Freight	Count	1	\$32,250.00	1978	0	72	3	\$32,250.00
1	HVAC	(HVAC) Heating	617	Cmplt HVAC	SF	3600	\$9.19	1978	0	72	3	\$33,084.00
2	SPRK	Sprinklers	683	Wet	SF	1800		1978	0	100	3	

Primary Extra Feature Information		Additional Extra Feature Information	
Section	1	Quantity	
Code	ELEV: Elevators	Quality	3: Average
Sub Type	652: Power Freight	Condition	
Unit Price	32250	Year	1978
Unit Type	Count	Effective Year	1977
Units	1	Deprec Rate	0
Measure 1	1	Percent Good	72

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 \$ 67,266 (\sum Special Building Features =16,542 + 8,820 +33,084 + 8,820).

We now know the total replacement cost new (RCN) of our sample building, including Special Features, is \$ 2,085,641 (\$2,018,375 + \$67,266).

$$\begin{aligned}
 \text{Building RCN} &= [\text{Section}_1 (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment} * \text{Multiplicative Variables})] + \\
 &+ [\text{Section}_n (\text{Base Rate} * \text{Effective Area} * \text{Size Adjustment} * \text{Multiplicative Variables})] + \\
 &+ [\$67,266] \\
 &= [\sum \text{Special Building Features}]
 \end{aligned}$$

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 \$2,778,884. 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 2016, therefore the valuation date is January 1, 2015. 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 62 years (2015-1953).

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 62 years as indicated on the Depreciation Table below:

Base Year 2015		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	2015	0	100	0	100	0	100
1	2014	0	100	0	100	0	100
35	1980	16	84	23	77	36	64
36	1979	17	83	25	75	38	62
37	1978	18	82	26	74	42	58
38	1977	19	81	28	72	44	56
39	1976	20	80	31	69	48	52
40	1975	21	79	32	68	50	50
41	1974	23	77	34	66	52	48
42	1973	25	75	36	64	56	44
43	1972	26	74	38	62	57	43
44	1971	28	72	40	60	61	39
45	1970	29	71	44	56	63	37
46	1969	31	69	46	54	64	36
47	1968	32	68	48	52	66	34
48	1967	34	66	50	50	67	33
49	1966	36	64	52	48	70	30
50	1965	38	62	54	46	71	29
51	1964	40	60	57	43		
52	1963	42	58	59	41		
53	1962	44	56	61	39		
54	1961	46	54	63	37		
55	1960	48	52	64	36		
56	1959	50	50	65	35		
57	1958	52	48	67	33		
58	1957	54	46	69	31		
59	1956	56	44	70	30		
60	1955	57	43	71	29		
61	1954	60	40	72	28		
62	1953	61	39	73	27		
63	1952	63	37				
64	1951	64	36				
65	1950	65	35				
70	1949	71	29				

Illustration 9

The Actual Year Built (1953) and the Effective Year Built (1977) the Effective Age would be 38 years. Moving across the table, we see that a building with an EYB of 1977 has 28 percent depreciation and therefore is 72 Percent Good (100%-28%). If the RCN of our sample building is \$2,085,641 the depreciated value, RCN-LD, is only \$ 2,000,796 (2,778,884 * 0.72).

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.

Base Rate Values

Value Source C Living Area/GBA 5,400 RCN \$2,018,375 Regression 0
Prim Bldg Use 47 Effective Area 8,460 Bldg % Good 74.00 Income \$2,445,230
Style size Adjustment 1.2386 RCNLD \$1,493,600
Bldg+XF RCN for All Bldgs \$7,413,759

Building #: 1 of 1 Section: 1 of 2

Section Level Depreciation

Year Built 1953
Effective Year Built 1977 Ovr EYB
Functional Obsol
Economic Obsol
Condition NO: Normal
Percent Complete 0
Depreciation Code
Remodel Rating 3: Major Renov
Year Remodeled 1998 Override Initials
Override Value

Section Summary

Group RS1 Effective Area 8460
Base Rate 103.14 RCN \$2,018,375
Eff Base Rate \$316.31 Bldg % Good 74
Net Other Adj \$0.00 RCNLD \$1,493,600
Living Area/GBA 5400

Code	Description	Gross	Living	Eff Area
BAS		1800	1800	1800
BM5		1800	0	1800

% Good	Remove	Value	Type	Reason Code	Date	ID	Comment
		74	T: Temporary	F: Functional	2/13/2015	15	239: ROBERT
Misc. Improve	Remove				Select a date	15	
Cost to Cure	Remove				Select a date	15	

Override Appraised Override Assessed cns_override_initial

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*****

$$\begin{aligned} \text{REHAB FACTOR 3} &= .45 * \text{Age} \\ \text{STRUCTURE CLASS AGE FACTOR C} &= .9 * \text{Age} \\ \text{REHAB YEAR} &= 1.5 * \text{Age} \end{aligned}$$

