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Property Assessments

Truth and Consequences

How far have we strayed from
the principles of leadership
and equity when we champion
a property tax system that
favors the wealthiest over the
poorest and the average
property owner

- **Dominick Gambino, CPE**
- **1978-1990:** Manager of Accounting, Allegheny County
- **1991-1999:** Admin. Asst. to the Controller in Charge of Special Audits and Reports
- **1984-1992:** Elected Borough Council / Tax Collector
- **1999-Current:** President, Diversified Municipal Services Inc.
- **2001-2003:** Manager, Office of Property Assessments
- Duquesne University
- Licensed Real Estate Instructor
- Certified PA Evaluator (CPE)

TODAY'S DISCUSSION

- What is an assessed value
- What role does the assessment have in regards to actual tax payments
- The tax payment formula
- How a reassessment is done
- Open dialog with questions at any time
- “Who’s on First”



**THE HAPPY
FAMILY OF REAL
ESTATE
PROFESSIONALS**

APPRAISERS



BROKERS/AGENTS



ASSESSORS



ASSESSORS

- Least understood and most misrepresented of all real estate disciplines yet affects all property owners
- Generally under-funded
- PA inexperienced in reassessment procedures and techniques – “one and out” philosophy
- Result in reliance on outside service

REASONS GIVEN TO NOT REASSESS

- It will mean a tax increase
- Its too expensive
- Why should I make everyone pay their fair share when no one else is doing it
- It will never be perfect so why try to make it better
- It will be a back-door windfall tax revenue increase for school districts

MRA MODEL (An Example)

Valuation Area 4 (North) – Model 11 (\$90,000 to \$120,000 Price Range)

$$\begin{aligned} \text{MRAVAL} = & 12,179.02 + 1.0 \text{LANDVAL} + 40.09 \text{SFLA} - 20.0 \text{UFAREA} + 19.13 \text{ATTGAR} + 120.0 \text{BAYMIN} + 30.0 \\ & \text{ADPOOL} + 1.25 \text{OBVAL} + 2280.56 \text{BSMGAR} + 3129.52 \text{FPOPEN} - 0.24 \text{DS*SF} + 1278.2 \text{TOTFIX} - 0.52 \text{AGE*SF} \\ & + 6.23 \text{CND*SF} + 45.21 \text{GRF*SF} + 3.4 \text{AC*SF} + 27.97 \text{SUMPCH} + 1376.39 \text{RANCH} + 8995.91 \text{SPLIT} + 4298.33 \\ & \text{BILEVL} - 4232.28 \text{BUNGLO} + 2059.25 \text{BSMADJ} + 1.38 \text{MAS*SF} + 1000.0 \text{UNFNAT} + 2.0 \text{HTADSF} + 6.0 \text{NBADSF} \\ & + 0.3 \text{AG20SF} + 0.20 \text{DS99SF} - 0.21 \text{DS98SF} - 3565.27 \text{OCC1} + 22.16 \text{ECF*SF} + 15.41 \text{FBRR5} - 12,093.49 \\ & \text{ROWADJ} - 2390.87 \text{PRKADJ} + 0.28 \text{AG80SF} \end{aligned}$$

Grade School Math

$$4 \times 2 = 8$$

$$2 \times 4 = 8$$

$$1 \times 8 = 8$$

Assessment X Mills = Tax Payment

- Source of components of tax payment
- Purpose of each component
- What can cause a change in each component
- Will an increase any of the components automatically mean higher taxes
- What changes can increase tax payment
- Which component gets most blame

Millage Rate Calculation – Driven by Budget

The tax rate (millage rate) is a relationship between the amount of taxes to be raised and the tax base. The millage rate is calculated by dividing the tax base (the total assessed value of all taxable property in the jurisdiction) into the amount of tax that must be raised (less other revenue or fund balance).

$$1 \text{ MILL} = .001$$

For example, if total assessed value is \$10 million, and the amount of tax to be raised is \$100,000, the tax rate is 1 percent or .010 or 10 mills.

If the assessed value the next year stays at \$10 million and the amount to be raised is now \$200,000, the tax rate is 2 percent or .020 or 20 mills.

If via reassessment, total assessed value doubles, and the amount of tax to be raised stays at \$100,000, the tax rate drops to 0.5 percent.

Revenue neutral provisions

ASSESSMENT
X MILLS = TAX
PAYMENT
(Driven by
Budget)



**A CLOSER LOOK AT THE
RELATIONSHIP BETWEEN
MILLAGE RATE AND
BUDGET**

No Reassessment-Budget
Increase = Tax Increase For All
 $\$10,000,000 \times .020 = \$200,000$

2008 Budget = \$100,000

- Assessments = \$10,000,000
- Millage = .010 or 10 mills

2009 Budget = \$200,000

- Assessments = \$10,000,000
- Millage = .020 or 20 mills

Reassessment - Anti-windfall Provision = Tax Increase For Some and Tax Decrease For Others

$$\$20,000,000 \times .005 = \$100,000$$

2008 Budget = \$100,000

- Assessments = \$10,000,000
- Millage = .010 or 10 mills

2009 Budget = \$100,000

- Assessments = \$20,000,000
- Millage = .005 or 5 mills

ROLE OF ASSESSMENT

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Purpose of Assessments: Distribute Tax Distribution

Assume:

The Total Assessed Value Doubles (Average Increase of Individual Properties Doubles) the Millage is Adjusted and the Tax Burden is re-distributed

Tax Payment Change From
Reassessment Where the Total
Assessed Values Doubled (\$10
million to \$20 million).* Consequently
Millage is Reduced By Half...

Cousin Vinny I - \$100k to \$100k
Cousin Vinny II - \$100k to \$200k
Cousin Vinny III - \$100k to \$50k
Cousin Vinny IV - \$100k to \$250k

* 2006 reassessment resulted in a 20%
increase

Cousin Vinny I Property

2008 Assessment = \$100,000

- $\$100,000 \times .01 = \$1,000$

2009 Assessment = \$100,000

- $\$100,000 \times .005 = \500



Cousin Vinny II Property

2008 Assessment = \$100,000

- $\$100,000 \times .01 = \$1,000$

2009 Assessment = \$200,000

- $\$200,000 \times .005 = \$1,000$



Cousin Vinny III Property

2008 Assessment = \$100,000

- $\$100,000 \times .01 = \$1,000$

2009 Assessment = \$50,000

- $\$50,000 \times .005 = \250



Cousin Vinny IV Property

2008 Assessment = \$100,000

● $\$100,000 \times .01 = \$1,000$

2009 Assessment = \$250,000

● $\$250,000 \times .005 = \$1,250$



The Same Theory Applies For
County, Muni and School
Property Taxes – See CMU
Study of 2006 Values

If we'd used the 2006 assessments

This chart shows how county tax bills would have been affected if Allegheny County had used the current-market property values it had calculated for 2006 instead of applying assessments based on property values in 2002. Assuming that the county had adjusted its tax rate to maintain and not increase revenue (and state law allows only a 5 percent increase) tax bills in most low- to middle-

income communities, on average, would have stayed about the same or fallen - in some cases dramatically. That's because property values in those communities have risen slowly, stayed steady or fallen. In many well-to-do communities where property values have risen compared to other places in the county, tax bills also would have risen.

