Executive Summary

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Review of the Indiana County, Pennsylvania,

Reassessment of 2015

For

The Indiana County Commissioners

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EXECUTIVE SUMMARY: REVIEW OF 2015 THE REASSESSMENT OF INDIANA COUNTY, PENNSYLVANIA

Overview

This is a summary of a review of the recently completed general reassessment of Indiana County, Pennsylvania, made by Almy, Gloudemans, Jacobs & Denne, Property Taxation and Assessment Consultants (AGJD) at the request of the Commissioners of Indiana County. The report of this review has three parts: this summary, the full technical report, and an appendix containing a graphical analysis of land pricing tables. The review sought answers to the six questions discussed below. It had two main elements:

1. A sales ratio analysis of the accuracy and uniformity of the new assessed values and

2. A high-level review of the valuation methods and procedures employed by the County and its contractor, Evaluator Services and Technology, Inc. (EST).

The sales ratio analysis (or "ratio study") was a statistical analysis made in our offices using data mostly supplied by EST. The review of valuation methods and procedures drew upon documentation provided by EST and upon interviews conducted during a site visit to the county, 2-4 December 2015. In addition to interviews with EST and County Assessment Office personnel, we benefitted from presentations made by landowners and other concerned parties. The County Commissioners provided background and facilitated our review. We are grateful for the cooperation and contributions made by all.

1. Are vacant, commercial, and residential properties appraised consistently with relevant legal requirements and in compliance with the contract between EST and the County?

First, we address legal requirements. The Pennsylvania Constitution in Article VIII, Section 1, requires uniformity in taxation, which implies uniformity of assessment as well as uniformity in tax rates. By uniformity in assessment, we mean assessed values that are a reasonably uniform fraction of market values in the year in which taxes are assessed.

The most relevant statute is the Consolidated County Assessment Law (Title 53, Chapter 88). Unfortunately, this statute contains little or nothing that reinforces the Constitution's uniformity requirement, at least with respect to uniformity in assessment. In fact, its toleration of indefinite and sometimes long intervals between reassessments guarantees non-uniform assessment. Statu-

tory administrative appeal procedures are at best a piecemeal solution. Aside from evidence of non-uniform assessment summarized below, we believe that the reassessment was made in compliance with legal requirements. (In our full report, a separate document, we comment on what we consider to be defects (or missed opportunities) in the law that contribute to the difficulties in appraising properties and in making ratio studies in Pennsylvania.)

Turning to the contract between EST and the County, we believe that county officials acted prudently and that EST acted in good faith. We note, however, that the agreement is based on EST's standard contract and, hence, has language that arguably is favorable to the firm. Specifically, it contains few measurable performance standards, and it has very little to say about valuation. The agreement called for the creation of a Joint Management Council (JMC) composed of representatives of EST and the County. The Council served in an oversight role, and the contract gave it responsibilities for approving policies and work, which arguably blurred ultimate accountability for problems with performance. The agreement also contains a "force majeure" clause, which excuses delays caused by acts of God and came into play with last year's extreme winter weather. Thus, it is very difficult for us to say that EST failed in some legally accountable way.

However, in the agreement EST promised to comply with professional standards, namely Standard 6, Mass Appraisal, of the Uniform Standards of Professional Appraisal Practice (USPAP) and the technical standards of the International Association of Assessing Officers (IAAO). Although the agreement is not explicit about which standards EST had in mind, there are aspects of the reassessment that fall short of standards and best practices, as discussed under questions 3 and 4, below.

2. Have available sales been appropriately screened so that all potentially usable sales are considered in both appraisal analysis and sales ratio studies?

The short answer is "no." But before explaining why, some background is important. In screening sales for a ratio study, the guiding principle is that a sale should be used unless there is a specific reason (or reasons) for not regarding it as an open-market, arm's-length sale. Such reasons should be stated. Parallel considerations apply in screening sales for use in appraisal analyses, although more sales are usable in appraisal than in ratio studies, because concerns about a mismatch between the property sold and the property appraised do not apply.

