



Susan Combs
Texas Comptroller of Public Accounts

The Property Value Study and How to Protest

January 2008



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Definitions

Appraisal Ratio – The ratio of an individual property’s appraised value shown on the appraisal roll to its market value.

Appraisal Roll Value – The property value estimated by the appraisal district after any Appraisal Review Board adjustment.

Coefficient of Dispersion (COD) – The COD measures how tightly or loosely the individual sample ratios are clustered around the median. The lower the COD, the more ratios are close to the median.

Confidence Interval – Measure of the reliability of the Comptroller’s estimate of school district value; expressed as a plus or minus margin of error range around the sum of Property Tax Division value estimates for tested categories.

Eligible School District – A school district that has invalid local value in the current year; valid local values in the two preceding years; and an aggregate local value in the current year that is not less than 90 percent of the lower limit of the margin of error.

Grace Period – A two-year period when local appraisal roll value is used as the estimate of the total taxable value in an eligible school district even though the local appraisal roll values are invalid.

Invalid Value – Local values outside the margin of error.

Local Value – For an individual property, the appraisal district’s appraised value; for a school district, the appraisal district’s total appraised value less the total amounts listed in Government Code Section 403.302(d) as determined by the appraisal district.

Margin of Error – An acceptable range of values within a school district or one-half of the confidence interval (expressed as a percentage).

Market Value – The price at which a property would transfer for cash or its equivalent under prevailing market conditions if exposed for sale in the open market with a reasonable time for the seller to find a purchaser, both the seller and the purchaser know of all the uses and purposes to which the property is adapted and for which it is capable of being used and

of the enforceable restrictions on its use, and both the seller and purchaser seek to maximize their gains and neither is in a position to take advantage of the exigencies of the other.

Median Level of Appraisal – The measure of accuracy of an appraisal district’s appraisals in relation to the standard of 100 percent of market value is known as the median level of appraisal. It is also explained by the middle ratio in a list of appraisal ratios from a property category or appraisal district sorted by size (low ratio to high ratio or vice versa).

Outliers – Properties with abnormally high or low ratios that can distort ratio studies.

Property Tax Division (PTD) – PTD is the division of the Comptroller’s office responsible for conducting the Property Value Study (PVS).

Price-Related Differential (PRD) – The PRD is the measure of inequity that may arise from systematic differences in the appraisal of low-value and high-value properties. Only an indicator—cannot alone prove vertical equity or inequity.

Sales Chasing – The practice of using the sale of a property to trigger a change in appraised value of that property to (or near) the property’s selling price.

State Value – For an individual property, the market value determined by the state; for a school district, the total taxable value in a school district as determined in the PVS.

Stratify – Placing similar properties into groups based on use, value or some other value-related characteristic.

Valid Value – Local values inside the margin of error.

Value-Stratified Weighted Mean – Ratio mechanism to adjust the sample to be representative of the values in the property population from which it is taken.

Weighted Mean Appraisal Ratio – Giving more weight to higher values of individual properties in a sample is known as the weighted mean appraisal ratio. It is calculated by dividing the sum of the county appraisal district (CAD) appraisal roll values by the sum of the market values on properties in a sample.

SECTION ONE:

The Property Value Study

This section presents an overview of the Property Value Study (PVS) and then explains its procedures in detail for those who want an in-depth knowledge of the process. This section refers to the Property Tax Code, the Government Code and the Education Code, which collectively provide the basis for conducting the study, making determinations of value and determining the distribution of state funding to schools.

PVS Overview

The Property Tax Division (PTD) conducts the PVS annually to estimate a school district's taxable property values and to measure central appraisal district (CAD) performance. The PVS is conducted as a ratio study. Property appraisal roll values are divided by their market values which results in a ratio measuring effectiveness of the CAD's appraisals. The appraisal roll value is the property value estimated by the local appraisal district. The market value, in simple terms, is the price for which a property would sell under normal conditions.

In conducting the PVS, the Comptroller of Public Accounts analyzes certain property categories according to generally accepted sampling and statistical techniques to estimate their market value and to calculate appraisal district performance measures. Industrial property, special inventory property, taxable non-business personal property and most property categories with less than five percent of school district value are excluded from the study. Because of these exclusions, the study's findings regarding school district market value and appraisal district performance do not apply to all of the state's properties or property categories. The study's users should recognize these exclusions when citing study findings.

What is the primary purpose of the PVS?

The primary purpose of the study is to help ensure the state distributes funds for public schools equitably.

Texas funds public education through state and local funds. Local funding comes from property taxes. The chief appraiser of each CAD determines local property values and school districts set tax rates that determine the amount of local tax revenue. The state bases its funding on the total taxable property value within each school district as determined by the PVS.

School districts may use the study to monitor their appraisal district's performance. Consulting the study and working regularly with the appraisal district will help ensure that values are uniform and as close to market as possible.

The results of the study can affect a school district's state funding. The Commissioner of Education uses the study to ensure equitable distribution of education funds so school districts have roughly the same number of dollars to spend per student, regardless of the school district's property wealth. School districts with less taxable property value per student receive more state dollars for each pupil than school districts with more value per student.

School Funding Equity Example

If the state were to rely solely on the values set by the 253 Texas appraisal districts, inequitable school funding could result in some school districts. For example, assume that two school districts—school



district A and school district B—are identical in every respect, except that the appraisal district for school district B does a better job appraising property than the appraisal district for school district A. Appraisal districts are required to appraise most property at market value. If the appraisal roll values in school district A are at 75 percent of market value, while the appraisal roll values in school district B are at 100 percent of market value, it would seem that school district A has less taxable property value. As a result, more state funding would flow to school district A, even though the two districts have the same number of students, the same taxable property value and are alike in every way. This is clearly an unfair result.

Court Challenges/State Response

A series of court cases brought in the 1980s by poor school districts challenged the Texas funding system. One of the issues was that property values were not set at uniform percentages of market value in each school district, resulting in an unfair distribution of funds. As part of its response to these court challenges, the Legislature required an independent estimate of taxable property value in each school district to ensure fair school funding.

The state determines this independent estimate through the PVS by adjusting school district appraisal roll values to market value. If the locally appraised value in a school district (local value) is within an acceptable range of the adjusted value (state value), PTD certifies the local value to the Commissioner of Education. If the local value is outside the acceptable range, PTD certifies the state value, unless the school district is eligible for a grace period—a two-year period when the Legislature allows local value be used, even though the school district’s property values are not at market value.

The grace period is intended to help a school district avoid the loss of funding that usually results when state funding is based on state value. A school district avoids this adverse consequence if its appraisal district’s improved appraisal performance results in a PVS finding of valid values in the year following the second year of the grace period. A school district that has had a grace period is not eligible for another until its PVS findings meets specific requirements. The most important of these requirements is a finding of valid values for two consecutive years.

PVS findings of state value do not directly affect local property taxes, which are based on the local appraised values provided by each appraisal district. If the Commissioner of Education uses the PVS state value in the funding formula, however, the school district usually receives less state funding than it expected because a PVS finding of state value is usually higher than the school district’s local value.

Education Code, Chapters 41 and 42, describe how the Commissioner of Education uses the findings of the PVS in the school funding formula to determine state aid. For questions about state aid or the funding formula, contact the Texas Education Agency (TEA) at (512) 463-9238.

What is the secondary purpose of the PVS?

The secondary purpose of the PVS is to provide taxpayers, school districts, appraisal districts and the Legislature with measures of appraisal district performance. PTD achieves this by publishing measures of appraisal level and uniformity, by conducting performance audits and by conducting appraisal standards reviews.

Appraisal Level and Uniformity

Property Tax Code Section 5.10 requires the Comptroller to measure appraisal district performance annually and to publish the results. PTD measures the level and uniformity of property tax appraisals in each appraisal district using data collected in the annual school district study. The level of appraisal shows whether the CAD has appraised typical properties at 100 percent of the legally required



level—normally the market value. The uniformity of appraisal indicates how much the percentage of market value varies from property to property.

Performance Audits

Property Tax Code Section 5.12 requires the Comptroller to conduct a performance audit in each appraisal district that fails to attain specified appraisal level and uniformity measures in the PVS. This section also requires the Comptroller to perform an audit upon the written request of taxing units or taxpayers in the appraisal district, if the request is made in the manner required by §5.12. If PTD performs an audit, the Comptroller's office will send a copy of the findings to the affected school districts so they can work with their appraisal district to improve its performance in the areas that the audit identified as needing attention.

Appraisal Standards Reviews

Property Tax Code Section 5.102 requires the Comptroller to perform an appraisal standards review (ASR) of the appraisal district(s) serving a school district that is in a grace period (eligible school district). The ASR produces a report with recommendations for appraisal districts to address appraisal issues that may have contributed to the PVS finding of state value. School districts that participate in the appraisal district receive a copy of the Comptroller's findings so they can work directly with their appraisal district to improve its appraisal performance.

If the appraisal district fails to take remedial action within a year of the report's issuance, the Comptroller is required to notify the judge of each district court in the county served by the appraisal district. The district judge(s) is required to appoint a five-member board of conservators to take control of the appraisal district. The board of conservators supervises the appraisal district until its member school districts' values are valid according to the PVS.

Other Legal Requirements

Government Code Section 403.302(a) requires the Comptroller to conduct a study to determine the total taxable value of all property in each school district.

Taxable Value

Taxable value is the estimated property wealth of each school district. By law, taxable value equals the market value of all property in a district, minus certain exemptions and deductions. The Comptroller's estimated taxable value reflects deductions for state-mandated homestead and disabled veterans' exemptions as well as value limitations. Deductions are also made for reinvestment zones, freeport exemptions, productivity appraisal of qualified agricultural lands, the school tax ceiling for homeowners age 65 and older or disabled and other state-mandated exemptions.

To estimate school district taxable value, the Government Code requires the Comptroller to:

- use generally accepted sampling, valuation and statistical techniques;
- ensure that different levels of appraisal on sold and unsold property or on properties protested to the Appraisal Review Board on the grounds of unequal appraisal do not adversely affect the accuracy of the study; and
- test the validity of taxable values and presume that appraisal roll values are correct when values are determined to be valid.



Margin of Error

The Comptroller tests the taxable values the appraisal district assigns to each property category by constructing a statistical margin of error around the Comptroller’s estimate of value for selected property categories in each school district. PTD considers values **valid**, or acceptable, when they are within the margin of error. The margin of error is plus or minus 5 percent of the state value at a minimum, but may be higher. PTD considers values outside this margin of error **invalid**.

Local Value Above Market Value

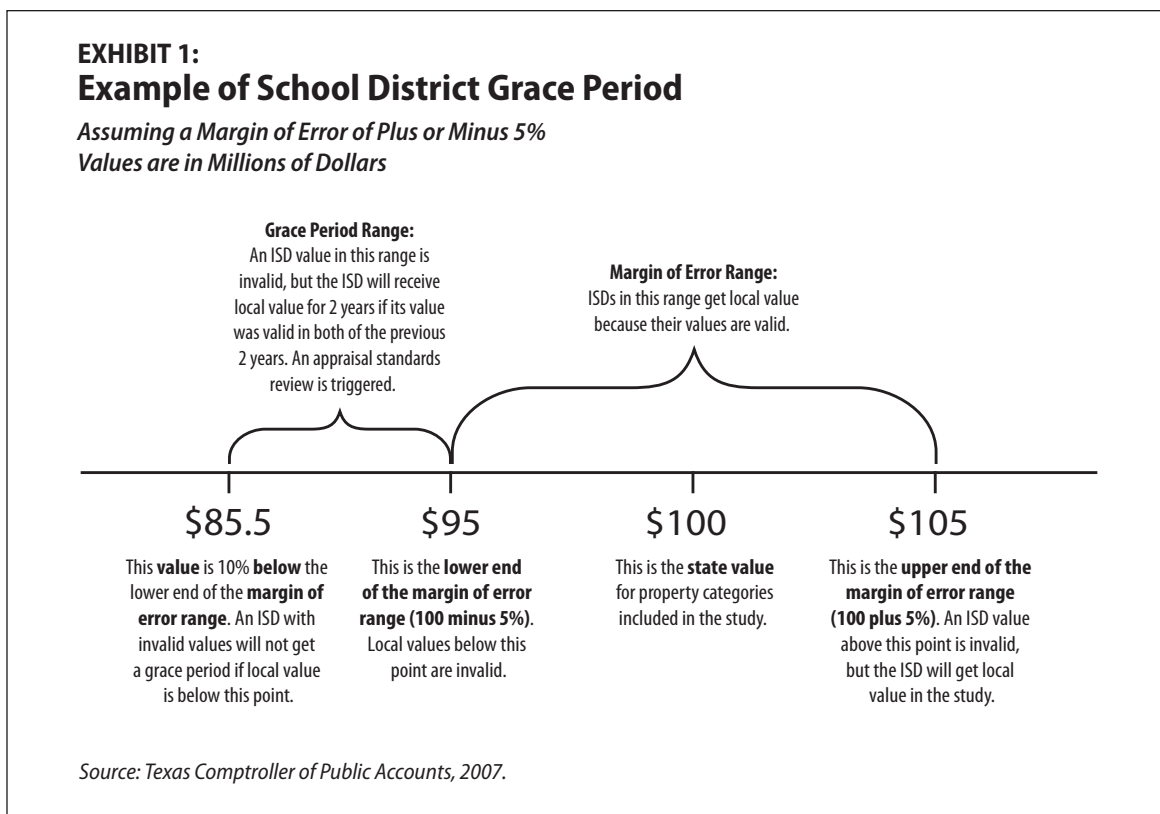
Even though a school district’s local value is invalid, the law requires the Comptroller to certify the local value if the local value is higher than the state value. This requirement prevents a school district from receiving extra state funding based on a lower state value, while receiving local funds from taxes on property that the CAD appraised above market value.

Grace Period

The Government Code requires the Comptroller to use the local appraisal roll values to estimate the total taxable value in an eligible school district for up to two years, even when the local appraisal roll values are invalid. This is known as a grace period. A school district is eligible for the grace period if it meets three conditions:

- the district’s values are invalid in the most recent Property Value Study;
- the district’s values were valid in the two studies preceding the most recent study; and
- the district’s local test value is above 90 percent of the lower threshold of the margin of error.

Exhibit 1 illustrates how a school district could be eligible for a grace period if its values are invalid. The exhibit assumes state value for properties included in the PVS for a school district is \$100 million. A school district achieves local value if the PVS determines its value is between a low of \$95 million to





a high of \$105 million. If the school district's value is less than \$95 million, but equal to or more than \$85.5 million, PTD considers its value as invalid, but the law requires PTD to certify local value if the school district had local value in the PVS the prior two years. This is called a grace period. If the school district's values are less than \$85.5 million it does not qualify for a grace period and PTD assigns state value.

Study Timeline

The study begins in February each year and concludes in July of the following year. A new study begins while the previous year's study undergoes protests, so there is considerable overlap.

Under the Government Code, the Comptroller must certify the preliminary findings of taxable value for each district before Feb. 1 of the year following the year under study. The agency delivers the findings to school and appraisal districts and certifies them to the Commissioner of Education. School districts that wish to protest preliminary value findings must do so within 40 days after the date of amended preliminary certification or certification of preliminary findings (**Comptroller Rule 9.109(d)(11)**).

The Comptroller publishes the appraisal district study results simultaneously with the results of the school district study and distributes copies to all appraisal districts and legislators. Although the Property Tax Code does not give appraisal districts the right to protest study *findings*, in the spirit of fairness and to enhance accuracy the Comptroller allows appraisal districts to appeal *level and uniformity measures*.

