

ASSESSORS' HANDBOOK
SECTION 581

EQUIPMENT INDEX AND PERCENT GOOD
FACTORS

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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 and fixtures, Table 8, were approved by the Board in October 2008. The valuation factors for biopharmaceutical industry equipment and fixtures, Table 9, were adopted by the Board in July 2008.

All of the information presented in this section of the Assessors' Handbook is current for use as of the 2009 lien date, January 1, 2009. We hope the information presented proves useful to all concerned parties, and that it promotes uniformity of assessment. The tables are intended for use in the mass appraisal of equipment and fixtures when determining market value for taxation purposes. However, relevant data pertinent to the assessment of specific property should always be reviewed and considered.

/s/ David J. Gau

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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 when determining market value for taxation purposes. 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 assesseses 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 2005. What is the estimated reproduction cost new of this office equipment as of the January 1, 2009 lien date?

The appropriate factor is found in Table 1 under the Average column for 2005.

TABLE 1: COMMERCIAL EQUIPMENT INDEX FACTORS

Year	Average
2008	100
2007	104
2006	109
2005	113

The factor is shown in the table as a percentage and must be converted to a decimal (1.13). 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
2005	\$1,000	1.13	\$1,130

In other words, it would require an expenditure of approximately \$1,130 on the 2009 lien date to reproduce the office equipment purchased in 2005 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 2009 lien date, what is the reproduction cost new for rubber tire manufacturing equipment acquired for \$100,000 in 2005?

The appropriate index factor is found in Table 2 under the column across from the year of acquisition, 2005.

TABLE 2: INDUSTRIAL MACHINERY AND EQUIPMENT INDEX FACTORS

Year	Average
2008	100
2007	105
2006	108
2005	111

The appropriate index factor of 111 percent is converted to a decimal (1.11) and multiplied by the acquisition cost as follows:

Year of Acquisition	Cost	Index Factor	Reproduction Cost New
2005	\$100,000	1.11	\$111,000

In other words, it would require an expenditure of approximately \$111,000 on the 2009 lien date to reproduce the rubber tire manufacturing equipment acquired in 2005 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 1991. 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 ($12 \times 1.25 = 15$) recommended maximum.
- Since the recommended maximum is 15 years, the appropriate index factor is the index factor corresponding to an item acquired in 1994 (2009 - 15). The index factor is 141 percent.
- Actual age of equipment on 2009 lien date is 18 years (2009 - 1991 = 18). Without using the recommended maximum, the index factor for 1991 is 150 percent.

• TABLE 1: COMMERCIAL EQUIPMENT INDEX FACTORS

Year	Average
2008	100
2007	104
2006	109
1994	141
1993	145
1992	148
1991	150

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 (1.50). Application of the maximum recommended index factor results with an estimated reproduction cost new of \$21,150 to reproduce the warehouse equipment purchased in 1991 for \$15,000. Application of the index factor associated with the actual age of the property results with an estimated reproduction cost new of \$22,500 to replace the warehouse equipment purchased in 1991 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	1994 ¹	\$15,000	1.41	\$21,150
Actual	1991	\$15,000	1.50	\$22,500

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 1991. The year 1994 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 2009 lien date for office equipment purchased in 2005 at an acquisition cost of \$1,000?

- Facts derived in Example 1.1: Index factor 1.13, reproduction cost new \$1,130.
- 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 2005, in Table 4.

TABLE 4: MACHINERY AND EQUIPMENT PERCENT GOOD FACTORS

INDIVIDUAL PROPERTIES—AVERAGE SERVICE LIFE

7% Rate of Return

Year Acquired	AGE	5 Years	10 Years	12 Years	15 Years	AGE	Year Acquired
2008	1	81	92	94	95	1	2008
2007	2	62	83	87	91	2	2007
2006	3	45	75	80	86	3	2006
2005	4	30	66	73	80	4	2005

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(b). 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
2005	\$1,000	1.13	\$1,130	.73	\$825

To reiterate, applying the index factor and the percent good factor to office equipment purchased in 2005 for \$1,000 results in an estimated value of \$825 on lien date January 1, 2009. 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 2009 lien date, what is the assessable value of a construction motor grader acquired new in 2005 for \$100,000?

The first step is determining the appropriate index factor. As indicated below, the index factor is 110. The factor is shown in the table as a percentage and must be converted to a decimal (1.10).

TABLE 3: AGRICULTURAL AND CONSTRUCTION EQUIPMENT INDEX FACTORS

YEAR	Agricultural	Construction
2008	100	100
2007	105	103
2006	108	106
2005	111	110

The second step is determining the appropriate percent good factor. The percent good factor indicated below for construction mobile equipment purchased new in 2005 is 55 percent.