The product of each of these MV adjustments is calculated to be 0.46575 ($0.45 * 0.90 * 1.5$). This product is then multiplied by the Actual Age to calculate the Effective Age. Recall our sample building's Actual Age is 62 years. The Effective Age is calculated to be 38 years ($62 * 0.6075$). Instead of CAMA using 62 chronological years to calculate depreciation, it will use 38 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 = 62 * .6075
Effective Age: 38
Percent Good = 72
RCNLD:819890
```

Back to our renovation, the 1998 major renovation done to the building reduced the effective age to 60.75% (Rehab Factor 3 = $.45 * \text{Rehab Year} = 1.5$) of the 62 years of actual age, resulting in an effective age of 38 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 = 1.5. This combination will reduce the effective age to 82.5% ($0.55 * 1.5$) of the 62 years of actual age, as a result, making the effective age now 31 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 38 years versus 31 years is about \$200,000 on a building with a RCN of \$2,085,641. 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 1977 ($2015 - 38$).
4. Having established the Effective Year Built, we look up 1977 on the *60 Year Economic Life Depreciation Table* and find that the Depreciation is 28% for that year. See Illustration 11.

Base Year 2015		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	2015	0	100	0	100	0	100
1	2014	0	100	0	100	0	100
20	1995	5	95	6	94	9	91
21	1994	5	95	7	93	10	90
22	1993	6	94	8	92	12	88
23	1992	6	94	9	91	13	87
24	1991	7	93	9	91	15	85
25	1990	7	93	10	90	16	84
26	1989	8	92	11	89	17	83
27	1988	9	91	13	87	19	81
28	1987	9	91	14	86	20	80
29	1986	10	90	15	85	23	77
30	1985	11	89	16	84	25	75
31	1984	12	88	17	83	26	74
32	1983	13	87	18	82	29	71

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 83. 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 31 years at 83%, by subtracting the 11% attributed to functional obsolescence, we are left with 72% (rounding error) as the percent good for our building. This matches the figure shown in the Cost.dat file.

Building #: 1 of 1 Section: 1 of 2

Section Level Depreciation

Year Built: 1953

Effective Year Built: 1977 Ovr EYB

Functional Obsol:

Economic Obsol:

Condition: NO: Normal

Percent Complete: 0

Depreciation Code:

Remodel Rating: 3: Major Renov

Year Remodeled: 1998

Override Value:

Override Initials:

Section Summary

Group: RS1 Effective Area: 8460

Base Rate: 103.14 RCN: \$2,018,375

Eff Base Rate: \$316.31 Bldg % Good: 74

Net Other Adj: \$0.00 RCNLD: \$1,493,600

Living Area/GBA: 5400

Code	Description	Gross	Living	Eff Area
BAS		1800	1800	1800
BM5		1800	0	1800

Value	Type	Reason Code	Date	ID	Comment	
% Good: 74	Remove	T: Temporary	Physical Depr	2/13/2015	15	239: ROBERT
Misc. Improve	Remove			Select a date	15	
Cost to Cure	Remove			Select a date	15	

Override Appraised: Override Assessed: cns_override_initial:

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

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 0.72 and we have RCN LD of the building. Knowing the total RCN of our sample building is \$\$ 2,085,641 , the RCN LD is \$1,501,662 (\$ 2,085,641 * 0.72).

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. Property Record Card, SSL 9999 8888
2. Cost.dat print-out, SSL 9999 8888
3. Land.dat print-out, SSL 9999 8888
4. CAMA Construction Valuation Guideline

CURRENT OWNER			ACCOUNT INFORMATION					CURRENT ASSESSMENT								
TEST OWNER 9999 9TH ST Washington DC 20002			Use Type	Use Code	Lot SF	Status Code	Description	Code	Assessed Val	COMM District of Columbia Real Property Assessment Division						
			C	045	999,999	A	COM LAND COMMERCL	045	2,364,000 1,513,780							
			VISIT / CHANGE HISTORY					Value Src: C Total: 3,877,780								
			Date	ID	Type	Inf. Source	Code	Description	DATA ENTRY							
								Entry ID: _____ Entry Date: / /								
OWNERSHIP HISTORY			INSTRUMENT #	SALE DATE	q/u	v/i	SALE PRICE	AC	PREVIOUS ASSESSMENTS (HISTORY)							
TEST OWNER			123456	10-28-2013	Q	I	120,000,000	01	Year	Use	Type	Val Source	Land Value	Building Value	Assessed Value	
									2016	045	C	C	2,364,000	1,513,780	3,877,780	
									2015	052	C	C	2,999,970	111,224,440	114,224,410	
									2014	021	A	C	13,995,970	1,433,000	15,428,970	
									2013	021	A	I	13,995,970	1,679,030	15,675,000	
									2012	021	A	C	13,995,970	1,328,140	15,324,110	
									2011	045	C	C	13,995,970	1,250,920	15,246,890	
									2010	045	C	C	13,995,970	1,274,640	15,270,610	
MIXED USE			APPEALS				ASSOCIATED PARCELS									
Code	Description	%	Appeal #	Decision	Amount	Revised AV	Primary SSL	SSL	USE	Lot Size	%	Total Value				
045	Store-Restaurant	100 0 0					9999 8888			999,999		3,877,780				
TAX TYPE			SUPPLEMENTAL DATA				COMMENTS									
Year	Type	Description	Type	Description												
2006	TX	TAXABLE	Part Part	0												
2005	TX	TAXABLE	Mixed Use	0												
2004	TX	TAXABLE	Vcnt Lnd Use	045												
2003	TX	TAXABLE	Model Type	0												
2002	TX	TAXABLE	Restr Resale													
2001	TX	TAXABLE	Abbutt Lot	0												
2000	TX	TAXABLE	Zone Overlay PUD													
PARCEL LOCATION SUMMARY																
SSL	NBHD	SUB-NBHD	ZONING	WARD	GROUP	ARN										
9999 8888	9	0	CR	6	1	408										
BUILDING PERMIT RECORD																
Permit ID	Issue Date	Type	Amount	Description	Insp Date											
LAND LINE VALUATION SECTION																
B #	Occ	Description	Zone	Frontage	Depth	Units	SI	I. Factor	LT	Price	Size Adj	Site Rating	Adjustments/Special Use	Notes	Land Value	
1	045	Store-Restaurant	CR	100	200	12000.000	SF	0	1.000000	1	197.00	0.0000		100.00	2,364,000	
Total Land Units						12,000	SF	Total Land Value						2,364,000		

CURRENT OWNER			ACCOUNT INFORMATION					CURRENT ASSESSMENT								
TEST OWNER 9999 9TH ST Washington DC 20002			Use Type	Use Code	Lot SF	Status Code	Description	Code	Assessed Val	COMM District of Columbia Real Property Assessment Division						
			C	045	999,999	A	COM LAND COMMERCL	045	2,364,000 1,513,780							
			VISIT / CHANGE HISTORY					Value Src: C Total: 3,877,780								
			Date	ID	Type	Inf. Source	Code	Description	DATA ENTRY							
								Entry ID: _____ Entry Date: / /								
OWNERSHIP HISTORY			INSTRUMENT #	SALE DATE	q/u	v/i	SALE PRICE	AC	PREVIOUS ASSESSMENTS (HISTORY)							
TEST OWNER			123456	10-28-2013	Q	I	120,000,000	01	Year	Use	Type	Val Source	Land Value	Building Value	Assessed Value	
									2016	045	C	C	2,364,000	1,513,780	3,877,780	
									2015	052	C	C	2,999,970	111,224,440	114,224,410	
									2014	021	A	C	13,995,970	1,433,000	15,428,970	
									2013	021	A	I	13,995,970	1,679,030	15,675,000	
									2012	021	A	C	13,995,970	1,328,140	15,324,110	
									2011	045	C	C	13,995,970	1,250,920	15,246,890	
									2010	045	C	C	13,995,970	1,274,640	15,270,610	
MIXED USE			APPEALS					ASSOCIATED PARCELS								
Code	Description	%	Appeal #	Decision	Amount	Revised AV	Primary SSL	SSL	USE	Lot Size	%	Total Value				
045	Store-Restaurant	100 0 0					9999 8888			999,999		3,877,780				
TAX TYPE			SUPPLEMENTAL DATA					COMMENTS								
Year	Type	Description	Type	Description												
2006	TX	TAXABLE	Part Part		0											
2005	TX	TAXABLE	Mixed Use		0											
2004	TX	TAXABLE	Vcnt Lnd Use		045											
2003	TX	TAXABLE	Model Type		0											
2002	TX	TAXABLE	Restr Resale													
2001	TX	TAXABLE	Abbutt Lot		0											
2000	TX	TAXABLE	Zone Overlay PUD													
PARCEL LOCATION SUMMARY																
SSL	NBHD	SUB-NBHD	ZONING	WARD	GROUP	ARN										
9999 8888	9	0	CR	6	1	408										
BUILDING PERMIT RECORD																
Permit ID	Issue Date	Type	Amount	Description		Insp Date										
LAND LINE VALUATION SECTION																
B #	Occ	Description	Zone	Frontage	Depth	Units	SI	I. Factor	LT	Price	Size Adj	Site Rating	Adjustments/Special Use	Notes	Land Value	
1	045	Store-Restaurant	CR	100	200	12000.000	SF	0	1.000000	1	197.00	0.0000		100.00	2,364,000	
Total Land Units						12,000	SF								2,364,000	

OUTPUT FROM NEW COST MODELING ENGINE
REPORT GENERATED ON 27-Feb-2015 AT 09:39

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

Cost Calculation for pid, bid = 183145, 173784
Account Number = 9999 8888
Use Code = 045
Cost Rate Group = RS1
Model ID: = DCC

Section #2

Section Use: Store-Super Market
Base Rate: 103.14
Size Adjustment: 1.23860
Effective Area: 5400
Adjusted Base Rate = (103.14 + 0) * 1.23860
Adjusted Base Rate: 127.75
RCN = ((127.75 * 4860 + 0.000000000000000000) * 1.4168000000000000) + 0
RCN: 879642

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

GRADE 40 = 1.120 x RCN
COMM NBHD 9 = 1.100 x RCN
CONDITION DESIRABILITY UTILITY G = 1.150 x RCN

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

STRUCTURE CLASS AGE FACTOR C = 0.900 x Age
CDU AGE FACTOR G = 1.000 x Age
REHAB FACTOR 3 = 0.450000 x Age
REHAB YEAR 1997 = 1.500 x Age

Actual Year Built: 1953
Effective Age = 38

*****Depreciation Adjustments*****

CDU DEPREC FACTOR G = 1.000 x Depreciation

Percent Good = 72
RCNLD: 633340

Section #1

Section Use: Store-Restaurant
Base Rate: 180.25

Size Adjustment: 1.23860

Effective Area: 5400

Adjusted Base Rate = (180.25 + 0) * 1.23860

Adjusted Base Rate: 223.26

RCN = ((223.26 * 3600 + 0.00000000000000000000) * 1.4168000000000000) + 0

RCN: 1138733

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

GRADE 40 = 1.120 x RCN

COMM NBHD 9 = 1.100 x RCN

CONDITION DESIRABILITY UTILITY G = 1.150 x RCN

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

STRUCTURE CLASS AGE FACTOR C = 0.900 x Age

CDU AGE FACTOR G = 1.000 x Age

REHAB FACTOR 3 = 0.450000 x Age

REHAB YEAR 1998 = 1.500 x Age

Actual Year Built: 1953

Effective Age = 38

*****Depreciation Adjustments*****

CDU DEPREC FACTOR G = 1.000 x Depreciation

Percent Good = 72

RCNLD: 819890

2016 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)

- 2011-2014 0%
- 2009-2010 5%
- 2004-2008 15%
- 1999-2003 25%
- Earlier-1998 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.

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

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

Regression 0 Income \$15,200
 RCN \$2,018,375 Bldg % Good 72
 Prim Bldg Use 45 Style RCNLD \$1,453,230 Bldg % RCN for All Bldgs \$16,419,925
 Living Area/GBA \$400 Effective Area 6,400 size Adjustment 1.288
 Style C:Brick/Concr Model: 94: Commercial Grade 40: Good Stories 1 # Units 1.00 Shape/Peri 2: Rectangular CDU G: Good 1st Floor Occ 045 Prim Bldg Use 045 Exterior Finish BV: Brick Veneer Wall Height 12.00 Structure Class C:Brick/Concr

Section Summary Group RS1 Effective Area 6400 RCN \$2,018,375
 Base Rate 103.14 Eff Base Rate \$316.31 Bldg % Good 72
 Net Other Adj \$0.00 RCNLD \$1,453,230
 Living Area/GBA \$400
 Code Description Gross Living Eff Area
 BAS Main Building Area 1800 1800
 BMS Basement, Full Finish 1800 0
 Section Level Depreciation Year Built 1977 Ovr EYB
 Functional Obsol Economic Obsol Condition ND: Normal Percent Complete 0 Depreciation Code 3: Major Renov Year Remodeled 1998 Override Value
 Value Reason Code Date Comment
 % Good Remove
 Misc. Improve Remove
 Cost to Cure Remove
 Override Appraised Override Assessed cns_override_initia

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 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:

X
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 \$500,000 per year and the market-derived capitalization rate is 5 percent, the indicated value would be \$10,000,000 ($\$500,000/.05$).

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 an 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 an income and expense statement for our sample property. The property, Breakaway Northwest, 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 close to the Convention Center in NW Washington,

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

Breakaway Northwest Apartments	
- December 31, 2010-	
Potential Gross Income	\$3,820,680
Vacancy & Collection Loss (7%)	-267,448
Miscellaneous Income (laundry) (2%)	<u>+ 62,600</u>
Effective Gross Income	\$3,615,832
Expenses	
Operating:	
Management (9%)	\$321,200
R.E. Taxes (7%)	262,000
Insurance (7%)	245,800
Utilities (7%)	238,700
Salaries (6%)	220,250
Marketing (4%)	130,400
Yard and Snow (2%)	<u>89,500</u>
<i>Sub-total (42%)</i>	\$1,507,850
Reserves for Replacements:	
Roof (4%)	\$150,400
Parking (3%)	121,000
Redecorating (3%)	115,948
Appliances (3%)	<u>102,400</u>
<i>Sub-total (13%)</i>	\$489,748
Total Expenses (55%)	\$1,997,598
Net Operating Income (45%)	<u>\$1,618,234</u>
Capitalization Rate	5.25%
Indicated Market Value	<u>\$30,823,500</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, vending machines, 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 replacements**. 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 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 nine percent of the effective gross income ($\$321,200/\$3,615,832$). These actual ratios are compared to typical ratios to see if any expenses are out of the ordinary. If they are out-of-line and no adequate explanation can be identified, it is appropriate to substitute that category of expense with an amount that would be more normal as indicated by market research. This is an aspect of "re-constructing" the income/expense statement to more properly reflect a stable, normalized net operating income.

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 \$3,122 per unit. With 164 units, we need to accumulate \$ 512,000 over a five year period. Charging \$102,400 per year to the reserves for replacements 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 traditional income/expense 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. 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. Analysis

of the market 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 buyers 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.

In our example, a market-derived capitalization rate for apartments of similar size and location indicate a direct capitalization rate of 5.25 percent. We now know the NOI and the cap rate and by following the IRV formula, we derive the value of Breakaway Northwest to be \$30,823,500 ($\$1,618,234/0.0525$).

The above discussion accurately represents the typical application of the income approach to valuation. However, determining valuations for ad-valorem purposes requires one significant modification to the process. Whereas in the above example we considered real estate taxes a legitimate expense, they are not expensed in ad-valorem appraisals. They are removed in our approach to account for the fact that the tax expense is directly determined by the very value we are trying to obtain. To avoid this circular situation whereby taxes affect value (lower NOI, if expensed) and value affects taxes, we remove the item from the NOI. Our tax-adjusted NOI will now be \$1,880,232 ($\$1,618,234 + \$262,000$). This is another aspect to reconstructing the income/expense statement illustrated earlier.

As a consequence of removing real estate taxes from the expenses and thereby increasing the NOI by a corresponding amount, we compensate by modifying the capitalization rate. The modification to the market cap rate allows us to remove real estate taxes from the net operating expenses and replace the loss by increasing the cap rate by the effective tax rate.

The cap rate we utilize for ad-valorem appraisals is a 'loaded' cap rate, meaning that it is comprised of both the market cap rate and the District's effective tax rate for apartments. Apartments are taxed at the residential tax rate. For this exercise the tax rate is \$0.85 per \$100 of assessed value, therefore the effective tax rate is 0.0085 ($0.85/100$). If the market cap rate is 5.25 percent and the effective tax rate is 0.85 percent, then our 'loaded' cap rate is 6.10 percent ($0.0525+0.0085$).

Based on the information we now have, we can estimate the market value of the subject apartment to be \$30,823,500 ($\$1,880,232/0.061$), the same as determined just a moment ago.