Returning to how sales were screened for the reassessment, there are extenuating circumstances over which the County Assessment Office, and by extension EST, has little control.

1. Pennsylvania law does not require adequate disclosure of accurate information about sales. It is possible to report an inaccurate price; it is not necessary to provide background information about the sale.

2. The procedures and code sets promulgated by the State Tax Equalization Board (STEB, now the Tax Equalization Division of the Department of Community and Economic Development or "TED") encourage underuse of available sales data (although EST took some steps to avoid that).

3. The County Assessment Office heretofore has not maintained a "sales file," a file of sale records that contained a separate record of each sale that contained information about the property that was sold together with price and other information about the sale.

4. The way the County's parcel identification system accommodates divisions of parcels introduces uncertainty about the size and shape of "parent" parcels so that a property when assessed may differ from the property when sold

The results are inaccurate price information, insufficient information being available to screen sales adequately, too few sales being used in appraisal (multi-parcel sales were not used), and ambiguities about the state of the property when it was sold. Besides unnecessarily limiting the sales used in appraisal, EST was not explicit about which sales it used or how. These conditions made our ratio study more difficult.

3. What is the level and uniformity of assessments for each major property group and for major geographic areas of the county?

At the outset, our findings pertain to the proposed assessments that were communicated 1 July 2015 to taxpayers. We understand that some assessments were revised before the initial appeal deadline. We did not have an opportunity to review those assessments or the assessments that were revised as the result of an appeal.

Some background on sales ratio studies will be helpful in understanding our conclusions about the level and uniformity of assessments. (Readers interested in more information are encouraged to consult the *Standard on Ratio Studies* published by the International Association of Assessing Officers (IAAO) in 2013 and *Fundamentals of Mass Appraisal*, also published by IAAO.)

The statistics calculated in our ratio study estimate the *level* of value (assessment) and the *uniformity* of values. They also consider whether the computed statistics are *reliable.* We use the *median* ratio as our measure of level of value. There are several aspects to uniformity. If the question is whether two or more groups of property are valued uniformly, their measures of central tendency are compared. If the question is whether all the properties *in* a group are valued uniformly, the *coefficient of dispersion* (COD) is the measure used. Sometimes, the concern is whether high-value properties and low-value properties are valued uniformly. The *price-related bias* (PRB) statistic is used to measure whether inequities vary with the value of the property in-

stead of the more common *price-related differential* (PRD), which has been shown to be unreliable.

The median ratio is the *middle* sales ratio when the ratios are arrayed in order of magnitude. When the total number of sales is even, the median is the arithmetic mean of the two middlemost ratios. The value of the median is affected only by the position, not the magnitude, of other ratios in the array. Because it minimizes the influence of outliers, the median generally is the preferred measure of central tendency when evaluating the quality of a reassessment. For each property group studied, the median should be close to 1.0 (or 100%). In its ratio study performance standards, IAAO considers median ratios within plus or minus 10% of the legal standard to be acceptable. Thus, if 100% is the goal, ratios between 90% and 110% are acceptable.

