AssetWORKS

QUICK GUIDE

How to Use Life Cycle Cost Analysis

to Optimize Asset Management

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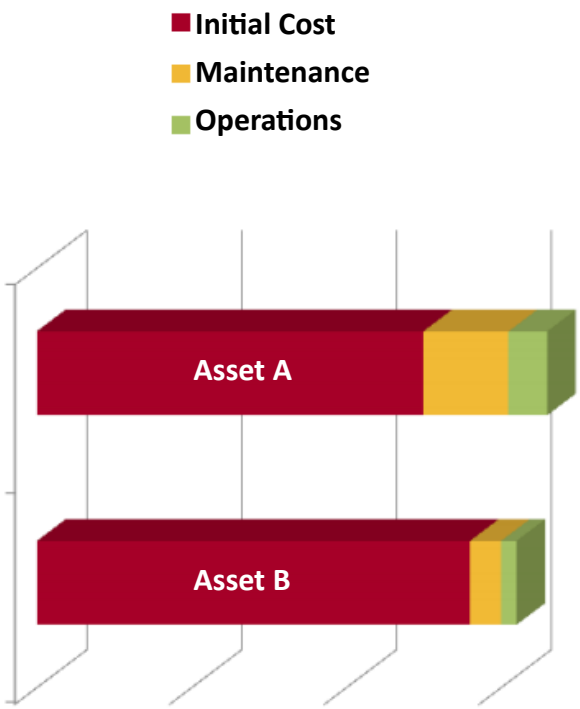
Life Cycle Analysis (LCA) can help fleet managers measure the long-term economic sustainability of their company's assets. Calculating the total cost of ownership over the life of an asset not only improves a company's bottom line, but reveals the most sensible option for fleet managers when faced with the decision to hold onto or sell an asset. This minimizes the cost of investment and maximizes the profitability an asset will return.

This Quick Guide will:

- Discuss various ways in which LCA can positively impact your fleet
- Provide several reasons why this is an important measurement for fleet managers to consider
- Examine how to conduct and interpret LCA to optimize asset contribution
- Detail how to obtain the data and information required for LCA

How to Save Money with Life Cycle Cost Analysis

Since, in most cases, capital resources are scarce, fleet managers can use LCA to examine the best ways to use their budget. LCA can help fleet managers to understand how much an asset **really** costs to own and operate. Rather than focusing on the purchase price, LCA serves as a more long-term, exhaustive measurement of economic viability over each stage of an asset's life cycle.



The acquisition of an asset is only part of the total cost of ownership to take into account when weighing benefit cost vs. 'do nothing' scenarios. Depreciation, interest, maintenance, repairs, fuel and downtime are examples of life cycle costs that will have an impact on an asset's net value to an organization.

LCA gives fleet managers a method to measure how much a vehicle or equipment costs through its full life cycle by factoring all of these additional costs and reveals the optimum replacement point for fleet managers to minimize investment, maximize profitability, and limit an asset's total cost of ownership.

Other Benefits of Life Cycle Cost Analysis

Aside from saving money and maximizing profitability for an organization, the implementation of LCA provides other benefits to an organization.

Corporate Policy Evaluation

LCA serves as a tool to review the impact of corporate policy decisions on an asset's life cycle. For example, LCA can weigh the upfront cost of implementing an alternative fuel in a vehicle vs. the fuel savings over the life cycle of the vehicle.

Regulatory Compliance

Regulations such as GASB34 and MAP-21 directly affect the way in which fleets may be managed in the future. Utilizing LCA helps fleet managers prepare accordingly, as regulations often require specific reporting and analysis for compliance.

Comprehensive Asset Management

Asset management is evolving from a more narrow maintenance management approach to a broader and more exhaustive asset management approach. Instead of managing only operating and maintenance expenses, there is an expanded emphasis on replacement, procurement and remarketing strategies to minimize life cycle costs and maximize salvage value.

Regulations and Standards

GASB34

Requires state and local government to begin reporting all financial transactions, including the value of capital assets in their annual financial reports on an accrual accounting basis.

MAP-21

Each state is required to develop a risk-based asset management plan for the National Highway System (NHS) to improve or preserve the condition of the assets and the performance of the system.

State of Good Repair

Designed to make sure the nation's bus and rail systems, including all infrastructure, are maintained properly for safety and efficiency.