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 characteristics 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 Northwest 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 four "key" areas having to do with the income approach to value:

- Gross Income (Rent)
- Vacancy & Expenses
- Net Operating Income
- Capitalization Rate

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

Economic Income Valuation Select Economic Account Exclude from Land Residual Rep Year: 2016

Land Use: 021 Residential Apartment-V Neighborhood: 40 GROSS RENT \$4,044,680

022 Year Built: 1980 Cap Code: HR2: HIGH RISE 2 Apply Value Vacancy \$199,104

Cost \$30,080,490 Cap Adj: 3: AVERAGE GIM Code: EXP \$1,845,876

Value/Bldg SF: \$203,247 Cap Rate: 0.0550 GIM Adj: NOI \$1,999,700

Leasable Area/Units Notes: Breakaway Northwest elevator apartment, 8 BLDG VALUE \$36,358,180

AREA GL 148 Other Adjustment 0

AREA UL 0 INCOME \$36,358,180

AREA LL 0 Per SF/Unit \$245,663.37

Gross Area 148

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Amt	Expense	Exp %	Exp Amount
1	1	1101	1BR, 1BA	3	3	0	46	19440.0	19440.0	3	0.0500	44,712	3	0.4800	407773
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	28560.0	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	35280.0	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0.00	0.00	3	0.0000		3	0.4800	30048

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. We'll be entering information for each section, 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:

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Amt	Expense	Exp %	Exp Amount
1	1	1101	1BR, 1BA	3	3	0	46	19440.0	\$894,240.00	3	0.0500	44,712	3	0.4800	407773
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	2,170,560.00	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	\$917,280.00	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0.00	\$62,600.00	3	0.0000		3	0.4800	30048

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.

Illustration 4

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

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

Economic Income Valuation Select Economic Account Exclude from Land Residual Rep Year: 2016

Land Use: 021 Residential Apartment-V Neighborhood 40
022 009 Apply Value

Year Built 1980 Cap Code HR2 : HIGH RISE 2 GIM Code

Cost \$30,080,490 Cap Adj 3 : AVERAGE GIM Adj

Value/Bldg SF: \$203,247 Cap Rate 0.0550 GIM Factor GIM

Leasable Area/Units Notes Breakaway Northwest, elevator apartment, 8

AREA GL 148
AREA UL 0
AREA LL 0
Gross Area 148

GROSS RENT \$4,044,680
Vacancy \$199,104
EXP \$1,845,876
NOI \$1,999,700
BLDG VALUE \$36,358,180
Other Adjustment 0
INCOME \$36,358,180
Per SF/Unit \$245,663.37

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Amx	Expense	Exp %	Exp Amount	
1	1	1101	1BR, 1BA	3	3	0	46	19440.0	19440.0	\$894,240.00	3	0.0500	44,712	3	0.4800	407773
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	28560.0	2,170,560.00	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	35280.0	\$917,280.00	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0.00	0.00	\$62,600.00	3	0.0000	3	0.4800	30048	

The amount of adjustment is based on the table below:

Rating	Description	Location	Use
1	POOR	0.80	0.80
2	FAIR	0.90	0.90
3	AVERAGE	1.00	1.00
4	GOOD	1.10	1.10
5	EXCELLENT	1.25	1.25
A	AVERAGE	1.00	1.00
S	NON-MARKET	1.00	0.90

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 \$1,620 per month or \$19,440 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 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.

		OLD CITY #2
Code	Description	Monthly Rent
0000	JR. EFFICIENCY	1255
0101	EFFICIENCY	1330
0102	EFFICIENCY, SM	1255
0103	EFFICIENCY, LG	1465
1101	1BR, 1BA	1620
1102	1BR, 1BA, SM	1475
1103	1BR, 1BA, LG	1800
1111	1BR+DEN, 1BA	1885
1113	1BR+DEN 1BA, LG	2075
2101	2BR, 1BA	2380
2102	2BR, 1BA, SM	2145
2103	2BR, 1BA, LG	2610
2111	2BR+DEN, 1BA	2740
2113	2BR+DEN 1BA, LG	3010
2201	2BR, 2BA	2740
2202	2BR, 2BA, SM	2465
2203	2BR, 2BA, LG	3010

2211	2BR+DEN, 2BA	3285
2213	2BR+DEN 2BA, LG	3620
3101	3BR, 1BA	2550
3102	3BR, 1BA, SM	2290
3103	3BR, 1BA, LG	2805
3111	3BR+DEN, 1BA	2940
3113	3R+DEN 1BA, LG	3220
3201	3BR, 2BA	2940
3202	3BR, 2BA, SM	2635

Table 3

Notice that our subject property is located in the Old City #2 market. The District of Columbia is divided into nine separate markets for income modeling purposes. The market influences within Old City #2 are, for example, different from the influences within Southwest or Georgetown markets. Separate rent rate and vacancy and expense ratio 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 \$4,293,120. But, if you recall from the income and expense statement, the property generated an additional \$62,600 in non-rental income. We need to include this amount to determine 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:

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Amt	Expense	Exp %	Exp Amount	
1	1	1101	1BR, 1BA	3	3	0	62	19440.0	19440.0	1,205,280.00	3	0.0500	60,264	3	0.4800	549608
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	28560.0	2,170,560.00	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	35280.0	\$917,280.00	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0	0.00	\$62,600.00	3	0.0000		3	0.4800	30048

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 \$ 4,355,720, 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 will be similar to what we did in the Gross Income. 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 value of the NOI calculated here will be the basis for the final valuation using the IRV formula, after selecting a rate. See below:

Parcel Information

SSL: 9999/ / / 7777/ / Primary Use: 021 Use Type: A Internal ID: 201605 Work In Prog 0 Living Area: 201000
 Location: 9999 7TH ST NW Total Assess: \$39,151,870 Land Acres: 99,999 \$SF/ Liv/GBA 194.79

Economic Income Valuation Select Economic Account Exclude from Land Residual Rep Year: 2016

Land Use: 021 Residential Apartment-V Neighborhood 40
 022 009 Apply Value GROSS RENT \$4,355,720
 Year Built 1980 Cap Code HR2 : HIGH RISE 2 GIM Code Vacancy \$214,656
 Cost \$30,080,490 Cap Adj 3 : AVERAGE GIM Adj EXP \$1,987,711
 Value/Bldg SF: \$183,418 Cap Rate 0.0550 GIM Factor GIM NOI \$2,153,353
 Leasable Area/Units Notes Breakaway BLDG VALUE \$39,151,870
 AREA GL 164 Northwest, Other Adjustment 0
 AREA UL 0 elevator INCOME \$39,151,870
 AREA LL 0 apartment, 8 Per SF/Unit \$238,730.91
 Gross Area 164

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Am	Expense	Exp %	Exp Amount	
1	1	1101	1BR, 1BA	3	3	0	62	19440.0	19440.0	1,205,280.00	3	0.0500	60,264	3	0.4800	549608
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	28560.0	2,170,560.00	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	35280.0	\$917,280.00	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0.00	0.00	\$62,600.00	3	0.0000	3	0.4800	30048	

Illustration 7

A Vacancy and Expenses line is automatically created for each style shown on the Gross Rent. The values are based on the market area of the property and are derived from market analysis. Recall that our apartments are located in the Old City #2 market. CAMA populates the Vac% column and the Exp% column with the market rates appropriate for Old City #2; in this case it would be based on this table:

	GEORGETOWN	NORTHEAST	OLD CITY #2	SOUTHEAST
Vacancy Ratio	4%	7%	5%	8%
Expense Ratio	42%	60%	48%	60%

Table 4

We have inspected the property and concur that the vacancy rate should be five percent, to coincide with typical vacancies for properties in Old City #2.

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Amt	Expense	Exp %	Exp Amount	
1	1	1101	1BR, 1BA	3	3	0	62	19440.0	19440.0	1,205,280.00	3	0.0500	60,264	3	0.4800	549608
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	28560.0	2,170,560.00	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	35280.0	\$917,280.00	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0	0.00	\$62,600.00	3	0.0000	3	0.4800	30048	

Illustration 8

If, however, we found the property to have less than typical vacancy we could have selected “4 Good.” Whereas the typical vacancy for the Old City #2 market area is 5 percent, had we selected “Good”, the vacancy rate would have been modified by appropriate multiplier in the adjustment table. The adjusted amount would have been 2.5 percent ($0.05 * 0.50$). The amount of adjustment for both vacancy and expense are shown in the table below.

Rating	Description	Vacancy	Expense
1	POOR	2.00	1.25
2	FAIR	1.50	1.10
3	AVERAGE	1.00	1.00
4	GOOD	0.50	0.90
5	EXCELLENT	0.25	0.75
A	AVERAGE	1.00	1.00
S	NON-MARKET	0.25	1.00

Table 5

The Expense % may be adjusted in a similar manner, but we’ll leave it set to the typical percent associated with the Old City #2 market of forty-eight percent. By subtracting the Exp. Amount from the EGI, we get the NOI of the property. CAMA has calculated the NOI to be \$2,153,353, identical to our earlier income and expense report modified for real estate taxes discussed earlier.

Economic Income Valuation Select Economic Account Exclude from Land Residual Rep Year: 2016

Land Use: 021 Residential Apartment-V Neighborhood 40
022 009 Apply Value

Year Built 1980 Cap Code HR2 : HIGH RISE 2 GIM Code
Cost \$30,080,490 Cap Adj 3 : AVERAGE GIM Adj

Value/Bldg SF: \$183,418 Cap Rate 0.0550 GIM Factor GIM

Leasable Area/Units Notes Breakaway Northwest, elevator apartment, 8

AREA GL 164
AREA UL 0
AREA LL 0
Gross Area 164

GROSS RENT \$4,355,720
Vacancy \$214,656
EXP \$1,987,711
NOI \$2,153,353
BLDG VALUE \$39,151,870
Other Adjustment 0
INCOME \$39,151,870
Per SF/Unit \$238,730.91

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Amt	Expense	Exp %	Exp Amount
1	1	1101	1BR, 1BA	3	3	0	62	19440.0	1,205,280.00	3	0.0500	60,264	3	0.4800	549608
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	2,170,560.00	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	\$917,280.00	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0.00	\$62,600.00	3	0.0000		3	0.4800	30048

Illustration 9

We're almost finished. The last piece of the valuation process is the capitalization rate.

Capitalization Rate

Capitalization rates will vary across the District based on the class of property (office, retail, apartments, etc.) and its location (market area). Capitalization rates are assigned to apartments based on their market location and type of apartment complex. The District is divided into three submarkets. Each of these submarkets provides a separate cap rate for high-rise and low-rise apartments. Neighborhood 40/E, Old City II, is located in the Northwest market area and our subject is a high-rise type complex.

The assigned capitalization rate for high-rise apartments in the Northwest market area is 0.055 or 5.5 percent. Remember, this is the 'loaded' cap rate. See the illustration below.

Economic Income Valuation Select Economic Account Exclude from Land Residual Rep Year: 2016

Land Use: 021 Residential Apartment-V Neighborhood 40
022 009 Apply Value

Year Built 1980 Cap Code HR2 : HIGH RISE 2 GIM Code
Cost \$30,080,490 Cap Adj 3 : AVERAGE GIM Adj

Value/Bldg SF: \$183,418 Cap Rate 0.0550 GIM Factor GIM

Leasable Area/Units Notes Breakaway Northwest, elevator apartment, 8

AREA GL 164
AREA UL 0
AREA LL 0
Gross Area 164

GROSS RENT \$4,355,720
Vacancy \$214,656
EXP \$1,987,711
NOI \$2,153,353
BLDG VALUE \$39,151,870
Other Adjustment 0
INCOME \$39,151,870
Per SF/Unit \$238,730.91

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Amt	Expense	Exp %	Exp Amount
1	1	1101	1BR, 1BA	3	3	0	62	19440.0	1,205,280.00	3	0.0500	60,264	3	0.4800	549608
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	2,170,560.00	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	\$917,280.00	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0.00	\$62,600.00	3	0.0000		3	0.4800	30048

Illustration 10

Upon analysis of the property and its income and expenses, an adjustment to the cap rate is not warranted and therefore the cap rate adjustment is set to “Average”. Had the property been located closer to the Mt. Vernon Metro station, there may have been a reason to adjust the cap rate down to reflect the property’s good performance based on its proximity to the station. In that situation, instead of ‘average’, we would want to adjust the rate to “Good” thereby lowering the rate. This adjustment is accomplished by the Cap Adjustment dialog box. See below.

Economic Income Valuation Select Economic Account Exclude from Land Residual Rep Year: 2016

Land Use: 021 Residential Apartment-V Neighborhood: 40
 022 009 Apply Value GROSS RENT \$4,355,720
 Year Built: 1980 Cap Code: HR2 : HIGH RISE 2 GIM Code: Vacancy \$214,656
 Cost: \$30,080,490 Cap Adj: **3 : AVERAGE** GIM Adj: EXP \$1,987,711
 Value/Bldg SF: \$183,418 Cap Rate: 0.0550 GIM Factor: GIM NOI \$2,153,353
 Leasable Area/Units Notes: Breakaway Northwest elevator apartment, 8 BLDG VALUE \$39,151,870
 AREA GL: 164 Other Adjustment: 0
 AREA UL: 0 INCOME \$39,151,870
 AREA LL: 0 Per SF/Unit \$238,730.91
 Gross Area: 164

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Am	Expense	Exp %	Exp Amoun	
1	1	1101	1BR, 1BA	3	3	0	62	19440.0	19440.0	1,205,280.00	3	0.0500	60,264	3	0.4800	549608
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	28560.0	2,170,560.00	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	35280.0	\$917,280.00	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0.00	0.00	\$62,600.00	3	0.0000	3	0.4800	30048	

Illustration 11

Had we agreed that the performance was “Good”, our original cap rate of 5.5 percent would have been modified to 4.95 percent ($0.061 * 0.90$). Remember IRV tells us that, all other things being equal, the lower the cap rate the higher the property value and vice versa.

Cap Rating	Description	Adjustment
0	VERY POOR	1.30
1	POOR	1.20
2	FAIR	1.10
3	AVERAGE	1.00
4	GOOD	0.90
5	EXCELLENT	0.80
A	AVERAGE	1.00

Table 6

Valuation

We have almost come to the end of our example and exercise. One simple division remains. Knowing that the NOI is \$2,153,353 and that the overall direct capitalization rate is 0.055, we can calculate the estimated value of Breakaway Northwest to be \$39,151,870 ($\$2,153,353/0.055$). Again, this is identical to the amount estimated in the first section of the exercise. The final results are highlighted below.

Economic Income Valuation Select Economic Account Exclude from Land Residual Rep Year: 2016

Land Use: 021 Residential Apartment-V Neighborhood 40
 022 009 Apply Value

Year Built 1980 Cost \$30,080,490
 Value/Bldg SF: \$183,418

Leasable Area/Units
 AREA GL 164
 AREA UL 0
 AREA LL 0
 Gross Area 164

Cap Code HR2 : HIGH RISE 2
 Cap Adj 3 : AVERAGE
 Cap Rate 0.0550

GIM Code
 GIM Adj
 GIM Factor

GROSS RENT \$4,355,720
 Vacancy \$214,656
 EXP \$1,987,711
 NOI \$2,153,353
 BLDG VALUE \$39,151,870
 Other Adjustment 0
 INCOME \$39,151,870
 Per SF/Unit \$238,730.91

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Am	Expense	Exp %	Exp Amoun	
1	1	1101	1BR, 1BA	3	3	0	62	19440.0	19440.0	1,205,280.00	3	0.0500	60,264	3	0.4800	549608
1	1	2101	2BR, 1BA	3	3	0	76	28560.0	28560.0	2,170,560.00	3	0.0500	108,528	3	0.4800	989775
1	1	3201	3BR, 2BA	3	3	0	26	35280.0	35280.0	\$917,280.00	3	0.0500	45,864	3	0.4800	418280
1	1	5000	APT MISC INCOME	3	3	0	0	0	0.00	\$62,600.00	3	0.0000		3	0.4800	30048

Illustration 12

Some Final Thoughts

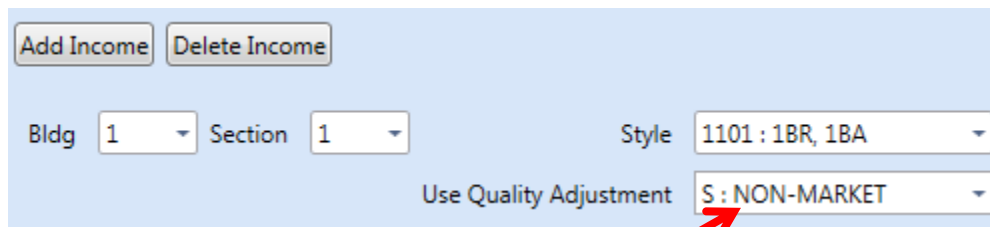
We have introduced you to some of the most elementary aspects of property valuation using the District's Vision[®] CAMA system. We have developed the estimated market value of a fictitious apartment complex, utilizing the direct capitalization income approach to value. This guideline is merely a small window, a first step, in the complex field of mass appraisal. A CAMA system robust enough to appraise almost 200,000 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.

Guidelines for Non-Market Multifamily (Apartment) Assessment