TABLE 5: CONSTRUCTION MOBILE EQUIPMENT PERCENT GOOD FACTORS

CONSTRUCTION MOBILE EQUIPMENT

Year Acquired	Age	New	Used	Average
2008	1	74	91	83
2007	2	66	81	74
2006	3	60	74	67
2005	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	2005	\$100,000	1.10	\$110,000	.55	\$60,500

In other words, the estimated value of construction equipment acquired new in 2005 at an acquisition cost of \$100,000 is \$60,500 on lien date January 1, 2009.

**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 2005 for \$100,000?

As in Example 2.2, the first step is determining the appropriate index factor. As indicated below, the index factor is 110, which is converted to a decimal (1.10).

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

YEAR	Agricultural	Construction
2008	100	100
2007	105	103
2006	108	106
2005	111	110

The second step is determining the appropriate percent good factor. The percent good factor indicated below for construction mobile equipment purchased used in 2005 is 68 percent.

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

CONSTRUCTION MOBILE EQUIPMENT				
Year Acquired	Age	New	Used	Average
2008	1	74	91	83
2007	2	66	81	74
2006	3	60	74	67
2005	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	2005	\$100,000	1.10	\$110,000	.68	\$74,800

In other words, the estimated value of construction equipment acquired **used** in 2005 at an acquisition cost of \$100,000 is \$74,800 on lien date January 1, 2009.

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(a).

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 2009 lien date, what is the estimated value of a mainframe computer acquired in 2006 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)
2008	1	66	73	79
2007	2	39	47	54
2006	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	2006	\$525,000	.35	\$183,750

The replacement cost new less normal depreciation of mainframe computer equipment purchased in 2006 for \$525,000 is \$183,750 on lien date January 1, 2009.

SEMICONDUCTOR MANUFACTURING EQUIPMENT AND FIXTURE VALUATION FACTORS

The Semiconductor Manufacturing Equipment and Fixture Valuation table (Chapter 4, Table 8) was approved by the Board on October 1, 2008. Similar to the computer valuation factors, the semiconductor manufacturing equipment and fixture valuation factors are intended to be applied directly to historical costs. 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.

The semiconductor machinery and equipment valuation factors are based on a 6-year economic life *untrended*. A minimum percent good factor of 8 percent applies to machinery and equipment. The semiconductor fixtures valuation factors are based on a 10-year economic life *trended*. A minimum percent good factor of 10 percent applies to the fixtures. The valuation factors include the minimum percent good and the trending.

DEFINITION

Semiconductor manufacturing equipment consists of (1) manufacturing equipment used in a clean room for the fabrication of semiconductor chips; (2) test equipment used in the manufacturing and research and development environment and to test semiconductor manufacturing equipment; and (3) fixtures in place to support a semiconductor fabrication facility. This definition is not limited by the size of a semiconductor facility or the technology of the chips produced.

BIOPHARMACEUTICAL INDUSTRY EQUIPMENT AND FIXTURES VALUATION FACTORS

The valuation factor table pertaining to the assessment of specific property owned and/or used by the biopharmaceutical industry was adopted by the Board in July 2008, and became effective as of the lien date January 1, 2009. For mass appraisal purposes, these factors are intended to be applied directly to the historical costs of property for each category.

DEFINITION

Biopharmaceutical Industry Equipment and Fixtures consist of equipment and fixtures utilized in connection with, or in support of, research and/or manufacturing activities that use organisms, or materials derived from organisms, their cellular, subcellular, or molecular components, to discover and/or provide products for human or animal therapeutics, diagnostics, and/or vaccines.

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

(Use for Lien Date January 1, 2009)

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 Chapter 5 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 & Fixtures Valuation Factors

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

Table 9: Biopharmaceutical Industry Equipment & Fixtures Valuation Factors

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

2008 COST = 100

Year	Average
2008	100
2007	104
2006	109
2005	113
2004	121
2003	125
2002	127
2001	128
2000	129
1999	131
1998	131
1997	132
1996	134
1995	136
1994	141
1993	145
1992	148
1991	150
1990	153
1989	158
1988	165
1987	172
1986	175
1985	177
1984	180
1983	185
1982	189
1981	198
1980	217
1979	236
1978	258
1977	278
1976	291
1975	310
1974	341
1973	392
1972	407
1971	419
1970	442
1969	469

This table is intended for use in the mass appraisal of equipment and fixtures when determining value for taxation purposes. However, relevant data pertinent to the assessment of a specific property should always be reviewed and considered.

