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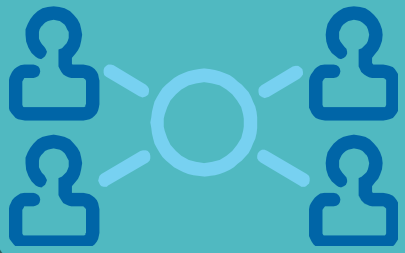
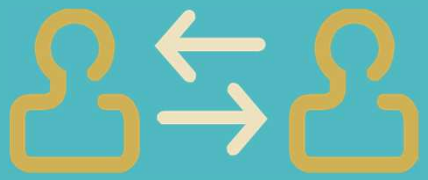


NETWORK

LEARN

GROW



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Overcoming Objections to Energy Efficiency Investments

ASHRAE Ottawa, Ontario Chapter
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Introductions

Who am I?

Who are you?

Why are you here?

Objectives

- Understand the fundamental concepts and techniques used to evaluate long-term benefits of energy efficient products and services
- Understand and be able to address the psychology and motivation of financial decision-making
- Use the tools discussed in this presentation to convince owners to make investments in energy-efficiency

Small Group Exercise #1

Get into groups of 2 – 3 people, convenient to your seating arrangement

Share your experience / frustration with trying to implement energy efficiency technology where you live / work

Generate a list of the top three (3) reasons cited for not investing in energy efficiency technology

Take no more than five minutes

What are the results?