Various affordable multi-family residential properties benefit from some public funding programs. The funding programs mostly impose restrictions that run with the land for a determined period in exchange for some restricted rent or other subsidy.

There are many categories of low-income multifamily housing with many or different complex capital financial structures, which makes its valuation a challenge. Examples of low-income (affordable) housing development includes, Section 202 housing, Section 221, Section 8 certificate and voucher program, Hope VI program, Low Income Housing Tax Credit (LIHTC) etc.

In simplifying the valuation/assessment process of low-income housing, and for OTR purposes, apartment units in low-income multifamily development under any kind of government program are referred to as “**non-market**” unit; denoted by “**S: NON-MARKET**” in Vision CAMA program under all adjustments categories except the capitalization rate.



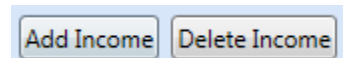
The screenshot shows a software interface with several input fields and buttons. At the top left are two buttons: 'Add Income' and 'Delete Income'. Below these are three dropdown menus: 'Bldg' with the value '1', 'Section' with the value '1', and 'Style' with the value '1101 : 1BR, 1BA'. To the right of these is a 'Use Quality Adjustment' dropdown menu with the value 'S : NON-MARKET'. A red arrow points to this dropdown menu.

Valuation Methodology

Income approach is generally accepted as the most reliable valuation method of appraising low-income multifamily housing developments. The sales comparison approach is less applicable due to limited or total lack of truly comparable sales, because of different income characteristics and government restrictions imposed on these properties. Also, these developments are sometimes too old, to make conclusion of market value via cost approach reliable.

The objective of this guide line is to focus on estimating market value of “non-market” apartments using Vision CAMA income model for consistency and consideration to existing restrictions by the government program in the housing development.

When the unit-mix consists of market and non-market units – Use to populate the unit-mix in the income model table.



The screenshot shows two buttons: 'Add Income' and 'Delete Income'.

Sample Apartment Units-Mix.

S = Non-Market Units

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area
1	1	1101	1BR, 1BA	3	3	0	45
1	1	2101	2BR, 1BA	3	3	0	20
1	1	3201	3BR, 2BA	3	3	0	15
1	1	5000	APT MISC INCOME	3	3	0	0
1	1	1101	1BR, 1BA	S	3	0	15
1	1	2101	2BR, 1BA	S	S	0	5

Market = 80 units
 Non-Market = 20 units
 Total = 100

Style: 2101 : 2BR, 1BA
 Use Quality Adjustment: S : NON-MARKET

The income model automatically adjusts market rent when “S: NON-MARKET” is selected under Use Quality Adjustment.

Rent								Market Rent	Adjusted	Gross Rent
Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area		Floor	
1	1	1101	1BR, 1BA	S	3	0	15	19440. UL	17496.	\$262,440.00

When the I&E report have the actual (received) rent for any non-market unit, check the box in front of Gross Rent and override it with the actual rent.

Style: 2101 : 2BR, 1BA
 Use Quality Adjustment: S : NON-MARKET
 Sub Areas: 0
 Gross Rent: 125000

Actual Rent (override)

Actual Rent (override)										Gross Rent
Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor		
1	1	2101	2BR, 1BA	S	S	0	5	28560. UL	25000	\$125,000.00

Select or apply non-market vacancy adjustment to all non-market units

Debt/Vac Adjustment **S : NON-MARKET** Debt/Vac Amount 1563 Ovr

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Amr
1	1	1101	1BR, 1BA	3	3	0	45	19440.0	\$874,800.00	3	0.0500	43,740
1	1	2101	2BR, 1BA	3	3	0	20	28560.0	\$571,200.00	3	0.0500	28,560
1	1	3201	3BR, 2BA	3	3	0	15	35280.0	\$529,200.00	3	0.0500	26,460
1	1	5000	APT MISC INCOME	3	3	0	0	0.00	\$62,600.00	3	0.0000	
1	1	1101	1BR, 1BA	S	3	0	15	19440. UL	\$262,440.00	S	0.0125	3,281
1	1	2101	2BR, 1BA	S	S	0	5	28560. UL	\$125,000.00	S	0.0125	1,563

Expenses and cap rate should be consistent for all the units except otherwise determined by the appraiser based on verifiable data.

Expense Adjustment **3 : AVERAGE** Expense Amount 59250 Ovr

Bldg	Section	Style	DescriptionXX	Use	Locati	Tenants	Area	Floor	Gross Rent	Vacancy	Vac %	Vac Amr	Expense	Exp %	Exp Amount
1	1	1101	1BR, 1BA	3	3	0	45	19440.0	\$874,800.00	3	0.0500	43,740	3	0.4800	898909
1	1	2101	2BR, 1BA	3	3	0	20	28560.0	\$571,200.00	3	0.0500	28,560	3	0.4800	150467
1	1	3201	3BR, 2BA	3	3	0	15	35280.0	\$529,200.00	3	0.0500	26,460	3	0.4800	241315
1	1	5000	APT MISC INCOME	3	3	0	0	0.00	\$62,600.00	3	0.0000		3	0.4800	30048
1	1	1101	1BR, 1BA	S	3	0	15	19440. UL	\$262,440.00	S	0.0125	3,281	3	0.4800	124397
1	1	2101	2BR, 1BA	S	S	0	5	28560. UL	\$125,000.00	S	0.0125	1,563	3	0.4800	59250

Cap Code **HR2 : HIGH RISE 2**
 Cap Adj **3 : AVERAGE**
 Cap Rate 0.0550 Ovr

Finally, check your analysis for accuracy and value conclusion.

GROSS RENT	\$2,425,240
Vacancy	\$103,603
EXP	\$1,114,386
NOI	\$1,207,252
BLDG VALUE	\$21,950,040
Other Adjustment	0
INCOME	\$21,950,040
Per SF/Unit	\$219,500.40

APPENDIX:

Sample PRC

SSL 9999 7777	Internal ID 201605	Sales Information				Commercial Data Elements			2016 INCOME VALUATION Washington, DC 2/27/2015 10:40:37 AM
Location 9999 7TH ST NW		Sale Date	Q/U	V/I	Sale Price	Exterior Finish	BR	Brick	
Current Owner		01-01-2006	Q	I	41,472,000				
BREAKAWAY NORTHWEST APTS INC		01-01-2005	Q	I	39,000,000				
9999 7TH ST		01-01-2004	Q	I	35,000,000				
		01-01-2003	U	I	0				
		01-01-2002	Q	I	30,000,000				
WASHINGTON DC 20001-999		Year Built			1980	9.0	1.6421		
Additional Owners:		Total Appraised Parcel Value			36,358,180				

ECONOMIC INCOME VALUATION

Leaseable Area Summary		Cap Rate		Income		Income Value		Notes	
Ground Level	148	Cap Code	HR2	Gross Income	4,044,680	Income Value	36,358,180	Breakaway Northwest, elevator apartment, 8 story building. NW corner of 6th and M St., NW. Recently remodeled. Close to Mt. Vernon Sq. Metro.	
Lower level	0	Cap Adjust	3	Vacancy Allowance	199,104	Other Adjust	0		
Upper Level	0	Cap Rate	0.0550	Expense Allowance	1,845,876				
		Rent ID	NBHD	Net Income	1,999,700	Total Income Value	36,358,180		
Total Leaseable Area	148	009	40			Value per SF/Unit	245,663		

#	Bldg #	Sect #	Style	Adj Table	OCC	SF/Unit	Flr Lev	Base Rate	Use Adj	Loc Adj	Rent SF/Unit	Gross Rent	Vac	Vac %	Vacancy Allowance	EGI	EXP	EXP %	EXP /SF	Expenses	NOI
1	1	1	110 1BR, 1BA	1	0	46	0	19440.00	3	3	19440.00	894,240	3	0.05	44,712	849,528	3	0.48		407,773	441,755
2	1	1	210 2BR, 1BA	1	0	76	0	28560.00	3	3	28560.00	2,170,560	3	0.05	108,528	2,062,032	3	0.48		989,775	1,072,257
3	1	1	320 3BR, 2BA	1	0	26	0	35280.00	3	3	35280.00	917,280	3	0.05	45,864	871,416	3	0.48		418,280	453,136
4	1	1	500 APT MISC I	6	0	0	0	0.00	3	3	0.00	62,600	3	0.00	0	62,600	3	0.48		30,048	32,552
						148					4,044,680			199,104	3,845,576				1,845,876	1,999,700	

SSL 9999 7777	Internal ID 201605	Sales Information				Commercial Data Elements			2016 INCOME VALUATION Washington, DC 2/27/2015 10:40:37 AM
Location 9999 7TH ST NW		Sale Date	Q/U	V/I	Sale Price	Exterior Finish	BR	Brick	
Current Owner		01-01-2006	Q	I	41,472,000				
BREAKAWAY NORTHWEST APTS INC		01-01-2005	Q	I	39,000,000				
9999 7TH ST		01-01-2004	Q	I	35,000,000				
		01-01-2003	U	I	0				
		01-01-2002	Q	I	30,000,000				
WASHINGTON DC 20001-9999		Year Built			1980	9.0	1.6421		
Additional Owners:		Appraised Value			36,358,180				

ACTUAL INCOME VALUATION

Cap Rate	Income	Income Value	Expense Breakdown
Cap Code	Gross Income	Income Value:	Heat, Maintenance, Accounting, Electric, Insurance, Management, Water, Trash Removal, Reserves, Sewer, Snow Removal, Other
Cap Adjust	Vacancy Allowance	Excess Land:	
Cap Rate	Expense Allowance	Total Income Value:	
	Other Income	Value Per SF/Unit:	
	Net Income		

#	Bld #	Sec #	Style	Adj Table	OCC	SF/Unit	Flr Lev	Loc Adj	Use Adj	Rent SF/Unit	Gross Rent	Vac Adj	Exp Adj	Other Income	Val Code	Notes	Lease Type	Tenant	Lease Begin	Yrs
						0					0									

PLEASE ALLOW THIS EXAMPLE TO BE USED AS A GUIDE TO UNDERSTANDING YOUR APPRAISAL.

CBD, INC. Office Building

December 31, 2015

Potential Gross Income		
	Office: 198,000 sq. ft. X \$52	\$10,296,000
	Retail: 7,500 sq. ft. X \$65	487,500
	Parking	500,000
	Antenna Lease	<u>30,000</u>
1.	Total Potential Gross Income	\$ 11,313,500
2.	<i>less</i> Vacancy & Collection Loss (7%)	- 754,845
3.	Effective Gross Income	\$ 10,558,655
Expenses		
Operating:		
4	Office Area (24%, rounded)	\$ 2,345,944
5.	Retail Area (25%, rounded)	113,344
6.	Parking & Antenna (25%, rounded)	132,500
7.	Reserves for Replacements (2% of PGI)	<u>226,270</u>
8.	Total Expenses	- \$ 2,818,058
9.	Net Operating Income	<u>\$7,740,597</u>
10.	Class 'A' Property Capitalization Rate	6.00 %
11.	Indicated Market Value	<u>\$129,009,950</u>

SSL 9999 8888		Internal ID 183145		Sales Information				Commercial Data Elements				2017 INCOME VALUATION									
Location 9999 9TH ST NW		Current Owner CDB, INC		Sale Date	OU	V/I	Sale Price	Exterior Finish		Wall Height		Washington DC 20002									
9999 9TH ST		20002		10-28-2013	0	1	125,000,000	0 Typical		12. 7 6098		12/31/2015 10:00:17 AM									
Washington DC		20002		Year Built		2005		Total Appraised Parcel Value		129,009,950											
ECONOMIC INCOME VALUATION																					
Leaseable Area Summary				Cap Rate				Income				Income Value				Notes					
Ground Level 7,500				Cap Code OA1				Gross Income 11,313,500				Income Value 11 129,009,950									
Lower level 0				Cap Adjust A				Vacancy Allowance 754,845				Other Adjust 0									
Upper Level 198,000				Cap Rate 10 0.0600				Expense Allowance 2,818,057				Total Income Value 129,009,950									
Total Leaseable Area 205,500				Rent ID 001 N/BHD 10				Net Income 7,740,597				Value per SF/Unit 628									
#	Bldg #	Sect #	Style	Adj Table	OCC	SF/Unit	Fir Lev	Base Rate	Use Adj	Loc Adj	Rent SF/Unit	Gross Rent	Vac	Vac %	Vacancy Allowance	EGI	EXP	EXP %	EXP /SF	Expenses	NOI
1	1	1	OFF OFFICE CL	3	0	198000	UL	52.00	3	3	52.00	10,296,000	3	0.07	720,720	9,575,280	3	0.24		2,345,944	7,229,336
2	1	1	OFF OFF RETAI	3	7500	7500	GL	65.00	3	3	65.00	487,500	3	0.07	34,125	453,375	3	0.25		113,344	340,031
3	1	1	OFF OFF PARKI	6	0	0	LL	0.00	3	3	500000.0	500,000	3	0.00	0	500,000	3	0.25		125,000	375,000
4	1	1	OFF OFF MISC I	6	0	0	UL	0.00	3	3	30000.00	30,000	3	0.00	0	30,000	3	0.25		7,500	22,500
5	1	1	OFF OFF RESE	6	0	0	GL	0.00	3	3	0	0	3	0.00	0	0	3	0.00		226,270	-226,270
												1	2	3					8	9	
												<u>11,313,500</u>	<u>754,845</u>	<u>10,558,655</u>					<u>2,818,058</u>	<u>7,740,597</u>	

2021 CAMA Residential Construction Valuation Guideline -- RPAD

USECODE**(Selects Base Rate)**

No.	Description	Value
011	Row	\$165.12
012	Detached	\$175.90
013	Semi-Detached	\$173.79
015	Mixed Use	\$165.12
019	Miscellaneous	\$165.12
023	Small Apt. Bldg.	\$158.73
024	Conversion	\$174.64

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)	\$12,000
Half Bath	\$ 7,200
Fireplace	\$ 9,000
Kitchen	\$11,500
Finished Basement (Basic)	\$26.00/sf
Finished Basement (Partition)	\$67.00/sf
Basement Garage	\$58.00/sf
Carport	\$42.00/sf
Stoop	\$28.00/sf
Open Porch	\$28.00/sf
Covered Open Porch	\$49.00/sf

Screen Enclosed Porch	\$52.50/sf
Glass Enclosed Porch	\$59.50/sf
Fully Enclosed Porch	\$70.00/sf
Deck	\$31.50/sf
Patio	\$10.50/sf

Grade (Multiplies Base, Add & Flat)

0	Default	
1	Low Quality	0.50
2	Fair Quality	0.75
3	Average Quality	1.00
4	Above Average Quality	1.06
5	Good Quality	1.16
6	Very Good Quality	1.30
7	Excellent Quality	1.44
8	Superior Quality	1.64
9	Extraordinary – A	1.92
10	Extraordinary – B	2.19
11	Extraordinary – C	2.55
12	Extraordinary – D	2.90

Interior Condition (Multiplies Base, Add & Flat)

0	Typical	
1	Poor	.794
2	Fair	.843
3	Average	1.000
4	Good	1.083
5	Very Good	1.182
6	Excellent	1.239

Exterior Condition (Multiplies Base, Add & Flat)

0	Default	
1	Poor	.794
2	Fair	.843
3	Average	1.000
4	Good	1.083
5	Very Good	1.182
6	Excellent	1.239

Overall Condition (Multiplies Base, Add & Flat)

0	Default	
1	Poor	.794
2	Fair	.843
3	Average	1.000
4	Good	1.083
5	Very Good	1.182
6	Excellent	1.239

Remodel Type (Multiplies Base, Add & Flat)

0	Default	
1	Unknown	
2	Gut Rehab	1.43
3	Major Renov	1.28
4	Remodel	1.08
5	Addition	
6	Cosmetic	1.03

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

2021 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 2020			
<i>Effective Age of Building</i>	<i>% Depr.</i>	<i>% Good</i>	<i>Effective Year Built</i>
0	0	100	2020
1	1	99	2019
2	2	98	2018
3	2	98	2017
4	3	97	2016
5	3	97	2015
6	4	96	2014
7	4	96	2013
8	4	96	2012
9	4	96	2011
10	5	95	2010
11	5	95	2009
12	5	95	2008
13	5	95	2007
14	6	94	2006
15	6	94	2005
16	6	94	2004
17	6	94	2003
18	6	94	2002
19	7	93	2001
20	7	93	2000
21	7	93	1999
22	7	93	1998
23	7	93	1997
24	8	92	1996
25	8	92	1995
26	8	92	1994
27	8	92	1993
28	8	92	1992
29	9	91	1991
30	9	91	1990
31	9	91	1989
32	9	91	1988
33	9	91	1987
34	9	91	1986
35	10	90	1985
36	10	90	1984
37	10	90	1983
38	10	90	1982
39	10	90	1981
40	10	90	1980
41	11	89	1979
42	11	89	1978
43	11	89	1977
44	11	89	1976
45	11	89	1975

46	11	89	1974
47	12	88	1973
48	12	88	1972
49	12	88	1971
50	12	88	1970
51	12	88	1969
52	12	88	1968
53	12	88	1967
54	13	87	1966
55	13	87	1965
56	13	87	1964
57	13	87	1963
58	13	87	1962
59	13	87	1961
60	14	86	1960
61	14	86	1959
62	14	86	1958
63	14	86	1957
64	14	86	1956
65	14	86	1955
70	15	85	1950
75	16	84	1945

2021 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)

- 2016-2019 0%
- 2014-2015 5%
- 2009-2013 15%
- 2004-2008 25%
- Earlier-2003 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 Stone-Restaurant
 Stories: 1 # Units: 0
 Structure Class: C Brick/Concr
 Exterior Finish: BV Brick Veneer
 Grade: 40 Good
 1st Floor Occ: 045 Stone-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: 1953
 CDU: G
 Remodel Rating: 3
 Year Remodeled: 1998
 Effective Year Built: 1982
 Status: F
 Percent Complete: 5

Value Type Rsn Date ID Comment

% Good Dvr
 Misc Improv
 Cost To Cure

02082

2021 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-	94	002	AP1	1	S90	1500	8	0.02	1
003	R	Residential Transient	94	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)	94	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	1	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

2021 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?
072	C	Industrial-Heavy Manufacturing	94	072	MN2	1	S90	30000	12	0.015	1
073	C	Industrial-Light	94	073	MN1	1	S90	22000	12	0.015	1
074	C	Industrial-Warehouse-1-story	94	074	WH2	1	S90	25000	16	0.01	1
075	C	Industrial-Warehouse-Multistor	94	075	WH1	1	S90	20000	16	0.01	1
076	C	Industrial-Truck Terminal	94	076	WH3	1	S90	20000	16	0.01	1
078	C	Warehouse-Condo	94	078	WH2	1	S90	5000	16	0.01	1
079	C	Industrial -Misc	94	079	MN1	1	S90	22000	12	0.015	1
081	C	Religious	94	081	PS1	1	S90	15000	24	0.01	1
082	C	Medical	94	082	MC1	1	S90	15000	10	0.01	1
083	C	Educational	94	083	ED1	1	S90	80000	12	0.01	1
084	C	Public Service	94	084	PS1	1	S90	12000	12	0.01	1
085	C	Embassy_Chancery	94	085	PS2	1	S90	12000	12	0.01	1
086	C	Museum_Library_Gallery	94	086	GS3	1	S90	14000	14	0.01	1
087	C	Recreational	94	087	RB1	1	S90	20000	24	0.01	1
088	C	Healthcare Facility	94	088	MC2	1	S90	8000	12	0.01	1
089	C	Special Purpose	94	089	GS2	1	S90	2000	8	0.01	1
091	R	Vacant	00	091		1	S90		0	0.015	1
092	R	Vacant-with permit	00	092		1	S90		0		1
093	R	Vacant-zoning limits	00	093		1			0		1
094	R	Vacant-false abutting	00	094		1			0		1
095	R	Vacant-Commercial Use	00	095		1			0		1
096	R	Vacant-Unimproved Parking	00	096		1			0		1
116	R	Condo-Horizontal Combined	05	116	CND	1	S90	3000	8	0.015	1
117	R	Condo-Vertical Combined	05	117	CND	1	S90	2000	8	0.015	1
126	C	Coop-Horizontal-Mixed Use	94	126	AP2	1	S90	10000	8	0.01	1
127	C	Coop-Vertical-Mixed Use	94	127	AP2	1	S90	10000	8	0.01	1
165	C	Vehicle Svc Station_Kiosk	94	165	SS1	1	S90	5000	14	0.01	1
189	C	Special Purpose-Memorial	00	189		1	S90	10000	0	0.01	1
191	C	Vacant	00	191		1					1
192	C	Vacant-with permit	00	192		1					1
193	C	Vacant-zoning limits	00	193		1					1
194	C	Vacant-false abutting	00	194		1					1
