

# Strategic Financial Analysis

## Seattle, Washington

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**Sponsored by:**

- BetterBricks, an initiative of the  
Northwest Energy Efficiency Alliance
- IFMA Seattle

# WHO IS BETTERBRICKS?



[www.betterbricks.com](http://www.betterbricks.com)

# Roadmap for Energy Management



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“It's tough to make predictions,  
especially about the future.”

Yogi Berra



# Overview

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## Navigating the Financial Maze to Win Facility Projects

- Create a Financial Frame for the Project
- The Right Tool for the Right Job
- Alignment with Organizational Goals
- Search for the Best Funding Source

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# What's UPS Mean?



NORTHWEST ENERGY EFFICIENCY ALLIANCE  
[www.nwalliance.org](http://www.nwalliance.org)

# What's UPS Mean?



Uninterruptible Power Supply

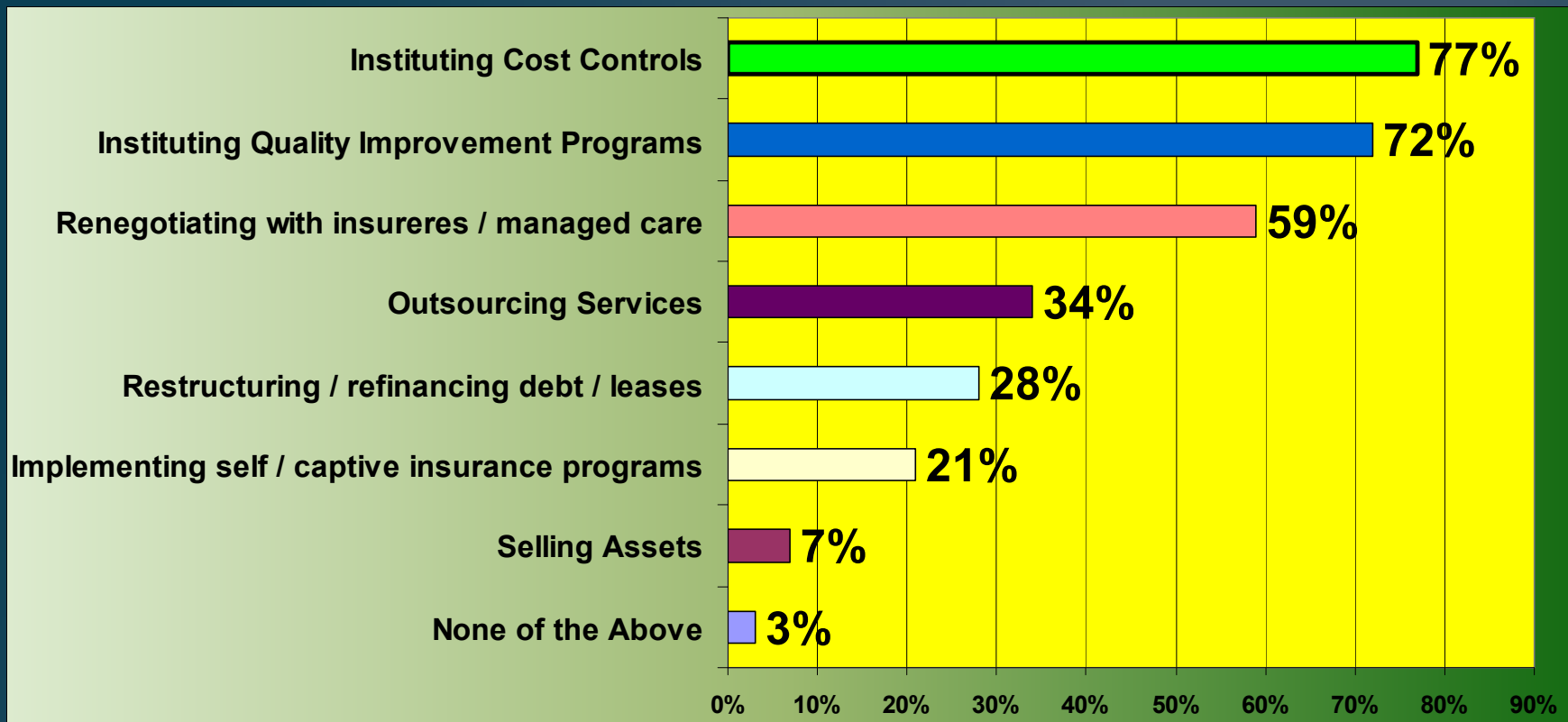
# What the CFO may hear when you say

# UPS



Photo by Hal Brown, Jr.