After study protests are complete on or about July 1, the Comptroller certifies final values to the Commissioner of Education, who uses the final values to set school district funding the following September.

Special Report for Equity Protests

Section 41.41(a)(2) of the Tax Code allows taxpayers to protest based on appraisal inequality. This type of protest is generally known as an "equity protest." For the purpose of an equity protest, the market value of the property is not at issue. The issue is whether the property is appraised similarly to other property in the appraisal district. Tax Code Section 41.43 specifies that the burden of proof is on the appraisal district and that the appraisal district has three alternatives for meeting that burden by a preponderance of the evidence.

- 1) The appraisal district may show that "the appraisal ratio of the property is equal to or less than the median level of appraisal of a reasonable and representative sample of other properties in the appraisal district;"
- 2) The appraisal district may show that "the appraisal ratio of the property is equal to or less than the median level of appraisal of a sample of properties in the appraisal district consisting of a reasonable number of other properties similarly situated to, or of the same general kind or character as, the property subject to the protest;" or
- 3) The appraisal district may show that "the appraised value of the property is equal to or less than the median appraised value of a reasonable number of comparable properties appropriately adjusted."

Some appraisal districts are losing equity protests in which the taxpayer uses the evidence permitted by option 3. These losses reduce taxable values and cause the overall level of appraisal (percentage of market value) for a property category to be lower than it would otherwise be.

PTD does not routinely receive information identifying Appraisal Review Board (ARB) changes in equity protests. If an appraisal district submits this information, however, PTD will provide a special



report to the appraisal district showing the effect of equity protests on levels of appraisal. The report will show three overall levels of appraisal for each property category with a significant number of equity protests. The first level of appraisal will be based on a property sample that includes equity protests but substitutes the values before ARB adjustment; the second will be based on a property sample that excludes equity protests; and the third will be based on a property sample that includes equity protests and uses the ARB adjusted values. The third result is the statewide method that is used to produce the property value study findings. The differences between the results will provide indicators of the effect of equity protests on levels of appraisal and on the amount of appraised value on which the taxing units could have levied taxes.

The PVS – Detailed Procedures

This section of the booklet lists the property categories used in the study, gives an overview of school district taxable value calculation and describes the procedures and calculations used in the study. It also describes procedures specific to each property category.

Property Categories

The Government Code and the Property Tax Code require the Comptroller to develop ratios and value estimates for property categories and to combine information on the various property categories into overall estimates.

The Comptroller generally uses the following property categories:

- A: Real Property: Single-Family, Residential;
- B: Real Property: Multifamily, Residential;
- C: Real Property: Vacant Lots and Tracts;
- D/E: Real Property: Acreage at Market Value and Farm and Ranch Improvements;
- D1: Real Property: Acreage at Productivity Value;
- F1: Real Property: Commercial;
- G: Real Property: Oil, Gas and Other Minerals;
- J: Real and Tangible Personal Property: Utilities; and
- L1: Personal Property: Commercial.

For a detailed description of these categories, see *The Property Classification Guide* (<http://www.window.state.tx.us/taxinfo/taxforms/96-313.pdf>).

The Comptroller may group properties into any other category or subcategory necessary for the efficient and accurate completion of the study. Pages 13-15 provide more information about these categories.

Calculating Taxable Value – Overview

PTD calculates the total taxable value in a school district, referred to as *state value*, by estimating market value or by accepting the appraisal district's local value in each property category in the school district and then adding these category values for an overall school district value. See pages 2 and 3 for more information.

PTD estimates most category values by obtaining a representative sample of properties in each category, computing a weighted mean ratio from this sample and dividing this ratio into the school district's self-reported appraisal roll value for the category.



The Comptroller does not develop ratios or value estimates for several property categories, which are included in the study as the local appraised value reported by the appraisal district.

Exhibit 2 summarizes the eight steps PTD uses to complete the study. Detailed descriptions of each step follow **Exhibit 2**.

EXHIBIT 2:

Step-by-Step Study Summary PTD Uses to Perform PVS

Step	Page
Step 1. – Gather and Prepare Market Data The first step in the study is to gather and prepare market data, which includes information on property sales, building costs and income information. If enough recent sales information is available, this data will become the basis of the study.	7
Step 2. – Select a Sample The second step is to select a sample. Using a statistical model designed to achieve a uniform 5 percent margin of error in each school district to the extent practicable; PTD assigns sample sizes for each property category in each school district.	7
Step 3. – Appraise Property PTD appraises sample properties to achieve the required sample size when insufficient sales are available.	8
Step 4. – Match PTD Values with Local Values PTD must match each sample property with the corresponding CAD records and obtain several items from the records.	9
Step 5. – Compute Property Ratios PTD computes individual property appraisal ratios. This is the ratio of the property's appraised value as shown on the appraisal roll to its market value.	9
Step 6. – Stratify PTD stratifies, or groups, properties by common features. Stratifying properties so that similar kinds of property are in each group before calculating study statistics makes the results more meaningful and accurate.	10
Step 7. – Statistical Analysis PTD computes several statistics that enable it to adjust reported school district values to market value and that will provide a means to interpret the study results.	11
Step 8. – Use the Results TEA uses the result of the study to equalize school funding. Property owners use the study to evaluate whether local taxing entities are taxing them fairly. Appraisal districts use the study to evaluate their performance and to determine the need for reappraisal.	24

Source: Texas Comptroller of Public Accounts, 2007.

Step 1. — Gather and Prepare Market Data

PTD begins by gathering and preparing market data, including property sales, building costs and income information. If enough recent sales information is available, this data will become the basis of the study. PTD gathers sales information from any available source, including CADs, multiple listing services, realtors, appraisers, title companies and taxpayers. PTD verifies, edits and adjusts sales prices as necessary for financing, personal property and time of sale. Building costs and income information become important when sales are scarce; in this situation, PTD is required to appraise sample property to meet sample size requirements. PTD may use appraisals based on comparable sales information, building costs, market rents and vacancy rates or other market information.

Step 2. — Select a Sample

PTD supervisory staff assigns sample sizes for each property category included in the study in each school district. PTD determines the sample size using a statistical model designed to achieve an



uniform 5 percent margin of error in each school district to the extent practicable. The sample includes a census of all recent sales when the number of sales is smaller than or does not greatly exceed the target sample size. If the number of available sales greatly exceeds the desired sample size, PTD randomly selects the sample from the sales population. If there are not enough sales to achieve the assigned sample size, PTD randomly selects enough properties to fill the gap and then appraises those properties. When necessary, supervisors adjust sample sizes to match available PTD resources.

PTD does not sample industrial property because there is a lack of publicly available appraisal information and because the cost of performing appraisals of this kind of property is prohibitive.

PTD generally does not include a property category in the study if the property category is on the appraisal roll at less than \$250 million and it includes less than 5 percent of the value in a school district (excluding industrial property).

PTD's samples of properties may sometimes include outliers. Outliers are properties with abnormally high or low ratios. If PTD determines that an outlier is the result of an appraisal district error or unusual market variability, the outlier remains in the study. If a clerical error, a property mismatch or an error in appraisal judgment contributed to the outlier, PTD attempts to correct the error so the property can remain in the study. If PTD finds that the outlier is a non-market transaction, it is excluded from the sample. To improve the sample's representativeness, PTD may exclude extreme outliers that remain after the process described above.

See **Appendix A** for a discussion of the modified sampling procedures used when PTD suspects sales chasing.

Step 3. — Appraise Property

When insufficient sales are available, PTD appraises sample properties to achieve the required sample size. After randomly selecting property for appraisal, PTD physically inspects each property. A CAD staff member may assist with routing these inspections. If physical inspection of an unimproved property (no buildings) is impossible or unnecessary, PTD may use appraisal cards, aerial photographs, soil maps and other relevant information to perform the appraisal.

For each property, PTD records the property class, construction type, condition, age, amenities and any outbuildings or other additives such as pools. PTD notes property specifics, such as neighborhood influences and restrictions, and checks to determine that the square footage recorded by the CAD is reasonable. If the CAD record is incorrect, PTD measures the property to obtain accurate square footage.

Appraisals must reflect a property's market value as of Jan. 1 of the study year. PTD appraisers must use the Comptroller's procedures in conjunction with the Comptroller's computerized Field Appraiser System to classify and appraise residential and commercial sample property unless better information is available or unless that kind of property is not included in the procedures or the Field Appraiser System. PTD uses other specialized computer software to appraise oil and gas reserves and other complex properties. PTD also develops separate appraisal schedules for vacant land.

Along with properties entered in the sample as appraisals, PTD also selects and appraises sold properties to develop a local modifier. A local modifier adjusts the PTD appraisal system values to account for differences in local markets.



Step 4. — Match PTD Values With Local Values

PTD matches each sample property with the corresponding CAD records. PTD also obtains several items from the CAD records. These include the CAD and ISD identification codes; the category code; the account number; the legal description; the parcel address; the sale/appraisal code; the sale date; the sale price; the source code; the CAD improvement value; the CAD land value; the furniture; fixtures and equipment value and the inventory value, if applicable to the sample property.

A proper match between the sample property and the CAD property records is important to ensure that the comparison of PTD's value for the sample property and the CAD's value for the sample property results in a meaningful ratio.

Step 5. — Compute Property Ratios

An appraisal ratio for an individual property is the ratio of the property's appraised value as shown on the appraisal roll to its market value. The sales price or PTD appraised value signify the market value. Exhibit 3 shows appraisal ratios for a sample consisting of both sales and appraisals as indicators of market value.

EXHIBIT 3:

Sample Calculation of Weighted Mean Appraisal Ratio for ABC Independent School District

Category A: Single-family Residential

SALES

Sale Number	Appraisal Roll Value	Adjusted Sale Price	Individual Appraisal Ratio
1	\$ 65,834	\$ 83,113	0.79
2	75,254	90,720	0.83
3	94,420	135,610	0.70
4	99,880	113,310	0.88
5	82,253	109,250	0.75
6	89,654	94,715	0.95
7	76,502	91,680	0.83
8	111,020	128,048	0.87
9	44,441	62,370	0.71
10	64,519	75,905	0.85
11	64,842	81,127	0.80
12	39,479	41,925	0.94
13	193,344	245,700	0.79
14	98,885	127,493	0.78
15	114,788	118,898	0.97
16	92,088	113,645	0.81
17	84,449	84,995	0.99
18	21,090	25,988	0.81
19	22,080	27,398	0.81



EXHIBIT 3: (continued)

Sample Calculation of Weighted Mean Appraisal Ratio for ABC Independent School District

APPRAISALS

Appraisal Number	Appraisal Roll Value	Appraisal Value for Study	Individual Appraisal Ratio
1	\$ 97,576	\$110,741	0.88
2	60,437	70,964	0.85
3	\$107,543	148,828	0.72
4	60,264	86,303	0.70
5	69,708	76,117	0.92
6	76,935	98,327	0.78

TOTAL SALES AND APPRAISALS

Appraisal Number	Appraisal Roll Value	Study Appraisal Value and Adjusted Sales Price Total	Weighted Mean Appraisal Ratio
All Properties	\$2,007,285	\$2,443,170	0.8216

ESTIMATED CATEGORY MARKET VALUE

Total Appraisal Roll Category Value	Weighted Mean Appraisal Ratio	Estimated Category Market Value
\$27,621,400	.8216	\$33,619,036

Source: Texas Comptroller of Public Accounts, 2007.

For example, Sale Number 1 in **Exhibit 3** has an appraisal roll value of \$65,834 and an adjusted sale price of \$83,113. Dividing \$65,834 by \$83,113 yields an appraisal ratio of 0.79 for this parcel. The reader should not make a judgment about appraisal district’s performance based on a single property ratio. Performance measurement requires statistics based on reasonably large groups of ratios.

Step 6. — Stratify

Stratifying properties so similar kinds of property are in each group before calculating study statistics makes the results more meaningful and accurate. PTD selects a sample for each property category or other stratum included in the study. At this point PTD has already stratified properties by their use—it has grouped single-family residential properties together, for instance.

In addition to categorizing property by its use, PTD uses a further level of stratification, known as value stratification. PTD uses value stratification only in the school district study, not in the appraisal district study. PTD obtains the information needed to value-stratify appraisal roll values from prior year stratification surveys or the appraisal rolls, depending upon availability. In a few school districts, value stratification information is not available.

PTD has established a value-stratification procedure that results in as many as six strata within a property category (**Exhibit 4**). The value ranges within the strata vary from school district to school district and from year to year, depending entirely on the distribution of property value within each school district.



EXHIBIT 4

Six Value Strata PTD Uses for PVS

Strata	Description
Stratum #1	After sorting all the properties in the category from lowest value to highest value, and beginning with the lowest valued property, this stratum contains the low-valued properties that collectively equal 5 percent of the category's total appraised value. PTD does not study this stratum. Instead, PTD accepts the locally determined value.
Stratum #2	This stratum contains all properties that individually exceed 20 percent of the value in the property category. PTD may or may not study these high-valued properties.
Stratum #3	After PTD sorts the remaining properties from lowest value to highest value, properties representing about the first 25 percent of the remaining appraisal roll value in the category comprise Stratum 3.
Stratum #4	Properties representing about the second 25 percent of the remaining appraisal roll value in the category comprise Stratum 4.
Stratum #5	Properties representing about the third 25 percent of the remaining appraisal roll value in the category comprise Stratum 5.
Stratum #6	Properties representing about the fourth 25 percent of the remaining appraisal roll value in the category comprise Stratum 6.

Source: Texas Comptroller of Public Accounts, 2007.

PTD studies strata 3-6 using random sampling procedures when performing appraisals.

In some school districts, PTD finds certain properties in a category sample sufficiently different from the remaining sample properties to warrant treatment as “exception” properties. An exception property is a property placed in its own separate stratum. The rationale is to offset the potential bias that an exception property might have on the estimated ratio. PTD uses other stratification methods in special circumstances, such as the resolution of a protest, when the evidence shows that some property characteristic other than use or value is distorting the appraisal level.

Step 7. — Statistical Analysis

The next step is to compute several statistics that will enable PTD to adjust reported school district values to market value, and that will provide a means to interpret the study results. PTD uses different statistical measures for school districts and appraisal districts. The two sections that follow explain these statistical computations. The first explains statistics computed for the school district study required by Government Code Section 403.302, and the second explains statistics computed for the appraisal district study required by Property Tax Code Section 5.10.

School District Statistics

The statistics used in the school district study are the:

- weighted mean ratio;
- stratified weighted mean ratio; and
- margin of error.

Weighted Mean

Exhibit 3 shows the computation of a weighted mean appraisal ratio. A weighted mean appraisal ratio takes into account the different values of the individual properties making up the sample by giving more weight to higher values. PTD calculates the weighted mean by totaling the appraisal roll values, totaling



the sales prices and appraisals and dividing the first sum by the second. As shown in **Exhibit 3**, the total appraisal roll value for this sample is \$2,007,285, and the total value of sales and appraisals is \$2,443,170. Dividing the former by the latter produces the weighted mean appraisal ratio of 0.8216. Finally, dividing the school district's total self-reported category value on its appraisal roll, or \$27,621,400, by the weighted mean appraisal ratio of 0.8216 results in an estimated category market value of \$33,619,036. This result shows below market appraisal and could reduce the school district's funding.

Stratified Weighted Mean

A stratified weighted mean appraisal ratio is an overall property category ratio calculated by combining the weighted mean ratios of various sub-categories or strata. As discussed above, PTD uses property use and property value to define each stratum. PTD uses these value-stratified weighted mean appraisal ratios when-ever feasible to estimate market values for residential properties (Categories A and B), vacant lots (Category C), commercial properties (Categories F1 and L1) and minerals (Category G). PTD stratifies these ratios by value stratum within each category if reasonably accurate stratification data are available.

