Energy Management for Community Colleges

ICCCFO Fall Conference
October 6, 2011
Sitton Construction Group

- Saving Owner’s money on their facilities
- Professional CM/Owner’s Rep
- Energy Consultants
- Doug Sitton, PE, LEED AP
- Erik Merker, CEM
Reducing Energy Usage

- Resources, Grants and Incentives
- Energy Efficiency
- Project Delivery
Energy Programs

- DCEO
- SEDAC
- IGEN
- ICECF
- Electrical Coops
- ERC-UIC
- IMEA
- MidAmerican Energy
DSIRE: www.dsireusa.org

- Database of State Incentives for Renewables and Efficiency
- State, local, utility and federal incentives and policies that promote renewable energy and energy efficiency
- Established in 1995
- Funded by U.S. Department of Energy
Department of Commerce and Economic Opportunity

- Public Sector
- Illinois Energy Now Program

- EEPS – Energy Efficiency Portfolio Standards
Department of Commerce and Economic Opportunity

- Standard Incentives
  - Quantifiable electric efficiency measures
- Custom Incentives
  - Incentives in $/kWh saved for non-standard measures
- New Construction
  - Design improvements beyond code
- Retro-Commissioning
  - Existing buildings
Smart Energy Design Assistance Center (SEDAC)

IL EEPS PROGRAM STRUCTURE

- Electric Utilities (Electric Efficiency Goals)
  - Ameren Illinois
  - ComEd
  - ActOnEnergy
  - smart ideas

  Financial Incentives to Private Sector

- DCEO
  - Illinois Department of Commerce & Economic Opportunity
  - Illinois EnergyNow

  SEDAC Services to All Sectors

- Gas Utilities (Gas Efficiency Goals)
  - Nicor
  - Peoples Gas
  - North Shore Gas

  Financial Incentives to Public Sector

- Financial Incentives to Private Sector

IL legislation sets energy efficiency goals for utilities.
SEDAC’s funding is from IL Utilities through DCEO.
SEDAC Provides SERVICES to the Public and Private Sector.
SEDAC

- **New Construction Incentives**
  - New construction and renovation
  - Incentives for design that exceeds the Illinois Energy Conservation Code

- **Retro-Commissioning (RCx) Program**
  - Low cost tune-ups and adjustments to existing building operating systems
  - Can use pre-qualified consultant of choice
  - SEDAC pays 100% of survey cost
  - DCEO Custom Program may help fund implementation
SEDAC Design Assistance

• Four (4) Levels
  – Level 1: Quick Advice
  – Level 2: Site Visit, Design Review, and Energy Assessment
  – Level 3: Detailed Design Assistance
  – Level 4: Implementation Assistance

• Can use pre-qualified consultant of choice

• SEDAC pays 100% of design assistance
Illinois Green Economy Network

- Community colleges spent $52 million on electricity/gas in FY 2010
- FY 2012 Goals:
  - 4% electricity reduction
  - 3% gas reduction
- FY 2011-2014 Goals:
  - 10% electricity reduction
  - 8% gas reduction
Illinois Green Economy Network

- $2,000,000 from DCEO for group bulk purchasing of energy efficient equipment
- Aggregator for Community Colleges
- 24 Community Colleges have signed on
- Energy audits through SEDAC and its consultants
Illinois Clean Energy Community Foundation

- Energy Efficiency
  - Lighting
  - Model Energy Efficiency Systems, eg, geothermal
  - Green Buildings (gold and platinum)
- Renewable Energy
- Natural Areas
Electrical Coops

- Approximately 12 community colleges
- Six (6) have used geothermal grant from ICECF through AIEC
- Some individual coops also have their own incentives
- AIEC aggregates geothermal grant applications to ICECF
Energy Resource Center – University of Illinois at Chicago

- Relationship with DCEO similar to SEDAC’s
- Current boiler tune-up special
- Energy assessments for SEDAC
Other Programs

- Illinois Municipal Electric Agency (IMEA)
  - Few main campuses are covered
  - Some branches are also covered

- MidAmerican Energy
  - Quad Cities area only
Energy Efficiency Measures (EEMs)
0-1 Year Payback EEMs

- Adjusting scheduling & set points
- Optimizing economizer operation
- Adding temperature and pressure resets to programming
- Repairing equipment deficiencies
1-5 Year Payback EEMs

- Installing:
  - Lighting upgrades
  - Daylighting controls
  - Occupancy controls
  - Variable frequency drives (VFDs) on fan and pump motors
- Implementing demand control ventilation
- Resizing systems to meet current loads
5+ Year Payback EEMs

• Installing exhaust energy recovery systems
• Replacing motors with higher efficiency motors
• Converting steam systems to hot water
• Replacing HVAC equipment with more efficient equipment
Accomplishing Energy Efficiency

Existing Buildings, Renovation and New Construction
Energy Audits

• Also called assessments
• Elements may include:
  – Site inspection
  – Design review
  – Modeling
  – Life-cycle cost analysis
Commissioning (Cx)

- Shipbuilding term
  - Commissioned ship is one deemed ready for service
- Must pass several milestones
  - Equipment is installed and tested
  - Problems are identified and corrected
  - Crew is extensively trained
- A thorough quality assurance process
Re-Commissioning

• Occurs when a building that has already been commissioned undergoes another commissioning process

• Decision triggered by
  – Change in use or ownership
  – Operational problems
Retro-Commissioning (RCx)

• Cx process for existing buildings

• Benefits:
  – Increased asset value
  – Improved system operation and performance
  – Increased O&M staff capabilities & expertise
  – Improved occupant comfort and indoor environmental quality

<table>
<thead>
<tr>
<th>Description</th>
<th>Range of Values¹</th>
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</thead>
<tbody>
<tr>
<td>Value of Energy Savings</td>
<td>$0.11 - $0.72/sqft</td>
</tr>
<tr>
<td>Value of Non-Energy Savings</td>
<td>$0.10 - $0.45/sqft</td>
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John A. Logan Retro-Commissioning

- SEDAC funded 100% of consultant’s fee
- 300,000 square feet
- Electric only
- Annual savings estimate
  - 651,605 kWh
  - $49,013
SWIC Retro-Commissioning

- SEDAC funded 100% of consultant’s fee
- 200,000 square feet
- Electric and gas
- Annual savings estimate
  - 277,930 kWh
  - 10,367 therms
  - $37,197
Project Delivery of Long-Term Payback Items
Project Delivery Methods

- Design/Bid/Build – Single Prime
- Design/Bid/Build – Multiple Prime
- Performance Contracting
Performance Contracting

- Selection based on best value proposal
- PC provides:
  - Financing
  - Guaranteed energy savings
  - Design-build
Maximizing PC

• Validate the fit for each project
• Write RFP to get apples-to-apples proposals
• Allow plenty of time for contract negotiation and final design
• Oversee and review all phases
• Emphasize competitive bidding
• Minimize self-performing of work
Summary: Reducing Energy Usage/Cost

• Have an overall energy plan
• Look for and implement quick payback measures
• Incorporate longer payback measures into additions and renovation
• Take advantage of grants, incentives and resources
Thank You

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