State of California

Board of Equalization
Property and Special Taxes Department

# Memorandum

**To:** Mr. Ramon J. Hirsig
Executive Director

**Date:** October 24, 2007

**From:** Mickie Stuckey, Acting Deputy Director
Property and Special Taxes Department

**Subject:** ***Assessors' Handbook Section 581, Equipment Index and Percent Good Factors (November 15, 2007 Administrative Consent Agenda)***

I am requesting that Assessors' Handbook Section 581, *Equipment Index and Percent Good Factors*, be approved for publication. Revenue and Taxation Code section 401.5 requires that the Board issue to county assessors information that will promote uniformity in assessed values throughout the state. Pursuant to that mandate, staff developed the January 2008 version of AH 581 which contains current tables of equipment index, percent good, and valuation factors that will aid in the mass appraisal of various types of personal property and fixtures.

Please place this item on the Board's November 15, 2007 Administrative Consent Agenda for approval.

MS:lf
Attachment

cc: Mr. Gary Evans

Approved:_____
Ramon J. Hirsig, Executive Director

BOARD APPROVED
at the_____ Board Meeting

_____
Gary Evans, Acting Chief
Board Proceedings

ASSESSORS' HANDBOOK
SECTION 581

# EQUIPMENT INDEX AND PERCENT GOOD FACTORS

JANUARY 2008

(USE FOR LIEN DATE JANUARY 1, 2008)


CALIFORNIA STATE BOARD OF EQUALIZATION

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# FOREWORD

This handbook section contains several tables of equipment index, percent good, and valuation factors that will aid in the mass appraisal of various types of personal property and fixtures. General instructions and pertinent information regarding the use of these tables are included in Chapters 1, 2, and 3. The tables are presented in Chapter 4.

Starting with the 2002 lien date, the commercial equipment index factors and the industrial equipment index factors in Tables 1 and 2 have been averaged into a single category of factors for each table. Use of a single category of factors for commercial equipment and a single category of factors for industrial equipment will provide value estimates within a reasonable band of value for the assessment of business property and promote statewide uniformity.

Prior to approval by the Board of this handbook section for 2002, staff researched the issue of whether the use of the index factors in Tables 1, 2, and 3 results in an estimate of replacement cost new or reproduction cost new. Board staff contacted representatives from the publications used to derive the index factors (Marshall & Swift/Boeckh, LLC and the U. S. Bureau of Labor Statistics) while investigating this issue. From the responses, staff concluded that application of the index factors in this handbook section to a property's original cost typically results in reproduction cost new.

Index factors (Tables 1, 2, and 3) may be used to estimate current reproduction costs. Table 1, Commercial Equipment Index Factors, was compiled based on equipment price data published by the Marshall & Swift/Boeckh, LLC, *Marshall Valuation Service*. Table 2, Industrial Machinery and Equipment Index Factors, and Table 3, Agricultural and Construction Equipment Index Factors, were derived using the Bureau of Labor Statistics' *Producer Price Indexes* as a basis. A discussion regarding the use of these factors can be found in Chapter 1.

Percent good factors (Tables 4 and 5) may be used in conjunction with the index factors to estimate reproduction cost new less normal depreciation. Table 4, Machinery and Equipment Percent Good Factors, was derived from a system developed by the Iowa State University Engineering Research Center. (See Chapter 2 for more information.) Table 5, Construction Mobile Equipment Percent Good Factors, and Table 6, Agricultural Mobile Equipment Percent Good Factors, were derived from a detailed analysis of used equipment sales data.

For construction mobile equipment and agricultural mobile equipment, we suggest using the comparative sales approach if possible. Several valuation guides are available for this purpose (see Chapter 7). If the valuation guides are not used, the cost approach can be employed. The appropriate index factor from Table 3 should be applied to the equipment cost along with a percent good factor from Table 5 for construction mobile equipment, and the appropriate index factor from Table 3 should be applied to the equipment cost along with a percent good factor from Table 6 for agricultural mobile equipment.

Valuation factors (Tables 7, 8, and 9) are intended to be applied directly to historical costs. The valuation factors in Table 7, Computer Valuation Factors, were developed by analyzing resale values of personal, mid-range, and mainframe computers as compared to original costs. The Board initially approved these factors in 1996. The valuation factors for semiconductor manufacturing equipment, Table 8, were approved by the Board in 1994 and continue to be recommended. The interim valuation factors for biopharmaceutical industry equipment and fixtures, Table 9, were adopted by the Board and effective as of the January 1, 1999 lien date.

All of the information presented in this section of the Assessors' Handbook is current for use as of the 2008 lien date, January 1, 2008. We hope the information presented proves useful to all concerned parties, and that it promotes uniformity of assessment. It is suggested that assessors use these data for mass appraisal purposes, but that does not preclude reliance on other documented evidence that results in a more accurate determination of assessed value.

David J. Gau
Deputy Director
Property and Special Taxes Department
California State Board of Equalization
January 2008

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# CHAPTER 1: USE OF EQUIPMENT INDEX FACTORS

Equipment index factors are developed for use in mass appraisals and are generally reliable and practical for converting original cost to estimates of reproduction cost or replacement cost new. Index factors are used to adjust a property's original cost for price level changes since the property was acquired. The index factors recommended by the Board, updated and distributed annually, include three separate index factor tables: Table 1, Commercial Equipment; Table 2, Industrial Equipment; and Table 3, Agricultural and Construction Equipment. The tables rely on indexes published by the U.S. Government Bureau of Labor Statistics (BLS) and on information published by Marshall & Swift/Boeckh, LLC (Marshall & Swift). The BLS and Marshall & Swift have indicated to Board staff that their indexes attempt to track price changes for an identical product sold under identical terms over time, such that the indexes approximate an estimate of reproduction cost new. Thus, when the original cost of property is multiplied by the Board's index factor for the year of acquisition, the product typically approximates current reproduction cost new.

In situations where equipment has undergone minimal changes in technology, reproduction cost and replacement cost are likely to be similar. In industries where the equipment used is undergoing rapid changes in technology, further adjustments are likely to be needed to arrive at replacement cost new. Thus, there may be situations where market evidence supports the need to make adjustments to reproduction cost to account for functional obsolescence before the percent good factors from Table 4 can be applied to arrive at market value. Any such adjustments should be based on reasonable evidence and appropriate adjustments should be made to arrive at replacement cost new. Assessors should consider such evidence provided by assessees when making these adjustments.

Please refer to Assessors' Handbook Section 504, *Assessment of Personal Property and Fixtures*, for guidelines on the use of reproduction and replacement costs in the appraisal process.

## PRICE CHANGES

Price changes are usually an increasing factor (inflation). During those periods of time when the cost of raw material and/or labor actually declines, price changes may be a decreasing factor (deflation).

### Effects of Technological Progress

If technological progress has occurred since the acquisition date of an asset, the cost of producing a functionally superior but physically similar asset may now be lower. Consequently, the current replacement cost new of previously existing assets will probably decline. High technology equipment, for example, typically suffers greater than normal functional obsolescence due to technological progress.

## COMMERCIAL EQUIPMENT INDEX FACTORS

Indexes for commercial equipment are supplied in Chapter 4, Table 1, Commercial Equipment Index Factors. If the index factors do not reasonably represent changes in equipment costs for a particular industry, additional research should be done to find a more appropriate method of estimating replacement cost new.

The following example demonstrates how to use the index factors to estimate reproduction cost new.

### Example 1.1: Estimating Reproduction Cost New Using Commercial Equipment Index Factors

A taxpayer acquired office equipment for $1,000 in 2004. What is the estimated reproduction cost new of this office equipment as of the January 1, 2008 lien date?

The appropriate factor is found in Table 1 under the Average column for 2004.

**TABLE 1: COMMERCIAL EQUIPMENT INDEX FACTORS**

| Year | **Average** |
|---|---|
| 2007 | 100 |
| 2006 | 106 |
| 2005 | 110 |
| **2004** | **117** |

The factor is shown in the table as a percentage and must be converted to a decimal (1.17). The factor in decimal format is applied to the acquisition cost to compute the reproduction cost new.

| Year of Acquisition | Cost | Index Factor | Reproduction Cost New |
|---|---|---|---|
| 2004 | $1,000 | **1.17** | $1,170 |

In other words, it would require an expenditure of approximately $1,170 on the 2008 lien date to reproduce the office equipment purchased in 2004 for $1,000.

## INDUSTRIAL EQUIPMENT INDEX FACTORS

The indexes for industrial equipment are supplied in Chapter 4, Table 2, Industrial Machinery and Equipment Index Factors. Chapter 5 of this handbook contains a listing of industry classes that are represented by these indexes. A detailed description of each industry class follows in Chapter 5.

