

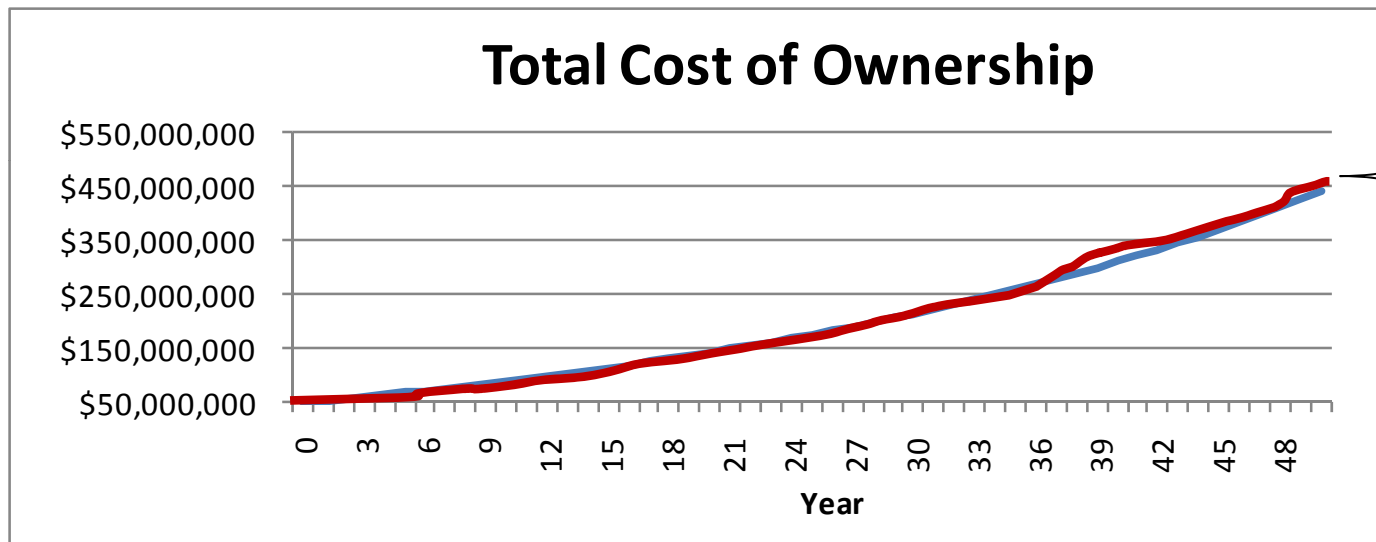


Maximizing Building Life Cycle to Get the Most Out of Your Facilities

Christopher P. Hodges, P.E., CFM, LEED-AP, IFMA Fellow
Facility Engineering Associates

The Financial Case for Facilities

Corporate Headquarters Model



This represents the growth in total cost of ownership over 50 years

- **Mid-Rise, 400,000 square feet**
- **Design & Construction Costs (CRV): \$47,600,000***
- **Capital Renewal: 2% of CRV****
- **O&M Budget \$6.30/sf*****
- **Inflation: 3%**

* RS Means 2009 Square Foot Costs

** National Research Council, 1990. *Committing to the Cost of Ownership: Maintenance & Repair of Public Buildings*

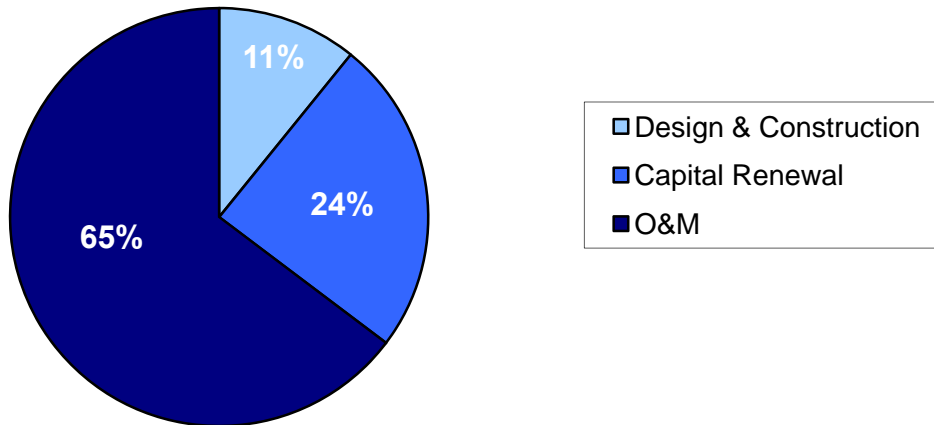
*** IFMA Benchmarks #32 Headquarters Average

The Financial Case for Facilities

Total Cost of Ownership
In Terms of Total Dollars . . .



