Cost Benefit Analysis of Energy Investments: How to sell the value proposition

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Know Your Audience (and their language)

> Translate from the boiler room to the board room
> Message at a high-level first, THEN drill into the details
> Understand organizational “pain points” and be able to position the investment as a solution to address them
> Develop financial analysis that aligns with organizational decision-making
> Highlight the non-energy benefits, which may ultimately be the key drivers to get something done

Courtesy: Gary Larson, The Far Side
Issues With Simple Payback

> Payback period ends…then what?
> Ignores time value of money
> Deals with opportunity cost, not financial return on investment
> Unfortunately it is “simple” so used frequently

### Project A

<table>
<thead>
<tr>
<th>Project Cost</th>
<th>$10K</th>
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<tbody>
<tr>
<td>Annual Savings</td>
<td>$5K</td>
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<tr>
<td>Equipment Life</td>
<td>3 years</td>
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### Project B

<table>
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<tr>
<th>Project Cost</th>
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</thead>
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<tr>
<td>Annual Savings</td>
<td>$50K</td>
</tr>
<tr>
<td>Equipment Life</td>
<td>15 years</td>
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</table>
Cash Flow Analysis

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual ($)</th>
<th>Cumulative ($)</th>
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</thead>
<tbody>
<tr>
<td>0</td>
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<td>-$300K</td>
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<td>5</td>
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<td>+$200K</td>
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<tr>
<td>10</td>
<td>+$100K</td>
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</tr>
<tr>
<td>15</td>
<td>+$100K</td>
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Internal rate of return = Equivalent interest rate to achieve return
Cash Flow Analysis

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Net present value
Translating into Equivalent Revenue

Operating Margin = Net Income / Revenue

Equivalent Revenue = Change in Net Income / Operating Margin

Impact of $10K Expense Reduction

Net Operating Margin

- 2%
- 5%
- 10%
- 20%
- 30%

Equivalent Revenue

- $600,000
- $500,000
- $400,000
- $300,000
- $200,000
- $100,000
- $0

Revenue

Net Income

Change in Net Income

Operating Margin

$100,000

$200,000

$300,000

$400,000

$500,000

$600,000
Non-energy Benefits: Solving Real Problems

- Health & Safety
- Quality & Productivity
- Reduce O&M Costs
- Aesthetics & Comfort
- Better Controls & Feedback
- Reduce Environmental Impacts
How NYSERDA Can Help With Your Energy Strategy

What we’ll look at:

> Large Innovative Projects
> On-site Personnel
> Managing Your Energy in Your Business
> Answer Your Energy Questions
C&I Carbon Challenge

Program Goal:
Cost-effective carbon emission reduction

Benefits
• $15 million available, awards range from $500,000-$5 million
• One-stop shop for NYSERDA Incentives
• Phased Payments to match expenditures

Bring us your best ideas!
On-site Energy Manager

Made us think differently, understand the cost of wasted energy and where the waste is. It is hard to quantify the unseen waste.

The program was inexpensive and we dropped a full megawatt in usage, about 50% more than we were anticipating, while we maintained output or increased it slightly.

Benefits

- 75% cost share for On-Site Energy Manager
- A dedicated employee focusing on energy savings and reducing operational costs
- Creation of an Energy Management Plan to target and achieve goals specific to your facility
Continuous Energy Improvement

Programs
- Strategic Energy Management
- ISO 50001-Ready
- Real Time Energy Management

Benefits
- A systematic approach to energy savings
- Provides Continual monitoring of energy use to ensure persistence
- Teaches co-workers to identify and quantify energy-saving opportunities
- Sets up data review and reporting systems to support lasting change
Flexible Technical Assistance

- Is a clean energy project right for you?
- How to reduce energy bills
- Payback on potential energy-related projects or building upgrades
- Investigate distributed energy resources
- Conduct a targeted or comprehensive energy study
Getting to YES with National Grid’s Energy Efficiency Programs
4 ways to Score with Energy Efficiency Projects
Grocery Stores – Single Measure Value Proposition

1. Margins low
2. Sales Prop
3. Energy Benefits:
   a. $39,825.40 annual energy & maintenance savings.
   b. $57,886.00 in NG incentives (50% of project cost).
   c. Frees up $ for future EE projects

https://ouc.bizenergyadvisor.com/article/grocery-stores
1. Energy Benefits:
   a. $84,186 annual energy & maintenance savings.
   b. $95,786 in NG incentives (30% of project cost).

2. Financials:
   a. Simple payback = 2.8 years/ROI = 15.3%
   b. Savings to Investment = 2.5%
   c. Net Present Value = $347,279
   d. Equivalent 2.9 M in revenues from maintenance & energy savings

3. Non-energy benefits:
   a. Improve visual merchandizing (LEDs make produce look more vibrant/appealing)
   b. Extend shelf life of meat, fish, produce
   c. Improve shopping experience & working conditions
   d. Avoid 1,531,517 annual CO2 emissions (boost Energy STAR score)

https://ouc.bizenergyadvisor.com/article/grocery-stores
Manufacturing - Paper Processing: Multi Measure + NEB

1. Energy Benefits:
   a. $671,378 annual energy & maintenance savings
   b. $1,152,771 in NG incentives (47% of project cost)

2. Financials & Financing:
   a. Simple payback = 2.0 years/ROI = 19.3%
   b. Savings to Investment = 3.5
   c. Net Present Value = $3,303,106
   d. Equivalent $11.8 M in revenues from maintenance & energy savings

3. Non-Energy Benefits:
   a. Avoid 11,756,771 annual CO2 emissions
   b. Increased revenue from additional paper production
Manufacturing - Paper Processing: Home Run

1. Energy Benefits:
   a. $541,288 annual energy & maintenance savings
   b. $1,810,488 in NG incentives (36% of project cost)

2. Financials & Financing:
   a. Simple payback = 6.0 years/ROI = 7.8%
   b. Savings to Investment = 1.7
   c. Net Present Value = 2,412,303
   d. Equivalent $9.5 M in revenues from maintenance & energy savings

3. Non-Energy Benefits:
   a. Avoid 14,212,526 annual CO2 emissions
   b. Wood handling & transportation cost reductions
   c. Pulpwood yield improvement
   d. Reduced amount of wood procured & per ton procurement costs

4. Other Benefits:
   a. Allowed plant to increase production and Expand Operations
Learn more about how to manage your energy
nyserda.ny.gov/putenergytowork

Keep up to date on NYSERDA programs and offerings:
nyserda.ny.gov/subscribe

National Grid Energy Efficiency Programs
See all the possibilities at ngrid.com/business or
call 1-855-236-7052
Questions?