Municipality	Change in property value	Change in taxes	Municipality	Change in property value	Change in taxes	Municipality	Change in property value	Change in taxes	Municipality	Change in property value	Change in taxes
Braddock	-16.1%	-29.6%	Blawnox	11.4%	-6.6%	Trafford	15.8%	-2.9%	Ben Avon Heights	19.3%	0.1%
Homestead	-9.3%	-23.9%	Etna	12.0%	-6.1%	Scott	15.9%	-2.8%	Hampton	19.4%	0.1%
North Braddock	-9.0%	-23.7%	Aleppo	12.2%	-5.9%	West Mifflin	15.9%	-2.8%	Upper St. Clair	19.5%	0.2%
Wilkinsburg	-5.8%	-21.0%	Millvale	12.3%	-5.8%	Robinson	15.9%	-2.8%	Aspinwall	19.6%	0.3%
Clairton	-1.1%	-17.0%	Sharpsburg	12.4%	-5.8%	Reserve	16.1%	-2.7%	Bradford Woods	20.1%	0.8%
Braddock Hills	2.8%	-13.8%	Ohio	13.1%	-5.2%	Whitehall	16.1%	-2.6%	North Fayette	20.2%	0.8%
Haysville	5.9%	-11.2%	Verona	13.4%	-4.9%	Bridgeville	16.2%	-2.6%	Dormont	20.3%	0.9%
North Versailles	5.9%	-11.2%	Chalfant	13.4%	-4.9%	Swissvale	16.3%	-2.4%	Collier	20.3%	0.9%
Glenfield	6.1%	-11.0%	Leetsdale	13.5%	-4.8%	Marshall	16.5%	-2.3%	West Deer	20.5%	1.0%
West Homestead	6.2%	-10.9%	McKees Rocks	13.6%	-4.7%	West View	16.6%	-2.2%	O'Hara	20.7%	1.3%
Neville	6.3%	-10.9%	Leet	13.7%	-4.6%	Plum	16.7%	-2.1%	Mt. Lebanon	20.8%	1.3%
Duquesne	6.3%	-10.9%	Heidelberg	14.0%	-4.4%	Penn Hills	16.7%	-2.1%	Monroeville	20.9%	1.4%
Rankin	6.4%	-10.8%	Carnegie	14.2%	-4.3%	Wilmerding	16.8%	-2.0%	Crafton	22.0%	2.3%
Glassport	6.6%	-10.6%	Green Tree	14.2%	-4.2%	Baldwin Borough	16.9%	-2.0%	Shaler	22.2%	2.5%
Dravosburg	6.7%	-10.5%	Wall	14.3%	-4.2%	Lincoln	17.1%	-1.8%	Oakdale	22.3%	2.5%
West Elizabeth	7.1%	-10.2%	Versailles	14.3%	-4.1%	Forward	17.1%	-1.8%	Frazer	22.4%	2.6%
Elizabeth Borough	7.1%	-10.2%	Whitaker	14.4%	-4.0%	Castle Shannon	17.1%	-1.8%	Indiana	24.5%	4.4%
Brackenridge	7.2%	-10.1%	East Deer	14.5%	-4.0%	Bethel Park	17.1%	-1.8%	Findlay	25.7%	5.4%
McDonald	7.6%	-9.8%	Wilkins	14.7%	-3.8%	Ingram	17.4%	-1.5%	Oakmont	25.8%	5.5%
Harmar	8.2%	-9.2%	Coraopolis	14.7%	-3.8%	Kennedy	17.5%	-1.5%	Osborne	25.8%	5.5%
Port Vue	8.4%	-9.1%	Turtle Creek	14.7%	-3.8%	Ross	17.6%	-1.4%	Pittsburgh	26.1%	5.7%
Pitcairn	8.6%	-9.0%	Brentwood	14.7%	-3.8%	Moon	17.7%	-1.3%	Fox Chapel	26.4%	6.0%
Emsworth	9.1%	-8.5%	Thornburg	14.8%	-3.7%	McCandless	17.9%	-1.1%	Bell Acres	26.8%	6.3%
Munhall	9.5%	-8.2%	East Pittsburgh	14.9%	-3.6%	Pine	18.0%	-1.1%	Kilbuck	28.1%	7.4%
Tarentum	9.5%	-8.1%	Stowe	15.0%	-3.6%	Fawn	18.0%	-1.0%	Sewickley	30.9%	9.8%
Mount Oliver	9.6%	-8.1%	McKeesport	15.3%	-3.3%	Roslyn Farms	18.0%	-1.0%	Pennsbury Village	31.8%	10.6%
Springdale Township	9.7%	-8.0%	Pleasant Hills	15.3%	-3.3%	South Park	18.1%	-1.0%	South Versailles	32.4%	11.0%
Liberty	9.8%	-7.9%	Ben Avon	15.5%	-3.1%	Avalon	18.3%	-0.8%	Sewickley Heights	34.2%	12.5%
East McKeesport	10.0%	-7.8%	Jefferson Hills	15.6%	-3.1%	Forest Hills	18.9%	-0.3%	Edgewood	35.9%	14.0%
Cheswick	10.2%	-7.6%	Harrison	15.6%	-3.0%	Richland	19.0%	-0.2%	Sewickley Hills	39.8%	17.2%
White Oak	10.5%	-7.3%	Bellevue	15.7%	-3.0%	South Fayette	19.0%	-0.2%	Edgeworth	41.6%	18.8%
Crescent	10.6%	-7.3%	Churchill	15.7%	-3.0%	Franklin Park	19.2%	-0.1%			

Property Tax vs. Earned Income Tax vs. Sales Tax

- Transparency and ability to compare (free website and enhanced website)
- Secured by property/difficult to evade
- Right to appeal
- Administered locally
- Taxpayer aware of entire liability as opposed to small amounts collected at sale or withholdings
- Low cost of collection especially with mortgage escrow

Disadvantages of Property Taxation

- Tax falls on unrealized gains – no relationship to cash flow especially with fixed income (exemptions required)
- Large lump sum payments make magnitude of tax more apparent
- Often no relationship between property value and government function being supported like schools
- Transparency and perception of inequity
- Resource intensive as opposed to voluntary reporting of income and sales tax

Cost vs. Price vs. Market Value vs. Assessed Value... what the heck is the value?