Total Cost of Ownership



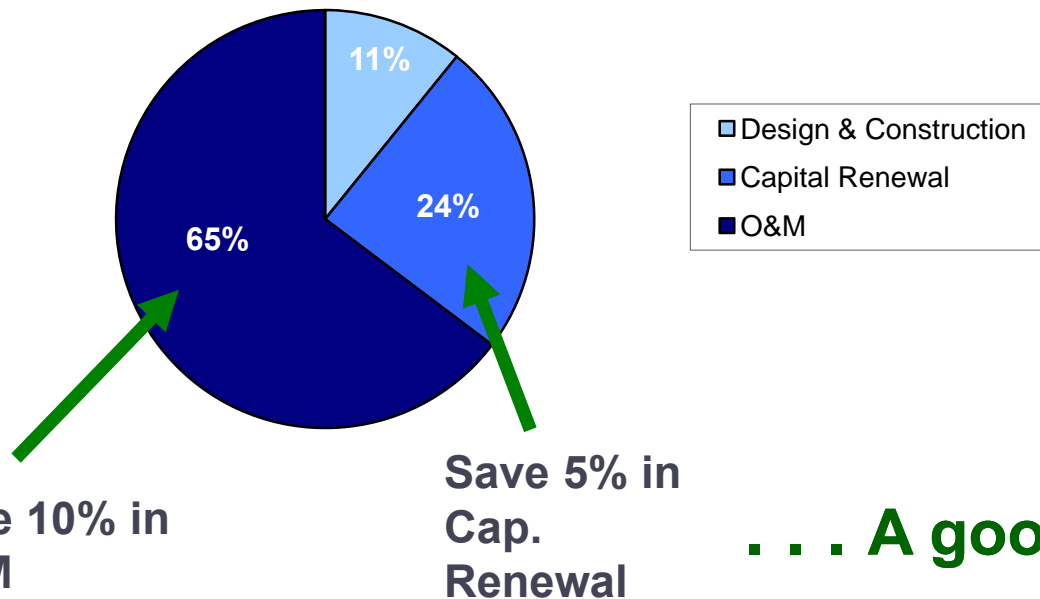
D&C: \$47M
CR: \$107M
O&M: \$284M
Total: \$438M

The Financial Case for Facilities

Total Cost of Ownership

Savings in O&M and Capital Renewal . . .