The following example demonstrates the use of the index factors to compute reproduction cost new.

### Example 1.2: Estimating Reproduction Cost New Using Industrial Machinery and Equipment Index Factors

On the 2008 lien date, what is the reproduction cost new for rubber tire manufacturing equipment acquired for $100,000 in 2004?

The appropriate index factor is found in Table 2 under the column across from the year of acquisition, 2004.

**TABLE 2: INDUSTRIAL MACHINERY AND EQUIPMENT INDEX FACTORS**

| Year | **Average** |
|---|---|
| 2007 | 100 |
| 2006 | 103 |
| 2005 | 105 |
| **2004** | **110** |

The appropriate index factor of 110 percent is converted to a decimal (1.10) and multiplied by the acquisition cost as follows:

| Year of Acquisition | Cost | Index Factor | Reproduction Cost New |
|---|---|---|---|
| 2004 | $100,000 | **1.10** | $110,000 |

In other words, it would require an expenditure of approximately $110,000 on the 2008 lien date to reproduce the rubber tire manufacturing equipment acquired in 2004 for $100,000.

## MAXIMUM RECOMMENDED EQUIPMENT INDEX FACTOR

Because rapid technological changes have taken place in recent years, Board staff recommends that appraisers use a maximum equipment index factor when valuing equipment. The recommended maximum factor is the factor for an age equal to 125 percent of the estimated average service life. The following example demonstrates the use of the 125 percent maximum.

**Example 1.3: Estimating the Maximum Recommended Equipment Index Factor**

- A taxpayer acquired warehouse equipment for $15,000 in 1990. What is the maximum recommended equipment index factor if this equipment has a 12 year average service life?
- Average service life of 12 years multiplied by the recommended 125 percent maximum equals 15 years (12 x 1.25 = 15) recommended maximum.
- Since the recommended maximum is 15 years, the appropriate index factor is the index factor corresponding to an item acquired in 1993 (2008 - 15). The index factor is 141 percent.
- Actual age of equipment on 2008 lien date is 18 years (2008 - 1990 = 18). Without using the recommended maximum, the index factor for 1990 is 149 percent.

**TABLE 1: COMMERCIAL EQUIPMENT INDEX FACTORS**

| Year | Average |
|---|---|
| 2007 | 100 |
| 2006 | 106 |
| 2005 | 110 |
| | |
| **1993** | **141** |
| 1992 | 144 |
| 1991 | 146 |
| **1990** | **149** |

The following table indicates the estimated reproduction cost new of the property using the maximum recommended index factor (1.41) and the index factor using the actual age (1.49). Application of the maximum recommended index factor results with an estimated reproduction cost new of $21,150 to reproduce the warehouse equipment purchased in 1990 for $15,000. Application of the index factor associated with the actual age of the property results with an estimated reproduction cost new of $22,350 to replace the warehouse equipment purchased in 1990 for $15,000. The example illustrates the difference in the estimate of reproduction cost new when the recommended maximum is not used.

**Example 1.3 -- continued**

| | Year of Acquisition | Cost | Index Factor | Reproduction Cost New |
|---|---|---|---|---|
| Maximum | 1993[1] | $15,000 | **1.41** | $21,150 |
| Actual | 1990 | $15,000 | **1.49** | $22,350 |

Use of the 125 percent limit is a recommendation. It is not intended to replace appraiser judgment. If the appraiser believes that using the 125 percent limit is inappropriate, the appraiser should provide a well-supported explanation of the reason for deviating from the recommendation.

## SUMMARY

Examples 1.1, 1.2, and 1.3 illustrate the use of Tables 1 and 2. Table 3, Agricultural and Construction Equipment Index Factors, is used in the same manner. (See Chapter 2, Examples 2.2 and 2.3, for complete examples related to agricultural and construction equipment.)

Although this handbook section contains appropriate index factors for many types of taxable equipment found in California, better information is available from other sources in many cases. In situations where equipment has undergone minimal changes in technology, reproduction cost and replacement cost are likely to be similar. In industries where the equipment used is undergoing rapid changes in technology, it may be more appropriate to use actual current replacement prices for some types of equipment. Actual current replacement prices are nearly always better indicators of replacement value than indexed acquisition costs. Where actual current replacement prices are not available, the assessor should make adjustments to account for functional obsolescence based on reasonable evidence available.

As discussed in this chapter, the index factor is used to convert acquisition cost to an estimate of reproduction cost new. The next chapter discusses the use of percent good factors and tables. The percent good factor converts the reproduction cost new to reproduction cost new less normal depreciation.

[1] Actual year of acquisition is 1990. The year 1993 represents the recommended maximum.

# CHAPTER 2: USE OF EQUIPMENT PERCENT GOOD FACTORS

## MACHINERY AND EQUIPMENT PERCENT GOOD FACTORS

Table 4, Machinery and Equipment Percent Good Factors, presented in Chapter 4, is designed to assist the appraiser in estimating reproduction cost new less normal depreciation of commercial and industrial equipment in conjunction with index factors as discussed in Chapter 1.[2] This table was derived using the "individual method" of computation. The rationale and the mathematics of the methods of computation are explained in Assessors' Handbook Section 582, *Explanation of the Derivation of Equipment Percent Good Factors.*

The rate of return used to compute the factors shown in Table 4 is calculated annually and is shown at the top of the table. The column headings represent the average service life expectancy of the equipment under consideration. Each column contains the percent good factor for the corresponding age.[3] No minimum percent good factor is intended in this table. If the assessor utilizes a minimum percent good factor, it must be determined in a supportable manner.[4]

Example 2.1 carries forward the calculation shown in Chapter 1, Example 1.1, to illustrate use of the percent good factors found in Table 4.

**Example 2.1: Estimating Reproduction Cost New Less Normal Depreciation**

Continuing with the facts from Example 1.1, what is the reproduction cost new less normal depreciation on the 2008 lien date for office equipment purchased in 2004 at an acquisition cost of $1,000?

- Facts derived in Example 1.1: Index factor 1.17, reproduction cost new $1,170.
- Appraiser estimates average service life of 12 years.
- The appropriate percent good factor (73 percent) can be found in the 12 year life column at year 2004, in Table 4.

**TABLE 4: MACHINERY AND EQUIPMENT PERCENT GOOD FACTORS**
INDIVIDUAL PROPERTIES—AVERAGE SERVICE LIFE
6.75% Rate of Return

| Year Acquired | AGE | 5 Years | 10 Years | **12 Years** | 15 Years | AGE | Year Acquired |
|---|---|---|---|---|---|---|---|
| 2007 | 1 | 81 | 92 | 94 | 95 | 1 | 2007 |
| 2006 | 2 | 62 | 83 | 87 | 90 | 2 | 2006 |
| 2005 | 3 | 45 | 75 | 80 | 85 | 3 | 2005 |
| **2004** | 4 | 29 | 66 | **73** | 80 | 4 | **2004** |

[2] Separate percent good tables are provided for construction mobile equipment (Table 5) and agricultural mobile equipment (Table 6).
[3] Life expectancies are derived from the R-3 survivor curve.
[4] Revenue and Taxation Code section 401.16. All section references in this section of the handbook refer to Revenue and Taxation Code sections unless otherwise noted.

**Example 2.1 -- continued**

The percent good factor is applied to the reproduction cost new to compute the reproduction cost new less normal depreciation. (The factor, in Table 4, is shown as a percentage and must be converted to a decimal in order to do the computation.)

| Year of Acquisition | Cost | Index Factor | Reproduction Cost New | Percent Good | Reproduction Cost Less Normal Depreciation |
|---|---|---|---|---|---|
| 2004 | $1,000 | 1.17 | $1,170 | .73 | $854 |

To reiterate, applying the index factor and the percent good factor to office equipment purchased in 2004 for $1,000 results in an estimated value of $854 on lien date January 1, 2008. It is important to note that the percent good factor reflects only normal depreciation. Additional value adjustments may be necessary if the property has experienced above- or below-normal loss in value.

## CONSTRUCTION AND AGRICULTURAL MOBILE EQUIPMENT PERCENT GOOD FACTORS

The percent good factors provided in Table 5 and Table 6, Chapter 4, are used when determining the loss of value for construction mobile equipment and agricultural mobile equipment, respectively. The factors presented were derived from used equipment sales data. Table 5 identifies a pattern of depreciation for construction mobile equipment, and Table 6 identifies a pattern of depreciation for two groups of equipment: (1) agricultural mobile equipment - *except* harvesters, and (2) agricultural mobile equipment - harvesters.