- It cost the owner \$67,000 to build the house: the assessor placed a value of the house at \$68,000 and the property was listed at \$70,000 and finally sold for \$68,500 or...
- Swimming pool in Pittsburgh

HOW IT REALLY WORKS

The market has many forces affecting value including supply and demand, motivation of buyers and sellers and normal wear and tear.

When similar properties are sold during the same time frame, a range of sales prices results.

Assessed values reflect a blending of the sales.

Market Value in the Field

Wants \$150,000

**Will accept
\$130,000**



\$140,000 Will pay

**\$125,000 Wants
to pay**



Mass Appraisal

- IAAO - The process of valuing a group of properties as of a given date, using standard methods, and allowing for statistical testing. Removed from Allegheny County Administrative Code (**IAAO Standard for Mass Appraisal**)
- CAMA – Using the database and analysis tools available with computer software to build robust models capable of replicating the pricing conditions within the market. CAMA is most practical and cost effective approach when valuing 562K parcels.
- A statistical approach to equity and uniformity

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GENERAL MASS APPRAISAL TECHNIQUES

Mass appraisal is the process of valuing a group of properties as of a given date using common data, standardized methods, and statistical testing

MASS APPRAISAL PROCESS

Data Collection

Sales Validation

Neighborhood Delineation

Calibrate Models

Valuation Technique

Reconciliation

Statistical Review of Results

Appeals

Certification



DATA COLLECTION

- Most expensive function – one time
- Select characteristics carefully
- Data collection manuals developed
- Data entry
- Continual cleansing via permits, appeal disclosures, scheduled site visits, mailers and administrative changes

SALES VALIDATION

- 50,000 deed transfers
- Initial review
- Labor intensive, mailers, site visits and neighborhood review
- Love and Affection
- Multi parcel sales
- Personalities
- Valid sale
- Unverified declared valid
- Invalid
- Sheriff Sale
- Outlier

NEIGHBORHOOD DELINEATION

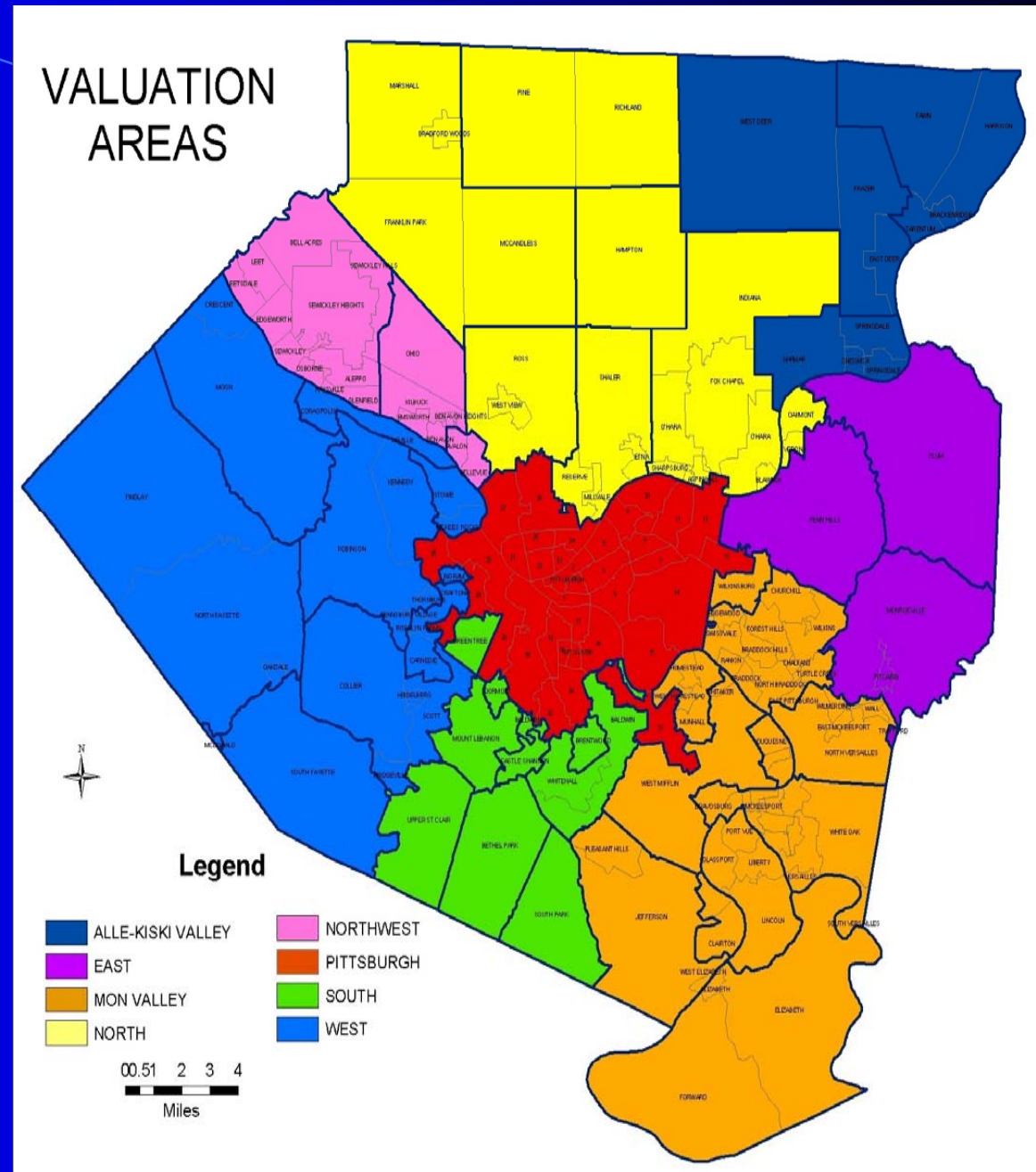
- 2,500 different neighborhoods based on homogeneity...the cornerstone of residential valuation...valuation process is neighborhood specific
- Physical
- Economic
- Governmental
- Social / demographic