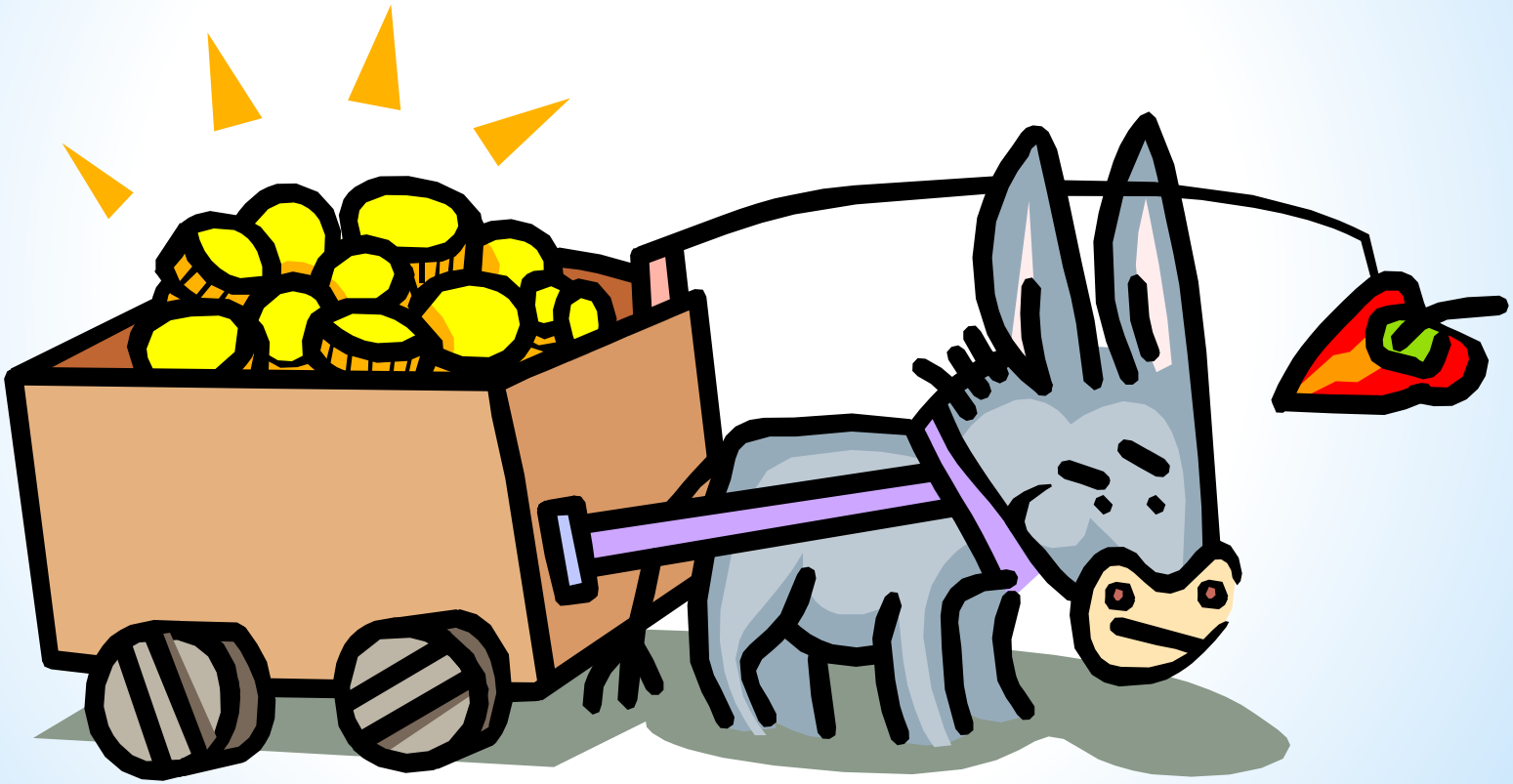
Small Group List

Common Objections

- *#1: “I can’t afford the investment; I don’t have the money.”*
- *#2: “How do I know I’ll save money?”*
- *#3: “Who else has done this? Can I trust the contractor / vendor?”*
- *#4: “I don’t own the building; the owner should make the investment”*

Others?

Incentives to Invest – The Carrot or The Stick?



The Carrot

- Increase the bottom line, improve productivity
- Tax deductions / tax credits
- Technical assistance and financial incentives from (some) utility companies or government agencies
- “Green energy” purchasing options

The Stick

- Higher energy prices
- Environmental impact / costs
- Shortages / brown-outs
- Reduced profitability / productivity

Utility Incentives - Why?

- Utility companies and regulatory bodies have done extensive modeling of energy efficiency technologies to determine typical annual savings
- Incentive programs are tied to predicted savings and their value to the public
- The “carrot” is larger for “unknown” technologies (objections #2 & #3)

Rationale for Utility Incentives

- Reduce first cost to owners (attempt to overcome objection #1)
- Utilities prove that technologies work by offering direct assistance to customers (attempt to overcome objection #2)
- Incentive programs generally adopt standardized products (i.e. eligible products) and installation methods to overcome objection #3

Utility Incentives Rationale, cont'd

- How do cash incentives address objection #4 - renters or lessees?
- Even with incentives, some owners still don't invest in EE products and services
- Conclusion? For some people, investing in energy efficiency is about more than just first cost and savings

Utility Incentives in Ottawa Area

- Prescriptive Lighting System Incentives
- Prescriptive Non-Lighting Incentives
- Custom Lighting Incentives
- Custom Non-Lighting Incentives
- Energy Audit Incentives
- Natural Gas Equipment Incentives

Shortcomings of First Cost / Simple Payback Analysis

- Energy savings in first year do not represent true value over time, because of price inflation
- First cost fails to capture other life cycle costs and benefits
- Two year simple payback represents a rate of return that is unrealistic (50%) when compared to normal business profit margins of 5% - 10%

Other Financial Analysis Methods for Overcoming Objections

- Net present value
- Rate of return
- Life-cycle costs / obsolescence
- Tax effects
- “Do Nothing” alternative

Net Present Value

- Equivalent value of annual savings expressed in today's dollars is called Present Value or Net Present Value (if negative amounts occur)
- Compare to equivalent profit, revenues generated by other investments, or value-added services
- Provides a "cash in the pocket" equivalent for comparison

