Integrated Energy Management

APPA Institute for Facilities Management
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TODAY'S PRESENTATION

Course Description:

This course explores:

Energy management means managing your energy-related production and consumption to help meet your institution's vision while maintaining its expected service levels. This requires grassroots involvement of faculty, staff, and students along with an understanding of the restrictions that can confront the energy management program due to your stakeholders' conflicting goals. With many competing political, social, and technical messages bombarding stakeholders, an effective energy management program needs sufficient resources and backing from campus leaders to be effective. Energy Management is not just about conserving energy; it's about understanding what you can reasonably expect to accomplish within your institution's constraints.

Learning Objectives:

- *Better understand the concepts of energy efficiency, conservation, demand, and management.*
- *Learn about the Integrated Energy Trident*
- *Study the breadth of the energy management function in our institutions.*
- *Identify the various stakeholders, restrictions, and opportunities that must be evaluated to create a viable energy management program.*

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What is an *Integrated Energy Strategy*?

"Don't make short-term decisions without a long term plan."

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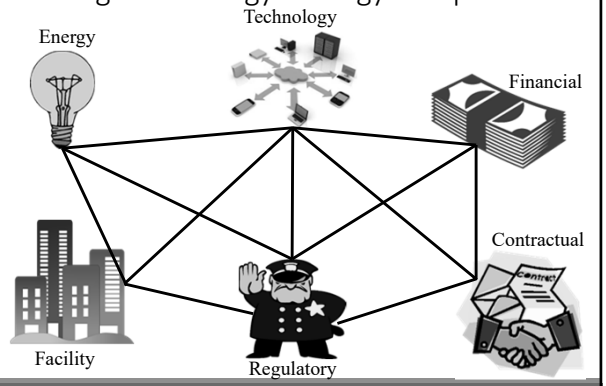
Integrated Energy Strategy Components



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Requires Input and Cooperation from All Stakeholders

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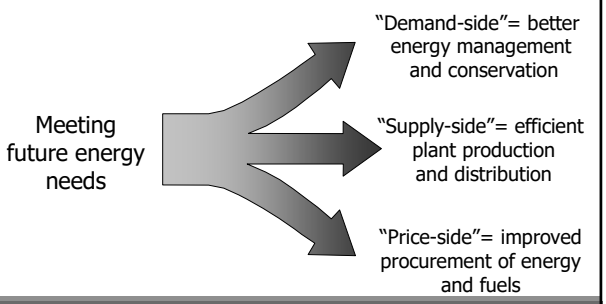
The Integrated Energy Trident



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INTEGRATED ENERGY MANAGEMENT QUESTIONS

- How does this fit with our institutional vision?
- What stakeholders are affected by the project(s)?
- Is this a conservation, efficiency or price/cost project?
- Will this save energy?
- Will this reduce total life-cycle costs?
- How will the funding be provided?
- Is this a sustainable concept?

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Efficiency vs. Conservation

Efficiency

Technology-based

- **Energy efficiency involves the use of technology, requiring less energy to perform the same function.**
- **Focuses on the equipment or system being used**
- **An example is installing LED light bulbs throughout a facility**

Conservation

Behavior-based

- **Energy conservation includes any behavior that results in the use of less energy.**
- **Focuses on the behavior of people**
- **An example is turning off the lights when not needed.**

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Demand-Side

- Energy Conservation Awareness Program
  - Consider using outside consultant trained staff
  - Must have constant and high level support
  - Best if part of an energy management institutional policy
- Energy Conservation and Efficiency Opportunities
  - Energy and operations audit
  - ESCO (energy services company)
    - Be your own ESCO
  - Use debt to finance needed changes

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GROUP DISCUSSION QUESTION #1

Your president/chancellor has signed on to a sustainability consortium. An idea to exchange fluorescent for LED lamps campus-wide has been proposed.

- Is this a price, conservation or an efficiency project?
- Will this save energy?
- Will this reduce total life-cycle costs?
- Is this a sustainable concept?

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Supply-Side

- Energy Efficiency Opportunities
  - Energy audit: Provide only the capacity needed
  - Use debt to finance needed changes
  - ESCO (energy services company)
    - Be your own ESCO
  - Operational changes
    - Optimization of assets
    - Efficiency mapping
- Synergize
- Make versus Buy
- KPI/MMV

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GROUP DISCUSSION QUESTION #2

You have projected the need for additional district heating capacity to your campus over the next 10 years. Your utilities group has proposed that the campus generate a portion of its power through cogeneration and provide the needed steam capacity from waste heat boilers. Capital funds are very restricted, but the project could pay for itself over 20 years.

- Is this a price, conservation or an efficiency project?
- Will this save energy?
- Will this reduce total life-cycle costs?
- Is this a sustainable concept?
- How can it be funded?

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Price-Side

- Take an active role in the regulatory process
  - Intercede as an institution
  - Intercede as an institutional group
  - Intercede as an industrial group
    - Recognize the expertise and cost requirements to gain a "seat at the table."
- Purchase fuel and power on the open market
    - Recognize the expertise and cost requirements to become effective in an open market
- Make versus Buy decision making tools

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GROUP DISCUSSION QUESTION #3

Your institution has been approached by a representative of a consortium that intercedes in regulatory rate cases advocating for green, fossil-fuel-free, alternative energy electrical production. What advice will you give executive management?

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GROUP DISCUSSION QUESTION #1a

Your president/chancellor has signed on to a sustainability consortium. The proposal is to install lighting timers and ambient light sensors in classrooms.

- Is this a price, conservation or an efficiency project?
- Will this save energy?
- Will this reduce total life-cycle costs?
- Is this a sustainable concept?

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GROUP DISCUSSION QUESTION #1b

Another proposal is to hire an external firm to provide a behavioral-focused energy conservation program.

- Is this a price, conservation or an efficiency project?
- Will this save energy?
- Will this reduce total life-cycle costs?
- Is this a sustainable concept?

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GROUP DISCUSSION QUESTION #2a

You have projected the need for additional district cooling capacity to your campus over the next 10 years. Your utilities group has proposed that the needed capacity come from a large cooling storage facility. Existing cooling assets will be run at night to charge the storage which will be depleted during the day. Capital funds are very restricted, but the project could pay for itself over 20 years.

- Is this a price, conservation or an efficiency project?
- Will this save energy?
- Will this reduce total life-cycle costs?
- Is this a sustainable concept?
- How can it be funded?

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GROUP DISCUSSION QUESTION #3a

Your student senate has passed a resolution that the institution commit to 100% alternative energy in 20 years. What advice will you give executive management?

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