TABLE 2: INDUSTRIAL MACHINERY AND EQUIPMENT INDEX FACTORS

2008 COST = 100

Year	Average
2008	100
2007	105
2006	108
2005	111
2004	115
2003	119
2002	119
2001	120
2000	120
1999	121
1998	122
1997	124
1996	126
1995	128
1994	131
1993	134
1992	137
1991	139
1990	143
1989	148
1988	154
1987	160
1986	163
1985	166
1984	170
1983	174
1982	178
1981	187
1980	206
1979	230
1978	253
1977	275
1976	295
1975	313
1974	364
1973	430
1972	448
1971	459
1970	478

This table is intended for use in the mass appraisal of equipment and fixtures when determining value for taxation purposes. However, relevant data pertinent to the assessment of a specific property should always be reviewed and considered.

TABLE 3: AGRICULTURAL AND CONSTRUCTION EQUIPMENT INDEX FACTORS

2008 COST = 100

Year	Agricultural	Construction
2008	100	100
2007	105	103
2006	108	106
2005	111	110
2004	116	117
2003	120	121
2002	122	123
2001	124	124
2000	126	125
1999	127	126
1998	128	128
1997	130	130
1996	132	132
1995	135	135
1994	141	139
1993	145	140
1992	149	144
1991	154	148
1990	159	152
1989	164	158
1988	171	166
1987	176	170
1986	177	174
1985	178	176
1984	179	178
1983	184	181
1982	193	185
1981	208	198
1980	232	220
1979	259	249
1978	282	274
1977	304	298
1976	329	320
1975	356	344
1974	418	418
1973	477	487
1972	492	506
1971	511	523
1970	531	550

This table is intended for use in the mass appraisal of equipment and fixtures when determining value for taxation purposes. However, relevant data pertinent to the assessment of a specific property should always be reviewed and considered.

TABLE 4: MACHINERY AND EQUIPMENT PERCENT GOOD FACTORS
INDIVIDUAL PROPERTIES--AVERAGE SERVICE LIFE, 7 % 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	Acq'd	
2008	1	67	76	81	85	87	89	91	92	93	94	94	95	95	96	97	97	98	98	99	99	99	1	2008	
2007	2	38	53	62	69	74	78	81	83	85	87	88	90	91	92	93	94	95	96	97	98	98	2	2007	
2006	3	17	32	45	54	61	67	71	75	78	80	82	84	86	88	89	91	92	94	96	97	98	3	2006	
2005	4	6	17	30	40	49	56	61	66	70	73	76	78	80	84	85	87	89	92	94	96	97	4	2005	
2004	5		8	18	28	37	45	52	57	62	66	70	72	75	79	81	84	86	89	92	94	96	5	2004	
2003	6		3	10	18	27	35	43	49	54	59	63	67	70	75	77	80	83	87	91	93	95	6	2003	
2002	7			5	11	19	27	34	41	47	52	57	61	64	70	72	77	80	84	89	92	94	7	2002	
2001	8			1	7	13	19	26	33	39	45	50	55	59	65	68	73	77	82	87	91	93	8	2001	
2000	9				3	8	14	20	26	33	39	44	49	53	60	64	69	73	79	85	89	92	9	2000	
1999	10					4	10	15	21	26	32	38	43	48	56	59	65	70	76	83	88	91	10	1999	
1998	11					1	6	11	16	21	27	32	37	42	51	55	61	67	73	81	86	90	11	1998	
1997	12					3	8	12	17	22	27	32	37	42	50	57	63	70	79	85	89		12	1997	
1996	13						5	9	13	17	22	27	32	37	46	53	59	67	76	83	87		13	1996	
1995	14						2	6	10	14	18	23	28	37	41	49	56	64	74	81	86		14	1995	
1994	15							4	8	11	15	19	24	32	37	45	52	61	72	79	85		15	1994	
1993	16							1	5	9	12	16	20	28	32	41	48	58	69	78	83		16	1993	
1992	17								2	6	9	13	17	25	29	37	45	54	67	76	82		17	1992	
1991	18									4	7	11	14	21	25	33	41	51	64	74	81		18	1991	
1990	19									1	5	8	11	18	22	30	37	48	62	72	79		19	1990	
1989	20									2	6	10	16	19	27	34	45	59	70	78			20	1989	
1988	21										4	8	13	16	24	31	42	57	68	76			21	1988	
1987	22										2	5	12	15	21	28	38	54	65	74			22	1987	
1986	23											3	10	12	19	25	36	51	63	73			23	1986	
1985	24												1	8	11	16	23	33	48	61	71		24	1985	
1984	25													6	8	15	20	30	46	59	69		25	1984	
1983	26														3	7	13	18	27	43	57	67	26	1983	
1982	27														1	5	11	16	25	40	54	65	27	1982	
1981	28															2	9	14	23	38	52	63	28	1981	
1980	29															1	7	12	21	35	49	61	29	1980	
1979	30																5	11	19	33	47	59	30	1979	
1978	31																	3	9	17	31	45	57	31	1978
1977	32																	2	7	16	28	43	55	32	1977
1976	33																		6	14	27	40	53	33	1976
1975	34																		3	12	24	38	51	34	1975
1974	35																		2	11	22	36	49	35	1974
1973	36																			9	21	34	47	36	1973
1972	37																			7	19	32	45	37	1972
1971	38																			5	18	30	43	38	1971
1970	39																			4	17	28	41	39	1970

NO MINIMUM PERCENT GOOD INTENDED

This table is intended for use in the mass appraisal of equipment and fixtures when determining value for taxation purposes. However, relevant data pertinent to the assessment of a specific property should always be reviewed and considered.

