

Australian/New Zealand Standard™

**Life cycle costing—
An application guide**

AS/NZS 4536:1999

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee OB/11, Life Cycle Costing.

The objective of this Standard is to establish a balanced set of guidelines for use throughout Australia by the private and public sector for life cycle costing which incorporates due consideration of product durability and reliability.

In preparing this Standard the Committee considered SAE ARP 4293—1992, *Aerospace Recommended Practice—Life Cycle Cost—Techniques and Applications*, ASTM E917—94, *Standard Practice for Measuring Life-Cycle Costs of Buildings, Building Systems* and IEC 300-3-3:1996, *Dependability management, Part 3: Application guide — Section 3: Life cycle costing*. It was decided by the Committee that there was no ISO document available with sufficient detail to be used as an Australian template; however, the combination of ideas from, in particular, the IEC and SAE documents were useful in providing an insight into life cycle costing.

This Standard simplifies the materials presented in the international reference Standards and focuses on identifying the most significant relationships between the different cost elements comprising the life cycle cost of a product.

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FOREWORD

Life cycle costing is a process to determine the sum of all expenses associated with a product or project, including acquisition, installation, operation, maintenance, refurbishment, discarding, and disposal costs. This Standard addresses the life cycle costing component of the economic evaluation. It also addresses some concepts of economic evaluation.

An economic evaluation involves analyzing and comparing product options at any stage of their development, with participation from all stakeholders. The aim of an economic evaluation is to determine the best option for a product to satisfy an identified need. It has as its philosophy the consideration of all effort (generally reduced to dollar values) required to satisfy that need.

In practice, decision making based on the life cycle cost (LCC) of a product often involves a combination of both quantitative and qualitative assessments. The quantitative results provide a baseline reference, but many important factors relevant to a decision may not be quantifiable in terms of costs. Value judgements based on experience are often used to account for such factors in the decision-making process. Such value judgements are generally qualitative. The qualitative assessments provide reinforcement for further support of the recommendations and decisions.

LCC and economic evaluation have the greatest value when applied early in the conceptual or development phase of a product, to optimize the basic design approach. However, they should also be used during the subsequent phases of the product life, to optimize other product decisions and facilitate efficient allocation of resources.

Life cycle costing may be applicable when analyzing the consequences and magnitudes of some risks, as well as when evaluating risk treatment options (see AS/NZS 4360).

Another type of economic evaluation is a value management study, and life cycle costing may also be applicable during the information, analysis and judgement phases (see AS/NZS 4183).

Other life cycle analyses include aspects other than money, finance or economic considerations. AS/NZS ISO 14040, provides a technique for assessing the environmental aspects and potential impacts associated with a product. These environmental aspects and potential impacts may then need to be costed as part of a life cycle costing analysis.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard Life cycle costing—An application guide

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard details the process of life cycle costing and is intended for use by both customers (users) and suppliers of products. Following the process will give a dollar value representing the life cycle cost (LCC) of a product to satisfy an identified need, together with supporting and qualifying documentation.

This Standard specifically excludes consideration of revenues. LCC includes acquisition ownership and disposal costs. Where products being compared give rise to different potential revenues these must be considered in the broader evaluation process. LCC is one input to the evaluation process.

Definitions and discussion of the various components of life cycle costing are included. The Standard highlights many of the contributing elements for forming a life cycle costing model. It also provides definitions and descriptions to assist the development of a model along with the types of outputs that may suit a desired interpretation.

Worked examples of life cycle costing exercises are included with sample evaluation and presentation pro formas.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

3960 Guide to reliability and maintainability program management

AS/NZS

4183 Value management

4360 Risk management

AS/NZS ISO

14040 Environmental management—Life cycle assessment—Principles and framework

1.3 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.3.1 Acquisition cost—the initial cost to gain possession of the completed product. Includes any research, development, testing and evaluation costs, as well as the investment and installation cost.

1.3.2 Base date—the date to which real costs refer, and to which discounted costs refer.

1.3.3 Cost driver—cost element which has a major effect on the LCC.

1.3.4 Cost element—an aspect of the product to be modelled. A cost element is generated from a collection of variables, rates, factors and constants expressed in money terms. The number and choice of cost elements depends on the purpose of the LCC analysis.

1.3.5 Dependability—the ability of the product to perform over its life as the user expects.



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