

Tangible Personal Property Summation Valuation Procedures

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For ad valorem property taxation purposes, industrial and commercial taxpayer tangible personal property (TPP) can be valued using either the unit valuation principle or the summation valuation principle. In theory, the use of either valuation principle should reach about the same value conclusion for the same bundle of taxpayer TPP. In the unit valuation principle, all of the taxpayer TPP is valued collectively, in the aggregate, as a single “unit” of operating property. In the summation valuation principle, all of the taxpayer TPP assets are valued individually. The values of all of the individual TPP assets are “summed” to reach the total value conclusion. This discussion summarizes the generally accepted summation valuation approaches and methods related to taxpayer TPP.

INTRODUCTION

This discussion summarizes the generally accepted summation valuation approaches and methods related to industrial and commercial taxpayer tangible personal property (TPP).

As with all TPP valuation procedures, the analyst should perform the procedures described below as thoroughly as possible. However, it is not always possible for the analyst to perform (or to complete) every procedure in every TPP summation valuation.

Often, there are client scope of work restrictions that limit the analyst’s ability to perform all of the valuation procedures. Often, there are property access and data access considerations that limit the analyst’s ability to perform every valuation procedure. And, the valuation variable data may simply not be available and/or the valuation procedure is simply not relevant to the particular TPP summation valuation.

In the typical TPP summation valuation, the following valuation procedures are usually performed on an individual property-by-property basis. That is, the analyst effectively performs a valuation of the total bundle of taxpayer TPP by summing the value indications for each individual TPP asset. For

example, all property confirmation and property condition consideration procedures are typically performed on an individual property-by-property basis.

The first group of analyst procedures is common to all TPP summation valuations—regardless of the valuation approach used. The second group of analyst procedures will be disaggregated by each generally accepted TPP valuation approach.

GENERAL PROCEDURE CATEGORY I: ASSET INVENTORY AND INSPECTION PROCEDURES

The first category of procedures in the summation valuation of taxpayer TPP includes the following:

1. Obtain the owner/operator listing of the subject TPP assets.
2. Confirm the existence of the subject TPP assets within the confines of the taxpayer entity.
3. Consider the accuracy of the continuing property record data related to the taxpayer TPP assets.

“If there are operating TPP observed . . . that are excluded from . . . the taxpayer’s continuing property record listing, then add these existing assets to the taxpayer’s property listing.”

4. Consider the overall condition of the taxpayer TPP.

Procedure 1: Obtain the Taxpayer Property Accounting TPP Listing

The analyst typically starts with the property owner’s continuing property record regarding the taxpayer TPP. The analyst typically

obtains the taxpayer’s TPP listing that is prepared “as of” a date as close as possible to the valuation date.

Procedure 2: Confirm Existence of the Taxpayer’s TPP

The analyst may perform the following tests of inclusion and exclusion with regard to the taxpayer’s continuing property record listing.

1. Verify that a reasonable sample of the operating TPP included on the taxpayer’s property list are, in fact, in existence.
2. If there are asset pieces included on the taxpayer’s TPP listing that are no longer in use in the taxpayer’s operations, then remove those unused assets from the continuing property record listing.
3. Verify that a reasonable sample of the TPP in use (i.e., that are physically located at the taxpayer facilities) are, in fact, included in the taxpayer’s continuing property record listing.
4. If there are operating TPP observed during the tests of inclusion and exclusion that are excluded from (or not on) the taxpayer’s continuing property record listing, then add these existing assets to the taxpayer’s property listing.

The result of the analyst’s performance of these aggregate existing data verification and TPP inclusion/exclusion test procedures should be an accurate and verifiable taxpayer continuing property record listing.

Procedure 3: Consider the Accuracy of the Continuing Property Record Data Related to the TPP

The data on the taxpayer’s continuing property record listing may be verified through discussions with operations, maintenance, engineering, or plant accounting disciplines.