Total Cost of Ownership



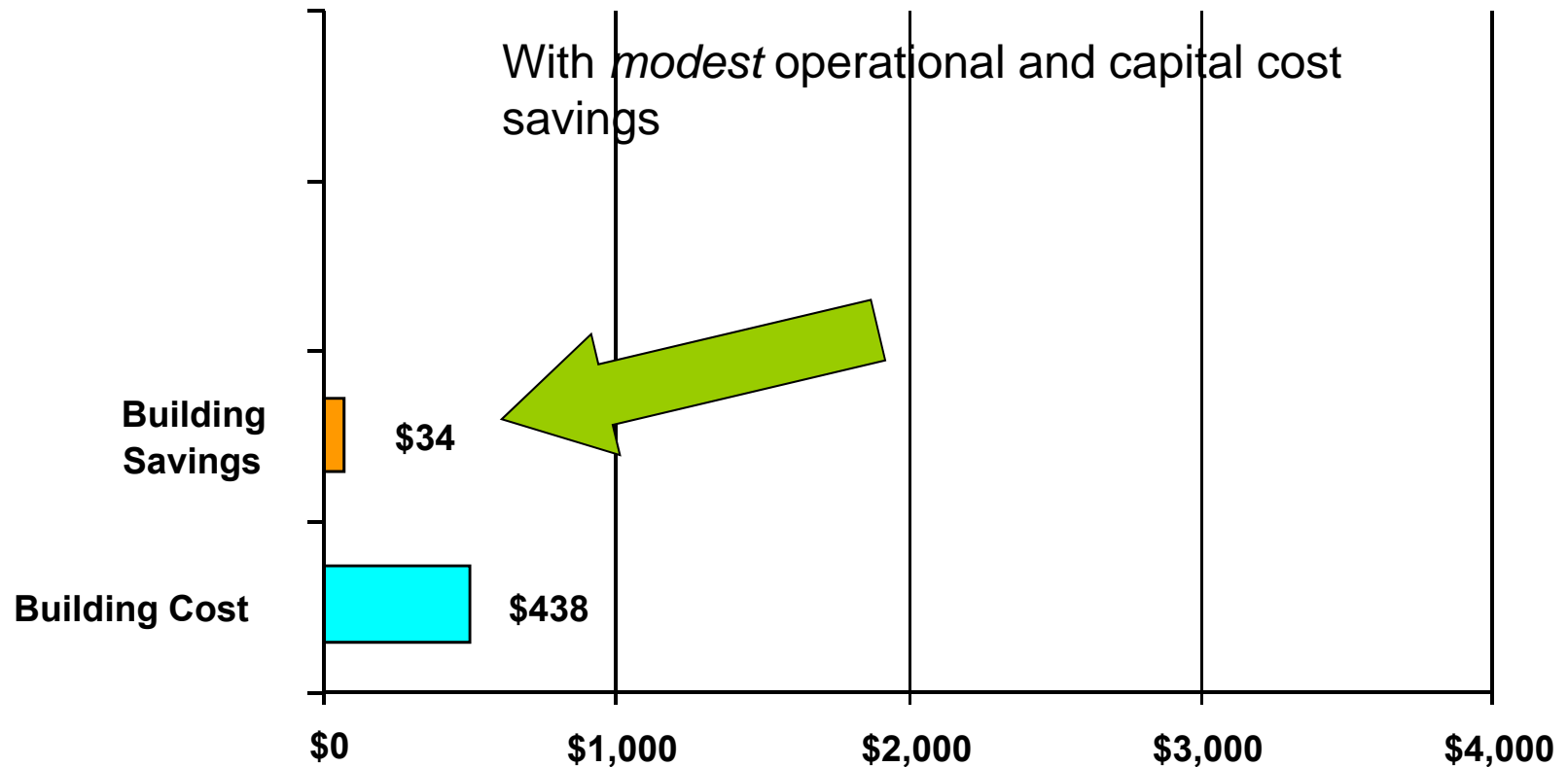
Savings

D&C:	\$47M		<u>Total \$</u>
CR:	\$107M	→	\$ 6M
O&M:	\$284M	→	\$28M
Total:	\$438M	→	\$34M

. . . A good reason to be green!

The Financial Case for Facilities

In Terms of Total Dollars (Millions) . . .

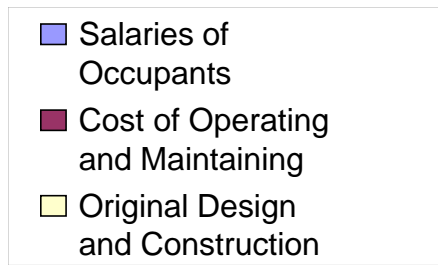
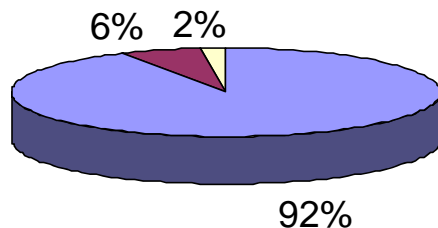


The Financial Case for Facilities

What about People?

Typical design and construction costs account for only about 2% of an organization's total cost to exist.

