

Issue Paper Number **08-011**



- Board Meeting
- Business Taxes Committee
- Customer Services and Administrative Efficiency Committee
- Legislative Committee
- Property Tax Committee
- Other

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## **Semiconductor Industry – Business Property Assessment Practices Guidelines**

### **I. Issue**

What valuation factors and trending procedures for semiconductor manufacturing equipment and fixtures should the State Board of Equalization (Board) adopt for inclusion in Assessors' Handbook Section 581, *Equipment Index and Percent Good Factors*?

### **II. Alternative 1 – Semiconductor Manufacturing Equipment Team Recommendation**

The Semiconductor Manufacturing Equipment Team recommends that the attached valuation factors and trending procedures for semiconductor manufacturing equipment and fixtures be adopted by the Board for inclusion in the 2009 revision of Assessors' Handbook Section 581, *Equipment Index and Percent Good Factors* (Attachment A).

### **III. Other Alternative(s) Considered**

None

## IV. Background

The Board co-administers the property tax in California with the county assessors. The 58 county assessors are charged with the assessment of locally assessed real and personal property for taxation purposes and resolution of appeals of property values at the local level in conjunction with county assessment appeals boards. The Board's role is advisory and does not include setting values for any locally assessed property or for resolving disputes over those assessments.

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). Among other data, AH 581 contains tables of valuation factors for non-production computer equipment, semiconductor manufacturing equipment, and biopharmaceutical industry equipment and fixtures.

The index factors published in AH 581 are generally reliable for converting a property's original cost to an estimate of reproduction cost new (RCN). Percent good factors, which are the complement of depreciation factors, are then applied to the RCN to arrive at an estimate of market value.

In December 1987, Board staff met with county assessors and industry representatives to discuss the valuation of certain semiconductor manufacturing industry assets. In the meeting, it was decided that a study of the industry was warranted to determine the accuracy of valuation methods employed in valuing the assets of the industry. After selection of an independent contractor to conduct the study, the first working meeting with the contractor was held September 12, 1988. Since the contractor was not able to complete the study prior to the 1990 lien date, the Board adopted valuation factors for semiconductor manufacturing equipment using the best data available to staff.

In 1992, the contractor completed the study. The issues were numerous and complex, and after discussions at several Board meetings, the Board adopted the study's recommended valuation factors for semiconductor manufacturing equipment. In 1994, the Board adopted updated valuation factors for semiconductor manufacturing equipment. Those factors are currently included in AH 581.

The Board was approached by industry in 2005 to review current data to validate or update the information contained in AH 581 relative to the valuation of semiconductor equipment and fixtures. Consequently:

- Budget Change Proposal 6 (approved in 2006) provided two positions on a two-year limited-term basis to create and participate on teams to conduct three studies, including one for semiconductor manufacturing equipment and fixtures, in the development of valuation factors. The Semiconductor Manufacturing Equipment Team (Team) consists of one Principal Property Appraiser and one Senior Specialist Property Auditor-Appraiser from the Board, two industry representatives, and two representatives from the California Assessors' Association.
- All members of the Team were tasked with pursuing market data for the project. The Team spent over 18 months pursuing such data. Overall, the Team was unsuccessful in providing useful market data. However, the Board Team members obtained accounting records that staff

believes is representative of the investment in semiconductor manufacturing equipment in California. Consequently, the Board Team members were successfully able to conduct a lifing study and develop the proposed valuation factors for the Team's consideration.

- On September 3, 2008, a final meeting of the Team resulted in agreement of the proposed valuation factors and trending procedures for semiconductor manufacturing equipment and fixtures contained in Attachment A.

## V. Discussion

After discussion at the June 24, 2008 Property Tax Committee meeting, the Board is committed to conducting valuation studies in the future. As part of that continuing workload, Board staff will review market data, that is supported by source documents, of used semiconductor equipment that may be made available to staff in the future. If such market data warrants, staff will recommend to the Board revised valuation factors for AH 581 for semiconductor manufacturing equipment and fixtures.

## VI. Alternative 1 – Semiconductor Manufacturing Equipment Team Recommendation

### A. Description of Alternative 1

The Semiconductor Manufacturing Equipment Team recommends that the attached valuation factors and trending procedures for semiconductor manufacturing equipment and fixtures be adopted by the Board for inclusion in the 2009 revision of Assessors' Handbook Section 581, *Equipment Index and Percent Good Factors* (Attachment A).

Currently, AH 581 contains valuation factors for semiconductor manufacturing equipment, but not for semiconductor manufacturing fixtures because there was no data available previously. The following is a comparison of the current equipment valuation factors and the proposed equipment valuation factors:

AGE	CURRENT EQUIPMENT VALUATION FACTOR	PROPOSED EQUIPMENT VALUATION FACTOR
1	80	78
2	62	61
3	47	46
4	34	34
5	24	25
6	16	18
7	10	12
8		8

**B. Pros of Alternative 1**

Adoption of Alternative 1 is reflective of the best information available at this time and will result in the majority, if not all, of the California County Assessors using the AH 581 when estimating market values for semiconductor manufacturing equipment and fixtures. This will lead to more uniform assessments for taxpayers.

**C. Cons of Alternative 1**

None

**D. Statutory or Regulatory Change for Alternative 1**

None

**E. Operational Impact of Alternative 1**

None

**F. Administrative Impact of Alternative 1**

**1. Cost Impact**

None

**2. Revenue Impact**

It is anticipated that there may be a small revenue impact since the valuation factors in Alternative 1 represent a slight drop from the current recommendation of the California Assessors' Association and current appraisal practices employed by the majority of the county assessors.

**G. Taxpayer/Customer Impact of Alternative 1**

None

**H. Critical Time Frames of Alternative 1**

The valuation factors and trending procedures discussed in this Alternative ultimately will be published in AH 581. AH 581 is generally adopted by the Board each year at its November Board meeting.

**Preparer/Reviewer Information**

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Current as of: September 12, 2008

**TABLE 8: SEMICONDUCTOR MANUFACTURING EQUIPMENT AND  
FIXTURE 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

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.

**Pursuant to Revenue and Taxation Code section 401.20, values determined by use of the valuation factors contained in Table 8 by a county assessor 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.**

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