Within each group, three columns of percent good figures ("new," "used," and "average") are listed. The column labeled "new" should be used to measure depreciation if the subject property was acquired new; conversely, the column labeled "used" should be applied when the equipment was purchased used. In cases where the taxpayer does not indicate if the property was first acquired new or first acquired used, Tables 5 and 6 provide an average of the new and used factors. The assessor may not average the "new" and "used" factors unless the taxpayer does not indicate if the property was first acquired new or first acquired used.[5]

The following examples demonstrate the use of the construction index and percent good factors found in Table 3 and Table 5 respectively.

[5] Section 401.16.

**Example 2.2: Estimating Reproduction Cost New Less Normal Depreciation for Construction Mobile Equipment Acquired New**

On the 2008 lien date, what is the assessable value of a construction motor grader acquired **new** in 2004 for $100,000?

The first step is determining the appropriate index factor. As indicated below, the index factor is 114. The factor is shown in the table as a percentage and must be converted to a decimal (1.14).

**TABLE 3: AGRICULTURAL AND CONSTRUCTION EQUIPMENT INDEX FACTORS**

| YEAR | Agricultural | **Construction** |
|---|---|---|
| 2007 | 100 | 100 |
| 2006 | 103 | 103 |
| 2005 | 106 | 107 |
| **2004** | 111 | **114** |

The second step is determining the appropriate percent good factor. The percent good factor indicated below for construction mobile equipment purchased **new** in 2004 is 55 percent.

**TABLE 5: CONSTRUCTION MOBILE EQUIPMENT PERCENT GOOD FACTORS**

CONSTRUCTION MOBILE EQUIPMENT

| Year Acquired | Age | **New** | Used | Average |
|---|---|---|---|---|
| 2007 | 1 | 74 | 91 | 83 |
| 2006 | 2 | 66 | 81 | 74 |
| 2005 | 3 | 60 | 74 | 67 |
| **2004** | 4 | **55** | 68 | 62 |

The third step is to apply the factors to the acquisition cost of the construction mobile equipment to determine the reproduction cost new less normal depreciation, or estimated value.

| Equipment Group | Year of Acquisition | Cost | Index Factor | Reproduction Cost New | Percent Good | Reproduction Cost Less Normal Depreciation |
|---|---|---|---|---|---|---|
| Construction | 2004 | $100,000 | **1.14** | $114,000 | **.55** | $62,700 |

In other words, the estimated value of construction equipment acquired **new** in 2004 at an acquisition cost of $100,000 is $62,700 on lien date January 1, 2008.

**Example 2.3: Estimating Reproduction Cost New Less Normal Depreciation for Construction Mobile Equipment Acquired Used**

What is the estimated value of a construction motor grader acquired **used** in 2004 for $100,000?

As in Example 2.2, the first step is determining the appropriate index factor. As indicated below, the index factor is 114, which is converted to a decimal (1.14).

**TABLE 3: AGRICULTURAL AND CONSTRUCTION EQUIPMENT INDEX FACTORS**

| YEAR | Agricultural | **Construction** |
|---|---|---|
| 2007 | 100 | 100 |
| 2006 | 103 | 103 |
| 2005 | 106 | 107 |
| **2004** | 111 | **114** |

The second step is determining the appropriate percent good factor. The percent good factor indicated below for construction mobile equipment purchased used in 2003 is 68 percent.

**TABLE 5: CONSTRUCTION MOBILE EQUIPMENT PERCENT GOOD FACTORS**

CONSTRUCTION MOBILE EQUIPMENT

| Year Acquired | Age | New | **Used** | Average |
|---|---|---|---|---|
| 2007 | 1 | 74 | 91 | 83 |
| 2006 | 2 | 66 | 81 | 74 |
| 2005 | 3 | 60 | 74 | 67 |
| **2004** | 4 | 55 | **68** | 62 |

The third step is to apply the factors to the acquisition cost of the **used** construction equipment, to determine the reproduction cost new less normal depreciation, or estimated value.

| Equipment Group | Year of Acquisition | Cost | Index Factor | Reproduction Cost New | Percent Good | Reproduction Cost Less Normal Depreciation |
|---|---|---|---|---|---|---|
| Construction | 2004 | $100,000 | **1.14** | $114,000 | **.68** | $77,520 |

In other words, the estimated value of construction equipment acquired **used** in 2004 at an acquisition cost of $100,000 is $77,520 on lien date January 1, 2008.

For construction mobile equipment and agricultural mobile equipment, where "new" or "used" status cannot be determined from appraisal data at hand, Tables 5 and 6 provide an average of the new and used factors.[6]

[6] The "average" factors may not be used by the assessor unless the taxpayer does not indicate if the property was first acquired new or first acquired used, as specified in section 401.16.

# CHAPTER 3: USE OF VALUATION FACTORS

## COMPUTER VALUATION FACTORS

Computer valuation tables were originally developed by the Board in 1995 and amended in 1997. The factors were developed by analyzing resale values of personal, mid-range, and mainframe computers as compared to original costs. These factors, provided in Table 7, Chapter 4, are intended to be applied directly to historical costs. As such, the tables include the effects of price changes (index or trend) and depreciation. Before using these tables, it is critically important to understand what types of equipment are intended to be valued using the tables.

First, the tables are intended to apply to non-production computers. Non-production computers are computers, including related equipment, designed for general business purposes. Non-production computers can be mainframe, mid-range, or personal computers (including networked personal computers). Related equipment includes monitors, printers, scanners, disk drives, cables, and other electronic peripherals commonly used as part of a non-production computer system.

The definition of non-production computers does not include computers embedded in machinery nor does it include equipment or computers specifically designed for use in any other application directly related to manufacturing. For example, equipment used for the manufacture of computers, semiconductors, or other computer components are production computers; therefore, the computer valuation factors are not appropriate for the valuation of such equipment. The following example demonstrates the use of the computer valuation factors.

**Example 3.1: Estimating Replacement Cost New Less Normal Depreciation Using Valuation Factors**

On the 2008 lien date, what is the estimated value of a mainframe computer acquired in 2005 for $525,000?

The first step is determining the valuation factor. As shown on the table below, the valuation factor is 35 percent.

**TABLE 7: COMPUTER VALUATION FACTORS**

| Year Acquired | Age | PERSONAL COMPUTERS ($25,000 or less) | MID-RANGE COMPUTERS ($25,000.01 to $500,000) | MAINFRAME COMPUTERS ($500,000.01 or more) |
|---|---|---|---|---|
| 2007 | 1 | 66 | 73 | 79 |
| 2006 | 2 | 39 | 47 | 54 |
| **2005** | 3 | 24 | 30 | **35** |

**Example 3.1 -- continued**

Since the valuation factor includes the effect of price changes (index or trend) and depreciation, the second step is to apply the valuation factor to the acquisition cost of the mainframe computer equipment.

| Equipment Group | Year of Acquisition | Cost | Valuation Factor | Replacement Cost Less Normal Depreciation |
|---|---|---|---|---|
| Mainframe Computers | 2005 | $525,000 | .35 | $183,750 |

The replacement cost new less normal depreciation of mainframe computer equipment purchased in 2005 for $525,000 is $183,750 on lien date January 1, 2008.

## SEMICONDUCTOR MANUFACTURING EQUIPMENT VALUATION FACTORS

The semiconductor manufacturing equipment valuation table (Chapter 4, Table 8) presents factors initially approved by the Board in 1994.[7] The table is based on a 6.5 year economic life. Similar to the computer valuation factors, the semiconductor manufacturing equipment valuation factors are intended to be applied directly to historical costs. The tables include the effects of price changes (index or trend) and depreciation. As shown in the example demonstrating the use of computer valuation factors (Example 3.1), only one factor is applied to the acquisition cost to determine the replacement cost new less normal depreciation.

[7] For more information regarding the original study and development of these factors, please refer to Letters To Assessors 90/36 and 94/24.

## INTERIM VALUATION FACTORS FOR BIOPHARMACEUTICAL INDUSTRY EQUIPMENT AND FIXTURES

In 1999, the Board adopted interim guidelines pertaining to the assessment of specific property owned and/or used by the biopharmaceutical industry.[8] These guidelines, which were effective as of the January 1, 1999 lien date, included a definition of reporting categories for these types of firms, and a valuation table for use in valuing these types of properties for assessment purposes.[9]

On standard annual property statements, pursuant to these guidelines, biopharmaceutical firms should report specific types of equipment and fixtures as described below:

| Form 571-L Category | Description |
|---|---|
| SCHEDULE A | |
| Machinery and Equipment | General Laboratory Equipment and High Technology Analytical Instruments |
| Other Equipment | Commercial Manufacturing Equipment |
| Tools, Molds, Dies, Jigs | Pilot Scales Manufacturing Equipment |
| SCHEDULE B | |
| Fixtures | Fixtures and Process Piping |

A sample listing of the equipment and fixtures covered by these descriptions is included in Chapter 4, following Table 9.