TABLE 5: CONSTRUCTION MOBILE EQUIPMENT PERCENT GOOD FACTORS

Year Acquired	Age	CONSTRUCTION MOBILE EQUIPMENT		
		New	Used	Average*
2008	1	74	91	83
2007	2	66	81	74
2006	3	60	74	67
2005	4	55	68	62
2004	5	51	62	57
2003	6	47	58	53
2002	7	42	52	47
2001	8	38	47	43
2000	9	35	43	39
1999	10	31	38	35
1998	11	28	34	31
1997	12	26	32	29
1996	13	24	29	27
1995	14	22	27	25
1994	15	20	25	23
1993	16	19	23	21
1992	17	16	20	18
1991	18	13	17	15
1990	19	12	13	13
1989	20	11	11	11
1988	21		9	

NO MINIMUM PERCENT GOOD INTENDED

This table is intended for use in the mass appraisal of equipment when determining value for taxation purposes. However, relevant data pertinent to the assessment of a specific property should always be reviewed and considered.

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.⁷

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

⁷ Section 401.16(a).

TABLE 6: AGRICULTURAL MOBILE EQUIPMENT PERCENT GOOD FACTORS

Year Acquired	Age	AGRICULTURAL MOBILE EQUIPMENT						Age
		EXCEPT HARVESTERS			HARVESTERS			
		New	Used	Average*	New	Used	Average*	
2008	1	78	92	85	74	90	82	1
2007	2	70	82	76	64	78	71	2
2006	3	64	75	70	57	69	63	3
2005	4	58	68	63	50	60	55	4
2004	5	52	62	57	43	53	48	5
2003	6	47	56	52	38	46	42	6
2002	7	42	50	46	33	40	37	7
2001	8	38	45	42	29	35	32	8
2000	9	34	40	37	25	30	28	9
1999	10	30	36	33	21	26	24	10
1998	11	27	32	30	19	23	21	11
1997	12	25	30	28	17	21	19	12
1996	13	23	28	26	15	18	17	13
1995	14	22	26	24		16		14
1994	15	20	23	22		14		15
1993	16	18	21	20		14		16
1992	17		19					17
1991	18		17					18

NO MINIMUM PERCENT GOOD INTENDED

This table is intended for use in the mass appraisal of equipment when determining value for taxation purposes. However, relevant data pertinent to the assessment of a specific property should always be reviewed and considered.

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.⁸

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

⁸ Section 401.16(a).

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)
2008	1	66	73	79
2007	2	39	47	54
2006	3	24	30	35
2005	4	15	19	22
2004	5	10	12	14
2003	6	6	8	9
2002	7	4	5	6
2001	8	2	3	4
2000	9	2	2	2

This table is intended for use in the mass appraisal of equipment when determining value for taxation purposes. However, relevant data pertinent to the assessment of a specific property should always be reviewed and considered.

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.⁹ 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.

⁹ 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 & FIXTURES
VALUATION FACTORS**

Year Acquired	Age	MACHINERY AND EQUIPMENT VALUATION FACTORS (Report on Schedule A-1)	FIXTURES VALUATION FACTORS (Report on Schedule B-2)
2008	1	78	92
2007	2	61	87
2006	3	46	81
2005	4	34	73
2004	5	25	66
2003	6	18	58
2002	7	12	49
2001	8	8	40
2000	9		31
1999	10		25
1998	11		20
1997	12		15
1996	13		13
1995	14		13
1994	15		13
1993	16		13
1992	17		13

Pursuant to Revenue and Taxation Code section 401.20, values determined by use of the valuation factors contained in Table 8 are rebuttably presumed to be the full cash value for semiconductor manufacturing equipment and fixtures. A county assessor or taxpayer has the right to present evidence supporting values different from those determined by use of Table 8 in order to attempt to overcome the presumption.

USE OF TABLE 8

The Semiconductor Manufacturing Equipment and Fixture Valuation Factors table was approved by the Board on October 1, 2008. These factors should be applied directly to historical costs.

The semiconductor machinery and equipment valuation factors are based on a 6-year economic life *untrended*. A minimum percent good factor of 8 percent applies to machinery and equipment.

