

Total Ownership Costs

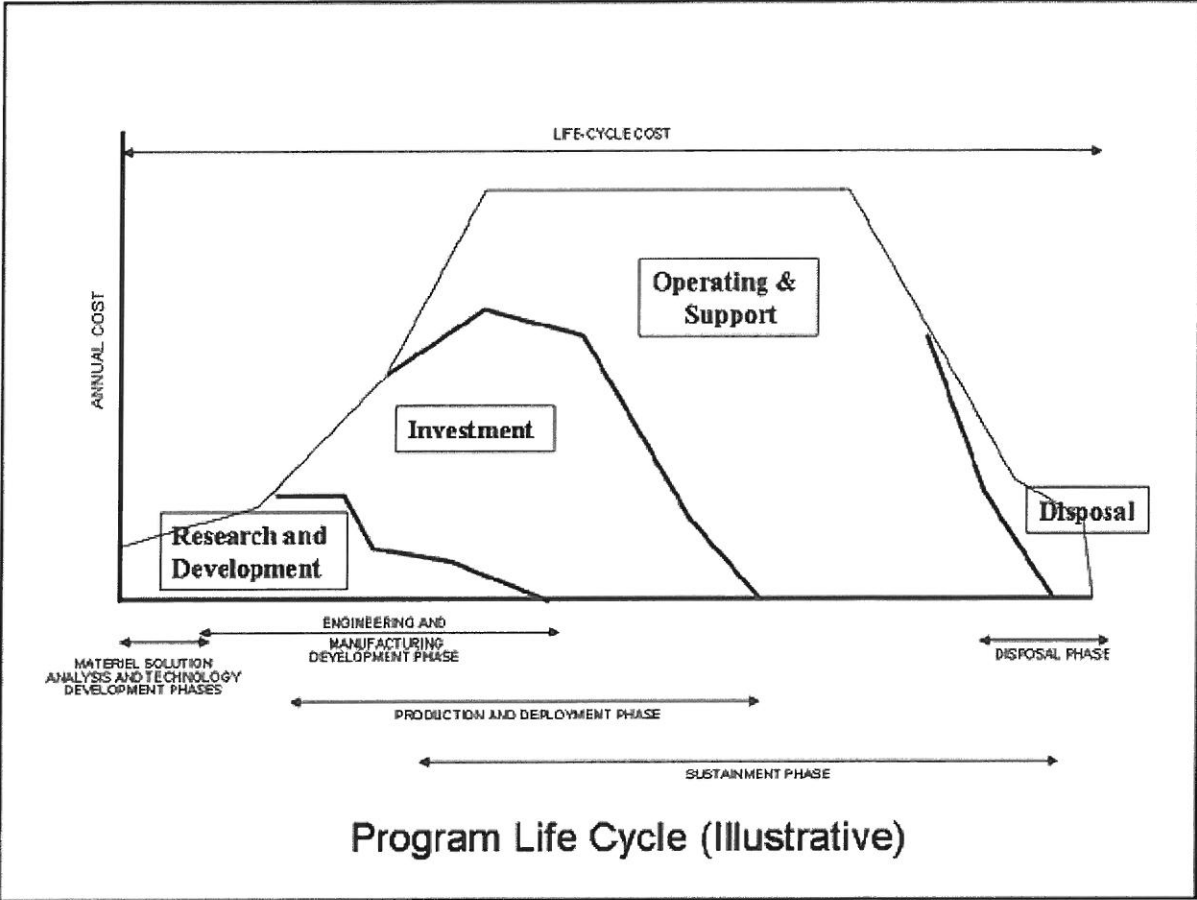
Total ownership cost includes the elements of a program's life-cycle cost, as well as other related infrastructure or business processes costs not necessarily attributed to the program in the context of the defense acquisition system. Infrastructure is used here in the broadest possible sense, and consists of all military department and defense agency activities that sustain the military forces assigned to the combatant and component commanders. Major categories of infrastructure are support to equipment (acquisition and central logistics activities), support to military personnel (non-unit central ["school-house"] training, personnel administration and benefits, and medical care), and support to military bases (installations and communications/information infrastructure).

In general, traditional life-cycle cost estimates are often adequate in scope to support the review and oversight of cost estimates made as part of the acquisition system. However, in special cases, depending on the issue at hand, the broader perspective of total ownership cost may be more appropriate than the life-cycle cost perspective, which may be too narrow to deal with the particular context. As discussed previously, for a defense acquisition program, life-cycle costs include not only the direct costs of the program, but also include certain indirect costs that would be logically attributed to the program. In a typical life-cycle cost estimate, however, the estimated indirect costs would include only the costs of infrastructure support specific to the program's military manpower (primarily medical support and system-specific training) and the program's associated installations or facilities (primarily base operating support and facilities sustainment, restoration and modernization).