Rate of Return

- Simple rate of return is savings each year compared to first cost
- Example: $1000 investment, $100 annual savings = 10% rate of return
- Rate of return is higher when inflation rate / interest is included
- Can be compared to other investment options: savings accounts, CD’s, profit margin

Life Cycle Costs / Obsolescence

- Investments should be analyzed over their useful life
- Analysis should include all costs - maintenance, consumables, disposal
- Obsolescence of existing systems affects investment decisions; accelerating the replacement date may enhance opportunities

Life Cycle Cost Features

- Cost components w/ negative cash flow: initial purchase price, routine maintenance costs, replacement costs complete
- Cost components w/ positive cash flow: energy savings, maintenance cost reductions, increased revenues, salvage value

Tax Effects

- Longer depreciation periods reduce financial benefits
- Tax credits may be available, which influence the financial analysis

The “Do Nothing” Alternative

- “Do nothing” costs are ignored when saying “No”
- Lost opportunities associated with “wasted” energy budget: product improvement / service enhancement
- Often only the incremental cost of an inevitable replacement needs to be considered, because “doing nothing” can’t last forever

Other Financial Factors

- Occupancy rates for hospitality businesses
- Tenant lease renewal, referrals
- Maintenance costs
- All of these have value that should be considered in the financial analysis of energy efficiency improvements

Review of Financial Calculation Methods

- AVOID USING SIMPLE PAYBACK!
- Functions for present value, future value, etc. can be obtained in spreadsheet programs
- Capital projects are often evaluated and compared by internal rate of return (IRR) or net present value (NPV)
- Cash flows can be input to spreadsheets to adjust for general inflation, energy cost inflation, cost of money (discount rate) and perform calculations

Sample Spreadsheet

Sample spreadsheet
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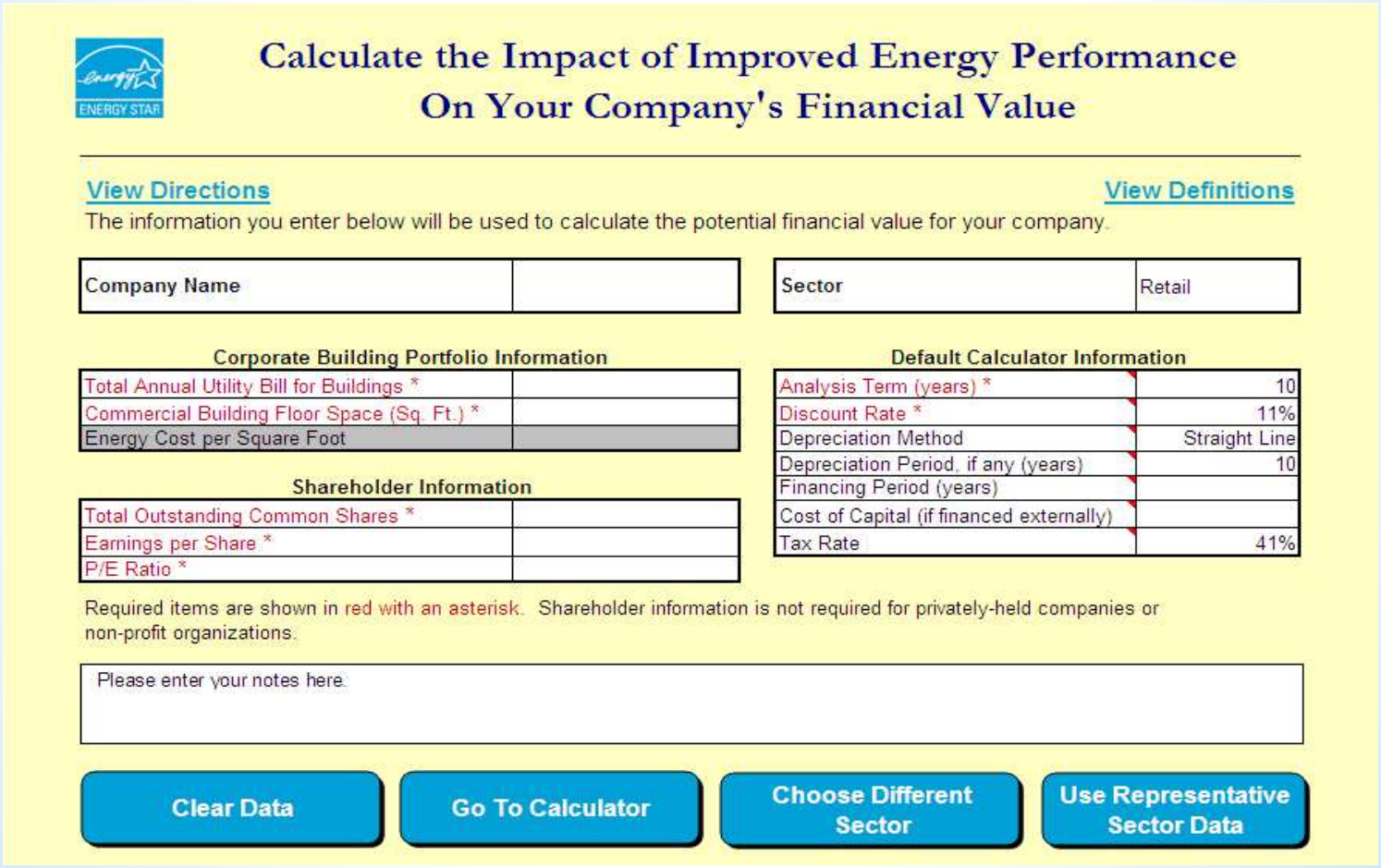
LIFE CYCLE CASH FLOW ANALYSIS