NEIGHBORHOOD DELINEATION

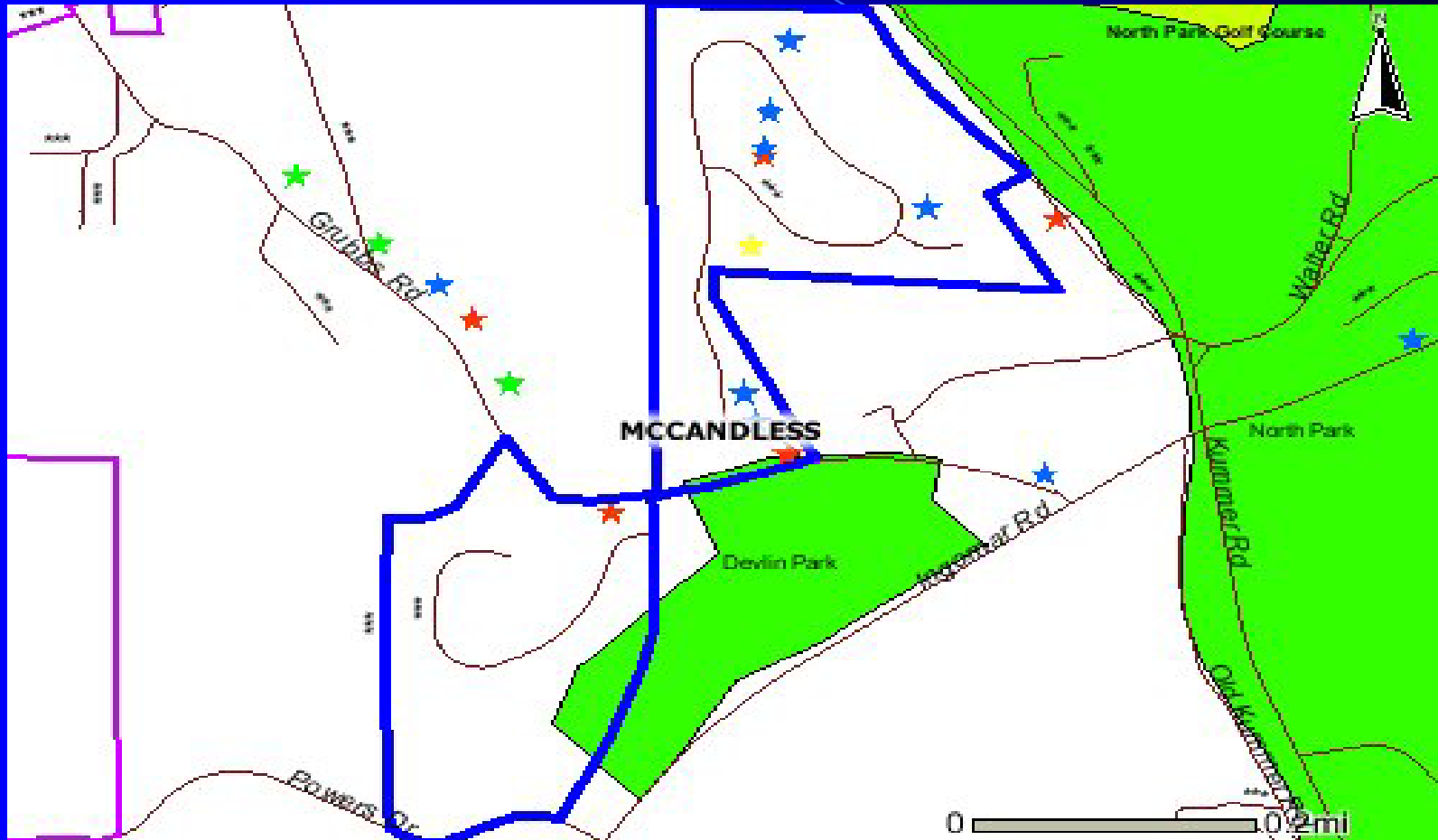
- Can be very difficult in certain areas
- Basis of valuation process
- Requires a good sampling of sales
- Can't be too small or too large
- Can not extend beyond muni borders
- Can be dynamic
- Can be corrected?

Neighborhood (2,500) Break Down By:

1. Geography
2. Location
3. Price Range
4. Property Age



- General Information
- Building Information
- Tax Information Pay Taxes
- Previous Owners
- Image
- Comparables
- Appeal Status
- Maps



OWNER GENERAL INFORMATION



Municipal Code:

927 MCCANDLESS

Parcel ID:

1072-R-00021-0000-00

School District:

North Allegheny

Neighborhood Code:

92724

Owner Name:

GAMBINO DOMINICK J & MONICA (W)

Property Location:

LE GRAND DR

WEXFORD, PA 15090

Tax Code:

Taxable

Sale Date:

6/17/1993

Owner code:

Regular

Sale Price:

\$279,900

State Code:

Residential

Deed Book:

8988

Use Code:

SINGLE FAMILY

Deed Page:

364

Homestead:

Yes

Abatement:

No

Farmstead:

No

Lot Area (SQFT):

26,213



Valuation Model (detail to follow)

- Calibrate the models to determine the contribution of individual characteristics' affect on valuation

RECONCILIATION

- Sales comparison approach
- Cost approach
- Income approach

TESTING THE VALUES FOR EQUITY AND UNIFORMITY

- Sales Ratio Studies
- Horizontal equity
- Vertical equity

C O D – measures average deviation of ratios from the median ratio or horizontal equity

- Trim outliers to avoid distortion & review
- Sort ratios (assessed/sales) and determine median
- Subtract median from each ratio
- Assign absolute deviations
- Sum absolute values
- Determine average of absolute deviations
- Divide average
- Acceptable Range = 15

P R D – measures the dispersion among ratios between low-value and high value properties or vertical equity

- Trim outliers to avoid distortion & review
- Determine weighted mean (weight to each dollar rather than each parcel as the with the mean) ratio by dividing sum of assessed values by sum of all sales
- Determine the mean ratio by summing all ratios and dividing by number of ratios
- Divide mean ratio by weighted mean
- Above 1.0 indicates regressivity (low-value assessed at greater % of market value than high-value)
- Below 1.0 indicates progressivity
- Acceptable range .98 – 1.03