Table 9, Interim Valuation Factors for Biopharmaceutical Industry Equipment & Fixtures, presents the Board-adopted valuation table for the biopharmaceutical industry. The factors are intended to be applied directly to historical costs for mass appraisal purposes, as are the computer valuation factors and the semiconductor manufacturing equipment valuation factors. (See Example 3.1 for a demonstration of application.) As illustrated in Table 9, a minimum factor of 10 percent is to be applied.

[8] Firms engaged in research and/or manufacturing activities that use organisms, or materials derived from organisms, and their cellular, subcellular, and molecular components to discover and/or provide products for human or animal therapeutics and diagnostics. Biopharmaceutical activities make use of living organisms to develop and/or produce commercial products, as opposed to conventional pharmaceutical activities, that make use of chemical compounds to develop and/or produce commercial products. Firms engaging in agriculture, animal husbandry, and pharmaceutical delivery in the area of research and/or manufacturing are specifically excluded.

[9] See also Letter To Assessors 99/54.

# CHAPTER 4: EQUIPMENT INDEX FACTORS, PERCENT GOOD FACTORS, AND VALUATION FACTORS TABLES

(Use for Lien Date January 1, 2008)

## *INDEX FACTOR TABLES*

### *Table 1: Commercial Equipment Index Factors*

These factors are derived using data published by the Marshall & Swift Boeckh, LLC, *Marshall Valuation Service*. The indexes contained in Table 1 are an average of several classes of commercial equipment. See Chapter 5 for each class of equipment included in the average index.

### *Table 2: Industrial Machinery and Equipment Index Factors*

These indexes are derived from data in the Bureau of Labor Statistics' *Producer Price Indexes*. The indexes contained in Table 2 are an average of several classes of industrial equipment. See Chapters 6 and 7 for detailed descriptions of each industry group in average index.

### *Table 3: Agricultural and Construction Equipment Index Factors*

These indexes are derived from data in the Bureau of Labor Statistics' *Producer Price Indexes*.

## *PERCENT GOOD FACTOR TABLES*

### *Table 4: Machinery and Equipment Percent Good Factors*

These factors are derived from a system developed by the Iowa State University Engineering Research Center (see Assessors' Handbook Section 582). The rate of return used to compute these factors is calculated annually and is shown on the table.

### *Table 5: Construction Mobile Equipment Percent Good Factors*

These factors were derived from a detailed analysis of used equipment sales data.

### *Table 6: Agricultural Mobile Equipment Percent Good Factors*

These factors were derived from a detailed analysis of used equipment sales data.

## *VALUATION FACTORS TABLES*

### *Table 7: Computer Valuation Factors*

These factors are intended to be applied directly to historical costs of non-production computers, including related equipment, designed for general business purposes.

### *Table 8: Semiconductor Manufacturing Equipment Valuation Factors*

These factors are intended to be applied directly to historical costs of semiconductor manufacturing equipment.

### *Table 9: Interim Valuation Factors for Biopharmaceutical Industry Equipment and Fixtures*

These factors are intended to be applied directly to historical costs of specific property owned and/or used by the biopharmaceutical industry.

# TABLE 1: COMMERCIAL EQUIPMENT INDEX FACTORS

2007 COST = 100

| Year | Average |
|---|---|
| 2007 | 100 |
| 2006 | 106 |
| 2005 | 110 |
| 2004 | 117 |
| 2003 | 121 |
| 2002 | 123 |
| 2001 | 124 |
| 2000 | 125 |
| 1999 | 127 |
| 1998 | 127 |
| 1997 | 128 |
| 1996 | 131 |
| 1995 | 132 |
| 1994 | 137 |
| 1993 | 141 |
| 1992 | 144 |
| 1991 | 146 |
| 1990 | 149 |
| 1989 | 153 |
| 1988 | 160 |
| 1987 | 167 |
| 1986 | 170 |
| 1985 | 172 |
| 1984 | 175 |
| 1983 | 180 |
| 1982 | 184 |
| 1981 | 192 |
| 1980 | 211 |
| 1979 | 229 |
| 1978 | 251 |
| 1977 | 269 |
| 1976 | 283 |
| 1975 | 300 |
| 1974 | 331 |
| 1973 | 381 |
| 1972 | 395 |
| 1971 | 407 |
| 1970 | 429 |
| 1969 | 455 |

# TABLE 2: INDUSTRIAL MACHINERY AND EQUIPMENT INDEX FACTORS

2007 COST = 100

| Year | Average |
|---|---|
| 2007 | 100 |
| 2006 | 103 |
| 2005 | 105 |
| 2004 | 110 |
| 2003 | 113 |
| 2002 | 114 |
| 2001 | 114 |
| 2000 | 114 |
| 1999 | 115 |
| 1998 | 116 |
| 1997 | 118 |
| 1996 | 119 |
| 1995 | 122 |
| 1994 | 125 |
| 1993 | 128 |
| 1992 | 130 |
| 1991 | 132 |
| 1990 | 136 |
| 1989 | 140 |
| 1988 | 146 |
| 1987 | 153 |
| 1986 | 155 |
| 1985 | 158 |
| 1984 | 162 |
| 1983 | 166 |
| 1982 | 169 |
| 1981 | 178 |
| 1980 | 196 |
| 1979 | 219 |
| 1978 | 241 |
| 1977 | 262 |
| 1976 | 281 |
| 1975 | 298 |
| 1974 | 347 |
| 1973 | 408 |
| 1972 | 425 |
| 1971 | 436 |
| 1970 | 455 |
| 1969 | 480 |

## TABLE 3: AGRICULTURAL AND CONSTRUCTION EQUIPMENT INDEX FACTORS

2007 COST = 100

| Year | Agricultural | Construction |
|---|---|---|
| 2007 | 100 | 100 |
| 2006 | 103 | 103 |
| 2005 | 106 | 107 |
| 2004 | 111 | 114 |
| 2003 | 115 | 117 |
| 2002 | 116 | 119 |
| 2001 | 118 | 121 |
| 2000 | 120 | 121 |
| 1999 | 121 | 122 |
| 1998 | 123 | 124 |
| 1997 | 124 | 127 |
| 1996 | 126 | 129 |
| 1995 | 129 | 132 |
| 1994 | 135 | 135 |
| 1993 | 138 | 136 |
| 1992 | 143 | 140 |
| 1991 | 147 | 144 |
| 1990 | 152 | 148 |
| 1989 | 157 | 153 |
| 1988 | 164 | 161 |
| 1987 | 168 | 165 |
| 1986 | 169 | 169 |
| 1985 | 170 | 171 |
| 1984 | 171 | 173 |
| 1983 | 176 | 176 |
| 1982 | 185 | 180 |
| 1981 | 199 | 193 |
| 1980 | 222 | 214 |
| 1979 | 247 | 241 |
| 1978 | 269 | 266 |
| 1977 | 290 | 290 |
| 1976 | 314 | 311 |
| 1975 | 341 | 334 |
| 1974 | 400 | 406 |
| 1973 | 456 | 473 |
| 1972 | 470 | 492 |
| 1971 | 488 | 508 |
| 1970 | 507 | 534 |
| 1969 | 529 | 560 |