INPUTS:	Investment life, yrs.	Discount rate	Replacement year	Desired ROI
	5	3.00%	10	4.0%

			YEAR								
CASH FLOWS	0	1	2	3	4	5	6	7	8	9	10
Installation cost	3,000										
		First year									
Cash flow #1		3,200	3,296	3,395	3,497	3,602	0	0	0	0	0
Cash flow #2		0	0	0	0	0	0	0	0	0	0
Cash flow #3		0	0	0	0	0	0	0	0	0	0
Cash flow #4		0	0	0	0	0	0	0	0	0	0
Cash flow #5		0	0	0	0	0	0	0	0	0	0
Replace or salvage (basis)	0	0	0	0	0	0	0	0	0	0	0
Totals	3,000	3,200	3,296	3,395	3,497	3,602	0	0	0	0	0
Net Present Value	12,092										
Annualized amount	2,716										
Internal Rate of Return	106.4%										
Simple payback, yrs.	0.9										

Energy Star Financial Calculator



Calculate the Impact of Improved Energy Performance On Your Company's Financial Value

View Directions | View Definitions

The information you enter below will be used to calculate the potential financial value for your company.

Company Name	

Sector	Retail

Corporate Building Portfolio Information

Total Annual Utility Bill for Buildings *	
Commercial Building Floor Space (Sq. Ft.) *	
Energy Cost per Square Foot	

Shareholder Information

Total Outstanding Common Shares *	
Earnings per Share *	
P/E Ratio *	

Default Calculator Information

Analysis Term (years) *	10
Discount Rate *	11%
Depreciation Method	Straight Line
Depreciation Period, if any (years)	10
Financing Period (years)	
Cost of Capital (if financed externally)	
Tax Rate	41%

Required items are shown in red with an asterisk. Shareholder information is not required for privately-held companies or non-profit organizations.

Please enter your notes here.

