



Designation: **E2453 – 05 E2453 – 13**

Standard Practice for Determining the Life-Cycle Cost of Ownership of Personal Property¹

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INTRODUCTION

Historically, the financial and property management communities have considered the “cost” of an item or group of items to be the acquisition value of the item(s), that is, the value/cost of an item is generally based upon the amount of money paid for the item, irrespective of the many and varied costs associated with the full life cycle. ~~As detailed in Practice E2219, given unique circumstances, there may be more appropriate models than the historical model for valuing property.~~ However, for the purpose of this practice on life-cycle costing (LCC), one should consider that in addition to the initial procurement costs, there are myriad costs required to support, maintain, operate, and dispose of the item(s). This practice on LCC provides an accepted methodology for calculating and summing those costs and provides a true total cost of ~~ownership~~ ownership that helps management make more informed and better acquisitions decisions.

1. Scope

1.1 This practice covers the establishment of a process consensus model for determining the life-cycle cost (LCC) of personal property assets owned or used by an entity.

1.1.1 For businesses, these personal property assets are required to achieve financial returns from producing and selling goods or services, or both.

1.1.2 For institutions and agencies, these personal property assets are required to accomplish their primary mission.

1.2 Real and personal property assets may include capital (fixed) assets and movable, durable assets including: customer-supplied assets, rental/leased assets, contract/project direct-purchased assets, or expense items.

1.3 Asset service lives can be divided into ~~four~~ three distinct stages, each with several separate yet interrelated substages: ~~budgetary/planning~~, acquisition, utilization, and disposition. These primary stages are not intended to be all encompassing, but are offered as the basis for establishing LCC.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

[E2135 Terminology for Property and Asset Management](#)

[E2219E2279 Practice for Valuation and Management of Moveable, Durable Property](#) [Establishing the Guiding Principles of Property Management](#) (Withdrawn 2009)

3. Terminology

3.1 *Definitions:*

¹ This practice is under the jurisdiction of ASTM Committee [E53](#) on ~~Property Asset Management Systems~~ and is the direct responsibility of Subcommittee [E53.03](#) on Financial Management.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.1.1 *calibration*, *n*—act of standardizing or determining the deviation from a standard so as to ascertain the proper correction factors.

3.1.2 *life-cycle cost (LCC)*, *n*—sum of all known material costs associated with an item or group of items and these costs include not only the acquisition value, but also all activities related to an item from acquisition through utilization and disposition. Sometimes referred to as TCO (see 3.1.6).

3.1.3 *personal property*, *n*—tangible property other than ~~land~~³; in law, the tangible, movable property of an individual, exclusive of land and including items such as automotive vehicles, boats, and money.

³ Definition from *Encarta World English Dictionary* (North American Edition), Microsoft Corp., 2004.

3.1.3.1 Discussion—

Software (~~tangible intellectual~~ intellectual property) is considered personal property.

3.1.4 *preventative maintenance*, *n*—regularly scheduled periodic maintenance activities (~~within a year~~) on selected equipment that typically includes inspection, lubrication, and minor adjustment.

3.1.5 *property*, *n*—something or a number of things in which one has the rights and interests subject to ownership including both tangible and intangible property (see Terminology E2135).

3.1.5.1 Discussion—

For the purposes of this practice, property includes, but is not limited to, capital (fixed) assets, customer-supplied assets, rental/leased assets, contract/project direct-purchased assets, or expense items. Generally, property does not include finished goods, products, or services marketed or sold or intangible property (such as intellectual property, patents, and so forth).

3.1.6 *total cost of ownership (TCO)*, *n*—analogous to LCC; for clarity and consistency, this practice will use LCC exclusively.

4. Summary of Practice

4.1 ~~This For decision making purposes this practice provides for complete accountability and financial control of personal property by separating the fourthree major life-cycle stages into more comprehensive substages and then associating those stages and substages with the effort and costs.~~

4.2 Entities adhering to this practice will establish a demonstrable and consistent methodology to ascertain the LCC for individual assets or groups of assets. Elements of the methodology will consider, at a minimum, those factors described in this practice.

4.3 The costs, now identified, can be tracked and analyzed, leading to a more comprehensive understanding of how assets can be more effectively and efficiently used, especially from a cost standpoint.

5. Significance and Use

5.1 For agencies and institutions, measuring and managing the LCC of ownership of property may directly result in improved accountability, in the form of cost savings, increased asset utilization, extended asset life, and increased mission effectiveness.

5.2 For companies, measuring and managing the LCC of ownership of property may directly result in cost savings, increased asset utilization, and, therefore, improved profit margins.

5.3 Including LCC in the three stages is consistent with Practice E2279 under the reporting principle.

6. Associated Costs

6.1 Associated costs can be broken down into ~~fourthree~~ distinct stages:

~~6.1.1 Budgetary/Planning—Concept, feasibility studies, funding, lease/buy, make/buy, and so forth;~~

~~6.1.1 Acquisition—Site Budgetary/planning—concept, feasibility, studies, funding, lease/buy, make/buy, and so forth and site acquisition, construction, design, purchase, receipt, and so forth;~~

~~6.1.2 Utilization—Utilities; Skills, training required and knowledge of the user, utilities; recurring and preventive maintenance; rehabilitation/overhaul; calibration; environmental, health, and safety (EHS) compliance; American with Disabilities Act (ADA) compliance; and so forth; and~~

~~6.1.3 Disposition—Identification of idle or excess items or both, disposition determinations, actual disposal costs, and so forth.~~

6.2 ~~Assets—The fourthree major stages in the life of an asset or group of assets are further detailed (this is not intended to be an all-inclusive-all-inclusive listing):~~

~~6.2.1 Budgetary/Planning: Acquisition:~~