# One CFO Perspective: Cost Control is King!



Source: CFO Survey: GE Healthcare Financial Services

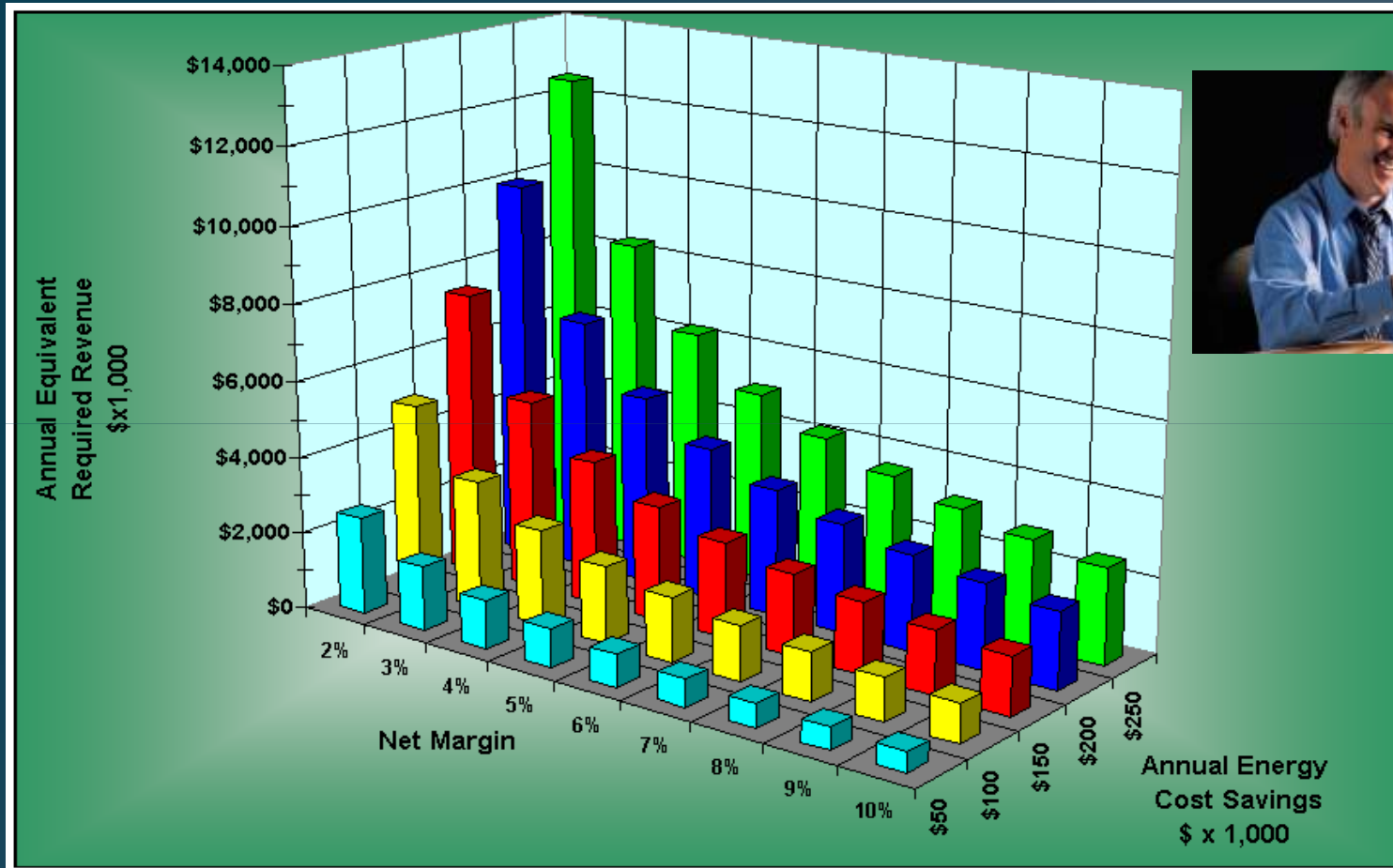
# Competition for Approval

- Energy management results in avoided cost
- New products result in new revenue



*How do you level the playing field?*

# Energy Efficiency Contributes to Cost Control – But How Is It Counted?



# Capital vs. Operating Budgets

## Capital

- Annual or longer cycle
- Little flexibility – sunk cost
- Based on projections – may not be empirically supported
- **Moderate-to-high** risk exposure for the institution

## Operating

- Annual allocation
- Short term adjustment flexibility
- Empirical precision
- **Low-to-moderate** risk exposure to institution

# Translating Energy Projects to CFO-speak

- 1) Create a compelling financial case
  - Estimate project costs and benefit streams into the future
  - Assign a useful life to the investment
  - Account for the time-value of money
  - Derive either a cost or rate of return number that characterizes the project.
- 2) Align the project with corporate goals
- 3) Identify the source of Funding

# Advantages of Energy Related Projects

- Project cost estimation can be relatively precise
- Excellent empirical evidence on energy savings and project life is available
- Commodity cost trends are known with reasonable confidence
- Cost uncertainty is tied to volatility, thereby enhancing value of avoided cost strategies

Can you say RISK MANAGEMENT !

# Analyzing Energy Management Investment Opportunities

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- **Economic Efficiency**
- **Tools of the trade**
  - **The simplicity of payback**
  - **Importance of discounting**
