

## Total Cost of Ownership: Maintenance of Essential Data

June 1, 2023 | Session Overview

### Speakers

Theodore J. Weidner, PhD, PE, RA, NCARB, DBIA, CEFP, Professor of Engineering Practice, Purdue University

Emily Herndon, Senior Consultant, Federal Asset Management, Woolpert Strategic Consulting

### Total Cost of Ownership – Maintenance of Essential Data Overview

The total cost of ownership (TCO) is an accepted approach to gather all costs associated with ownership of a facility over its lifecycle. Inputs to TCO are drawn from several sources and require transparency and collaboration. However, much of these inputs are forecasts, which affects TCO by the accuracy of the input data as well as changes to the input data over time.

The National Institute of Building Sciences hosted this webinar, which was sponsored by the Facility Management and Operations Council.

### Why Use Total Cost of Ownership

Subject matter experts Theodore J. Weidner, PhD, PE, RA, NCARB, DBIA, CEFP, Professor of Engineering Practice, Purdue University, and Emily Herndon, Senior Consultant, Federal Asset Management, Woolpert Strategic Consulting, discussed how TCO creates awareness of costs and commitments.

#### TCO also:

- Guides planning for future costs
- Allows comparison of improvement/renewal costs

- Demonstrates ROI (return on investment)
- Tracks capital construction and renovation decisions
- Documents capital construction value

#### TCO Framework Inputs

- Initial Asset Cost (Ca): Planning and programming, acquisition design, construction/site development commissioning
- Operations and Maintenance Cost (Cb): Lease or rental, maintenance, operations, overhead and administration
- Utilities Cost (Cc): Annual utility costs/expenditures
- Renewal Cost (Cd): Replacement, programmatic upgrades, improvements/enhancements
- End-of-Useful/Functional Life Cost (Ce): Sale/adaptive reuse, re-sale value/salvage value, removal, site restoration/remediation, deconstruction/recycling

#### The TCO process can begin at any stage, including:

- Planning – identify or manage a budget
- Design – make value decisions
- Post-acquisition – analyze commitments and make keep/remodel/ dispose decisions
- Financial – planning for future budgets and cost allocation

## The Importance Of TCO To Facility Management

The maintenance strategy at your facility ultimately makes up your maintenance cost.

Facility management represents three parts of the TCO equation: Cb, Cc, and Cd. This number should be used in facility management for developing a target cost that shows progress toward efficiency, a cost that represents industry best practices, and/or to represent the actual present cost of ownership.

This number will be used for three primary reasons: to develop a target cost that will show progress towards efficiency; to develop a cost that represents industry best practices; and to represent the actual cost of ownership today.

### Calculating Costs

Things to consider include your agency or organization's strategic plan, the agency or organization's investment strategy, and the strategic asset management plan, as it may have an influence on how you operate and maintain a facility. Also consider the mission of your facility or facilities, (mission criticality and EOP will affect your maintenance strategy) and expected level of performance.

The conditions of your asset portfolio and asset data, component renewal schedules, and PM/CM ratio also should be considered.

### Existing Known Costs

- Utilities
- Cleaning/custodial
- Groundskeeping
- Waste removal
- Regulatory compliance
- Technology
- Administration
- Supplies
- Training equipment rental
- Vehicles
- Salaries and personnel

## Tools & Resources

- Computerized maintenance management system (CMMS)
- Analytics dashboards/reporting
- Energy management software and utility bills
- Contract values
- Historical data
- NIST Building Life Cycle Cost (BLCC)
- Program Handbook 135: FEMP Life Cycle Costing Manual

With the right data, tools and processes in place, your organization can make data-driven decisions to calculate and manage TCO.

## Keepings Costs Current

As with everything, time changes the cost of operating and maintaining a facility. Correspondingly, the total cost of ownership changes over time. The total cost of ownership should be reviewed periodically based on changes in costs, predicted versus actual. The owner can decide how often TCO should be recalculated — annually, every five years, or when an important decision about the facility is pending. Keeping all facility cost information in an organized fashion, knowing where in the organization the correct information is maintained, is essential to be able to respond accurately when needed.