The analyst may request assurances or representations from the taxpayer operations or accounting management with regard to the following types of continuing property records data:

1. The continuing property record operating TPP listing number
2. Taxpayer TPP identification number or bar code
3. The TPP asset manufacturer and country of origin
4. The general category of the TPP
5. The specific type of the TPP
6. The model number of the TPP
7. The serial number of the TPP
8. The date of manufacture of the TPP
9. The location of the TPP including building address, room number, department number, etc.
10. The capacity of the TPP against model specifications
11. Any internal upgrades or enhancements to the TPP against model standards
12. Any appurtenances and other external peripherals attached to the TPP
13. Appurtenances that have been identified and noted separately in the continuing property record listing
14. The last plant TPP physical inventory date
15. The date that the TPP was put into service

Procedure 4: Consider the Average Condition of the Property within Each TPP Category

The analyst may consider the condition, maintenance, and operating environment of the taxpayer TPP through discussions with operations, maintenance, engineering, or accounting representatives.

In such discussions with taxpayer management, the analyst may consider the following property

condition factors (on either a TPP-specific basis or a TPP category-by-category basis):

1. The condition of the TPP, including consideration of physical deterioration, wear and tear, and so forth
2. The adequacy of the taxpayer property operating environment
3. The usage of the typical bundle of taxpayer TPP including:
 - a. percent of time per period of continuous use and
 - b. number of operators using the TPP during a given period
4. The existence of any maintenance agreement for the TPP and the maintenance logs for the TPP, including consideration of:
 - a. the number of operator complaints,
 - b. the severity of operator complaints,
 - c. how operator complaints are rectified, and
 - d. the existence of any recurring TPP operations problems

CATEGORY II: OPERATING TPP DATA COLLECTION AND ANALYSIS

The taxpayer's continuing property record listing may contain certain information such as the original cost of the TPP within the taxpayer, the date each asset was placed into service, and the accumulated financial accounting depreciation related to each TPP asset.

The first two procedures in this category are common to all TPP summation valuation methods.

Procedure 1: Discuss the Type of Data Included in the Continuing Property Record Listing with Management

The analyst may discuss with the taxpayer operations or accounting management the accuracy of the continuing property records data, including the following data considerations:

1. The original cost of the TPP with respect to an actual purchase order
2. The original cost of the TPP with respect to the paid invoice amount

3. The purchase order date
4. The invoice date
5. The date when each TPP asset was received at the taxpayer facility
6. The date when each TPP asset was placed into service
7. Any sales tax that was included on the paid invoice
8. Any freight, insurance, or other delivery expenses that was included on the paid invoice

Procedure 2: Discuss the Type of Historical Cost Information that Is Captured in the Continuing Property Record with Management

The analyst may discuss with the taxpayer operating, purchasing, maintenance, or accounting management the type of cost data that are included in the property record. These data may include consideration of the following cost components:

1. Installation Costs. Set-up costs on the basis of the normal amount of time required for various set-up activities including (a) unpacking and checking and (b) making necessary power, gas, water, and other internal and/or external connections.
2. Special requirements expenditures. Expenditures required specifically for the TPP to work efficiently, such as high power source wiring, dust-free air equipment, special installation, and the like.
3. Commissioning expenses. Start-up expenses related to the normal amount of time required for various start-up activities including, for example, loading necessary systems and applications software, process debugging, and hand-over to the property operator.

Procedure 3: Collect the Data Necessary to Perform the Selected Valuation Analyses

The analyst typically considers these data collection procedures with respect to each selected TPP summation valuation method.

Data Related to the Cost Approach

Replacement Cost New less Depreciation Method

For each category of TPP assets in the taxpayer's continuing property record listing, the analyst may research the appropriate price, production, and cost indexes. Common sources of such indexes include the *Statistical Abstracts of the United States*, the *Marshall & Swift Valuation Guide*, and others.

An index—for price, cost, materials, wages, production, and so on—is simply a calculation for reporting the relative changes in the price or cost of specific items—or groups of items—over a period of time.