A value-stratified weighted mean appraisal ratio is a mechanism used to adjust the sample automatically to be representative of its property population. For example, low-valued properties tend to cluster in certain geographic areas, while mid-range and high-valued properties tend to cluster in others. Similarly, construction types tend to vary with value. A value-stratified weighted mean appraisal ratio adjusts for location effect and for the effects of varying construction types. In addition, it is a particularly useful tool for enhancing a representative sample when appraisal levels in a category vary significantly between lower-valued and higher-valued properties.

Exhibits 5-7 show how a stratified weighted mean appraisal ratio is calculated and how it differs from a weighted mean and a simple mean appraisal ratio. PTD calculates the stratified weighted mean appraisal ratio for a category by:

- grouping sample properties by appraisal roll value stratum;
- calculating a weighted mean appraisal ratio for each value stratum;
- dividing the weighted mean appraisal ratio into the CAD total appraisal roll value for each value stratum to estimate a market value;
- adding these individual market value stratum estimates; and
- dividing the sum of the CAD values in each stratum by the sum of PTD's individual market value stratum estimates.

Exhibit 4 lists properties in a hypothetical random sample.



EXHIBIT 5:

Sample Calculation of a Value-Stratified Weighted Mean Appraisal Ratio

Step 1

Stratum 1: \$0 to \$2,500

Property	CAD Appraisal Roll Value In the Sample	PTD Appraisal/Sale Price In the Sample	Ratio CAD ÷ PTD In the Sample (Rounded four places)
Not sampled	Not sampled	Not sampled	Not sampled

Stratum 2: More than or equal to \$1,205,000

Property	CAD Appraisal Roll Value In the Sample	PTD Appraisal/Sale Price In the Sample	Ratio = CAD/PTD In the Sample (Rounded four places)
1	\$ 1,205,000	\$ 1,209,961	0.9959
Total Stratum 2	\$1,205,000	\$1,209,961	0.9959

Stratum 3: \$2,501 to \$15,300

Property	CAD Appraisal Roll Value In the Sample	PTD Appraisal/Sale Price In the Sample	Ratio = CAD/PTD In the Sample (Rounded four places)
2	\$ 11,243	\$ 8,000	1.4054
3	\$ 13,510	\$ 10,000	1.3510
4	\$ 14,194	\$ 11,500	1.2343
5	\$ 14,800	\$ 12,000	1.2333
6	\$ 15,001	\$ 13,000	1.1539
Total Stratum 3	\$68,748	\$54,500	1.2614

Stratum 4: \$15,301 to \$47,573

Property	CAD Appraisal Roll Value In the Sample	PTD Appraisal/Sale Price In the Sample	Ratio = CAD/PTD In the Sample (Rounded four places)
7	\$ 20,374	\$ 20,000	1.0187
8	\$ 20,477	\$ 20,000	1.0239
9	\$ 20,994	\$ 20,000	1.0497
10	\$ 25,806	\$ 24,800	1.0406
11	\$ 28,166	\$ 27,000	1.0432
Total Stratum 4	\$115,816	\$111,800	1.0359

(continued)



**EXHIBIT 5:
Sample Calculation of a Value-Stratified Weighted Mean Appraisal Ratio**

Step 1 (continued)

Stratum 5: \$47,574 to \$110,625

Property	CAD Appraisal Roll Value In the Sample	PTD Appraisal/Sale Price In the Sample	Ratio = CAD/PTD In the Sample (Rounded four places)
12	\$ 51,007	\$ 52,000	0.9809
13	\$ 52,191	\$ 52,000	1.0037
14	\$ 53,217	\$ 54,000	0.9855
15	\$ 54,141	\$ 54,000	1.0026
16	\$ 57,396	\$ 57,000	1.0069
Total Stratum 5	\$267,952	\$269,000	0.9961

Stratum 6: \$110,626 to \$465,581

Property	CAD Appraisal Roll Value In the Sample	PTD Appraisal/Sale Price In the Sample	Ratio = CAD/PTD In the Sample (Rounded four places)
17	\$ 111,648	\$ 125,000	0.8932
18	\$ 114,140	\$ 135,000	0.8455
19	\$ 139,498	\$ 150,000	0.9300
Total Stratum 6	\$365,286	\$410,000	0.8909

Total for All Strata

Property	CAD Appraisal Roll Value In the Sample	PTD Appraisal/Sale Price In the Sample	Ratio = CAD/PTD In the Sample (Rounded four places)
All 19 Properties In Sample	\$2,022,802	\$2,055,262	Not applicable

Mean Ratio (Unweighted Average)

Property	CAD Appraisal Roll Value In the Sample	PTD Appraisal/Sale Price In the Sample	Mean Ratio
All 19 Properties In Sample	Not applicable	Not applicable	1.0631

Weighted Mean Ratio

Property	CAD Appraisal Roll Value In the Sample	PTD Appraisal/Sale Price In the Sample	Weighted Mean Ratio
All 19 Properties in sample	\$2,022,802	\$2,055,262	0.9842

Price-Related Differential

Mean Ratio	Weighted Mean Ratio	Mean Ratio ÷ Weighted Mean Ratio
1.0631	0.9842	1.0802

Source: Texas Comptroller of Public Accounts, 2007.



PTD groups the sample properties in six strata. It calculates a ratio for each property, by dividing the CAD value by the PTD appraisal value or sale price. PTD calculates a weighted mean ratio for each stratum by dividing the sum of the CAD values by the sum of the PTD appraisal or sale amounts. A weighted mean ratio is calculated for the entire property category by dividing the sum of the CAD values in every strata by the sum of the PTD values in every strata. PTD calculates a simple mean ratio by summing all the individual property ratios in the entire category and dividing by the number of ratios. PTD calculated the weighted mean and simple mean for comparison to the stratified weighted mean in Exhibit 6 and for use in calculating the price-related differential (PRD). PTD calculated the PRD by dividing the simple mean by the weighted mean. The section on Appraisal District Statistics below provides an explanation of the PRD.

Exhibit 5 lists the strata shown in Exhibit 3 and shows the number of sample parcels, the CAD value of the sample properties, the PTD value of the sample properties and the weighted mean ratio for each stratum.

EXHIBIT 5:

Sample Calculation of a Value-Stratified Weighted Mean Appraisal Ratio

Step 2

Stratum Number (#)	Number of Parcels In the Sample (n_{sample})	CAD Value In the Sample (TX_{sample})	PTD Estimate In the Sample (TY_{sample})	Stratum Ratio (CAD Value ÷ PTD Estimate) Weighted Mean Ratio In the Sample (Rounded four places) ($r1_{\text{sample}}$)
1	Not applicable	Not applicable	Not applicable	1.0000
2	1	\$1,205,000	\$1,209,961	0.9959
3	5	\$ 68,748	\$ 54,500	1.2614
4	5	\$ 115,816	\$ 111,800	1.0359
5	5	\$ 267,952	\$ 269,000	0.9961
6	3	\$ 365,286	\$ 410,000	0.8909

Source: Texas Comptroller of Public Accounts, 2007.

Exhibit 5 also shows how the weighted mean stratum ratios are calculated by dividing the CAD value in each stratum by the PTD value in each stratum.



Exhibit 6 lists the strata shown in Exhibit 4 and Exhibit 5 and shows the number of parcels in the stratum, the CAD value in the stratum, the stratum ratio (from Exhibit 4 or Exhibit 5) and the PTD market value estimate for each stratum.

EXHIBIT 6:

Sample Calculation of a Value-Stratified Weighted Mean Appraisal Ratio

Steps 3-5

Stratum Number (#)	Number of Parcels In the Stratum (N _{Stratum})	CAD Value In the Stratum (TX _{Stratum})	Stratum Ratio Weighted Mean Ratio In the Sample (r1 _{sample})	CAD Value ÷ Stratum Ratio PTD Estimate In the Stratum (Rounded to the nearest dollar.) (TY _{Stratum})
1	711	\$ 300,224	1.0000	\$ 300,224
2	1	1,205,000	0.9959	1,209,961
3	259	1,495,515	1.2614	1,185,599
4	56	1,463,787	1.0359	1,413,058
5	22	1,500,526	0.9961	1,506,401
6	7	1,544,658	0.8909	1,733,817
Total	1,056	\$7,509,710		\$7,349,060

Stratified Ratio, All Strata

Total CAD Value	Total PTD Estimate	Stratified Ratio (Total CAD Value ÷ Total PTD Estimate)
\$7,509,710	\$7,349,060	1.0219

Source: Texas Comptroller of Public Accounts, 2007.

Exhibit 6 also shows the calculation of the stratified weighted mean ratio by dividing the sum of the CAD values for each stratum by the sum of the PTD market value estimated for each stratum. PTD divides this stratified weighted mean ratio into the appropriate self-reported category total to develop its market value estimate for the category and reports the final calculation in the ISD Summary Worksheet.

There are substantial differences in the level of appraisal among value strata in Exhibit 4. Lower-valued properties appraised at higher levels than higher-valued properties, as indicated by a PRD well above 1.03. Using a stratified weighted mean appraisal ratio will adjust for these differences so that they will not bias the sample ratio and the resulting market value estimate for the category.

If stratification data are not available for a school district, PTD cannot calculate the stratified weighted mean appraisal ratios. If the data to calculate a value-stratified ratio becomes available at any time during the process, including the protest process, PTD may calculate a value-stratified ratio.

Margin of Error

The margin of error is equal to one-half of the confidence interval expressed as a percent of total value studied in a school district. The confidence interval is a computed range of school district values for which the PVS has not proven that the state’s estimate of value is significantly different from the local value. If a school district’s local value is outside the range, the study has proven, statistically at least, that the school district’s value is incorrect because it is significantly different from the state’s estimate.



For example, assume that PTD estimates market value in sampled property categories in school district ABC to be \$100 million before exemptions. PTD computes the margin of error to be plus or minus 5 percent of \$100 million. Market value plus 5 percent is \$105 million; market value minus 5 percent is \$95 million. The \$100 million estimate is the **point estimate**; the confidence interval of \$95 million to \$105 million is an *interval estimate*. The PTD uses the margin of error to determine whether local value is valid. If the school district's value is inside the margin of error range, PTD accepts it as valid. If not, PTD considers it invalid.

The Legislature has instructed the Comptroller's office to include enough samples to obtain a margin of error that does not exceed 5 percent, if resources permit. PTD, to make the study uniform, has set a 5 percent floor on the margin of error. This means that if the statistically calculated margin of error is less than 5 percent, it is set at 5 percent. On the other hand, if PTD's margin of error is more than 5 percent, PTD will use the higher margin of error to decide whether the local value is valid.

Appendix B and **Appendix C** provide additional explanations of the confidence interval and margin of error computations.

Appraisal District Statistics

For the appraisal district study, PTD aggregates samples collected for the school district study to the appraisal district level. PTD then calculates statistical measures of appraisal level and uniformity in each property category and for the CAD overall. The measure of appraisal level is the median. The measures of appraisal uniformity include the coefficient of dispersion (COD), the percentage of properties within 10 and 25 percent of the median and the price-related differential (PRD). Together, the median level of appraisal, the COD, the percentage of properties within 10 or 25 percent of the median and the PRD enable the PVS to address the legal requirements that appraisals be equal, uniform and at 100 percent of market value.

PTD aggregates samples from each category to the appraisal district level, with one exception. The ratio derived for agricultural acreage receiving productivity appraisal is not a median derived from a property sample. Consequently, PTD does not calculate measures of appraisal uniformity for acreage receiving productivity appraisal. The performance measures for the appraisal district listed under Category D: Rural Real-Market Value on the appraisal district summary worksheet are derived from the property samples used to compute the weighted mean appraisal ratios for estimating the market values of non-qualified acreage and farm and ranch improvements.

Median

This is the median level of appraisal measures, or the accuracy of an appraisal district's appraisals in relation to the standard of 100 percent of market value. The International Association of Assessing Officers (IAAO) *1999 Standard on Ratio Studies* sets the standard for appraisal level at 95 – 105 percent of market value when the an organization uses the study results for funding equalization programs and at 90 – 110 percent of market value when the results are used for other purposes.

Property Tax Code Section 1.12(c) defines the median appraisal ratio as:

“The median appraisal ratio for a sample of properties is, in a numerically ordered list of the appraisal ratios for the properties: (1) if the sample contains an odd number of properties, the appraisal ratio above and below which there is an equal number of appraisal ratios in the list; or (2) if the sample contains an even number of properties, the average of the two consecutive appraisal ratios above and below which there is an equal number of appraisal ratios in the list.”



The value of individual properties does not influence the median ratio; only the ranking of individual ratios within the sample matters. The median ratio falls at the middle of a group of ratios ranked from highest to lowest or lowest to highest.

Exhibit 7 uses 19 sales (marked “S1” to “S19”) and six appraisals (marked “A1” to “A6”) to show how to identify the median ratio.

EXHIBIT 7:
Sample Calculation of Median Appraisal Ratio
XYZ County Appraisal District

Category A: Single-family Residential
SALES AND APPRAISALS

Number Sale or Appraisal	Adjusted Sale Appraisal Roll Value	Individual Price or Appraised Value	Appraisal Ratio
S 17	\$84,449	\$84,995	0.99
S 15	\$114,788	\$118,898	0.97
S 6	\$89,654	\$94,715	0.95
S 12	\$39,479	\$41,925	0.94
A 5	\$69,708	\$76,117	0.92
S 4	\$99,880	\$113,310	0.88
A 1	\$97,576	\$110,741	0.88
S 8	\$111,020	\$128,048	0.87
S 10	\$64,519	\$75,905	0.85
A 2	\$60,437	\$70,964	0.85
S 2	\$75,254	\$90,720	0.83
S 7	\$76,502	\$91,680	0.83
S 16	\$92,088	\$113,645	0.81*
S 18	\$21,090	\$25,988	0.81
S 19	\$22,080	\$27,398	0.81
S 11	\$64,842	\$81,127	0.80
S 1	\$65,834	\$83,113	0.79
S 13	\$193,344	\$245,700	0.79
S 14	\$98,885	\$127,493	0.78
A 6	\$76,935	\$98,327	0.78
S 5	\$82,253	\$109,250	0.75
A 3	\$107,543	\$148,828	0.72
S 9	\$44,441	\$62,370	0.71
S 3	\$94,420	\$135,610	0.70
A 4	\$60,264	\$86,303	0.70
Total = 25			
*0.81 – Median Appraisal Ratio for Category A, XYZ Appraisal District			

Source: Texas Comptroller of Public Accounts, 2007.



In this exhibit, PTD ranks the appraisal ratios from the highest ratio to the lowest. Twenty-five properties make up the sample. The median ratio, 0.81, is 13th on the list, with 12 properties ranked above it and 12 ranked below it.

An easy way to find the median for a sample containing an odd number of properties is to divide the total count by two, then round the result upward to the nearest whole number. The sample shown in **Exhibit 7** contains 25 parcels. In this example, if one divides the 25 parcels by two, the result is 12.5. Rounding upward to the nearest whole number produces 13. The 13th ratio is the median.

For an even-numbered sample, the median is the average of the two middle ratios. If there were 24 properties in the sample, the median would be the average of ratios 12 and 13. Eleven ratios would be above 12 and below 13.

PTD calculates a median appraisal level for each major category of property in each appraisal district, provided there were at least five properties in the sample. PTD then combines the properties making up the sample for each category into a larger sample of all properties in the appraisal district. Finally, PTD lists the median ratio from the larger sample as the overall ratio for the appraisal district.