Life-Cycle Costs of a Facility



The Cost of Productivity

Average annual cost for Personnel: \$300-600/sf

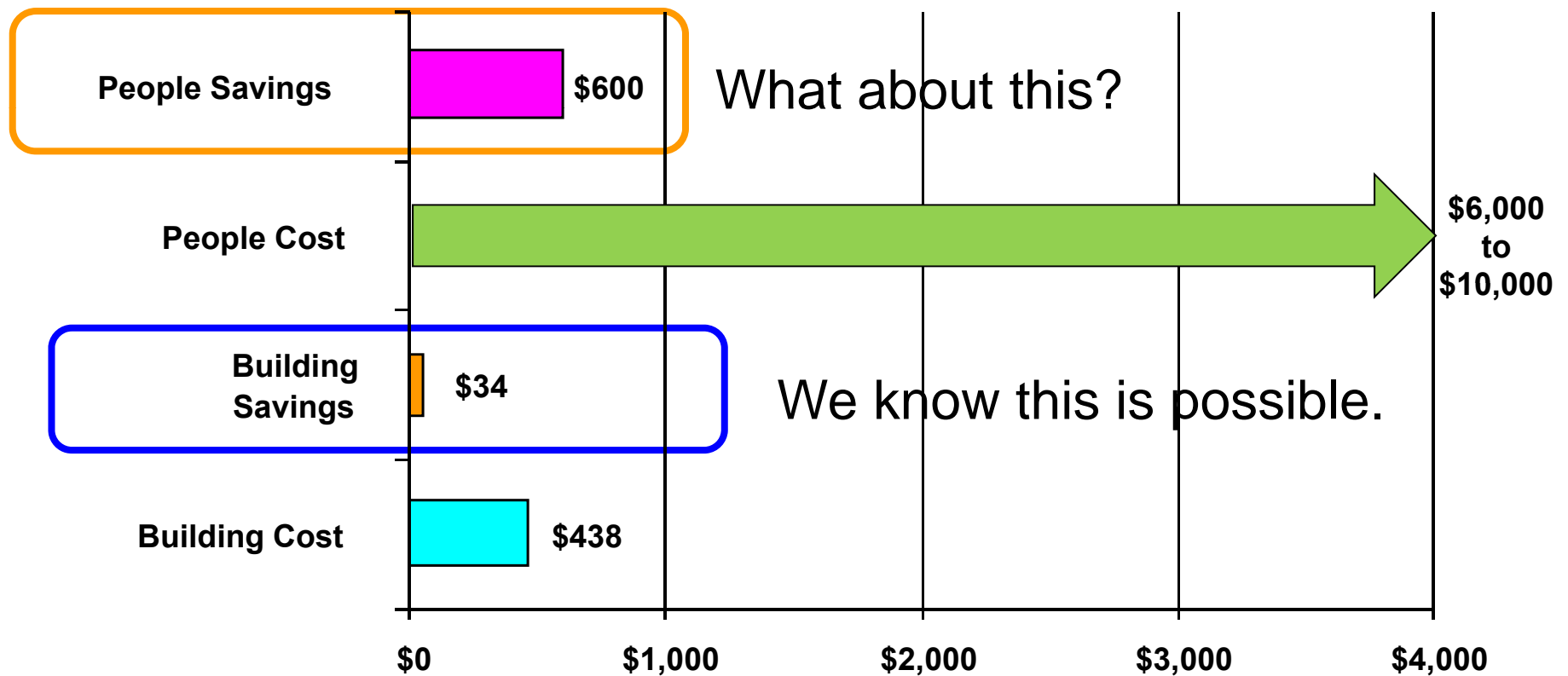
For facilities: \$20/sf

For energy: \$2.50/sf

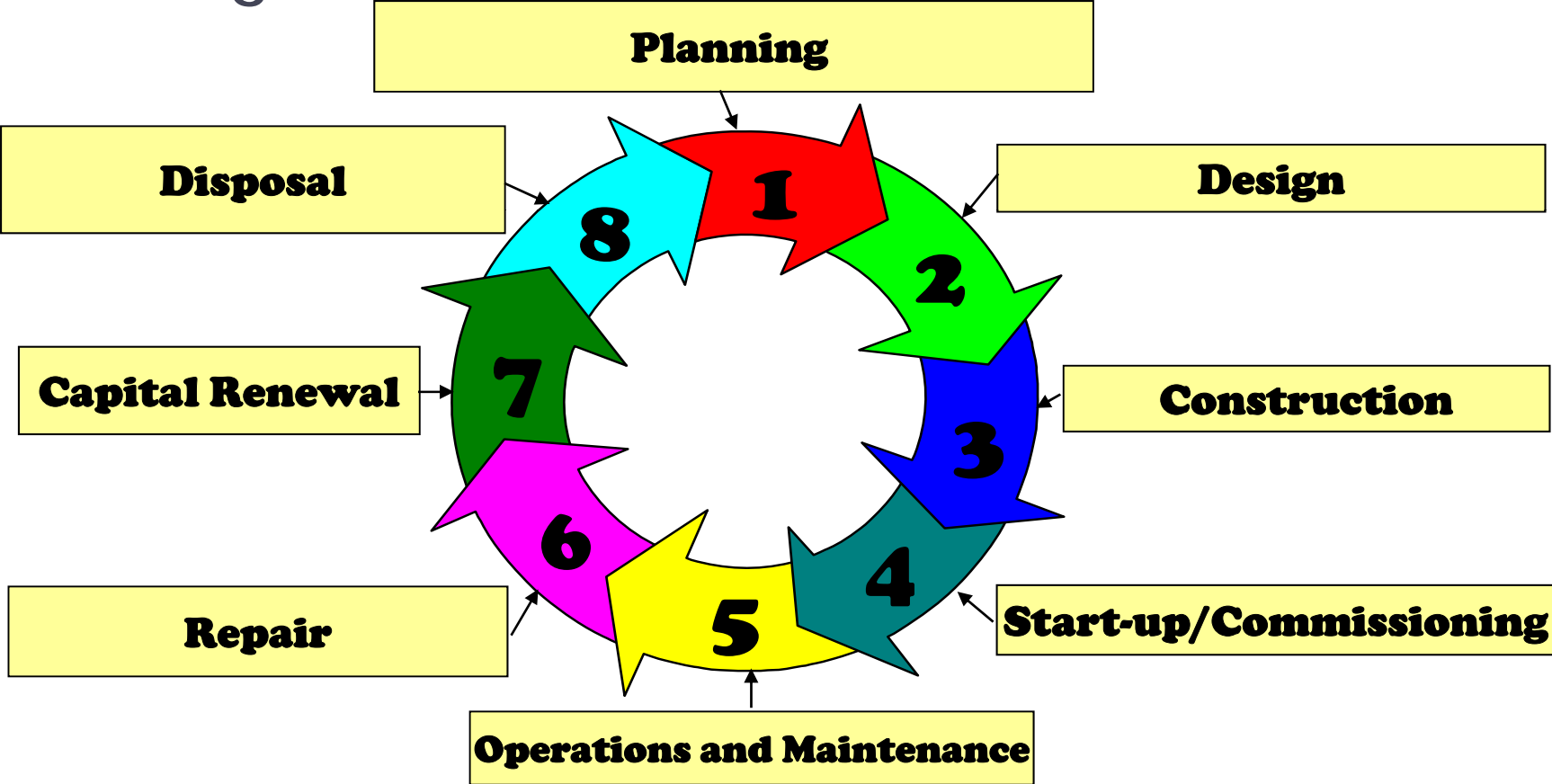


Productivity (People) Cost

In Terms of Total Dollars (Millions) . . .



Building Life Cycle - Life Cycle Costing



Life Cycle Approach

Life Cycle Cost (LCC) approach

LCC = the sum investment costs, capital costs, installations costs, energy costs, operating costs, maintenance costs, and disposal costs over the lifetime of the facility.

“The usefulness of a [life cycle cost analysis] lies not in the determination of a total cost of a project alternative, but in *the ability to compare the cost of project alternatives and to determine which alternatives provides the best value per dollar spent.*”