195	C	Vacant-Commercial Use	00	195		1					1
196	C	Vacant-Unimproved Parking	00	196		1					1
214	C	Garage-Multi-family	00	214		1	S90	10000	0	0.015	1
216	C	Condo-Investment-Horizontal	94	216	CND	1	S90	10000	8	0.015	1
217	C	Condo-Investment-Vertical	94	217	CND	1	S90	50000	8	0.015	1
265	C	Vehicle Svc Station_Kiosk	94	265	SS1	1	S90	5000	12	0.01	1
316	R	Condo-Duplex	05	316	CND	1	S90	5000	8	0.015	1
365	C	Vehicle Svc Station_Market	94	365	SS2	1	S90	5000	12	0.01	1
417	R	Condo-Vertical-Parking-Unid	00	417		1		2000	0		1
465	C	Vehicle Svc Station_Market	94	465	SS2	1	S90	5000	14	0.01	1
516	R	Condo-Detached	05	516	SIN	1	S90	2000	8	0.015	1



Government of the District of Columbia Office of Tax and Revenue - Real Property Tax Administration
 1101 4th Street, SW, Suite W550, Washington, DC 20024

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 with 1 dwelling place, 1 wall built as common wall with another structure, 3 exposed walls; primarily used as abode.
014 Residential-Garage	(CLASS 1): Structure used primarily as accessory to single-family residence; no living quarters; on an individual lot. Garages, pools, tennis courts, pads, etc.
015 Residential-Mixed Use	(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. Mixed-use eligible.
016 Residential-Condo-Horizontal	(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.
017 Residential-Condo-Vertical	(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.
018 Residential-Condo-Garage	(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.
019 Residential-Single-Family-Misc	(CLASS 1) : All other residential-single family uses not otherwise coded.
021 Residential-Apartment-Walk-Up	(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.
022 Residential-Apartment-Elevator	(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.
023 Residential Flats-Less than 5	(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.
024 Residential-Conversions-Less t	(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.
025 Residential-Conversion-5 Units	(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.
026 Residential-Cooperative-Horizontal	(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.
027 Residential-Cooperative-Vertical	(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.
029 Residential-Multifamily, Misc	(CLASS 1 or 2): All other residential multi-family uses not otherwise noted. Mixed-use eligible.
031 Hotel-Small	(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.

Government of the District of Columbia Office of Tax and Revenue - Real Property Tax Administration
1101 4th Street, SW, Suite W550, Washington, DC 20024

Use Codes

Code Description	Long Description
032 Hotel-Large	(CLASS 2): Structure providing temporary or semi-permanent residences; full personal services; eating/drinking facilities, entertainment, retail, banquet /conference capabilities; more than 150 rooms.
033 Motel	(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.
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. Mixed-use eligible.
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. Mixed-use eligible.
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. Mixed-use eligible.
043 Store-Department	(CLASS 2): Structure used primarily for sales of combination of retail products; no living quarters; except custodial staff. Mixed-use eligible.
044 Store-Shopping Center/Mall	(CLASS 2): Structure/combination of structures, enclosed/not; 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. Mixed-use eligible.
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. Mixed-use eligible.
047 Store-Super Market	(CLASS 2): Structure used primarily for retail grocery sales; ground level; row, attached, or detached; with/without accessory uses. Mixed-use eligible.
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. Mixed-use eligible.
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. Mixed-use eligible.
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. Mixed-use eligible.
059 Commercial-Office-Misc.	(CLASS 2): All other commercial office uses which have not been otherwise coded. Mixed-use eligible.
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 repairs; 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.

Government of the District of Columbia Office of Tax and Revenue - Real Property Tax Administration
1101 4th Street, SW, Suite W550, Washington, DC 20024

Use Codes

Code Description

Long Description

065 Vehicle Service Station-Vintage	(CLASS 2): Structure used for retail sale of motor fuel, lubricants. Incidental services such as lubrication, hand-car washing; 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. Mixed-use eligible.
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.
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. Mixed-use eligible.
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 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. Mixed-use eligible.
091 Vacant-True	(Class 1): Lot not improved with a structure and Residential vacant land (formerly Class 3).
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 or lot with deed or covenant restrictions precluding buildings.
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. Mixed-use eligible.
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.

Government of the District of Columbia Office of Tax and Revenue - Real Property Tax Administration
1101 4th Street, SW, Suite W550, Washington, DC 20024

Use Codes

Code Description

Long Description

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 3). 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. Mixed-use eligible.
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. Mixed-use eligible.
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.
191 Vacant-True	(CLASS 2): Lot not improved with a structure and commercial vacant land (formerly Class 3).
192 Vacant-With Permit	(CLASS 2): Lot for which an unexpired building permit has been issued.
193 Vacant-Zoning limits	(CLASS 2): Lot on which DC Zoning regulations prohibit an owner to build as a matter of right or lot with deed or covenant restrictions precluding buildings.
194 Vacant-False-Abutting	(CLASS 2): Lot assigned no real estate improvement value, but having part of a structure whose value is assigned to another lot. Mixed-use eligible.
195 Vacant-Commercial Use	(CLASS 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 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 3). 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-Unid	(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-Unid	(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 non-incident 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):	

2021 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
AP1	0	\$127.55	5	60	80	99
AP1	A	\$136.30	5	70	80	99
AP1	B	\$136.25	5	70	80	99
AP1	C	\$127.55	5	60	80	99
AP1	D	\$126.34	5	50	80	99
AP1	S	\$122.54	5	50	80	99
AP2	0	\$155.28	5	60	80	99
AP2	A	\$213.25	5	70	80	99
AP2	B	\$202.47	5	70	80	99
AP2	C	\$155.28	5	60	80	99
AP2	D	\$143.81	5	50	80	99
BN1	0	\$408.57	5	60	80	99
BN1	A	\$495.68	5	70	80	99
BN1	B	\$473.43	5	70	80	99
BN1	C	\$408.57	5	60	80	99
BN1	D	\$376.32	5	50	80	99
BN1	S	\$350.50	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	\$309.42	5	50	80	99
CND	A	\$309.42	5	50	80	99
CND	B	\$309.42	5	50	80	99
CND	C	\$309.42	5	50	80	99
CND	D	\$309.42	5	50	80	99
CND	R	\$309.42	5	50	80	99
CND	S	\$309.42	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	\$205.38	5	60	80	99
ED1	A	\$286.43	5	70	80	99
ED1	B	\$275.05	5	70	80	99
ED1	C	\$205.38	5	60	80	99
ED1	D	\$193.32	5	50	80	99
ED1	S	\$196.89	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	\$286.60	5	60	80	99
GS1	A	\$297.47	5	70	80	99
GS1	B	\$300.29	5	70	80	99
GS1	C	\$286.60	5	60	80	99
GS1	D	\$272.94	5	50	80	99
GS1	S	\$190.96	5	50	80	99
GS2	0	\$257.77	5	60	80	99

2021 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
GS2	A	\$409.34	5	70	80	99
GS2	B	\$386.49	5	70	80	99
GS2	C	\$257.77	5	60	80	99
GS2	D	\$240.93	5	50	80	99
GS2	S	\$234.66	5	50	80	99
GS3	0	\$235.09	5	60	80	99
GS3	A	\$341.34	5	70	80	99
GS3	B	\$325.99	5	70	80	99
GS3	C	\$235.09	5	60	80	99
GS3	D	\$218.79	5	50	80	99
GS3	S	\$212.73	5	50	80	99
HT1	0	\$161.30	5	60	80	99
HT1	A	\$195.58	5	70	80	99
HT1	B	\$188.46	5	70	80	99
HT1	C	\$161.30	5	60	80	99
HT1	D	\$149.66	5	50	80	99
HT1	S	\$120.16	5	50	80	99
HT2	0	\$257.22	5	60	80	99
HT2	A	\$266.24	5	70	80	99
HT2	B	\$257.22	5	70	80	99
HT2	C	\$201.02	5	60	80	99
HT2	D	\$187.07	5	50	80	99
HT2	S	\$250.23	5	50	80	99
MC1	0	\$361.38	5	60	80	99
MC1	A	\$485.40	5	70	80	99
MC1	B	\$469.88	5	70	80	99
MC1	C	\$361.38	5	60	80	99
MC1	D	\$333.05	5	50	80	99
MC1	S	\$191.07	5	50	80	99
MC2	0	\$233.84	5	60	80	99
MC2	A	\$305.00	5	70	80	99
MC2	B	\$291.61	5	70	80	99
MC2	C	\$233.84	5	60	80	99
MC2	D	\$217.58	5	50	80	99
MC2	S	\$233.84	5	50	80	99
MLT	R	\$96.34	5	70	80	70
MN1	0	\$88.96	5	60	80	99
MN1	A	\$104.15	5	70	80	99
MN1	B	\$99.27	5	70	80	99
MN1	C	\$88.96	5	60	80	99
MN1	D	\$80.66	5	50	80	99
MN1	S	\$81.28	5	50	80	99
MN2	0	\$192.65	5	60	80	99
MN2	A	\$258.45	5	70	80	99
MN2	B	\$251.74	5	70	80	99
MN2	C	\$192.65	5	60	80	99
MN2	D	\$125.21	5	50	80	99
MN2	S	\$182.57	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	\$174.64	5	75	40	75
MRC	A	\$174.64	5	75	40	75

2021 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
MRC	B	\$174.64	5	75	40	75
MRC	C	\$174.64	5	75	40	75
MRC	D	\$174.64	5	75	40	75
MRC	S	\$174.64	5	75	40	75
OF1	0	\$277.48	5	60	80	99
OF1	A	\$382.18	5	70	80	99
OF1	B	\$366.60	5	70	80	99
OF1	C	\$277.48	5	60	80	99
OF1	D	\$257.05	5	50	80	99
OF1	S	\$247.28	5	50	80	99
OF2	0	\$277.48	5	60	80	99
OF2	A	\$382.18	5	70	80	99
OF2	B	\$366.60	5	70	80	99
OF2	C	\$277.48	5	60	80	99
OF2	D	\$256.39	5	50	80	99
OF2	S	\$247.28	5	50	80	99
OF3	0	\$264.86	5	60	80	99
OF3	A	\$277.74	5	70	80	99
OF3	B	\$264.86	5	70	80	99
OF3	C	\$198.82	5	60	80	99
OF3	D	\$183.54	5	50	80	99
OF3	S	\$179.61	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	\$161.09	5	60	80	99
PK1	A	\$162.43	5	70	80	99
PK1	B	\$167.18	5	70	80	99
PK1	C	\$161.09	5	60	80	99
PK1	D	\$147.59	5	50	80	99
PK1	S	\$116.10	5	50	80	99
PK2	0	\$89.54	5	60	80	99
PK2	A	\$93.22	5	70	80	99
PK2	B	\$89.54	5	70	80	99
PK2	C	\$84.67	5	60	80	99
PK2	D	\$78.76	5	50	80	99
PK2	S	\$48.77	5	50	80	90
PS1	0	\$239.54	5	60	80	99
PS1	A	\$334.63	5	70	80	99
PS1	B	\$317.91	5	70	80	99
PS1	C	\$239.54	5	60	80	99
PS1	D	\$224.35	5	50	80	99
PS1	S	\$205.38	5	50	80	99
PS2	0	\$245.09	5	60	80	99
PS2	A	\$327.06	5	70	80	99
PS2	B	\$311.98	5	70	80	99
PS2	C	\$245.09	5	60	80	99
PS2	D	\$228.52	5	50	80	99
PS2	S	\$163.05	5	50	80	99
R11	R	\$165.12	6	75	80	75
R12	R	\$175.90	6	75	80	75
R13	R	\$173.79	6	75	80	75
R15	R	\$165.12	6	75	80	75

2021 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
R19	R	\$165.12	6	75	80	75
R23	R	\$158.73	6	75	80	75
R24	R	\$174.64	6	75	80	75
RB1	0	\$213.06	5	60	80	99
RB1	A	\$280.70	5	70	80	99
RB1	B	\$283.27	5	70	80	99
RB1	C	\$213.06	5	60	80	99
RB1	D	\$201.91	5	50	80	99
RB1	S	\$195.94	5	50	80	99
RES	R	\$96.10	5	70	80	70
RH1	0	\$187.64	5	70	80	99
RH1	A	\$187.64	5	70	80	99
RH1	B	\$187.64	5	70	80	99
RH1	C	\$187.64	5	70	80	99
RH1	D	\$187.64	5	70	80	99
RH1	S	\$187.64	5	70	80	99
RH2	0	\$261.25	5	60	80	99
RH2	A	\$342.19	5	70	80	99
RH2	B	\$332.30	5	70	80	99
RH2	C	\$261.25	5	60	80	99
RH2	D	\$241.21	5	50	80	99
RH2	S	\$179.37	5	50	80	99
RS1	0	\$282.42	5	60	80	99
RS1	A	\$373.71	5	70	80	99
RS1	B	\$373.71	5	70	80	99
RS1	C	\$282.42	5	60	80	99
RS1	D	\$260.51	5	50	80	99
RS1	S	\$260.46	5	50	80	99
RS2	0	\$304.62	5	60	80	99
RS2	A	\$412.44	5	70	80	99
RS2	B	\$412.44	5	70	80	99
RS2	C	\$304.62	5	60	80	99
RS2	D	\$280.58	5	50	80	99
RS2	S	\$281.96	5	50	80	99
RT1	0	\$190.02	5	60	80	99
RT1	A	\$241.92	5	70	80	99
RT1	B	\$231.96	5	70	80	99
RT1	C	\$190.02	5	60	80	99
RT1	D	\$176.75	5	50	80	99
RT1	S	\$175.88	5	50	80	99
RT2	0	\$183.64	5	60	80	99
RT2	A	\$214.21	5	70	80	99
RT2	B	\$214.21	5	70	80	99
RT2	C	\$183.64	5	60	80	99
RT2	D	\$169.11	5	50	80	99
RT2	S	\$168.18	5	50	80	99
RT3	0	\$291.32	5	60	80	99
RT3	A	\$303.24	5	70	80	99
RT3	B	\$291.32	5	70	80	99
RT3	C	\$238.14	5	60	80	99
RT3	D	\$280.72	5	50	80	99
RT3	S	\$286.09	5	50	80	99
RT4	0	\$181.43	5	60	80	99
RT4	A	\$181.23	5	70	80	99
RT4	B	\$181.23	5	70	80	99
RT4	C	\$181.43	5	60	80	99

2021 Base Cost Rates

Cost Group	Class	Base Rate	Depr. Table	Econ. Life	Max. Depr.	Max. Age
RT4	D	\$165.98	5	50	80	99
RT4	S	\$162.81	5	50	80	99
SIN	R	\$154.17	5	70	80	70
SS1	0	\$371.85	5	70	80	99
SS1	A	\$375.19	5	70	80	99
SS1	B	\$378.47	5	70	80	99
SS1	C	\$371.85	5	70	80	99
SS1	D	\$364.70	5	70	80	99
SS1	S	\$371.85	5	70	80	99
SS2	0	\$301.32	5	60	80	99
SS2	A	\$306.83	5	70	80	99
SS2	B	\$306.83	5	70	80	99
SS2	C	\$301.32	5	60	80	99
SS2	D	\$284.74	5	50	80	99
SS2	S	\$295.44	5	50	80	99
SV1	0	\$134.95	5	60	80	99
SV1	A	\$146.06	5	70	80	99
SV1	B	\$150.31	5	70	80	99
SV1	C	\$134.95	5	60	80	99
SV1	D	\$116.56	5	50	80	99
SV1	S	\$112.37	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	\$91.42	5	60	80	99
WH1	A	\$137.59	5	70	80	99
WH1	B	\$132.36	5	70	80	99
WH1	C	\$91.42	5	60	80	99
WH1	D	\$80.66	5	50	80	99
WH1	S	\$81.90	5	50	80	99
WH2	0	\$76.69	5	60	80	99
WH2	A	\$117.01	5	70	80	99
WH2	B	\$112.25	5	70	80	99
WH2	C	\$76.69	5	60	80	99
WH2	D	\$68.02	5	50	80	99
WH2	S	\$69.40	5	50	80	99
WH3	0	\$107.54	5	60	80	99
WH3	A	\$107.01	5	70	80	99
WH3	B	\$111.15	5	70	80	99
WH3	C	\$120.87	5	60	80	99
WH3	D	\$74.64	5	50	80	99
WH3	S	\$107.54	5	50	80	99

Real Property Assessment Division
2021 Base Change
RESIDENTIAL (Class 1)

Neighborhood	Name	Total Base			
		2020	2021	Difference	% Change
001	American University Park	\$2,618,911,065	\$2,681,889,770	\$62,978,705	2.40%
002	Anacostia	\$711,749,505	\$747,777,690	\$36,028,185	5.06%
003	Barry Farms	\$328,892,000	\$347,889,660	\$18,997,660	5.78%
004	Berkley	\$1,412,936,320	\$1,456,409,960	\$43,473,640	3.08%
005	Brentwood	\$777,733,488	\$835,516,330	\$57,782,842	7.43%
006	Brightwood	\$2,656,492,660	\$2,745,068,790	\$88,576,130	3.33%
007	Brookland	\$4,330,395,090	\$4,511,985,780	\$181,590,690	4.19%
008	Burleith	\$928,110,850	\$950,707,250	\$22,596,400	2.43%
009	Capitol Hill	\$4,100,458,731	\$4,227,933,260	\$127,474,529	3.11%
010	Central	\$6,140,802,352	\$6,196,094,346	\$55,291,994	0.90%
011	Chevy Chase	\$5,766,456,726	\$5,974,434,062	\$207,977,336	3.61%
012	Chillum	\$509,325,130	\$528,970,640	\$19,645,510	3.86%
013	Cleveland Park	\$2,927,232,818	\$2,971,277,490	\$44,044,672	1.50%
014	Colonial Village	\$604,723,290	\$615,383,320	\$10,660,030	1.76%
015	Columbia Heights	\$7,607,242,124	\$7,881,623,020	\$274,380,896	3.61%
016	Congress Heights	\$1,614,890,342	\$1,721,584,290	\$106,693,948	6.61%
017	Crestwood	\$858,819,780	\$890,842,330	\$32,022,550	3.73%
018	Deanwood	\$1,917,915,813	\$2,020,413,501	\$102,497,688	5.34%
019	Eckington	\$1,975,739,658	\$2,047,582,370	\$71,842,712	3.64%
020	Foggy Bottom	\$1,592,480,550	\$1,585,761,980	-\$6,718,570	-0.42%
021	Forest Hills	\$3,115,220,957	\$3,115,040,379	-\$180,578	-0.01%
022	Fort Dupont Park	\$1,103,933,432	\$1,154,534,376	\$50,600,944	4.58%
023	Foxhall	\$356,839,870	\$362,334,410	\$5,494,540	1.54%
024	Garfield	\$1,820,055,530	\$1,863,907,450	\$43,851,920	2.41%
025	Georgetown	\$6,094,345,650	\$6,205,127,763	\$110,782,113	1.82%
026	Glover Park	\$1,544,449,200	\$1,564,708,100	\$20,258,900	1.31%
027	Hawthorne	\$320,689,900	\$325,917,150	\$5,227,250	1.63%
028	Hillcrest	\$1,430,743,970	\$1,498,217,370	\$67,473,400	4.72%
029	Kalorama	\$3,924,789,530	\$3,992,203,310	\$67,413,780	1.72%
030	Kent	\$1,446,991,895	\$1,485,688,070	\$38,696,175	2.67%
031	LeDroit Park	\$1,502,909,063	\$1,575,782,570	\$72,873,507	4.85%
032	Lily Ponds	\$519,877,938	\$566,416,690	\$46,538,752	8.95%
033	Marshall Heights	\$544,448,320	\$580,283,370	\$35,835,050	6.58%
034	Massachusetts Av Heights	\$736,440,130	\$756,012,010	\$19,571,880	2.66%
035	Michigan Park	\$476,482,700	\$485,049,520	\$8,566,820	1.80%
036	Mount Pleasant	\$4,252,097,853	\$4,397,022,670	\$144,924,817	3.41%
037	North Cleveland Park	\$1,078,521,880	\$1,110,064,520	\$31,542,640	2.92%
038	Observatory Circle	\$1,642,717,469	\$1,667,805,383	\$25,087,914	1.53%
039	Old City I	\$13,745,509,264	\$14,502,669,430	\$757,160,166	5.51%
