

**Energy Efficiency  
Simple, Safe Investment**

**Tim Gasper, PE  
Brady Energy Services  
(919) 781-0458  
TJGasper@Trane.com**



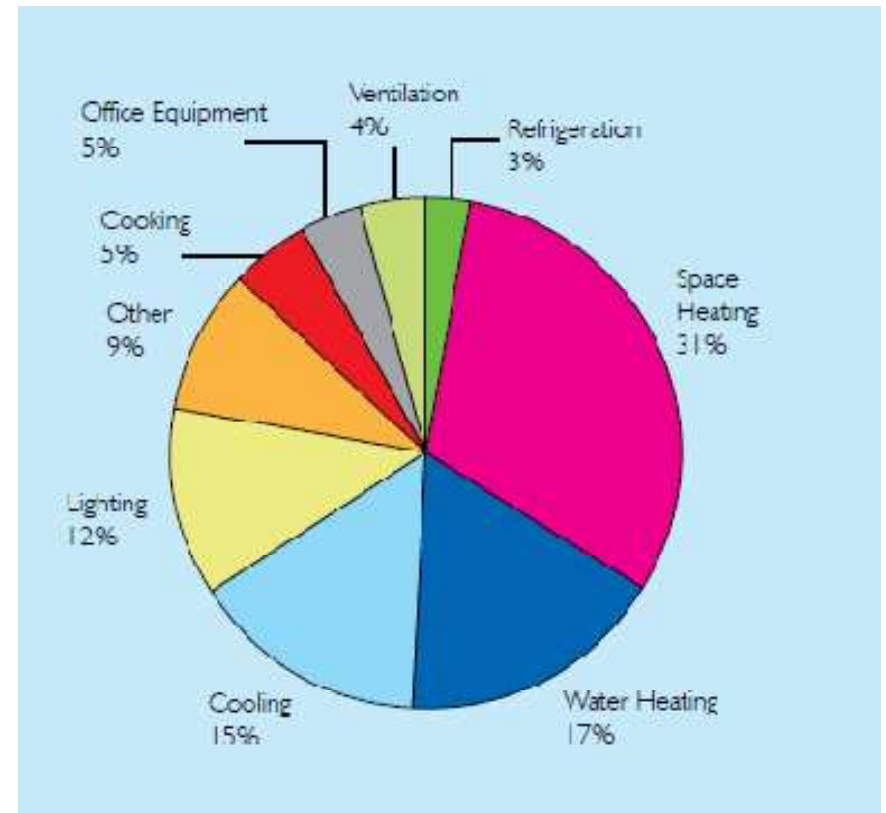
# Energy Efficiency in Attractions and Accommodations

- Energy Costs
  - On average, America's 47,000 hotels spend **\$2,196**
    - per available room each year on energy
  - Represents about **6% of all operating costs**
- Energy Efficiency Benefits
  - Direct energy cost savings
    - 20 % reduction in energy consumption means...
    - Same financial effect as increasing the ADR
      - » **\$1.24** in limited-service hotels
      - » **\$2.70** in full-service hotels
  - Capital equipment upgrades
    - More reliable = Less maintenance = Less cost and often not considered
  - Enhances guest comfort
  - Demonstrates a commitment to **climate stewardship**
    - Competitive advantage