Clear Data | Go To Calculator | Choose Different Sector | Use Representative Sector Data

Simple Case Study

- The best way to understand the math is by example
- Installation costs and cost savings are shown for illustration only; every project should be subjected to energy analysis and preliminary design before financial comparisons are attempted

Hotel PTAC

- Project: 1 ton PTAC unit in hotel room (13 years old)
- Base case: 1,500 kWh / year , EER = 8.8
- Replacement EER = 10.27
- Electricity cost of $0.10 / kWh average
- Project life: 15 years

Energy Savings

- kWh savings: 1,500 kWh x (1 - 8.8/10.27) = 200 kWh / yr.
- $ savings: $0.10 / kWh x 200 kWh / yr = $20 / yr.

Simple Payback

- Installed cost = $900 (replacement of working unit)
- Simple payback: $\frac{\$900}{\$20 / yr.}$

= 45 years!!! (longer than the life of the equipment)

Life Cycle Analysis

- Obsolescence – assume existing unit has two more years of useful life, equal to $120 (add to first cost of $900)
- Improved performance: 3 more occupancy days per year, equal to $210
- Maintenance costs are reduced by 2 hours per year, equal to $40
- Inflation at 2% annually

Excel Spreadsheet

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LIFE CYCLE CASH FLOW ANALYSIS
Case 2 - PTAC Project, including obsolescence

INPUTS:	Investment life, yrs.	Discount rate	Replacement year	Inflation rate
	15	3.00%	0	2.00%

		YEAR							
CASH FLOWS	Initial Values	1	2	3	4	5	6	7	8
Installation cost	$1,020								
Electricity cost savings	$20	$20.00	$20.40	$20.81	$21.22	$21.65	$22.08	$22.52	$22.97
Increased revenue	$210	$210.00	$214.20	$218.48	$222.85	$227.31	$231.86	$236.49	$241.22
Annual maint. cost or savings	$40	$40.00	$40.80	$41.62	$42.45	$43.30	$44.16	$45.05	$45.95
Replace or salvage (basis)	$0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Totals	($1,020)	$270.00	$275.40	$280.91	$286.53	$292.26	$298.10	$304.06	$310.15
Net Present Value	$2,656								
Annualized savings	$311								
Internal Rate of Return	28%								
Simple payback, yrs.	3.8								
Discounted payback	3.7								

Life Cycle Analysis, PTAC, cont'd

- NPV of the investment is $2,700
- Annualized savings of $300
- SP = 3.8 yrs.
- Rate of return is 28%
- Notice that the major financial benefits are not energy efficiency related

Frame of Reference for Using LCC / ROI

- What type of business are we dealing with?
- What is the typical after-tax profit margin, and how does the ROI of the energy project compare?
- How much net revenue growth would be required to generate the same after-tax value as an energy project?
- What is the budget cycle / replacement cycle for equipment?

Example

- Health care yields about 1% after-tax margin (generally set aside for future growth)
- Energy savings of $10,000 at the bottom line is equivalent to generating $1 million in new revenue
- Cost to equip and staff to generate new revenue ???