Coefficient of Dispersion

The COD measures how tightly or loosely the individual sample ratios are clustered around the median. The Code requires the Comptroller to calculate a COD around the median for each major property category. The COD is one measure of appraisal uniformity.

Technically, the COD expresses as a percentage of the median the average absolute deviation of the appraisal ratios in a sample from the sample's median. A high COD indicates high variation—few ratios close to the median and low appraisal uniformity. A low COD indicates low variation—ratios clustered tightly around the median and high appraisal uniformity.

The IAAO's *1999 Standard on Ratio Studies* contains the following standards for CODs:

1. single-family residential and condominiums: 15 or less; in areas of newer or fairly similar residences: 10 or less; heterogeneous rural residences and seasonal homes: 20 or less;
2. vacant land: 20 or less;
3. income properties in large, urban jurisdictions: 15 or less; and
4. income properties in other jurisdictions: 20 or less.

The IAAO does not publish standards for other real and personal property because they vary with local conditions.

The COD measures appraisal uniformity independently of the median level of appraisal. As a result, CODs allow comparison of appraisal uniformity among districts or property categories where median levels of appraisal differ significantly.



Exhibit 8 provides data for a sample calculation of a COD.

**EXHIBIT 8:
Sample Calculation for Coefficient of Dispersion
XYZ County Appraisal District**

Category A: Single-family Residential

Sale or Appraisal (Column 1)	Property Number (Column 2)	Individual Property Ratio % (Column 3)			Median (Column 4)	Difference from Median (Column 5)	Absolute Value of Difference (Column 6)																																																								
S	17	99			81	+ 18	18																																																								
S	15	97			81	+ 16	16																																																								
S	6	95			81	+ 14	14																																																								
S	12	94			81	+ 13	13																																																								
A	5	92			81	+ 11	11																																																								
S	4	88			81	+ 7	7																																																								
A	1	88			81	+ 7	7																																																								
S	8	87			81	+ 6	6																																																								
S	10	85			81	+ 4	4																																																								
A	2	85			81	+ 4	4																																																								
S	2	83			81	+ 2	2																																																								
S	7	83			81	+ 2	2																																																								
S	16	81	10%	25%	81	0	0																																																								
S	18	81			81	0	0																																																								
S	19	81			81	0	0																																																								
S	11	80			81	- 1	1																																																								
S	1	79			81	- 2	2																																																								
S	13	79			81	- 2	2																																																								
S	14	78			81	- 3	3																																																								
A	6	78			81	- 3	3																																																								
S	5	75			81	- 6	6																																																								
A	3	72			81	- 9	9																																																								
S	9	71			81	- 10	10																																																								
S	3	70			81	- 11	11																																																								
A	4	70			81	- 11	11																																																								
<p>Total of Absolute Values = 162 — Number of Sample Properties = 25</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; width: 10%;">162</td> <td style="width: 10%;"></td> <td style="width: 10%;">Total of Absolute Values</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td style="text-align: right;">÷ 25</td> <td></td> <td>Number of Sample Properties</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">= 6.48</td> <td></td> <td>Average Absolute Deviation</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">÷ 81</td> <td></td> <td>Median Appraisal Ratio</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">= .08</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">x 100</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: right;">= 8.0</td> <td></td> <td>Coefficient of Dispersion</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>								162		Total of Absolute Values						÷ 25		Number of Sample Properties						= 6.48		Average Absolute Deviation						÷ 81		Median Appraisal Ratio						= .08								x 100								= 8.0		Coefficient of Dispersion					
162		Total of Absolute Values																																																													
÷ 25		Number of Sample Properties																																																													
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= .08																																																															
x 100																																																															
= 8.0		Coefficient of Dispersion																																																													

Source: Texas Comptroller of Public Accounts, 2007.



Calculating a COD requires six steps:

- Step 1:** Subtract the median ratio (Column 4) for the sample from each individual ratio (Column 3) making up the sample, which results in the deviation for each ratio (Column 5)
- Step 2:** Convert each deviation to its absolute value (Column 6)
- Step 3:** Sum the absolute values of each deviation (Total of Column 6, in this sample 162)
- Step 4:** Divide the total deviation (162) by the number of properties in the sample (in this case 25) to get the average absolute deviation, which in this sample is 6.48
- Step 5:** Divide the average absolute deviation (6.48) by the median ratio (81), which in this sample results in 0.08
- Step 6:** Multiply the result by 100, yielding a COD of 8

Using the formula above and the data in **Exhibit 8**, one can now compute the COD.

Divide the average absolute deviation (6.48) by the median appraisal ratio (81) and multiply by 100 to arrive at a COD of 8.

PTD calculates a COD for each major category of property in an appraisal district if the sample has at least five properties and combines the samples for each category into a larger sample to calculate the overall COD.

Percentage of Properties within 10 Percent and 25 Percent of the Median

To calculate the percentage of properties within 10 percent, multiply the median appraisal ratio by 10 percent and add the result to the median.

- Using the data from **Exhibit 8** [$(81 \times .10) = 8.1 + 81 = 89.1$] yields the ratio that exceeds the median by 10 percent.
- Subtracting the result from the median [$81 - 8.1 = 72.9$] yields the ratio 10 percent below the median.

Counting the number of properties in the sample with ratios equal to or between these two numbers (16) and dividing that count by the total number of properties ($16 \div 25$) shows the percentage within 10 percent of the median.

In **Exhibit 8**, properties in the sample that have ratios between 89.1 percent and 72.9 percent are within 10 percent of the median. In this sample, the percent within 10 percent is 64 percent.

To calculate the percentage within 25 percent of the median, multiply the median times 25 percent, then add, and subtract the result to find the upper and lower end of the range.

PTD computes these percentages if the sample contains at least six properties. Properties that have ratios between 101.2 percent and 60.7 percent are within 25 percent of the median. In this sample, all properties are within 25 percent of the median.

The COD and the percentage of properties within 10 percent and 25 percent of the median are measures of horizontal ratio dispersion. They measure how consistently appraisal districts appraise



properties at the same level (percentage of market value) without regard to the value of the properties. A low COD and high percentages indicate equitable appraisals, while a high COD and low percentages indicate inequitable appraisal.

Price-Related Differential (PRD)

The PRD measures another form of inequity that may arise from systematic differences in the appraisal of low-value and high-value properties. According to the IAAO *1999 Standard on Ratio Studies*:

When low-value properties are appraised at greater percentages of market value than high-value properties, assessment regressivity is indicated. When low-value properties are appraised at smaller percentages of market value than high-value properties, assessment progressivity results. Appraisals made for tax purposes, of course, should be neither progressive nor regressive.

Progressive and regressive appraisals result in an inequity called vertical inequity.

PTD calculates the PRD, for each property category included in the study if the sample contains at least five properties, by dividing a sample's mean ratio by its weighted mean ratio. **Exhibit 9** provides sample data to demonstrate this calculation.



EXHIBIT 9:
Sample Calculation of Price Related Differential
XYZ County Appraisal District

Category A: Single-family Residential
SALES AND APPRAISALS

Sale or Appraisal (Column 1)	Number (Column 2)	Appraisal Roll Value (Column 3)	Adjusted Sale Price or Appraised Value (Column 4)	Individual Appraisal Ratio (Column 5)
S	17	\$ 84,449	\$ 84,995	0.99
S	15	114,788	118,898	0.97
S	6	89,654	94,715	0.95
S	12	39,479	41,925	0.94
A	5	69,708	76,117	0.92
S	4	99,880	113,310	0.88
A	1	97,576	110,741	0.88
S	8	111,020	128,048	0.87
S	10	64,519	75,905	0.85
A	2	60,437	70,964	0.85
S	2	75,254	90,720	0.83
S	7	76,502	91,680	0.83
S	16	92,088	113,645	0.81
S	18	21,090	25,988	0.81
S	19	22,080	27,398	0.81
S	11	64,842	81,127	0.80
S	1	65,834	83,113	0.79
S	13	193,344	245,700	0.79
S	14	98,885	127,493	0.78
A	6	76,935	98,327	0.78
S	5	82,253	109,250	0.75
A	3	107,543	148,828	0.72
S	9	44,441	62,370	0.71
S	3	94,420	135,610	0.70
A	4	60,264	86,303	0.70
Totals		\$2,007,285	\$2,443,170	20.71
Number of Properties	25			

Source: Texas Comptroller of Public Accounts, 2007.



To calculate the PRD requires three steps.

Step 1: Calculate the Mean by dividing the total individual appraisal ratios (total of Column 5 in Exhibit 9) by the number of properties (from Column 1) [$20.71 \div 25 = 0.8284$]

Step 2: Calculate the Weighted Mean by dividing the total appraisal roll value (total of Column 3 in Exhibit 9) by the total adjusted sale price or appraised value (total of Column 4 in Exhibit 9) [$\$2,007,285 \div \$2,443,170 = 0.8216$]

Step 3: Calculate the PRD by dividing the Mean by the Weighted Mean [$0.8284 \div 0.8216 = 1.01$]

The IAAO standard for this measure is 0.98 to 1.03, with PRDs below this range indicating progressivity, and measures above this range indicating regressivity. A PRD inside this range indicates the appraisal district is treating low-value and high-value properties uniformly. In this example, a PRD of 1.01 indicates uniformity.

The IAAO cautions that the PRD is not a reliable statistic when the sample is small or when the sample is heavily influenced by extreme sales prices. For this reason, PTD publishes the sample size on the CAD summary worksheet. The PRD is only an indicator; it alone cannot prove vertical equity or inequity. Additional tests are required to prove vertical inequity.

Step 8. — Use the Results

While the primary use of the study is to help equalize school funding, the secondary, but still very important, use of the study is to assess an appraisal district's performance. Property taxpayers may use the study to evaluate whether the CAD is treating them fairly in comparison to owners of similar property in the same area, or in other areas across the state. Taxpayers may also compare their treatment to the treatment of owners of other kinds of property.

Appraisal districts and school districts may use the study to evaluate the need for reappraisal, although they should be conducting on-going ratio studies to obtain this information on a timelier basis. The state uses the study to trigger mandatory audits and reviews in some instances.

School district officials should pay particular attention to local ratio studies, and to the PVS, because they may affect their school funding. These officials should consult with their appraisal districts on a regular basis, and work with them to ensure that values are uniform and as close to market value as possible.

Individual Property Category Details

This section defines local properties and technical properties, and explains how PTD studies the various property categories. PTD publishes several documents that explain appraisal procedures used in the study in more detail. Contact PTD toll-free at (800)252-9121 or visit our Web site at <http://taxstar.cpa.state.tx.us/proptax/ptd.html> for more information.

Local Properties

Local properties consist of residential properties and vacant lots, rural real property not qualified for productivity appraisal, commercial real and personal property and other taxable property. PTD field appraisers gather almost all of the data used in the local properties portion of the study. These employees, assigned to different regions throughout the state, appraise individual properties and collect sales data and other market information.

As a rule, PTD will sample properties in a local property category in a school district if the category has at least 5 percent of total school district value or \$250 million in value based on the preceding year's



study. However, PTD may sample a category at any time, regardless of whether its value falls within this rule. Categories not sampled are assigned reported appraisal roll value (local value).

Residential Properties and Vacant Lots

These properties consist of Categories A (single-family residential real property), B (multi-family residential real property) and C (vacant lots and tracts).

For each of these property categories sampled, field appraisers collect sales information and perform appraisals to develop a sample of tested parcels. Using this sample information, PTD then develops a weighted mean appraisal ratio for each category. PTD develops a stratified ratio whenever possible. This estimated ratio, when divided into the school district's total self-reported value for the category, produces PTD's estimated value for the category.

Rural Real Property at Market Value

These properties consist of the portion of Category D (rural acreage) that is appraised at market value and all of Category E (farm and ranch improvements). Although Categories D and E remain separate categories on the property value reports, PTD merged these categories in 1989 for study purposes. This merger was necessary since rural improvements and land often sell together. Consequently, this merger makes it easier to compare total sales prices for land and buildings with the total appraised values on the appraisal roll without making artificial allocations between land and buildings. PTD does not appraise land qualified for productivity valuation at market value. This is discussed separately under *Technical Properties*, below.

PTD collects sales and performs appraisals to develop a property sample based on market values. This sample may include some property receiving productivity appraisal, but PTD calculates the ratios for those individual parcels based on the appraisal district's reported market values, not their productivity values.

From this market value sample, PTD develops a non-stratified weighted mean appraisal ratio and divides this ratio into the school district's reported value of rural real property that did not qualify for productivity appraisal. The result is PTD's estimated market value for acreage not receiving productivity appraisal and the value of farm and ranch improvements. See below for a discussion of rural real property that is qualified for productivity valuation and that appraisal districts are not required to appraise at market value.

Commercial Real and Personal Property

Category F1 contains commercial real property (land and improvements), while Category L1 contains commercial personal property (furnishings, fixtures, movable machinery, equipment and inventories). To estimate market values in these two categories, PTD collects sales information and, if necessary, performs appraisals for each school district category sampled. PTD develops either a stratified or non-stratified weighted mean appraisal ratio from the sampled properties and divides each school district's reported category value by the weighted mean ratio to generate PTD's estimate of category market value. This procedure is the same used to estimate value in other local property categories, with the exception of agricultural land qualified for productivity appraisal.

Complex Properties

Complex properties consist of oil, gas and other mineral properties; utility properties and qualified agricultural land. With the exception of agricultural properties, these properties do not sell often and if they do, the sales data is rarely available. As a result, PTD must obtain and analyze volumes of data



and develop computer models to value these properties. PTD's Austin-based appraisers perform all of the necessary work to review and appraise these properties.

As a rule, PTD will sample properties in each technical property category in each school district if the category has a minimum percentage of district value and a minimum dollar amount. PTD assigns categories not sampled the local reported appraisal roll value.

Qualified Agricultural Land

The Property Tax Code requires appraisal districts to appraise property at market value, unless the law requires otherwise. The law makes an exception for land used for agriculture or to raise timber.

Property Tax Code, Chapter 23, Subchapters (C) and (D), require appraisal of qualified agricultural land at its productivity value. Agricultural land qualified for productivity appraisal is in Category D1. These provisions require appraisal districts to classify qualified land according to its agricultural productivity, determine the net income-to-land for each land class over a five-year period, and capitalize the average to estimate productivity value. The Property Tax Code sets the capitalization rate at the greater of 10 percent or 2.5 points above the Farm Credit Bank of Texas' lending rate for December 31 of the prior year. Taxing entities base property taxes on the productivity appraisal, but appraisal districts also must estimate the market value of any land receiving productivity appraisal.

Property Tax Code, Section 23.71, establishes the procedures for productivity appraisal of timberland. This process differs only slightly from the procedure for agricultural land. The law classifies timberland according to soil type and the type of timber grown. For each class, PTD capitalizes the estimated net income-to-land into a value per acre.

To develop the productivity ratio, the PTD uses the appraisal district's report of total acreage in each of the agricultural land classes for each school district and information provided by published sources and persons in each county who are familiar with local agricultural conditions. Austin-based PTD staff develops an estimate of net return-to-land over a five-year period and capitalizes the average using the legally mandated rate to reach an estimated value per acre for each land class. Multiplying the value for each class times the reported acreage in the class yields the total taxable value per land class. The total of the values for each land class is the total taxable value for all acreage receiving productivity appraisal in a school district.

On the report of property value, school districts report the total appraised value of all land receiving productivity appraisal. PTD divides this reported value by its own estimate of productivity value. The resulting ratio shows the general level of appraisal of all land receiving productivity appraisal in a school district.