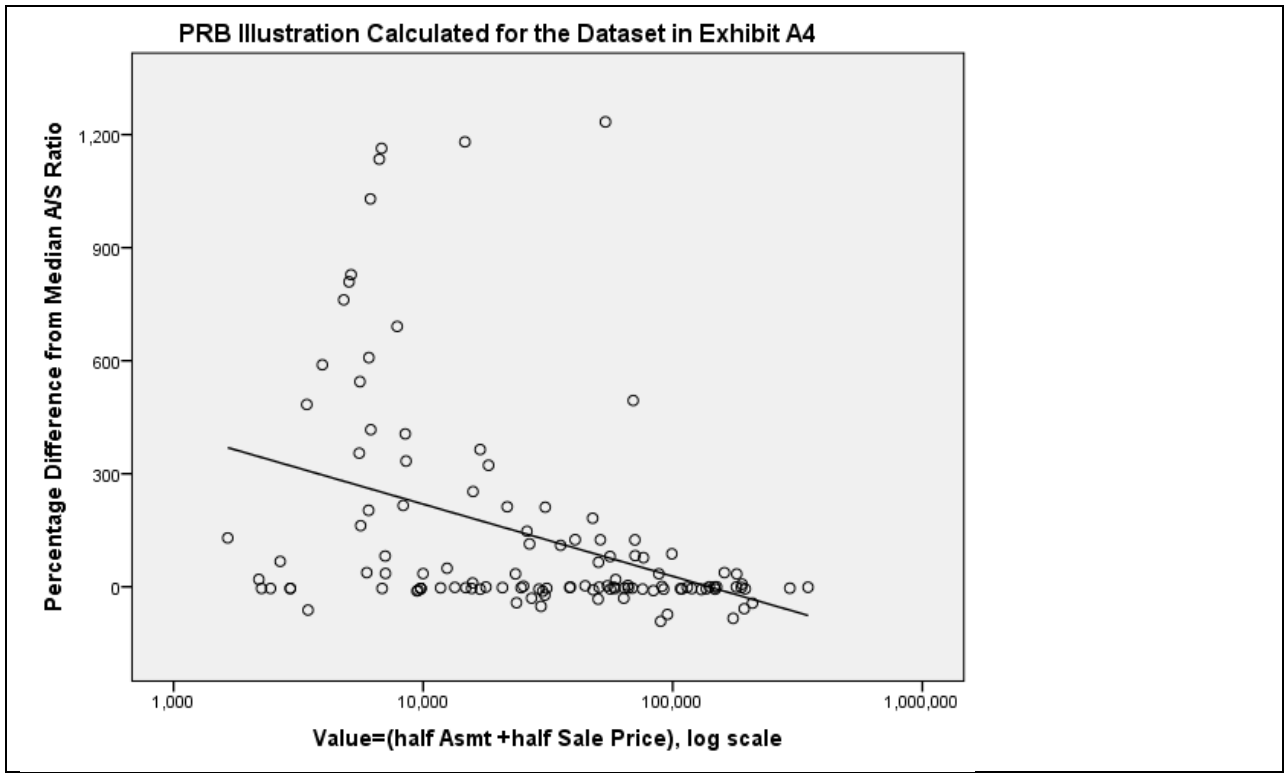
The coefficient of dispersion (COD) is akin to the average error in layman's terms. That is, it measures the average percentage deviation of individual ratios from the median ratio. It is calculated by (1) subtracting the median from each ratio, (2) taking the absolute value (negative signs are ignored) of the differences, (3) summing these values, (4) dividing by the number of ratios to obtain the "average absolute deviation," (5) dividing by the median, and (6) optionally multiplying by 100 (to express the results in percentage terms). In general, the lower the COD is, the more uniform assessments are. However, IAAO considers CODs of 5.0 or below as suspect. The IAAO has established acceptable CODs that vary with the class of property and the nature of the assessment district. We consider Indiana County to belong to the rural or small jurisdiction category, which has older properties, depressed market areas, and little development. The IAAO COD standards for such areas are as follows:

- Residential improved (single family dwellings, condominiums, manufactured housing, 2-4 family units): 5.0-20.0.
- Income-producing properties (commercial, industrial, apartments): 5.0-25.0.
- Residential vacant land: 5.0-25.0.
- Other (non-agricultural rural) vacant land: 5.0-30.0.

The price-related bias (PRB) statistic indicates the percentage by which sales ratios fall (or rise) with each doubling (or halving) of "property value"[1] and thereby the extent to which regressivity (or progressivity) is present in the ratios. As shown in the following exhibit, the PRB is essentially the slope of the regression line through the cloud of data point that results from plotting each ratio on a graph with its height on the vertical axis determined by the difference obtained from subtracting the median ratio from that parcel's actual ratio and its position on the horizontal axis determined by its value. It is reported as a percentage, not as a fraction. Thus a PRB coefficient of -1.410 percent indicates that assessment levels fall by 1.41% for each doubling of value, for example, from $100,000 to $200,000, and fall by another 1.410 percent as values double again from $200,000 to $400,000, and so on. The IAAO standard states that the PRB should

