NEVADA DEPARTMENT OF TAXATION

Division of Local Government Services

2017-2018 REPORT OF ASSESSMENT RATIO STUDY

2017-18 Ratio Study Approved by the Nevada Tax Commission on May 8, 2017

2017 - 2018

Report of Assessment Ratio Study

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INTRODUCTION: AUTHORITY, OVERSIGHT AND REPORTING

NRS 361.333 requires the Department to determine the ratio of the assessed value of each type or class of property, for which the county assessor has the responsibility of assessing in each county, to the taxable value of that property as determined by the Department through appraisals of individual parcels. The ratio is in compliance with statute if the ratio of assessed value to taxable value is more than 32 percent or less than 36 percent. *See NRS 361.333(5)(c).*

Under NRS 361.333, the Nevada Tax Commission is obligated to equalize property under its jurisdiction. Equalization is the process by which the Commission ensures "that all property subject to taxation within the county has been assessed as required by law."[1]

There are two types of information the Commission considers to determine whether property has been assessed equitably. The first comes from a ratio study, which is a statistical analysis designed to study the level and uniformity of the assessments. The second type of information comes from a review to determine whether each county has adequate procedures to ensure that all property subject to taxation is being assessed in a correct and timely manner.

It is important to note that the statistical analysis required by NRS 361.333 is a quality control technique designed for mass appraisal. Mass appraisal, like single-property appraisal, is a "systematic method for arriving at estimates of value."[2] The difference between mass appraisal and single-property appraisal is only a matter of scope:

> *Mass appraisal models have more terms because they attempt to replicate the market for one or more land uses across a wide geographic area. Single-property models, on the other hand, represent the market for one kind of land use in a limited area.*
>
> *Quality is measured differently in mass appraisal and single-property appraisal. The quality of a single-property appraisal is measured against a small number of comparable properties that have sold. The quality of mass appraisals is measured with statistics developed from a sample of sales in the entire area appraised by the model.*[3]

Typically, mass appraisal techniques using valuation models for groups and classes of property are used by county assessors to determine taxable value. For example, mass appraisal techniques for land valuation are described in NAC 361.11795, and reference the use of base lot values as benchmarks for valuing properties within a stratum. In addition an assessor is required to use the IAAO "Standard on Automated Valuation Models" when developing mass appraisal models, pursuant to NAC 361.1216.

[1] NRS 361.333(4)(a) "The board of county commissioners and the county assessor, or their representatives, shall present evidence to the Nevada Tax Commission of the steps taken to ensure that all property subject to taxation within the county has been assessed as required by law." Compare this statutory requirement to the International Association of Assessing Officers definition of equalization: "The process by which an appropriate governmental body attempts to ensure that property under its jurisdiction is appraised equitably at market value or as otherwise required by law."

[2] Eckert, Joseph K., Ed., Property Appraisal and Assessment Administration (IAAO: Chicago, 1990), p. 35.

[3] Ibid.

NRS 361.333(2) permits the Department to conduct a ratio study on smaller groups of counties instead of the entire state in any one year. The ratio study is therefore conducted over a three year cycle. The counties reviewed for 2017-2018 are Carson City, Churchill, Elko, Lander, Pershing and White Pine Counties.

If inequity or bias is discovered, NRS 361.333 provides the Nevada Tax Commission the authority to apply factors designed to correct inequitable conditions to classes of property or it may order reappraisal, the goal of which is to ensure that each of the classifications of real and personal property is assessed between 32% and 36% of taxable value. In addition, NRS 360.215 authorizes the Department of Taxation to assist county assessors in appraising property which the ratio study shows to be in need of reappraisal. The Department also consults on the development and maintenance of standard assessment procedures to ensure that property assessments are uniformly made.

RATIO STUDY DESIGN PARAMETERS AND STANDARDS FOR ANALYSIS

Generally speaking, a "ratio study" is "designed to evaluate appraisal performance by comparing the estimate of assessed value produced by the assessor on each parcel in the sample to the estimate of taxable value produced by the Department. The comparison is called a "ratio."

The appraisals conducted by the Department comprise a *sample* of the *universe or population* of all properties within the jurisdiction being reviewed. From the information about the *sample*, the Department *infers* what is happening to the population as a whole.

The Department examines the ratio information for *appraisal level* and *appraisal uniformity.* Appraisal level compares how close the assessor's estimate of assessed value is to the legally mandated standard of 35% of taxable value. Appraisal level is measured by a descriptive statistic called a *measure of central tendency.* A measure of central tendency, such as the mean, median, or aggregate ratio, is a single number or value that describes the center or the middle of a set of data. In the case of this ratio study, the median describes the middle of the array of all ratios comparing the assessed value to the taxable value established for each parcel.

Assessment uniformity refers to the degree to which different properties are assessed at equal percentages of taxable value. If taxable value could be described as the center of a "target," then assessment uniformity looks at how much dispersion or distance there is between each ratio and the "target." The statistical measure known as the coefficient of dispersion (COD) measures uniformity or the distance from the "target."

The ratio study, by law, must include the median ratio of the total property within each subject county and each class of property. The study must also include two comparative statistics known as the overall ratio (also known as the aggregate ratio or weighted mean ratio) and the coefficient of dispersion (COD) of the median, for both the total property in each subject county and for each major class of property within the county. NRS 361.333 (5)(c) defines the major classes of property as:

I. Vacant land;
II. Single-family residential;
III. Multi-residential;
IV. Commercial and industrial; and
V. Rural

In addition, the statistics are calculated specifically for improvements, land, and total property values.

The median is a statistic describing the measure of central tendency of the sample. It is the middle ratio when all the ratios are arrayed in order of magnitude, and divides the sample into two equal parts. The median is the most widely used measure of central tendency by equalization agencies because it is less affected by extreme ratios or "outliers," and is therefore the preferred measure for monitoring appraisal performance or evaluating the need for a reappraisal.[4] NRS 361.333(5)(c) states that under- or- over assessment may exist if the median of the ratios falls in a range less than 32% or more than 36%.

The Department calculates the overall or aggregate ratio by dividing the total assessed value of all the observations (parcels) in the sample by the total taxable value of all the observations (parcels) in the sample. This produces a ratio weighted by dollar value. Because of the weight given to each dollar of value, parcels with higher values exert more influence than parcels with lower values. The aggregate ratio helps identify under or over assessment of higher valued property. For instance, an unusually high aggregate ratio might indicate that higher valued property is over assessed, or valued at a rate higher than other property. The statutory and regulatory framework does not dictate any range of acceptability for the aggregate ratio.

The COD is a measure of dispersion relating to the uniformity of the ratios and is calculated for all property, and each class of property, within the subject jurisdiction. The COD measures the deviation of the individual ratios from the median ratio as a percentage of the median and is calculated by (1) subtracting the median from each ratio; (2) taking the absolute value of the calculated differences; (3) summing the absolute differences; (4) dividing by the number of ratios to obtain the "average absolute deviation;" and (5) dividing by the median. The COD has "the desirable feature that its interpretation does not depend on the assumption that the ratios are normally distributed."[5] The COD is a relative measure and useful for comparing samples from different classes of property within, as well as among, counties.

In 2010, the Nevada Tax Commission adopted NAC 361.1216. The regulation adopted the *Standard on Automated Valuation Models*, September 2003 edition published by the International Association of Assessing Officers. The *Standard on Automated Valuation Models*, Section 8.4.2.1, discusses the coefficient of dispersion and Table 2 references Ratio Study Performance Standards with regard to the COD. The IAAO *Standard on Ratio Studies* states that "the smaller the measure, the better the uniformity, but extremely low measures can signal acceptable causes such as extremely homogeneous properties or very stable markets; or unacceptable causes such as lack of quality control, calculation errors, poor sample representativeness or sales chasing. Note that as market activity changes or as the complexity of properties increases, the measures of variability usually increase, even though appraisal procedures may be equally valid."[6]

The IAAO recommended ratio study performance standards are as follows:

Type of Property	COD
Single-family Residential	
Newer, more homogenous areas	5.0 to 10.0
Older, heterogeneous areas	5.0 to 15.0
Rural residential and seasonal	5.0 to 20.0

[4] International Association of Assessing Officers, Standard on Ratio Studies, (2010), p.12; 27.

[5] International Association of Assessing Officers, Standard on Ratio Studies, (2010), p. 13.

[6] International Association of Assessing Officers, Standard on Ratio Studies, (2013), p. 17.

Type of Property	COD
Income-producing properties	
Larger, urban jurisdictions	5.0 to 15.0
Smaller, rural jurisdictions	5.0 to 20.0
Vacant land	5.0 to 25.0
Other real and personal property	Varies with local conditions[7]

RATIO STUDY CONCLUSIONS

The 2017-2018 Ratio Study presentation includes the comparison of the median and aggregate ratios and the COD of all 17 counties required by NRS 361.333(1)(b)(1). These charts show the aggregate and median ratios and the coefficient of dispersion for the past three study years (2015 - 2017) across all counties for all properties.

Similar data is shown just for the counties in the 2017-2018 study year. Here the aggregate and median ratios, the COD, and the median related differential (MRD) are compared across types of property in the six counties. Data for each individual county is displayed for each type of property across all appraisal areas within the county, not just the reappraisal area.

Median Related Differential

The median related differential is a statistic that tends to indicate regressivity when it is above 1.03 and progressivity when it is below .98. It is an indication of whether high-value properties are appraised higher or lower than low-value properties. The standard is not an absolute when samples are small or when wide variations in prices exist. In that case, other statistical tests may be more useful. *This particular test is not required by statute.*

The chart on page 12 indicates that of the six counties studied in 2017 - 2018, regressivity is present for vacant land in Carson City and Churchill County; in commercial/industrial properties in Pershing County; and in Rural Land and Improvements in Lander County. Conversely, progressivity is present for Improved Land, Vacant Land, and Multi-Family Residence properties in Pershing County. Other counties where progressivity or regressivity occurred in prior years are also listed. The Department recommends reviewing stratifications of property and neighborhoods to ensure sufficient sales data is available, or use alternate methods of land valuation.

Aggregate Ratio

The data for the aggregate (overall) ratio, or weighted mean, shown on page 11 are within the acceptable standard range of 32% to 36% on a composite basis for the six counties studied in 2017 - 2018, with the following exceptions noted: Churchill County Vacant Land at 29.9%; Pershing County Improved Land at 36.4%; and Pershing County Vacant Land at 36.1%.

[7] International Association of Assessing Officers, Standard on Ratio Studies, (2013), p. 17; and Standard on Automated Valuation Models (2003), p. 28.

Median Ratio

The median ratios of assessed value to taxable value generally indicate over-or-undervaluation of those types of property taken as a whole within the entire appraisal jurisdiction. Median ratios may be acceptable, yet inequity could still exist in pocket areas. However, this study makes these inferences for property groups as a whole within the jurisdiction, without regard to individual market areas. As noted above, for purposes of monitoring appraisal performance and for direct equalization, the median ratio is the preferred measure of central tendency.

