Tools to Quantify the Financial Benefits of Existing Building Commissioning

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New York, NY
Bob Sauchelli, US EPA
ENERGY STAR is a voluntary partnership between business and government which provides an established framework to promote the environmental and financial benefits of improved energy performance.
ENERGY STAR offers guidance, tools, and resources to help organizations achieve superior energy performance.
Current Market Penetration:

- 13 billion sq. ft. in partnership (19% of all commercial buildings)
- 21,000 buildings rated in Portfolio Manager

In 2003 alone, ENERGY STAR helped Americans achieve:

- Energy cost savings = $9 billion
- GHG reductions = 18 million cars
- Energy savings = 20 million homes
Do You Know How Your Customers’ Facilities Perform?

Until recently, a standardized, comparable metric of whole building performance did not exist.

U.S. EPA introduced the energy performance rating system to meet this need.
Is 10 MPG high or low for an automobile?

Energy Performance Rating System

Is 80 kBtu/SF/YR high or low for a building?

Fuel Efficiency

MPG

Energy Efficiency

1 - 100
Energy Performance Rating System

Normalizes building energy consumption
Weather, hours, occupant density, plug load
Whole building “mpg” rating

Benchmarks for comparison
Similar buildings in national stock

Recognizes top performing buildings
Top 25% qualify for ENERGY STAR
Eligible Space Types

Supermarkets

Hospitals

Hotels

Warehouses

Offices

general, courthouse, bank branch, financial center

K-12 Schools

Medical Offices

Post Offices

Residence Halls/ Dormitories
National Energy Performance Rating

The rating system overlays a 1 to 100 scale over national data, which gives relative meaning to energy use.

Number of Buildings

Worst Performers

Benchmark Score

Energy Intensity (kBtu/ft²-year)

Best Performers
Set Priorities Across Portfolios

High scoring buildings provide lessons learned and label candidates.

O&M improvements will yield savings and label candidates.

Best investment opportunities are in lower quartiles, where there is the greatest potential for improvement.

Tune

Reward & Learn

Invest

Portfolio in Benchmark Order
Staging Improvements

- Existing building commissioning
- Lighting
- Supplementary load reduction
- Fan/motor system upgrades
- Heating/cooling system upgrades

Details about the staged approach to energy management can be found in the ENERGY STAR Building Manual, available online at www.energystar.gov
Financial Value Calculator

- Quantifies energy efficiency projects in financial terms.
- Easy-to-use spreadsheet.
- Useful for specific projects, evaluating a building’s operating cost savings, or determining the impact of the energy management across a portfolio.
Each $1 invested in energy performance improvements in commercial real estate, is equivalent to...

Increasing Net Operating Income by... 4%

Increasing Asset Value by... $2 to $3
A 10% reduction in energy costs in the hospitality industry is Equivalent to...

- Increasing Occupancy Points by... 1.04
- Increasing the Average Daily Rate by... $1.35
- Increasing the Average Daily Rate by... 1.6%
A 10% reduction in energy costs in the supermarket industry is equivalent to:

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percentage</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing Profit Margins by</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Increasing Earnings Per Share by</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Increasing Sales Per Square Foot by</td>
<td>$60</td>
<td></td>
</tr>
</tbody>
</table>
Every $1 saved on energy in a non-profit healthcare organization is equivalent to...

- Increasing revenue for hospitals by... $20
- Increasing revenue for medical offices by... $10
A 5% reduction in energy costs in hospitals, medical offices and nursing homes is equivalent to...