# Energy Efficiency in Attractions and Accommodations

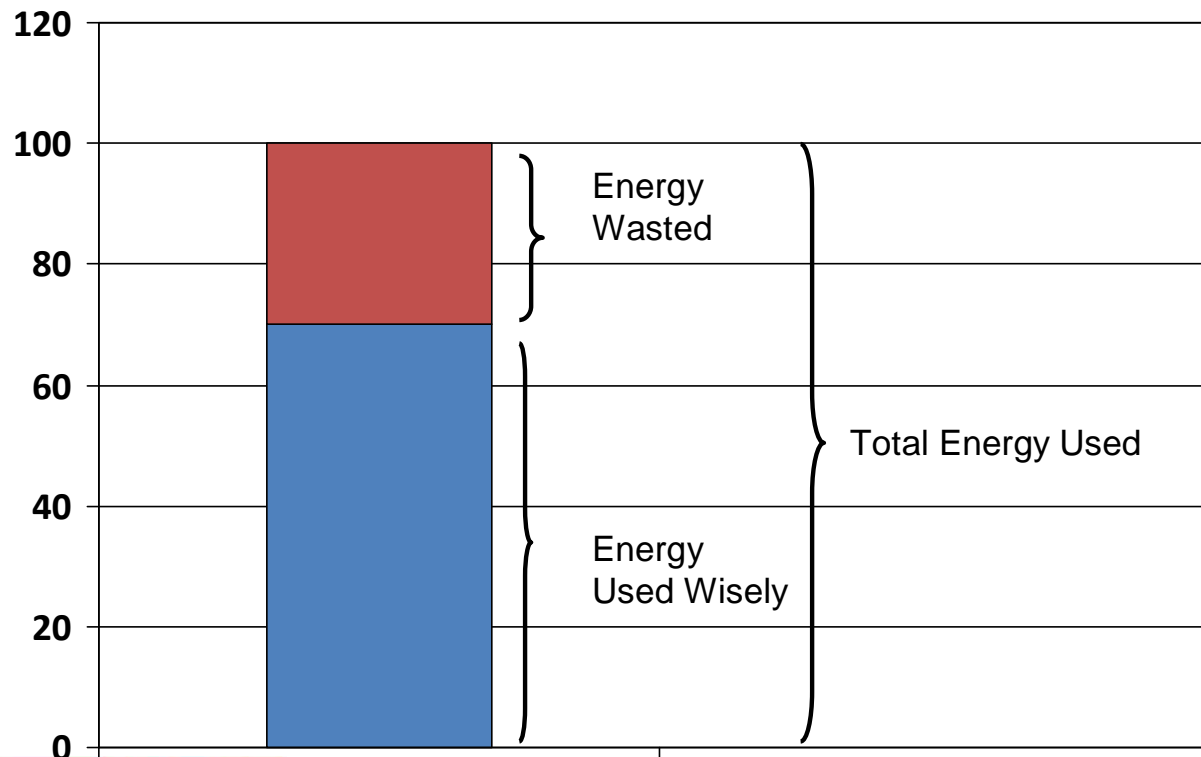
- Energy Costs

- Where is it going?
- What choices?
  - Continue to spend?
    - » Do nothing is not an option
  - Invest & reduce?
    - » No & low-cost measures
    - » Capital investments
- Future Energy Costs?
- Cost of Delay?



# Energy Use

- Energy consumption in EACH Category – two components
  - Energy used wisely
  - Energy use wasted



Use	Percent
Space Heating	31%
Water Heating	17%
Space Cooling	15%
Lighting	12%
Other	9%
Cooking	5%
Office Eq	4%
Ventilation	4%
Refrigeration	3%

# Most Common Energy Wasters

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1. Scheduling – HVAC, Lighting, Kitchen Eq.
2. Old Lighting Systems
3. Kitchen Hood Systems
4. Simultaneous Heating & Cooling
5. Poor HVAC Ventilation Control
6. Constant Volume Air & Air Mixing Systems
7. Constant Volume Pumping & Pump Throttling
8. Poor Maintenance
9. Poor Chiller & Boiler Plant Control
10. Oversized and Inefficient Equipment