The median ratios shown on page 11 indicate the appraisal level for all classes of property in each county included in this study are within the acceptable standard range of 32% and 36% using the results of the sample taken by the Department. The land, improvement, and the overall ratios of the assessed value established by each county assessor, measured against the taxable value established by the Department, are within statutory limits.

Coefficient of Dispersion

The COD ratios, shown on page 12, for the six counties studied in 2017 – 2018, indicate the ratios for all property, and each class of property, within the jurisdictions are relatively uniform. The COD ratios reported are typically at the low end or below the IAAO range standards. The standards are more appropriate for comparison in market-based assessment systems than in Nevada's unique hybrid system.

PROCEDURAL / OFFICE REVIEW

NRS 361.333 (1)(b)(2) requires the Department to make a determination about whether each county has adequate procedures to ensure that all property subject to taxation is being assessed in a correct and timely manner, and to note any deficiencies. For the 2017-18 Ratio Study, the Department reviewed assessors' procedures as part of the ratio study process.

LAND AND IMPROVEMENT FACTORS

Pursuant to NRS 361.260(5), the Department reviews assessments in areas where improvement factors are applied. All counties annually reappraise land making the land factor no longer applicable. Improvement Factors for the 2017- 2018 tax year are available on the Taxation website at https://tax.nv.gov/ .

2017-2018

REPORT OF ASSESSMENT RATIO STUDY

STATISTICAL TABLES

NEVADA DEPARTMENT OF TAXATION
2017-2018 RATIO STUDY
AGGREGATE RATIOS

SUBJECT COUNTY	STUDY YEAR	ALL PROPERTY	IMPROVEMENTS	IMPROVED LAND	VACANT LAND	SINGLE FAMILY RESIDENCE	MULTI-FAMILY RESIDENCE	COMMERCIAL INDUSTRIAL	RURAL LAND & IMPROVEMENTS
CARSON CITY	2017	34.1	34.6	33.8	32.5	34.1	34.4	34.5	33.7
CHURCHILL	2017	34.6	34.8	34.6	29.9	34.2	34.9	35.2	35.0
CLARK	2015	34.5	34.7	34.7	33.6	34.7	33.7	34.8	35.0
DOUGLAS	2016	34.7	35.0	34.2	34.2	34.5	35.0	34.9	35.0
ELKO	2017	33.4	33.6	34.1	34.9	34.3	34.1	33.0	35.0
ESMERALDA	2015	33.7	33.6	34.0	34.1	34.0	32.8	32.7	33.9
EUREKA	2015	34.7	34.9	34.0	34.5	34.7	34.6	34.5	35.0
HUMBOLDT	2016	33.7	33.3	34.9	33.8	33.8	34.3	33.2	35.0
LANDER	2017	34.3	34.2	34.7	34.4	34.4	34.3	34.2	33.3
LINCOLN	2015	33.4	33.1	34.3	33.8	33.9	33.2	32.5	33.3
LYON	2016	33.1	32.6	34.7	33.6	33.2	34.2	32.1	35.0
MINERAL	2015	31.7	30.3	34.5	34.9	33.1	29.9	31.8	35.0
NYE	2016	33.3	33.2	34.3	34.0	34.2	33.3	32.7	35.0
PERSHING	2017	34.5	33.9	36.4	36.1	34.6	34.3	34.3	35.0
STOREY	2015	33.7	33.6	32.2	35.0	32.2	32.3	34.5	35.0
WASHOE	2016	34.6	34.8	34.2	34.1	34.3	34.8	34.9	35.0
WHITE PINE	2017	34.3	34.6	33.5	34.2	34.5	34.4	34.2	34.4
STATEWIDE	**2017**	34.1	34.2	34.2	33.6	34.2	34.1	34.2	34.3

NEVADA DEPARTMENT OF TAXATION
2017-2018 RATIO STUDY
MEDIAN RATIOS

SUBJECT COUNTY	STUDY YEAR	ALL PROPERTY	IMPROVEMENTS	IMPROVED LAND	VACANT LAND	SINGLE FAMILY RESIDENCE	MULTI-FAMILY RESIDENCE	COMMERCIAL INDUSTRIAL	RURAL LAND & IMPROVEMENTS
CARSON CITY	2017	34.0	34.0	34.2	33.8	34.0	34.1	34.1	33.2
CHURCHILL	2017	34.7	34.9	34.6	33.5	34.6	34.9	34.8	35.0
CLARK	2015	34.5	34.7	34.7	34.5	34.8	33.6	34.7	35.0
DOUGLAS	2016	34.9	35.0	34.8	34.4	34.6	35.1	34.8	35.0
ELKO	2017	34.2	34.0	34.9	34.1	34.3	34.7	33.4	35.0
ESMERALDA	2015	34.0	33.7	34.4	34.5	33.8	33.6	33.5	34.3
EUREKA	2015	34.9	35.0	33.9	35.0	34.9	34.8	34.5	35.0
HUMBOLDT	2016	34.2	33.5	34.6	34.0	34.0	34.5	33.9	35.0
LANDER	2017	34.7	34.4	35.0	35.0	34.2	34.7	34.7	35.0
LINCOLN	2015	33.8	33.3	34.2	34.3	33.9	33.4	32.6	35.0
LYON	2016	34.2	33.5	35.0	35.2	33.6	34.4	33.0	35.0
MINERAL	2015	33.5	32.4	35.0	34.5	33.5	32.2	33.1	35.0
NYE	2016	34.1	33.9	34.7	34.2	34.4	33.6	32.6	35.0
PERSHING	2017	34.9	33.4	35.1	35.0	34.5	33.4	35.8	35.0
STOREY	2015	33.9	33.8	34.6	34.6	33.2	33.9	34.5	35.0
WASHOE	2016	34.4	34.5	34.7	34.2	34.4	34.2	34.4	35.0
WHITE PINE	2017	34.1	34.4	33.6	33.6	34.4	34.6	33.8	35.0
STATEWIDE	2017	34.4	34.1	34.7	34.5	34.2	34.1	34.3	35.0

NEVADA DEPARTMENT OF TAXATION
2017-2018 RATIO STUDY
COEFFICIENTS OF DISPERSION

SUBJECT COUNTY	STUDY YEAR	ALL PROPERTY	IMPROVEMENTS	IMPROVED LAND	VACANT LAND	SINGLE FAMILY RESIDENCE	MULTI-FAMILY RESIDENCE	COMMERCIAL INDUSTRIAL	RURAL LAND & IMPROVEMENTS
CARSON CITY	2017	3.6	5.9	3.8	5.7	1.8	2.2	5.5	1.4
CHURCHILL	2017	3.1	2.2	2.6	5.7	2.0	1.5	3.0	0.0
CLARK	2015	2.6	3.0	2.5	2.1	2.8	1.7	1.8	3.2
DOUGLAS	2016	1.3	0.1	2.9	2.7	1.1	0.2	1.3	0.0
ELKO	2017	2.6	2.7	2.0	3.4	2.0	2.0	2.5	0.1
ESMERALDA	2015	4.2	4.4	3.5	7.2	2.6	3.3	2.6	1.2
EUREKA	2015	1.9	1.8	2.7	1.8	2.1	2.8	1.0	-
HUMBOLDT	2016	2.6	3.3	3.3	1.8	2.2	2.0	4.4	0.0
LANDER	2017	2.8	3.8	1.9	2.9	3.1	2.0	2.7	1.2
LINCOLN	2015	4.4	3.8	2.7	5.3	3.1	2.8	3.5	1.0
LYON	2016	5.7	7.5	2.3	9.0	6.5	1.4	5.1	0.1
MINERAL	2015	8.9	17.2	2.3	3.4	10.2	9.7	10.4	0.2
NYE	2016	2.7	3.3	2.5	2.9	1.9	2.0	2.3	0.8
PERSHING	2017	4.1	5.4	8.7	2.4	3.2	5.2	6.0	0.1
STOREY	2015	5.0	5.6	9.3	3.7	6.2	4.2	3.4	0.1
WASHOE	2016	1.7	2.5	1.7	1.7	1.6	1.6	1.9	0.0
WHITE PINE	2017	3.8	4.5	2.9	3.4	4.0	2.1	4.4	3.3
STATEWIDE	2017	4.1	5.1	3.5	4.1	3.5	3.5	4.4	1.0

NEVADA DEPARTMENT OF TAXATION
2017-2018 RATIO STUDY
MEDIAN RELATED DIFFERENTIALS

SUBJECT COUNTY	STUDY YEAR	ALL PROPERTY	IMPROVEMENTS	IMPROVED LAND	VACANT LAND	SINGLE FAMILY RESIDENCE	MULTI-FAMILY RESIDENCE	COMMERCIAL INDUSTRIAL	RURAL LAND & IMPROVEMENTS
CARSON CITY	2017	1.00	0.98	1.01	1.04	1.00	0.99	0.99	0.98
CHURCHILL	2017	1.00	1.01	1.00	1.12	1.01	1.00	0.99	1.00
CLARK	2015	1.00	1.00	1.00	1.03	1.00	1.00	1.00	1.00
DOUGLAS	2016	1.01	1.00	1.02	1.00	1.00	1.00	1.00	1.00
ELKO	2017	1.02	1.01	1.02	0.98	1.00	1.02	1.01	1.00
ESMERALDA	2015	1.01	1.00	1.01	1.01	0.99	1.02	1.02	1.01
EUREKA	2015	1.01	1.00	1.00	1.01	1.00	1.01	1.00	1.00
HUMBOLDT	2016	1.01	1.00	0.99	1.01	1.00	1.01	1.02	1.00
LANDER	2017	1.01	1.00	1.01	1.02	0.99	1.01	1.01	1.05
LINCOLN	2015	1.01	1.00	1.00	1.01	1.00	1.01	1.00	1.05
LYON	2016	1.03	1.03	1.01	1.05	1.01	1.01	1.03	1.00
MINERAL	2015	1.06	1.07	1.01	0.99	1.01	1.08	1.04	1.00
NYE	2016	1.02	1.02	1.01	1.01	1.01	1.01	1.00	1.00
PERSHING	2017	1.01	0.99	0.96	0.97	1.00	0.97	1.04	1.00
STOREY	2015	1.01	1.01	1.07	0.99	1.03	1.05	1.00	1.00
WASHOE	2016	0.99	0.99	1.02	1.00	1.00	0.98	0.99	1.00
WHITE PINE	2017	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.02
STATEWIDE	2017	1.01	1.00	1.01	1.02	1.00	1.00	1.00	1.02

NEVADA DEPARTMENT OF TAXATION
2017-2018 RATIO STUDY
ALL APPRAISAL AREAS

OVERALL (AGGREGATE) RATIO

Subject County	All Property	Class of Property: Improvements	Improved Land	Vacant Land	Single Family Residence	Multi-Family Residence	Commercial Industrial	Rural Land & Improvements
CARSON CITY	34.1	34.6	33.8	32.5	34.1	34.4	34.5	33.7
CHURCHILL	34.6	34.8	34.6	29.9	34.2	34.9	35.2	35.0
ELKO	33.4	33.6	34.1	34.9	34.3	34.1	33.0	35.0
LANDER	34.3	34.2	34.7	34.4	34.4	34.3	34.2	33.3
PERSHING	34.5	33.9	36.4	36.1	34.6	34.3	34.3	35.0
WHITE PINE	34.3	34.6	33.5	34.2	34.5	34.4	34.2	34.4
ALL COUNTIES	34.1	34.2	34.2	32.9	34.3	34.4	34.0	34.5

