Lilly del Caribe PR01: Energy Conservation Program & Investment Evaluation Tools

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About Us

Lilly del Caribe PR01

- Pharmaceutical Manufacturer: Cymbalta, Cialis, Evista, Zyprexa
- Originally Built in 1966
- Located in Carolina, PR
- Building Space of 500,000 ft²
- Utilities: Electrical, Chilled Water, Steam, Purified Water, Potable Water and Compressed Air.
Background

*Source PREPA*
Background

58% Increase in Fuel Costs since 2007

*Source US Department of Energy - EIA
Where were we in 2007?

Energy Consumption:
409,794 MMBtu

Total Energy Costs
$11MM

Corporate Goal
15% Decrease in Total Energy Consumption by 2013
PR01 Energy Conservation

• Established in 2006

• Has representatives from all disciplines within the engineering department.

• Responsible for compliance with corporate and local goals.
Where are we today?

Total Energy Reduced

From 409,794 MMBtu to 288,000 MMBtu

27% Decrease in Total Energy Consumption to date.
Energy Components

The total energy footprint of a site will include the fuel and electrical consumption components.
Capital Investment Profile

- 11 Major Projects since 2006
- Total Investment: $2,200,000
- Total Savings: $2,250,000
- Average Simple Payback: 0.97 yrs
Evaluation Criteria

1. Savings Potential

   • How much?

   • How soon?

   • How complex is the implementation?
Since Kerosene is a cleaner fuel and has a higher caloric content, changes in fuel type was decided to be considered only when a sustained variance of $0.05 or more
Evaluation Criteria

2. Simple Payback:

• <1 year: High Priority
• 1 <3 years: Requires Good Marketing
• >3 years: Major project with long term benefits
Simple Payback Example

New VFDs in a pump system, along with the installation of high efficiency motors will cost $100,000. The project will provide savings of $50,000 per year.

<table>
<thead>
<tr>
<th>Cost of Project</th>
<th>Yearly Savings</th>
<th>Simple Payback</th>
</tr>
</thead>
<tbody>
<tr>
<td>$100,000</td>
<td>$50,000</td>
<td>$100,000/$50,000 = 2 yrs</td>
</tr>
</tbody>
</table>
Evaluation Criteria

3. Internal Rate of Return (IRR):

- Used in capital budgeting to evaluate investments against each other.
- Investments with an IRR > Cost of Capital are favorable.
Evaluation Criteria

4. Life Cycle Cost/Net Present Value:

- Widely used across industries
- Includes savings, costs and equipment life
- Can help to sell projects with high initial costs
Evaluation Criteria

5. Human Resources

• Who will sponsor the project?
• Who will manage the project?
• Who will be the owner of the finished project?
Evaluation Criteria

6. Avoided Costs

• The cost of doing nothing.

• Its numbers can be very persuasive.
Evaluation Criteria

6. Avoided Costs

<table>
<thead>
<tr>
<th>Year</th>
<th>kWh</th>
<th>Cost per kWh</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>48,267,299</td>
<td>$0.15</td>
<td>$7,368,832</td>
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<tr>
<td>2011</td>
<td>44,460,139</td>
<td>$0.23</td>
<td>$10,928,396</td>
</tr>
<tr>
<td>2007</td>
<td>48,267,299</td>
<td>$0.23</td>
<td>$10,066,401</td>
</tr>
</tbody>
</table>

Avoided Costs = $3,559,563
Sample Project: LED Replacement

**Situation:** Several floodlights in the PR01 Parking Lot were damaged and needed replacement. We compared the costs of repairing them vs replacing the whole lighting system with energy efficient LED fixtures.

**Before**  
(28) 400W HPS Floodlights

**After**  
(16) 188W LED Cobra Type

**Result:** By replacing the system with LEDs, we increased the overall illumination of the area while reducing the total fixtures from 28 to 16.

- Cost of Repairs: $14K
- Savings Electrical Bill: $7K
- Cost of LED System: $25K

**Simple Playback:** 1.9
Questions?

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