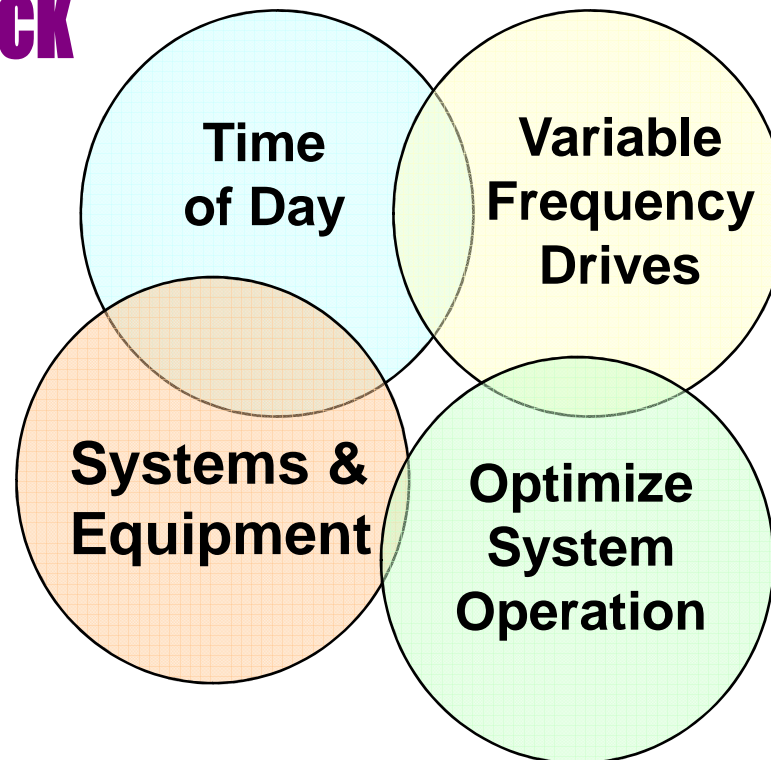
# Energy Conservation Measures

**Shut off/Setback**

**Slow down**

**Repair  
Replace**

**Coordinate &  
Commission**



# Financial Analysis Tools

- Simple Payback – SPB
  - $\text{Cost/annual savings}=\text{years}$
- Internal Rate of Return
- Net Present Value
- “Continue to Waste” or “Invest & Save”
  - Annualized measure costs compared to annual savings
- TEPA - Thermal Energy Purchase Agreement
  - System owned/operated/maintained by 3<sup>rd</sup> party
  - Buy the BTUs
- Off Balance Sheet – Off Credit
  - Efficiency Measures owned/operated/maintained by 3<sup>rd</sup> party

**Focus on  
Investment &  
Payback**

**Focus on  
Cash Flow**

# Financial Considerations

- Investment **Risks**
  - Risk of results falling short of **expectations**
  - Risk of results falling short of **other investments**
- If focus only on Investment & Payback
  - Energy management – **stop & go process**
    - Back to square one if measure(s) rejected
  - Continue to **waste dollars**
    - Instead of **saving dollars**



# How Much Does the Measure Cost?

- Why make the measure justify itself so quickly?
  - Long life measure will often be rejected
- How much does the measure **cost per year?**
  - Compare **Annual Cost** to **Annual Benefits**

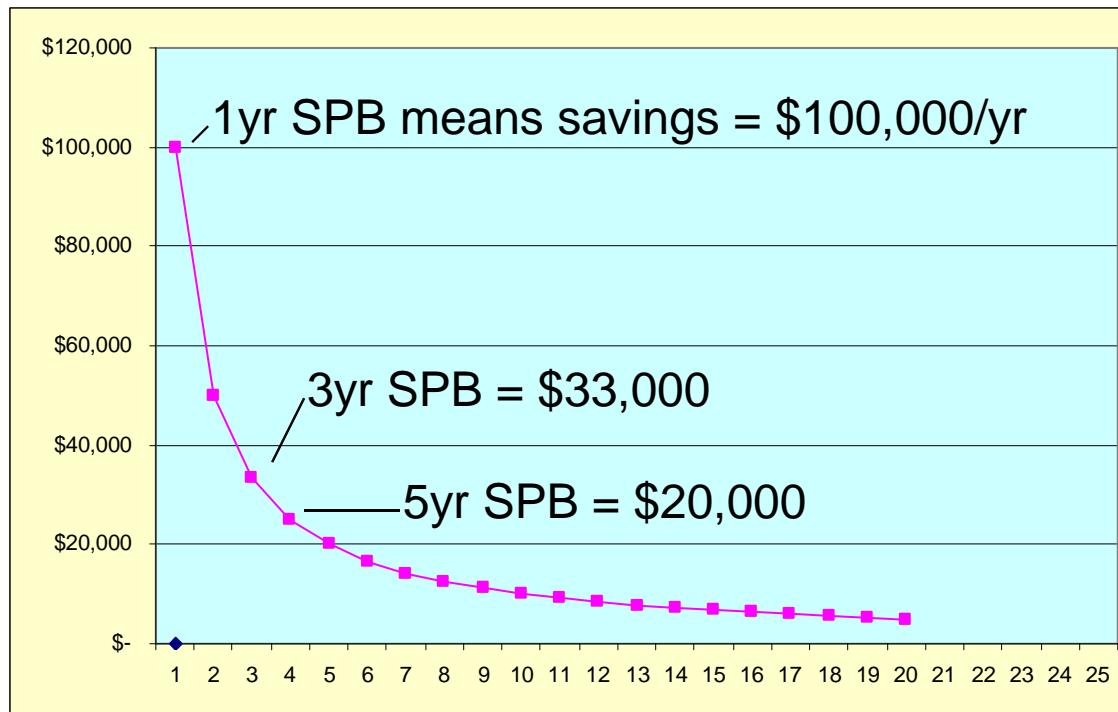
$$\text{Annualized Cost (PMT)} = \frac{i(1+i)^n}{[(1+i)^n]-1}$$