MEDIAN RATIO

Subject County	All Property	Class of Property: Improvements	Improved Land	Vacant Land	Single Family Residence	Multi-Family Residence	Commercial Industrial	Rural Land & Improvements
CARSON CITY	34.0	34.0	34.2	33.8	34.0	34.1	34.1	33.2
CHURCHILL	34.7	34.9	34.6	33.5	34.6	34.9	34.8	35.0
ELKO	34.2	34.0	34.9	34.1	34.3	34.7	33.4	35.0
LANDER	34.7	34.4	35.0	35.0	34.2	34.7	34.7	35.0
PERSHING	34.9	33.4	35.1	35.0	34.5	33.4	35.8	35.0
WHITE PINE	34.1	34.4	33.6	33.6	34.4	34.6	33.8	35.0
ALL COUNTIES	34.4	34.3	34.7	34.6	34.3	34.5	34.2	35.0

NEVADA DEPARTMENT OF TAXATION
2017-2018 RATIO STUDY
ALL APPRAISAL AREAS

COEFFICIENT OF DISPERSION (COD)

Subject County	All Property	Class of Property: Improvements	Improved Land	Vacant Land	Single Family Residence	Multi-Family Residence	Commercial Industrial	Rural Land & Improvements
CARSON CITY	3.6	5.9	3.8	5.7	1.8	2.2	5.5	1.4
CHURCHILL	3.1	2.2	2.6	5.7	2.0	1.5	3.0	0.0
ELKO	2.6	2.7	2.0	3.4	2.0	2.0	2.5	0.1
LANDER	2.8	3.8	1.9	2.9	3.1	2.0	2.7	1.2
PERSHING	4.1	5.4	8.7	2.4	3.2	5.2	6.0	0.1
WHITE PINE	3.8	4.5	2.9	3.4	4.0	2.1	4.4	3.3
ALL COUNTIES	3.4	4.3	3.9	4.1	2.7	2.6	4.6	1.4

MEDIAN RELATED DIFFERENTIAL

Subject County	All Property	Class of Property: Improvements	Improved Land	Vacant Land	Single Family Residence	Multi-Family Residence	Commercial Industrial	Rural Land & Improvements
CARSON CITY	1.00	0.98	1.01	1.04	1.00	0.99	0.99	0.98
CHURCHILL	1.00	1.01	1.00	1.12	1.01	1.00	0.99	1.00
ELKO	1.02	1.01	1.02	0.98	1.00	1.02	1.01	1.00
LANDER	1.01	1.00	1.01	1.02	0.99	1.01	1.01	1.05
PERSHING	1.01	0.99	0.96	0.97	1.00	0.97	1.04	1.00
WHITE PINE	0.99	1.00	1.00	0.98	1.00	1.00	0.99	1.02
ALL COUNTIES	1.01	1.00	1.02	1.05	1.00	1.00	1.00	1.01

CARSON CITY
2017-2018 RATIO STUDY

ALL APPRAISAL AREAS

REAL PROPERTY	AGGREGATE RATIO	MEDIAN RATIO	COD MEDIAN	SAMPLE SIZE
COUNTYWIDE TOTAL PROPERTY	34.1%	34.0%	3.6%	102
COUNTYWIDE IMPROVEMENTS	34.6%	34.0%	5.9%	76
COUNTYWIDE IMPROVED LAND	33.8%	34.2%	3.8%	78
COUNTYWIDE VACANT LAND	32.5%	33.8%	5.7%	23
SINGLE FAMILY IMPROVEMENTS	34.0%	33.9%	2.0%	34
SINGLE FAMILY LAND	34.3%	34.5%	4.6%	34
SINGLE FAMILY TOTAL PROPERTY	34.1%	34.0%	1.8%	34
MULTIPLE FAMILY IMPROVEMENTS	34.6%	34.7%	2.0%	18
MULTIPLE FAMILY LAND	33.6%	33.1%	3.1%	18
MULTIPLE FAMILY TOTAL PROPERTY	34.4%	34.1%	2.2%	18
COMMERCIAL/INDUSTRIAL IMPROVEMENTS	34.9%	34.3%	10.6%	22
COMMERCIAL/INDUSTRIAL LAND	33.7%	34.2%	2.6%	21
COMMERCIAL/INDUSTRIAL TOTAL PROPERTY	34.5%	34.1%	5.5%	22
RURAL IMPROVEMENTS	33.6%	33.6%	0.0%	1
RURAL LAND	33.8%	33.2%	1.4%	5
RURAL TOTAL PROPERTY	33.7%	33.2%	1.4%	5
SECURED PERSONAL PROPERTY				
ALL SECURED	35.0%	35.0%	0.3%	14
AIRCRAFT	n/a	n/a	n/a	-
AGRICULTURAL	35.0%	35.0%	0.0%	1
BILLBOARDS	n/a	n/a	n/a	-
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.2%	5
MOBILE HOMES	34.8%	35.0%	0.4%	8
UNSECURED PERSONAL PROPERTY				
ALL UNSECURED	35.0%	35.0%	0.1%	30
AIRCRAFT	35.0%	35.0%	0.4%	8
AGRICULTURAL	35.0%	35.0%	0.0%	2
BILLBOARDS	35.0%	35.0%	0.0%	4
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.2%	8
MOBILE HOMES	35.0%	35.0%	0.0%	8
TOTAL PERSONAL PROPERTY	35.0%	35.0%	0.2%	44

CHURCHILL COUNTY
2017-2018 RATIO STUDY

ALL APPRAISAL AREAS

REAL PROPERTY	AGGREGATE RATIO	MEDIAN RATIO	COD MEDIAN	SAMPLE SIZE
COUNTYWIDE TOTAL PROPERTY	34.6%	34.7%	3.1%	86
COUNTYWIDE IMPROVEMENTS	34.8%	34.9%	2.2%	60
COUNTYWIDE IMPROVED LAND	34.6%	34.6%	2.6%	66
COUNTYWIDE VACANT LAND	29.9%	33.5%	5.7%	20
SINGLE FAMILY IMPROVEMENTS	34.2%	34.7%	2.1%	30
SINGLE FAMILY LAND	34.1%	34.3%	2.8%	30
SINGLE FAMILY TOTAL PROPERTY	34.2%	34.6%	2.0%	30
MULTIPLE FAMILY IMPROVEMENTS	35.0%	35.0%	1.4%	15
MULTIPLE FAMILY LAND	34.6%	34.8%	2.8%	15
MULTIPLE FAMILY TOTAL PROPERTY	34.9%	34.9%	1.5%	15
COMMERCIAL/INDUSTRIAL IMPROVEMENTS	35.2%	35.0%	3.0%	15
COMMERCIAL/INDUSTRIAL LAND	35.0%	34.6%	2.4%	15
COMMERCIAL/INDUSTRIAL TOTAL PROPERTY	35.2%	34.8%	3.0%	15
RURAL IMPROVEMENTS	n/a	n/a	n/a	-
RURAL LAND	35.0%	35.0%	0.0%	6
RURAL TOTAL PROPERTY	35.0%	35.0%	0.0%	6
SECURED PERSONAL PROPERTY				
ALL SECURED	35.0%	35.0%	0.1%	19
AIRCRAFT	n/a	n/a	n/a	-
AGRICULTURAL	35.0%	35.0%	0.0%	5
BILLBOARDS	n/a	n/a	n/a	-
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.2%	6
MOBILE HOMES	35.0%	35.0%	0.0%	8
UNSECURED PERSONAL PROPERTY				
ALL UNSECURED	35.0%	35.0%	0.2%	26
AIRCRAFT	35.0%	35.0%	0.0%	5
AGRICULTURAL	35.0%	35.0%	0.1%	3
BILLBOARDS	35.0%	35.0%	0.1%	2
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.7%	8
MOBILE HOMES	35.0%	35.0%	0.0%	8
TOTAL PERSONAL PROPERTY	35.0%	35.0%	0.2%	45

ELKO COUNTY
2017-2018 RATIO STUDY
ALL APPRAISAL AREAS

REAL PROPERTY	AGGREGATE RATIO	MEDIAN RATIO	COD MEDIAN	SAMPLE SIZE
COUNTYWIDE TOTAL PROPERTY	33.4%	34.2%	2.6%	99
COUNTYWIDE IMPROVEMENTS	33.6%	34.0%	2.7%	67
COUNTYWIDE IMPROVED LAND	34.1%	34.9%	2.0%	74
COUNTYWIDE VACANT LAND	34.9%	34.1%	3.4%	25
SINGLE FAMILY IMPROVEMENTS	34.2%	34.1%	2.5%	31
SINGLE FAMILY LAND	34.3%	34.6%	2.2%	31
SINGLE FAMILY TOTAL PROPERTY	34.3%	34.3%	2.0%	31
MULTIPLE FAMILY IMPROVEMENTS	33.9%	34.6%	2.3%	16
MULTIPLE FAMILY LAND	34.8%	35.0%	0.9%	16
MULTIPLE FAMILY TOTAL PROPERTY	34.1%	34.7%	2.0%	16
COMMERCIAL/INDUSTRIAL IMPROVEMENTS	32.9%	33.1%	2.5%	20
COMMERCIAL/INDUSTRIAL LAND	33.8%	34.7%	2.8%	20
COMMERCIAL/INDUSTRIAL TOTAL PROPERTY	33.0%	33.4%	2.5%	20
RURAL IMPROVEMENTS	n/a	n/a	n/a	-
RURAL LAND	35.0%	35.0%	0.1%	7
RURAL TOTAL PROPERTY	35.0%	35.0%	0.1%	7
SECURED PERSONAL PROPERTY				
ALL SECURED	35.0%	35.0%	0.2%	13
AIRCRAFT	n/a	n/a	n/a	-
AGRICULTURAL	35.0%	35.0%	0.1%	6
BILLBOARDS	n/a	n/a	n/a	-
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.3%	7
MOBILE HOMES	n/a	n/a	n/a	-
UNSECURED PERSONAL PROPERTY				
ALL UNSECURED	35.0%	35.0%	0.0%	32
AIRCRAFT	35.0%	35.0%	0.0%	7
AGRICULTURAL	35.0%	35.0%	0.0%	4
BILLBOARDS	35.0%	35.0%	0.0%	4
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.1%	7
MOBILE HOMES	35.0%	35.0%	0.0%	10
TOTAL PERSONAL PROPERTY	35.0%	35.0%	0.1%	45