The semiconductor fixtures valuation factors are based on a 10-year economic life *trended*. A minimum percent good factor of 10 percent applies to the fixtures. The valuation factors include the minimum percent good and the trending.

DEFINITION

Semiconductor manufacturing equipment consists of (1) manufacturing equipment used in a clean room for the fabrication of semiconductor chips; (2) test equipment used in the manufacturing and research and development environment and to test semiconductor manufacturing equipment; and (3) fixtures in place to support a semiconductor fabrication facility. This definition is not limited by the size of a semiconductor facility or the technology of the chips produced.

CLASSIFICATION—SEMICONDUCTOR MANUFACTURING EQUIPMENT AND FIXTURES

Following is a list to serve as guidance in classifying machinery and equipment and fixtures in the semiconductor industry. Machinery and equipment should be reported on Schedule A-1 of the Business Property Statement (BOE-571-L); fixtures should be reported on Schedule B-2.

Fixturization from the clean room or service bay wall or floor that is directly related to the installation of machinery and equipment should also be reported on Schedule A-1 and valued in the same manner as the machinery and equipment.

<u>Machinery and Equipment (Schedule A-1)</u>	<u>Fixtures (Schedule B-2)</u>
<i>See next page</i>	Acid Neutralization System Air Filtration System, HEPA Filters Air Handlers Air Recirculation Fans Central Utility Building (CUB) for the Process Bulk Chemicals, Storage and Delivery System Bulk Gas, Storage and Delivery Systems Chillers Clean room HVAC Support system Compressed Air Systems Deionized Water Tanks and Piping Electrical Substations Gas and Chemical Vaults Gas Monitoring System Liquid Waste, Storage and Treatment System Nitrogen and Oxygen Lines Process Cooling Tower Process Cooling Water Scrubbers (Fume Scrubbers) Sodium Hydroxide Storage Tanks Specialty Gases, Storage and Delivery System Storage Bunkers for Corrosives, Flammables, and Solvents Sulfuric Acid Storage Tanks Water Purification System

<u>Machinery and Equipment (Schedule A-1)</u>	<u>Machinery and Equipment (Cont.)</u>
Annealing Equipment	Measuring and Analytical Instrumentation
Annealing Furnace	AUGER
Asher, Dry Resist Removal	EPMA
Atmospheric Pressure Chemical Vapor Deposition (APCVD)	ESCA
Baking	Failure Analysis Equipment (E-beam, Laser, FIBS, Atomic Force)
Chemical Mechanical Planarization Equipment	IR Life-time Measurement
Post CMP Clean Tool	Film Thickness Monitoring
Wafer Marking	Liquid/Gas/Air/Dust Counter
Mark Reader	Particle Inspection
Back Grinder	Reflection Measuring
Bump Plating	Spectrophotometer
Tape Sticker/Peeler	Medium Current
Backside Etcher	Megasonic and Ultrasonic Cleaning System
Coater (Spin, Spray, Extrusion)	Metal Organic Chemical Vapor Deposition (MOCVD)
Columnated Sputtering	Oxidation Furnace
Compound Semiconductor Epitaxial Equipment Contact Aligner	Metal Organic Vapor Phase Epitaxy (MOVPE)
Developer	Molecular Beam Epitaxy (MBE)
Diffusion Furnace	Plasma Enhanced Chemical Vapor Deposition (PECVD)
Dry Residue Removal	Plasma Etching
Drying Equipment (Spin Dryer, Spin Rinse Dryer) (SRD)	Plasma Stripper
E-Beam Direct Write	Processing Equipment
EUV	Projection Aligner
Edge Bead Removal System	Projection Exposure System
Electroplating (ECD) Equipment	Proximity Aligner
Gas Etching	Rapid Thermal
Hardening System, Resist Stabilizing Equipment	Reactive Ion Etch (RIE)
High Current	Resist Development Analyzer
High Density Plasma Chemical Vapor Deposition (HDPCVD)	Resist Processing Tools for Device Production
High Energy and Plasma Immersion	Resist Stabilizing Equipment
High Pressure Jet Cleaner	SCALPEL
Holographic Mask Aligner, and Other Exposure Tools for Device Production Mask Aligner	Silicon Epitaxial Growing Equipment
IPA Dryer	Spin-On Deposition Tools
Ion Beam Etching	Spin Processor, Wafer (Photoresist) Track Step-and-Scan
Ion Beam Milling	Sputter Etching
Ion Milling	Stepping Projection Aligner
Ionized Sputtering	Supercritical Cleaning System
Laser Annealer	Surface Tension Dryer
Long Throw Sputtering	Synchrotron Radiation (SR) Aligner
Low Pressure Chemical Vapor Deposition (LPCVD)	UV Photoresist Curing
Magnetically Enhanced (RIE)	Vacuum Evaporation Equipment (Aluminum and Gold Evaporators) Wafer Brush/Scrubber
	Wafer Peripheral Exposure Equipment
	Wet Bench (Immersion, Spray, Recirculators), Sink
	Wet Etching Equipment
	Wet Spin Etcher
	X-ray Aligner
	X-Ray Stepper