040	Old City II	\$16,165,421,943	\$16,498,149,760	\$332,727,817	2.06%
041	Palisades	\$1,298,712,150	\$1,321,775,270	\$23,063,120	1.78%
042	Petworth	\$3,933,155,883	\$4,101,232,570	\$168,076,687	4.27%
043	Randle Heights	\$1,310,223,410	\$1,393,594,440	\$83,371,030	6.36%
044	NoMa	\$1,080,735,539	\$1,196,009,700	\$115,274,161	10.67%
046	SW Waterfront	\$2,742,372,260	\$2,857,319,230	\$114,946,970	4.19%
047	Riggs Park	\$1,308,546,911	\$1,333,604,820	\$25,057,909	1.91%
048	Shepherd Park	\$790,060,598	\$809,080,898	\$19,020,300	2.41%
049	Sixteenth Street Heights	\$1,705,450,738	\$1,753,769,620	\$48,318,882	2.83%
050	Spring Valley	\$1,669,033,660	\$1,704,856,990	\$35,823,330	2.15%
051	Takoma	\$474,614,990	\$486,180,760	\$11,565,770	2.44%
052	Trinidad	\$1,797,838,570	\$1,876,965,580	\$79,127,010	4.40%
053	Wakefield	\$836,167,830	\$851,126,260	\$14,958,430	1.79%
054	Wesley Heights	\$1,829,115,110	\$1,929,927,030	\$100,811,920	5.51%
055	Woodley	\$338,078,960	\$352,605,410	\$14,526,450	4.30%
056	Woodridge	\$1,462,810,620	\$1,502,245,500	\$39,434,880	2.70%
059	Rail Road Tracks	\$0	\$0	\$0	0.00%
063	North Anacostia Park	\$321,240	\$353,370	\$32,130	10.00%
064	Anacostia Park	\$0	\$0	\$0	0.00%
066	Fort Lincoln	\$700,177,070	\$733,414,300	\$33,237,230	4.75%
067	St. Elizabeth's Hospital	\$1,943,070	\$2,137,370	\$194,300	10.00%
068	Bolling AFB & Naval Research	\$13,371,340	\$14,875,920	\$1,504,580	11.25%
069	D.C. Village	\$0	\$0	\$0	0.00%
073	Washington Navy Yard	\$433,986,520	\$448,603,250	\$14,616,730	3.37%
	Totals:	\$134,930,511,255	\$139,315,758,428	\$4,385,247,173	3.25%

Real Property Assessment Division
2021 Base Change
COMMERCIAL (Class 2)

Neighborhood	Name	Total Base			
		2020	2021	Difference	% Change
001	American University Park	\$677,990,415	\$695,797,060	\$17,806,645	2.63%
002	Anacostia	\$253,068,530	\$263,761,910	\$10,693,380	4.23%
003	Barry Farms	\$49,479,610	\$52,541,310	\$3,061,700	6.19%
004	Berkley	\$22,048,090	\$23,107,340	\$1,059,250	4.80%
005	Brentwood	\$1,048,270,601	\$1,104,328,957	\$56,058,356	5.35%
006	Brightwood	\$269,140,402	\$285,219,994	\$16,079,592	5.97%
007	Brookland	\$925,719,884	\$969,292,960	\$43,573,076	4.71%
008	Burleith	\$0	\$0	\$0	0.00%
009	Capitol Hill	\$984,042,436	\$1,050,292,590	\$66,250,154	6.73%
010	Central	\$57,574,003,406	\$59,603,013,397	\$2,029,009,991	3.52%
011	Chevy Chase	\$740,383,268	\$757,540,380	\$17,157,112	2.32%
012	Chillum	\$167,088,435	\$174,504,823	\$7,416,388	4.44%
013	Cleveland Park	\$480,737,700	\$522,574,590	\$41,836,890	8.70%
014	Colonial Village	\$0	\$0	\$0	0.00%
015	Columbia Heights	\$1,559,710,752	\$1,655,845,060	\$96,134,308	6.16%
016	Congress Heights	\$101,114,792	\$110,277,122	\$9,162,330	9.06%
017	Crestwood	\$901,630	\$950,040	\$48,410	5.37%
018	Deanwood	\$312,815,513	\$325,116,309	\$12,300,796	3.93%
019	Eckington	\$583,778,409	\$623,828,499	\$40,050,090	6.86%
020	Foggy Bottom	\$4,600,302,664	\$4,860,799,830	\$260,497,166	5.66%
021	Forest Hills	\$700,481,506	\$712,898,750	\$12,417,244	1.77%
022	Fort Dupont Park	\$89,363,060	\$94,492,660	\$5,129,600	5.74%
023	Foxhall	\$3,536,980	\$3,529,930	-\$7,050	-0.20%
024	Garfield	\$319,366,225	\$327,858,690	\$8,492,465	2.66%
025	Georgetown	\$3,766,652,379	\$3,907,114,880	\$140,462,501	3.73%
026	Glover Park	\$99,295,630	\$102,160,064	\$2,864,434	2.88%
027	Hawthorne	\$0	\$0	\$0	0.00%
028	Hillcrest	\$103,411,320	\$113,489,820	\$10,078,500	9.75%
029	Kalorama	\$838,906,638	\$846,978,966	\$8,072,328	0.96%
030	Kent	\$100,064,300	\$102,964,720	\$2,900,420	2.90%
031	LeDroit Park	\$31,921,420	\$34,443,980	\$2,522,560	7.90%
032	Lily Ponds	\$155,611,710	\$163,438,710	\$7,827,000	5.03%
033	Marshall Heights	\$18,781,330	\$20,201,370	\$1,420,040	7.56%
034	Massachusetts Av Heights	\$131,771,000	\$131,771,000	\$0	0.00%
035	Michigan Park	\$15,326,760	\$19,088,400	\$3,761,640	24.54%
036	Mount Pleasant	\$621,411,270	\$655,378,530	\$33,967,260	5.47%
037	North Cleveland Park	\$317,856,750	\$327,138,700	\$9,281,950	2.92%
038	Observatory Circle	\$519,693,021	\$518,781,830	-\$911,191	-0.18%
039	Old City I	\$5,930,310,128	\$6,304,601,700	\$374,291,572	6.31%
040	Old City II	\$7,821,155,249	\$8,108,910,877	\$287,755,628	3.68%
041	Palisades	\$58,471,630	\$59,920,510	\$1,448,880	2.48%
042	Petworth	\$168,912,250	\$177,430,490	\$8,518,240	5.04%
043	Randle Heights	\$154,039,500	\$157,946,980	\$3,907,480	2.54%
044	NoMa	\$4,771,244,917	\$4,942,281,330	\$171,036,413	3.58%
046	SW Waterfront	\$7,580,606,682	\$7,779,946,788	\$199,340,106	2.63%
047	Riggs Park	\$80,305,323	\$80,898,550	\$593,227	0.74%
048	Shepherd Park	\$179,586,096	\$182,748,836	\$3,162,740	1.76%
049	Sixteenth Street Heights	\$117,362,998	\$123,711,920	\$6,348,922	5.41%
050	Spring Valley	\$99,068,010	\$104,544,990	\$5,476,980	5.53%
051	Takoma	\$189,876,210	\$197,352,650	\$7,476,440	3.94%
052	Trinidad	\$187,064,662	\$202,281,940	\$15,217,278	8.13%
053	Wakefield	\$15,080,430	\$16,823,880	\$1,743,450	11.56%
054	Wesley Heights	\$97,882,080	\$98,274,090	\$392,010	0.40%
055	Woodley	\$12,380	\$13,620	\$1,240	10.02%
056	Woodridge	\$632,052,005	\$678,842,900	\$46,790,895	7.40%
059	Rail Road Tracks	\$1,617,394	\$1,779,134	\$161,740	10.00%
063	North Anacostia Park	\$1,882,830	\$2,048,720	\$165,890	8.81%
064	Anacostia Park	\$1,309,440	\$1,440,380	\$130,940	10.00%
066	Fort Lincoln	\$101,252,250	\$107,640,540	\$6,388,290	6.31%
067	St. Elizabeth's Hospital	\$0	\$0	\$0	0.00%
068	Bolling AFB & Naval Research	\$17,979,220	\$18,479,580	\$500,360	2.78%
069	D.C. Village	\$445,490	\$463,740	\$18,250	4.10%
073	Washington Navy Yard	\$897,438,010	\$989,581,970	\$92,143,960	10.27%
	Totals:	\$107,289,003,020	\$111,498,489,286	\$4,209,486,266	3.92%

Real Property Assessment Division
2021 Base Change
RESIDENTIAL/COMMERCIAL (Classes 1 and 2)

Neighborhood	Name	Total Base			
		2020	2021	Difference	% Change
001	American University Park	\$3,296,901,480	\$3,377,686,830	\$80,785,350	2.45%
002	Anacostia	\$964,818,035	\$1,011,539,600	\$46,721,565	4.84%
003	Barry Farms	\$378,371,610	\$400,430,970	\$22,059,360	5.83%
004	Berkley	\$1,434,984,410	\$1,479,517,300	\$44,532,890	3.10%
005	Brentwood	\$1,826,004,089	\$1,939,845,287	\$113,841,198	6.23%
006	Brightwood	\$2,925,633,062	\$3,030,288,784	\$104,655,722	3.58%
007	Brookland	\$5,256,114,974	\$5,481,278,740	\$225,163,766	4.28%
008	Burleith	\$928,110,850	\$950,707,250	\$22,596,400	2.43%
009	Capitol Hill	\$5,084,501,167	\$5,278,225,850	\$193,724,683	3.81%
010	Central	\$63,714,805,758	\$65,799,107,743	\$2,084,301,985	3.27%
011	Chevy Chase	\$6,506,839,994	\$6,731,974,442	\$225,134,448	3.46%
012	Chillum	\$676,413,565	\$703,475,463	\$27,061,898	4.00%
013	Cleveland Park	\$3,407,970,518	\$3,493,852,080	\$85,881,562	2.52%
014	Colonial Village	\$604,723,290	\$615,383,320	\$10,660,030	1.76%
015	Columbia Heights	\$9,166,952,876	\$9,537,468,080	\$370,515,204	4.04%
016	Congress Heights	\$1,716,005,134	\$1,831,861,412	\$115,856,278	6.75%
017	Crestwood	\$859,721,410	\$891,792,370	\$32,070,960	3.73%
018	Deanwood	\$2,230,731,326	\$2,345,529,810	\$114,798,484	5.15%
019	Eckington	\$2,559,518,067	\$2,671,410,869	\$111,892,802	4.37%
020	Foggy Bottom	\$6,192,783,214	\$6,446,561,810	\$253,778,596	4.10%
021	Forest Hills	\$3,815,702,463	\$3,827,939,129	\$12,236,666	0.32%
022	Fort Dupont Park	\$1,193,296,492	\$1,249,027,036	\$55,730,544	4.67%
023	Foxhall	\$360,376,850	\$365,864,340	\$5,487,490	1.52%
024	Garfield	\$2,139,421,755	\$2,191,766,140	\$52,344,385	2.45%
025	Georgetown	\$9,860,998,029	\$10,112,242,643	\$251,244,614	2.55%
026	Glover Park	\$1,643,744,830	\$1,666,868,164	\$23,123,334	1.41%
027	Hawthorne	\$320,689,900	\$325,917,150	\$5,227,250	1.63%
028	Hillcrest	\$1,534,155,290	\$1,611,707,190	\$77,551,900	5.06%
029	Kalorama	\$4,763,696,168	\$4,839,182,276	\$75,486,108	1.58%
030	Kent	\$1,547,056,195	\$1,588,652,790	\$41,596,595	2.69%
031	LeDroit Park	\$1,534,830,483	\$1,610,226,550	\$75,396,067	4.91%
032	Lily Ponds	\$675,489,648	\$729,855,400	\$54,365,752	8.05%
033	Marshall Heights	\$563,229,650	\$600,484,740	\$37,255,090	6.61%
034	Massachusetts Av Heights	\$868,211,130	\$887,783,010	\$19,571,880	2.25%
035	Michigan Park	\$491,809,460	\$504,137,920	\$12,328,460	2.51%
036	Mount Pleasant	\$4,873,509,123	\$5,052,401,200	\$178,892,077	3.67%
037	North Cleveland Park	\$1,396,378,630	\$1,437,203,220	\$40,824,590	2.92%
038	Observatory Circle	\$2,162,410,490	\$2,186,587,213	\$24,176,723	1.12%
039	Old City I	\$19,675,819,392	\$20,807,271,130	\$1,131,451,738	5.75%
040	Old City II	\$23,986,577,192	\$24,607,060,637	\$620,483,445	2.59%
041	Palisades	\$1,357,183,780	\$1,381,695,780	\$24,512,000	1.81%
042	Petworth	\$4,102,068,133	\$4,278,663,060	\$176,594,927	4.31%
043	Randle Heights	\$1,464,262,910	\$1,551,541,420	\$87,278,510	5.96%
044	NoMa	\$5,851,980,456	\$6,138,291,030	\$286,310,574	4.89%
046	SW Waterfront	\$10,322,978,942	\$10,637,266,018	\$314,287,076	3.04%
047	Riggs Park	\$1,388,852,234	\$1,414,503,370	\$25,651,136	1.85%
048	Shepherd Park	\$969,646,694	\$991,829,734	\$22,183,040	2.29%
049	Sixteenth Street Heights	\$1,822,813,736	\$1,877,481,540	\$54,667,804	3.00%
050	Spring Valley	\$1,768,101,670	\$1,809,401,980	\$41,300,310	2.34%
051	Takoma	\$664,491,200	\$683,533,410	\$19,042,210	2.87%
052	Trinidad	\$1,984,903,232	\$2,079,247,520	\$94,344,288	4.75%
053	Wakefield	\$851,248,260	\$867,950,140	\$16,701,880	1.96%
054	Wesley Heights	\$1,926,997,190	\$2,028,201,120	\$101,203,930	5.25%
055	Woodley	\$338,091,340	\$352,619,030	\$14,527,690	4.30%
056	Woodridge	\$2,094,862,625	\$2,181,088,400	\$86,225,775	4.12%
059	Rail Road Tracks	\$1,617,394	\$1,779,134	\$161,740	10.00%
063	North Anacostia Park	\$2,204,070	\$2,402,090	\$198,020	8.98%
064	Anacostia Park	\$1,309,440	\$1,440,380	\$130,940	10.00%
066	Fort Lincoln	\$801,429,320	\$841,054,840	\$39,625,520	4.94%
067	St. Elizabeth's Hospital	\$1,943,070	\$2,137,370	\$194,300	10.00%
068	Bolling AFB & Naval Research	\$31,350,560	\$33,355,500	\$2,004,940	6.40%
069	D.C. Village	\$445,490	\$463,740	\$18,250	4.10%
073	Washington Navy Yard	\$1,331,424,530	\$1,438,185,220	\$106,760,690	8.02%
	Totals:	\$242,219,514,275	\$250,814,247,714	\$8,594,733,439	3.55%

Real Property Assessment Division
2021 Base Change
EXEMPT

Neighborhood	Name	Total Base			
		2020	2021	Difference	% Change
001	American University Park	\$515,439,680	\$538,587,420	\$23,147,740	4.49%
002	Anacostia	\$98,410,450	\$103,206,830	\$4,796,380	4.87%
003	Barry Farms	\$150,550,220	\$159,779,240	\$9,229,020	6.13%
004	Berkley	\$329,133,370	\$344,135,180	\$15,001,810	4.56%
005	Brentwood	\$260,443,920	\$278,847,600	\$18,403,680	7.07%
006	Brightwood	\$102,954,632	\$108,058,960	\$5,104,328	4.96%
007	Brookland	\$2,649,608,038	\$2,828,351,640	\$178,743,602	6.75%
008	Burleith	\$94,056,820	\$97,267,850	\$3,211,030	3.41%
009	Capitol Hill	\$234,962,640	\$248,106,620	\$13,143,980	5.59%
010	Central	\$4,415,873,987	\$4,632,130,790	\$216,256,803	4.90%
011	Chevy Chase	\$484,968,056	\$508,929,120	\$23,961,064	4.94%
012	Chillum	\$30,278,100	\$31,943,180	\$1,665,080	5.50%
013	Cleveland Park	\$223,251,970	\$237,686,500	\$14,434,530	6.47%
014	Colonial Village	\$59,074,820	\$61,356,580	\$2,281,760	3.86%
015	Columbia Heights	\$1,491,411,749	\$1,534,790,370	\$43,378,621	2.91%
016	Congress Heights	\$651,169,900	\$681,784,340	\$30,614,440	4.70%
017	Crestwood	\$54,045,282	\$55,721,350	\$1,676,068	3.10%
018	Deanwood	\$415,158,740	\$436,992,460	\$21,833,720	5.26%
019	Eckington	\$118,359,884	\$123,543,440	\$5,183,556	4.38%
020	Foggy Bottom	\$4,483,085,896	\$4,708,827,100	\$225,741,204	5.04%
021	Forest Hills	\$594,503,056	\$620,099,880	\$25,596,824	4.31%
022	Fort Dupont Park	\$172,078,980	\$182,483,110	\$10,404,130	6.05%
023	Foxhall	\$500,630	\$524,920	\$24,290	4.85%
024	Garfield	\$165,425,570	\$171,824,590	\$6,399,020	3.87%
025	Georgetown	\$869,058,002	\$937,392,700	\$68,334,698	7.86%
026	Glover Park	\$33,945,900	\$36,322,759	\$2,376,859	7.00%
027	Hawthorne	\$928,140	\$936,270	\$8,130	0.88%
028	Hillcrest	\$70,783,960	\$74,851,040	\$4,067,080	5.75%
029	Kalorama	\$1,163,028,515	\$1,207,720,293	\$44,691,778	3.84%
030	Kent	\$95,467,200	\$99,428,540	\$3,961,340	4.15%
031	LeDroit Park	\$687,678,130	\$716,158,990	\$28,480,860	4.14%
032	Lily Ponds	\$159,834,010	\$172,977,460	\$13,143,450	8.22%
033	Marshall Heights	\$99,104,030	\$105,957,600	\$6,853,570	6.92%
034	Massachusetts Av Heights	\$843,708,810	\$894,838,810	\$51,130,000	6.06%
035	Michigan Park	\$54,200,620	\$55,279,650	\$1,079,030	1.99%
036	Mount Pleasant	\$310,100,350	\$332,392,200	\$22,291,850	7.19%
037	North Cleveland Park	\$108,982,970	\$114,025,030	\$5,042,060	4.63%
038	Observatory Circle	\$599,822,379	\$628,230,210	\$28,407,831	4.74%
039	Old City I	\$724,286,826	\$742,648,800	\$18,361,974	2.54%
040	Old City II	\$2,167,478,023	\$2,234,120,924	\$66,642,901	3.07%
041	Palisades	\$40,509,010	\$42,816,470	\$2,307,460	5.70%
042	Petworth	\$130,098,180	\$137,829,100	\$7,730,920	5.94%
043	Randle Heights	\$242,883,410	\$262,094,790	\$19,211,380	7.91%
044	NoMa	\$222,794,530	\$243,290,760	\$20,496,230	9.20%
046	SW Waterfront	\$308,708,100	\$332,614,500	\$23,906,400	7.74%
047	Riggs Park	\$82,087,480	\$88,536,870	\$6,449,390	7.86%
048	Shepherd Park	\$85,571,345	\$89,540,290	\$3,968,945	4.64%
049	Sixteenth Street Heights	\$136,663,299	\$142,639,510	\$5,976,211	4.37%
050	Spring Valley	\$432,178,620	\$447,880,540	\$15,701,920	3.63%
051	Takoma	\$35,007,260	\$38,243,730	\$3,236,470	9.25%
052	Trinidad	\$101,538,767	\$104,750,870	\$3,212,103	3.16%
053	Wakefield	\$9,422,610	\$9,668,420	\$245,810	2.61%
054	Wesley Heights	\$82,929,575	\$89,722,860	\$6,793,285	8.19%
055	Woodley	\$116,345,370	\$126,581,110	\$10,235,740	8.80%
056	Woodridge	\$241,174,392	\$266,657,370	\$25,482,978	10.57%
059	Rail Road Tracks	\$960,544	\$1,056,599	\$96,055	10.00%
063	North Anacostia Park	\$1,636,800	\$1,800,480	\$163,680	10.00%
064	Anacostia Park	\$0	\$0	\$0	0.00%
066	Fort Lincoln	\$8,826,730	\$9,130,710	\$303,980	3.44%
067	St. Elizabeth's Hospital	\$3,612,950	\$3,973,840	\$360,890	9.99%
068	Bolling AFB & Naval Research	\$0	\$0	\$0	0.00%
069	D.C. Village	\$45,648,860	\$46,466,930	\$818,070	1.79%
073	Washington Navy Yard	\$401,580	\$401,580	\$0	0.00%
	Totals:	\$28,112,153,667	\$29,533,957,675	\$1,421,804,008	5.06%

Real Property Assessment Division
2021 Base Change
ALL PROPERTIES

Neighborhood	Name	Total Base			
		2020	2021	Difference	% Change
001	American University Park	\$3,812,341,160	\$3,916,274,250	\$103,933,090	2.73%
002	Anacostia	\$1,063,228,485	\$1,114,746,430	\$51,517,945	4.85%
003	Barry Farms	\$528,921,830	\$560,210,210	\$31,288,380	5.92%
004	Berkley	\$1,764,117,780	\$1,823,652,480	\$59,534,700	3.37%
005	Brentwood	\$2,086,448,009	\$2,218,692,887	\$132,244,878	6.34%
006	Brightwood	\$3,028,587,694	\$3,138,347,744	\$109,760,050	3.62%
007	Brookland	\$7,905,723,012	\$8,309,630,380	\$403,907,368	5.11%
008	Burleith	\$1,022,167,670	\$1,047,975,100	\$25,807,430	2.52%
009	Capitol Hill	\$5,319,463,807	\$5,526,332,470	\$206,868,663	3.89%
010	Central	\$68,130,679,745	\$70,431,238,533	\$2,300,558,788	3.38%
011	Chevy Chase	\$6,991,808,050	\$7,240,903,562	\$249,095,512	3.56%
012	Chillum	\$706,691,665	\$735,418,643	\$28,726,978	4.06%
013	Cleveland Park	\$3,631,222,488	\$3,731,538,580	\$100,316,092	2.76%
014	Colonial Village	\$663,798,110	\$676,739,900	\$12,941,790	1.95%
015	Columbia Heights	\$10,658,364,625	\$11,072,258,450	\$413,893,825	3.88%
016	Congress Heights	\$2,367,175,034	\$2,513,645,752	\$146,470,718	6.19%
017	Crestwood	\$913,766,692	\$947,513,720	\$33,747,028	3.69%
018	Deanwood	\$2,645,890,066	\$2,782,522,270	\$136,632,204	5.16%
019	Eckington	\$2,677,877,951	\$2,794,954,309	\$117,076,358	4.37%
020	Foggy Bottom	\$10,675,869,110	\$11,155,388,910	\$479,519,800	4.49%
021	Forest Hills	\$4,410,205,519	\$4,448,039,009	\$37,833,490	0.86%
022	Fort Dupont Park	\$1,365,375,472	\$1,431,510,146	\$66,134,674	4.84%
023	Foxhall	\$360,877,480	\$366,389,260	\$5,511,780	1.53%
024	Garfield	\$2,304,847,325	\$2,363,590,730	\$58,743,405	2.55%
025	Georgetown	\$10,730,056,031	\$11,049,635,343	\$319,579,312	2.98%
