Project Financing

Paige L. Macias, UC Irvine
The Challenge

Maximizing limited financial resources by implementing projects that:

- Reduce/eliminate lighting levels
- Reduce ongoing utility expenses (perhaps deficits)
- Lower maintenance costs
- Reduce energy consumption/greenhouse gas emissions
Project Development Cycle

• Define strategic goals
• Understand business-as-usual case
• Identify potential projects and define scope
• Understand project case/s
• Cash-flow and payback analysis
• Establish financial feasibility criterion
• Project selection
Understand Basic Scope Parameters

• Eliminate illumination (whenever possible)
• Hours of consumption
• Business-as-usual cost of energy
• Maintenance savings (if applicable)
• Project implementation costs

Be realistic, if not a little conservative, in setting these parameters.
Project Candidates

Anything that draws power 24x7 is potentially a good retrofit candidate!

Occupancy controls will capture more hours of non-use than most people realize!

Example
A recreational center open 5,000 hours a year may pay to retrofit fixtures, but an intercollegiate arena used only 750 hours a year may not.
Business-As-Usual Cost of Energy:  
*Time-Weighted Vs. Average Cost*

- In most cases should be the time-weighted marginal cost/kWh including demand charges and time-of-use factors (assumes TOU tariff rate).

- Using the average cost/kWh is not always valid.
Evaluation Tools

- Simple Payback
- Net Present Value (NPV)
- Rate of Return/Return Analysis on Investment (ROI)
- Lifecycle Cost Analysis (the best)
Lifecycle Cost Analysis: **Broadest Bracket of Cost**

- Evaluates all project savings and costs over a lifetime. Includes salvage and maintenance savings, as well as operating, maintenance, replacement, and disposal costs.

- If the NPV of the benefits is greater than costs, the project is considered cost-effective.
Establish Financial Feasibility Criterion

UCI Criterion: Project savings are at least 2x debt service for the borrowing that will support energy efficiency projects.

- Provides for a margin of safety if project costs are underestimated.

- Some of the net savings are sequestered for the cost of skilled staff to provide ongoing maintenance, recommissioning, adjustment, and monitoring to ensure savings continue to be realized.
Bi-Level, Motion Controlled Stairwell Lighting Project at UCI

Basic Parameters
Fixtures Retrofit: 394
Estimated Energy Savings: 152,000 kWh/yr.
Estimated Cost per Fixture: $260
Estimated Project Cost: $104,000
Bi-Level, Motion Controlled Stairwell Lighting Project at UCI

Time-Weighted Marginal Cost/kWh
Energy Cost: $.07/kWh
Estimated Annual Savings: $10,600
Simple Payback: 9.8 yrs.

Average Cost/kWh
Energy Cost: $.11/kWh
Estimated Annual Savings: $16,300
Simple Payback: 6.4 yrs.
Summary

Spending time upfront evaluating the financial feasibility of a project will enable your institution to realize the greatest return on investment.

Paige L. Macias
University of California, Irvine
(949) 824-5108
plmacias@uci.edu