Other Financing Mechanisms

- Performance contracts
- Leasing

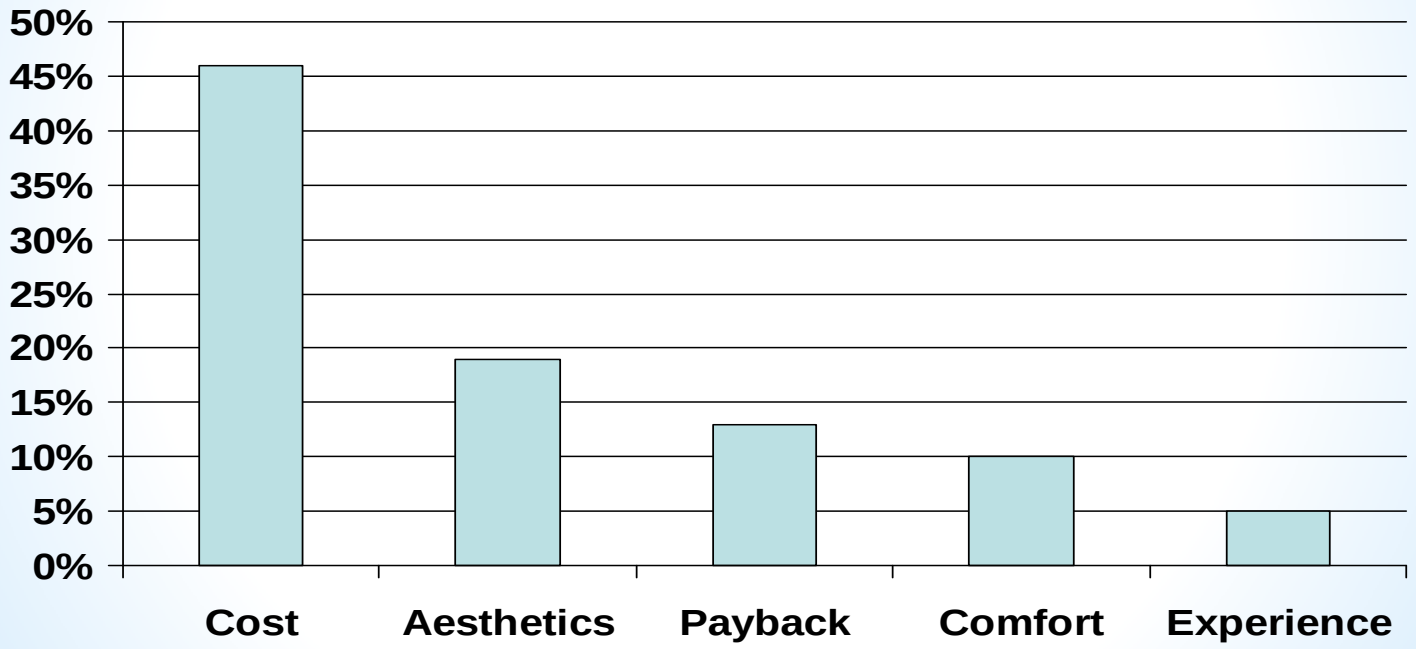
Don’t Confuse Me With The Facts
(My Mind’s Made Up!)

- In spite of all the best financial data, the donkey won’t move
- What else is there?
- For the group: What are at least two other non-financial hurdles to energy efficiency investment?

Psychology of Investment Decisions

- If energy efficiency investment is about more than first cost and savings, what else is there?
- Inconvenience
- Lost revenue during construction
- Aesthetics / customer appeal
- Fear of the unknown
- Fear of failure / bad investment

Psychological Hurdles



How Do We Deal With Psychology?

- Try to see the opposing viewpoint
- Understand the motivators / stressors
- Be satisfied with small victories
- Plant seeds (ideas), and let outside influences produce the growth

Psychology of Investment Decisions, cont'd

- Sales and marketing is about building trust
- Trust is a mutual relationship
- New and / or unknown products sometimes require heavy discounting to overcome fear factor; offer a visit to a successful project site for the "warm and fuzzy"
- Lost time is lost revenue; energy costs are still generally only a small part of the big picture for businesses

“I don’t have the time …”

- Businesses have been forced to streamline operations and maintenance
- Technical expertise for energy projects is either non-existent or overwhelmed
- YOU can bring the valuable resource of TIME to a business

Boardroom vs. Boiler Room

- Technical talk doesn’t sell
- Be conservative with savings estimates – CFOs have learned to be skeptical!
- Know what metrics are important to upper level management – ROI, life cycle cost, net present value?
- To sell energy efficiency, you have to get an audience with the people who have the money

Timing is Everything

- Business investment is evaluated on a timetable – fiscal year
- Presenting a project after the annual budget is established has low chance for success
- Presenting a project too early in the fiscal year risks being forgotten
- Know WHEN to bring the project proposal to the people with the money

Questions?

Contact for More Information

Further questions and information may be obtained by contacting the presenter:

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THANKS!