TABLE 9: BIOPHARMACEUTICAL INDUSTRY EQUIPMENT & FIXTURES VALUATION FACTORS

Year Acquired	Age	SCHEDULE A			SCHEDULE B
		Machinery & Equipment (A-1)	Other Equipment (A-3)	Tools, Molds, Dies, Jigs (A-4)	Fixtures (B-2)
2008	1	85	92	89	92
2007	2	72	87	82	87
2006	3	58	81	72	81
2005	4	44	73	62	73
2004	5	32	66	52	66
2003	6	21	58	42	58
2002	7	13	48	31	48
2001	8	12	40	23	40
2000	9	12	31	16	31
1999	10	12	24	12	24
1998	11	12	18	12	18
1997	12	12	14	12	14
Prior	Prior Years	12	13	12	13

Pursuant to Revenue and Taxation Code section 401.20, values determined by use of the valuation factors contained in Table 9 are rebuttably presumed to be the full cash value for biopharmaceutical industry equipment and fixtures. A county assessor or taxpayer has the right to present evidence supporting values different from those determined by use of Table 9 in order to attempt to overcome the presumption.

USE OF TABLE 9

The valuation factor table pertaining to the assessment of specific property owned and/or used by the biopharmaceutical industry was adopted by the Board in July 2008 and became effective as of the lien date January 1, 2009. 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 12 or 13 percent applies, depending on the classification.

DEFINITION

Equipment and fixtures utilized in connection with, or in support of, research and/or manufacturing activities that use organisms, or materials derived from organisms, their cellular, subcellular, or molecular components, to discover and/or provide products for human or animal therapeutics, diagnostics, and/or vaccines.

**CLASSIFICATION—BIOPHARMACEUTICAL INDUSTRY EQUIPMENT
AND FIXTURES**

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.

**Machinery and Equipment (A-1)
Lab Equipment**

<u>General Laboratory Equipment</u>	<u>Hi-tech Analytical Instruments</u>
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 Diffractometers
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 (A-3)
Commercial Manufacturing Equipment

Air Sampler Clean Room Monitor Commercial Scale Agitator Commercial Scale Control Devices Commercial Scale Fermentation Tanks and Controls Commercial Scale Glycol System Commercial Scale Mix Tanks, Stainless Steel Commercial Scale Mixers Commercial Scale Pumps Commercial Scale Purification Vessels and Devices Commercial Scale RO Water Unit and System	Commercial Scale Stainless Steel Tanks and Vessels Custom Roller Bottle Apparatus Equipment Skids Filter Housings, Stainless Steel Floor Scale Flow Meter Piping and tubing between Production Vessels Roller Bottle Machine Capper Roller Bottle Machine Unit Roller Racks Sanitary Valves (personal property) WFI Water Still Other Commercial Scale Control Devices Other Commercial Scale Tanks, Vessels, and Devices
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Tools, Molds, Dies, Jigs (A-4)
Pilot Scale Manufacturing Equipment

Mobile Pilot Plants Pilot Scale Fermentation Control Pilot Scale Mixers Pilot Scale Pumps and Hose Apparatus Pilot Scale Purification Vessels and Devices	Skids Small Fermentors (< 500 liters) Small Scale Process Control Devices Individual components aggregated into pilot scale manufacturing equipment systems
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Fixtures (B-2)
Fixtures and Process Piping

Benches and Counters, Built-in Cabinets, Built-in Casework, Metal Casework, Wood Clean In Place Equipment Clean Room Air Ducts/Handlers Clean Room Filter Units Clean Room Fixtures, not specified Clean Room Special Floor Surfaces Cleanrooms Electric supply systems unique to process Emergency Generators (for process) Feedwater System Fiber optic communication systems for process Fume Hoods (built-in)	HVAC systems and ductwork unique to process Individual components aggregated into fixtures Piping and plumbing related to process RO, DI, WFI Water Piping Safety Stations and First Aid Cabinets Clean Room Special Wall Surfaces Steam supply unique to process Walk-in freezers and refrigerator units Wall Cases, Built-in Waste disposal equipment unique to process Water supply systems unique to process (WFI) Water, electric, and gas hook-ups to lab stations Other items meeting the definition of a fixture as specified in Property Tax Rule 122.5
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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.¹⁰

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.