i = cost of capital and discount rate for future cash flows

n = economic life of project

# Example – Annualized Cost of Measure

- Cost of Measure = \$100,000
- $SPB = \text{Cost} / \text{Savings} = \text{Years}$



# Retrofit Example

- Cost of Measure = \$100,000
- Cost of Capital (=discount rate) = 10%

	<b>Energy Before</b>	<b>Energy After</b>	<b>Savings</b>	<b>% Savings</b>
<b>Energy</b>	\$ 50,000	\$ 38,500	\$ 12,500	25.00%
<b>SPB</b>	<b>8.0</b>			

**Asset Life** 20  
**Annualized Cost** (\$11,745.96)

Year	0	1	2	3	4	5
<b>Cost Basis if SPB Method</b>		\$100,000	\$50,000	\$33,333	\$25,000	\$20,000
<b>Cost Basis if Annualized</b>		(\$11,746)	(\$11,746)	(\$11,746)	(\$11,746)	(\$11,746)
<b>Annual Savings w/Inflation</b>	(\$100,000)	\$ 12,500	\$ 13,000	\$ 13,520	\$ 14,061	\$ 14,623

<b>Net Savings</b>	\$ 754	\$ 1,254	\$ 1,774	\$ 2,315	\$ 2,877
<b>Cumulative Savings</b>	\$ 754	\$ 2,008	\$ 3,782	\$ 6,097	\$ 8,974