Data Related to the Sales Comparison Approach

Direct Sales Comparison Method

For the taxpayer's bundle of TPP assets, the analyst may research transaction pricing data with regard to actual sales of guideline bundles of seasoned assets.

Guideline TPP operating assets generally have these same characteristics:

1. Manufacturers and countries of origin
2. General categories of TPP assets
3. General types of TPP assets
4. Number of TPP assets
5. Average dates of manufacture (or average age) of the TPP assets

If sales data related to sufficiently comparative TPP assets are not available, then the analyst may reconsider the applicability of the sales comparison approach with respect to the TPP valuation.

If there are actual sales of sufficiently comparative TPP assets, then the analyst may investigate and confirm the following information with regard to each guideline transaction:

1. The actual market price for each guideline sale transaction
2. The time (month and year) of each guideline transaction
3. The location of the sale transaction
4. The average condition of the guideline TPP assets
5. Any upgrade or changes from the standard specifications of the typical TPP assets within the guideline unit

6. Any unrelated property (e.g., nonoperating assets, nontaxable assets) included/excluded in the guideline sale transaction
7. Any special terms and conditions of the guideline transaction

The analyst's search for guideline sale transactions may be conducted by:

1. researching publicly available industry or competitor company data,
2. licensing/renting/buying privately developed transaction databases, and
3. gathering information from reputable and knowledgeable TPP equipment brokers.

Data Related to the Income Approach

Yield Capitalization Method

For the taxpayer's bundle of operating TPP, the analyst may research transactional data with regard to the actual rental or lease of guideline TPP assets. If guideline rental transaction data are not available, then the analyst may want to reconsider the applicability of the yield capitalization method in the TPP summation valuation.

For each rental or lease of guideline assets, the analyst may consider the terms and conditions of the rental/lease agreement, including the following:

1. The term of the lease agreement
2. The amount of rent payable for each period of the term
3. The inclusion of any penalty clause, with the amount of the penalty
4. The inclusion of any asset purchase clause, with the contractual purchase price.

For each guideline rental transaction, the analyst may consider the following data:

1. The rental history regarding the guideline TPP assets
2. The maintenance history including maintenance expense regarding the guideline TPP assets
3. The guideline TPP assets' general and administrative expense
4. The guideline TPP assets' marketing and advertising expense

Also, the analyst may consider the following capital market and economic factors in the derivation of the appropriate yield capitalization rate:

1. The prevailing risk-free rate of return
2. The amount of any additional TPP-specific risk premium
3. The expected long-term inflation rate

Analysis Related to the Cost Approach Replacement Cost New less Depreciation Method

Using a cost, price, or production index for the industry, the analyst may use cost “inflation” trending factors for each taxpayer vintage group of TPP. The cost new for each operating TPP vintage group is estimated by multiplying (1) the historical cost of the taxpayer TPP within the vintage group by (2) the appropriate age-dependent cost trending factor.

Next, the analyst may estimate the average age of each property category within the taxpayer entity. The analyst may estimate the average RUL of the subject TPP based on:

1. property-specific statistical studies or
2. published information regarding the effective life of property in the taxpayer industry.

Using this RUL estimate as a proxy, the analyst may estimate the “percent good” for the subject TPP. This percent-good factor takes into account the normal physical depreciation of the subject TPP.

For the analyst’s observations regarding the condition, maintenance, and operations of the subject TPP, the costs and expenses that would be required to bring the existing TPP to state-of-the-art condition—or the costs required to operate the taxpayer with below state-of-the-art TPP—are estimated. This factor is one consideration for measuring any functional obsolescence.

Analysis Related to the Sales Comparison Approach Direct Sales Comparison Method

Adjustments to the transactional sale price may be made for any changes from the specifications and information regarding the taxpayer TPP.