PA STEB CLR

- Below 85 will trigger Common Level Ratio
- Still not correct inequities
- Complicated
- STEB may be the Oversight Agency mentioned in Wettick Order

APPEALS

- Very important function in Mass Appraisal Process
- Prior to certification
- Base year vs. CMV
- 2002 selected as base year
- Appropriate evidence – comp sales
- Property owner ability to argue CMV
- When, who and how
- HPI
- BOV

APPEAL RESULTS

- 100,000 filed on 2001 values
- 100,000 filed on 2002 values (1,200 per day)
- Approx. 15-20% no show rate
- Approx. 75% reduced
- Approx. 25% Sustained or increased

Base Year Approach

- Utilize 2002 as base year
- Measures value based on 2002 market BUT allows value changes based on physical change or “administrative review”
- Appeals determined by comp sales in 2002/Do not use current market EXCEPT owner
- No decrease for depreciating areas or increase in appreciating areas unless appealed
- Political reality
- Who benefits? Perspective of agents/politicians/property owners

The Mystery Unveiled

Allegheny County's
Valuation
Technique

Assessing accuracy improves Despite uproar, reassessments mostly fair

Thursday, January 31, 2002

By David L. Michelmore and Mark Belko, Post-Gazette Staff Writers

Despite public unrest and political backpedaling, the 2002 Allegheny County property assessments are the most fair and accurate the county has produced in years, a Pittsburgh Post-Gazette analysis has concluded.

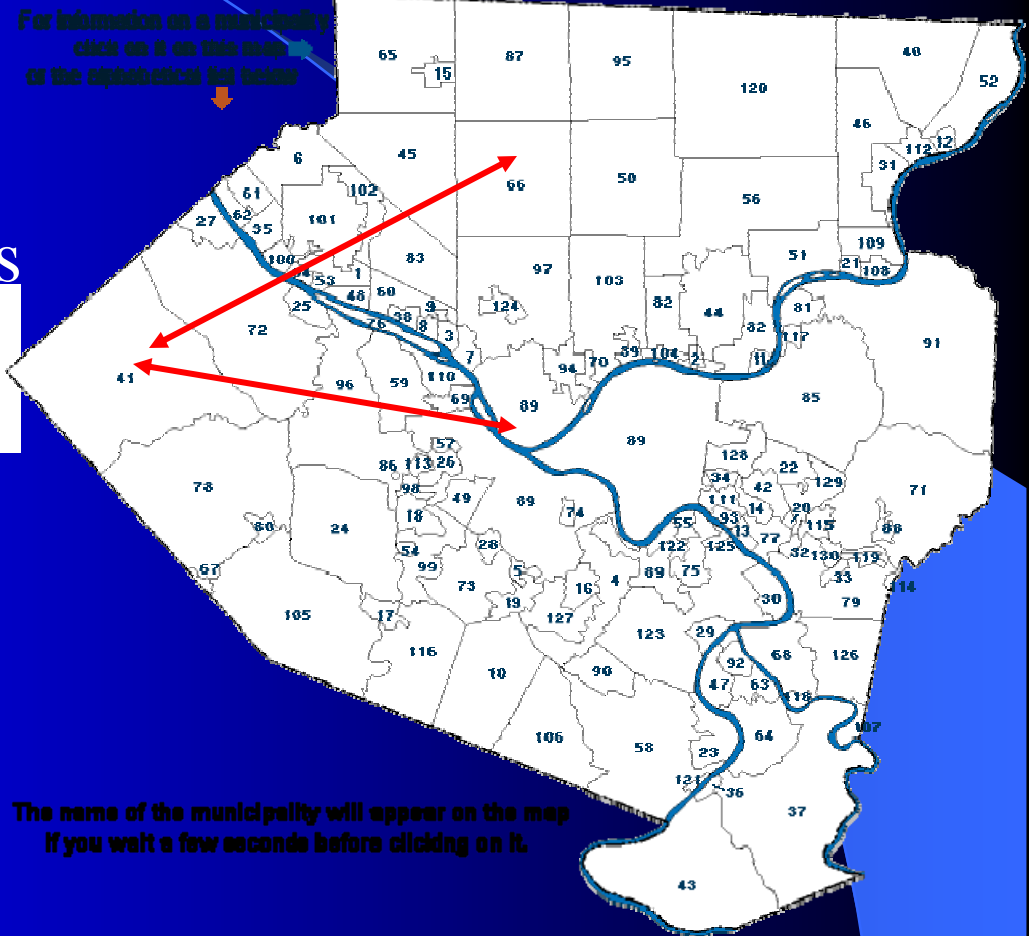
In fact, with the latest round of revaluations, Allegheny County finally seems to have begun bringing its long-standing assessment problems under control. Overall, assessments on 74 percent of the county's residential properties fall within 15 percent of actual value, a review of more than 24,000 sales from 2001 and 2002 showed.

That compares with 56 percent in the accurate range using the 2001 assessment figures on the same sales and only 10.6 percent using the 2000 assessments.

For the first time since the Post-Gazette began examining assessments 11 years ago, the over assessment burden on the very low end of the housing market has eased...(also includes findings of Court Appointed analysis by Consad)

HOW BIG IS THIS TASK?

- 562,000 Parcels
- Doughnut is 3" Across
- 26.61 Miles
- North Side to the Airport to North Park
- 2,956 Dozen Left



THREE METHODS OF VALUATION

- Cost Approach – Supported site value, accurate estimate of the reproduction costs plus a complete estimate of all forms of depreciation (physical, functional and economic/location) that affect the property (utilize Marshall & Swift). Best used with new construction and unique properties. $(\text{Replacement Cost} - \text{Acc Dpr.}) + \text{Land} = \text{Value}$
- Sales Comparison Approach – Reflects most directly the actions of the market. Appraiser must validate sales and choose sales that are similar to or adjustable to the subject based on date of sale, financing, personal property and physical characteristics
- Income Approach – measures the present value of the future benefits of ownership. Income streams and values of property upon resale are capitalized into a present value.

Cost Approach

- Best used for new construction or unique property.

Weaknesses include reliance on correct depr. estimations and land value estimated independently from sometimes scarce sales.

Utilized in areas where model was overstating value from sales, subsidized housing sale prices and new construction.