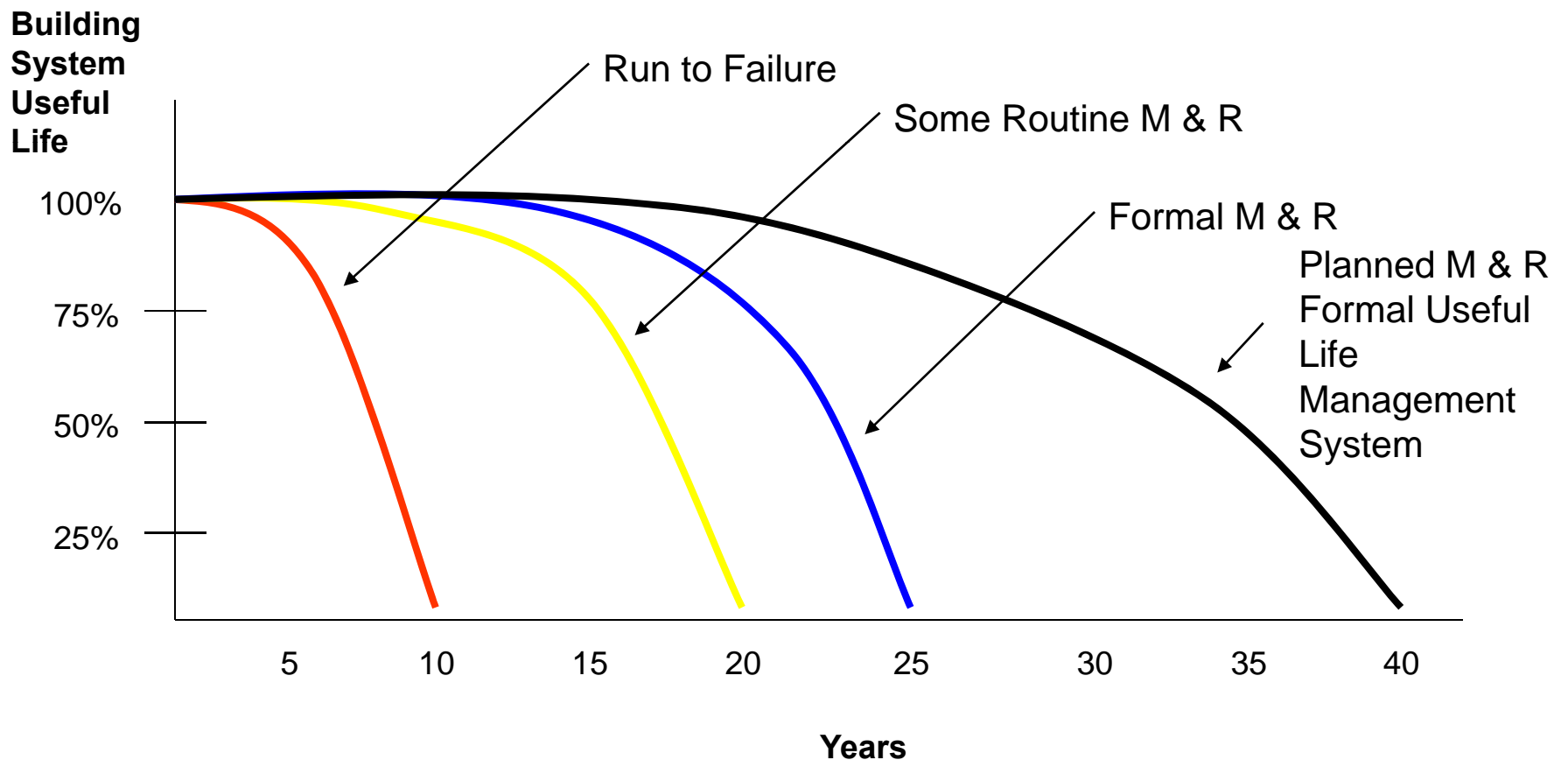
(Alaska Department of Education and Early Development – Life Cycle Cost Analysis Handbook)

Looking at LCC will help the FM to strike the right balance between ***initial cost***, ***operating cost***, and ***service life***