Increasing earnings per share by ... $0.01
Financial Value Calculator

**Approach**

**Input:**
- **Provided by User**
  - Annual Energy Cost
  - Total Portfolio SF
  - Initial Investment
  - Annual Energy Savings
- **Publicly available**
  - P/E Ratio
  - Earnings per Share
  - Outstanding Common Shares

**Output:**
- **Financial Impacts**
  - Total Investment
  - Payback
  - Net Present Value
  - Internal Rate of Return
  - Net Income / NOI
  - Increased EPS
  - Shareholder Value
WELCOME TO THE FINANCIAL VALUE CALCULATOR

Choose Your Sector:

- Corporate Real Estate
- Healthcare (For-Profit)
- Healthcare (Not For-Profit)
- Hotel/Motel
- Supermarket/Grocery
- Retail

Input Your Data

OR

Go To Calculator

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

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

<table>
<thead>
<tr>
<th>Company Name</th>
<th>ABC Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector</td>
<td>Corporate Real Estate</td>
</tr>
</tbody>
</table>

#### Corporate Building Portfolio Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Annual Utility Bill for Buildings</td>
<td>$20,500,000</td>
</tr>
<tr>
<td>Commercial Building Floor Space (Sq. Ft.)</td>
<td>10,600,000</td>
</tr>
<tr>
<td>Energy Cost Intensity ($/Sq. Ft.)</td>
<td>$1.93</td>
</tr>
</tbody>
</table>

#### Shareholder Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Outstanding Common Shares</td>
<td>1,280,000,000</td>
</tr>
<tr>
<td>Earnings per Share *</td>
<td>$1.95</td>
</tr>
<tr>
<td>P/E Ratio *</td>
<td>13.13</td>
</tr>
</tbody>
</table>

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.

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Buttons:
- Clear Data
- Go To Calculator
- Choose Different Sector
- Use Representative Sector Data
Calculate the Impact of Improved Energy Performance
On Your Company's Financial Value

Step 1 of 2: Choose your energy performance investment goal

Each option below will calculate the potential return associated with improved energy performance. You can decide whether to define particular corporate investment rates or focus on building portfolio investment returns by choosing ONE of the options below.

1. Corporate Investment
   - Specify 70% of the following THREE factors:
     - Initial Investment ($):
     - Annual Energy Savings ($):
     - Target Internal Rate of Return (%):

2. Corporate Building Portfolio
   - Select the percentage of your building portfolio to upgrade:
     - Specified annualized and savings values:

3. Different Sector
   - ENERGY STAR shows that investing in energy performance can improve financial performance. For the scenario you created, your company could:
     - Add $1,204,900 of net income to your bottom line.
     - Increase earnings per share by 0.1 cents, or roughly 0.05 percent.
     - Increase its market value by $5.55 for each $1.00 invested, for an overall increase of $16,830,735.

Step 2 of 2: Review your potential financial returns

- Income Statement Impact:
  - Initial Investment: $2,519,800
  - Earnings Before Interest and Taxes (EBIT): $2,519,800
  - Net Income: $8,592

- Financial Summary:
  - Initial Investment: $2,519,800
  - Earnings Before Interest and Taxes (EBIT): $2,519,800
  - Net Income: $8,592

All financial summary information is calculated for pro forma financials.
Calculate Financial Metrics

**Corporate Building Portfolio**

Select the percentage of your building portfolio to upgrade:

Specify your investment and savings values.
OR, choose a typical investment and savings value.

<table>
<thead>
<tr>
<th>Ann. Energy Savings (%)</th>
<th>Investment Levels ($/Sq. Foot)</th>
<th>Initial Investment ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>$</td>
<td>0.27</td>
</tr>
<tr>
<td>30%</td>
<td>$</td>
<td>1.60</td>
</tr>
<tr>
<td>20%</td>
<td>$</td>
<td>0.80</td>
</tr>
</tbody>
</table>

**Buttons:**
- Save This Scenario
- Reset Entries
- Choose Different Sector
Calculate Financial Metrics

### Income Statement Impacts

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Cost Savings</td>
<td>$2,050,000</td>
</tr>
<tr>
<td>Expenses</td>
<td></td>
</tr>
<tr>
<td>Depreciation (ignoring salvage value)</td>
<td>-</td>
</tr>
<tr>
<td>Interest Payments</td>
<td>-</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>-</td>
</tr>
<tr>
<td>Income Before Taxes</td>
<td>$2,050,000</td>
</tr>
<tr>
<td>Income Taxes</td>
<td>$840,500</td>
</tr>
<tr>
<td>Increased Net Income</td>
<td>$1,209,500</td>
</tr>
</tbody>
</table>