PTD calculates an appraisal district's ratio similarly and bases it on the sum of the school district calculations. This ratio is not a median derived from a property sample. As a result, PTD does not calculate measures of appraisal uniformity for land receiving productivity appraisal.

Finally, PTD adds the estimated market value of rural real property not receiving productivity appraisal and the estimated productivity value for land receiving productivity appraisal. The total is the estimated total taxable value of Category D (rural acreage).



Oil, Gas and Other Minerals

The minerals category consists primarily of oil- and natural gas-producing properties (Category G1) and lignite and sulfur mines (Category G2).

PTD samples mineral properties in school districts if the minerals category represents 5 percent or more of the total school district value. PTD assigns local value to mineral categories not meeting this criterion. PTD selects the G1 sample from the current year data provided by county appraisal districts and appraisal firms representing them. PTD assigns the local tax roll value to the low-value stratum that contains property in the lowest 5 percent of the property category's value in the school district.

After removing low-value properties, and placing high-valued properties in a separate stratum, PTD stratifies the remaining properties into four strata. Then PTD randomly selects the leases it will appraise for the study.

PTD uses computer models and specialized software to carry out discounted cash flow evaluations of mineral properties. Using computer models and information from a variety of sources, including an in-house database, PTD calculates economic parameters such as wellhead prices, operating expenses, equipment costs, net salvage values and discount rates. PTD generated the future cash flow based on forecasted production and economic parameters and then discounted to present value. PTD then adds the discounted equipment salvage value to derive the market value for each oil and gas property. PTD may also use discounted cash flow analysis to appraise lignite and sulfur properties.

To produce the individual appraisal ratio for each minerals property in the sample, PTD divides the appraisal district's value by the estimated market value. Category G ratios are calculated similarly to Category A, but Category G is divided into three subcategories.

PTD then calculates a stratified weighted mean ratio based on the strata discussed above.

Utilities

The utilities category (Category J) consists of the real property and tangible personal property of telephone, electric, gas distribution, railroad and pipeline companies, as well as the property of other companies commonly thought of as utilities, such as water systems.

PTD chooses utility samples by a method that ensures sampling the highest-valued properties and other properties as appropriate. PTD utility staff use recognized unitary valuation methods, including the cost, income, and market approaches, as applicable. PTD bases appraisals on information published in annual company reports filed with federal and state regulatory agencies and furnished directly to the Comptroller by the utility companies. PTD also obtains information from business and industry publications. PTD determines the percentage of unit value attributable to each company's Texas operations to develop an overall estimated value for the Texas portion of the company. Using information provided by the utilities or appraisal districts, PTD allocates this Texas value to the various school districts in which the utility owns property.

The total appraisal roll value for the sampled utility properties divided by the total estimated market values produces a non-stratified weighted mean ratio for utilities. Dividing this ratio into the school district's total reported value for utilities generates PTD's estimated total value of all utility property in the school district.

SECTION TWO:

How to Protest

*This section explains how to build an effective protest of the PVS' preliminary taxable values determined for each school district. The Comptroller may amend these preliminary findings at any time before final certification to the Commissioner of Education; therefore, **school districts should not rely on preliminary findings to set budgets or tax rates.***

Who may protest preliminary study findings?

The law gives school districts and some property owners a right to protest the Comptroller's preliminary findings of taxable property value certified to the Commissioner of Education. Property owners may protest if the Comptroller uses their property in a school district study and the total tax liability on all of the owner's property in the school district's category sample is \$100,000 or more. Individual owners may request information about values placed on their properties to determine if they wish to protest. To obtain this information, contact staff in the Complex Properties or Field Studies sections, at (800) 252-9121.

While the law does not permit an appraisal district to protest the Comptroller's preliminary findings of taxable property value certified to the Commissioner of Education, Comptroller rules allow appraisal districts to challenge appraisal performance measures using the same procedures that school districts use to protest preliminary value findings.

Protest Timeline

Petitioners have 40 days after the Comptroller publishes PVS preliminary findings to file a protest. **If a protest is necessary, school districts, appraisal districts and property owners must file a protest petition by the protest deadline: March 11, 2008.**

Comptroller rules combine school district, taxpayer and appraisal district challenges into a single hearing. For example, an appraisal district and a school district within that appraisal district present evidence to the hearing examiner at the same time.

Hearing examiners hear protests in May and usually issue written decisions by June. Any party who disagrees with the hearing examiner's decision may file an exception with the hearing examiner within 10 days after the hearing examiner sends the decision via e-mail, facsimile machine, or delivers it to an overnight delivery service. If a protesting party files an exception, the hearing examiner will issue a final decision in June.

Following the hearings, the Comptroller certifies the final PVS results to the commissioner of education. There is not a firm deadline for certification of final results. The law requires the Comptroller to certify final PVS results in time for the TEA to use the findings to distribute state education funds. The Comptroller usually certifies final values by early July.

A school district may appeal the result of a protest in district court by timely filing a petition signed by the superintendent. This is true even if the school district filed a joint protest with the appraisal district



or if the school district appoints the appraisal district as its agent. Appraisal districts and taxpayers may not appeal protest results to district court.

In this publication, the term “petitioner” describes the parties that may protest the preliminary findings: school districts, appraisal districts, and some taxpayers.

Protest Summary

The following pages describe the steps a petitioner must take to challenge the PVS preliminary findings. **Cooperation between school and appraisal districts is essential throughout the process.** Exhibit 10 summarizes this process.

EXHIBIT 10: Protest Summary

Step	Procedure	Page
Step 1: Review Preliminary Findings	Check preliminary findings for clerical errors, reasonableness, representativeness of sample and accuracy to determine if a protest is required.	30
Step 2: Prepare Protest Evidence	Gather and organize the necessary evidence, complete the protest forms enclosed with preliminary findings.	32
Step 3: Prepare and File Protest Petition	Prepare and mail the petition, forms, supporting evidence and statements by the protest deadline.	41
Step 4: PTD Review, Recommendation and Informal Conferences	PTD will review the protest and make a recommendation. If PTD’s recommendation is not acceptable, the protest may still be resolved in an informal conference.	44
Step 5: The Hearing	If the petitioner and PTD cannot agree, a formal hearing is held, in which the hearing examiner will review the evidence and hear arguments. After the hearing, the petitioner will receive the examiner’s decision.	46
Step 6: File Written Exceptions	An opportunity to file exceptions is afforded to each party adversely affected by the hearing examiner’s decision. The examiner may change the proposed decision based on the exceptions. The petitioner will receive notice of the final decision in June, following the hearing.	47
Step 7: Appeal a Final Decision	School districts have 30 days from the date the notice is mailed to file an appeal in Travis County District Court. If a suit is not filed, the values are final. Appraisal districts and property owners have no right to appeal.	47

Source: Comptroller of Public Accounts, September 2007.

Step 1. — Review Preliminary Findings

Chief appraisers, school superintendents and property owners should carefully review the preliminary PVS findings. At a minimum, they should carefully examine the following areas when they receive the findings and supporting data:

- ✓ **Are the local values the same as on the self-report?**
When used in this publication, the term, “self-report” means the information required on the *School District Report of Property Value and the Report on Value Lost Because of the School Tax Limitation on Homesteads for the Elderly*, whether submitted in electronic or paper format. PTD uses values from the self-report as the basis for the study. To verify the self-reported values, a school district should compare the following study data against the certified values reported by the school’s appraisal district.



- Are the category values on the summary worksheet the same as those reported on the self-report?
- Are the homestead exemptions correct?
- Are the tax abatement, pollution control, freeport and other exemptions reported correctly?
- Is the projected tax paid to a tax increment-financing fund reported correctly?
- Is the levy lost to the over-65 tax freeze correct?
- Is the levy lost to the 10 percent homestead value limitation correct?

✓ **Are there clerical errors in the sample properties?**

- Does the report list the correct appraisal roll values?
- Is each sample property located in the right school district?
- Are the selling prices and sale dates correct?
- Are the appraisal details correct?

✓ **Is there a mismatch in the sample?**

For instance, if any sales in the PVS for Category F1: Commercial Real Property include the value of property listed in Category L1: Business Personal Property, the category ratio may be incorrect. PTD may be comparing a total sales price to a partial appraisal district value. This error typically occurs when a party transfers an ongoing business to another party that continues to operate the business. Another common mismatch occurs when the appraisal roll value represents a vacant lot, but the sales price in the sample represents the lot with a new improvement.

✓ **Does the property sample accurately represent the category?**

Generally, look for gaps in the sample's coverage of the school district. As long as the level of appraisal (ratio) in un-sampled areas is similar to the ratio in sampled areas, it will not significantly affect findings. However, if the level of appraisal is different in un-sampled areas, the findings may be affected.

- Are the sales included in the sample accurate market transactions? Examine all sales for unusual terms or conditions, and check whether each sales price is accurate. See the list of sales that are often non-market transactions under Adding or Deleting Sales in Step 2.
- Does the sample fairly represent all areas of the school district?
- Does the sample include a representative and reasonable range of building types and ages?
- Does the sample include a reasonable and representative range of property values within the category?
- Does the sample reasonably represent market conditions that existed on Jan. 1 of the study year?

✓ **Do the sample averages seem appropriate for the school district?**

- Did PTD use the right average value per square foot or per acre?
- Is the average value per parcel or per structure correct? (Divide the total category or stratum value by the number of parcels or accounts in the category or stratum.)

✓ **Do the appraisal performance measures seem reasonable?**

- Given the last time the appraisal district reappraised the category, do the ratios appear reasonable?
- If the school or appraisal district has a ratio study of its own, are the ratios and coefficients of dispersion comparable?



✓ **Are Category J: Utilities appraised accurately?**

In addition to asking the questions listed above, appraisal and school districts may want to review the results of the utility study based entirely on appraisals of utility companies. The Comptroller's PTD will release copies of utility company appraisals on request. PTD's complex property staff can also supply non-confidential allocation information to help with this review.

Included in the school and appraisal districts' preliminary findings is a list of the companies that are in the utility sample. The school district weighted mean appraisal ratio appears at the bottom of the list. In addition, the list shows the company number, appraised value, PTD market value estimate and an appraisal ratio for the company tested. A review of this printout will help determine which company's appraisal may be in error. In addition to the information shown on the printout, the following information is also available for review:

- a table showing company names and identifying numbers;
- a listing of railroad trackage, type of track and assessed values for railroad companies included in the school district's utility sample;
- a list of pipeline company segments included in the school district's utility sample, such as the age, diameter and mileage of each segment sampled; and
- appraisals of utility companies included in the PVS.

Review the appraisal roll values used to determine if they are correct. Review all mileage and other physical characteristics listed on the printout to find any errors. Review the PTD-performed appraisal for errors.

Step 2. — Prepare Protest Evidence

Preliminary findings may be changed only if a written protest petition (Form 50-210, *School District and Appraisal District Petition Protesting 2006 Property Value Study*) is filed with the PTD manager that includes all of your supporting evidence, along with two copies of the petition and evidence, on or before the protest deadline.

In making a protest, the school district or property owner may present any relevant evidence for PTD's or the hearing examiner's consideration. To be certain that all evidence is fairly considered, it is important that the issues be clearly stated, and the evidence tied to the specific issues it supports.

A Comptroller rule requires a petitioner to organize the evidence by property category. The rule also requires all evidence that the petitioner intends to use to be included with the appeal. The Comptroller or the hearings examiner cannot review any petition that does not adequately explain the changes requested. To avoid confusion, the petitioner should identify each protested property by its PTD-assigned account number.

A petitioner may amend the petition or deliver additional evidence until midnight of the filing deadline. PTD will not accept petitions or additional evidence filed, faxed or postmarked after the protest deadline. Completing the forms as suggested in this step assures Government Code requirements for protesting are satisfied. PTD mailed copies of the forms to each district with the preliminary findings. For additional copies of the forms, visit the Comptroller's Web site at [//www.window.state.tx.us/tax-info/taxforms/02-forms.html#Study](http://www.window.state.tx.us/tax-info/taxforms/02-forms.html#Study).

PTD provides a Protest and Recommendation template that may be completed electronically for listing each category being protested, and within each category, for stating what specific issues are being protested. Petitioners should include all of the information required on the template.



The template requires the following data:

- **Category:** (type in the first category, such as “A”)
- **Property ID:** (here the appellant should type the account number of the property being protested. If the issue is of a broader nature, such as what time adjustment was used, the appellant could type a short description of the issue, such as “Time Adjustment.”)
- **Legal description:** (here the appellant should type the legal description of the particular property. In the case of a broader issue, leave it blank.)
- **Basis of appeal:** (here the appellant should clearly state why the account is being protested and what outcome the appellant is requesting from the PTD.)

✓ **Correcting a Report of Property Value**

Only school districts may protest to correct errors in their *Report of Property Value*, also called self-reports (SR).

Late changes to the appraisal roll also may require self-report changes. To correct a SR after the study’s preliminary release, the protesting party must file a protest by the protest deadline and should:

- Check the SR box on the Statement of Evidence form (Form 50-199 *School and Appraisal District Statement of Protest and Evidence*) in the section labeled Category protested;
- include an amended SR signed by the authorized agent;
- include an amended freeze loss form signed by the authorized agent;
- include a corrected copy of the appraisal roll’s real or personal property tax roll summary, including appraisal roll supplements, appraisal review board orders, court orders requiring value changes and other evidence of the value change;
- include a copy of the exemption summary to correct the SR’s exemptions;
- include a collection report verifying the loss to tax deferrals (report should include account number, taxable value and the amount of taxes deferred);
- include any Tax Increment Financing (TIF) agreement and amendments, if not provided during PVS, for TIF-eligible payment changes; and
- include a copy of the special appraisal (timber or other special agricultural use) tax roll summary to correct your self-report’s productivity appraisal data.

Refer to the Comptroller’s *Property Classification Guide* for information on how to classify property correctly.

Call the Complex Properties Section at (800) 252-9121 for questions about classifying special appraisal (timber, agricultural or other special uses).

✓ **Correcting a Clerical Error**

A clerical error is a transcription error, such as an error in listing the appraisal district value, a date, a sales price, an account number, the location of the property in a particular school district or other error that does not reflect the data PTD intended to record. To correct a clerical error in the preliminary findings:

- file a petition on or before the protest deadline;
- use the template form for the property category that has the clerical error;
- list the data that needs correcting; and
- file copies of documents that verify the correction, such as the correct appraisal card, deed or other supporting evidence.

Usually, PTD resolves clerical error and SR protests before the hearings examiner begins hearings.



✓ **Correcting Sample Representativeness**

If the makeup of the sample is significantly different from the makeup of all properties in the category, the petitioner may want to challenge representativeness. For example, if the sample does not include sales of a significant type of property, such as brick veneer houses, the representativeness of the sample may be questionable. The same principle applies if the sample does not include properties from a particular area with significant value, such as lakefront lots or a new subdivision, or from a particular value range, such as lots selling at \$5,000 to \$10,000.

To assess whether the sample is representative, the petitioner will need data on the characteristics of properties in the category and information showing how the PVS distributes the particular characteristic of concern in the property population. If the sample is broken into groups (stratified), the petitioner should show that the issue of sample representativeness is better resolved with the petitioner's groupings than with the Comptroller's value groupings (value strata).

The fact that the sample excludes some kinds of property does not necessarily mean that the Comptroller's value is inaccurate. The category value is likely to be inaccurate only if the omitted property type is a significant portion of the category value and is appraised at a level different from the properties in the sample. If the petitioner believes this is the case, the protest should include supporting evidence.

