



U.S. Department of Energy  
Energy Efficiency and Renewable Energy

# What is an Energy Project?

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of

CONTROL TECHNOLOGY AND SOLUTIONS

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# Agenda

- Deteriorating Infrastructures
- Energy Projects – Yesterday and Today
- How Energy Projects are Accomplished
- What Qualifies as an Energy Saving Project
- Three Stages of an Energy Project
- Aspects of Guarantee Proposals
- Are you a candidate for an Energy Project
- Steps to get started



# Deteriorating Infrastructures

- Many public buildings are over 20 years old
- Fiscal budgeting limits large scale renovation
- Poor maintenance practices compound issues
- Technology changes have not been incorporated
- Most public buildings built when little concern was given to operating costs



# Example–Deteriorating Infrastructures

- \$112 billion is needed to repair or upgrade American school facilities to “good overall condition”
- Of this, \$11 billion is needed to remove hazardous substances such as asbestos, lead and radon
- One third of America’s schools have at least one building in need of extensive repair
- More than 11 million students attend schools with unsatisfactory ventilation



# Yesterday's Energy Projects

- Energy Management Systems
- Repair Temperature Controls
- Replacing Incandescent Lighting
- Big Maintenance Contracts

**Example:** Maryville Schools, Maryville, MO

- Replaced steam traps
- Repair pneumatic temperature controls
- Installed EMS in all buildings



# Today's Energy Projects

- Alternative Fuels
- HVAC Replacement
- Direct Digital Control Systems
- Total Lighting Retrofits
- The sky's the limit!



# Example: Today's Energy Projects

**Case History** – Louisiana State University, Louisiana

**Location:** Baton Rouge, Louisiana

**Size/Description:** Multi-facility University Campus, largest Energy Savings Performance Contract completed in the U.S. to that date, 100 building linked to a central chilled water and steam plant

**Projects Cost:** \$18,650,000

**Project State/End Dates:** November 1989 – June 1994 (contract buyout by client)

**Type/Tern of Contract:** 10 Year Guaranteed Savings Plan

## **CMS Implemented:**

- A 5,000 – HP, gas fire turbine was installed to drive a 6,300 ton chiller and produce steam with a heat recovery boiler
- Over four (4.5) miles of underground piping along with 8,000-tons of cooling tower capacity were installed and 2.25 miles of fiber optic cable (for EMS)
- Twenty-two (22) new pumps and variable speed drives were needed to modify and control the flow of chilled water to the campus building
- A new, computerized energy control system was installed to optimize the use of the chiller plant
- Boiler controls were relocated from separate control rooms into the new plant
- CES/Way controlled 12,000-tons of chillers from the new central plan and distributed chilled water to the campus utilizing variable volume pumping loops, without the use of building booster pumps.

**Annual Energy Savings: Projected: \$4,334,992**

**Achieved: \$4,672,049**



# How Energy Projects are Accomplished

## **Missouri Statute 2.381 provides for:**

- Improving occupants comfort and life safety
- Repair, modernize and maintain facilities
- Leverages state funding formula for upgrades to public schools
- Allows funding of facility improvements from existing budget
- Achieves “guaranteed” results through energy cost saving measures



# What Qualifies as an Energy Saving Project?

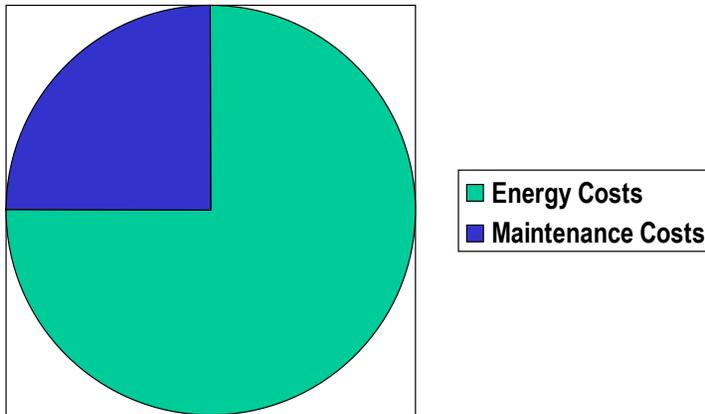
- Indoor Air Quality Improvements & Automated Temperature Controls
- Heating, Ventilating and Air Conditioning Upgrades or Replacement
- Lighting Improvements
- Cogeneration and Energy Recovery Systems
- Building Envelop Improvements
  - Insulation, Roofs, Windows, Doors & Weather-stripping
- Life Safety Improvements (fire alarm & various communication systems)