LANDER COUNTY
2017-2018 RATIO STUDY

ALL APPRAISAL AREAS

REAL PROPERTY	AGGREGATE RATIO	MEDIAN RATIO	COD MEDIAN	SAMPLE SIZE
COUNTYWIDE TOTAL PROPERTY	34.3%	34.7%	2.8%	96
COUNTYWIDE IMPROVEMENTS	34.2%	34.4%	3.8%	65
COUNTYWIDE IMPROVED LAND	34.7%	35.0%	1.9%	65
COUNTYWIDE VACANT LAND	34.4%	35.0%	2.9%	30
SINGLE FAMILY IMPROVEMENTS	34.4%	34.0%	4.7%	30
SINGLE FAMILY LAND	34.3%	34.5%	2.7%	30
SINGLE FAMILY TOTAL PROPERTY	34.4%	34.2%	3.1%	30
MULTIPLE FAMILY IMPROVEMENTS	34.2%	34.8%	2.6%	15
MULTIPLE FAMILY LAND	34.8%	35.0%	2.3%	15
MULTIPLE FAMILY TOTAL PROPERTY	34.3%	34.7%	2.0%	15
COMMERCIAL/INDUSTRIAL IMPROVEMENTS	34.0%	34.6%	2.9%	15
COMMERCIAL/INDUSTRIAL LAND	35.1%	35.0%	0.4%	14
COMMERCIAL/INDUSTRIAL TOTAL PROPERTY	34.2%	34.7%	2.7%	15
RURAL IMPROVEMENTS	32.4%	32.4%	0.0%	1
RURAL LAND	35.0%	35.0%	0.0%	6
RURAL TOTAL PROPERTY	33.3%	35.0%	1.2%	6
SECURED PERSONAL PROPERTY				
ALL SECURED	35.0%	35.0%	0.1%	13
AIRCRAFT	n/a	n/a	n/a	-
AGRICULTURAL	35.0%	35.0%	0.0%	4
BILLBOARDS	n/a	n/a	n/a	-
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.0%	3
MOBILE HOMES	34.9%	35.0%	0.1%	6
UNSECURED PERSONAL PROPERTY				
ALL UNSECURED	35.0%	35.0%	7.6%	20
AIRCRAFT	35.0%	34.9%	0.2%	2
AGRICULTURAL	35.0%	35.0%	0.0%	3
BILLBOARDS	35.0%	35.0%	0.0%	2
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	25.3%	6
MOBILE HOMES	35.0%	35.0%	0.0%	7
TOTAL PERSONAL PROPERTY	35.0%	35.0%	4.6%	33

PERSHING COUNTY
2017-2018 RATIO STUDY
ALL APPRAISAL AREAS

REAL PROPERTY	AGGREGATE RATIO	MEDIAN RATIO	COD MEDIAN	SAMPLE SIZE
COUNTYWIDE TOTAL PROPERTY	34.5%	34.9%	4.1%	89
COUNTYWIDE IMPROVEMENTS	33.9%	33.4%	5.4%	63
COUNTYWIDE IMPROVED LAND	36.4%	35.1%	8.7%	69
COUNTYWIDE VACANT LAND	36.1%	35.0%	2.4%	20
SINGLE FAMILY IMPROVEMENTS	34.2%	33.5%	4.8%	30
SINGLE FAMILY LAND	36.7%	35.1%	7.7%	30
SINGLE FAMILY TOTAL PROPERTY	34.6%	34.5%	3.2%	30
MULTIPLE FAMILY IMPROVEMENTS	34.1%	32.9%	6.5%	14
MULTIPLE FAMILY LAND	35.1%	34.9%	5.1%	14
MULTIPLE FAMILY TOTAL PROPERTY	34.3%	33.4%	5.2%	14
COMMERCIAL/INDUSTRIAL IMPROVEMENTS	33.6%	33.9%	4.9%	19
COMMERCIAL/INDUSTRIAL LAND	38.3%	36.3%	14.5%	19
COMMERCIAL/INDUSTRIAL TOTAL PROPERTY	34.3%	35.8%	6.0%	19
RURAL IMPROVEMENTS	n/a	n/a	n/a	-
RURAL LAND	35.0%	35.0%	0.1%	6
RURAL TOTAL PROPERTY	35.0%	35.0%	0.1%	6
SECURED PERSONAL PROPERTY				
ALL SECURED	35.0%	35.0%	1.5%	26
AIRCRAFT	35.0%	35.0%	0.0%	1
AGRICULTURAL	34.8%	35.0%	7.5%	5
BILLBOARDS	35.0%	35.0%	0.0%	1
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.1%	3
MOBILE HOMES	35.0%	35.0%	0.1%	16
UNSECURED PERSONAL PROPERTY				
ALL UNSECURED	35.1%	35.0%	3.6%	19
AIRCRAFT	35.0%	35.0%	0.1%	3
AGRICULTURAL	35.4%	35.0%	2.0%	5
BILLBOARDS	35.0%	35.0%	0.0%	3
COMMERCIAL/INDUSTRIAL	34.9%	35.0%	7.3%	8
MOBILE HOMES	n/a	n/a	n/a	-
TOTAL PERSONAL PROPERTY	35.0%	35.0%	2.4%	45

WHITE PINE COUNTY
2017-2018 RATIO STUDY

ALL APPRAISAL AREAS

REAL PROPERTY	AGGREGATE RATIO	MEDIAN RATIO	COD MEDIAN	SAMPLE SIZE
COUNTYWIDE TOTAL PROPERTY	34.3%	34.1%	3.8%	95
COUNTYWIDE IMPROVEMENTS	34.6%	34.4%	4.5%	71
COUNTYWIDE IMPROVED LAND	33.5%	33.6%	2.9%	76
COUNTYWIDE VACANT LAND	34.2%	33.6%	3.4%	19
SINGLE FAMILY IMPROVEMENTS	34.7%	34.6%	4.4%	33
SINGLE FAMILY LAND	33.6%	33.7%	3.0%	33
SINGLE FAMILY TOTAL PROPERTY	34.5%	34.4%	4.0%	33
MULTIPLE FAMILY IMPROVEMENTS	34.5%	34.5%	2.3%	15
MULTIPLE FAMILY LAND	34.0%	34.2%	2.1%	15
MULTIPLE FAMILY TOTAL PROPERTY	34.4%	34.6%	2.1%	15
COMMERCIAL/INDUSTRIAL IMPROVEMENTS	34.6%	34.1%	5.6%	22
COMMERCIAL/INDUSTRIAL LAND	33.1%	33.0%	2.2%	22
COMMERCIAL/INDUSTRIAL TOTAL PROPERTY	34.2%	33.8%	4.4%	22
RURAL IMPROVEMENTS	29.9%	29.9%	0.0%	1
RURAL LAND	35.0%	35.0%	1.0%	6
RURAL TOTAL PROPERTY	34.4%	35.0%	3.3%	6
SECURED PERSONAL PROPERTY				
ALL SECURED	35.0%	35.0%	0.0%	18
AIRCRAFT	n/a	n/a	n/a	-
AGRICULTURAL	35.0%	35.0%	0.0%	5
BILLBOARDS	n/a	n/a	n/a	-
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.0%	5
MOBILE HOMES	35.0%	35.0%	0.0%	8
UNSECURED PERSONAL PROPERTY				
ALL UNSECURED	35.0%	35.0%	0.2%	26
AIRCRAFT	35.0%	35.0%	0.2%	3
AGRICULTURAL	35.0%	35.0%	0.0%	5
BILLBOARDS	35.0%	35.0%	0.0%	1
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.4%	8
MOBILE HOMES	35.0%	35.0%	0.0%	9
TOTAL PERSONAL PROPERTY	35.0%	35.0%	0.1%	44

ALL COUNTIES INCLUDED IN
2017-2018 RATIO STUDY

ALL APPRAISAL AREAS

REAL PROPERTY	**AGGREGATE RATIO**	**MEDIAN RATIO**	**COD MEDIAN**	**SAMPLE SIZE**
ALL COUNTIES TOTAL PROPERTY	34.1%	34.4%	3.4%	567
ALL COUNTIES IMPROVEMENTS	34.2%	34.3%	4.3%	402
ALL COUNTIES IMPROVED LAND	34.2%	34.7%	3.9%	428
ALL COUNTIES VACANT LAND	32.9%	34.6%	4.1%	137
SINGLE FAMILY IMPROVEMENTS	34.3%	34.2%	3.6%	188
SINGLE FAMILY LAND	34.4%	34.4%	4.0%	188
SINGLE FAMILY TOTAL PROPERTY	34.3%	34.3%	2.7%	188
MULTIPLE FAMILY IMPROVEMENTS	34.5%	34.7%	3.0%	93
MULTIPLE FAMILY LAND	34.1%	34.8%	3.2%	93
MULTIPLE FAMILY TOTAL PROPERTY	34.4%	34.5%	2.6%	93
COMMERCIAL/INDUSTRIAL IMPROVEMENTS	34.0%	34.0%	5.6%	113
COMMERCIAL/INDUSTRIAL LAND	34.1%	34.7%	5.2%	111
COMMERCIAL/INDUSTRIAL TOTAL PROPERTY	34.0%	34.2%	4.6%	113
RURAL IMPROVEMENTS	32.7%	32.4%	3.8%	3
RURAL LAND	34.8%	35.0%	0.9%	36
RURAL TOTAL PROPERTY	34.5%	35.0%	1.4%	36
SECURED PERSONAL PROPERTY				
ALL SECURED	35.0%	35.0%	0.5%	103
AIRCRAFT	35.0%	35.0%	0.0%	1
AGRICULTURAL	35.0%	35.0%	1.5%	26
BILLBOARDS	35.0%	35.0%	0.0%	1
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.2%	29
MOBILE HOMES	35.0%	35.0%	0.1%	46
UNSECURED PERSONAL PROPERTY				
ALL UNSECURED	35.0%	35.0%	1.5%	153
AIRCRAFT	35.0%	35.0%	0.2%	28
AGRICULTURAL	35.0%	35.0%	0.5%	22
BILLBOARDS	35.0%	35.0%	0.0%	16
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	4.9%	45
MOBILE HOMES	35.0%	35.0%	0.0%	42
TOTAL PERSONAL PROPERTY	35.0%	35.0%	1.1%	256