A protest of the sample's representativeness should include a statement that details the reasons for challenging the representativeness of the sample and propose a different stratification. It should include evidence of the petitioner's proposed alternate stratification and its basis. Consider including a comparative analysis for the sample and the category. Value stratification is an efficient method of increasing sample representativeness when properties of different values are on the roll at different appraisal levels. For more details about stratification see Page 6 or call (800) 252-9121 toll-free or in Austin call (512) 305-9744.

✓ **Submitting a Local Ratio Study**

If the petitioner has conducted an independent ratio study in the school district, the petitioner should submit the entire ratio study as evidence. The ratio study should include a statement showing the methodology the petitioner used and explaining why it is more accurate than the Comptroller's study. The petitioner should include: the data used to stratify the ratio study samples, the sales and appraisal information used, the sales dates, sale prices, CAD values, time adjustment data and any other information used as the basis for adjusting the sales prices. PTD requests that the petitioner submit the information in an electronic file, if possible.

✓ **Challenging Individual Sales in a Sample**

The petitioner may want to challenge specific sales. If so, Comptroller rules require the following procedure:

- List the challenged sales on the template form for the property's category. Give the property's account number from the appraisal roll, legal description or address, sale date, selling price and appraisal roll value for 2007. Appraisal roll values listed should reflect the property's value before exemptions.
- Include a statement, as required by Comptroller rules, in the 'basis of appeal' explaining why the sale is being challenged. Statements such as "the sale is not a market transaction" are not convincing. Instead, state why the sale is not a market transaction and include evidence that confirms the argument. Attach a photograph of the property and a copy of the appraisal card, if they support the petitioner's position. If the sale is not a market transaction or involves



unusual terms, documentation—such as a sales contract or written statement from the buyer—is helpful.

- State whether PTD should adjust or delete the sale.
- Provide supporting documentation for any requested adjustments, such as an analysis of the market in which the property is located.

✓ **Challenging Individual Appraisals in a Sample**

Samples often include appraisals. This results when sales are scarce, when sales under-represent property types or when PTD suspects that sales chasing may be distorting the study results. In most cases, an appraisal by an appraiser independent of the appraisal district carries more weight than one by an appraisal district. To challenge individual appraisals in a sample, the petitioner must:

- List the challenged appraisals on the template under the specific category, including all information requested on the form. If the petitioner thinks the appraisal is correct, but that one or more variables such as construction class or percent good are incorrect, include corrected variables with a detailed explanation and documentation of why it is correct.
- Attach a statement for each appraisal indicating why the petitioner believes the appraisal is incorrect. Statements such as “this appraisal is not representative” or “the percent good is wrong” are not convincing. Instead, state why the appraisal is not representative.

These additional steps could make the protest more convincing:

- If some aspect of the appraisal method should be changed, state all assumptions and sources of the data used.
- Use a generally accepted manual for cost data and identify the manual used. Submit all documentation for the schedules used.
- Justify depreciation estimates.
- Document comparable sales and provide a sales adjustment grid.
- If the petitioner uses the income approach, the petition should include a statement documenting the market data used, as well as calculations of market rents, vacancies and expenses. Attach the income and expense analysis used. Document capitalization rates with a sales analysis, a band-of-investment analysis or another generally accepted method. Explain and document income and expense projections adequately.
- If petitioner thinks a sample is not representative, explain why and submit documentation.
- Submit a clear photograph of the property and a copy of the appraisal card for each challenged appraisal. More than one photograph can often help to document the property’s characteristics. Keep copies of the photographs sent to PTD.

✓ **Challenging a Time Adjustment Factor**

The law requires the appraisal of property at its market value as of Jan. 1 of the tax year. When a property sells on a different date, a time adjustment factor increases or decreases a property’s sales price to adjust for market appreciation or depreciation. The objective is to calculate what the property would have sold for on Jan. 1 of the tax year.

If the petitioner believes PTD’s time adjustment factor is wrong:

- Include the issue in the template, listing the property ID as ‘time adjustment.’
- Under basis of appeal, present the reasoning for a change to the time adjustment.
- Provide evidence that supports petitioner’s time adjustment factor. If the evidence includes large amounts of data, include that data in the appeal, using an Excel spreadsheet.



✓ **Adding or Deleting Sales**

PTD selected the sales in each sample by one of these two methods:

- the census method, which includes all the market sales that occurred in a given time period; or
- the random selection method, in which PTD selects the sample randomly, which ensures that all the market sales in a given time period have an equal chance of selection.

Whether petitioner requests adding all available market sales or a portion of them, PTD will recommend adding the sales only under the following conditions:

- Petitioner files a signed statement that all the property transactions (market and non-market) known to petitioner that occurred in the time period used in the study are included with the protest petition in an electronic listing following the requirements of the *Electronic Property Transaction Submission Manual* and submits all relevant information about the terms and conditions of the sale.
- Petitioner indicates which sales should be excluded from consideration in a ratio study including those that are not considered market transactions (see list of typical non-market transactions below).
- If petitioner concludes that a property did not transfer at market value, evidence must be provided proving that the sale is non-market.
- Documentation submitted with the petition must show that at least forty percent of the sales were verified. Acceptable verification documentation includes closing statements, sales agreements, written confirmations and sales reporting service documents.
- Adding the sales must maintain or enhance the representativeness of the existing sample.
- In staff's judgment, the resulting sample is unbiased by sales chasing, inappropriate screening of the sales population, or inappropriate sample selection.

To avoid the question of bias when petitioner requests adding only a portion of the sales population to a PTD random sample or requests replacement of a PTD random sample with a different sample, staff may consider drawing another random sample from the original or the updated population in the presence of petitioner.

To be included in a ratio study, sales submitted by petitioner must be accurate, arms-length indicators of market value. According to the International Association of Assessing Officers (IAAO), an appraisal office should not use non-market sales in a ratio study. See the IAAO's *2007 Standard on Ratio Studies* for more details about non-market sales and for a discussion of sales with special conditions and sales by large business entities. Some typical examples of sales often found to be invalid for ratio studies, according to the IAAO, are:

- Sales involving governmental entities or public utilities (these sales are generally forced sales, such as condemnation sales).
- Sales involving charitable, religious or educational institutions (these sales are usually gifts).
- Sales in which a financial institution is the buyer (These are often foreclosure sales that have not been exposed to the open market). Open-market sales, in which a financial institution is a willing buyer, such as the purchase of vacant land for a branch bank, are likely valid. Sales in which a financial institution is the seller may be valid if made on the open market.
- Sales between relatives or corporate affiliates (these sales are not usually open-market sales and are made at prices favorable to the buyer.) Corporate sales often require considerable research to determine legal relationships.



- Sales of convenience, made to change or correct the title or deed (these sales may have the same grantee and grantor and the sale price is usually nominal). A review of the deed is usually the best way to identify whether the transaction is a sale of convenience.
- Estate sales in which the buyer is an executor or trustee (these are usually non-market sales if used to satisfy the debts of the deceased or the wishes of an heir). If neither of these factors is present, however, sales in which an estate is the seller may well be valid market sales.
- Forced sales that result from a judicial order in which the seller is normally a sheriff, receiver or other court officer. An auction in which the receiver is required to accept whatever bid offered is an absolute auction and produces sales that are always invalid for ratio studies. On the other hand, if the auction is well advertised and attended, the sale price may be at market value.
- Sales in which the title is in doubt. (These sales tend to be below market value). Properties that sell with a quitclaim deeds or trustee's deeds may not have a merchantable title.

To have non-market transactions adjusted or deleted from the sample, provide documentation proving that the property sold for more or less than market value, and request their deletion or adjustment.

✓ Adding Appraisals to a Sample

Appraisals are most appropriate as evidence when there are no sales for a category or the sales available do not properly represent the category. To add appraisals to improve representativeness, include data indicating why PTD's sample is not representative. To submit several appraisals, either randomly select the properties or justify using an alternate selection process. The final sample should represent an appropriate range of values and property types within the category. No matter how accurate the appraisals may be, a sample has little or no weight if it appears the petitioner selected properties to achieve a particular ratio or value.

Appraisals are sometimes difficult to support as evidence because of the assumptions required in the process. Addressing errors or non-representativeness in the sample is usually more efficient than submitting alternate appraisals. Appraisals have more weight if performed by an independent expert representing the school district, someone who follows recognized professional appraisal standards and who has no personal interest in the outcome of the hearing.

Submit information for appraisals with the following items in mind:

- Use the study's appraisal date of Jan. 1. Justify using appraisals for other dates and document all time adjustments.
- List all appraisals on the template. Appraisal roll values should reflect value before subtracting exemptions.
- Use market value for appraisals prepared by petitioner, not another value criteria, such as loan value. Property Tax Code Section 1.04(7) defines market value as:
 - [T]he price at which a property would transfer for cash or its equivalent under prevailing market conditions if:
 - (A) exposed for sale in the open market with a reasonable time for the seller to find a purchaser;
 - (B) both the seller and the purchaser know of all the uses and purposes to which the property is adapted and for which it is capable of being used and of the enforceable restrictions on its use; and
 - (C) both the seller and purchaser seek to maximize their gains and neither is in a position to take advantage of the exigencies of the other.



- Submit a supporting statement for each appraisal that:
 - ♦ identifies the appraiser and describes the appraiser’s qualifications;
 - ♦ shows the appraiser’s assumptions and identifies all data sources, particularly for cost, income and expense data;
 - ♦ states and supports depreciation estimates, if the cost approach is used;
 - ♦ lists comparable sales and includes an adjustment grid, if the market approach is used;
 - ♦ documents rent calculation, capitalization rate selection, income projection methods and sources of the data, if the income approach is used; and
 - ♦ gives the date for which the appraiser estimated market value.

✓ **Protesting the Productivity Value in Category D: Rural Real Property**

Category D includes rural real property that qualifies for productivity valuation (Subcategory D1) and rural real property that does not qualify (Subcategory D/E). The property that does not qualify is appraised at market value and is protested similarly to Categories A, B and C.

The Property Tax Code requires appraisal districts to appraise qualified property at both market value and productivity value. Productivity value is based on an agricultural property’s ability to produce agricultural or timber products.

For detailed information about the appraisal of qualified agricultural and timberland, see the *Manual for the Appraisal of Agricultural Land and the Manual for the Appraisal of Timberland*.

Protests of agricultural land’s productivity value estimates frequently challenge the PVS estimate of the landowner’s income or expenses for the land. The most effective evidence for these protests includes actual lease agreements specifying the terms of a cash lease or the shared crop proceeds and expenses. Since values are determined based on landowner income and expenses in a typical lease, affidavits from owners detailing the income from these leases and expenses incurred are good evidence. Actual receipts supporting the amount of landowner expenses could be included as evidence. Summaries of cash or share lease information are also acceptable, if the summary includes the names of the leasing parties, the acreage involved and the terms of the lease. Protests should identify the specific income and/or expense items that the petitioner is protesting. Since agricultural land’s productivity values are based on five years of information, any evidence submitted should identify the year that the information covers.

Information supporting protests of timberland value estimates are more effective if supported by any of the four recognized sources of information specified in Property Tax Code Section 23.71: the U.S. Forest Service, the Natural Resources Conservation Service, the Texas Forest Service and colleges and universities within the state.

✓ **Protesting Categories F1 and L1**

The study divides the appraisal ratios and school district value estimates for commercial property into two categories. Category F1 is commercial real property and Category L1 is commercial personal property.

Correcting sample representativeness, sales and other issues discussed previously for other categories also apply to Categories F1 and L1.

✓ **Challenging Individual Appraisals in an Categories F1 or L1 Samples**

Challenging appraisals included in a Category F1 or L1 samples may require PTD and the district to make conclusions without using sales as evidence of value. In these cases, the most efficient way



to structure a protest is to perform and submit a detailed examination of the property. The examination should identify any erroneous information and appraisal assumptions. Evidence that supports errors identified in appraisals may include photographs of the real estate or personal property, construction costs, comparative sales analysis or other supportable appraisal techniques.

If protesting particular personal property (Category L1) values, the best evidence is copies of company accounting records, income tax returns, asset listings showing original costs and dates of acquisition, supportable evidence of year-end inventories and photographs showing inventory levels and equipment conditions.

✓ **Adding Sales or Appraisals of Commercial Properties**

To add sales or appraisals of commercial properties, follow the same general guidelines for sales information discussed previously, include a copy of the appraisal card showing the property's appraisal roll value and include all properties that were part of the sale.

✓ **Protesting Category G: Oil, Gas and Other Minerals**

PTD usually appraises mineral properties using the income approach. The appraiser estimates the value by computing the present worth of a property's expected income, using discounted cash flow analysis. Assumptions about the size, distribution and duration of expected income flows generally define these estimates.

Production decline curves, such as rate vs. time, rate vs. cumulative production, surface pressure vs. cumulative production, bottom hole pressure/Z factor vs. cumulative production and type curves, are used to appraise oil and gas properties. PTD bases the production forecast and economic evaluation methods on the principle that it can predict a mineral lease's future production and estimate its economic value based on past performance and related reservoir characteristics.

✓ **Challenging Individual Appraisals in a Category G Sample**

Projections of future lease production, product prices, lease-operating costs and the rate at which to discount future income to the present (the discount rate) are important variables in appraising mineral properties. A protest should center on why one or more of the variables used by PTD were wrong. Whether local mineral properties are appraised through contract with a professional valuation firm or in-house by appraisal district staff, the petitioner should supply the following data:

- lease name of protested property;
- PTD Property ID number;
- CAD/firm lease number;
- CAD's total 8/8ths appraised value;
- allocation and value assigned to school district;
- undiscounted salvage value;
- contested appraisal parameters and reason for protest (e.g., gas decline rate and lease operating expenses);
- exact changes requested and the rationale for each change (e.g., change the gas decline rate to 25 percent to reflect the decline rate during the last six months and change the first-year lease operating expenses to \$25,550 to reflect the actual operating expenses incurred by the operator); and
- supporting documentation for each requested change (e.g., provide a copy of your appraisal's gas decline curve and a copy of the operator's itemized lease operating expenses).

The petitioner should submit the following data to support the protest:

- original appraisal;
- copy of the itemized lease operating expenses provided by the operator;



- historical and projected production decline curves;
- pressure/production decline curves and other pressure information;
- water cut vs. production information;
- oil and gas price information and starting production rates;
- remaining recoverable reserves;
- workover and well treatment information; and
- any other information that supports the protest.

The petitioner should check the appraisal roll values for the properties and, if not in agreement with one or more of the variables used in PTD's appraisals, should document the differences or areas of disagreement and file a protest.

✓ **Correcting Category G Sample Representativeness**

Category G consists primarily of oil and natural gas producing properties, lignite and sulfur mines and non-producing minerals. PTD divides these mineral properties into three subcategories. Subcategory G1 consists of oil and natural gas producing properties. Subcategory G2 consists of mines and quarries including lignite, sulfur and other mineral reserves. Subcategory G3 consists of non-producing mineral properties defined as real property. Subcategories G2 and G3 typically consist of little value, to which PTD assigns the local tax roll value.

A petitioner may challenge the representativeness of the sample by the same methods discussed earlier under Correcting Sample Representativeness.

When submitting additional appraisals, provide all necessary variables for each property for PTD review (see list of variables under Challenging individual appraisals in a Category G sample above). When requesting removal of an individual property in the sample, document why the particular property should not be included. In either case, provide information about the amount of value and number of leases for each kind of lease in the school district.

✓ **Protesting Category J: Utilities**

PTD bases the utility sample in each school district entirely on appraisals. PTD appraises each utility company as a unit and allocates this unit value to school districts that have the utility company's property. Next, PTD compares the allocated values to the appraisal district's values to develop ratios and estimate taxable values. If a petitioner finds appraisal or allocation problems, the petitioner should document them with sufficient evidence to support a change.