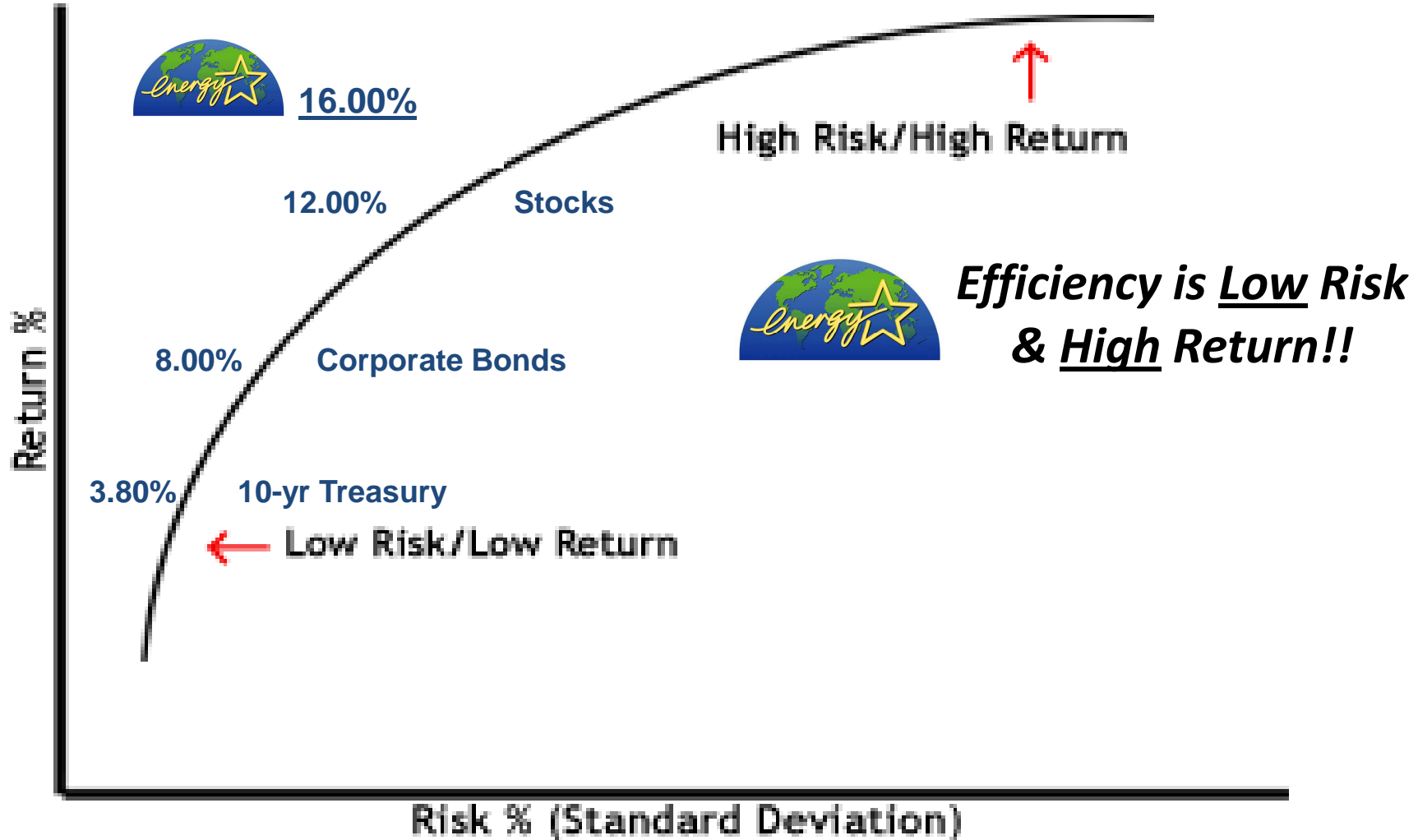
**NPV** \$51,885.22

**IRR** 16%

**20-yr Total Cumulative Net Savings** \$ 137,307



# Investment Risks & Returns



# S&P 500 – 2000 - 2010

- Negative return for decade
- Are there better investments – safer too?
- Consistent with risk/return?



# Typical Array of Choices

<u>Upgrade</u>	<u>Cost</u>	<u>SPB-Yrs.</u>
Chiller Upgrade	\$1,250,000	15
Boiler Upgrade	\$550,000	8
Insulation	\$225,000	10
Doors	\$400,000	20
Windows	\$1,200,000	20
Other HVAC	\$350,000	25
<b>Total</b>	<b>\$3,975,000</b>	<b>14.8</b>
Controls Upgrade	\$350,000	2
Thermal Storage	\$1,000,000	8
Lighting Upgrade	\$2,000,000	4
<b>Total</b>	<b>\$7,325,000</b>	<b>6.9</b>

Good *Strategy* - Consider **Bundling *Fast & Slow*** Paybacks



# Financial Considerations - Summary

- Efficiency Investments?
  - Invest or *keep paying*
- Consider using *Annualized* Cost
  - Pay a 20-yr asset in 3-yrs?
- *Bundle* your projects
  - Fast & slow paybacks
- Consider investment *Risk & Return*
  - Efficiency is a SAFE Investment!!
- **Invest** or **Waste** mentality



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## ECO-TOURISM

### Introduction to Eco-Tourism



Orbitz is committed to protecting Planet Earth, by helping raise environmental awareness and by making it easier to be an eco-friendly traveler.

- Find Hotels that have earned the EPA's ENERGY STAR® for using nearly 40 percent less energy than average buildings and emitting 35 percent less carbon dioxide into the atmosphere.

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## Eco-Friendly Hotels

Start considering an eco-friendly hotel when you travel. Many lodging properties use wind and solar power as energy sources or purchase only environmentally-friendly products, such as "green" detergents for linens and soaps. Hotels around the world are doing their part to help you minimize your impact on the environment on your next trip. Based on [Orbitz' research](#), we think these hotels deserve some recognition.