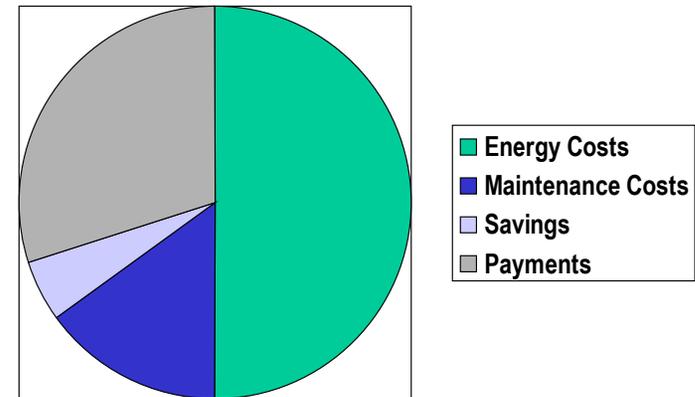


# Three Stages of an Energy Project

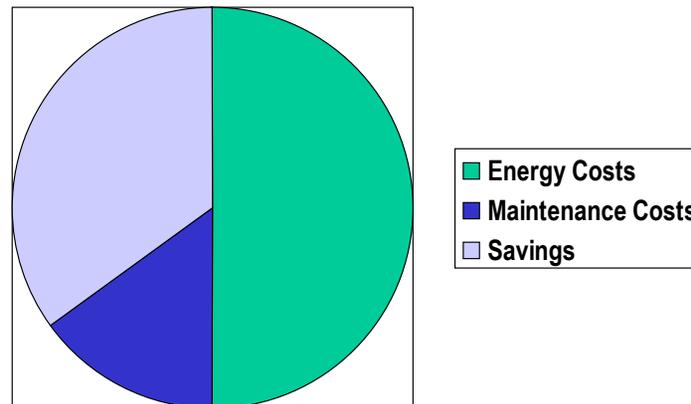
## Before Improvements



## After Improvements



## After Repayment



**Also, Performance Contracting improves comfort and increases system reliability.**



# Aspects of Guaranteed Proposals

- Guaranteed Energy Savings Contract shall have written guarantee of savings
- Annual cost to Company can not exceed Energy and Operational Savings
  - Energy Savings:
    - Dollars that can be saved from existing utility usage and equated to quantifiable dollars that must be guaranteed by the contract provider.
  - Operational Savings:
    - Operation and Maintenance budgeted items; expenses eliminated and future replacement expenditures avoided as a result of new equipment installed or services provided.



# Are you a candidate for an Energy Project?

- Does your facility have more than 40,000 ft<sup>2</sup> of conditioned space?
- Do you spend more than \$40,000 per year on utilities?

*If you answered yes, you could be eligible*

## Other key issues to consider:

- Is the age of your building over 15 years?
- Are HVAC maintenance costs high or systems need to be replaced?
- Has your lighting system been upgraded to high efficiency?
- Has your control system been modernized?
- Is your roof original?
- Are your windows single pane?
- Are you experiencing comfort complaints?



# What are the steps to get started?

- Pre Request for Proposal Activities:
  - Meet with qualified Performance Contracting Provider
  - Provide company financial documentation
  - Provide access to district for Facility Feasibility Study
  - Receive and review Feasibility Study
  - Begin formal Process....(1. Advertise for Request for Proposals)



# Thank you for attending.

- For more information, please feel free to contact us:

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