¹⁰ 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.ironolutions.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

CHAPTER 8: VALUATION FACTOR STUDIES

The factors contained in this handbook section are updated for each January 1 lien date when current market data becomes available that indicate that the factor(s) should be adjusted. Interested parties may provide data to Board staff via a petition¹¹ in support of changing factors contained in this handbook.

OVERVIEW

Section 401.5 of the Revenue and Taxation Code requires that the Board issue to county assessors data relating to costs of property and other information to promote uniformity in appraisal practices and in assessed values throughout the state. In an effort to comply with section 401.5, the Board annually publishes Assessors' Handbook Section 581, *Equipment Index and Percent Good Factors* (AH 581). Currently, AH 581 contains tables of valuation factors for non-production computer equipment, semiconductor manufacturing equipment, and biopharmaceutical industry equipment and fixtures. In June 2008, the Board directed staff to develop further valuation factors for AH 581 by conducting valuation studies for various industries that petition Board staff for a study of their industry property/equipment.

The purpose of these procedures is to provide guidelines to interested parties in identifying, gathering, and verifying data to submit to Board staff for the purpose of conducting a valuation study of their tangible personal property/equipment. The goal of interested parties is to provide enough quality data to enable Board staff to develop valuation factors that the local county assessors can apply to the historical cost of property/equipment in determining the fair market value for property tax purposes. Depending on the type and scope of a study, the data and source participants will vary.

Generally, there are two types of valuation studies for ad valorem personal property tax purposes: *industry group* and *assets specific*. *Industry group* studies involve a group of assets that are deployed within a particular industry. Biopharmaceutical equipment and semiconductor manufacturing equipment are examples of industry group types. *Asset specific* studies have a very narrow scope and involve assets that are typically owned by a diverse set of property owners and can be found in many operational settings. Computers and copiers are examples of asset specific types.

The findings of a study will be determined by the analysis of market data and will not be influenced by opinions of either industry or counties. Once a study has begun and sufficient quality market data has been received by Board staff, the study will be completed, even in the event that the original petitioner decides to withdraw their petition.

¹¹ The petition and procedures for property tax valuation factor studies were adopted by the Board on September 17, 2008.

MARKET DATA

The successful outcome of a study will be completely dependent on the availability of good market data. The industry will be expected to provide verifiable market data in a sufficient quantity to be statistically representative of the property/equipment within the industry.

Market data submitted must include the following fields (see Table 1 below):

- Make
- Model name
- Model number
- Description
- Configuration
- Serial number
- Manufacture date, ship date, or acquisition date
- Price sold to end user and date of sale
- Discount price new

TABLE 1

MAKE	MODEL NAME	MODEL NUMBER	DESCRIPTION	CONFIGURATION	SERIAL NUMBER	DISCOUNT PRICE NEW DATE ¹	DISCOUNT PRICE NEW	DATE SOLD TO END USER ²	PRICE SOLD TO END USER
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¹ The decision as to what date to provide for the purpose of establishing vintage age is driven by the available data and the source of the data. If, for example, you are receiving price sold to the end user along with a full description of the asset from an industry reseller and you have received cooperation from the manufacturer, the manufacturer can provide ship dates. Another example is where you are able to obtain the used sales prices to items listed on a fixed asset listing (FAL). (When using this method, take care to avoid items on a FAL that were purchased used.) In this case, you will provide the acquisition date listed on the FAL.

² Enter the date of the related subsequent market transaction that corresponds to the price sold to the end user. Market data related to price sold to end user should be limited to a 12-month period. When your petition is approved, Board staff will provide you with the 12-month range.

If the reseller incurred refurbishing costs in readying equipment for sale to the end user, you should include a field for refurbishing costs and provide the refurbishing costs for the related market transactions.

Discount price new and price sold to end user should contain the same components (for example, installation cost, sales tax, and transportation cost). Ideally, discount price new and price sold to end user should only contain the price of the property/equipment.

CONFIDENTIALITY OF DATA

Government Code section 15619 prohibits divulgence of information obtained by Board of Equalization employees. Section 15619 provides, in part:

Any member or ex-member of the State Board of Equalization, or any agent employed by it, or the Controller, or ex-Controller, or any person employed by him or her, or any person who has at any time obtained such knowledge from any of the foregoing officers or persons shall not divulge or make known in any manner not provided by law, any of the following items of information concerning the business affairs of companies reporting to the board:

(a) Any information concerning the business affairs of any company that is gained during an examination of its books and accounts or in any other manner, and is not required by law to be reported to the State Board of Equalization.

(b) Any information, other than the assessment and the amount of taxes levied, obtained by the State Board of Equalization in accordance with law from any company other than one concerning which that information is required by law to be made public.

(c) Any particular item of information relating to the disposition of its earnings contained in the report of a quasi-public corporation that the corporation, by written communication specifying the items and presented at the time when it files its report, requests shall be treated as confidential.