Sales Comparison Approach

- 95% of residential properties
- Reliability rests on number and quality of sales (sales validation and adjustments)
- Mass appraisals generally involve the use of automated statistical techniques (MRA / comparable sales)

Income Approach

- Preferred approach when reliable income and expense are available, along with well-supported income multipliers and cap rates.
- Multipliers express ratio of market value (sale price) to gross income (monthly or annual).
- Extracted from recent sales

Allegheny County Properties

- 562,000 + Parcels
 - 429,000 + Residential Parcels
 - 122,000 + Commercial & Industrial Parcels
 - 11,000 + Others

IN-HOUSE CHANGES IN REVALUATION

	2001	2002-2006
Sales Validation	1/1/96 – 12/31/99 1/1/98 Sales Value Price > \$10,000	1/1/98 – 6/30/01 4/1/01 Sales Value Price > \$1,000
Model	Feedback Contractor in FL 8 Models	MRA Cooperative Effort 76 Models
Comparable Sales	Illustrative Only	True comparables that determine value

Reassessment Pitfalls or “Learn by Our Mistakes”

- Select a model that can be defended (RFP)
- Determine a calendar – no longer one shot
- Independent appeals process
- Appeal results should remain
- Public and Public Official Education
- In-house involvement and training
- Take possession of the product

2004 - Road to Reval...human interaction



- **Triennial Calendar:**

Implement
IAS/GIS

re-delineate
neighborhoods

validate sales – arms
length transaction

view properties/
cleanse data

review appeal data

calibrate models and
reconciliation



RESIDENTIAL REVALUATION



- Changes in Process
- Four Modeling Steps
 1. Multiple Regression Analysis (MRA)
 2. Comparables
 3. Weighted Average
 4. Market Estimate

MODELING PROCESS

To Calculate Market Estimate Need:

1. MRA Value
2. Comparable #1 Adjusted Sale Price
3. Comparable #2 Adjusted Sale Price
4. Comparable #3 Adjusted Sale Price
5. Comparable #4 Adjusted Sale Price
6. Comparable #5 Adjusted Sale Price
7. Weighted Average of Adjusted Sale Prices

Subject Property



Multiple Regression Analysis

- Determine the relationship between several independent or predictor variables (bedrooms/bathrooms/SFLA/condition/neighborhood) and a dependent variable (value)
- The number of bedrooms or building style, such as a split level, may influence the value more in certain neighborhoods
- Weakness exists outside the bell curve, above and below regression line, with tendency to overvalue low end properties and under value high end properties

Step 1—MULTIPLE REGRESSION ANALYSIS

Look at 30-40 variables

Weight each variable

Calculate MRA value

PRC's available from OPA

Square Foot Living Area

$$\$40.09 \times 1000 = \$40,090$$

Total Fixtures

$$\$1,278.20 \times 6 = \$7,669.20$$

Style (Ranch) = \$1,376.39



VARIABLE	WEIGHT	SUBJECT'S VALUE	ADD TO MRA VAL
CONSTANT		12179.02	\$12,179.00
LAND VALUE	1	35100	\$35,100.00
SQUARE FOOT LIVING AREA	40.09	1000	\$40,090.00
UNFINISHED AREA	-20	0	\$0.00
ATTACHED GARAGE	19.13	0	\$0.00
BAY WINDOW	120	0	\$0.00
POOL	30	0	\$0.00
OUT BUILDING VALUE	1.25	0	\$0.00
BASEMENT GARAGE	2280.56	1	\$2,280.00
FIRE PLACE	3129.52	1	\$3,129.00
TOTAL FIXTURE	1278.2	6	\$7,669.00
AGE ADJUSTMENT (DEPRECIATION)	-0.52	51000	-\$26,520.00
CONDITION ADJUSTMENT	6.23	1000	\$6,230.00
GRADE ADJUSTMENT	45.21	0	\$0.00
AIR CONDITIONING	3.4	0	\$0.00
PORCHES	27.97	16	\$447.00
RANCH	1376.39	1	\$1,376.00
SPLIT	8995.91	0	\$0.00
BILEVEL	4298.33	0	\$0.00
BUNGALO	-4232.28	0	\$0.00
BASEMENT ADJUSTMENT	2059.25	3	\$6,177.00
EXTERIOR WALL ADJUSTMENT	1.38	0	\$0.00
UNFINISHED ATTIC	1000	0	\$0.00
HEATING ADJUSTMENT	2	0	\$0.00
NEIGHBORHOOD ADJUSTMENT	6	0	\$0.00
AGE > 20 ADJUSTMENT	0.3	31000	\$9,300.00
OCCUPANCY ADJUSTMENT	-3565.27	0	\$0.00
ECONOMIC FACTOR ADJUSTMENT	22.16	0	\$0.00
FINISHED BASEMENT ADJUSTMENT	15.41	0	\$0.00
ROW ADJUSTMENT	-12093.49	0	\$0.00
PARKING ADJUSTMENT	-2390.87	0	\$0.00
AGE > 80 ADJUSTMENT	0.28	0	\$0.00
MRAVAL			\$97,457

\$97,457

MODELING PROCESS

To Calculate Value Need:

1. MRA Value = **\$97,457**
2. Comparable #1 Adjusted Sale Price
3. Comparable #2 Adjusted Sale Price
4. Comparable #3 Adjusted Sale Price
5. Comparable #4 Adjusted Sale Price
6. Comparable #5 Adjusted Sale Price
7. Weighted Average of Adjusted Sale Prices

Step 2--COMPARABLES

- All Comps are Sales from 1998-June 2001
- Your property can be one of your comps
- Selection based on similar characteristics
- Adjust sales price
- Sales Comparable Grids available from OPA
- Over 50,000 sales included in model

How It's Really Done

DISTANCE POINTS: a measure of the comparability of the subject and sale properties
County-defined weighted characteristics (locational and physical) determine the value.
The lower the value, the better the comparable.
Market valuation program selects the five best (lowest-valued) comparables.

$$\text{COMP DIST PT} = \sqrt{\{\sum[W_i(X_i - X_i(s))]^2 + \sum[W_j d(X_j, X_j(s))]^2\}}$$

Where W_i = weight associated with the i th continuous variable
 X_i = value of the i th characteristic of sale property
 $X_i(s)$ = value of the i th characteristic of subject property
 W_j = weight associated with the j th classification variable
 X_j = value of the j th characteristic of sale property
 $X_j(s)$ = value of the j th characteristic of subject property
 $d(X_j, X_j(s)) = 0$ if $X_j = X_j(s)$, = 1 if $X_j \neq X_j(s)$