ISO 55000 and PAS-55

Emerging standards aimed to make industry more efficient as well as break down barriers to international trade.

How to Access Data for LCA

1. Maintenance and Repairs

Information on costs related to parts and labor can be accessed through annual maintenance reports, labor reports and downtime reports from your asset maintenance system or asset service provider. Only the costs related to normal wear and tear repairs, component failure, refurbishment and routine maintenance should be included. Costs linked to accidents, physical damage, misuse, and user modifications are excluded.

2. Downtime

The reliability and time required to repair and maintain a asset changes as assets age and can influence an asset's optional life cycle. Maintenance systems can provide data on the frequency of breakdowns and the out-of-service duration.

3. Fuel

An automated fuel management system and interfaces with commercial fuel card providers are the best sources of fuel consumption and cost data. The fuel transaction data captured by these systems can provide the quantity of fuel consumed over time and distance, as well as historic costs.

How to Access Data for LCA

4. Depreciation

The ongoing capital expense associated with an asset is critical to determining its life cycle. Capital or expense-based deprecation statistics are offered through capital journals or via capital asset management tools. These can provide purchase price and depreciation terms which, along with expected resale value, can determine the ongoing cost of ownership.

5. Resale Value

An asset's market worth can be estimated by using industry references such as Kelly Blue Book (KBB) and Black Book, or by sampling salvage and sale records. Alternatively, salvage can be calculated from the purchase price, estimated depreciation salvage value, depreciation term and method.

6. Usage

Automated fuel systems, GPS/AVL systems and manual meter entry are all methods for collecting usage. Usage can be measure as time (hours of operation), distance (miles/kilometers), or as a count. Usage data is correlated with other costs to help calculate use-based life cycle parameters.

Determining Optimal Replacement

In order to replace assets at an optimum economic end of life, you can calculate the cost per year of owning and operating an asset over its entire lifespan using a widely accepted methodology called Mean Equivalent Annual Cost (MEAC). MEAC averages the varying capital and operating costs for different life spans of an asset to identify which life span has the least annual cost and represents the optimal replacement point.

EAC is calculated using the following formula:

EAC = NPV/At,r

NPV = net present value

A = present value of an annuity factor

t = time

r = interest rate

To calculate the MEAC, for each life span interval (time or distance) the total capital and operating costs are added together and the Equivalent Annual Cost (EAC), or the Net Present Value (NPV) of an annuity is calculated.

The MEAC cost calculation uses the cumulative costs of ownership and operation and an annual equivalency factor to determine the average annual cost for an asset with that life span. The average annual cost for each life span is plotted on a graph and presented in a table. The life span with the lowest average annual cost is considered the optimal life span and the recommended replacement point. Replacing an asset before or after that recommended replacement would result in higher costs.

LCA Challenges

While utilizing LCA can be an effective cost-saving tool for your organization, there are several challenges that you must work through in order to ensure accurate analysis.

Generating asset cost profiles

A complete cradle-to-grave history must be available for enough assets to calculate life cycle. These cost profiles can also be built from scratch, but historic data is needed to estimate mean cost by time and usage. Lastly, outliers such as inflated cost repairs and spare units can skew this data.

Inflation impacts

Consistent increase in price levels requires that historic costs and expenses be calculated in constant year dollars.

Data quality and capture

Raw data alone can sometimes be misleading, as this does not account for nuances and specifics that should be factored into the data. Downtime and all capital costs need to be identified. The data quality is also contingent upon labor rates and salvage history.

AssetWorks

Capital Asset Management (CAM) Solution

AssetWorks CAM is a comprehensive asset life cycle-based management system designed to help asset managers find ways to minimize capital expenditures and operating expenses by maximizing the useful life of an asset.

CAM compiles the maintenance, disposal and replacements costs of an asset and automates the calculation of an asset's full life cycle costs. CAM allows asset managers to select the right assets at the right price, identify annual asset costs to pinpoint optimal replacement times, and maximize asset disposal. CAM also provides support with fundamental asset management tasks like procurement and remarketing.

CAM can be seamlessly integrated with all fleet and asset maintenance software solutions, including AssetWorks FleetFocus Fleet Management Solution.

For more information on how AssetWorks CAM can manage the life cycles of your assets and save your fleet money, click here**.**

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