Many other important support or infrastructure activities (such as recruiting and accession training of new personnel, individual training other than system-specific training, environmental and safety compliance, contract oversight support from the Defense Contract Management Agency and the Defense Contract Audit Agency, and most management headquarters functions) are normally not considered in the scope of a traditional acquisition program life-cycle cost estimate. In addition, important central (i.e., wholesale) logistics infrastructure activities such as supply chain management are implicitly incorporated in a traditional life-cycle cost estimate, but their costs are somewhat hidden (because these costs are reflected in the surcharges associated with working capital fund arrangements and are not explicitly identified). However, there could easily be cases where explicit consideration of such infrastructure activities would be important and would need to be recognized in a cost estimate or analysis. Examples of such cases are cost analyses tied to studies of alternative system support concepts and strategies; reengineering of business practices or operations; environment, safety, and occupational health considerations; or competitive sourcing of major infrastructure activities. In these cases, the traditional life-cycle cost structure may not be adequate to analyze the issue at hand, and the broader total ownership cost perspective would be more appropriate. For such instances, the typical life-cycle cost tools and data sources would need to be augmented with other tools and data sources more suitable to the particular issue being addressed.

One special case of where traditional life-cycle cost models and data sources need to be augmented concerns the inclusion of the fully burdened cost of delivered energy in trade-off analyses for certain tactical systems.

Source – Defense Acquisition University Guidebook



Life Cycle Costs Specific to Vessel Hull Construction

Vessel operations conducted in commercial/military/law enforcement operating environments are significantly more rigorous than typical recreational boating conditions. Operation in heavy seas is compulsory in most situations and can have undesirable effects on hull structures. Hull construction material is a significant factor when attempting to compute life cycle costs, crew safety, mission effectiveness, and vessel recapitalization costs.

- **Fiberglass**

Pros - The use of fiberglass and other similar composite materials are well suited for recreational boating and docile operating conditions. They are lightweight, low cost, and can be repaired relatively easily with properly trained technicians. They also offer a wide range of colors that can appeal to a broad customer base.

Cons – The use of fiberglass materials in commercial/military/law enforcement in hull and deck construction typically does not provide adequate strength during operation in heavy sea states for prolonged periods of time. The effect of persistent operation in this type of operating condition can result in cracked stringer, bulkhead, decking, hull, and transoms.

The effects of prolonged operations in harsh operating environment make fiberglass or other composite materials are significant and minimize the vessels' candidacy to enter into any service life extension program (SLEP). Refurbishment costs consistently exceed the 50% procurement cost threshold.

- **Aluminum / Steel**

Pros - The use of aluminum or steel construction materials generally provide a considerable advantage with respect to tolerance to heavy sea state operating conditions. The additional strength provides a greater ability to withstand unintentional impact with objects. Collision tolerance is considerably higher when compared to fiberglass or other composite construction material.

CONS – Initial procurement cost can be higher. The availability of skilled welders can be limited in some geographic areas. When compared to fiberglass or other composite material, additional vessel weight [may] result in reduced top end speeds.

15 - 20 Year Total Life Cycle & Ownership Costs

40' Interceptor / 4 Engines / Full Electronics (Radar / Navigation / UHF, VHF, FM, HF Comms)

FIBERGLASS CONSTRUCTION

Expected service life - 6 Years		Annual	Lifecycle
Acquisition costs		\$500,000	\$500,000
Annual operating hours		1,200	7,200
Hourly operating costs (maintenance only)	\$54	\$64,800	\$388,800
Unscheduled equipment repairs (annually)		\$7,000	\$42,000
Initial Life Cycle Costs		\$73,000	\$938,000
Service Life Extension Program (SLEP) - N/A - Exceeds 50% acquisition costs		n/a	n/a
Total Costs of Ownership - 18 Year Life Cycle (3 procurements - every six years)			\$2,814,000

ALUMINUM CONSTRUCTION

Expected service life - 10 Years		Annual	Lifecycle
Acquisition costs		\$750,000	\$750,000
Annual operating hours		1,200	12,000
Hourly operating costs (maintenance only)	\$43	\$51,600	\$516,000
Unscheduled equipment repairs (annually)		\$5,000	\$30,000
Total Cost of Ownership		\$57,800	\$1,308,000

Service Life Extension (SLEP) / Refurbishment @ 10 year interval

Initial Life Cycle Costs - 10 years			\$1,308,000
Engines (4 four)			\$100,000
Electronics (full replacement)			\$40,000
Hull refurbishment			\$10,000
Total Cost of Ownership - 20 Year Life Cycle w/SLEP			\$1,458,000

Fiberglass Total Cost of Ownership (18 years)			\$2,814,000
Aluminum Total Cost of Ownership (20 years)			\$1,458,000
Total Cost Savings Per Vessel (20 years)			\$1,356,000

50 Vessel Fleet Total Costs of Ownership Cost Savings (20 years)			\$67,800,000
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