# TABLE 4: MACHINERY AND EQUIPMENT PERCENT GOOD FACTORS

INDIVIDUAL PROPERTIES--AVERAGE SERVICE LIFE

**6.75% Rate of Return**

| Year Acq'd | AGE | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 17 | 18 | 20 | 22 | 25 | 30 | 35 | 40 | AGE | Year Acq'd |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2007 | 1 | 67 | 76 | 81 | 85 | 87 | 89 | 91 | 92 | 93 | 94 | 94 | 95 | 95 | 96 | 96 | 97 | 97 | 98 | 99 | 99 | 99 | 1 | 2007 |
| 2006 | 2 | 38 | 52 | 62 | 69 | 74 | 78 | 81 | 83 | 85 | 87 | 88 | 89 | 90 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 98 | 2 | 2006 |
| 2005 | 3 | 17 | 32 | 45 | 54 | 61 | 67 | 71 | 75 | 78 | 80 | 82 | 84 | 85 | 88 | 89 | 91 | 92 | 94 | 95 | 97 | 98 | 3 | 2005 |
| 2004 | 4 | 6 | 17 | 29 | 40 | 49 | 56 | 61 | 66 | 70 | 73 | 76 | 78 | 80 | 83 | 85 | 87 | 89 | 91 | 94 | 96 | 97 | 4 | 2004 |
| 2003 | 5 | | 8 | 18 | 28 | 37 | 45 | 52 | 57 | 62 | 66 | 69 | 72 | 75 | 79 | 81 | 84 | 86 | 89 | 92 | 94 | 96 | 5 | 2003 |
| 2002 | 6 | | 3 | 10 | 18 | 27 | 35 | 42 | 49 | 54 | 59 | 63 | 66 | 69 | 74 | 76 | 80 | 83 | 86 | 90 | 93 | 95 | 6 | 2002 |
| 2001 | 7 | | | 5 | 11 | 19 | 26 | 34 | 41 | 46 | 52 | 56 | 60 | 64 | 70 | 72 | 76 | 80 | 84 | 89 | 92 | 94 | 7 | 2001 |
| 2000 | 8 | | | 1 | 7 | 13 | 19 | 26 | 33 | 39 | 45 | 50 | 54 | 58 | 65 | 68 | 72 | 76 | 81 | 87 | 90 | 93 | 8 | 2000 |
| 1999 | 9 | | | | 3 | 8 | 14 | 20 | 26 | 32 | 38 | 44 | 48 | 53 | 60 | 63 | 69 | 73 | 78 | 85 | 89 | 92 | 9 | 1999 |
| 1998 | 10 | | | | | 4 | 10 | 15 | 20 | 26 | 32 | 37 | 43 | 47 | 55 | 59 | 65 | 70 | 75 | 83 | 87 | 91 | 10 | 1998 |
| 1997 | 11 | | | | | 1 | 6 | 11 | 16 | 21 | 26 | 32 | 37 | 42 | 50 | 54 | 61 | 66 | 73 | 80 | 86 | 89 | 11 | 1997 |
| 1996 | 12 | | | | | | 3 | 8 | 12 | 16 | 22 | 27 | 32 | 37 | 45 | 49 | 57 | 62 | 70 | 78 | 84 | 88 | 12 | 1996 |
| 1995 | 13 | | | | | | | 5 | 9 | 13 | 17 | 22 | 27 | 32 | 41 | 45 | 52 | 59 | 66 | 76 | 82 | 87 | 13 | 1995 |
| 1994 | 14 | | | | | | | 2 | 6 | 10 | 14 | 18 | 23 | 27 | 36 | 40 | 48 | 55 | 63 | 74 | 81 | 86 | 14 | 1994 |
| 1993 | 15 | | | | | | | | 4 | 7 | 11 | 15 | 19 | 23 | 32 | 36 | 44 | 51 | 60 | 71 | 79 | 84 | 15 | 1993 |
| 1992 | 16 | | | | | | | | 1 | 5 | 9 | 12 | 16 | 19 | 28 | 32 | 40 | 48 | 57 | 69 | 77 | 83 | 16 | 1992 |
| 1991 | 17 | | | | | | | | | 2 | 6 | 9 | 13 | 16 | 24 | 28 | 37 | 44 | 54 | 66 | 75 | 81 | 17 | 1991 |
| 1990 | 18 | | | | | | | | | | 4 | 7 | 10 | 14 | 21 | 25 | 33 | 40 | 51 | 64 | 73 | 80 | 18 | 1990 |
| 1989 | 19 | | | | | | | | | | 1 | 5 | 8 | 11 | 18 | 22 | 29 | 37 | 47 | 61 | 71 | 78 | 19 | 1989 |
| 1988 | 20 | | | | | | | | | | | 2 | 6 | 10 | 15 | 19 | 26 | 33 | 44 | 58 | 69 | 77 | 20 | 1988 |
| 1987 | 21 | | | | | | | | | | | | 4 | 8 | 13 | 16 | 23 | 30 | 41 | 56 | 67 | 75 | 21 | 1987 |
| 1986 | 22 | | | | | | | | | | | | 2 | 5 | 11 | 14 | 21 | 28 | 38 | 53 | 65 | 73 | 22 | 1986 |
| 1985 | 23 | | | | | | | | | | | | | 3 | 10 | 12 | 18 | 24 | 35 | 50 | 62 | 72 | 23 | 1985 |
| 1984 | 24 | | | | | | | | | | | | | 1 | 8 | 10 | 16 | 22 | 32 | 48 | 60 | 70 | 24 | 1984 |
| 1983 | 25 | | | | | | | | | | | | | | 6 | 8 | 14 | 19 | 29 | 45 | 58 | 68 | 25 | 1983 |
| 1982 | 26 | | | | | | | | | | | | | | 3 | 6 | 13 | 18 | 27 | 42 | 56 | 66 | 26 | 1982 |
| 1981 | 27 | | | | | | | | | | | | | | 1 | 5 | 11 | 15 | 24 | 40 | 53 | 64 | 27 | 1981 |
| 1980 | 28 | | | | | | | | | | | | | | | 2 | 9 | 14 | 22 | 37 | 51 | 63 | 28 | 1980 |
| 1979 | 29 | | | | | | | | | | | | | | | 1 | 7 | 12 | 20 | 34 | 49 | 60 | 29 | 1979 |
| 1978 | 30 | | | | | | | | | | | | | | | | 5 | 11 | 18 | 32 | 46 | 59 | 30 | 1978 |
| 1977 | 31 | | | | | | | | | | | | | | | | 3 | 8 | 17 | 30 | 44 | 56 | 31 | 1977 |
| 1976 | 32 | | | | | | | | | | | | | | | | 2 | 7 | 15 | 28 | 42 | 54 | 32 | 1976 |
| 1975 | 33 | | | | | | | | | | | | | | | | | 5 | 14 | 26 | 40 | 52 | 33 | 1975 |
| 1974 | 34 | | | | | | | | | | | | | | | | | 3 | 12 | 24 | 38 | 50 | 34 | 1974 |
| 1973 | 35 | | | | | | | | | | | | | | | | | 2 | 10 | 22 | 35 | 48 | 35 | 1973 |
| 1972 | 36 | | | | | | | | | | | | | | | | | | 9 | 21 | 33 | 46 | 36 | 1972 |
| 1971 | 37 | | | | | | | | | | | | | | | | | | 7 | 19 | 31 | 44 | 37 | 1971 |
| 1970 | 38 | | | | | | | | | | | | | | | | | | 5 | 17 | 29 | 42 | 38 | 1970 |
| 1969 | 39 | | | | | | | | | | | | | | | | | | 3 | 16 | 27 | 40 | 39 | 1969 |

NO MINIMUM PERCENT GOOD INTENDED

## TABLE 5: CONSTRUCTION MOBILE EQUIPMENT PERCENT GOOD FACTORS

| Year Acquired | Age | CONSTRUCTION MOBILE EQUIPMENT | | |
|---|---|---|---|---|
| | | New | Used | Average* |
| 2007 | 1 | 74 | 91 | 83 |
| 2006 | 2 | 66 | 81 | 74 |
| 2005 | 3 | 60 | 74 | 67 |
| 2004 | 4 | 55 | 68 | 62 |
| 2003 | 5 | 51 | 62 | 57 |
| 2002 | 6 | 47 | 58 | 53 |
| 2001 | 7 | 42 | 52 | 47 |
| 2000 | 8 | 38 | 47 | 43 |
| 1999 | 9 | 35 | 43 | 39 |
| 1998 | 10 | 31 | 38 | 35 |
| 1997 | 11 | 28 | 34 | 31 |
| 1996 | 12 | 26 | 32 | 29 |
| 1995 | 13 | 24 | 29 | 27 |
| 1994 | 14 | 22 | 27 | 25 |
| 1993 | 15 | 20 | 25 | 23 |
| 1992 | 16 | 19 | 23 | 21 |
| 1991 | 17 | 16 | 20 | 18 |
| 1990 | 18 | 13 | 17 | 15 |
| 1989 | 19 | 12 | 13 | 13 |
| 1988 | 20 | 11 | 11 | 11 |
| 1987 | 21 | | 9 | |

NO MINIMUM PERCENT GOOD INTENDED

### USE OF TABLE 5

The percent good table is designed to assist the appraiser in determining total loss of value once reproduction cost new (RCN) has been determined for the captioned equipment.

The table, derived from used equipment sales data, identifies a pattern of depreciation for construction mobile equipment. The column labeled "new" should be used to measure depreciation if the subject property was acquired new; conversely, the column labeled "used" should be applied when the equipment was purchased used. In cases where the taxpayer does not indicate if the property was first acquired new or first acquired used, Table 5 provides an average of the new and used factors. The "new" and "used" factors may not be averaged unless the taxpayer does not indicate if the property was first acquired new or first acquired used.[10]

*Starting with the 2005 lien date, average factors were provided to reflect the provisions of section 401.16 as to use of average percent good factors.

[10] Section 401.16.