[1] For the purpose of minimizing a bias inherent in ratios, value for this purpose is defined as one half of the assessment and one half of the sales price, thus giving equal weight to each. Using either alone would tend to bias the measure in one direction or the other.

generally lie between ±5% and PRBs outside the range of ±10% are "unacceptable" if statistically significant. Assuming that they are statistically significant at the 95% confidence level (discussed next), values closer to 0 indicate better price-related uniformity. For data affected by high dispersion, as much of the data for Indiana County is, patterns in the data are less clear the PRB compliance threshold is relatively hard to fail.



Because computed statistics, such as the ratio statistics described above, are based on samples, one cannot be sure that they are accurate. Thus, it is desirable to express them in terms of a margin for error. The "95% confidence interval" is a common statistical way of expressing the likelihood that a statistic, such as a median ratio of 89%, accurately describes the level of assessment. A confidence interval has a confidence level (e.g., 95%) and a lower and an upper boundary, say 81% and 103%. In this example, one can be "95% confident" that the true median is between the upper and lower bounds, and one cannot say that the IAAO standard for level of assessment has not been met. Our decisions about whether IAAO standards are met take into account confidence intervals, which are documented in our full report.

Now we can turn to our evaluation of EST's performance. Despite the cooperation of the County and EST, each of the main steps in a ratio study (assembling the data, screening the sales, determining the study groups or "strata," making the statistical analyses, evaluating the results, and communicating our findings) presented challenges. There were tradeoffs among the sales period analyzed, the care that the County and EST took in screening sales, and the various sample sizes. For reasons explained in our report, we deemed it fairest to make parallel ratio studies of the data

sets available to us. Altogether, we analyzed about two dozen property groups (as detailed in our report). For each group of properties studied (vacant land, commercial, etc.), we computed the normal ratio study statistics that are summarized below. The following table summarizes our findings.

Summary of Ratio Studies

Study	Number	Median		Consistency	COD		PRB	
		Statistic	P/F		Statistic	P/F	Statistic	P/F
Land								
Best	37	1.600	F	F	0.478	F	-12.849	P
Easiest	121	1.045	P	P	1.818	F	-51	F
Commercial								
Best	20	1.013	P	P	0.367	F	-12.212	P
Easiest	83	1.063	P	P	0.148	P	0.971	P
Residential								
Best	196	1.013	P	P	0.262	F	-15	F
Easiest	1,354	1.007	P	P	0.155	P	32	F

The "best" studies are so named because the sales used in them mostly occurred after EST completed its model building and thus do not directly affect the models. Their main disadvantage is that the numbers of properties in the samples are comparatively small. The "easiest" studies are so named because some of the sales used in the studies likely were used in model building; hence they do not constitute an independent test of performance. Thus, the "best" studies are independent of sales used in the reassessment, while the "easiest" studies use the same sales, making it easier to obtain favorable results.

The "Number" column displays the number of sales in the respective samples.

The two columns headed by "Median" display, first, the median sales ratio and, second, whether the IAAO standard for level of assessment was met at the 95% confidence level. That is, there is not sufficient evidence to conclude that the level of assessment lies outside of 0.9 to 1.1. "P" means that the IAAO standard was met (that is, the test was "passed"); "F" means, "failed" (or that the standard was not met). "P" and "F" have the same meaning in the other columns. Recall that when samples are small and the ratios vary, it is difficult to fail some tests.

"Consistency" has to do with whether the median ratios for sub-categories in the class are within plus or minus 5% of the overall ratio.

The two columns headed by "COD" display, first, the coefficient of dispersion for the sample and, second, whether it meets the IAAO standard for the category of property.

The two columns headed by "PRB" display, first, the computed statistic for price-related bias and, second, whether the statistic is significant at the 95% confidence level.

With the exception of vacant land and apparent regressivity for residential properties (which may include up to ten acres of land), these data suggest the results of the reassessment generally pass the standards promulgated by the International Association of Assessing Officers. The other studies we made generally support this conclusion.