  - **The power of life cycle cost analysis**
  - **The flexibility of internal rate of return calculations**

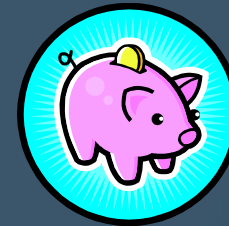
# Economic Efficiency

- **Energy** Efficiency =  $\frac{\text{Energy Output}}{\text{Energy Input}}$
- ***Economic*** Energy Efficiency =  $\frac{\$ \text{ Value of Energy Cost}}{\text{Value of Energy Benefit}}$
- **Carbon** Efficiency =  $\frac{\text{Amount of CO}_2}{\text{Task}}$

# Simple Payback (SPB)

$$\text{SPB} = \frac{\text{COST}}{\text{SAVINGS/YR}}$$

$$\text{SPB} = \frac{\$ 12,000}{\$ 5,000} = 2.4 \text{ yrs}$$



SPB = The number of years until the cumulative savings equals the cost without regard for the time-value of money.

# Simple Payback (SPB)

- Advantages

- Fast
- Simple
- Shows time period to recovery of funds
- Does not require discounting for time-value of money

Use - Quick screening tool for similar items

- Disadvantages

- Too Simple
- Does not define relative efficiency or scale
- Does not account for additional savings over measure lifetime
- Does not account for time-value of money
- Not meaningful for dissimilar options

# More Powerful Analytical Tools

## Life Cycle Cost

- Determines total cost of ownership for a project over its life expectancy
- Detailed comparison tool for similar items
- Comprehensive
- Well defined risk profile

## Internal Rate of Return

- Determines the percent return to the organization for a given investment
- Detailed analysis tool
- Often used as an initial "Hurdle Rate" for investment by the organization

## Discounting:

**"A nickel isn't worth a dime today."**

**Yogi Berra**



**"Inflation is when you pay fifteen dollars for the ten-dollar haircut you used to get for five dollars when you had hair."**