ADJUSTED SALE PRICE: the appropriate model is applied to the subject and each of the comparable sales to obtain regression estimates of subject and sale market values.

$$\text{ADJ SALE PRICE} = \text{Comp Sale Price} + (\text{Regression Estimate of Subject} - \text{Regression Estimate of Sale})$$

WEIGHTED ESTIMATE: a weighted average of the five adjusted sale prices
In essence this is inverse weighting by the expected error in the estimate.
This method reduces the effect of any outlier comparables.

$$W_i = 1 / [(M/2)^2 + D_i^2 + (2M \times P_i)^2]$$

Where W_i = weight for the i th sale
 M = maximum acceptable comparability distance
 D_i = actual comparability distance between i th sale and subject
 P_i = fractional percentage adjustment to the i th sale

MARKET ESTIMATE: the average of the middle three values from the subject's MRA Estimate, the five Adjusted Sale Prices of the comps, and the Weighted Estimate

ADJUSTING SALES PRICE



SUBJECT

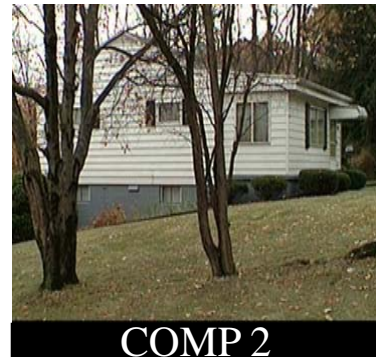
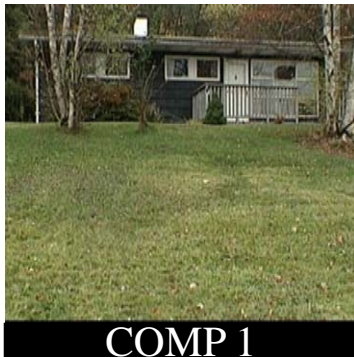
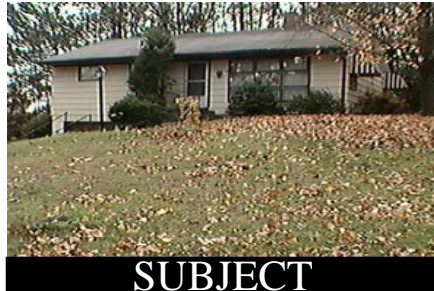


COMP 1

	SUBJECT	COMP1
DISTANCE PT		23
SALE DATE		5/6/1999
SALE PRICE		65,000
MUNI	NH	NH
STYLE	RANCH	RANCH
SQUARE FOOT LIVING AREA	1000	960
BASEMENT	FULL	FULL
EXTERIOR WALL	FRAME	FRAME
YEAR BUILT	1950	1950
GRADE	C	C
CONDITION	GOOD	FAIR
ADJ SALE PRICE		86,686 ←

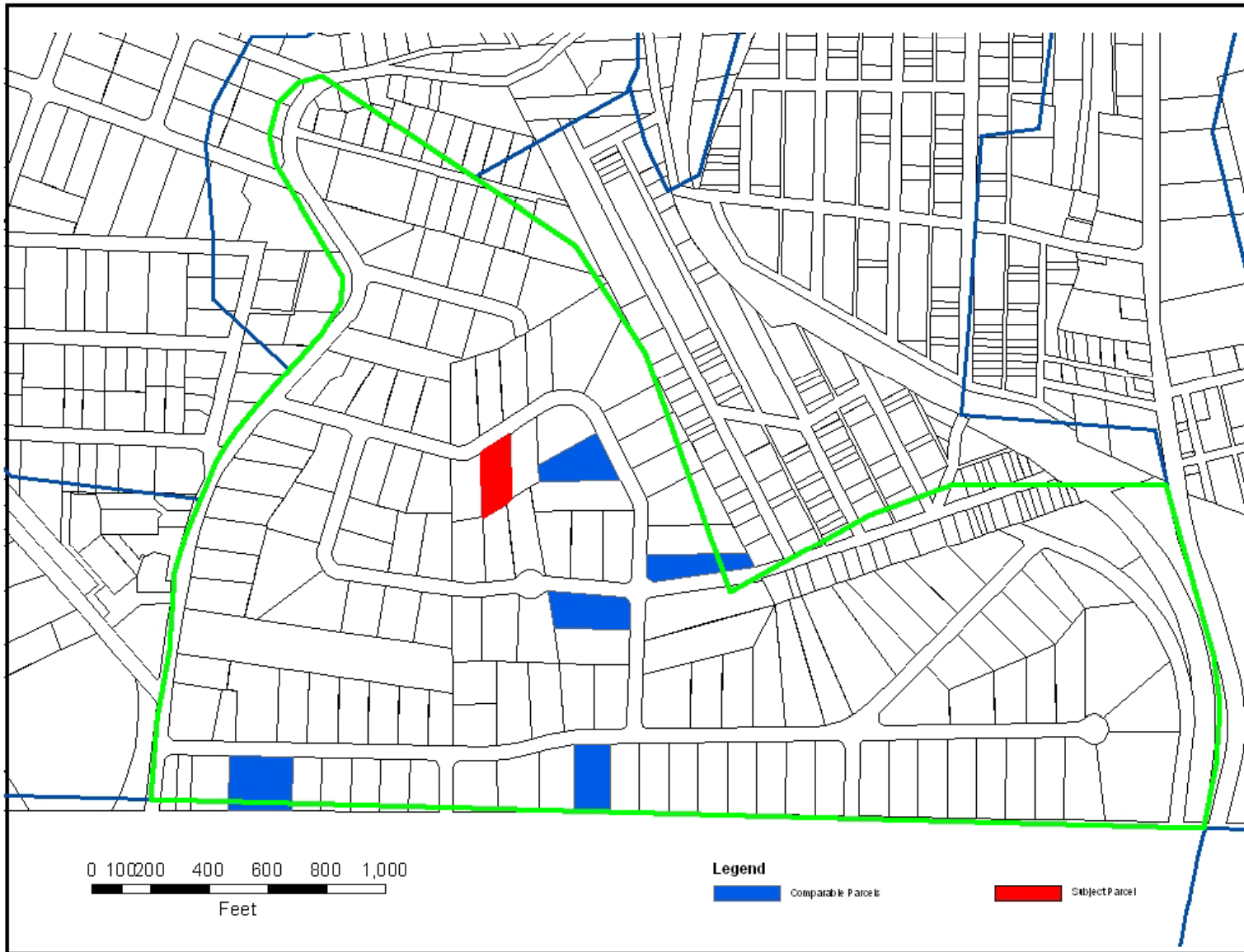
DISTANCE POINT assigns a grade to each comparable based on the parameters set by the assessor during the comparable selection process