4. Do valuation methods comply with valuation standards promulgated by IAAO and the Uniform Standards of Professional Appraisal Practice (USPAP) promulgated by the Appraisal Foundation?

General compliance with professional standards is difficult to answer for several reasons. As mentioned, EST was not clear about the standards with which it meant to comply. In addition, in a conflict between standards and Pennsylvania law, the law is supreme. Notably, EST places appropriate emphasis on using the sales comparison and income approaches to value. However, compliance with standards can be questioned in the following areas.

First, with respect to USPAP, Standard 6, Mass Appraisal, Development and Reporting, the USPAP Preamble contains the following statement:

> "STANDARD 6 establishes requirements for the development *and communication* [emphasis supplied] of a mass appraisal."

The standard is:

> "In developing a mass appraisal, an appraiser must be aware of, understand, and correctly employ those recognized methods and techniques necessary to produce and communicate credible mass appraisals."

Thus far, EST has not demonstrated that its vacant land models are credible. EST has only asserted the theoretical basis (contributory value) of its models, presented "cherry-picked" ratio study results that purport to demonstrate the power of the models, and given taxpayers access to their own assessment and those of a few comparison properties.

It should be understood that the valuation profession and mass appraisal practitioners in particular embrace a wide range of sophistication ranging from mechanical applications of the cost approach to sophisticated geo-statistical modeling. Compliance with valuation standards is seldom cut-and-dried. All appraisers face data constraints that limit the credibility of their analyses.[2]

[2] This observation also applies to some of the appraisers engaged by large landowners.

While EST's focus on the contributory value of various property attributes is attractive theoretically, in practice, the tabular models used by EST in land valuation (and to a lesser extent, residential improvement valuation) require the appraiser to extrapolate well beyond available indicators of value to populate the tables in order to apply them to the mass of properties being appraised.

Second, the ratio studies that EST produced to defend its models are based on 1,105 sales that tend to confirm the accuracy of the assessments. That is, either the sales were selected to confirm the assessments (so-called "cherry-picking") or valuation models were based on a non-representative sample of the properties to be appraised (which resulted in the models over-fitting the sales on which they were based). In any event, EST published ratio study statistics that suggested the general level of assessment was invariably very close to 100 percent (the legal standard). Furthermore, EST's CODs except in a very few instances were *less than* 5 percent, which in the view of the IAAO *Standard on Ratio Studies* casts doubt on the validity of the study, either because of "sales chasing" or "cherry picking," as discussed under the fifth question (next).

Third, and most important, our ratio study results (as summarized above) suggest that in parts of the County, land is over-valued, demonstrating that some of the land models are incapable of producing credible values. Superficially, it appears that in some instances, base rates are too high. Given the reported volume of appeals of vacant land assessments, this may no longer be the case.