**Sam Ewing**

# Discounting

Discount Rate (DR)= 10%

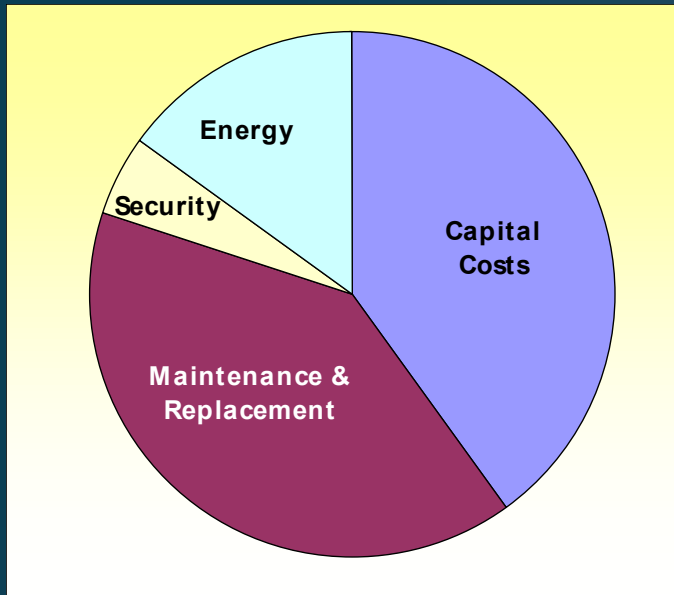
Cost = \$ 100.00

Year -->	1	2	3	4	5	6	7	8
Nominal Savings	\$ 20.00	\$ 20.00	\$ 20.00	\$ 20.00	\$ 20.00	\$ 20.00	\$ 20.00	\$ 20.00
Cuml Discount Rate Calc	(1-DR)^1	(1-DR)^2	(1-DR)^3	(1-DR)^4	(1-DR)^5	(1-DR)^6	(1-DR)^7	(1-DR)^8
Cuml Discount	0.9	0.81	0.729	0.656	0.590	0.531	0.478	0.430
Annual Discounted Savings	\$ 18.00	\$ 16.20	\$ 14.58	\$ 13.12	\$ 11.81	\$ 10.63	\$ 9.57	\$ 8.61

Total Savings=Present Value								
Present Value Year 1 =	\$ 18.00							
Present Value Year 2 =		\$ 34.20						
Present Value Year 3 =			\$ 48.78					
Present Value Year 4 =				\$ 61.90				
Present Value Year 5 =					\$ 73.71			
Present Value Year 6 =						\$ 84.34		
Present Value Year 7 =							\$ 93.91	
Present Value Year 8 =								\$ 102.52

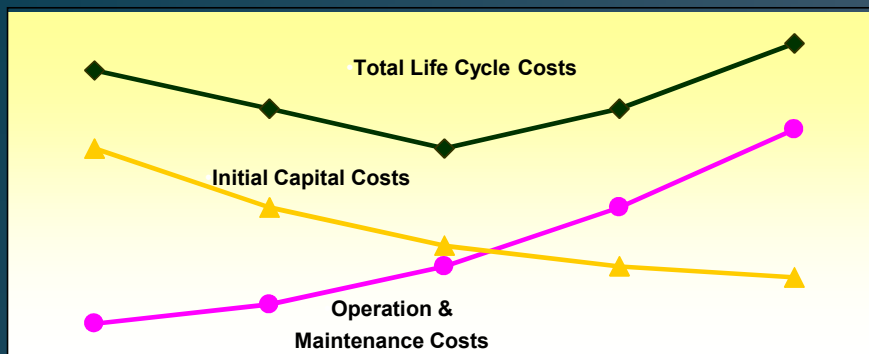


# Life-Cycle Cost (LCC)



## “Double bottom line”

- Considers operating costs in addition to first costs
- Typically applied to specific building components



## “Triple bottom line”

- approach includes personnel

## Life-Cycle Cost (LCC)

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$$LCC = C - S + M + R + E$$

Where:

C = Purchase cost installed

S = Salvage value

M = Maintenance and Repair Costs

R = Replacement cost

E = Energy Costs

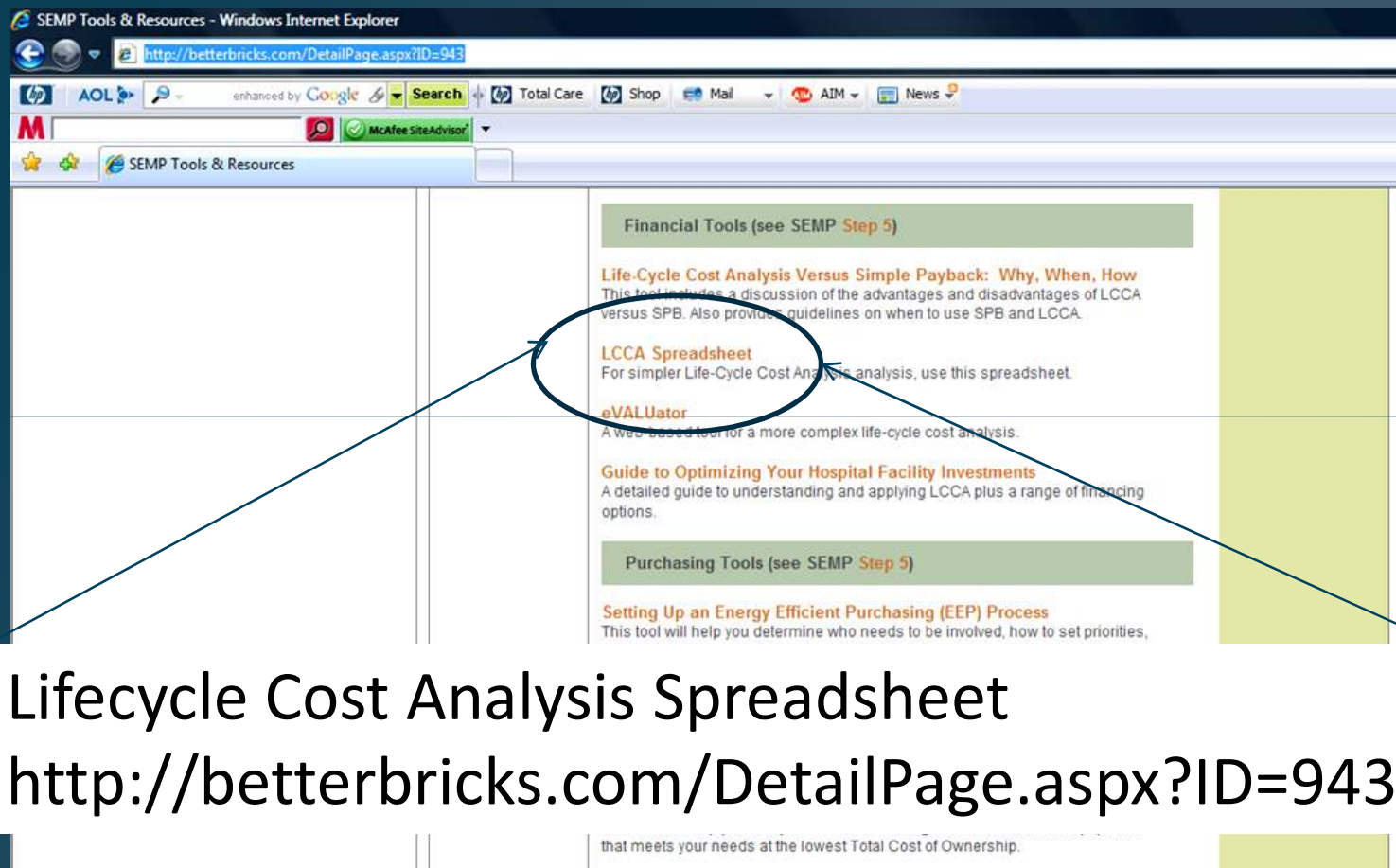
[All costs and revenues are in discounted dollars]

# Life-Cycle Cost (LCC)

- Advantages:
  - Does account for total savings over measure lifetime
  - Comprehensive
  - Useful for comparing like solutions
  - Does account for time-value of money
- Disadvantages
  - Does not indicate the return on investment
  - Does not define relative efficiency or scale
  - Not meaningful for dissimilar options

Use - Detailed comparison tool for similar items

# Life Cycle Cost Analysis



The screenshot shows a Windows Internet Explorer browser window displaying the 'SEMP Tools & Resources' page. The address bar shows the URL <http://betterbricks.com/DetailPage.aspx?ID=943>. The page content includes several tool categories and links:

- Financial Tools (see SEMP Step 5)**
  - Life-Cycle Cost Analysis Versus Simple Payback: Why, When, How**  
This tool includes a discussion of the advantages and disadvantages of LCCA versus SPB. Also provides guidelines on when to use SPB and LCCA.
  - LCCA Spreadsheet**  
For simpler Life-Cycle Cost Analysis, use this spreadsheet.
  - eVALuator**  
A web-based tool for a more complex life-cycle cost analysis.
  - Guide to Optimizing Your Hospital Facility Investments**  
A detailed guide to understanding and applying LCCA plus a range of financing options.
- Purchasing Tools (see SEMP Step 5)**
  - Setting Up an Energy Efficient Purchasing (EEP) Process**  
This tool will help you determine who needs to be involved, how to set priorities,

that meets your needs at the lowest Total Cost of Ownership.

Lifecycle Cost Analysis Spreadsheet

<http://betterbricks.com/DetailPage.aspx?ID=943>

# Internal Rate of Return (IRR)

- The Internal Rate of Return is the equivalent of the interest rate earned on an investment.
- It allows the comparison of dissimilar projects or alternatives in terms of their profitability. It is often used as an initial project “hurdle rate”.



# Internal Rate of Return (IRR)

## BAD NEWS!

- The equation for this function is quite complex and requires significant expertise to work from scratch.



## GOOD NEWS

- Most spreadsheet programs and financial analysis programs have a simple “plug-in” model that allows easy calculation.



## Internal Rate of Return (IRR)

$$\text{IRR} = \Delta C - \Delta S + \Delta M + \Delta R + \Delta E$$

Where:

C = Purchase cost difference (installed)

S = Salvage value difference

M = Maintenance and Repair cost difference

R = Replacement cost difference

E = Energy Costs difference

[All costs and revenues are in discounted dollars]

# Internal Rate of Return (IRR)

- Advantages
  - Shows relative economic efficiency
  - Does account for time-value of money
  - Can compare dissimilar alternatives competing for investment dollars
- Disadvantages
  - Does not define relative scale
  - Does not provide information on the optimum size of investment

## Uses:

- Detailed analysis tool
- Set “Hurdle Rate”

# Providence Newburg



**“The internal rate of return on the investment is estimated at 54 percent when incentives are factored into the equation and even higher with energy tax credits.”**

**Richard Beam**



# Strategic Issues

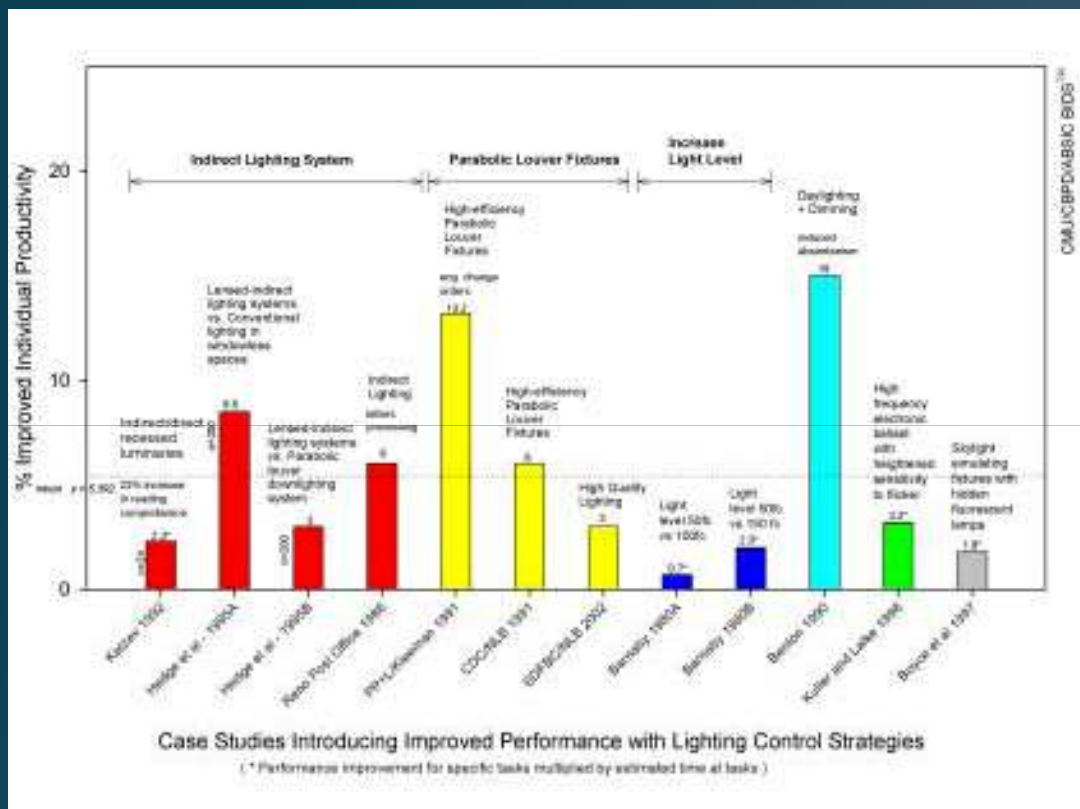
- What financial standards are used by your organization for decision-making purposes?
- What are the “hurdle rates” and calculation procedures for each?
- What economic efficiency policies could be implemented in energy related areas?