If the petitioner thinks the properties included in the Category J sample are not representative, the protest should include evidence that supports the exclusion of property or the inclusion of additional properties, following the guidelines for challenging representativeness presented previously.

If the petitioner thinks that PTD's value or allocation of value is incorrect, the protest should include all evidence necessary to support this position. This evidence may include:

- the unit value appraisal;
- valuation schedules;
- detailed listings of the physical property;
- investment information; and
- other valuation data.

If the petitioner finds an error in the appraisal roll values, the petitioner should provide a copy of the appraisal card or appropriate portion of the tax roll.



Step 3. — Prepare and File Protest Petition

To protest the PVS preliminary findings, a school district, appraisal district or property owner must file a petition on or before the protest deadline. The petitioner should use Comptroller forms and the new PVS Protest and Recommendation template in Word format. Using these forms and template will help you organize your evidence and present it in a standard format. Having the information in a standard format may speed up our review of your protest.

The Comptroller has made some changes that will make filing your appeal easier. To file a valid appeal, petitioners complete only two hardcopy forms and submit their evidence in an electronic file. The new PVS Protest and Recommendation template completely replaces the category evidence sheets that were required for past protests. Petitioners no longer are required to provide most of the sale identification data that was required by the category evidence forms.

Protest forms are available on the Comptroller's Web site at [//www.window.state.tx.us/taxinfo/taxforms/02-forms.html#Study](http://www.window.state.tx.us/taxinfo/taxforms/02-forms.html#Study) or by calling PTD's Reporting Section at (800) 252-9121. You also may call the Reporting Section if you need an electronic copy of the evidence template.

There are four types of protests:

- school district protest;
- appraisal district protest;
- joint school and appraisal district protest; and
- property owner protest.

An appraisal district does not have to protest—jointly or otherwise—just because one of its component school districts is protesting. Likewise, a school district does not have to protest when its appraisal district protests. However, the Comptroller's rule on protest procedures requires a protesting school district to notify each appraisal district that appraises property for the school district about its protest. Likewise, a protesting appraisal district must send its notice of protest to each school district that participates in the appraisal district.

File only one petition.

A petitioner may file **one** protest petition—one petition covers every property category that is under protest. The "one petition" rule does not mean that only one person may gather or present evidence—that number is not limited. Petitioners may authorize other persons to gather and present evidence. PTD may review evidence filed by a person other than the agent, however, **only if** it has written authorization from the agent or petitioner to review this evidence.

For the petitioner's convenience, an authorization statement now appears at the bottom of the *Statement of Protest and Evidence* form. Instead of submitting authorization on each of the category evidence forms that were used for past protests, petitioners now submit authorization on one form.

Assume, for example, that the petitioner wants its own agent to handle the evidence on every category except Category J, which the petitioner wants to assign to Appraiser B. The petitioner should file one petition, name the agent and provide PTD with written authorization, on the *Statement of Protest and Evidence* form, for Appraiser B to present Category J evidence.

School or Appraisal District and the Type of Protest

The petitioner should provide the name of the school or appraisal district that is protesting and specify if the petition is being filed to protest for the school, appraisal district or property owner, or a combination of those parties.



Identify one agent.

On the *School District and Appraisal District Petition* (Form 50-210) the petitioner should list its agent's name, address, telephone number and fax number. **A petitioner may have one, and only one, agent.** A school district and appraisal district that are protesting jointly must select one agent to represent both parties.

Throughout the review process, PTD may need to contact the agent with questions about evidence and to send correspondence to this individual. PTD will send all correspondence about the protest including the decision, to the agent. For effective representation during the protest, the petitioner should select an agent who:

- knows about the petition and evidence;
- has the authority to make decisions about the protest; and
- will be available to discuss the protest with PTD staff.

When reviewing the evidence, PTD will consider only that evidence submitted by the agent or a person authorized by the agent in writing to present evidence.

Sometimes, a petitioner finds it necessary to replace the agent who was originally named on the protest petition. To work with a new agent, PTD must first have the petitioner's written authorization. The new agent will replace the former agent for all purposes in connection with the protest. PTD can accept only the new agent's decisions. All correspondence, including the hearing examiner's decisions, will be sent to the new agent.

The petitioner's named agent may represent the petitioner at the hearing or the petitioner may be represented by an individual who is not the agent, such as an attorney or the chief appraiser. At any time, the petitioner's hearing representative may designate another individual to participate in the hearing. If the petitioner's agent will not be present at the hearing and wants another individual to represent the petitioner, the agent must give PTD a written designation in advance of the hearing.

Have the petition authorized by the proper officials.

The *School District and Appraisal District Petition* (Form 50-210) contains an authorization statement for each party. The superintendent must sign the statement for a school district protest. The chief appraiser must sign the statement for an appraisal district protest. Either the property owner or property owner's agent must sign the *Owner Protesting Property Value Study Petition* (Form 50-233). A joint school-appraisal district protest petition must be signed by both the chief appraiser and superintendent. To appeal the final protest decision to district court, the school superintendent must sign the petition.

The authorization statement:

- authorizes the protest;
- appoints an authorized agent (the person to whom PTD will direct all official contacts);
- affirms that the information submitted in the protest is true and correct to the best of the signer's knowledge;
- acknowledges that a value claimed to be correct has been stated; and
- confirms that notice has been given to the proper entities.

Complete the statement of value claimed to be correct.

The Government Code requires a petitioner to state the total value it claims to be correct. The petitioner should state the total value it claims to be correct on the Comptroller form entitled, *Statement of Protest and Evidence* (form 50-199), which is a part of the petition.

**Check each property category under protest.**

On the *Statement of Protest and Evidence* form, check the categories that are being challenged.

The petition serves as a cover sheet for the entire protest. The *Statement of Protest and Evidence* (form 50-199) lists each property category. The initials “SR” in the category blank indicate that the petitioner is protesting some aspect of the self-report. The petitioner should check each property category that is under protest.

Submit all evidence with the petition.

The petition is an evidentiary appeal, which means that it must include all evidence that the school district, appraisal district or property owner will rely on to challenge the Comptroller’s preliminary findings. This requirement gives the PTD enough time to look at all available evidence, try to resolve a protest without a hearing and hold a hearing if necessary. PTD cannot review late-filed evidence and will make a motion to the hearing examiner to exclude late evidence.

Organize the evidence by category.

Comptroller rules require the petitioner to organize evidence by property category. An appraisal district that challenges the Comptroller’s finding of median level of appraisal should organize its evidence by property category and school district. This organization enables PTD and the hearing examiner to focus more efficiently on the individual property category samples challenged in each school district.

Note: For agricultural and timber productivity value protests, the subject of the protest determines the category that should be protested. If the protest deals with appraisal issues, it is a Category D1 protest. If it deals with changes from land class to land class, or it corrects self-reported acreage breakdowns or appraisal district values, it is a self report (SR) protest.

State why the preliminary findings are wrong.

In protesting the Comptroller’s preliminary findings, the petitioner must specifically state why the preliminary findings are wrong, and provide evidence of the error, before the deadline for filing the protest. All documents and other evidence the petitioner wants PTD or the hearing examiner to consider must be submitted before the protest deadline.

The law requires the statement of evidence to be complete enough to confer jurisdiction on the hearing examiner and a district court. The petitioner’s evidence submission must be clear, detailed and specific.

PTD’s new *PVS Protest and Recommendation* template simplifies the process of stating why the findings are wrong and submitting clear, detailed, and persuasive evidence. For each category of property, use the template to state the action the Comptroller should take and state how the action requested will improve the study’s accuracy. The template, with detailed instructions will be e-mailed to all school and appraisal districts at preliminary certification.

List sales and appraisals at the appropriate point on the template. Attach these and any other supporting data that is in hard copy form to the statement of evidence form. Submit the original and two copies of every document and item of evidence with the petition, on 8½ x 11 paper when possible. Attach originals of any photographs to one of the copies.

File the petition on time.

Petitioners must file the petition including a hard copy of the “name” template and evidence, plus two copies of these documents, by the protest deadline. Please include a CD or DVD that contains an



electronic copy of the Protest and Recommendation template. Or, you may e-mail PTD a copy of the template at PTDappeals@cpa.state.tx.us. A petition is timely if the petitioner addresses it to the PTD Manager, sends it by first class mail or express mail and has a postmark date no later than the protest deadline. The Petitioner may fax a petition of fewer than 10 pages as described above and PTD will consider it timely submitted if received by fax on or before the deadline. However, the petitioner must mail the original to PTD within three days of the fax. Send faxes to (512) 463-2427.

A school district, appraisal district or property owner may not file any evidence after the protest deadline. The protesting party may not raise issues or present evidence not contained in the petition either to the hearing examiner or in the exceptions to the proposed decisions. The protesting party may supplement or change a petition before the protest deadline.

A protesting party may receive one extension of up to 10 days if requested in writing five days in advance of the original deadline. The hearing examiner may grant an extension only for good cause. Good cause is something that the petitioner has no control over, such as a medical emergency.

PTD's Corrections

Occasionally, PTD discovers an error in its study before the deadline to file protests. PTD may make changes, certify new preliminary findings and notify the district of the change. Each district adversely affected by a change has 40 days to protest the results of that change. A change is adverse if the school district value increases as the direct result of the change.

Property Owner Protests

As mentioned at the start of Section Two, a property owner may protest the study's preliminary findings if the property tax liability for all of the owner's properties included in a school district category sample is \$100,000 or more for the year of the study.

Property owners are subject to the same general protest petition filing requirements, deadlines and other protest procedures. There are, however, some differences, such as:

- The property owner or property owner's agent must sign the protest petition.
- The owner must be prepared to show the hearing examiner that the total tax liability on the property or properties included in a school district's category sample is \$100,000 or more. The Comptroller's rule authorizes the hearing examiner to determine whether the he or she has jurisdiction over the protest. If the property owner cannot show the total tax liability is \$100,000 or more for the year of the study, the hearing examiner does not have authority to hear the protest.
- The property owner is not required to notify districts that may experience property value changes because of the protest. Districts may call the PTD's Complex Property Section after the filing deadline to find out if a property owner in the district has protested. Likewise, although the Comptroller sends each district a new summary of final values, a district may call the PTD's Complex Property Section to find out if the result of an owner's protest has changed its value or measures.

Property owners wanting more information on submitting a protest, may call the Complex Property Section at (800) 252-9121.

Step 4. — PTD Review, Recommendation and Informal Conferences

PTD will review all submitted evidence and make recommendations for resolving the protest. More often than not, PTD settles protests informally after it recommends adjustments to appraisal performance measures or market value estimates.



Request for Additional Evidence

PTD may request additional evidence to help resolve a protest. Petitioners have 10 working days from the date of the request to submit this evidence. The hearing examiner may not consider evidence that was not provided to PTD on time.

It is not the intent of the 10-day rule to complete a protest that was filed without sufficient evidence. PTD will request additional evidence under the 10-day rule only when it can resolve the issue by production of self-proving documents, such as a warranty deed or closing statement, to prove the market nature of a sale for which some evidence was submitted.

PTD may recommend other changes.

The Comptroller's duty is to ensure the Property Value Study's overall accuracy; therefore, PTD's review of a protest is not limited to merely those specific items raised by a protest. A full review of protested categories and a recommendation devised to ensure accuracy are necessary for the Comptroller to meet this obligation.

For example:

- A protest requesting that PTD delete some non-market transactions from the sample could result in a PTD recommendation to delete all non-market transactions from the sample.
- A protest suggesting that some sales be added to the sample could result in a PTD recommendation that all known sales be added to the sales population and a new sample randomly selected from that population.
- If PTD randomly selected the sample, it may replace any sales deleted during the protest process with alternative, randomly selected, sales.
- If a shortage of alternative sales prevents PTD from reaching its target margin of error, it may recommend randomly selecting properties to appraise for inclusion in the sample.

In any event, the recommended new ratio may be higher or lower than the ratio originally protested. PTD makes recommendations like these if doing so increases the study's accuracy more than taking the action that the petitioner requested. PTD does not know what the effect of a recommendation will be at the time the recommendation is made.

Petitioner's Response

After reviewing a protest, PTD mails an *Agree/Disagree* form and a *Conference Hearing and Notification* form, along with the written recommendation on the protest. The petitioner should review the recommendation and inform PTD if it agrees or disagrees by completing and returning the forms. If the petitioner agrees, the petitioner's protest will be resolved and a hearing will not be required. If the petitioner disagrees, the petitioner may request that a hearing be conducted, by written submission or in person, by selecting that option on the form. The hearing examiner will give a written submission the same weight that is given to evidence presented in person.

Informal Resolution Conferences

PTD schedules informal conferences for April 28 through May 2, 2008. Before the hearing on an unresolved protest, PTD schedules an informal conference to explore the possibility of resolving the protest without the necessity of a formal hearing. PTD will notify the petitioner of the date and time set for the informal conference. PTD may conduct these informal resolution conferences entirely in writing or via telephone conference call. The petitioner should contact PTD at (800) 252-9121 to discuss the preferred conference call option.



Step 5. — The Hearing

PTD schedules formal hearing dates for May 12-16, 2008. The agency will notify each protesting party's agent of the date and time of the hearing after it receives the protest. While PTD's goal is to be as accommodating as possible, it cannot reschedule hearing dates without creating serious difficulty in controlling the flow of protests. Therefore, PTD does not reschedule a hearing without a showing of good cause. Consolidation of hearing dates for the convenience of an agent or attorney is not good cause for rescheduling.

During a hearing, the protesting party may present oral argument to support its challenge. However, the protesting party may not raise an issue or request a remedy that was not specified in the petition and may not present oral or written evidence that was not submitted with the petition. Hearing examiners may not consider admissions, proposals or offers made in attempts to compromise disputed issues in a preliminary conference.

The hearing examiners base their decisions on the evidence and arguments of the protesting party and PTD. The hearing examiner must issue a written decision. The hearing examiner e-mails, faxes or mails by overnight delivery service the decision to each protesting party.

Guidelines for Presenting a Protest

Petitioners appearing at a protest hearing should present protests by following these guidelines:

- ✓ **Restrict comments.**
Do not introduce evidence that was not submitted by March 11 and do not protest new categories, issues or remedies at the hearing. Regardless of who presents it, oral evidence must reflect evidence timely filed with the petition.
- ✓ **Be organized.**
Unless directed otherwise by the hearing examiner, support the petition by:
 - stating the name of the school district;
 - presenting protest in category order;
 - summarizing the evidence provided on that property or issue; and
 - continuing with the next issue, category or school district.
- ✓ **Be brief.**
The hearing examiner may set a time limit for the hearing. Brevity will allow time for the hearing examiner to ask questions. Observe the time limit established for the hearing, regardless of the number of categories protested.
- ✓ **Stick to the point.**
Bringing up issues that the hearing examiner cannot resolve such as the education aid allocations made by the state, reduces the amount of time available to discuss evidence. While the hearing examiner may be sympathetic, he or she will only consider adjusting preliminary ratios and values based on relevant evidence—that is, evidence related to the correct total taxable value for the school district.



Step 6. — Written Exceptions

The hearing examiner will prepare and send to the agent the proposed decision on petitioner's protest. The petitioner or the PTD may file written exceptions to the proposed decision, but may not submit any more evidence. Exceptions must be filed no later than 10 days after the date the hearing examiner sent the recommendation to the agent. Either party will have an opportunity to reply to the exceptions. The petitioner or the PTD has 20 days from the date the hearing examiner sends the proposed decision to reply to either party's exceptions. Copies of all exceptions and replies shall be served promptly on the examiner and on all other parties in the protest with certification of service furnished to the hearing examiner.