026	Glover Park	\$1,677,690,730	\$1,703,190,923	\$25,500,193	1.52%
027	Hawthorne	\$321,618,040	\$326,853,420	\$5,235,380	1.63%
028	Hillcrest	\$1,604,939,250	\$1,686,558,230	\$81,618,980	5.09%
029	Kalorama	\$5,926,724,683	\$6,046,902,569	\$120,177,886	2.03%
030	Kent	\$1,642,523,395	\$1,688,081,330	\$45,557,935	2.77%
031	LeDroit Park	\$2,222,508,613	\$2,326,385,540	\$103,876,927	4.67%
032	Lily Ponds	\$835,323,658	\$902,832,860	\$67,509,202	8.08%
033	Marshall Heights	\$662,333,680	\$706,442,340	\$44,108,660	6.66%
034	Massachusetts Av Heights	\$1,711,919,940	\$1,782,621,820	\$70,701,880	4.13%
035	Michigan Park	\$546,010,080	\$559,417,570	\$13,407,490	2.46%
036	Mount Pleasant	\$5,183,609,473	\$5,384,793,400	\$201,183,927	3.88%
037	North Cleveland Park	\$1,505,361,600	\$1,551,228,250	\$45,866,650	3.05%
038	Observatory Circle	\$2,762,232,869	\$2,814,817,423	\$52,584,554	1.90%
039	Old City I	\$20,400,106,218	\$21,549,919,930	\$1,149,813,712	5.64%
040	Old City II	\$26,154,055,215	\$26,841,181,561	\$687,126,346	2.63%
041	Palisades	\$1,397,692,790	\$1,424,512,250	\$26,819,460	1.92%
042	Petworth	\$4,232,166,313	\$4,416,492,160	\$184,325,847	4.36%
043	Randle Heights	\$1,707,146,320	\$1,813,636,210	\$106,489,890	6.24%
044	NoMa	\$6,074,774,986	\$6,381,581,790	\$306,806,804	5.05%
046	SW Waterfront	\$10,631,687,042	\$10,969,880,518	\$338,193,476	3.18%
047	Riggs Park	\$1,470,939,714	\$1,503,040,240	\$32,100,526	2.18%
048	Shepherd Park	\$1,055,218,039	\$1,081,370,024	\$26,151,985	2.48%
049	Sixteenth Street Heights	\$1,959,477,035	\$2,020,121,050	\$60,644,015	3.09%
050	Spring Valley	\$2,200,280,290	\$2,257,282,520	\$57,002,230	2.59%
051	Takoma	\$699,498,460	\$721,777,140	\$22,278,680	3.18%
052	Trinidad	\$2,086,441,999	\$2,183,998,390	\$97,556,391	4.68%
053	Wakefield	\$860,670,870	\$877,618,560	\$16,947,690	1.97%
054	Wesley Heights	\$2,009,926,765	\$2,117,923,980	\$107,997,215	5.37%
055	Woodley	\$454,436,710	\$479,200,140	\$24,763,430	5.45%
056	Woodridge	\$2,336,037,017	\$2,447,745,770	\$111,708,753	4.78%
059	Rail Road Tracks	\$2,577,938	\$2,835,733	\$257,795	10.00%
063	North Anacostia Park	\$3,840,870	\$4,202,570	\$361,700	9.42%
064	Anacostia Park	\$1,309,440	\$1,440,380	\$130,940	10.00%
066	Fort Lincoln	\$810,256,050	\$850,185,550	\$39,929,500	4.93%
067	St. Elizabeth's Hospital	\$5,556,020	\$6,111,210	\$555,190	9.99%
068	Bolling AFB & Naval Research	\$31,350,560	\$33,355,500	\$2,004,940	6.40%
069	D.C. Village	\$46,094,350	\$46,930,670	\$836,320	1.81%
073	Washington Navy Yard	\$1,331,826,110	\$1,438,586,800	\$106,760,690	8.02%
	Totals:	\$270,331,667,942	\$280,348,205,389	\$10,016,537,447	3.71%

Parcel Count per Neighborhood - 2021

NBHD	NAME	Residential	Commercial	Exempt	Total
001	AMERICAN UNIV. PARK	2,699	88	33	2,820
002	ANACOSTIA	2,104	180	126	2,410
003	BARRY FARMS	934	40	96	1,070
004	BERKLEY	812	7	42	861
005	BRENTWOOD	1,067	336	87	1,490
006	BRIGHTWOOD	4,480	147	91	4,718
007	BROOKLAND	8,043	279	353	8,675
008	BURLEITH	856		5	861
009	CAPITOL HILL	4,164	321	69	4,554
010	CENTRAL	7,121	1,289	176	8,586
011	CHEVY CHASE	5,776	149	58	5,983
012	CHILLUM	1,063	68	60	1,191
013	CLEVELAND PARK	3,380	43	49	3,472
014	COLONIAL VILLAGE	650		18	668
015	COLUMBIA HEIGHTS	11,543	497	317	12,357
016	CONGRESS HEIGHTS	5,419	145	324	5,888
017	CRESTWOOD	822	1	22	845
018	DEANWOOD	7,024	268	429	7,721
019	ECKINGTON	2,647	141	44	2,832
020	FOGGY BOTTOM	2,178	144	118	2,440
021	FOREST HILLS	3,327	62	57	3,446
022	FORT DUPONT PARK	3,580	49	153	3,782
023	FOXHALL	370	1	1	372
024	GARFIELD	1,400	52	225	1,677
025	GEORGETOWN	4,638	611	191	5,440
026	GLOVER PARK	2,642	55	38	2,735
027	HAWTHORNE	314		1	315
028	HILLCREST	4,537	91	72	4,700
029	KALORAMA	3,814	128	207	4,149
030	KENT	906	30	21	957
031	LEDROIT PARK	1,936	31	41	2,008
032	LILY PONDS	1,651	47	72	1,770
033	MARSHALL HEIGHTS	2,039	22	113	2,174
034	MASS. AVE. HEIGHTS	193	1	54	248
035	MICHIGAN PARK	939	13	8	960
036	MOUNT PLEASANT	4,780	211	122	5,113
037	N. CLEVELAND PARK	880	43	8	931
038	OBSERVATORY CIRCLE	1,773	40	80	1,893
039	OLD CITY I	17,408	895	212	18,515
040	OLD CITY II	21,196	1,154	388	22,738
041	PALISADES	1,409	55	27	1,491
042	PETWORTH	6,843	245	79	7,167
043	RANDLE HEIGHTS	3,781	63	251	4,095
044	NOMA	942	186	20	1,148
046	SW WATERFRONT	3,948	228	35	4,211
047	RIGGS PARK	2,871	39	20	2,930
048	SHEPHERD PARK	1,025	42	15	1,082
049	16TH ST. HEIGHTS	2,437	110	65	2,612
050	SPRING VALLEY	937	8	35	980
051	TAKOMA	913	57	69	1,039
052	TRINIDAD	3,490	99	68	3,657
053	WAKEFIELD	967	15	5	987
054	WESLEY HEIGHTS	3,026	6	21	3,053
055	WOODLEY	209	1	3	213
056	WOODRIDGE	3,044	380	75	3,499
059	RAIL ROAD TRACKS		3	4	7
060	N. ROCK CREEK PARK				
061	NATL. ZOO				
062	S. ROCK CREEK PARK				
063	N. ANACOSTIA PARK	1	3	10	14
064	ANACOSTIA PARK		1		1
065	NATIONAL ARBORETUM				
066	FORT LINCOLN	1,395	9	21	1,425
067	ST. ELIZABETHS HOSPITAL	3		3	6
068	BOLLING AFB & NAVAL RES	9	20		29
069	D.C. VILLAGE		1	1	2
070	FORT DRIVE				
071	GLOVER-ARCHBOLD PWY				
072	MALL				
073	WASHINGTON NAVY YARD	157	20	1	178
	TOTALS:	188,512	9,270	5,409	203,191

*DC and US (5,295) not included in Base Report Statistics

**PI accounts (314) not included in Base Report Statistics

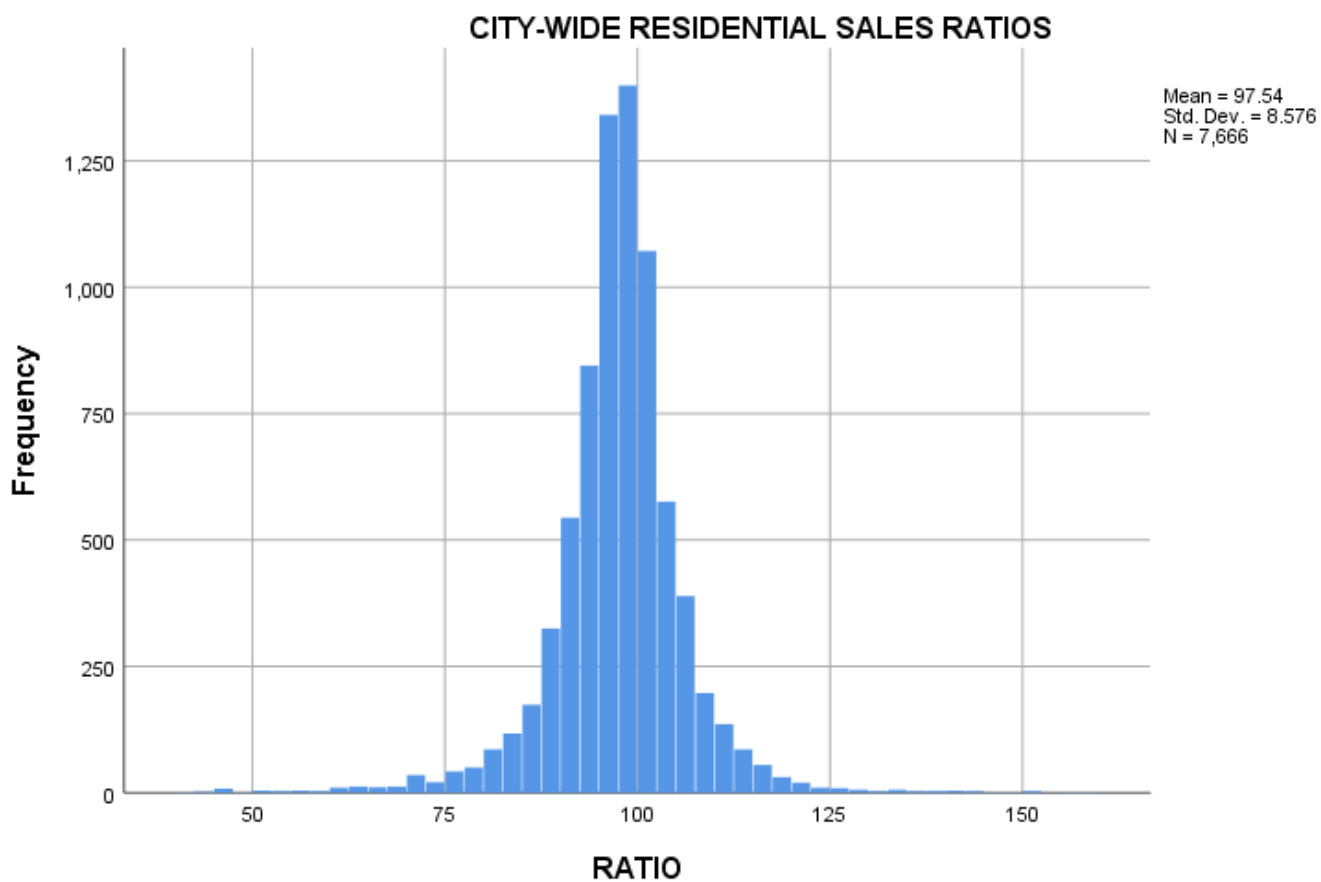
Preliminary 2021 Performance Report

2019 SALES RATIOS CITY-WIDE

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
All	7,895	1,089,937	615,000	97.7	97.3	97.2	6.0	6,908	987	1.00

2019 SALES RATIOS BY PROPERTY TYPE: CITY-WIDE

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Residential	7,666	729,310	604,950	97.8	97.5	97.5	5.8	6,699	967	1.00
Commercial	229	13,162,292	1,890,000	92.3	89.9	96.6	12.1	209	20	.93



Sales Ratio Report Using Current 2020 Values

2019 SALES RATIOS BY NEIGHBORHOOD: SINGLE-FAMILY

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	69	1,212,167	1,180,000	90.0	89.8	89.8	8.8	63	6	1.00
2 ANACOSTIA	51	444,161	435,000	92.7	91.2	91.4	10.9	45	6	1.00
3 BARRY FARMS	16	415,031	397,500	91.7	91.1	90.6	9.8	14	2	1.00
4 BERKELEY	25	1,763,340	1,755,500	90.8	89.8	87.7	11.3	22	3	1.02
5 BRENTWOOD	22	537,934	535,000	94.3	92.7	91.8	8.7	21	1	1.01
6 BRIGHTWOOD	144	652,557	638,750	92.7	91.3	91.6	7.1	136	8	1.00
7 BROOKLAND	239	694,414	675,000	94.2	92.2	91.7	8.9	223	16	1.01
8 BURLEITH	33	1,245,000	1,020,000	95.1	94.4	93.4	5.8	33	0	1.01
9 CAPITOL HILL	116	1,279,476	1,226,500	95.0	94.9	93.6	7.5	101	15	1.01
10 CENTRAL	8	1,541,725	1,714,375	95.6	95.0	93.9	6.2	7	1	1.01
11 CHEVY CHASE	198	1,235,437	1,146,000	91.0	90.6	90.3	9.9	184	14	1.00
12 CHILLUM	34	691,409	718,750	93.8	92.4	92.4	6.8	33	1	1.00
13 CLEVELAND PARK	41	1,904,604	1,600,000	97.2	95.8	93.8	11.5	32	9	1.02
14 COLONIAL VILLAGE	23	1,072,470	1,052,000	95.7	96.1	96.3	5.9	20	3	1.00
15 COLUMBIA HEIGHTS	167	839,352	775,000	93.0	90.7	89.7	9.1	156	11	1.01
16 CONGRESS HEIGHTS	134	398,076	378,700	90.2	86.4	86.9	9.8	133	1	.99
17 CRESTWOOD	37	1,170,926	1,115,000	86.7	88.7	88.6	9.4	35	2	1.00
18 DEANWOOD	223	376,405	385,000	92.6	88.8	88.5	10.0	213	10	1.00
19 ECKINGTON	53	887,939	854,000	93.4	91.7	90.2	8.1	51	2	1.02
20 FOGGY BOTTOM	11	864,455	870,000	100.8	103	102.7	4.1	7	4	1.00
21 FOREST HILLS	20	1,553,575	1,460,500	90.0	90.6	90.7	11.4	16	4	1.00
22 FORT DUPONT PARK	122	381,248	381,950	93.5	90.4	90.4	10.0	116	6	1.00
23 FOXHALL	23	1,090,745	1,000,000	96.6	94.2	93.5	7.0	21	2	1.01
24 GARFIELD	11	1,587,409	1,560,000	82.8	83.8	83.9	8.0	10	1	1.00
25 GEORGETOWN	97	2,230,446	1,750,000	94.0	93.4	90.8	11.2	79	18	1.03
26 GLOVER PARK	44	1,047,771	1,025,000	93.8	92.2	92.0	5.9	44	0	1.00
27 HAWTHORNE	12	1,089,379	1,080,523	94.5	93.8	93.3	6.9	11	1	1.01
28 HILLCREST	75	491,088	486,000	89.5	88.5	88.8	10.4	72	3	1.00
29 KALORAMA	17	2,678,941	2,200,000	98.3	93.3	91.6	12.4	13	4	1.02
30 KENT	25	1,916,089	1,450,000	97.3	94.9	93.0	10.1	20	5	1.02
31 LEDROIT PARK	57	1,077,672	1,060,000	91.2	91.0	90.3	8.2	52	5	1.01
32 LILY PONDS	61	419,672	425,000	89.9	87.3	88.2	9.0	61	0	.99
33 MARSHALL HEIGHTS	55	399,363	394,000	93.3	89.5	90.0	10.2	53	2	.99
34 MASS. AVE. HEIGHTS	5	2,195,040	2,205,200	97.5	95.2	98.3	9.2	4	1	.97
35 MICHIGAN PARK	27	675,648	650,000	94.3	94.8	94.5	7.6	23	4	1.00
36 MOUNT PLEASANT	63	1,189,040	1,200,000	92.1	91.2	90.1	8.0	58	5	1.01
37 N. CLEVELAND PARK	40	1,244,158	1,245,000	93.5	91.4	90.4	8.8	39	1	1.01
38 OBSERVATORY CIRCLE	11	1,602,718	1,595,000	97.7	94.0	94.1	5.2	11	0	1.00
39 OLD CITY #1	529	939,014	867,000	91.3	90.0	89.5	8.7	510	19	1.01
40 OLD CITY #2	171	1,245,300	1,150,000	94.5	94.1	92.6	8.0	154	17	1.02
41 PALISADES	46	1,417,773	1,187,500	94.2	93.8	94.7	8.7	41	5	.99
42 PETWORTH	280	726,725	719,500	95.4	93.4	92.8	9.9	237	43	1.01
43 RANDLE HEIGHTS	105	375,278	369,000	91.3	88.7	88.3	11.7	97	8	1.01
46 SW WATERFRONT	9	1,016,445	1,025,000	80.7	85.6	85.3	7.6	9	0	1.00
47 RIGGS PARK	98	530,441	549,900	96.9	94.1	94.2	4.6	98	0	1.00
48 SHEPHERD PARK	27	945,741	885,000	93.0	91.4	91.0	7.3	26	1	1.00
49 16TH STREET HEIGHTS	66	975,077	957,500	95.2	92.2	92.0	7.7	64	2	1.00
50 SPRING VALLEY	38	1,920,895	1,762,500	92.8	92.0	90.9	8.7	33	5	1.01
51 TAKOMA PARK	26	576,863	567,500	90.3	90.9	90.4	8.0	22	4	1.01
52 TRINIDAD	135	623,179	600,000	92.6	91.0	89.9	10.9	112	23	1.01
53 WAKEFIELD	10	1,213,250	1,067,500	97.3	96.7	99.5	9.3	9	1	.97
54 WESLEY HEIGHTS	30	1,537,783	1,178,750	92.4	94.3	94.2	7.5	26	4	1.00
55 WOODLEY	11	1,652,364	1,525,000	91.5	90.0	89.5	6.2	11	0	1.01
56 WOODRIDGE	93	637,467	650,000	93.6	93.3	92.6	10.8	80	13	1.01
66 FORT LINCOLN	71	641,525	605,690	95.2	95.7	95.4	3.0	71	0	1.00

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Single-Family	4,154	892,515	773,750	93.0	91.4	91.2	9.2	3,832	322	1.00

Sales Ratio Report Using Proposed 2021 Values

2019 SALES RATIOS BY NEIGHBORHOOD: SINGLE-FAMILY

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	69	1,212,167	1,180,000	97.7	98.3	98.2	2.6	68	1	1.00
2 ANACOSTIA	51	444,161	435,000	98.6	98.1	98.4	5.7	42	9	1.00
3 BARRY FARMS	16	415,031	397,500	99.5	96.8	96.9	4.4	16	0	1.00
4 BERKELEY	25	1,763,340	1,755,500	99.3	98.2	97.7	3.8	23	2	1.01
5 BRENTWOOD	22	537,934	535,000	97.3	95.5	94.7	8.1	20	2	1.01
6 BRIGHTWOOD	144	652,557	638,750	96.4	96.6	96.8	3.8	138	6	1.00
7 BROOKLAND	239	694,414	675,000	98.3	96.8	96.3	7.1	203	36	1.01
8 BURLEITH	33	1,245,000	1,020,000	98.1	97.8	97.0	4.5	29	4	1.01
9 CAPITOL HILL	116	1,279,476	1,226,500	97.8	98.4	97.2	6.5	89	27	1.01
10 CENTRAL	8	1,541,725	1,714,375	100.8	101	100.0	2.5	8	0	1.01
11 CHEVY CHASE	198	1,235,437	1,146,000	98.5	98.3	98.0	4.3	174	24	1.00
12 CHILLUM	34	691,409	718,750	96.3	97.0	96.9	3.7	33	1	1.00
13 CLEVELAND PARK	41	1,904,604	1,600,000	99.8	100	99.5	5.4	32	9	1.01
14 COLONIAL VILLAGE	23	1,072,470	1,052,000	99.1	99.6	99.7	4.3	20	3	1.00
15 COLUMBIA HEIGHTS	167	839,352	775,000	98.7	97.7	97.2	6.0	142	25	1.01
16 CONGRESS HEIGHTS	134	398,076	378,700	98.0	96.5	96.6	4.3	130	4	1.00
17 CRESTWOOD	37	1,170,926	1,115,000	98.7	99.3	99.2	5.3	32	5	1.00
18 DEANWOOD	223	376,405	385,000	97.4	96.3	96.1	6.0	200	23	1.00
19 ECKINGTON	53	887,939	854,000	97.4	95.9	94.7	6.8	50	3	1.01
20 FOGGY BOTTOM	11	864,455	870,000	100.0	102	101.7	3.1	9	2	1.00
21 FOREST HILLS	20	1,553,575	1,460,500	98.1	98.4	98.4	4.2	18	2	1.00
22 FORT DUPONT PARK	122	381,248	381,950	97.3	96.2	96.3	6.7	111	11	1.00
23 FOXHALL	23	1,090,745	1,000,000	98.0	99.3	98.8	4.4	17	6	1.00
24 GARFIELD	11	1,587,409	1,560,000	98.1	98.0	98.0	2.5	11	0	1.00
25 GEORGETOWN	97	2,230,446	1,750,000	99.1	99.1	98.5	2.7	90	7	1.01
26 GLOVER PARK	44	1,047,771	1,025,000	98.5	98.6	98.6	2.5	43	1	1.00
27 HAWTHORNE	12	1,089,379	1,080,523	97.9	98.0	97.8	3.6	11	1	1.00
28 HILLCREST	75	491,088	486,000	98.4	95.8	96.0	7.4	66	9	1.00
29 KALORAMA	17	2,678,941	2,200,000	99.9	100	99.7	2.2	16	1	1.00
30 KENT	25	1,916,089	1,450,000	98.3	98.7	97.3	6.2	21	4	1.01
31 LEDROIT PARK	57	1,077,672	1,060,000	97.3	96.7	95.9	7.3	48	9	1.01
32 LILY PONDS	61	419,672	425,000	96.8	96.0	96.4	5.0	58	3	1.00
33 MARSHALL HEIGHTS	55	399,363	394,000	97.5	95.5	95.7	7.3	51	4	1.00
34 MASS. AVE. HEIGHTS	5	2,195,040	2,205,200	100.0	100	101.3	3.3	4	1	.99
35 MICHIGAN PARK	27	675,648	650,000	98.8	99.6	99.3	3.4	24	3	1.00
36 MOUNT PLEASANT	63	1,189,040	1,200,000	97.7	98.5	97.9	4.7	52	11	1.01
37 N. CLEVELAND PARK	40	1,244,158	1,245,000	98.7	99.4	98.7	5.4	30	10	1.01
38 OBSERVATORY CIRCLE	11	1,602,718	1,595,000	99.7	99.6	99.8	1.9	11	0	1.00
39 OLD CITY #1	529	939,014	867,000	96.9	96.4	96.0	6.4	469	60	1.00
40 OLD CITY #2	171	1,245,300	1,150,000	99.2	100	99.4	4.8	143	28	1.01
41 PALISADES	46	1,417,773	1,187,500	98.3	97.9	98.0	4.5	40	6	1.00
42 PETWORTH	280	726,725	719,500	99.1	97.9	97.2	8.1	218	62	1.01
43 RANDLE HEIGHTS	105	375,278	369,000	97.9	97.7	97.3	6.2	91	14	1.00
46 SW WATERFRONT	9	1,016,445	1,025,000	94.7	93.9	93.7	5.1	9	0	1.00
47 RIGGS PARK	98	530,441	549,900	98.4	97.9	97.9	2.6	97	1	1.00
48 SHEPHERD PARK	27	945,741	885,000	98.5	98.3	98.1	3.1	26	1	1.00
49 16TH STREET HEIGHTS	66	975,077	957,500	98.5	97.7	97.5	4.6	61	5	1.00
50 SPRING VALLEY	38	1,920,895	1,762,500	97.9	98.7	98.5	4.5	34	4	1.00
51 TAKOMA PARK	26	576,863	567,500	96.4	97.7	97.5	4.2	22	4	1.00
52 TRINIDAD	135	623,179	600,000	96.5	95.8	94.6	9.2	104	31	1.01
53 WAKEFIELD	10	1,213,250	1,067,500	99.3	98.3	98.4	2.4	10	0	1.00
54 WESLEY HEIGHTS	30	1,537,783	1,178,750	99.4	101	100.8	5.1	20	10	1.00
55 WOODLEY	11	1,652,364	1,525,000	96.9	98.0	97.7	2.7	11	0	1.00
56 WOODRIDGE	93	637,467	650,000	97.4	97.0	96.6	8.4	75	18	1.00
66 FORT LINCOLN	71	641,525	605,690	99.1	99.2	99.0	3.2	64	7	1.00

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Single-Family	4,154	892,515	773,750	98.0	97.5	97.5	5.7	3,634	520	1.00

Sales Ratio Report Using Current 2020 Values

2019 SALES RATIOS BY NEIGHBORHOOD: CONDOMINIUMS

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	19	564,153	543,000	96.0	95.4	94.9	4.0	18	1	1.00
2 ANACOSTIA	3	113,667	125,000	124.6	112	119.5	18.7	1	2	.94
3 BARRY FARMS	8	304,375	305,000	85.0	87.6	84.4	18.9	7	1	1.04
4 BERKELEY	6	511,333	513,000	96.4	96.5	96.1	1.3	6	0	1.00
5 BRENTWOOD	31	366,416	330,000	96.3	96.7	96.0	5.0	30	1	1.01
6 BRIGHTWOOD	43	469,695	435,000	92.3	92.0	92.6	5.5	41	2	.99
7 BROOKLAND	88	398,981	365,000	92.4	91.0	91.5	8.0	80	8	.99
9 CAPITOL HILL	49	483,741	385,280	93.8	94.8	94.1	7.9	42	7	1.01
10 CENTRAL	379	689,195	560,000	99.6	98.5	98.4	7.9	294	85	1.00
11 CHEVY CHASE	36	550,616	419,493	94.8	94.1	94.1	7.9	32	4	1.00
12 CHILLUM	8	331,431	297,450	92.8	102	96.9	12.5	6	2	1.05
13 CLEVELAND PARK	88	430,366	384,500	95.3	95.2	94.5	6.5	79	9	1.01
15 COLUMBIA HEIGHTS	415	518,479	507,500	96.6	95.5	96.1	7.3	354	61	.99
16 CONGRESS HEIGHTS	32	175,900	199,900	91.5	87.1	84.7	20.6	28	4	1.03
18 DEANWOOD	8	120,562	127,374	92.0	95.0	93.9	9.5	7	1	1.01
19 ECKINGTON	64	576,253	565,000	96.6	94.5	94.1	6.0	59	5	1.00
20 FOGGY BOTTOM	57	344,849	270,000	94.6	95.6	94.1	7.6	49	8	1.02
21 FOREST HILLS	47	328,704	310,000	97.4	96.1	94.6	8.1	39	8	1.02
22 FORT DUPONT PARK	7	168,887	121,210	94.3	81.5	62.0	26.9	5	2	1.31
24 GARFIELD	40	526,709	413,950	97.8	95.9	87.7	8.6	31	9	1.09
25 GEORGETOWN	67	914,519	580,000	97.7	98.3	92.8	9.4	50	17	1.06
26 GLOVER PARK	38	332,861	337,500	95.9	95.7	96.3	8.0	31	7	.99
28 HILLCREST	32	145,164	135,000	80.8	82.0	77.8	18.6	28	4	1.05
29 KALORAMA	126	618,348	535,000	95.1	95.2	95.1	9.7	103	23	1.00
31 LEDROIT PARK	35	629,757	690,000	99.5	97.0	95.8	9.8	26	9	1.01
32 LILY PONDS	8	327,425	335,250	77.6	77.7	76.3	9.2	8	0	1.02
33 MARSHALL HEIGHTS	11	157,113	150,000	78.1	77.4	71.9	23.1	9	2	1.08
36 MOUNT PLEASANT	139	554,072	524,000	94.9	95.2	95.2	7.5	122	17	1.00
37 N. CLEVELAND PARK	4	430,750	426,000	95.6	96.6	96.3	4.0	4	0	1.00
38 OBSERVATORY CIRCLE	53	525,263	432,500	91.0	90.1	88.1	11.0	48	5	1.02
39 OLD CITY #1	290	580,614	542,500	95.0	94.3	94.4	7.1	260	30	1.00
40 OLD CITY #2	733	578,362	519,900	95.5	95.5	95.2	7.3	639	94	1.00
41 PALISADES	12	223,000	223,250	95.1	95.1	94.8	6.7	10	2	1.00
42 PETWORTH	93	429,918	399,900	95.0	94.3	94.0	6.0	86	7	1.00
43 RANDLE HEIGHTS	17	114,468	99,750	90.1	80.4	81.1	21.9	14	3	.99
46 SW WATERFRONT	101	512,068	397,000	91.8	91.9	88.9	9.5	92	9	1.03
48 SHEPHERD PARK	16	355,650	342,450	100.0	99.7	100.1	2.8	15	1	1.00
49 16TH STREET HEIGHTS	22	367,330	377,000	92.9	91.0	91.1	6.9	21	1	1.00
52 TRINIDAD	73	422,380	365,000	95.0	94.7	94.7	4.5	69	4	1.00
53 WAKEFIELD	19	387,126	329,000	96.9	97.6	97.1	7.0	17	2	1.01