Determining the true cost of green

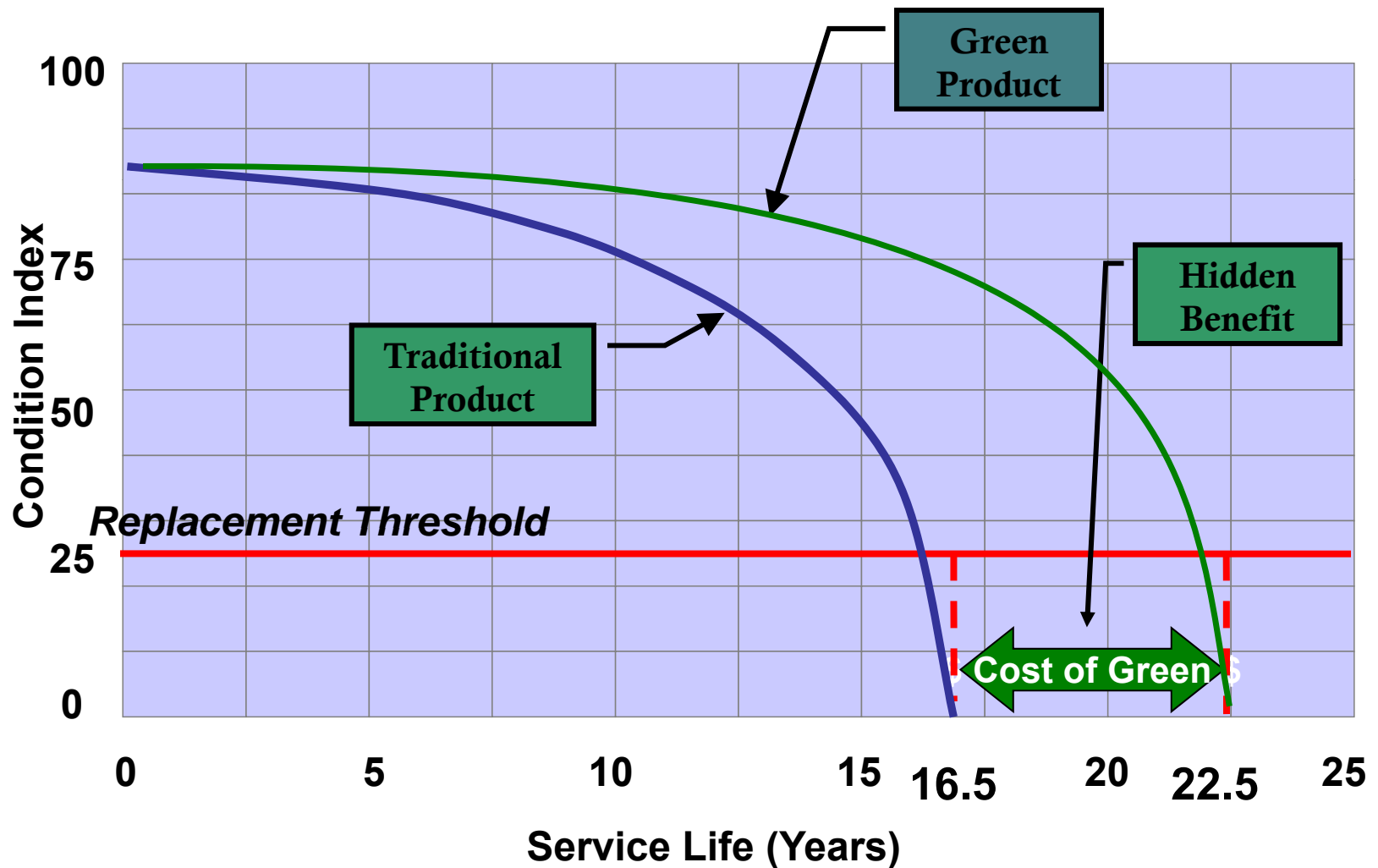
We know from experience that level of maintenance effects service life:



How does **Green** effect service life ?

