



STATE OF CALIFORNIA

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August 9, 1995

No. 95/46

TO COUNTY ASSESSORS AND INTERESTED PARTIES:

**ADDENDUM TO LTA 95/44 COMPUTER VALUATION METHODOLOGY**

Enclosed is a summary of computer valuation methodologies provided by Richard H. Lane, Ph.D. This information is provided so that all interested parties may review it prior to the meeting on August 17, 1995 at 1:30 p.m. in Room 121, 450 "N" St., Sacramento, California.

Sincerely,

John W. Hagerty  
Deputy Director  
Property Taxes Department

JWH:kmc

Enclosures

In this paper, we attempt to present a number of different ways that the California BOE could potentially develop its 1996 computer valuation tables. The intent here is to present each methodology impartially, without advocating any particular one. For each methodology, we give a very brief summary of the fundamental calculations, together with the advantages of the methodology and, most importantly, some of the caveats that must be addressed if the methodology is to be adopted.

All of these methodologies are part of the "cost approach to value", in which the value of a used asset is appraised at its original historical cost, multiplied by a value factor (dependent on the age of the asset). The value factor should incorporate all changes in value that have occurred since the asset was purchased new--inflation, deflation, technology change, physical deterioration, functional and economic obsolescence....

The methodologies described here attempt to produce accurate value factors in different ways. Most use information from the marketplace for used computers, relying on the general principle that actual free market transactions take place at prices that incorporate all possible changes in value since original purchase.

A priori, no one methodology can be said to be superior or inferior at this time. This is because each depends on a significant data gathering effort. To a large extent, the accuracy of the results from each methodology will depend on the quality and quantity of the data that can be found to support it. Consequently, all methodologies should be maintained as possibilities until data and other questions are settled. At the conclusion of the present exercise, we hope that one or more methodologies will be clearly superior.

For its 1996 value tables, the California State Board of Equalization has decided that three tables should be developed:

- One for computer equipment with original cost up to \$25,000
- One for cost greater than \$25,000, but not exceeding \$500,000
- One for cost greater than \$500,000

To develop these tables, the methodologies presented here will have to be applied to each of these categories.

## **I. Comparison of year to year used values**

### **A. Summary of method**

- ◆ (note: The reasoning here is similar to that of the State Board for its 1995 tables)
- ◆ Estimate average loss in value during first year of service
- ◆ From blue books and/or other market observations, compute average decline in value of used equipment from year to year
- ◆ Value in later years set by multiplying prior year's value factor by average decline in price during the year

### **B. Advantages**

- ◆ Relatively simple
- ◆ Used market figures from objective sources
- ◆ Once methodology is established, value factors are easily updated each year

### **C. Caveats**

- ◆ Used equipment values available only for selected computers and configurations, not all equipment
- ◆ As yet, there is no known definitive and objective method of estimating first year loss in value

## **II. Comparison of year to year new prices**

### **A. Summary of method**

- ◆ Gather information on average changes in new street prices of equipment each year
- ◆ Estimate change in value when an asset changes from "new" to "used" (this may be independent of year)
- ◆ Year zero value (January/February of lien year) set to the ratio of "used to new" values
- ◆ Value in succeeding years set to value in prior year multiplied by change in new selling prices for the year in question.

### **B. Advantages**

- ◆ Relatively simple
- ◆ For PC's, there may be objective information readily available for new prices

### **C. Caveats**

- ◆ Many different types of computer equipment are not tracked in readily available sources

- ◆ Actual selling prices for new equipment is sensitive and also possibly unknown to manufacturers
- ◆ Selling prices may include varying warranties, support, bundled software/network services, etc.
- ◆ Once equipment is no longer sold new, it is no longer tracked in the year to year comparison of new prices. Only those models that stay on the market a very long time will be in the year to year comparison. Long-lived models typically hold their new prices better than ones that are discontinued earlier. Because of this factor, this methodology will probably overvalue computers that are no longer sold new.