## TABLE 6: AGRICULTURAL MOBILE EQUIPMENT PERCENT GOOD FACTORS

| Year Acquired | Age | AGRICULTURAL MOBILE EQUIPMENT | | | | | | Age |
|---|---|---|---|---|---|---|---|---|
| | | EXCEPT HARVESTERS | | | HARVESTERS | | | |
| | | New | Used | Average* | New | Used | Average* | |
| 2007 | 1 | 78 | 92 | 85 | 74 | 90 | 82 | 1 |
| 2006 | 2 | 70 | 82 | 76 | 64 | 78 | 71 | 2 |
| 2005 | 3 | 64 | 75 | 70 | 57 | 69 | 63 | 3 |
| 2004 | 4 | 58 | 68 | 63 | 50 | 60 | 55 | 4 |
| 2003 | 5 | 52 | 62 | 57 | 43 | 53 | 48 | 5 |
| 2002 | 6 | 47 | 56 | 52 | 38 | 46 | 42 | 6 |
| 2001 | 7 | 42 | 50 | 46 | 33 | 40 | 37 | 7 |
| 2000 | 8 | 38 | 45 | 42 | 29 | 35 | 32 | 8 |
| 1999 | 9 | 34 | 40 | 37 | 25 | 30 | 28 | 9 |
| 1998 | 10 | 30 | 36 | 33 | 21 | 26 | 24 | 10 |
| 1997 | 11 | 27 | 32 | 30 | 19 | 23 | 21 | 11 |
| 1996 | 12 | 25 | 30 | 28 | 17 | 21 | 19 | 12 |
| 1995 | 13 | 23 | 28 | 26 | 15 | 18 | 17 | 13 |
| 1994 | 14 | 22 | 26 | 24 | | 16 | | 14 |
| 1993 | 15 | 20 | 23 | 22 | | 14 | | 15 |
| 1992 | 16 | 18 | 21 | 20 | | 14 | | 16 |
| 1991 | 17 | | 19 | | | | | 17 |
| 1990 | 18 | | 17 | | | | | 18 |

NO MINIMUM PERCENT GOOD INTENDED

USE OF TABLE 6

The percent good table is designed to assist the appraiser in determining total loss of value once reproduction cost new (RCN) has been determined for the captioned equipment.

The table, derived from used equipment sales data, identifies a pattern of depreciation for two groups of equipment. Within each group, three columns of percent good figures "new," "used," and "average" are listed. The column labeled "new" should be used to measure depreciation if the subject property was acquired new; conversely, the column labeled "used" should be applied when the equipment was purchased used. In cases where the taxpayer does not indicate if the property was first acquired new or first acquired used, Table 6 provides an average of the new and used factors. The "new" and "used" factors may not be averaged unless the taxpayer does not indicate if the property was first acquired new or first acquired used.[11]

*Starting with the 2005 lien date, average factors were provided to reflect the provisions of section 401.16 as to use of average percent good factors.

[11] Section 401.16.

## TABLE 7: COMPUTER VALUATION FACTORS

| Year Acquired | Age | PERSONAL COMPUTERS ($25,000 or less) | MID-RANGE COMPUTERS ($25,000.01 to $500,000) | MAINFRAME COMPUTERS ($500,000.01 or more) |
|---|---|---|---|---|
| 2007 | 1 | 66 | 73 | 79 |
| 2006 | 2 | 39 | 47 | 54 |
| 2005 | 3 | 24 | 30 | 35 |
| 2004 | 4 | 15 | 19 | 22 |
| 2003 | 5 | 10 | 12 | 14 |
| 2002 | 6 | 6 | 8 | 9 |
| 2001 | 7 | 4 | 5 | 6 |
| 2000 | 8 | 2 | 3 | 4 |
| 1999 | 9 | 2 | 2 | 2 |

### USE OF TABLE 7

Computer valuation tables were originally developed by the Board in 1995, and amended in 1997, by analyzing resale values of personal, mid-range, and mainframe computers as compared to original costs.[12] These factors are intended to be applied directly to historical costs of non-production computers. Non-production computers are computers, including related equipment, designed for general business purposes. Non-production computers do not include computers embedded in machinery and do not include equipment or computers specifically designed for use in any other application directly related to manufacturing. No estimates of economic lives are stated or implied, since the tables were not derived by analyzing price indexes and economic life patterns.

[12] Prior to January 2000, computer valuation tables were distributed via Letter To Assessors. For more information regarding the original study and development of these factors, please refer to Letters To Assessors 97/18, 96/27, and 96/19.

## TABLE 8: SEMICONDUCTOR MANUFACTURING EQUIPMENT VALUATION FACTORS

| Year Acquired | Age | SEMICONDUCTOR MANUFACTURING EQUIPMENT |
|---|---|---|
| 2007 | 1 | 80 |
| 2006 | 2 | 62 |
| 2005 | 3 | 47 |
| 2004 | 4 | 34 |
| 2003 | 5 | 24 |
| 2002 | 6 | 16 |
| 2001 | 7 | 10 |

### USE OF TABLE 8

The semiconductor manufacturing equipment valuation table was initially approved by the Board in 1994.[13] The Board recommends the above table for use when valuing semiconductor manufacturing equipment. The table is based on a 6.5 year economic life. These factors are intended to be applied directly to historical costs.

[13] For more information regarding the original study and development of these factors, please refer to Letters To Assessors 90/36 and 94/24.

## TABLE 9: INTERIM VALUATION FACTORS FOR BIOPHARMACEUTICAL INDUSTRY EQUIPMENT & FIXTURES

| Year Acquired | Age | SCHEDULE A | | | SCHEDULE B |
|---|---|---|---|---|---|
| | | Machinery & Equipment (A-1) | Other Equipment (A-3) | Tools, Molds, Dies, Jigs (A-4) | Fixtures (B-2) |
| 2007 | 1 | 85 | 92 | 89 | 92 |
| 2006 | 2 | 69 | 83 | 78 | 83 |
| 2005 | 3 | 54 | 75 | 67 | 75 |
| 2004 | 4 | 40 | 66 | 56 | 66 |
| 2003 | 5 | 28 | 57 | 45 | 57 |
| 2002 | 6 | 18 | 49 | 35 | 49 |
| 2001 | 7 | 11 | 40 | 26 | 40 |
| 2000 | 8 | 10 | 33 | 19 | 33 |
| 1999 | 9 | 10 | 26 | 13 | 26 |
| 1998 | 10 | 10 | 20 | 10 | 20 |
| 1997 | 11 | 10 | 15 | 10 | 15 |
| 1996 | 12 | 10 | 11 | 10 | 11 |
| Prior | Prior Years | 10 | 10 | 10 | 10 |

### USE OF TABLE 9

The interim valuation factor table pertaining to the assessment of specific property owned and/or used by the biopharmaceutical industry was adopted by the Board in 1999, and became effective as of the lien date January 1, 1999. For mass appraisal purposes, these factors are intended to be applied directly to the historical costs of property for each category. As illustrated, a minimum percent good factor of 10 percent applies.

Following is a sample listing of the equipment and fixtures included in these schedules and categories. Other types of equipment (office equipment, computers, etc.) should be valued using the index factors and percent good factors or the valuation factors presented in the remainder of the handbook as appropriate.

# SCHEDULE A

## Machinery and Equipment

*(Schedule A-1)*

| General Laboratory Equipment | Hi-tech Analytical Instruments |
|---|---|
| Analytical Balances | Cell Fusion Devices |
| Anesthetic Machines | Cell Sorting Instruments – FACS |
| Animal Cages | Chemstations – computer controlled |
| Autoclaves | Cryostats |
| Autosamplers | Chromatography – Desktop |
| Bacteria Identification Systems | Cytometry Instruments |
| Cameras used in research | DNA Sequencers and Analyzers |
| Centrifuges (and rotors) | DNA Synthesizers and Purifiers |
| Chart Recorders | Electrolyte Analyzers |
| Conductivity Monitors | Electron Scanning Microscopes |
| Control Valves (laboratory scale) | Electrophoresis – Gas or Liquid |
| Densitometers | Mass Spectrometers – NMR, FTIR, AA, MALDI |
| Digital Counters | Molecular Imaging Equipment |
| Evaporator | Particle Counters and Analyzers |
| Fermentors (< 100 liters) | Peptide Synthesizers and Sequencers |
| Fume Hoods (portable) | Protein Synthesizers |
| Glass Handling Equipment | Scintillation Counters |
| Glassware Washers | Spectrometers |
| Glucose Analyzers | Spectrophotometers |
| Ice Machines | Thermal Analysis Instruments |
| Imaging Equipment | Viscometers |
| Incubators | X-Ray Diffratometers |
| Liquid Samplers | Other unspecified equipment that is similar in character, scale and technology |
| Micromanipulators | |
| Microscopes | |
| Microtomes | |
| Optical Scanning Detectors | |
| Organic Synthesizers | |
| Osmometers | |
| Ovens | |
| pH Analyzers | |
| Pipettes | |
| Pumps (laboratory scale) | |
| Radiation Monitors | |
| Reactor Vessels (<100 liters) | |
| Refrigerators and Freezers | |
| Sample Handling Equipment | |
| Samplers | |
| Shakers | |
| Sterilizers | |
| Stirrers | |
| Ultrasonic Cleaning Systems | |
| Waterbaths | |