Accordingly, all data obtained from industry in the course of a valuation study will be held confidential and will not be made available to competitors or counties. When Board staff provides results of their analysis of data during and at the conclusion of a study, the data will be masked and/or arrayed in a manner that will preclude identification of the source of any specific data.

INDUSTRY GROUP STUDIES

MARKET DATA FOR GROUP STUDIES

See the section *Market Data* above for an expanded discussion and required formatting parameters for market data. For an industry group type study, provide the most current FAL for the companies you listed in your petition (form BOE-401). The FAL will permit you and Board staff to identify classes of assets and to determine the distribution of investments over time. Only through this analysis can Board staff identify the classes, distribution, and volume of market data needed for your study. You should submit this item soon after your petition has been approved. The FAL should include the following fields:

- General ledger account number
- Asset number
- Description
- Serial number
- Location code
- Acquisition date
- Acquisition cost

Additionally, you will be required to provide:

- Descriptions of each general ledger account
- A schedule describing the location codes

The FAL should correspond to the general ledger. These accounting records will be subject to audit by Board staff. Full cooperation of the industry group is a condition of your study's success.

Once Board staff has analyzed your accounting records, you will be notified of the different asset classes and the amount of market data you must obtain. Board staff will provide you with specific information regarding the market data needed, which should eliminate the collection of unnecessary or redundant data.

ACCOUNTING RECORDS FOR ECONOMIC LIFING STUDY

If you are requesting that Board staff conduct an economic lifing study, you should be prepared to provide FAL's for the most current seven years for each of the companies listed in your petition. Each of the FAL's should contain:

- General ledger account number
- Asset number
- Description
- Serial number
- Location code
- Acquisition date
- Acquisition cost

Additionally, you will be required to provide:

- Descriptions of each general ledger account
- A schedule describing the location codes
- End of year (whether fiscal or calendar) general ledger balances that correspond to the FAL

ASSET SPECIFIC STUDIES

MARKET DATA FOR ASSET SPECIFIC STUDIES

See the section *Market Data* above for an expanded discussion and required formatting parameters for market data. Market data for asset specific type studies should reflect the market (according to market share). Therefore, immediately after your petition is approved, the industry representative should submit to Board staff a schedule of market share according to manufacturer for each year dating back seven years. Sources of data should be representative of the users of the property/equipment in California.

Once Board staff has analyzed the market share information, you will be notified of the amount of market data that must be submitted to Board staff.

ACCOUNTING RECORDS FOR ECONOMIC LIFING STUDY

If you are requesting that Board staff conduct an economic lifing study, you should be prepared to provide FAL's for the most current seven years from a wide variety of companies. Each of the FAL's should contain:

- General ledger account number
- Asset number
- Description
- Serial number
- Location code
- Acquisition date
- Acquisition cost

Additionally, you will be required to provide:

- Descriptions of each general ledger account
- A schedule describing the location codes
- End of year (whether fiscal or calendar) general ledger balances that correspond to the FAL

VERIFICATION OF DATA

ACCOUNTING RECORDS

Prior to submitting a FAL, industry should verify that the FAL corresponds to the general ledger amounts. After Board staff reviews the accounting records submitted, Board staff may elect to audit the accounting records. The industry participants should be fully aware of this requirement and be prepared to cooperate in a timely manner. The lack of cooperation or delays in responding

to Board staff requests can negatively impact the process and ultimately may lead to the termination of the study.

MARKET DATA

Industry should be able to verify each field in the market data by way of a source document, such as an invoice. Price sold to the end user can be obtained from industry resellers and from companies within the industry that have sold directly to an end user. In each case, the invoice of the transaction should be available for inspection by Board staff. Discount price new may prove to be the most difficult to obtain. If, for example, you are able to match used price sold to the end user to discount price new reflected on a FAL, the invoice for that item listed on the FAL should be available. Make sure that the descriptions of your matches are of such detail to reasonably conclude that both items are the same make, model, and configuration. Matching configurations is the most difficult step of this task depending upon the sophistication of the equipment. When obtaining data on the price to the end user, ensure that you obtain all of the fields outlined in Table 1 above for each line item. Failure to secure the necessary fields may render your used price to the end user invalid.

TIMELINE FOR SUBMITTING DATA

Once a petition has been accepted, the industry will be provided with a timeline for their study which will include specific times to submit accounting records and, after analysis of the accounting records, when market data must be submitted. Generally, a maximum of six months will be allowed for industry to provide sufficient, quality data in order for the study to move forward. If industry does not produce the required data timely, the study will be terminated.

PETITION

A petition, BOE Form 401, [*Petition to Conduct Property Tax Valuation Study*](#), may be downloaded from the Board's website at www.boe.ca.gov/proptaxes/proptax.htm.