### Financial Summary

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Investment</td>
<td>$2,862,000</td>
</tr>
<tr>
<td>Annual Utility Savings</td>
<td>$2,050,000</td>
</tr>
<tr>
<td>Increased Earnings per Share (EPS)</td>
<td>0.1 cents</td>
</tr>
<tr>
<td>Percent Increase in EPS</td>
<td>0.05%</td>
</tr>
<tr>
<td>Internal Rate of Return</td>
<td>71%</td>
</tr>
<tr>
<td>Payback Period (in years)</td>
<td>1.4</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$8,298,131</td>
</tr>
</tbody>
</table>

*All financial summary information is calculated for pre-tax figures.*
Step 2 of 2: Review your potential financial returns

ENERGY STAR shows that investing in energy performance can improve financial performance. For the scenario you created, your company could:

Add $1,209,500 of net income to your bottom line.

Increase earnings per share by 0.1 cents, or roughly 0.05 percent.

Increase its market value by $5.55 for each $1.00 invested; for an overall increase of $15,880,735.
Calculate Score Changes

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### Energy Performance Rating

#### Delta Score Estimator

**View Instruction:**

**Step 1**

- **ENTER Building or Portfolio Name (Optional):** ABC Bank
- **Select Building or Portfolio Type:** Office
- **AND**
- **ENTER current energy performance rating:** 60

**Step 2**

Select one of the following options:

- **Percent Energy Reduction:**
  - (INPUT a number from 1 to 50 and press "ENTER")
  - **OR**
- **Desired energy performance rating:**
  - (INPUT a number from 1 to 100 and press "ENTER")

- **Calculate Results**
- **Clear**

**Results**

**Resulting Energy Performance Rating:**

Based on the information you entered, this building is likely to score 68 on the energy performance rating scale after implementing projects that reduce energy consumption by 10%.

- **View Instructions**
- **Print Results**
- **Reset All Entries**

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**Analyze Results Using FYC**
Calculate Score Changes

View Instructions

Step 1
ENTER Building or Portfolio Name (Optional):
ABC Bank

Select Building or Portfolio Type:
Office

AND

ENTER current energy performance rating:
60

Step 2
Select one of the following options:

- Percent Energy Reduction:
  (INPUT a number from 1 to 50 and press "ENTER")

- Desired energy performance rating:
  (INPUT a number from 1 to 100 and press "ENTER")

OR

- Desired energy performance rating:
  (INPUT a number from 1 to 100 and press "ENTER")

[Calculate Results] [Clear]

Results

Resulting Energy Performance Rating:
68
ENERGY STAR Leaders

• ENERGY STAR Leaders will recognize partners that demonstrate superior energy management through organization-wide continuous improvement
  – 10, 20, and 30 point portfolio-wide improvement
  – Portfolio-wide rating of 75 or higher
Earn recognition from EPA

• Building level
  – ENERGY STAR Label
  – Designed to earn ENERGY STAR

• Organization level
  – ENERGY STAR Leaders
    • 10, 20, or 30 point increase portfolio-wide
    • Portfolio-wide rating of 75 or higher
  – ENERGY STAR Partner of the Year awards
Other ENERGY STAR Financial Tools

• **QuikScope**
  – Calculates how energy savings can impact net operating income (NOI) and asset value for the commercial real estate market.

• **Cash Flow Opportunity Calculator**
  – Estimates how much new equipment or RCx services can be purchased and financed by the anticipated savings cash flows.
  – Compares the costs/benefits of financing the project now vs. later.
Thank You

For more information visit: www.energystar.gov

and click on “Business Improvement”

or
call the ENERGY STAR Hotline at 1-888-STAR-YES