5. Are sold and unsold properties appraised consistently based on the same market criteria?

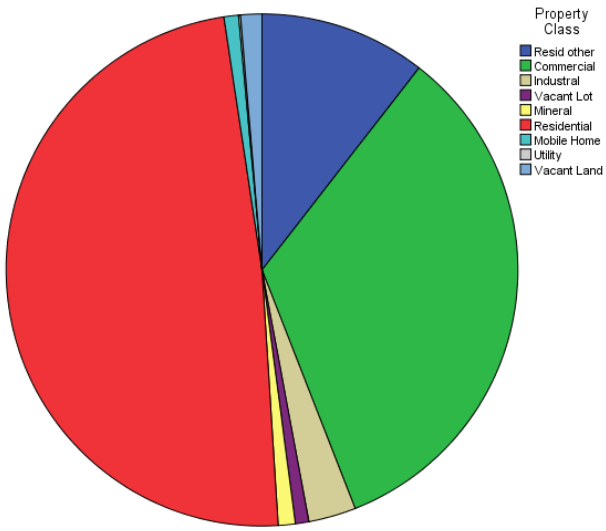
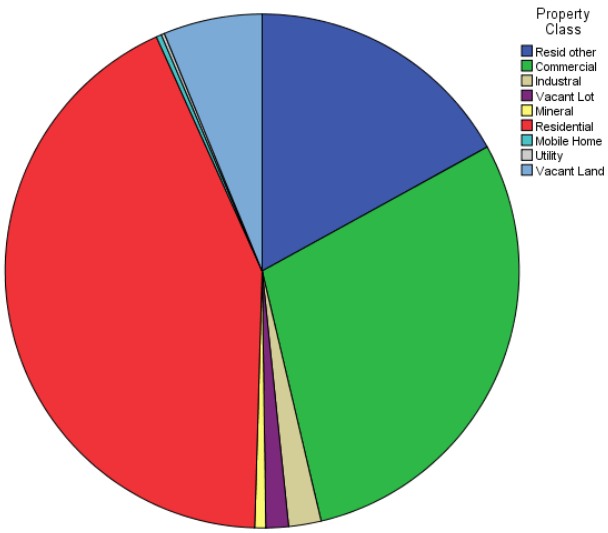
Aside from land valuation (and possibly other) models that over-fit the sales data used in model development, we do not think that there was any discriminatory application of mass appraisal models. The problem is that the models were tailored to a small subset of the population, those that were believed to have recently been part of arm's-length sales (that is, the models were over-fit), so that their application to a larger set of properties with different characteristics was less reliable.

6. What improvements to appraisal models, formulas, and rates can be made in the short term to improve assessment equity and fairness?

At the outset, we believe most of the outcry about the reassessment can be attributed to the shifts in property values in the County over the 47-year interval since the last reassessment. They presage individual and collective shifts in property tax obligations, as the following figure suggests. Each slice of the pie charts represents the proportion of total assessed value ascribed to a property class in EST's classification scheme. The light blue slices at the top of the charts show that the share of total assessment value to be borne by "vacant land" has increased. The narrow-

er purple slices at the bottoms show that the proportion of total assessed values ascribed to "vacant lots" also has increased. Meanwhile, the proportions to be borne by residential and commercial properties (the red and green slices, respectively) have decreased. The issue that our review addresses is whether the values on which the slices are based are generally accurate, not the shifts in the shares themselves, because such shifts are to be expected after almost half-century.

Shifts in the Composition of the Property Tax Base before and after the Reassessment

Previous Distribution in Assessed Values	Proposed, New Distribution
	

What is perhaps unappreciated (and which the figure sheds no light on) is the degree of assessment and tax inequities that had built up over the decades. These are more dramatic than the shifts. Our studies of the old assessment reveal that median assessment ratios ranged from 2 percent for tracts of vacant land of 10 or more acres, to about 11 percent for vacant lots of less than an acre, to more than 20 percent for small commercial properties. With different groups at 2 and 20 percent levels of assessment, the owners of one type of property were, on average, paying property taxes at an effective rate ten times higher than owners of another type of property for at least some fraction of the decades since the last reassessment. Average errors for properties of the same type, as measured by the COD, ran from 33 percent for residential property, through 43 percent for commercial properties, to over 200 percent for parcels of vacant land. (The legislation that rolls back tax rates is powerless to address the tax shifts within the County that attend the correction of the massive property tax inequities that prevailed before the reassessment.)

Despite its flaws, we do not believe the reassessment should be abandoned. The improvements in valuation accuracy and fairness are too great. To continue to tax property on the basis of the existing assessed values would be unconscionable.

It seems to us that legal and time constraints limit what can be done technically to improve the 2015 assessments. That is not to say that work on improving valuation models cannot go for-

ward so that when property is split or subdivided in future years, the assessments align more closely to 2015 market values. Unless it is illegal to do so, guidance could be provided to the Board of Assessment Appeals on applying improved valuation models in an equitable manner and property values could be updated in the not too distant future, say in two years, to encompass such improvements

Any initiatives the County officials can take to bring about improvements in Pennsylvania's property tax system are to be encouraged. The body of our report contains a number of recommendations (some of which have been mentioned here) for legislative and procedural improvements.