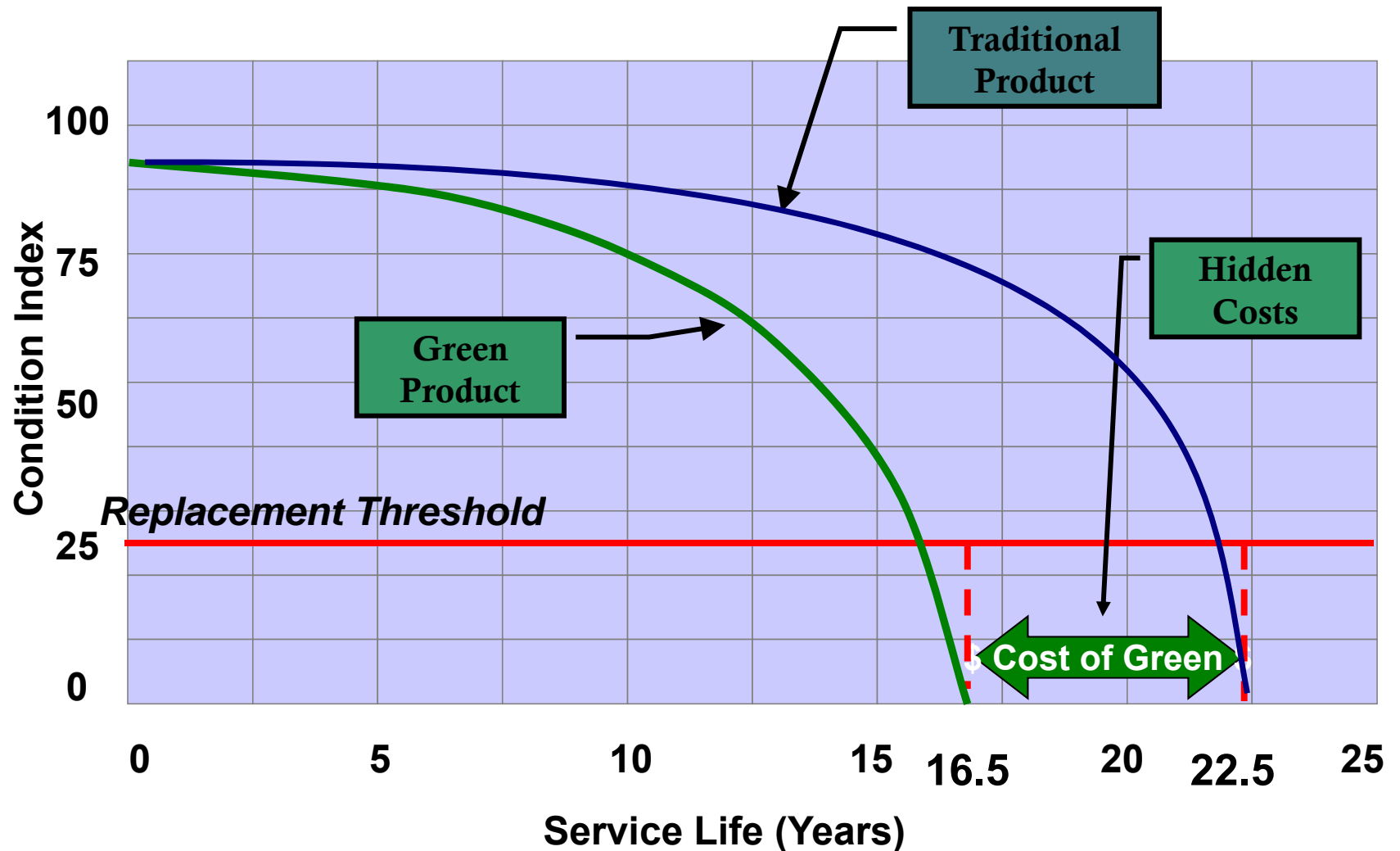
Determining the true cost of green

The Hidden Benefit of Green



Determining the true cost of green

The Hidden Cost of Green



Determining the true cost of green

How do you reduce TCO?

- Proper planning, design, and construction
- Use Life Cycle Approach
- Focus on Operations (Energy)
- Make building system decisions based on LCC and longer EUL

Looking at [Service Life](#) will help the FM to strike the right balance between Sustainable practices and operating the facility economically

Conservation and Reduction

Common FM Questions:



- How Long Will This Take?
- How Much Will It Cost?



Where does your money come from?

Conservation and Reduction

Capital Budget

What is included in a Capital Budget?



- Future cyclical repair and replacements
- Measures that extend service life or retain the usable condition
- Major activities with a maintenance cycle in excess of one year
- Systems that have reached the end of their useful life

Capital Budget: Typically 2-4% Replacement Value

Conservation and Reduction

Capital Budget

Examples:

- **Roof replacement**
- **Furniture replacements**
- **Lighting system upgrade or replacement**
- **HVAC system upgrade or replacement**
- **Interior renovations**



Conservation and Reduction

Operating Budget

What is included in an Operating Budget?

- Service and routine maintenance
- Utilities
- Custodial services and cleaning
- Pest control
- Snow removal
- Grounds care and landscaping
- Environmental operations and record keeping
- Waste hauling and waste diversion (recycling)
- Security services



Facility Operating Current Replacement Value Index = 1.63%
(Mean from IFMA Benchmarks V-2008)



Conservation and Reduction

What happens when these numbers shrink?

Capital Budget:

Deferred Maintenance increases

Facility Condition Index decreases

Facility Operating Current Replacement Value Index:

Preventive Maintenance decreases

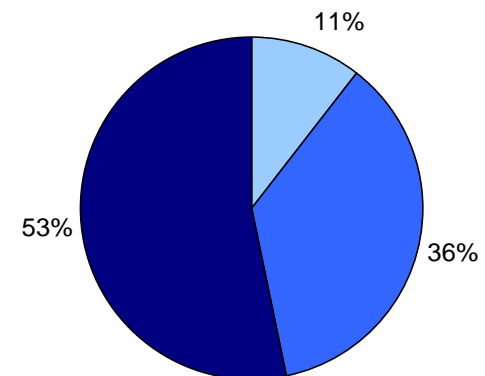
Corrective Maintenance increases

Conservation and Reduction

Know your numbers!!!

- ***You need to know:*** Total cost of ownership
- ***You need to know how to:*** Reduce operating cost
- ***You need to be able to speak:*** Return on investment and Payback

Total Cost of Ownership



■ Design & Construction ■ Capital Renewal ■ O&M