STATEWIDE
2015-2018 RATIO STUDIES

ALL APPRAISAL AREAS

REAL PROPERTY	AGGREGATE RATIO	MEDIAN RATIO	COD MEDIAN	SAMPLE SIZE
STATEWIDE TOTAL PROPERTY	34.1%	34.3%	3.8%	1,473
STATEWIDE IMPROVEMENTS	34.2%	34.1%	5.1%	1,024
STATEWIDE IMPROVED LAND	34.2%	34.7%	3.5%	1,098
STATEWIDE VACANT LAND	33.6%	34.5%	4.1%	371
SINGLE FAMILY IMPROVEMENTS	34.3%	34.2%	4.6%	528
SINGLE FAMILY LAND	33.9%	34.4%	3.9%	527
SINGLE FAMILY TOTAL PROPERTY	34.2%	34.2%	3.5%	528
MULTIPLE FAMILY IMPROVEMENTS	34.1%	34.2%	4.3%	219
MULTIPLE FAMILY LAND	34.2%	34.6%	3.2%	219
MULTIPLE FAMILY TOTAL PROPERTY	34.1%	34.1%	3.5%	219
COMMERCIAL/INDUSTRIAL IMPROVEMENTS	34.1%	34.1%	6.0%	251
COMMERCIAL/INDUSTRIAL LAND	34.4%	34.6%	3.9%	249
COMMERCIAL/INDUSTRIAL TOTAL PROPERTY	34.2%	34.3%	4.4%	252
RURAL IMPROVEMENTS	33.2%	32.9%	2.4%	8
RURAL LAND	34.9%	35.0%	0.7%	103
RURAL TOTAL PROPERTY	34.3%	35.0%	1.0%	103
SECURED PERSONAL PROPERTY				
ALL SECURED	35.0%	35.0%	0.4%	246
AIRCRAFT	35.0%	35.0%	0.0%	5
AGRICULTURAL	34.9%	35.0%	0.8%	59
BILLBOARDS	35.0%	35.0%	0.0%	3
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	0.5%	68
MOBILE HOMES	35.0%	35.0%	0.1%	111
UNSECURED PERSONAL PROPERTY				
ALL UNSECURED	35.0%	35.0%	0.8%	409
AIRCRAFT	35.0%	35.0%	0.1%	74
AGRICULTURAL	35.0%	35.0%	0.4%	42
BILLBOARDS	35.0%	35.0%	0.0%	46
COMMERCIAL/INDUSTRIAL	35.0%	35.0%	2.1%	115
MOBILE HOMES	34.9%	35.0%	0.5%	132
TOTAL PERSONAL PROPERTY	35.0%	35.0%	0.7%	655

2017-2018

REPORT OF ASSESSMENT RATIO STUDY

COUNTY ABSTRACTS AND FINDINGS

CARSON CITY RATIO STUDY 2017-2018
NARRATIVE

All improvements are revalued and land reappraised annually in Carson City. The Assessor[1] continues to physically inspect 1/5 of the county each year to capture any new improvements added without a permit within the previous five years.

Property Type	Sample Size	In Ratio	Out of Ratio	Exception Rate
LAND				
Vacant Land	24	22	2	8.3%
Single-Family Residential Land	34	33	1	3%
Multi-Family Residential Land	18	18	0	0%
Commercial and Industrial Land	21	21	0	0%
Agricultural Land **(Note 4)**	5	5	0	0%
IMPROVEMENTS				
Single Family Residential Improvements **(Note 1)**	34	34	0	0%
Multi-family Residential Improvements **(Note 2)**	18	17	1	6%
Commercial and Industrial Improvements **(Note 3)**	22	16	6	27%

Note 1: Single Family Residential Improvements: An incorrect multiplier was applied to all Residential properties. Had the correct multiplier been applied, the final outcome of the statistical analysis would not have resulted in a significant difference. (Finding CC 2017-01)

Note 2: Multi-Family Residential Improvements: The one outlier listed above was found in the area of the county which was *physically* inspected during the 2017-2018 tax

[1] All references to the Assessor means the Assessor or the Assessor's staff

year. An incorrect multiplier was applied to all Residential properties. Had the correct multiplier been applied, the final outcome of the statistical analysis would not have resulted in a significant difference. (Finding CC 2017-01)
Note 3: Commercial and Industrial Improvements: Of the six outliers listed above, four were found in the 4/5 of the county which was not *physically* inspected during the 2017-18 tax year. One was a vacant commercial property (LUC 14) in the reappraisal area that now has new minor improvements (LUC 48)

Note 4: Agricultural Land: The prior year's values per acre were applied to all Agricultural Land. (Finding CC 2017-02) The sample parcels did not include any classifications that fell into the upper range of percentage increases from the prior year. While the ratios were lower than expected, all of the sample ratios were within statutory guidelines.

Property Type	Sample Size Accounts Reviewed	Total Property Records Examined	Records Out of Ratio	Exception Rate
Personal Property	44	346	1 (Notes)	0%

Notes: *Records Out of Ratio* reflect outliers after adjusting for computer system rounding differences.
There was one outlier that was the result of an input error on the year of acquisition on one piece of equipment which has been corrected.
One aircraft account could not be verified as no record could be located to confirm the information reported in ADS by the taxpayer. Steps have been taken to obtain proper documentation.

Observations and Summary

Procedures: Since the complete change in the real property appraisal staff in 2013, there have been significant improvements in office procedures. Each year the staff has identified and focused on different areas of concern while continuing to improve on previously discovered deficiencies. They strive to make each year better than the last and the results of their efforts have been noticeable.

Minor Improvements: Commercial outliers have decreased since the last Ratio Study. Older, established commercial properties appear to be the area that needs more detailed attention. After a discussion with the appraisal staff, they have begun to tighten their improvement discovery process to better identify differences in long established commercial properties that typically do not change. It is the Department's hope that this will further decrease the commercial outliers in future Ratio Studies.

Personal Property: During the 2014-2015 Ratio Study, it was discovered that there were inconsistent life assignments within the 2006 and 2007 reporting years. It appears that this issue has been corrected.

Findings and Recommendations

Finding No. CC 2017-01

Criteria
The calculation of the cost of replacement of an improvement must be calculated in accordance with NAC 361.128(1) which states that the standards and modifiers of local costs, published in the version of the *Residential Cost Handbook*, *Marshall Valuation Service*, *Residential Estimator* software adopted by reference pursuant to NAC 361.1177 as of January 1 of the year immediately preceding the lien date for the current year, must be utilized.

Condition
Local multipliers reflect local cost conditions, are based on weighted labor and material costs, which include local sales taxes, and are designed to adjust the basic costs to each locality. Carson City used a local cost multiplier of 1.04 on *all* single family and multi-family residential properties for the 2017-2018 tax year. The *Residential Cost Handbook*, *Marshall Valuation Service*, *Residential Estimator* states that the Local Cost Multiplier for Carson City is 1.06.

Cause
The cost adjustment portion of the Marshall & Swift valuation software was not verified to ensure it was defaulting to the appropriate Local Cost Multiplier. As a result, an inaccurate default multiplier of 1.04 was not over-written to calculate at 1.06.

Effect
All things being equal, the value calculation of a 1.04 vs. a 1.06 multiplier does not create an issue of assessments out of the statutory percentage range of 32-36% permitted by NRS 361.333. It is also noted that of the 52 single and multi-family properties valued within the sample, the application of the correct multiplier, combined with differences noted and calculated by the Department, resulted in 3 properties that would have had improvement values resulting in ratios outside of the 32 to 36 percent range, required by NRS 361.333, falling within statutory guidelines. In addition, 3 different properties that would have resulted in ratios at the low end of the range, but within ratio, fall below the 32% threshold. The result of these differences, make no notable impact on the final statistical analysis of the Ratio Study.

Recommendation
The Assessor has already been made aware of this error and has stated that it is normal procedure to verify that the Marshall & Swift default is correct prior to utilizing the software for valuation each year and that this step was uncharacteristically missed this year during the valuation process. It is the Department's belief that as a result of this finding, it will *not* be an ongoing issue, and that moving forward, the Assessor *will* be extra diligent to ensure the software is correctly calculating values.

Finding No. CC 2017-02

Criteria
The calculation of the Agricultural Land Valuation must be calculated in accordance with NRS **361A.140**(2) which states that the county assessors shall classify agricultural real property utilizing the definitions and applying the appropriate values published in the Tax Commission's bulletin.

Condition
Carson City applied the per acre value from the 2016-17 Agricultural Land Bulletin to the 2017-18 land values.

Cause
The Assessor stated that ADS loads the current valuation tables into their system and that the values with in the table were verified correct by a member of the Assessor's staff. The Assessor is unsure how/why the current values calculated from the previous year.

Effect
The per acre percentage increase between the 2016-17 and 2017-18 tax years, including all AG land categories and classifications, range from 1.8% to 7.3% averaging 3.9%. Because of the various agricultural land categories, the classifications within each category and the varying rates, the overall financial impact is unknown.

Recommendation
The Assessor has been made aware of this error and corrected it. All values now reflect those within the 2017-18 Agricultural Bulletin No. 206. The Department recommends that the Assessor's staff not only verify that the tables loaded by the data system vendor are correct but that they have properly transferred and calculated within the parcel accounts.

CHURCHILL COUNTY RATIO STUDY 2017-2018
NARRATIVE

All improvements are revalued and land reappraised annually in Churchill County. The Assessor[1] continues to physically inspect 1/5 of the county each year to capture any new improvements added without a permit within the previous five years.

Property Type	Sample Size	In Ratio	Out of Ratio	Exception Rate
LAND				
Vacant Land (Note #1)	20	19	1	5%
Single-Family Residential Land	30	30	0	0%
Multi-Family Residential Land	15	15	0	0%
Commercial and Industrial Land	15	15	0	0%
Agricultural Land	6	6	0	0%
IMPROVEMENTS				
Single Family Residential Improvements (Note #2)	30	29	1	3.33%
Multi-family Residential Improvements	15	15	0	0%
Commercial and Industrial Improvements (Note #3)	15	14	1	6.67%

Note 1: Vacant Land: The one outlier listed above was found in the 4/5 of the county which was not *physically* inspected during the 2017-18 tax year.

Note 2: Single-Family Residential Improvements: The sole outlier listed above was found in the 4/5 of the county which was not *physically* inspected during the 2017-18 tax year.

[1] All references to the Assessor means the Assessor or the Assessor's staff

Note 3: Commercial and Industrial Improvements: The lone outlier listed above was found in the 4/5 of the county which was not *physically* inspected during the 2017-18 tax year.

Property Type	Sample Size Accounts Reviewed	Total Property Records Examined	Records In Ratio	Records Out of Ratio	Exception Rate
Personal Property	45	453	453	0 (Notes)	0%

Notes: Records Out of Ratio reflect outliers after adjusting for rounding differences.

Observations and Summary

The Assessor in Churchill has developed a land module that allows staff to inventory site-specific data and geographic areas to provide a more comprehensive analysis. The sales questionnaire has been very effective in acquiring sales data from recent purchasers that may have otherwise been unknown. Churchill County has created a user friendly website with transparency which allows taxpayers to retrieve information anytime. In addition, staff is available to address taxpayer questions and concerns directly.

Findings and Recommendations

Finding No. CH2017-01

Criteria
This finding is specific to *Manufactured Homes Converted to Real Property* identified under Land Use Code 22. Per Nevada Revised Statute (NRS) 361.227, the full cash value of any improvements made on the land is based on the cost of replacement less depreciation calculated at 1.5 percent of the cost of replacement for each year of adjusted actual age of the improvement, up to a maximum of 50 years. Furthermore, per Nevada Administrative Code (NAC) 361.1117, "Cost of replacement" means the total cost of construction required to replace an improvement with a substitute of like or equal utility using current standards of materials and design, including the cost of any pertinent labor, materials, supervision, contractors' profit and overhead, architects' plans and specifications, sales taxes and insurance. Per Churchill County Code (CCC) 14.16.070 paragraph G, to be converted to real property a manufactured home must have a 24" foundation stem wall.