**Other Equipment**
*(Schedule A-3)*

| | |
|---|---|
| Air Sampler | Commercial Scale Stainless Steel Tanks and Vessels |
| Clean Room Monitor | Custom Roller Bottle Apparatus |
| Commercial Scale Agitator | Equipment Skids |
| Commercial Scale Control Devices | Filter Housings, Stainless Steel |
| Commercial Scale Fermentation Tanks and Controls | Floor Scale |
| Commercial Scale Glycol System | Flow Meter |
| Commercial Scale Mix Tanks, Stainless Steel | Piping and tubing between Production Vessels |
| Commercial Scale Mixers | Roller Bottle Machine Capper |
| Commercial Scale Pumps | Roller Bottle Machine Unit |
| Commercial Scale Purification Vessels and Devices | Roller Racks |
| Commercial Scale RO Water Unit and System | Sanitary Valves (personal property) |
| | WFI Water Still |
| | Other Commercial Scale Control Devices |
| | Other Commercial Scale Tanks, Vessels and Devices |

**Tools, Molds, Dies, Jigs**
*(Schedule A-4)*

| | |
|---|---|
| Mobile Pilot Plants | Skids |
| Pilot Scale Fermentation Control | Small Fermentors (< 500 liters) |
| Pilot Scale Mixers | Small Scale Process Control Devices |
| Pilot Scale Pumps and Hose Apparatus | Individual components aggregated into pilot scale manufacturing equipment systems |
| Pilot Scale Purification Vessels and Devices | |

**SCHEDULE B**

**Fixtures**
*(Schedule B-2)*

| | |
|---|---|
| Benches and Counters, Built-in | HVAC systems and ductwork unique to process |
| Cabinets, Built-in | Individual components aggregated into fixtures |
| Casework, Metal | Piping and plumbing related to process |
| Casework, Wood | RO, DI, WFI Water Piping |
| Clean In Place Equipment | Safety Stations and First Aid Cabinets |
| Clean Room Air Ducts/Handlers | Clean Room Special Wall Surfaces |
| Clean Room Filter Units | Steam supply unique to process |
| Clean Room Fixtures, not specified | Walk-in freezers and refrigerator units |
| Clean Room Special Floor Surfaces | Wall Cases, Built-in |
| Cleanrooms | Waste disposal equipment unique to process |
| Electric supply systems unique to process | Water supply systems unique to process (WFI) |
| Emergency Generators (for process) | Water, electric, and gas hook-ups to lab stations |
| Feedwater System | Other items meeting the definition of a fixture as specified in Property Tax Rule 122.5 |
| Fiber optic communication systems for process | |
| Fume Hoods (built-in) | |

# CHAPTER 5: CLASS INFORMATION

## COMMERCIAL CLASSES CONTAINED IN AVERAGE INDEX (TABLE 1)

- Bank
- Garage
- Hospital
- Hotel
- Laundry
- Library
- Office
- Restaurant
- Retail
- Theater
- Warehouse

## INDUSTRY CLASSES CONTAINED IN AVERAGE INDEX (TABLE 2)

- Aerospace
- Cement Manufacturing
- Chemicals and Allied Products
- Electrical Equipment Manufacturing
- Electronic Equipment
- Fabricated Metal Products
- Food and Kindred Products
- Glass and Glass Products
- Grain and Grain Mill Products
- Leather and Leather Products
- Lumber, Wood Products, and Furniture
- Machinery, Except Electrical Metal Working and Transportation
- Mining
- Motor Vehicles and Parts
- Paper Finishing
- Petroleum Exploration and Production
- Petroleum Refining
- Plastics Products
- Primary Metals
- Printing and Publishing
- Professional and Scientific Instruments
- Pulp and Paper
- Rubber Products
- Stone and Clay Products Except Cement
- Sugar and Sugar Products
- Textile Mill Products
- Vegetable Oil Products

# DESCRIPTION OF INDUSTRY CLASSES

Aerospace

Includes the manufacture of aircraft, spacecraft, rockets, missiles, and component parts.

Cement Manufacturing

Includes the manufacture of cement. Excludes the manufacture of concrete and concrete products.

Chemicals and Allied Products

Includes the manufacture of basic chemicals such as acids, alkalis, salts, organic and inorganic chemicals; chemical products to be used in further manufacture, such as synthetic fibers and plastics materials; and finished chemical products, such as pharmaceuticals, cosmetics, soaps, fertilizers, paints, varnishes, explosives, and compressed and liquefied gases.

Electrical Equipment Manufacturing

Includes the manufacture of electric household appliances, electronic equipment, batteries, ignition systems, and machinery used in the generation and utilization of electrical energy.

Electronic Equipment

Includes the manufacture of electronic communications, detection, guidance, control, radiation, computation, test, and navigation equipment, and components thereof. Excludes manufacturers that, in addition to electronic equipment, also produce other equipment included under electrical equipment.

Fabricated Metal Products

Includes the manufacture of fabricated metal products, such as cans, tinware, hardware, metal structural products, stampings, and a variety of metal and wire products.

Food and Kindred Products

Includes the manufacture of foods and beverages, such as meat and dairy products; baked goods; canned, frozen, and preserved products; confectionery and related products; and soft drinks and alcoholic beverages. Excludes the manufacture of grain and grain mill products, sugar and sugar products, and vegetable oils and vegetable oil products.

Glass and Glass Products

Includes the manufacture of flat, blown, or pressed glass products, such as plate, safety, and window glass, glass containers, glassware, and fiberglass. Excludes the manufacture of lenses.

Grain and Grain Mill Products

Includes the manufacture of blended and prepared flours, cereals, feeds, and other grain and grain mill products.

Leather and Leather Products

Includes the manufacture of finished leather products, the tanning, currying, and finishing of hides and skins, and the processing of fur pelts.

Lumber, Wood Products, and Furniture

Includes the manufacture of lumber, plywood, veneers, furniture, flooring, and other wood products. Excludes the manufacture of pulp and paper.

Machinery, Except Electrical, Metal Working, and Transportation

Includes the manufacture of machinery, such as engines and turbines, farm machinery, construction and mining machinery, food products machinery, textile machinery, woodworking machinery, paper industry machinery, compressors, pumps, ball and roller bearings, blowers, industrial patterns, process furnaces and ovens, office machines, and service industry machines and equipment.

Mining

Includes the mining and quarrying of metallic and nonmetallic minerals and the milling, benefaction, and other primary preparation of such materials.

Motor Vehicles and Parts

Includes the manufacture of automobiles, trucks, buses, and their component parts. Excludes the manufacture of glass, tires, and stampings.

Paper Finishing

Includes paper finishing and conversion into cartons, bags, envelopes, and similar products.

Petroleum Exploration and Production

Includes the exploration, drilling, maintenance, and production activities of petroleum and natural gas producers. Includes gathering pipelines and related storage facilities of such producers. Excludes gathering pipelines and related storage facilities of pipeline companies.

Petroleum Refining

Includes the distillation, fractionation, and catalytic cracking of crude petroleum into gasoline and its other components.

Plastics Products

Includes the manufacture of processed, fabricated, and finished plastic products. Excludes the manufacture of basic plastic materials.

Primary Metals

Includes the smelting, reducing, refining, and alloying of ferrous and nonferrous metals from ore, pig, or scrap, and the manufacture of castings, forgings, and other basic ferrous and nonferrous metals products.

Professional and Scientific Instruments

Includes the manufacture of mechanical measuring, engineering, laboratory, and scientific research instruments; optical instruments and lenses; surgical, medical, and dental instruments and equipment; ophthalmic equipment; photographic equipment; and watches and clocks.

Printing and Publishing

Includes printing, publishing, lithographing, and printing services, such as bookbinding, typesetting, photoengraving, and electrotyping.

Pulp and Paper

Includes the manufacture of pulp from wood, rags, and other fibers and the manufacture of paper and paperboard from pulp. Excludes paper finishing.

Rubber Products

Includes the manufacture of finished rubber products, and the recapping, retreading, and rebuilding of tires.