The analyst may study the selected sales of guideline TPP assets in order to adjust each guideline sale transaction price for the following differences between the taxpayer TPP and the guideline sale TPP assets:

1. The average year of manufacture installation (i.e., the average age of the TPP assets)



2. The types of manufacturers and the TPP specifications
3. The time of each actual sale and the valuation date
4. The location of each actual sale and the location of the taxpayer TPP assets
5. The average condition of the guideline assets relative to the condition of the taxpayer TPP assets
6. Any additions and/or deletions to the average specifications of the guideline TPP assets and the average specifications of the taxpayer TPP assets
7. Any special terms and conditions of the guideline sale transactions in order to reflect the sale of a fee-simple interest

The analyst may conclude an adjusted sale price for each sale of guideline TPP assets giving due consideration to the adjustment factors listed above.

Analysis Related to the Income Approach Yield Capitalization Method

The analyst may estimate the market-derived normalized—or stabilized—annual rental income related to the taxpayer TPP. The analyst may also estimate the maintenance, marketing, and other administrative expenses related to the taxpayer TPP.

The analyst may project the net operating income associated with an actual or hypothetical rental related to the taxpayer TPP. Next, the analyst may then project the average RUL of the taxpayer TPP.

Finally, the analyst may develop present value discount factors from the selected present value discount rate. The present value discount rate is based on the analyst's consideration of the asset-specific risk factors associated with the taxpayer TPP.

CATEGORY III: VALUATION SYNTHESIS AND CONCLUSION

The analyst may develop a value indication from each applicable TPP summation valuation approach and method.

The analyst may then reconcile the various value indications and synthesize a final value conclusion related to the taxpayer TPP.

Value Indication for the Cost Approach Reproduction Cost New less Depreciation Method

A value indication for the taxpayer TPP may be developed based on the following procedures:

$$\begin{aligned}
 & \text{Historical cost} \\
 & \times \text{ Trend factor} \\
 & = \text{Reproduction cost new} \\
 & - \text{Physical depreciation} \\
 & = \text{Reproduction cost new less depreciation} \\
 & - \text{Functional obsolescence} \\
 & - \text{External obsolescence} \\
 & = \text{TPP value indication}
 \end{aligned}$$

Value Indication for the Income Approach Yield Capitalization Method

A value indication of the taxpayer TPP may be developed based on the following procedures:

$$\begin{aligned}
 & \text{Normalized income} \\
 & \times \text{ Corresponding present value discount factor} \\
 & = \text{Discounted income} \\
 \\
 & \text{Sum of discounted income} \\
 & \div \text{ Average RUL of the taxpayer TPP} \\
 & = \text{TPP value indication}
 \end{aligned}$$

Valuation Synthesis and Conclusion

If more than one summation valuation approach is applicable, then the analyst should give appropriate weight to the various value indications in order to conclude a final taxpayer TPP value conclusion.

The appropriate weight assigned to each summation value indication should be based on the following:

1. Quantity and quality of data analyzed in each applicable summation valuation method
2. The analyst's confidence in the developed valuation variables and operating/financial projections
3. The analyst's personal experience with the taxpayer industry

The analyst typically assigns appropriate weights to the various value indications in order to calculate a final value estimate. This final value estimate is then rounded in order to conclude the summation value of the taxpayer TPP.

SUMMARY

The above discussion summarized several issues with regard to the summation valuation of taxpayer TPP for ad valorem property tax purposes. Generally accepted summation valuation approaches, methods, and procedures were introduced. The above discussion summarized the application of the generally accepted approaches, methods, and procedures to the typical summation valuation of taxpayer TPP.

Within each summation valuation approach, several valuation methods were discussed. And, within each summation valuation method, individual TPP valuation procedures were described.

The first group of procedures described was general to all TPP valuation approaches. The second group of procedures described was specific to the indicated TPP valuation approach.

This is the typical process that analysts perform in the summation valuation of taxpayer TPP. After all of the summation valuation approaches and methods are performed, the analyst reconciles the various value indications into a total taxpayer TPP value conclusion.

This total TPP value conclusion is a function of the quantity and quality of available data, the experience and judgment of the analyst, the purpose and objective of the TPP valuation, the appropriate standard (or definition) of value, and the appropriate premise of value.

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