Condition
Churchill County is undervaluing foundation stem walls using 18" instead of the code required 24". If a manufactured home was replaced today having similar utility to the six

converted manufactured home samples studied, new (replacement) homes would have to meet current code in the county.

Cause

The assessor is valuing converted manufactured home foundations based on a standard 18” foundation stem wall rather than replacement cost requirement of 24”. The county assessor is aware that the county code for conversion foundations has varied from no code to 18”, 30”, and recently changed to 24”. The county has many converted manufactured homes with stem wall foundations that vary greatly based upon code requirements at the time of set up. The assessor has been consistently using the 18” stem wall.

Effect

The differences in the sample may not be statistically valid to apply to the population, so the effect is not known to a valid range. However, as it relates to the 2017-18 roll year, applying the average difference of $790 per parcel in the sample, there is a potential undervaluation of $798,700 taxable value or $279,540 assessed value in the county - 1,011 manufactured homes converted to real property multiplied by $790 per parcel. Further, applying the average tax rate for Churchill County of 3.0284 per hundred the fiscal impact is estimated to be less than $8,500 in total. This effect is not necessarily statistically valid, but it is reflective of the order of magnitude. It is also noted that of the six homes studied, the higher foundation costs calculated by the Department did not result in any of the improvement values falling outside of the 32 to 36 percent range which is considered satisfactory per NRS 361.333.

Recommendation

As the fiscal impact is considered relatively small, the Department recommends that beginning with the 2018-19 roll, the Churchill County assessor begin costing all foundations for Land Use Code 22 parcels using a 24” stem wall depth. Doing so will improve the overall equality in the relationship between how foundations are costed for these homes when compared to more common stick built homes valued using Marshall & Swift cost factors reflective of current costs based on current building codes. In addition, the Department recommends putting procedures in place to identify and update stem wall depths if/when county codes change.

Finding No. CH 2017-02

Criteria

The cost of replacement of an improvement must be calculated in accordance with Nevada Administrative Code (NAC) 361.128 (1) using The standards and modifiers of local costs published in the version of the *Residential Cost Handbook*, *Marshall Valuation Service, Residential Estimator* software or *Commercial Estimator* software, as appropriate, adopted by reference pursuant to NAC 361.1177 as of January 1 of the year immediately preceding the lien date for the current year.

Condition

In the *2017-18 Churchill County Cost Reference Manual*, the cell used to calculate the value of an elevated drain field, or engineered septic tank, added 115% to the cost of a standard drain field. Per the Marshall & Swift Residential Manual (C-13), the drain field tank should have added 10-15%.

Cause

There was an error in the 2017-18 Churchill County Cost Reference Manual that 'double-charged' property owners whose parcels had engineered septic tanks. For properties with these elevated drain fields, 10-15% cost should be added to the septic tank. Parcels that met this condition had a cost of 115% added.

Effect

The impact of this error could potentially create an assessment out of the statutory percentage range of 32-36% permitted by NRS 361.333. As it pertains to the 2017-18 roll year, the difference for each affected parcel was $3,258.39. Per the Assessor, six parcels in the total population would have been affected. The total overvaluation would be $19,550.34 taxable value or $6,842.62 assessed value in the county. Further, applying an average tax rate for Churchill County of 3.0284, the fiscal impact is estimated to be $207.23 for 2017-18. This effect does not reflect a significant fiscal impact, but it is reflective of the order of magnitude.

Recommendation

The error in the *2017-18 Churchill County Cost Reference Manual* was brought to the attention of the Assessor prior to the tax roll closing. It was an uncharacteristic mistake. It is the Department's belief that it will not be an on-going issue, and that moving forward, the Assessor will be extra diligent to ensure all formulas in future Churchill County Cost Reference Manuals will be properly calculating values.

ELKO COUNTY RATIO STUDY 2017-2018
NARRATIVE

All land is reappraised each year in Elko County. The Nevada Tax Commission (NTC) approved the Assessor's[1] request to reappraise all land, rather than apply a land factor in non-reappraisal areas, in 2006.

Elko has conducted a full revaluation of all improvements throughout the county since 2009. The Assessor continues to physically inspect 1/5 of the county each year to capture any new improvements added without a permit within the previous five years. This is best practice for discovery of new improvements.

Property Type	Sample Size	In Ratio	Out of Ratio	Exception Rate
LAND				
Vacant Land	25	25	0	0%
Single-Family Residential Land	31	31	0	0%
Multi-Family Residential Land	16	16	0	0%
Commercial and Industrial Land	20	20	0	0%
Agricultural Land	7	7	0	0%
IMPROVEMENTS				
Single Family Residential Improvements **(Note 1)**	31	30	1	1%
Multi-family Residential Improvements **(Note 2)**	16	16	0	0%
Commercial and Industrial Improvements **(Note 3)**	20	19	1	1%

Note 1: Single Family Residential Improvements: Both the outlier and one of three new discoveries since last physical inspection involved additions that were not accurately detectable via aerial photographs. Discussed with Assessor the need to monitor building

[1] All references to the Assessor means the Assessor or the Assessor's staff.

permits closely and perhaps do spot checks in reevaluation areas even when aerials suggest no changes.

Note 2: Multi-Family Residential Improvements: While no MFR samples were out of ratio there was 1 parcel with new decking installed without a permit. Assessor will make appropriate updates. An additional MFR property was costed incorrectly (100% slab and subfloor) and would have been out of ratio except for compensating errors. Assessor has updated M&S calculations.

Note 3: Commercial and Industrial Improvements: Three non-outlier commercial properties had large commercial electric signs that typically would have been tracked on a personal property account but were not picked up. Assessor putting special effort into insuring this doesn't happen again and that all signs for commercial accounts are valued appropriately. This includes procedures to identify those commercial property signs that are leased by the owner. The one identified commercial outlier included such a sign but also an additional structure that was not picked up.

Property Type	Sample Size Accounts Reviewed	Total Property Records Examined	Records In Ratio	Records Out of Ratio	Exception Rate
Personal Property	45	592	591	1 (Notes)	0%

Notes: Records Out of Ratio reflect outliers after adjusting for rounding differences. There were 47 property records that had rounding differences and a single personal property item that was out of ratio.

The one outlier occurred because the Assessor neglected to input the cost on 1 record in one account. Assessor has corrected this oversight.

There were four manufactured home accounts for which there was no Dealer Report of Sale or other documentation to justify the initial cost. All four were very old manufactured homes.

Observations and Summary

Marshall & Swift: The Department recommends the Assessor utilize all adjustments ("Foundation", "Energy", "Hillside", and "Seismic") and unusual-conditions multipliers as stated in the Marshall & Swift cost manual as needed and deemed appropriate when valuing residential properties within the county. There were several instances observed where 'siding' material was not identified accurately. Assessor will review the distinctions among various siding materials (e.g. aluminum/vinyl vs wood versus hardboard) with the staff.

The Assessor has implemented Department recommended changes in the use of M&S Seismic adjustments for the 2017-18 tax year. See Finding # EL 2017-1 below for details. While researching Elko building department codes in support of changes to the seismic adjustment the Assessor has voluntarily elected to change the M&S Energy and Foundation adjustments from Moderate to Extreme. The Department supports this change.

The Assessor is using the zip code default multipliers within the ADS system for Residential properties. These multipliers are verified correct by the Assessor prior to implementation and have been confirmed correct by the Department. Any local costs which differ from values in Marshall & Swift must be sent to the Department for approval prior to use.

Minor Improvements: Minor improvements are identified by the Assessor and valued from either the Marshall & Swift cost manuals or the Assessor's Handbook of Rural Building Costs. Each year the assessor updates a comprehensive spread sheet of residential, commercial and AG specific costs (including appropriate adjustments) indexed by quality and size for each of the common improvements typically encountered throughout Elko County. Each improvement is given a unique code that is referenced on the property improvement list. This is a best practice and useful outline for all the rural counties.

New Construction Valuation: The Assessor discovers and tracks the progress of new construction through building permits and the reappraisal process. The Assessor utilizes Pictometry to assist discovery of new construction and identify areas in need of a field review. Each re-valuation area is flown a couple of months in advance so that photos are available prior to revaluation. New versus prior aerial photographs are compared and any discernable differences trigger a physical site review.

Obsolescence: The Assessor has not needed to apply any area wide obsolescence at this time due to the relatively stable market in Elko compared to other areas of the state.

Land: The parcel numbering system in Elko County has been out of compliance for years and has still not been addressed. The introduction of a new CAMA system in the next few years may provide an opportunity to address this issue though Assessor is concerned about lack of staffing to implement the numbering change.

Between the relatively large numbers of vacant sales, the historical sales data in areas with few sales and the calculated base lot values in the newer subdivisions (north of I-80) there was adequate data to justify the Assessor's land values for parcels in the sample.

Appraisal Records: Files are well organized and mostly digitized. Hard copies of parcel files are no longer filed in the office. Most information is available to the public online with the exception of portions of the personal property data. Descriptions of the personal property items are marked as "Confidential" and not available to the public.

For several years the Assessor has been working on identifying and valuing all federally owned parcels (primarily BLM) and including these on the tax roll. This process is estimated to be 95% complete.

An issue was discovered with the Elko County real property tax roll supplied to the Department by the end of each year in compliance with NAC 361.1542. That tax roll did not contain any government owned exempt parcels. While these parcels did exist on the counties "in house" tax roll, the file sent to the Department each year was produced from the counties' "published" tax roll which excluded all government owned parcels in order to reduce newspaper printing costs. Two sample properties were among those not included in the roll sent to the Department. The error was immediately corrected and the Department will confirm that complete tax rolls are sent in the future.

Agricultural Properties: The agricultural records are well maintained with maps and detailed descriptions of land classifications. There were no outliers for agricultural land in this year's ratio study.

Findings and Recommendations

Finding No. EL 2017-01

Criteria

This finding is specific to residential properties. The cost of replacement of an improvement must be calculated in accordance with Nevada Administrative Code (NAC) 361.128 (1) using The standards and modifiers of local costs published in the version of the *Residential Cost Handbook, Marshall Valuation Service, Residential Estimator* software or *Commercial Estimator* software, as appropriate, adopted by reference pursuant to NAC 361.1177 as of January 1 of the year immediately preceding the lien date for the current year. Additionally, in *Guidance Letter 10-003* dated July 14, 2010, the Department advises all counties to use the seismic adjustment level 3 for residential properties, unless otherwise indicated by the local building department. Both the Elko City and Elko County building departments require the use of *Seismic Design Category D* which is "extreme" necessitating a zone 3 seismic adjustment be applied when using Marshall and Swift costs.

Condition

Prior to the 2017-18 roll, the county was applying an incorrect (low) seismic adjustment which caused residential dwellings to be slightly undervalued throughout the county.