# Alignment with Organizational Goals

## Organizational Goals Linked to Energy Efficiency

- Cost reductions/Higher net margins
- Higher productivity and comfort
- Healthier environment, inside and out
- Staff retention
- Quality of customer care
- Community leadership
- Reduced CO2 impacts on climate

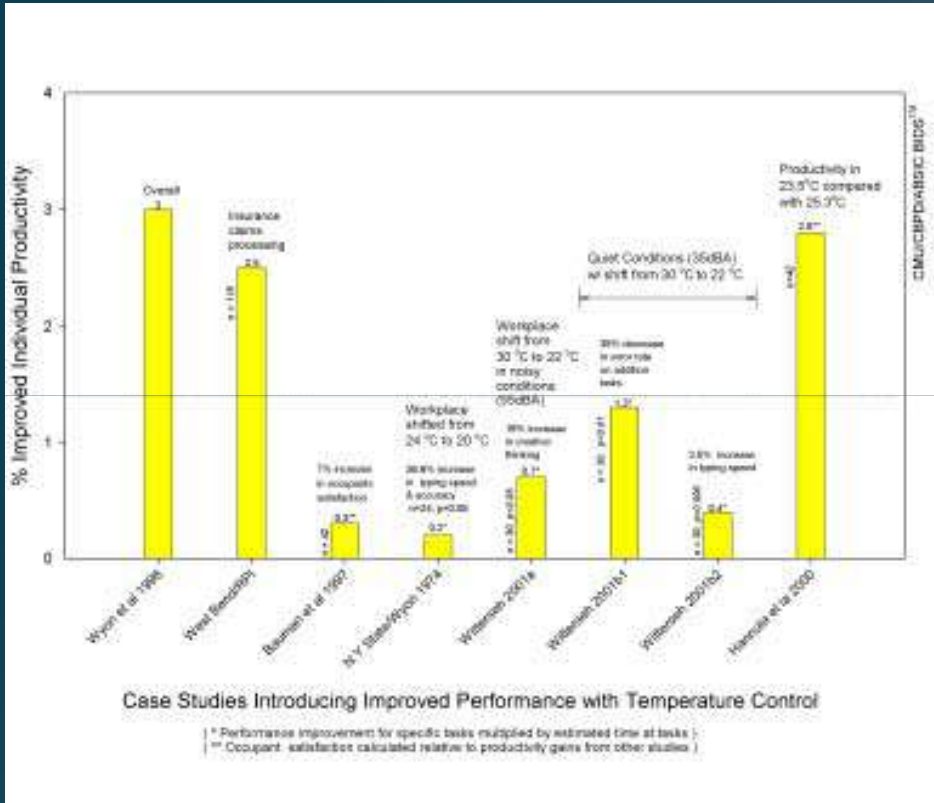
# Productivity - Lighting



## Productivity Increase and Lighting Control

- Daylight
- Task-based light levels
- Anti-glare fixtures

# Productivity – Thermal Control



## Productivity Increase and Thermal Control

- Temperature
- Humidity
- Air Rate



# Financial Analysis Resources

- Your CFO
- BetterBricks Guide To Financial Methods and Financing Approaches
- Selected Web Resources