54 WESLEY HEIGHTS	38	374,183	332,500	92.8	92.2	90.8	10.1	35	3	1.02
56 WOODRIDGE	5	325,980	335,900	71.3	78.1	76.6	13.3	5	0	1.02
66 FORT LINCOLN	22	352,312	355,000	89.0	86.6	86.3	11.0	21	1	1.00
73 WASHINGTON NAVY YARD	130	655,786	567,400	96.8	96.1	95.9	1.0	130	0	1.00

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Condominium	3,512	536,270	479,900	95.5	94.9	94.8	8.1	3,051	461	1.00

Sales Ratio Report Using Proposed 2021 Values

2019 SALES RATIOS BY NEIGHBORHOOD: CONDOMINIUMS

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	19	564,153	543,000	96.0	96.2	95.8	4.0	18	1	1.00
2 ANACOSTIA	3	113,667	125,000	124.6	112	119.7	18.9	1	2	.94
3 BARRY FARMS	8	304,375	305,000	93.9	97.2	93.4	13.5	7	1	1.04
4 BERKELEY	6	511,333	513,000	97.8	97.9	97.5	1.4	6	0	1.00
5 BRENTWOOD	31	366,416	330,000	97.0	98.3	97.1	4.2	30	1	1.01
6 BRIGHTWOOD	43	469,695	435,000	93.6	94.2	94.5	5.5	40	3	1.00
7 BROOKLAND	88	398,981	365,000	95.0	95.8	95.4	5.3	79	9	1.00
9 CAPITOL HILL	49	483,741	385,280	94.3	96.4	95.6	7.4	42	7	1.01
10 CENTRAL	379	689,195	560,000	100.0	100	100.1	4.7	309	70	1.00
11 CHEVY CHASE	36	550,616	419,493	96.9	96.2	95.7	6.4	31	5	1.01
12 CHILLUM	8	331,431	297,450	91.7	100	95.5	14.2	6	2	1.05
13 CLEVELAND PARK	88	430,366	384,500	97.7	97.7	97.3	5.1	78	10	1.00
15 COLUMBIA HEIGHTS	415	518,479	507,500	98.0	97.8	98.4	5.8	354	61	.99
16 CONGRESS HEIGHTS	32	175,900	199,900	96.7	98.4	96.0	12.6	26	6	1.03
18 DEANWOOD	8	120,562	127,374	93.8	98.0	97.2	7.2	7	1	1.01
19 ECKINGTON	64	576,253	565,000	96.8	95.9	95.7	5.5	60	4	1.00
20 FOGGY BOTTOM	57	344,849	270,000	98.8	98.3	97.8	6.1	48	9	1.00
21 FOREST HILLS	47	328,704	310,000	100.0	98.6	97.4	5.3	42	5	1.01
22 FORT DUPONT PARK	7	168,887	121,210	96.9	95.0	84.9	17.1	5	2	1.12
24 GARFIELD	40	526,709	413,950	99.7	101	103.0	5.7	30	10	.98
25 GEORGETOWN	67	914,519	580,000	98.7	99.2	96.2	5.9	57	10	1.03
26 GLOVER PARK	38	332,861	337,500	97.9	96.6	97.5	5.7	34	4	.99
28 HILLCREST	32	145,164	135,000	92.0	93.0	88.3	16.4	25	7	1.05
29 KALORAMA	126	618,348	535,000	100.0	98.7	99.3	4.9	107	19	.99
31 LEDROIT PARK	35	629,757	690,000	99.0	98.3	97.1	7.6	28	7	1.01
32 LILY PONDS	8	327,425	335,250	90.0	91.3	90.0	11.5	7	1	1.02
33 MARSHALL HEIGHTS	11	157,113	150,000	88.4	90.4	85.8	17.5	9	2	1.05
36 MOUNT PLEASANT	139	554,072	524,000	98.0	97.1	97.2	5.9	122	17	1.00
37 N. CLEVELAND PARK	4	430,750	426,000	95.9	96.9	96.5	4.0	4	0	1.00
38 OBSERVATORY CIRCLE	53	525,263	432,500	94.0	95.0	94.4	8.9	45	8	1.01
39 OLD CITY #1	290	580,614	542,500	97.0	96.7	96.8	5.4	262	28	1.00
40 OLD CITY #2	733	578,362	519,900	97.4	98.1	97.7	5.2	643	90	1.00
41 PALISADES	12	223,000	223,250	97.8	98.3	98.1	4.3	10	2	1.00
42 PETWORTH	93	429,918	399,900	95.3	96.2	95.6	4.8	86	7	1.01
43 RANDLE HEIGHTS	17	114,468	99,750	100.1	96.4	94.3	9.9	12	5	1.02
46 SW WATERFRONT	101	512,068	397,000	95.0	95.5	92.7	7.8	88	13	1.03
48 SHEPHERD PARK	16	355,650	342,450	99.2	99.1	99.2	1.0	16	0	1.00
49 16TH STREET HEIGHTS	22	367,330	377,000	96.5	96.0	96.1	5.0	21	1	1.00
52 TRINIDAD	73	422,380	365,000	95.9	96.0	96.0	3.4	71	2	1.00
53 WAKEFIELD	19	387,126	329,000	99.8	99.7	99.0	7.0	12	7	1.01
54 WESLEY HEIGHTS	38	374,183	332,500	100.0	99.2	97.6	7.7	33	5	1.02
56 WOODRIDGE	5	325,980	335,900	90.0	92.7	91.3	9.4	4	1	1.02
66 FORT LINCOLN	22	352,312	355,000	91.6	91.3	91.0	10.7	20	2	1.00
73 WASHINGTON NAVY YARD	130	655,786	567,400	96.8	96.1	95.9	1.0	130	0	1.00

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Condominium	3,512	536,270	479,900	97.5	97.6	97.5	5.9	3,065	447	1.00

Sales Ratio Report Using Current 2020 Values

2019 SALES RATIOS BY NEIGHBORHOOD: MULTI-FAMILY

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
2 ANACOSTIA	2	1,112,500	1,112,500	83.2	83.2	76.9	14.2	2	0	1.08
5 BRENTWOOD	1	1,999,000	1,999,000	59.6	59.6	59.6	.0	1	0	1.00
6 BRIGHTWOOD	2	5,821,000	5,821,000	85.2	85.2	85.2	.0	2	0	1.00
9 CAPITOL HILL	1	5,600,000	5,600,000	57.2	57.2	57.2	.0	1	0	1.00
13 CLEVELAND PARK	2	3,976,400	3,976,400	94.7	94.7	94.8	.7	2	0	1.00
15 COLUMBIA HEIGHTS	1	775,000	775,000	104.6	105	104.6	.0	1	0	1.00
16 CONGRESS HEIGHTS	5	511,000	515,000	85.0	85.5	86.1	11.4	5	0	.99
18 DEANWOOD	3	790,000	620,000	83.5	80.8	83.4	9.5	3	0	.97
19 ECKINGTON	2	1,115,250	1,115,250	67.2	67.2	65.2	13.3	2	0	1.03
22 FORT DUPONT PARK	1	1,200,000	1,200,000	82.1	82.1	82.1	.0	1	0	1.00
24 GARFIELD	2	3,287,500	3,287,500	74.0	74.0	66.2	35.1	2	0	1.12
25 GEORGETOWN	2	5,451,100	5,451,100	78.7	78.7	67.4	27.7	2	0	1.17
28 HILLCREST	3	1,077,867	825,000	62.3	76.9	68.7	28.8	2	1	1.12
29 KALORAMA	1	21,815,000	21815000	90.3	90.3	90.3	.0	1	0	1.00
33 MARSHALL HEIGHTS	2	1,087,500	1,087,500	70.7	70.7	70.1	1.9	2	0	1.01
36 MOUNT PLEASANT	2	2,397,500	2,397,500	75.4	75.4	77.3	7.4	2	0	.98
39 OLD CITY #1	1	1,975,000	1,975,000	61.6	61.6	61.6	.0	1	0	1.00
40 OLD CITY #2	8	10,659,488	3,225,000	77.2	71.1	61.1	32.8	8	0	1.16
42 PETWORTH	1	9,325,000	9,325,000	73.9	73.9	73.9	.0	1	0	1.00
43 RANDLE HEIGHTS	5	1,890,886	950,000	61.2	74.0	61.3	27.0	4	1	1.21
49 16TH STREET HEIGHTS	3	4,535,000	3,050,000	91.9	88.8	84.8	4.0	3	0	1.05
TOTALS:										
PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Multi-Family	50	4,153,609	1,750,000	78.7	77.9	71.0	21.1	48	2	1.10

Sales Ratio Report Using Proposed 2021 Values

2019 SALES RATIOS BY NEIGHBORHOOD: MULTI-FAMILY

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
2 ANACOSTIA	2	1,112,500	1,112,500	93.3	93.3	86.3	14.2	1	1	1.08
5 BRENTWOOD	1	1,999,000	1,999,000	92.3	92.3	92.3	.0	1	0	1.00
6 BRIGHTWOOD	2	5,821,000	5,821,000	91.5	91.5	93.1	2.1	2	0	.98
9 CAPITOL HILL	1	5,600,000	5,600,000	74.7	74.7	74.7	.0	1	0	1.00
13 CLEVELAND PARK	2	3,976,400	3,976,400	97.4	97.4	97.8	2.1	2	0	1.00
15 COLUMBIA HEIGHTS	1	775,000	775,000	108.3	108	108.3	.0	0	1	1.00
16 CONGRESS HEIGHTS	5	511,000	515,000	95.4	92.5	93.7	10.4	4	1	.99
18 DEANWOOD	3	790,000	620,000	93.7	94.1	95.8	4.7	3	0	.98
19 ECKINGTON	2	1,115,250	1,115,250	84.3	84.3	81.1	17.5	2	0	1.04
22 FORT DUPONT PARK	1	1,200,000	1,200,000	93.7	93.7	93.7	.0	1	0	1.00
24 GARFIELD	2	3,287,500	3,287,500	96.7	96.7	96.1	2.1	2	0	1.01
25 GEORGETOWN	2	5,451,100	5,451,100	87.1	87.1	79.0	17.9	2	0	1.10
28 HILLCREST	3	1,077,867	825,000	88.1	96.2	92.6	9.5	2	1	1.04
29 KALORAMA	1	21,815,000	21815000	87.5	87.5	87.5	.0	1	0	1.00
33 MARSHALL HEIGHTS	2	1,087,500	1,087,500	84.9	84.9	86.8	4.8	2	0	.98
36 MOUNT PLEASANT	2	2,397,500	2,397,500	93.2	93.2	95.4	7.0	2	0	.98
39 OLD CITY #1	1	1,975,000	1,975,000	99.4	99.4	99.4	.0	1	0	1.00
40 OLD CITY #2	8	10,659,488	3,225,000	90.1	81.1	90.8	14.7	8	0	.89
42 PETWORTH	1	9,325,000	9,325,000	89.1	89.1	89.1	.0	1	0	1.00
43 RANDLE HEIGHTS	5	1,890,886	950,000	68.8	73.6	65.7	14.9	5	0	1.12
49 16TH STREET HEIGHTS	3	4,535,000	3,050,000	99.0	96.8	92.7	3.9	3	0	1.04
TOTALS:										
PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Multi-Family	50	4,153,609	1,750,000	92.8	88.9	89.1	11.3	46	4	1.00

Sales Ratio Report Using Current 2020 Values

2019 SALES RATIOS BY NEIGHBORHOOD: COMMERCIAL

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	2	14,575,000	14575000	98.5	98.5	97.9	7.5	1	1	1.01
2 ANACOSTIA	2	1,105,500	1,105,500	64.5	64.5	64.8	6.9	2	0	1.00
5 BRENTWOOD	1	8,950,000	8,950,000	82.3	82.3	82.3	.0	1	0	1.00
6 BRIGHTWOOD	3	988,333	915,000	59.2	58.4	57.6	7.3	3	0	1.01
7 BROOKLAND	9	1,574,178	1,150,000	67.7	74.3	68.4	39.6	8	1	1.09
9 CAPITOL HILL	3	1,561,667	1,500,000	68.9	69.8	62.7	26.4	3	0	1.11
10 CENTRAL	30	61,276,578	16400000	92.7	95.9	92.7	15.5	22	8	1.03
11 CHEVY CHASE	1	2,375,000	2,375,000	51.9	51.9	51.9	.0	1	0	1.00
12 CHILLUM	3	843,333	830,000	91.8	83.5	76.4	19.4	2	1	1.09
15 COLUMBIA HEIGHTS	14	1,271,821	1,176,000	71.9	70.0	70.9	16.4	14	0	.99
16 CONGRESS HEIGHTS	3	846,333	810,000	38.9	40.8	35.1	28.6	3	0	1.16
18 DEANWOOD	6	727,883	416,500	102.7	94.1	103.5	29.7	3	3	.91
19 ECKINGTON	3	1,335,000	1,050,000	73.1	68.2	62.2	16.1	3	0	1.10
20 FOGGY BOTTOM	3	84,766,667	101200000	74.8	77.5	83.5	13.4	3	0	.93
24 GARFIELD	3	2,675,000	2,775,000	92.2	89.8	90.6	6.4	3	0	.99
25 GEORGETOWN	11	4,609,091	3,225,000	88.2	84.3	81.0	15.8	10	1	1.04
26 GLOVER PARK	1	3,800,000	3,800,000	83.2	83.2	83.2	.0	1	0	1.00
28 HILLCREST	1	950,000	950,000	50.1	50.1	50.1	.0	1	0	1.00
29 KALORAMA	3	2,570,833	2,237,500	67.8	72.1	68.9	13.5	3	0	1.05
31 LEDROIT PARK	1	1,975,000	1,975,000	49.5	49.5	49.5	.0	1	0	1.00
32 LILY PONDS	1	4,500,000	4,500,000	48.7	48.7	48.7	.0	1	0	1.00
34 MASS. AVE. HEIGHTS	1	23,000,000	23000000	81.0	81.0	81.0	.0	1	0	1.00
36 MOUNT PLEASANT	6	2,612,500	2,212,500	81.9	85.1	82.6	18.1	5	1	1.03
39 OLD CITY #1	16	2,626,055	1,800,000	67.5	69.1	75.5	27.8	15	1	.91
40 OLD CITY #2	24	4,500,208	2,237,500	72.5	75.7	83.1	26.1	22	2	.91
41 PALISADES	1	970,000	970,000	88.7	88.7	88.7	.0	1	0	1.00
42 PETWORTH	5	858,200	776,000	60.3	56.2	52.3	20.9	5	0	1.08
43 RANDLE HEIGHTS	1	1,200,000	1,200,000	123.7	124	123.7	.0	0	1	1.00
44 NOMA	1	174900000	174900000	115.7	116	115.7	.0	0	1	1.00
46 SW WATERFRONT	1	104598000	104598000	101.5	102	101.5	.0	1	0	1.00
49 16TH STREET HEIGHTS	6	2,586,667	1,437,500	64.8	62.6	57.4	23.1	6	0	1.09
51 TAKOMA PARK	4	1,750,500	1,526,000	105.3	101	87.6	27.0	2	2	1.16
52 TRINIDAD	2	1,176,250	1,176,250	36.6	36.6	28.7	39.7	2	0	1.27
53 WAKEFIELD	1	2,650,000	2,650,000	66.8	66.8	66.8	.0	1	0	1.00
56 WOODRIDGE	5	6,820,000	4,000,000	69.9	73.6	71.3	32.8	4	1	1.03
73 WASHINGTON NAVY YARD	1	4,193,841	4,193,841	103.7	104	103.7	.0	1	0	1.00

TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Commercial	179	15,678,684	1,950,000	76.5	78.2	91.4	27.1	155	24	.86

Sales Ratio Report Using Proposed 2021 Values

2019 SALES RATIOS BY NEIGHBORHOOD: COMMERCIAL

NB NAME	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
1 AMERICAN UNIVERSITY	2	14,575,000	14575000	101.7	102	101.9	2.2	2	0	1.00
2 ANACOSTIA	2	1,105,500	1,105,500	78.3	78.3	78.1	5.0	2	0	1.00
5 BRENTWOOD	1	8,950,000	8,950,000	83.0	83.0	83.0	.0	1	0	1.00
6 BRIGHTWOOD	3	988,333	915,000	80.5	77.6	75.4	17.3	3	0	1.03
7 BROOKLAND	9	1,574,178	1,150,000	92.2	85.2	87.7	11.0	9	0	.97
9 CAPITOL HILL	3	1,561,667	1,500,000	90.5	91.6	90.7	4.3	3	0	1.01
10 CENTRAL	30	61,276,578	16400000	98.5	98.3	98.0	5.7	26	4	1.00
11 CHEVY CHASE	1	2,375,000	2,375,000	81.7	81.7	81.7	.0	1	0	1.00
12 CHILLUM	3	843,333	830,000	93.6	89.8	86.9	7.5	3	0	1.03
15 COLUMBIA HEIGHTS	14	1,271,821	1,176,000	90.6	88.3	88.1	8.6	13	1	1.00
16 CONGRESS HEIGHTS	3	846,333	810,000	80.7	78.9	80.5	6.4	3	0	.98
18 DEANWOOD	6	727,883	416,500	85.3	96.3	84.5	15.4	5	1	1.14
19 ECKINGTON	3	1,335,000	1,050,000	92.2	94.1	93.3	3.0	3	0	1.01
20 FOGGY BOTTOM	3	84,766,667	101200000	91.4	94.2	97.3	6.0	3	0	.97
24 GARFIELD	3	2,675,000	2,775,000	107.0	104	105.4	5.8	1	2	.99
25 GEORGETOWN	11	4,609,091	3,225,000	93.8	94.0	92.9	8.3	10	1	1.01
26 GLOVER PARK	1	3,800,000	3,800,000	83.6	83.6	83.6	.0	1	0	1.00
28 HILLCREST	1	950,000	950,000	86.3	86.3	86.3	.0	1	0	1.00
29 KALORAMA	3	2,570,833	2,237,500	85.0	86.8	85.8	2.4	3	0	1.01
31 LEDROIT PARK	1	1,975,000	1,975,000	83.4	83.4	83.4	.0	1	0	1.00
32 LILY PONDS	1	4,500,000	4,500,000	84.6	84.6	84.6	.0	1	0	1.00
34 MASS. AVE. HEIGHTS	1	23,000,000	23000000	83.3	83.3	83.3	.0	1	0	1.00
36 MOUNT PLEASANT	6	2,612,500	2,212,500	93.2	91.9	87.7	12.7	5	1	1.05
39 OLD CITY #1	16	2,626,055	1,800,000	94.6	91.8	95.0	10.2	15	1	.97
40 OLD CITY #2	24	4,500,208	2,237,500	85.4	84.8	91.2	20.7	22	2	.93
41 PALISADES	1	970,000	970,000	89.3	89.3	89.3	.0	1	0	1.00
42 PETWORTH	5	858,200	776,000	75.0	73.6	75.8	13.3	5	0	.97
43 RANDLE HEIGHTS	1	1,200,000	1,200,000	80.4	80.4	80.4	.0	1	0	1.00
44 NOMA	1	174900000	174900000	102.8	103	102.8	.0	1	0	1.00
46 SW WATERFRONT	1	104598000	104598000	101.4	101	101.4	.0	1	0	1.00
49 16TH STREET HEIGHTS	6	2,586,667	1,437,500	82.5	80.8	70.7	14.5	6	0	1.14
51 TAKOMA PARK	4	1,750,500	1,526,000	101.1	92.5	86.4	12.8	3	1	1.07
52 TRINIDAD	2	1,176,250	1,176,250	85.5	85.5	83.2	5.1	2	0	1.03
53 WAKEFIELD	1	2,650,000	2,650,000	95.4	95.4	95.4	.0	1	0	1.00
56 WOODRIDGE	5	6,820,000	4,000,000	94.9	91.3	91.6	15.5	4	1	1.00
73 WASHINGTON NAVY YARD	1	4,193,841	4,193,841	106.8	107	106.8	.0	0	1	1.00

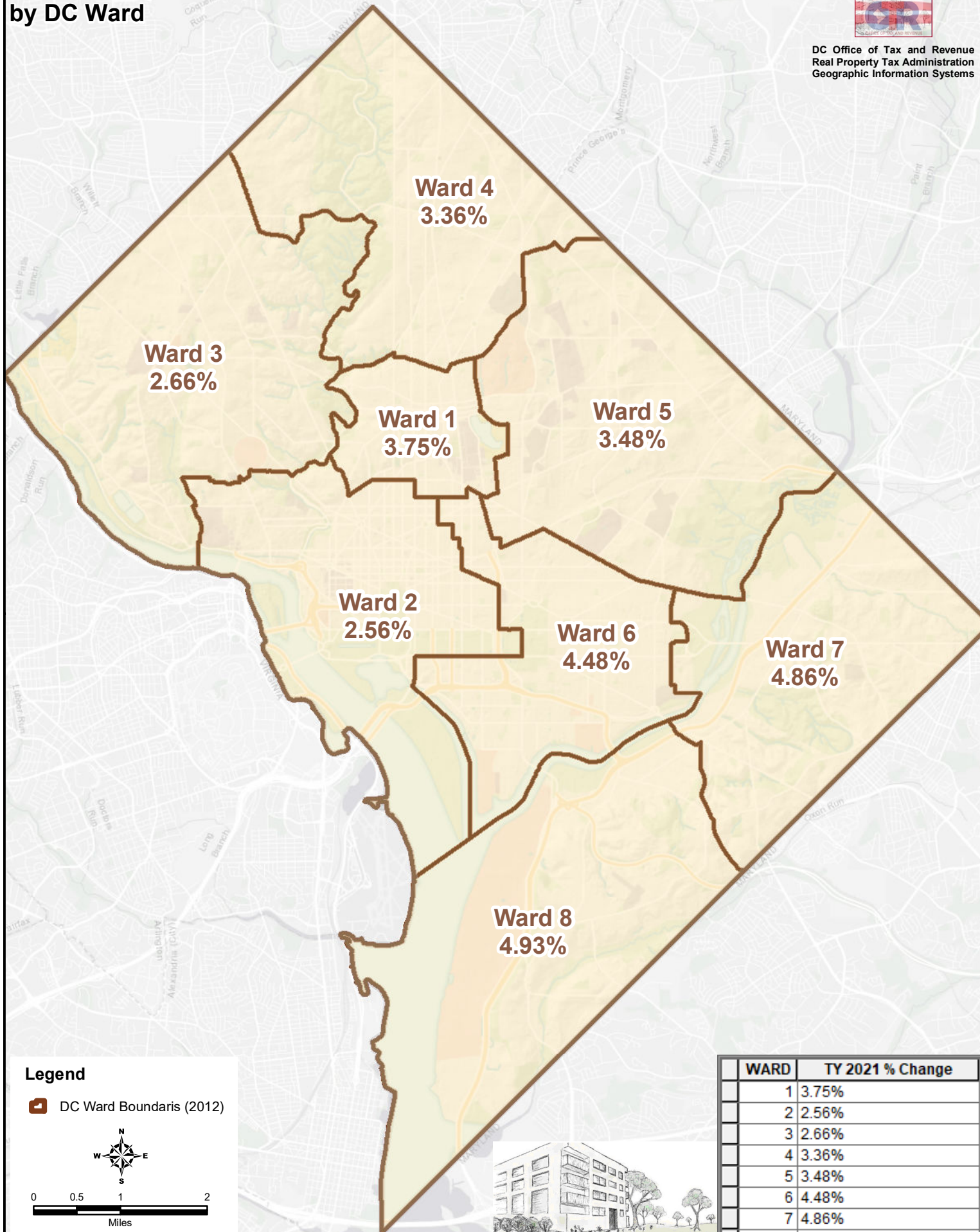
TOTALS:

PROPERTY TYPE	SALES	AVE PRICE	MED PRICE	MEDIAN	MEAN	WEIGHTED	COD	< 105	> 105	PRD
Commercial	179	15,678,684	1,950,000	92.3	90.2	97.2	12.3	163	16	.93

Residential (Usecodes: 011, 012, 013, 023, 024) Overall Change by DC Ward

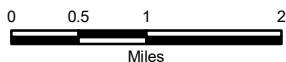


DC Office of Tax and Revenue
Real Property Tax Administration
Geographic Information Systems



Legend

DC Ward Boundaris (2012)



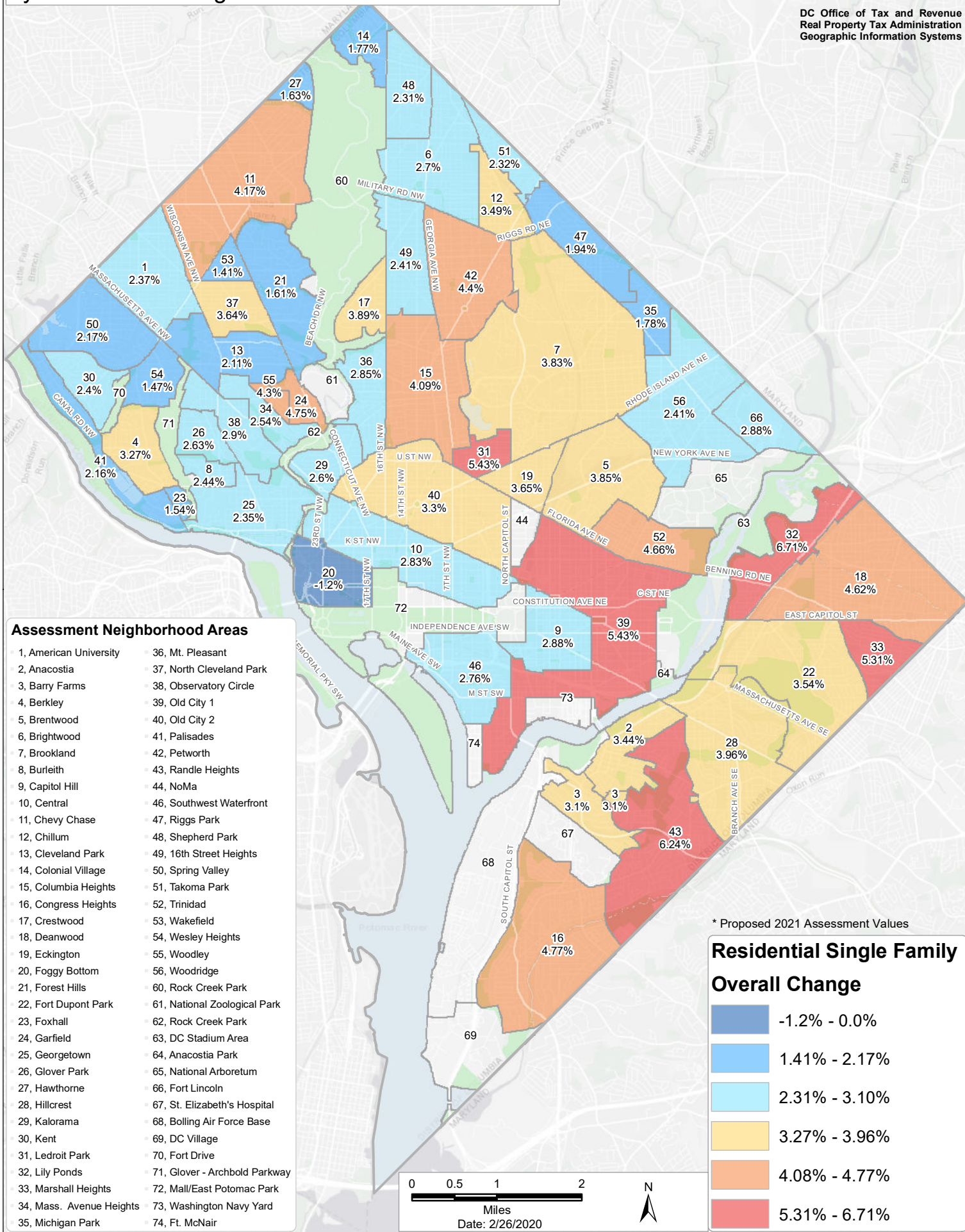
Date: 2/26/2020



TY *2021 Residential Single Family Overall Change by Assessment Neighborhood Area



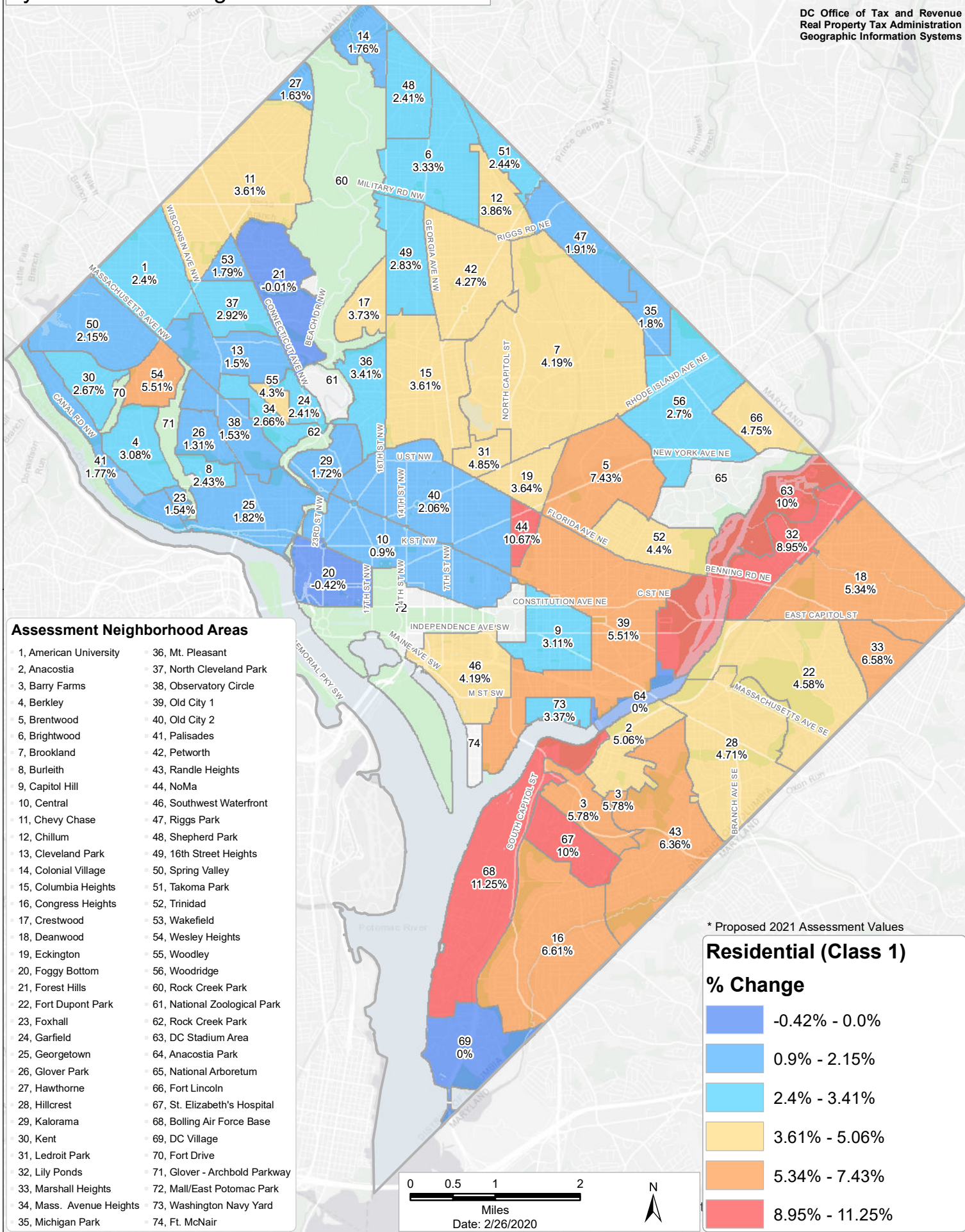
DC Office of Tax and Revenue
Real Property Tax Administration
Geographic Information Systems



TY *2021 Residential (Class 1) Base Change by Assessment Neighborhood Area



DC Office of Tax and Revenue
Real Property Tax Administration
Geographic Information Systems

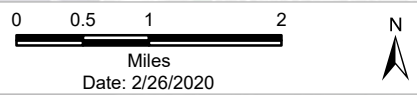
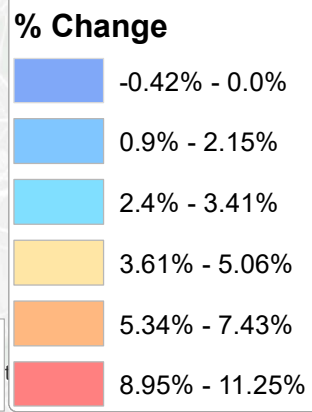


Assessment Neighborhood Areas

- | | |
|--------------------------|-------------------------------|
| 1, American University | 36, Mt. Pleasant |
| 2, Anacostia | 37, North Cleveland Park |
| 3, Barry Farms | 38, Observatory Circle |
| 4, Berkley | 39, Old City 1 |
| 5, Brentwood | 40, Old City 2 |
| 6, Brightwood | 41, Pallsades |
| 7, Brookland | 42, Petworth |
| 8, Burleith | 43, Randle Heights |
| 9, Capitol Hill | 44, NoMa |
| 10, Central | 46, Southwest Waterfront |
| 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, Mass. Avenue Heights | 73, Washington Navy Yard |
| 35, Michigan Park | 74, Ft. McNair |

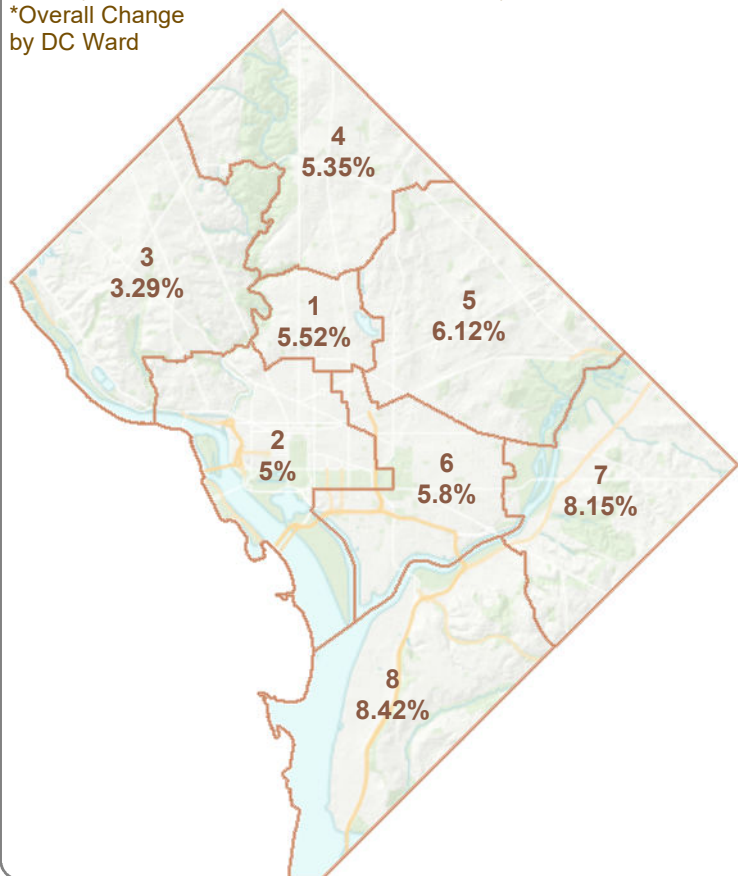
* Proposed 2021 Assessment Values

Residential (Class 1)



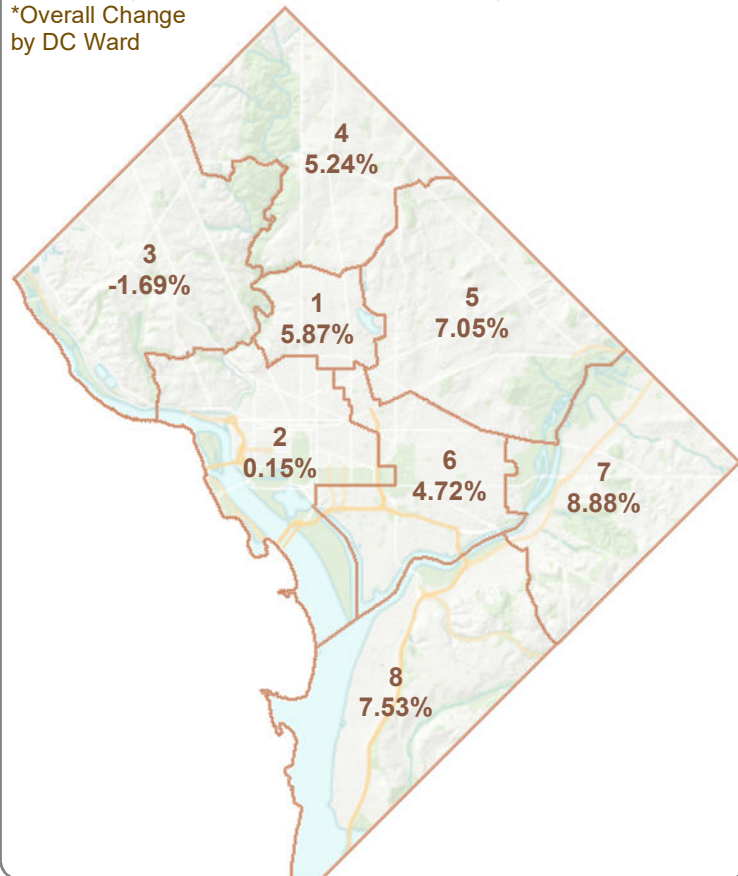
Retail (Usecode: 004, 061, 065, 067, 068, 069)

*Overall Change by DC Ward



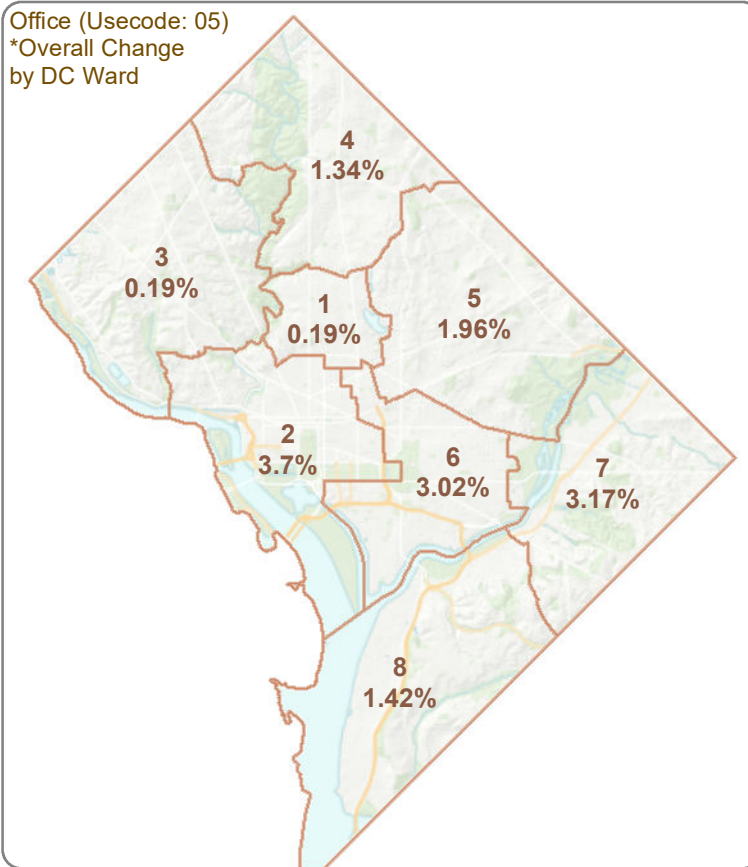
Apartment (Usecode: 021, 022, 025, 028, 029)

*Overall Change by DC Ward

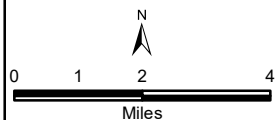


Office (Usecode: 05)

*Overall Change by DC Ward



TY *2021 Commercial Change by DC Ward



OTR Office of Tax and Revenue
 Real Property Assessment Division
 GIS Geographic Information Systems

* Proposed 2021 Assessment Values

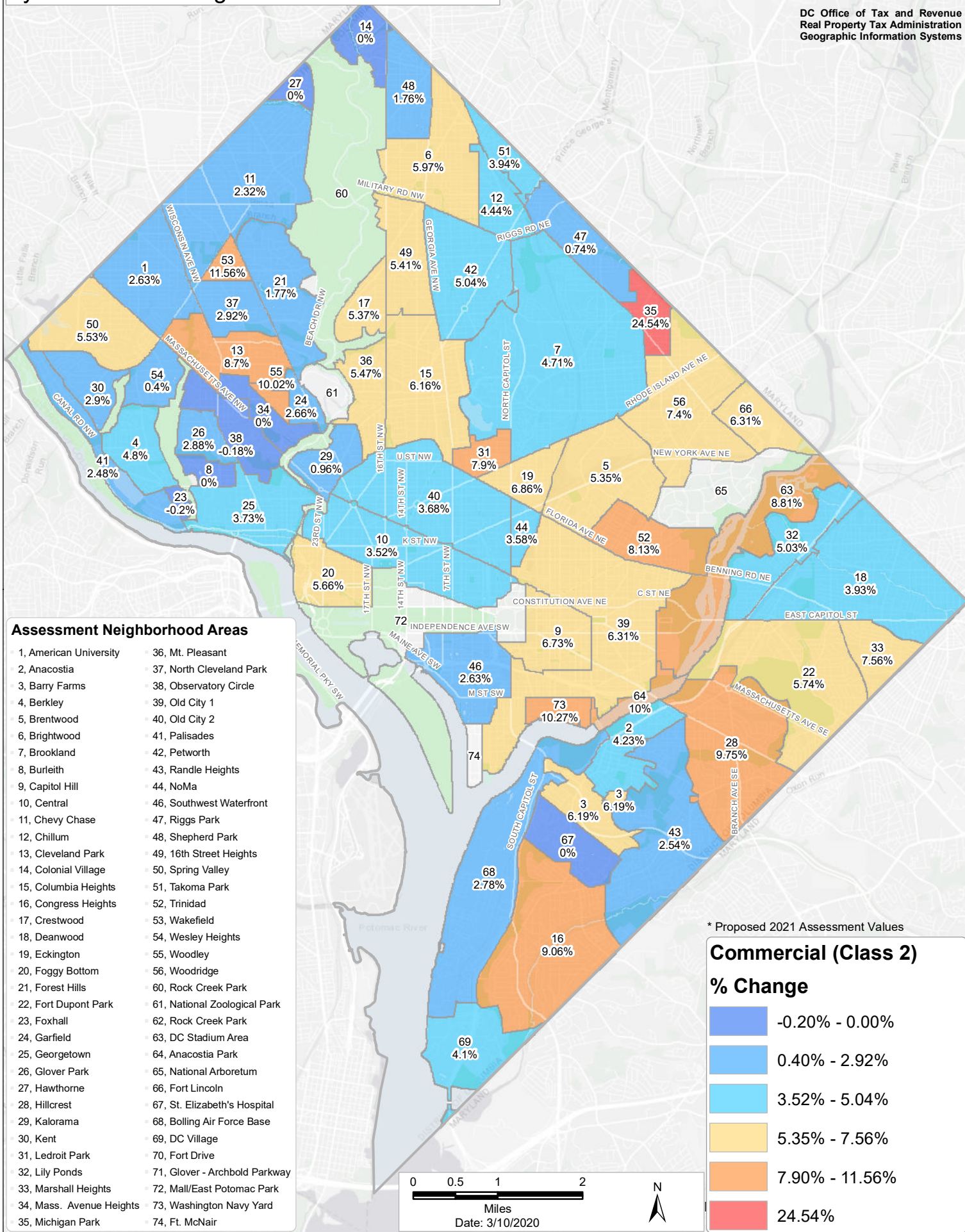
Date: 2/28/2020



TY *2021 Commercial (Class 2) Base Change by Assessment Neighborhood Area



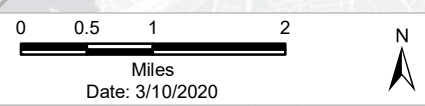
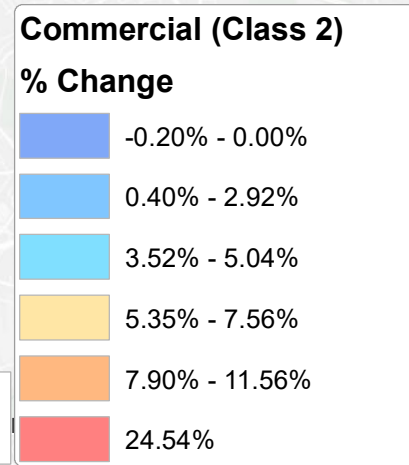
DC Office of Tax and Revenue
Real Property Tax Administration
Geographic Information Systems



Assessment Neighborhood Areas

- | | |
|--------------------------|-------------------------------|
| 1, American University | 36, Mt. Pleasant |
| 2, Anacostia | 37, North Cleveland Park |
| 3, Barry Farms | 38, Observatory Circle |
| 4, Berkley | 39, Old City 1 |
| 5, Brentwood | 40, Old City 2 |
| 6, Brightwood | 41, Pallsades |
| 7, Brookland | 42, Petworth |
| 8, Burleith | 43, Randle Heights |
| 9, Capitol Hill | 44, NoMa |
| 10, Central | 46, Southwest Waterfront |
| 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, Mass. Avenue Heights | 73, Washington Navy Yard |
| 35, Michigan Park | 74, Ft. McNair |

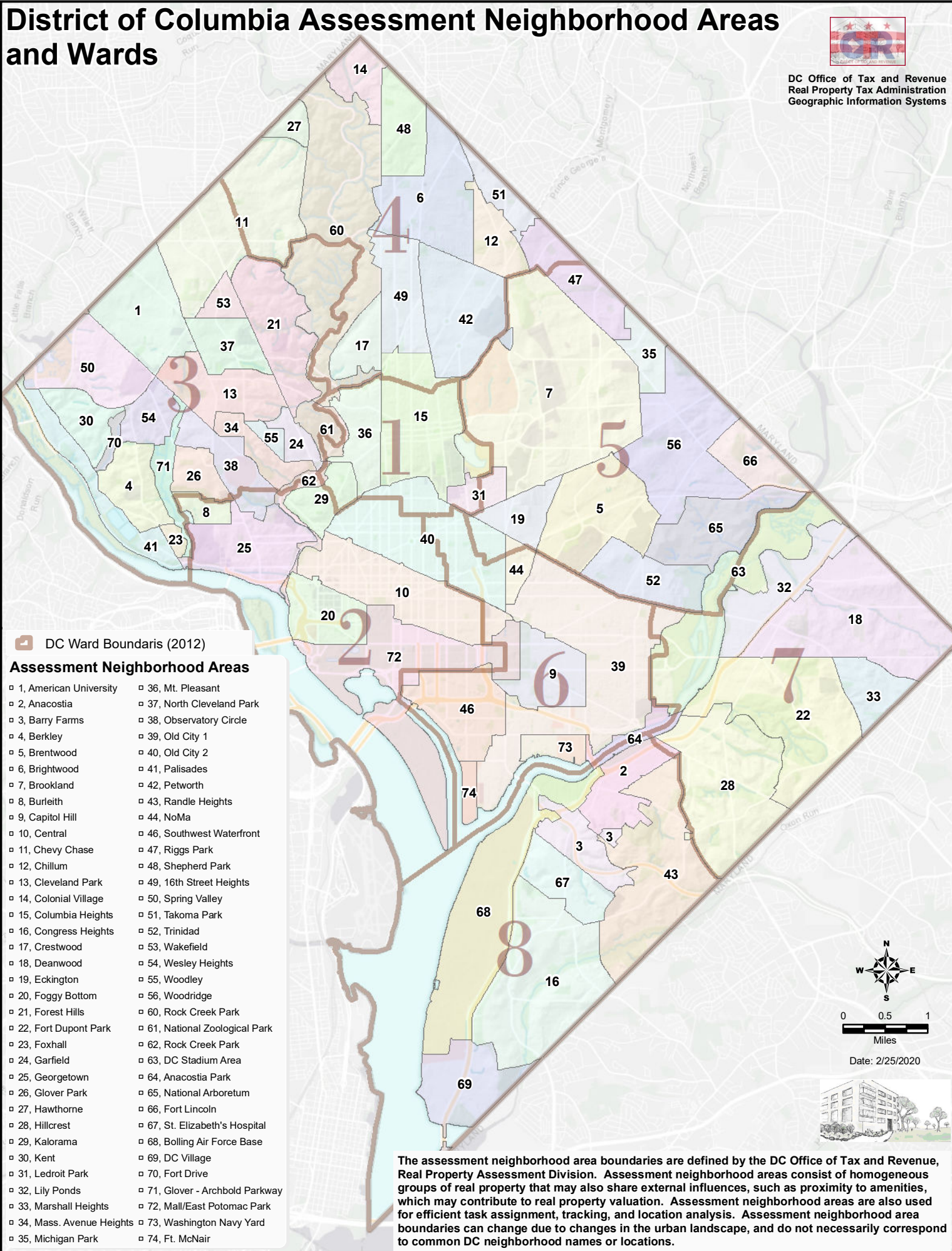
* Proposed 2021 Assessment Values



District of Columbia Assessment Neighborhood Areas and Wards



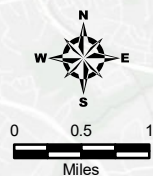
DC Office of Tax and Revenue
Real Property Tax Administration
Geographic Information Systems



DC Ward Boundaris (2012)

Assessment Neighborhood Areas

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



Date: 2/25/2020



The assessment neighborhood area boundaries are defined by the DC Office of Tax and Revenue, Real Property Assessment Division. Assessment neighborhood areas consist of homogeneous groups of real property that may also share external influences, such as proximity to amenities, which may contribute to real property valuation. Assessment neighborhood areas are also used for efficient task assignment, tracking, and location analysis. Assessment neighborhood area boundaries can change due to changes in the urban landscape, and do not necessarily correspond to common DC neighborhood names or locations.