Cause

The data system used to calculate improvement values using Marshall and Swift costs was applying the Zone 2B seismic adjustment instead of the Zone 3 adjustment which should have been used.

Effect

The potential impact of the error is unknown because the Department's version of the Marshall and Swift estimator program would not allow for a Zone 2B option. Based on value comparisons made prior to the assessor correcting the adjustment factor before closing the roll, application of the incorrect adjustment did not appear to cause many of the improvement values to fall outside of the 32 to 36 percent range which is considered satisfactory per NRS 361.333.

Recommendation

For the 2017-18 roll, the county corrected the seismic adjustment to use Zone 3 after being made aware of the issue prior to the roll close. The few number of residential outliers found in this study support that the change was made timely. It is the Department's belief that no further action is necessary and that this will not be an issue in the future.

LANDER COUNTY RATIO STUDY 2017-2018
NARRATIVE

Lander County comprises five distinct Appraisal Groups which are defined by geography and township, range and section boundaries. Of the appraisal groups, four consist of one tax district each and the fifth consists of four separate tax districts (total of eight distinct tax districts). Whereas all land is reappraised each year in the county, improved property is revalued according to an appraisal cycle which repeats every five years. This results in the application of an improvement factor approved by the Nevada Tax Commission in non-reappraisal areas. The Assessor will continue to "physically" re-inspect no less than one-fifth of the county each year (i.e. one "appraisal group" each year) based on the previous reappraisal area rotation. This is a best practice for discovery of new improvements where a permit may not have been required and to insure accurate records are maintained.

Property Type	Sample Size	In Ratio	Out of Ratio	Exception Rate
LAND				
Vacant Land	30	29	1	3%
Single-Family Residential Land	30	30	0	0%
Multi-Family Residential Land	15	15	0	0%
Commercial and Industrial Land	15	15	0	0%
Agricultural Land	6	6	0	0%
IMPROVEMENTS				
Single Family Residential Improvements **(Note 1)**	30	28	2	7%
Multi-family Residential Improvements	15	15	0	0%
Commercial and Industrial Improvements **(Note 2)**	15	12	3	20%

Note 1: Single Family Residential Improvements: The two outliers were the result of incorrectly identifying improvements during previous onsite inspections. The responsible appraiser is no longer with the Assessor's Office. Five additional single family residences in non-reappraisal areas were found to have changes since last physical inspection. None

were sufficient to cause an out-of-ratio condition and all were reviewed with the Assessor and appropriate updates made to the files pending onsite inspections or reviewing aerial photos where appropriate.

Note 2: Commercial and Industrial Improvements: Two of the three commercial outliers were the result of previous cursory inspections (short staffed) of very old commercial buildings. The third outlier was the result of upgrades to a commercial building in Austin. Work was done with permits and a grant however changes to the tax roll were waiting on the physical inspection for the 2018-19 tax year.

Property Type	Sample Size Accounts Reviewed	Total Property Records Examined	Records In Ratio	Records Out of Ratio	Exception Rate
Personal Property	33	300	300	0 (Notes)	0%

Notes: Records Out of Ratio reflect outliers after adjusting for rounding differences and one 'Arbitrary Assessment' record with an assessed value that was programmatically overridden with a minimum value ($100 for this county) and thus technically out of ratio but not an error.

Observations and Summary

Marshall & Swift: Assessor uses the ADS version of M&S for costing residential and commercial properties. Assessor is using Zone 3 seismic adjustment and relies on the default values for the other adjustments in M&S. As a result of discussions regarding changes to Energy and Foundation adjustments in adjacent Elko County the Assessor is researching a change to the Energy adjustment from moderate to extreme and implementing a 'Hillside' adjustment for the Austin area for the next tax year. Final decision will be based on a review with the Building Department.

Minor Improvements: Minor improvements are identified by the Assessor and valued from either the Marshall Swift cost manuals and the Assessor's Handbook of Rural Building Costs. Internally generated 'Property Appraisal Value' tables are updated annually from the above sources and are cross referenced by Unit of Measurement, Total Cost; Base Cost; Section & Page from the corresponding manual, and the proper multipliers assigned to Lander County. The assessor does not employ lump sum costing but instead values minor improvements individually. When practical, this is a best practice

Improvement Factor:
The minimal numbers of improvement outliers found among all three property types suggests that the improvement factor is working as intended.

New Construction Valuation: The Assessor discovers and tracks the progress of new construction through the building permit programs, periodic discussions with the building inspector, observations while driving throughout the county and during the reappraisal process. Visits to outlying rural areas are planned to coincide with scheduled visits to those areas in order to conserve travel expenses. Many improvements in the outlying areas are put in place without a building permit and therefore not discovered until physical reappraisal or incidental drive by.

Land: Calculating values continues to be a challenge in the southern half of Lander County (Austin to Kingston) due to a lack of vacant sales and the fact that many of the existing sales are unverified or not arm's length transactions. Sales verification letters are typically not returned or there are discrepancies between buyer and seller versions of the sale. In addition, land contracts are relied on for many of the vacant sales. Typically these are not recorded until paid in full years after the sale.

Calculating land values for the few improved parcel sales in the same areas using abstraction isn't reliable since in many instances the improvements on the more rural properties and even many in Austin are quite old, sometimes 50 to 100 years old.

Assessor is aware that land valuation procedures need to be reviewed and the source of pertinent sales information broadened to appropriate areas in other counties. And, since the last ratio study, has begun referencing Eureka County sales in Crescent Valley on the eastern border of Lander County. Approximately 50% of the land values in this ratio study were left unchanged from historic values due to lack of any data substantiating a change in value.

The Lander County Assessor is open to future guidance from the Department in broadening the search for comparable sales to outside the county. The Department recommends any work in this area be scheduled independently of the ratio study in order to devote the time necessary. Note that the Assessor, who is also a successful fee appraiser, is open to and actively looking for an independent contractor to take on the task of updating land values in the problem areas via a means other than local sales.

Appraisal Records: Files are well organized with no issues obtaining the required information. The office has recently begun using Pictometry and is still in the learning stages of incorporating the technology into daily use. Assessor is sponsoring onsite training sessions to increase the skill level.

PERSHING COUNTY RATIO STUDY 2017-2018
NARRATIVE

Pershing County does not do annual re-costing. The Assessor[1] continues to physically inspect 1/5 of the county each year to capture any new improvements added without a permit within the previous five years.

Property Type	Sample Size	In Ratio	Out of Ratio	Exception Rate
LAND				
Vacant Land (Note 1)	20	19	1	5%
Single-Family Residential Land (Note 1)	30	19	11	37%
Multi-Family Residential Land (Note 1)	14	11	3	21%
Commercial and Industrial Land (Note 1)	19	9	10	53%
Agricultural Land	6	6	0	0%
IMPROVEMENTS				
Single Family Residential Improvements (Notes 2, 3)	30	24	6	20%
Multi-family Residential Improvements (Notes 2, 3)	14	8	6	43%
Commercial and Industrial Improvements (Note 3)	19	14	5	26%

Note 1: Land Values: The high number of land outliers resulted from the problem addressed below (Finding No. PE 2017-03).

Note 2: Missing Subfloor, appliance, and floor covering allowances: Of the six Single-Family Residential Improvements outliers listed above, three were missing the Subfloor and appliance allowances. Of those three, two were missing the floor covering allowance, and two were missing the appliance allowance. Our investigation found that

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the Subfloor allowance is not automatically added to estimates when entered through the Advanced Data Systems (ADS) database, whereas the Subfloor allowance *is* automatically included in our Marshall & Swift program. The Assessor has been made aware of the need to manually add the subfloor when using Marshall & Swift through ADS.

Four of the six Multi-Family Residential Improvements are missing the Subfloor allowance, and one of those four is also missing the appliance allowance.

Note 3: Incorrect calculation of Replacement Cost New Less Depreciation (RCNLD): Each of two of the Single-Family Residential Improvement outliers has two different calculated values on the Pershing County website. One of the values is correctly calculated for the current year and one is not. The value that was used for assessment on these parcels was the incorrect value.

Two of the six Multi-Family Residential Improvements have the same website issue/error. Four of the five Commercial and Industrial Improvements have the same website issue/error.

Property Type	Sample Size Accounts Reviewed	Total Property Records Examined	Records In Ratio	Records Out of Ratio	Exception Rate
Personal Property	45	380	366	14 (Note)	4%

Notes: *Records Out of Ratio* reflect outliers after adjusting for computer system rounding differences.

1. All outliers were a result of improper life assignments. The records were discussed with the Assessor's Office and they made corrections.
2. The Department recommends the county run queries periodically to randomly check specific items of personal property to verify all lives are consistently and correctly being assigned.

Observations and Summary

The Pershing County Assessor and her staff are relatively new. The staff is in training to become more proficient in their jobs. The assessor has welcomed review of the office's records and processes and is very receptive of any constructive criticism offered by the Department. Additionally, she has expressed the desire to receive additional assistance and training as her and her staff's time permits in order to continue to progress. The Department intends to continue to work with her office to provide assistance going forward.

Findings and Recommendations

Finding No. PE 2017-01

Criteria
This finding was found across several parcels of both Single Family Residential (SFR - Land Use Code 20) and Multiple Family Residential (MFR - Land Use Code 30). Per Nevada Revised Statute (NRS) 361.227, the full cash value of any improvements made on the land is based on the cost of replacement less depreciation calculated at 1.5 percent of the cost of replacement for each year of adjusted actual age of the improvement, up to a maximum of 50 years. Furthermore, per Nevada Administrative Code (NAC) 361.1117, "Cost of replacement" means the total cost of construction required to replace an improvement with a substitute of like or equal utility using current standards of materials and design, including the cost of any pertinent labor, materials, supervision, contractors' profit and overhead, architects' plans and specifications, sales taxes and insurance. Pershing County re-costs on a five year cycle; they do not re-cost annually.

Condition
Pershing County used Marshall & Swift to value the dwellings on the subject parcels. In the course of their valuations, they have not included raised subfloor in some of the valuations, all of which were last valued in December 2012. Inspections of these particular dwellings showed them to have raised wood subfloors.

Cause
The assessor has stated wood subfloor is automatically included in the costing of the dwellings. Review of Marshall & Swift's Residential Manual states that is the case if the Manual is used for costing. However, the Marshall & Swift program does not automatically include the raised wood subfloor when used through ADS. The Department confirmed this with another county familiar with ADS, Marshall & Swift, and the need to add subfloor to get proper valuations. While the Department's version of Marshall & Swift defaults to 100% raised wood subfloor (which can then be changed), the county's version through ADS does not.