The examiner will consider all written exceptions and responses made to written exceptions. Based on these documents, the examiner may or may not decide to change the proposed decision.

If the petitioner does not file exceptions within 10 days, the proposed decision becomes final. If the petitioner files exceptions, the original or amended decision becomes final when signed by the Deputy Comptroller.

Step 7. — Appealing a Final Decision

The hearing examiner notifies each protesting party's agent of the final decision if either party files exceptions. The statute permits school districts to appeal the examiner's final decision to the Travis County District Court by filing a petition within 30 days of the date it receives notice of the Comptroller's final decision. The law does not give taxpayers or appraisal districts the right to appeal to district court.

A school district may appeal to district court only those items and issues raised in its petition and exceptions.

A school district may appeal to district court if it filed a timely protest petition signed by the superintendent. That protest petition may be either a joint school/appraisal district protest or it may be a separate school-district-only petition.

Appendices

Appendix A: Selective Re-appraisal of Sales (Sales Chasing)

Beginning with the 1999 PVS, Government Code Section 403.302 required the Comptroller to ensure that “different levels of appraisal on sold and unsold property do not adversely affect the accuracy of the study.” Differing levels of appraisal are often referred to as unequal appraisal, and the most common cause of unequal appraisal is “sales chasing.”

Definition

Sales chasing is the practice of using the sale of a property to trigger a change in appraised value of that property to (or near) the property’s selling price. Unless unsold properties are appraised at a similar level, the practice of sales chasing causes unequal appraisal in the CAD and may cause invalid findings in ratio studies like the Property Value Study.

Effect on the Property Value Study

Sales chasing may taint the findings of ratio studies that require large samples of sales. The study depends heavily on sales because the alternative, conducting appraisals, is cost prohibitive. If a CAD is chasing sales, the sample will show appraised values at or near market value. Since PTD selects the sample from a subgroup of all properties in its category and the CAD treats this subgroup differently than the universe of properties, this sample may not reflect the true nature of the universe of properties. The reality may be that the majority of appraised values—unsold properties—may be below or above market value. In a rising housing market, sales chasing may cause a study to arrive at an inaccurately low taxable value. Conversely, in a falling market, sales chasing may cause a study to arrive at an inaccurately high taxable value.

Study Response

PTD’s response to the legal requirement to ensure that the accuracy of the study is unaffected by unequal appraisal involves two primary steps:

1. conduct one or more tests in each CAD to determine if it is likely sales chasing is occurring; and
2. adjust the sample to correct for sales chasing in districts where sales chasing is likely.

In situations where sample adjustments are required, PTD ensures that the sample contains properties that had no chance of unequal treatment by sales chasing. It does this by including sales that occurred too late in the study year for the CAD to use the sales price, by including sales from sources unavailable to the CAD or by including PTD appraisals.

It is important to note that even in appraisal districts where samples are adjusted, if sold and unsold property is appraised equally at or near market value, the study findings will not be adverse to the school or CAD.



Appendix B: Questions and Answers about Margins of Error and Confidence Intervals in the PVS

Definitions

“95 percent confidence interval” or range of values means that, on average, 95 out of 100 samples would result in a value that lies within the computed range of values. PTD assumes the correct value to be within the computed range of values.

Standard error is a commonly used statistical term. It is a measure of the differences between an average and all the numbers that go into determining that average. Conceptually, it is somewhat similar to a coefficient of dispersion.

“t-value” is an adjustment factor that increases the margin of error as the sample size decreases.

Frequently Asked Questions

1. What is a margin of error and how does PTD calculate it?

A margin of error (as computed in the PVS) is approximately twice the standard error of a school district’s estimated value (in the property categories tested), expressed as a percentage of such value. Consequently, the margin of error indicates statistical reliability.

PTD uses the following procedures to calculate the margin of error:

- Calculate the standard error (SE \$) of the school district’s estimated value.
- Multiply the standard error (SE \$) by the appropriate t-value at the 95 percent confidence interval. (See definition above)
- Divide the product of the standard error (SE \$) and the t-value (See definition) by the school district’s estimated value.

The following formula describes this procedure:

$$\text{Margin of error} = (\text{SE \$} * \text{t-value}) \div \text{ISD estimated value}$$

2. How are margin of error and confidence interval related?

The margin of error is equal to one-half of the confidence interval expressed as a percent of total value tested in a school district. For example, assume PTD estimates market value in sampled and census property categories in ABC school district to be \$100 million (before exemptions). PTD computes the margin of error to be plus or minus 5 percent of \$100 million. Market value plus 5 percent is \$105 million; market value minus 5 percent is \$95 million (the \$100 million estimate is known as a point estimate; the confidence interval of \$95 million to \$105 million is often called an interval estimate).

3. What is the purpose of a confidence interval?

A confidence interval provides one measure of whether the state’s estimate of value in a school district is statistically significantly different from the self-reported appraisal roll value (i.e., local value) in that district. In other words, a confidence interval is a measure of the reliability (or precision) of the Comptroller’s estimate of school district value.

Assume PTD estimates market value in ABC school district to be \$100 million with a margin of error of 5 percent at the 95 percent confidence level. This means that the actual market value in ABC school district is probably somewhere between \$95 million and \$105 million. This range constitutes the 95 percent confidence interval. The 95 percent confidence interval means that, in



repeated sampling of this school district, PTD expects approximately 95 of every 100 computed confidence intervals to contain the true market value, which PTD has estimated to be \$100 million, while only five of these would not.

If the local value in the ABC school district lies within the calculated confidence interval, then the difference between the local value and the point estimate of value is statistically insignificant. This means that the Comptroller's study does not disprove local value. In this case, the Comptroller certifies ABC's local value to the commissioner of education. If the local value lies outside the confidence interval, PTD considers it invalid. Unless the school district is in a grace period (see Page 3 of this publication), the Comptroller's estimate of value is certified to the commissioner of education. If local value lies outside the confidence interval, the study results have disproved local value because the difference between the local value and the Comptroller's estimate is statistically significant.

The study contains a hold harmless feature. This feature means that if the school district's tested value is calculated to be within 5 percent of PTD's estimate of value, PTD will automatically certify the school district's value. In addition, if the school district's margin of error is calculated to be less than 5 percent, then the PTD will calculate (i.e., widen) the confidence interval as if it were 5 percent for purposes of certifying value. PTD management sets the actual percentage used in the calculation, which could vary in future studies.

4. Is the target margin of error the same in every school district?

Yes. PTD also refers to the target margin of error as a planned margin of error.

5. Is the target confidence interval the same in every district, if the target margin of error is the same in every district?

No. They are not the same because the study expresses them in different units. For example, the study expresses the margin of error in percentage terms while it expresses the confidence interval in dollar terms. Assume there are two school districts, ABC and XYZ. The Comptroller estimates the total value (in tested property categories) to be \$100 million in ABC and \$500 million in XYZ. If the margin of error were 5 percent in both districts, the confidence interval of ABC would be \$95 million to \$105 million, while the confidence interval for XYZ would be \$475 million to \$525 million. Although the margin of error is the same for both districts, the widths of the confidence intervals are different because the districts' values are different. However, even if two school districts have identical margins of error and/or confidence intervals, this does not determine whether the Comptroller will certify local or state value. The critical test is whether local value lies within the PTD-computed confidence interval for the school district.

6. Does the study compute the confidence interval and the margin of error for a school district based on all value in the school district?

No. In computing a confidence interval for a school district, PTD only includes property categories whose values were estimated from representative (i.e., random) samples taken in that school district. If PTD does not test a property category, it excludes that category value from the confidence interval and margin of error calculations for that school district.

For example, assume a school district with a Comptroller estimate of market value of \$106 million before exemptions. Total local value in the school district as shown on the self-report is \$98 million. The estimated margin of error is 5 percent. Assume further that PTD does not sample any properties in Multi-family (Category B) and Vacant Lots (Category C) in the school district



because they constitute less than 5 percent of value. The combined value of these non-sampled (i.e., non-tested) categories is \$6 million. PTD assigns non-sampled property categories local value.

PTD computes the confidence interval for this district as follows:

The **Point Estimate**:

\$106 million – \$6 million = \$100 million

The **Confidence Interval**:

\$100 million - 5 percent **and** \$100 million + 5 percent = \$95 million **and** \$105 million.

Since the local value for the sampled property categories (excluding Categories B and C) lies within the confidence interval, the Comptroller would certify local value for the school district.

The Comptroller computes confidence intervals before deducting exemptions. If a school district's local value, before exemptions, lies within the Comptroller's computed confidence interval, then the Comptroller certifies local taxable value, after exemptions, to the commissioner of education.

7. Does the study treat complex properties differently than local properties?

Yes. In many cases, PTD treats complex properties as census (i.e., non-random) categories rather than sampled categories. In a census, one studies every unit in a group to determine some characteristic of the group. In a sample, one studies a portion of the units in a group to estimate some characteristic of the group. Sampling requires far fewer resources than conducting a census.

PTD does not use census properties to calculate the confidence interval, but it does use them to calculate the margin of error. PTD considers all properties in a census so there is no sampling error since the variance and standard error for census properties is zero.

PTD shows census properties as non-random properties on the confidence interval detail sheet. To compute the margin of error, PTD adds the value of census properties to the combined value of the sampled property categories. One-half of the confidence interval (as computed from sampled and census properties) is divided by this total to produce the margin of error for the school district.

In effect, the census (non-random) properties collectively comprise a separate subcategory.

PTD treats all properties in the Category J (Utilities) as well as the Category D1 (Qualified agricultural acreage) sample as census properties.

8. How does the Comptroller's use of confidence intervals affect the methodology used to select and appraise properties for the Property Value Study?

It has no effect. PTD calculates confidence intervals for each school district's market value after it enters all sales and appraisals into the system and all market values are calculated.



Appendix C : Method Used to Compute Confidence Intervals

Definitions

CAD = County Appraisal District

PTD = Property Tax Division of Texas Comptroller's office

For each ISD m , $m = 1, 2, \dots$

Let h = category value stratum or total category, depending on whether stratification is used ($h=1, 2, \dots, L$)
 category A, B, C, D1, F1, L1, M, G, (random portion.)

i = parcels ($i=1, 2, \dots, n_h$)

x_{hi} = CAD \$ value (local self-reported appraisal roll value) of i^{th} parcel, value stratum or category h

TX_h = total CAD \$ value, value stratum or category h

y_{hi} = PTD \$ value of i^{th} parcel, value stratum or category h

$\hat{T}Y_h$ = estimated PTD \$ value, value stratum or category h

\bar{x}_h = sample mean, CAD values, value stratum or category h

\bar{y}_h = sample mean, PTD values, value stratum or category h

N_h = total number of parcels (population), value stratum or category h

n_h = number of sample parcels, value stratum or category h

L = number of value strata/categories in a school district

$$\hat{R}1_h = \frac{\bar{x}_h}{\bar{y}_h} = \text{estimated weighted average level of appraisal, value stratum or category } h$$

$$\hat{R}2_h = \frac{\bar{y}_h}{\bar{x}_h} = \text{inverse of estimated weighted average level of appraisal, value stratum or category } h$$

$$\hat{R}2_h = 1 / \hat{R}1_h$$

S_h^2 is the PTD's measure of variability:

$$S_h^2 = RVx_h + RVy_h - 2RVx_hy_h$$

$$RVx_h = \left\{ \frac{1}{n_h-1} \left[\sum x_{hi}^2 - \frac{(\sum x_{hi})^2}{n_h} \right] \right\} / \bar{x}_h^2$$

$$RVy_h = \left\{ \frac{1}{n_h-1} \left[\sum y_{hi}^2 - \frac{(\sum y_{hi})^2}{n_h} \right] \right\} / \bar{y}_h^2$$

$$RVx_hy_h = \left\{ \frac{1}{n_h-1} \left[\sum x_{hi}y_{hi} - \frac{(\sum x_{hi})(\sum y_{hi})}{n_h} \right] \right\} / \bar{x}_h\bar{y}_h$$



Method Used to Compute Confidence Intervals

1. Compute variance (Var) of $\hat{R} 2_h$ in each value stratum or category of the following property categories, if sampled: A, B, C, D1, F1, L1, M, and the randomly selected portion of G. If the PTD used value-stratified ratios in estimating category values, then compute variances by value stratum. If not, compute variances by category.

$$\text{Recall that } \hat{R} 1_h = \frac{\bar{x}_h}{\bar{y}_h}; \hat{R} 2_h = \frac{\bar{y}_h}{\bar{x}_h}; \text{ and } \hat{R} 2_h = 1 / \hat{R} 1_h.$$

$$\text{Var } (\hat{R} 2_h) = \left[\left(\frac{N_h - n_h}{N_h n_h} \right) (R2_h)^2 \right] S_h^2.$$

2. Let TX_{ran} and $\hat{T} Y_{ran}$ equal total CAD \$ value and total PTD \$ value, respectively, of all categories sampled in Step 1 above.

$$TX_{ran} = \sum_{h=1}^L TX_h$$

$$\hat{T} Y_{ran} = \sum_{h=1}^L \hat{T} Y_h$$

$$\hat{R} 1_{ran} = \frac{TX_{ran}}{\hat{T} Y_{ran}}$$

$$\hat{R} 2_{ran} = \frac{\hat{T} Y_{ran}}{TX_{ran}}$$

Note: The subscript “ran” denotes randomly sampled categories or representatively sampled categories.

3. Compute the variance of $\hat{R} 2_{ran}$ as derived from categories sampled in Step 1.

$$\hat{R} 2_{ran} = \frac{\hat{T} Y_{ran}}{TX_{ran}} = \frac{\sum_{h=1}^L R2_h TX_h}{TX_{ran}}$$

$$\text{Var } (\hat{R} 2_{ran}) = \sum_{h=1}^L \left(\frac{TX_h}{TX_{ran}} \right)^2 \text{Var } (\hat{R} 2_h)$$



4. Calculate the standard error (SE) of $\hat{R}2_{ran}$

$$SE (\hat{R}2_{ran}) = \sqrt{\text{Var} (\hat{R}2_{ran})}$$

5. Multiply SE ($\hat{R}2_{ran}$) by the "t - value" for $\hat{R}2_{ran}$ as derived from categories sampled in Step 1 above.

The t values used by the PTD are approximations to those of exact Student's t distributions with corresponding degrees of freedom. To determine the degrees of freedom, subtract the number of value strata (from stratified categories) plus the number of non-stratified categories from the combined samples. In other words,

$$\text{degrees of freedom} = \sum n_h - L.$$

6. Take the product of

$$[SE (\hat{R}2_{ran}) * t \text{ value }]$$

as a percent of $\hat{R}2_{ran}$ as derived from categories sampled in Step 1.

7. Multiply the percent obtained in Step 6 by $\hat{T}Y_{ran}$ as computed from categories sampled in Step 1. Call this ME\$.

$$ME\$ = \left\{ \frac{[SE (\hat{R}2_{ran}) * t \text{ value }]}{\hat{R}2_{ran}} \right\} * \hat{T}Y_{ran}$$

8. Recall TX_{ran} and $\hat{T}Y_{ran}$

To these two sums, add the respective appraisal roll values and the PTD values of D1 (minus timber) and the sample in category J, the non-random portion of G and parcels with an "E" flag. Let these two sums be TX_{TOT} and $\hat{T}Y_{TOT}$ respectively.

9. Compute the confidence interval for the school district. (Note: only tested categories are included in confidence interval computations.)

$$\hat{T}Y_{TOT} \pm ME\$$$

If TX_{TOT} lies within this confidence interval or within the "hold harmless" margin of error (see Appendix B, #3), TX_{TOT} is valid; otherwise TX_{TOT} is invalid.