ADJUSTING SALES PRICE



	SUBJECT	COMP1	COMP2	COMP3	COMP4	COMP5
DISTANCE PT		23	37	43	57	58
SALE DATE		5/6/1999	5/26/2000	9/30/1998	5/23/2001	4/29/1998
SALE PRICE		65,000	85,000	85,000	79,000	69,000
MUNI	NH	NH	NH	NH	NH	NH
STYLE	RANCH	RANCH	RANCH	RANCH	RANCH	RANCH
SQUARE FOOT LIVING AREA	1000	960	819	840	792	1000
BASEMENT	FULL	FULL	FULL	FULL	FULL	FULL
EXTERIOR WALL	FRAME	FRAME	FRAME	FRAME	FRAME	BRICK
YEAR BUILT	1950	1950	1950	1950	1950	1955
GRADE	C	C	C	C	C-	C
CONDITION	GOOD	FAIR	AVERAGE	VERY GOOD	AVERAGE	AVERAGE
ADJ SALE PRICE		86,686 ←	97,320 ←	88,384 ←	93,199 ←	84,996 ←

COMPARABLES



MODELING PROCESS

To Calculate Value Need:

1. MRA Value = \$97,457
2. Comparable #1 Adjusted Sale Price = \$86,686
3. Comparable #2 Adjusted Sale Price = \$97,320
4. Comparable #3 Adjusted Sale Price = \$88,384
5. Comparable #4 Adjusted Sale Price = \$93,199
6. Comparable #5 Adjusted Sale Price = \$84,996
7. Weighted Average of Adjusted Sale Prices

Weighted Average = similar to an arithmetic mean, where instead of each value contributes equally, some will contribute more. In other words the better comps will weigh more heavily on the final average.

WEIGHTED AVERAGE in this instance is a market adjustment based on distance points and adjustment to the original sales amounts

Weighted Average Calculation-Comp #1

- **WEIGHTED ESTIMATE:** a weighted average of the five adjusted sale prices
- In essence this is inverse weighting by the expected error in the estimate.
- This method reduces the effect of any outlier comparables.

$$W_i = 1 / [(M/2)^2 + D_i^2 + (2M \times P_i)^2]$$

Where

W_i = weight for the ith sale

M = maximum acceptable comparability distance

D_i = actual comparability distance between ith sale and subject

P_i = fractional percentage adjustment to the ith sale

- $W_{1n} = 1 / [(100/2)^2 + 23^2 + ((2 * 100) * ((86,686 - 65,000) / 65,000))^2] = .159$

Step 3--CALCULATE THE WEIGHTED AVERAGE

$$\begin{aligned}\text{Weighted Average} &= \text{Wgt}_1 \times \text{Adj Price}_1 \\ &+ \text{Wgt}_2 \times \text{Adj Price}_2 \\ &+ \text{Wgt}_3 \times \text{Adj Price}_3 \\ &+ \text{Wgt}_4 \times \text{Adj Price}_4 \\ &+ \text{Wgt}_5 \times \text{Adj Price}_5\end{aligned}$$

$$\begin{aligned}\text{Weighted Average} &= (0.159) \times 86,686 + (0.253) \times 97,320 \\ &+ (0.27) \times 88,384 + (0.169) \times 93,199 \\ &+ (0.149) \times 84,996 \\ &= \$90,685\end{aligned}$$

MODELING PROCESS

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6. Comparable #5 Adjusted Sale Price = \$84,996
7. Weighted Average of Adjusted Sale Prices – \$90,685

Step 4--CALCULATE MARKET ESTIMATE

1. MRA Value = ~~\$97,457~~
2. Comparable #1 Adjusted Sale Price = ~~\$86,686~~
3. Comparable #2 Adjusted Sale Price = ~~\$97,320~~
4. Comparable #3 Adjusted Sale Price = \$88,384
5. Comparable #4 Adjusted Sale Price = \$93,199
6. Comparable #5 Adjusted Sale Price = ~~\$84,996~~
7. Weighted Average of Adjusted Sale Prices = \$90,685

Step 4--CALCULATE MARKET ESTIMATE

Average remaining three values

- | | |
|---|----------|
| 4. Comparable #3 Adjusted Sale Price = | \$88,384 |
| 5. Comparable #4 Adjusted Sale Price = | \$93,199 |
| 7. Weighted Average of Adjusted Sale Prices = | \$90,685 |

Subject Property



$$\begin{aligned}\text{Market Estimate} &= (88,384 + 93,199 + 90,685) / 3 \\ &= \$90,700\end{aligned}$$

Sales comp grid available at OPA

Statewide Plan

- Education for Officials and Property Owners
- Data collection via local input
- Neighborhood delineation via local input
- CAMA and Modeling with outside assistance – piggy-back contracts
- Not all counties are the same – triggers
- STEB

FOR NERDS' EYES ONLY

In Search of Equity and Uniformity

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Appreciation of Value

2001 Assessment Normalized to 01/01/98 and appreciated by 3%						
2001 Assessment	01/01/98	01/01/99	01/01/00	01/01/01	04/01/01	
\$79,000	\$79,000	\$81,370	\$83,811	\$86,325	\$87,189	
87.10%		89.71%	92.40%	95.18%	96.13%	
2001 Assessment Normalized to 01/01/98 and appreciated by 4%						
2001 Assessment	01/01/98	01/01/99	01/01/00	01/01/01	04/01/01	
\$79,000	\$79,000	\$82,160	\$85,446	\$88,010	\$89,180	
87.10%		90.58%	94.21%	97.03%	98.32%	
2001 Assessment Normalized to 01/01/98 and appreciated by 5%						
2001 Assessment	01/01/98	01/01/99	01/01/00	01/01/01	04/01/01	
\$79,000	\$79,000	\$82,950	\$87,098	\$89,710	\$91,209	
87.10%		91.46%	96.03%	98.91%	100.56%	
2001 Assessment Normalized to 01/01/98 and appreciated by 6%						
2001 Assessment	01/01/98	01/01/99	01/01/00	01/01/01	04/01/01	
\$79,000	\$79,000	\$83,740	\$88,764	\$91,427	\$93,256	
87.10%		92.33%	97.87%	100.80%	102.82%	