Effect
Since raised wood subfloor has not been included in the dwelling valuations of these particular parcels, the dwellings have been undervalued and are outside of the 32 to 36 percent range which is considered satisfactory per NRS 361.333. The differences in the sample may not be statistically valid to apply to the population, so the effect is not known to a valid range. However, as it relates to the 2017-18 roll year, applying the average difference of $12,518 per parcel in the sample, there is a potential undervaluation of $1,402,000 taxable value or $490,700 assessed value in the county. (This was calculated as follows: Seven parcels out of 44 SFR and MFR parcels in the ratio study sample have no subfloor which equals 15.9% of the sampled SFR and MFR parcels. Applying this percentage to the 704 total SFR and MFR parcels in the county, 112 parcels may have no subfloor and be undervalued. 112 SFR and MFR dwellings multiplied by $12,518 per parcel equals $1,402,000.) Further, applying a tax rate of 3.1453 per hundred to the $490,700 assessed value, the fiscal impact is estimated to be less than $15,500 in total. This effect is not necessarily statistically valid, but it is reflective of the order of

magnitude. The erroneous calculations caused by the lack of wood subfloor at seven sampled parcels studied did cause the improvement values of these parcels where these errors were found to fall outside of the 32 to 36 percent range considered satisfactory per NRS 361.333

Recommendation

The parcels in question will be re-valued in Marshall & Swift at the end of this year (five year cycle). Since the fiscal impact is considered relatively small, the Department recommends that beginning with the 2018-19 roll, the Pershing County assessor re-values these parcels' dwellings, and ensures that all appraisers who operate ADS are aware of the need to add raised wood subfloor or concrete slab subfloor to all dwellings being valued throughout the county as appropriate.

Finding No. PE2017-02

Criteria

This finding has been found across several parcels of all improvement types (Single Family Residential – SFR, Multi-family Residential – MFR, and Commercial). Per Nevada Revised Statute (NRS) 361.227, the full cash value of any improvements made on the land is based on the cost of replacement less depreciation calculated at 1.5 percent of the cost of replacement for each year of adjusted actual age of the improvement, up to a maximum of 50 years. Furthermore, per Nevada Administrative Code (NAC) 361.1117, "Cost of replacement" means the total cost of construction required to replace an improvement with a substitute of like or equal utility using current standards of materials and design, including the cost of any pertinent labor, materials, supervision, contractors' profit and overhead, architects' plans and specifications, sales taxes and insurance.

Condition

Certain parcels have incorrect Replacement Cost New Less Depreciation (RCNLD) calculations that have been used to figure the assessed values and resultant property taxes.

Cause

Pershing County does not re-cost annually; instead, they use the Improvement Factor and re-cost one-fifth of the county every five years. The assessor's incorrect calculations were figured using the Replacement Cost from the last time the properties' improvements were valued in Marshall & Swift (re-costed). Depreciation was then applied to the improvements based on what the depreciation rate was as of that last re-costing valuation date. The website does show the correct calculations and the correct RCNLD that should be used, but the website and the hard copy of the Secured Assessment Roll (SAR) use the former figures with the incorrect taxable and assessed values. In most instances the taxable and assessed values are too high, but sometimes they are too low.

Discussions with other counties and with Ardie at ADS revealed the cause of the incorrect assessed values: the county assessor is supposed to take the Department-supplied Improvement Factor and then incorporate the 1.5% depreciation rate (for that year) to create a composite factor that the counties then enter into ADS. ADS programming then uses that composite factor to calculate the RCNLD for that year.

Pershing County did not know to create the composite factor that incorporates the depreciation, so no depreciation was applied for this year and sometimes prior years.

Effect

The result of the erroneous calculations has been inaccurate assessed valuations and property taxes on the affected parcels. The differences in the sample may not be statistically valid to apply to the population, so the effect is not known to a valid range. However, as it relates to the 2017-18 roll year, applying the average difference of $10,448 per parcel in the sample, there is a potential net undervaluation of $710,500 taxable value or $248,700 assessed value in the county. (This was calculated as follows: five parcels out of 63 SFR, MFR, and Commercial parcels in the ratio study sample have the inaccurate calculations which equal 7.9% of the sampled SFR, MFR, and Commercial parcels. Applying this percentage to the 856 total SFR, MFR, and Commercial parcels in the county, 68 parcels may have erroneous assessed values and resultant applied property taxes. 68 SFR, MFR, and Commercial dwellings multiplied by $10,448 per parcel equals $710,500 of taxable value.) Further, applying a tax rate of 3.1453 per hundred to the $248,700 assessed value, the fiscal impact is estimated to be less than $7,900 in total. This effect is not necessarily statistically valid, but it is reflective of the order of magnitude. The erroneous calculations did cause the improvement values of the five sampled parcels where these errors were found to fall outside of the 32 to 36 percent range considered satisfactory per NRS 361.333.

Recommendation

While the fiscal impact is considered relatively small, as a minimum, the Department recommends the Pershing County assessor utilize ADS and any other resources as necessary to correct the valuation methodology for the 2018-19 roll year. An alternative solution, which may be easier to implement, would be to begin re-costing all improvements on an annual basis as twelve other counties are already doing.

Finding No. PE2017-03

Criteria

This finding has been found across all property types throughout the county except property classified as agricultural. Per Nevada Revised Statute (NRS) 361.260, each year the county assessor shall determine the taxable value of all real property.

Condition

Land values throughout the county have been difficult to determine.

Cause

The assessor has struggled with the analysis and determination of land values given the limited number of vacant land sales and ranges of sales prices.

Effect

From the review of the properties in the study, the accuracy of land values appeared questionable. In addition, land valuation processes were insufficiently documented. The valuation issues identified in the ratio study sample, however, cannot be automatically assumed to apply to the population. The effect is unknown due to location and individual property characteristics which vary by location and property type. Based on conservative value range estimates, as per NRS 361.333, the Department compared the latest median ratio, overall ratio and coefficient of dispersion of the median for land values and reported on those findings. The Department found the county was slightly above acceptable ratios for the following property types: Improved Land (Overall Ratio 36.4%), Vacant Land (Overall Ratio 36.1%), Commercial and Industrial Land (Overall Ratio 38.3% and Median Ratio 36.3%), Countywide Improved Lands (Overall Ratio 36.4%), and Countywide Vacant Land (Overall Ratio 36.1%), and Single Family Land (Overall 36.7%).

Recommendation

While the fiscal impact is unknown, it is not expected to be statistically significant. The Department recommends the Pershing County Assessor work with the Department to improve the analysis and determination of land values to achieve acceptable standards.

WHITE PINE COUNTY RATIO STUDY 2017-2018
NARRATIVE

All land is reappraised each year in White Pine County. The Nevada Tax Commission approved the Assessor's[1] request to reappraise all land, rather than apply a land factor in non-reappraisal areas, on October 2, 2006. White Pine County has been in transition from a retiring assessor to an interim assessor to an elected assessor. The new assessor has stated he is reappraising the whole county yearly for land and will be begin re-costing improvements in November for tax year 2017-18. The reappraisal area in the county had many older fully depreciated properties. Compliments to the Assessor and staff for their work.

Property Type	Sample Size	In Ratio	Out of Ratio	Exception Rate
LAND				
Vacant Land	19	19	0	0%
Single-Family Residential Land	33	33	0	0%
Multi-Family Residential Land	15	15	0	0%
Commercial and Industrial Land	22	22	0	0%
Agricultural Land	6	6	0	0%
IMPROVEMENTS				
Single Family Residential Improvements (Note 1)	33	25	7	21%
Multi-family Residential Improvements (Note 2)	15	13	2	13%
Commercial and Industrial Improvements (Note 3)	22	19	3	14%

[1] All references to the Assessor means the Assessor or the Assessor's staff.

Note 1: Single Family Residential Improvements: Of the seven outliers listed above, five were found in the 4/5 of the county which was not *physically* inspected during the 2017-18 tax year. The cause is the age of many of these homes and the improvement factor not keeping up with current cost. One parcel had a shed that was converted to livable area. It was added to the roll. One had an incorrect lump sum applied for cost. One building was out of ratio due to quality class.

Note 2: Multi-Family Residential Improvements: Of the two outliers listed above, both were found in the 4/5 of the county which was not *physically* inspected during the 2017-18 tax year. One had a 1943 improvement that was undervalued due to the improvement factor not keeping up with current costs, and the other property had 3 older mobile homes: 1924, 1931 and 1937.

Note 3: Commercial and Industrial Improvements: Of the four outliers listed above, one was found in the 4/5 of the county which was not *physically* inspected during the 2017-18 tax year. Common errors found were not listing exterior lights, fire escapes, or bolsters. The improvement factor is not keeping up with current costs.

Property Type	Sample Size Accounts Reviewed	Total Property Records Examined	Records In Ratio	Records Out of Ratio	Exception Rate
Personal Property	44	729	729	0 (Notes)	0%

Notes: *Records Out of Ratio* reflect outliers after adjusting for computer system rounding differences. If an item has multiple items it should be listed separately on a separate line.

Observations and Summary

Appraisal Records: Files are maintained with a minimum of one prior reappraisal cycle for comparison. All information is available either on the county website or within the Assessor's computer system with the exception of personal property mobile homes and aircraft which are still maintained in hard copy format. Apex and Marshall & Swift information is available on the website. White Pine has created a system of transparency which not only allows taxpayers to retrieve information but also allows staff to more efficiently address taxpayer questions and concerns.
Sales Records: Sales data was reported on time and in a useable format.
Improvement Factors: Are not keeping up with current cost. The Assessor is reappraising yearly starting tax year 2017-18 and this should eliminate the problems

showing in all types of construction. Single Family, Mutli-Family and Commercial. There were 12 Outliers in total.

Findings and Recommendations

Finding No. WP 2017-01

Criteria

The calculation of the cost of replacement of an improvement must be calculated in accordance with NAC 361.128(1) which states that the standards and modifiers of local costs, published in the version of the *Residential Cost Handbook*, *Marshall Valuation Service*, *Residential Estimator* software adopted by reference pursuant to NAC 361.1177 as of January 1 of the year immediately preceding the lien date for the current year, must be utilized.

Condition

Local multipliers reflect local cost conditions, are based on weighted labor and material costs, which include local sales taxes, and are designed to adjust the basic costs to each locality. When a multiplier is not available for a specific county, Assessors may use the multiplier of the closest county or the Nevada State Multiplier listed in Marshall and Swift. White Pine County used a local cost multiplier of 1.06 on all single family and multi-family residential properties for the 2017-18 tax year. The *Residential Cost Handbook*, *Marshall Valuation Service*, *Residential Estimator* states that the Local Cost Multiplier for the nearest county, Elko County, is 1.08 and the statewide multiplier is 1.07.

Cause

The cost adjustment portion of the Marshall & Swift valuation software was not verified to ensure it was defaulting to the appropriate Local Cost Multiplier. As a result, an inaccurate default multiplier of 1.06 was used to value residential properties.

Effect

The result of these differences, make no notable impact on the final statistical analysis of the Ratio Study.

Recommendation

The Assessor has already been made aware of this error and has stated that it is normal procedure to verify that the Marshall & Swift default is correct prior to utilizing the software for valuation each year. The step was uncharacteristically missed this year during the valuation process. It is the Department's belief that it will *not* be an ongoing issue, and that moving forward, the Assessor *will* be extra diligent to ensure the software is correctly calculating values.