Check out our growing list of "green" hotels:

Find hotels by state

North Carolina

Eco-Friendly Hotels Criteria

[SpringHill Suites by Marriott Charlotte University Research Park - Charlotte, NC](#)

[Springhill Suites by Marriott Raleigh/Durham Airport/Research Triangle Park-Durham, NC](#)

[Courtyard by Marriott Durham Research Triangle Park - Durham, NC](#)

[Courtyard by Marriott Raleigh North - Raleigh, NC](#)

[Courtyard by Marriott Raleigh Crabtree Valley - Raleigh, NC](#)

[Courtyard by Marriott Raleigh-Durham Airport - Raleigh, NC](#)

[Courtyard by Marriott Greensboro - Greensboro, NC](#)

[Courtyard by Marriott Fayetteville - Fayetteville, NC](#)

[Courtyard by Marriott Charlotte SouthPark - Charlotte, NC](#)

[Courtyard by Marriott Charlotte Arrowood - Charlotte, NC](#)

[Courtyard by Marriott Raleigh Cary - Cary, NC](#)

[Residence Inn by Marriott Raleigh Cary - Cary, NC](#)

[Courtyard by Marriott Charlotte University Research Park - Charlotte, NC](#)

[Proximity Hotel](#)

### Eco-Friendly Hotel Criteria:

- Use a natural source of energy (i.e. wind, water, solar, bio-fuel)
- Use environmentally-friendly and safe products (i.e. detergents for linens, soaps, shampoos, etc.)
- Contribute \$\$ from each hotel reservation to an environmental organization
- Use of energy conserving devices (i.e. eco-friendly light fixtures/bulbs triggered by motion detectors, water-saving devices, water filtration systems and air filtration/purifiers)
- Earned the ENERGY STAR®



Orbitz is proud to recognize hotels that have earned the ENERGY STAR, indicating that they are among the top 25% of facilities in the country for energy performance. Click here for more information about the ENERGY STAR program

[www.energystar.gov](http://www.energystar.gov)

Hotels interested in learning how to track energy performance and the related carbon

Child

(0-17)

0

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# Energy Management Guide

[www.emt-india.net/ECBC/ECBC-Guidebooks/guidebook-Hotel.pdf](http://www.emt-india.net/ECBC/ECBC-Guidebooks/guidebook-Hotel.pdf)

## Simple, organized, useful

- Initiate an Energy Management Program
- Determine Efficiency Targets
- Conduct Energy Assessments
- Identify Energy Savings Opportunities
- Calculating Costs and Paybacks
- Implement Measures
- Monitor Performance

## ENERGY MANAGEMENT IN YOUR HOTEL





## Resources & Info

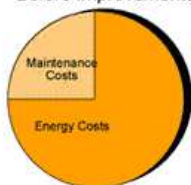
### What is Energy Performance Contracting?

#### Here's how it works:

- ❑ RESOURCES & INFO
- ❑ What is PC?
- ❑ 5 Steps to Success
- ❑ PC Activities by State
- ❑ State Programs
- ❑ Federal Programs
- ❑ Financing
- ❑ Legislation
- ❑ Documents
- ❑ Links

You enter into an agreement with a private energy service company (ESCO). The ESCO will identify and evaluate energy-saving opportunities and then recommend a package of improvements to be paid for through savings. The ESCO will guarantee that savings meet or exceed annual payments to cover all project costs—usually over a contract term of seven to 10 years. If savings don't materialize, the ESCO pays the difference, not you. To ensure savings, the ESCO offers staff training and long-term maintenance services.

Before Improvements







After Improvements



Many types of building improvements can be funded through your existing budgets—new lighting technologies, boilers and chillers, energy management controls and swimming pool covers, to name a few.

#### A qualified ESCO can help you put the pieces together:

<http://www.energyservicescoalition.org/resources/whatis.htm>

-  Develop engineering designs and specifications;
-  Manage the project from design to installation to monitoring;
-  Arrange for financing;
-  Train your staff and provide ongoing maintenance services; and
-  Guarantee that savings will cover all project costs.