### **III. Comparison of estimated new and blue book used**

#### **A. Summary of method**

- ◆ Establish actual average selling price and quantities sold for each model, each manufacturer, and each year (quarter? month?)
- ◆ Collect blue book values for same models on used market, same time periods
- ◆ Compare used values to original selling price to determine depreciation as a function of age
- ◆ Compute weighted average of depreciation at each age

#### **B. Advantages**

- ◆ Relies on real selling prices and objective market observers for data
- ◆ Weights computers by market presence

#### **C. Caveats**

- ◆ Enormous data gathering effort
- ◆ Many smaller pieces of computing equipment are not tracked by blue books
- ◆ Data requested from manufacturers is extremely sensitive

### **IV. RCNLD**

#### **A. Summary of method**

- ◆ Value estimated as "Replacement Cost New less Depreciation."
- ◆ Replacement Cost New estimated by US federal price series
- ◆ Depreciation based on lifetime, based on lifing studies
- ◆ Other adjustments (up and down) as appropriate

**B. Advantages**

- ◆ Traditional, standard California method, well known to Assessors and taxpayers
- ◆ Worked out and described in Assessor's Handbooks
- ◆ Obsolescence considered explicitly as such
- ◆ Auditable, based on real asset data
- ◆ Repeatable
- ◆ RCN source is objective and scientific
- ◆ Depreciation based on non-sensitive information
- ◆ Treats all computer equipment evenly--gives all property (CPU's, peripherals, other data processing equipment) the proper weight in final results, so applies to all property

**C. Caveats**

- ◆ Must avoid double counting of obsolescence--lifetime might end due to obsolescence rather than physical death
- ◆ Lifting studies can over-estimate lifetime, can also underestimate lifetime--must be careful with data

**V. Comparison of purchase and sale of actual computers**

**A. Summary of method**

- ◆ Depreciation rates measured by actual percentage decline in value for specific assets that were disposed of with proceeds
- ◆ All known sales of used equipment grouped by age at disposition
- ◆ Percent good set to total used proceeds divided by total new cost for same assets

**B. Advantages**

- ◆ Same assets compared new versus used--true depreciation is measured
- ◆ Considers all sold equipment, regardless of type, with proper weight statistically
- ◆ Accommodates data from all industries (*i.e.*, all buyers and eventual sellers of computers), not just manufacturers or high-tech users.
- ◆ Data non-sensitive, contained in fixed asset records of all corporate computer users

C. *Caveats*

- ◆ Some adjustments may be necessary to sales data (e.g., if sales are not to end users)
- ◆ Unsaleable equipment (i.e., with zero value) not factored into results--if we cannot discern how often this happens at each age, this method would likely overvalue computers.
- ◆ Data from each source probably thin--requires collecting data from many sources
- ◆ Probably does not consider the experience of residential, educational, or governmental users

VI. ***Mixed approach***

A. *Summary of method*

- ◆ For very large computers, do explicit appraisals, or require taxpayers to declare actual cash value based on a professional appraisal
- ◆ For smaller computers, rely on any of the other mass appraisal methods

B. *Advantages*

- ◆ Puts additional attention specifically on those assets where the dollar under- or over-appraisal may be greatest
- ◆ Allows for consideration of contemporaneous market comparables for larger computers
- ◆ Smaller assets obviously appraised as well as in other approaches

C. *Caveats*

- ◆ Would have to develop new standards for both taxpayers and assessors for appraising larger computers
- ◆ Same caveats as for other methods for smaller computers

VII. ***Data and analysis of other jurisdictions***

A. *Summary of method*

- ◆ Gather the value factor schedules for other states and jurisdictions
- ◆ Understand the basis for each schedule
- ◆ Where a schedule are objective and data-based, consider the schedule as a valid indicator of value

**B. Advantages**

- ◆ Leverages the work of many other analysts and a great deal of other data
- ◆ Provides a force for equalization of valuations across the nation
- ◆ Other states do not have a "Proposition 13", and revenue implications are less of an issue

**C. Caveats**

- ◆ Revenue implications still exist in some jurisdictions
- ◆ Many schedules are out of date
- ◆ Some schedules are politically driven
- ◆ Some schedules explicitly include incentives for industry to locate in the jurisdiction