Stone and Clay Products, Except Cement

Includes the manufacture of structural clay products, such as brick, tile, and pipe; pottery and related products, such as vitreous-china, plumbing fixtures, earthenware, and ceramic insulating material; concrete; asphalt building materials; concrete, gypsum, and plaster products; cut and finished stone; and abrasive, asbestos, and miscellaneous nonmetallic mineral products.

Sugar and Sugar Products

Includes the manufacture of raw sugar, syrup, or finished sugar from sugar cane or sugar beets.

Textile Mill Products

Includes the manufacture of spun, woven, or processed yarns and fabrics from natural or synthetic fibers. Excludes finishing and dyeing.

Vegetable Oil Products

Includes the manufacture of vegetable oils and vegetable oil products.

# CHAPTER 6: CLASSIFICATION OF IMPROVEMENTS AS STRUCTURE ITEMS OR FIXTURES

The intent of the following listing is to classify property without regard to ownership. The listing does not necessarily indicate appraisal responsibility by a real property appraiser or an auditor–appraiser. It should be used as a guide for classifying improvements reported on Schedule B of the Business Property Statement.

Section 122.5 of Title 18 of the California Code of Regulations (Property Tax Rule 122.5) provides a definition of "fixtures" and is controlling. For ease of use, the general concepts used as a basis for the segregation of improvements to "structure item" or "fixtures" categories are as follows.[14]

### *Primary Test*

Rule 122.5(d) states that "...Intent is the primary test of classification." To determine intent the appraiser should look to what is "reasonably manifested by outward appearance."

### *Structure Item*

An improvement will be classified as a "structure item" when its primary use or purpose is for housing or accommodation of personnel, personalty, or fixtures; or when the improvement has no direct application to the process or function of the trade, industry, or profession.

### *Fixture*

An improvement will be classified as a "fixture" if its use or purpose directly applies to or augments the process or function of a trade, industry, or profession.

### *Dual Purpose*

Items that have a dual purpose will be classified according to their primary purpose.

### *Examples*

The following pages list a variety of improvements and their typical classifications as structure items or fixtures. It must be emphasized that the listing is illustrative as a guide only. Proper classification as a fixture or structure item is determined according to the actual use or purpose of the property.

[14] See also Assessors' Handbook Section 504, *Assessment of Personal Property and Fixtures*, for additional information.

**STRUCTURE ITEMS**

Air conditioning—office and building cooling

Auxiliary power generation equipment—for building purposes

Awnings

Batch plants—buildings, fences, paving, yard lights, and spur tracks

Boilers—office and building heating

Building renovations

Butane and propane installations—used for heating buildings

Car washes—all buildings, canopies, interior and exterior walls, fences, paving, and normal plumbing

Carpets and floor coverings affixed to floor—wall-to-wall carpeting and specially installed strip or area carpeting, tile, terrazzo coverings

Central heating and cooling plants

Chutes—built-in

Coin-operated laundries—restroom, sanitary plumbing fixtures

Conveyors—for moving people

Cooling towers—other than used in a trade or production process

Crane ways

Dock elevators

Elevators—including machinery and power wiring

**FIXTURES**

Air conditioning—process cooling

Air lines

Auxiliary power generation equipment—for trade or production purposes

Back bars

Batch plant—scales, silos, hoppers, bins, machinery

Boilers—for manufacturing process

Bowling lanes

Burglar alarm systems

Butane and propane installations—used for trade or production purposes

Car washes—special plumbing, wiring, and car washing equipment

Compressors—air

Conveyors—for moving materials and products

Cooling towers—used in a trade or production process

Counters

Cranes—traveling

Environmental control devices—used in the production process

Fans and ducts—used for processing

**STRUCTURE ITEMS**

Environmental control devices—if an integral part of the structure

Escalators

External window coverings

Fans and ducts—which are part of an air circulation or exhaust system for the building

Fences—outside of building

Flagpoles

Heating—boilers—used in office or building heating

Kiosk—permanently attached

Movie sets—which are a complete building

Paint spray rooms—if an integral part of the building

Parking lot gates

Partitions—floor to ceiling

Pipelines and pipe supports—used to convey air, water, steam, oil, or gas to operate the facilities in a building

Pits—not used in the trade or process

Pneumatic tube systems

Radiators—steam

Railroad spurs

Refrigeration systems—that are an integral part of the building

**FIXTURES**

Fences and railings—inside of buildings

Furnaces—process

Furnishings—built-in, i.e., wall-hung desks

Heating—boilers—for the manufacturing process

Hoists

Incinerators—commercial and industrial

Ice dispensers—coin operated

Kilns—beehive, tunnel, or cylinder type, and equipment

Kilns—lumber

Laundromat—plumbing, wiring, and concrete work for equipment

Lighting fixtures—lighting associated with a commercial or industrial process

Machinery foundations and pits—not part of normal flooring or foundation

Miniature golf courses

Movie sets—which are not a complete building

Ovens

Paint spray booths

Partitions—annexed—less than floor to ceiling

Pipelines and pipe supports—used to convey air, water, steam, oil, or gas to equipment used in the production process

**STRUCTURE ITEMS**

Refrigerators—walk in—which are an integral part of the building—excluding operating equipment

Restaurants—rough plumbing to fixtures

Renovations to building structures

Security—Banks and Financial
- Fire alarm systems
- Safes-embedded
- Night depository –(if an integral part of the building)
- Teller cages
- Vault alarm system
- Vaults

Service stations—canopies, paving, sign, pylons

Shelving—originally designed as an integral part of the building

Shielded or clean rooms—if an integral part of the building

Signs—include supporting structure, which forms an integral part of the building, including sign blades, pylons, or marquee structures serving as canopies. Exclude sign cabinet (face) and lettering

Silos or tanks—whose primary function or intent is to store property for a time period, such as storage tank farms and grain and liquid petroleum storage facilities

Smog control devices—when attached to incinerator or building heating plant

**FIXTURES**

Pits—used as wine and sugar clarifiers, skimming pits, grease pits, sump pits, and pits used to house machinery in the manufacturing

Plumbing—special purpose

Power wiring, switch gear, and power panels—for manufacturing process

Refrigeration systems—that are not an integral part of the building

Refrigerators—walk in—unitized—including operating equipment

Restaurant equipment—plumbing fixtures, stainless steel or galvanized sinks in kitchens, bars, soda fountains, garbage disposals, dishwashers, hoods, etc.

Roller skating surface

Scales—including platform and pit

Security—Banks and Financial
- Cameras (surveillance)—attached to walls or columns
- Drive-up and walk-up windows—unitized security type
- Night depository –(if not an integral part of the building)
- Man traps
- Vault doors

Service Stations—gasoline storage tanks, pumps, air and water wells

**STRUCTURE ITEMS**

Sprinkler systems—where primary function is the protection of a building or structure

Store fronts

Television and radio antenna towers

Trout ponds—concrete

Theaters—drive-in—buildings, screen and structures, fencing, paving, lighting

Water systems at golf courses

**FIXTURES**

Shelving—other than that which is an integral part of the building

Shielded or clean rooms—if not an integral part of the building

Signs—sign cabinets and free standing signs, including supports

Silos or tanks—whose primary function is as part of a process, including temporary process holding such as breweries or refineries

Ski lifts, tows, trams

Sky slides

Smog control devices—attached to process device

Theaters—auditorium equipment—seating, screens, stage equipment, sound, lighting, and projection

Theaters—drive in—heater and speaker uprights, wiring and units, projection equipment, signs

Trash compactors and paper shredders

Wash basins—special purpose water softeners for commercial or industrial purposes

# CHAPTER 7: VALUATION GUIDES

There are numerous valuation guides available that contain sale-derived market values of construction mobile equipment and agricultural mobile equipment. The appraiser should utilize these valuation guides in making the appraisal estimate when sufficient information regarding the equipment's make, model, etc., is available. The index factors from Table 3 and the percent good factors from Table 5 and Table 6 should be used when sufficient information cannot be obtained from value guides or other market information.

Valuation guides that we are aware of include the following:

### *Agricultural Equipment*

*The Official Tractor Blue Book,* Penton Media

Phone: (800) 654-6776 or (913) 967-7453

Internet Address: www.buypenton.com

*Official Guide - Tractors and Farm Equipment*, Iron Solutions

Phone: (877) 266-4766

Internet Address: www.ironsolutions.com

*Farm Equipment Guide*, Heartland Ag Business Group

Phone: (800) 673-4763

Internet Address: www.hotlineguides.com

### *Construction Equipment*

*Green Guide: Equipment Values*, Penton Media

Phone: (800) 669-3282

Internet Address: www.equipmentwatch.com