Comprehensive Resource Management

A holistic view

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Comprehensive Resource Management

- Resource Management is frequently addressed only in “project” sized bites, never as a “program”
- The current OSPI and Department of Commerce funding creates an opportunity to initiate a comprehensive resource plan
- Comprehensive resource planning will reap benefits in improved facilities, lower utility costs, and a reduction in future capital project costs for years to come

Elements of a Comprehensive Approach

- Ongoing Activities
  - Resource management
  - Maintenance management
  - Personnel management
  - Systems management
- Project Based Activities
  - ESPC Projects
  - Capital Projects

Resource Conservation Management

- Efficient Operations and Behavioral Changes
  - Small adjustments save a lot of energy and money with minimal impact to occupants
- Organizational Participation
  - Direction and support from upper-level management
  - Institutional wisdom from the trenches
  - Designated person to coordinate – Resource Conservation Manager
- Partnership
- Audit, Evaluate, Re-evaluate, Communicate

Resource Management

- Resource Accounting
  - Tracking and trending
    - Identify outliers, unexplained changes, billing errors, rate changes
  - Graphing and communicating results
  - Sub-metering & Interval Data
    - Analyze consumption by end use (lighting, plugload, HVAC)
    - Like-space comparison
    - Daily peak loads and demand leveling
    - Existing sub meters often not used

Resource Conservation Management

- New way of doing business
  - Federal and State Attention
    - Call for energy conservation and independence
    - Greenhouse Gas reduction and EnergyStar™ requirements
  - Budget Crisis
    - Less money spent on utilities, more on jobs and programs
    - RCM pays for itself; additional savings reinvested in conservation
  - Economic Recovery
    - Established conservation ethic
    - New employee orientation: “This is how we do things here.”

Maintenance Management

- Maintenance Management Systems
- Smart purchasing and system replacement
  - High efficiency motors
  - Toilets
  - Irrigation systems
  - Lights
  - Chillers, boilers, heat pumps
- Trending of HVAC Systems
  - Weekly review of system trend data can save 10% or more off utility bills by itself, and greatly improve comfort

Personnel Management

- The right person in the right place
  - Resource Conservation Manager
  - Utility bill analysis
  - HVAC technician to review system logs
  - Consider departmental assignments – “Plumber in charge of water savings”
- Training
- Incentivizing

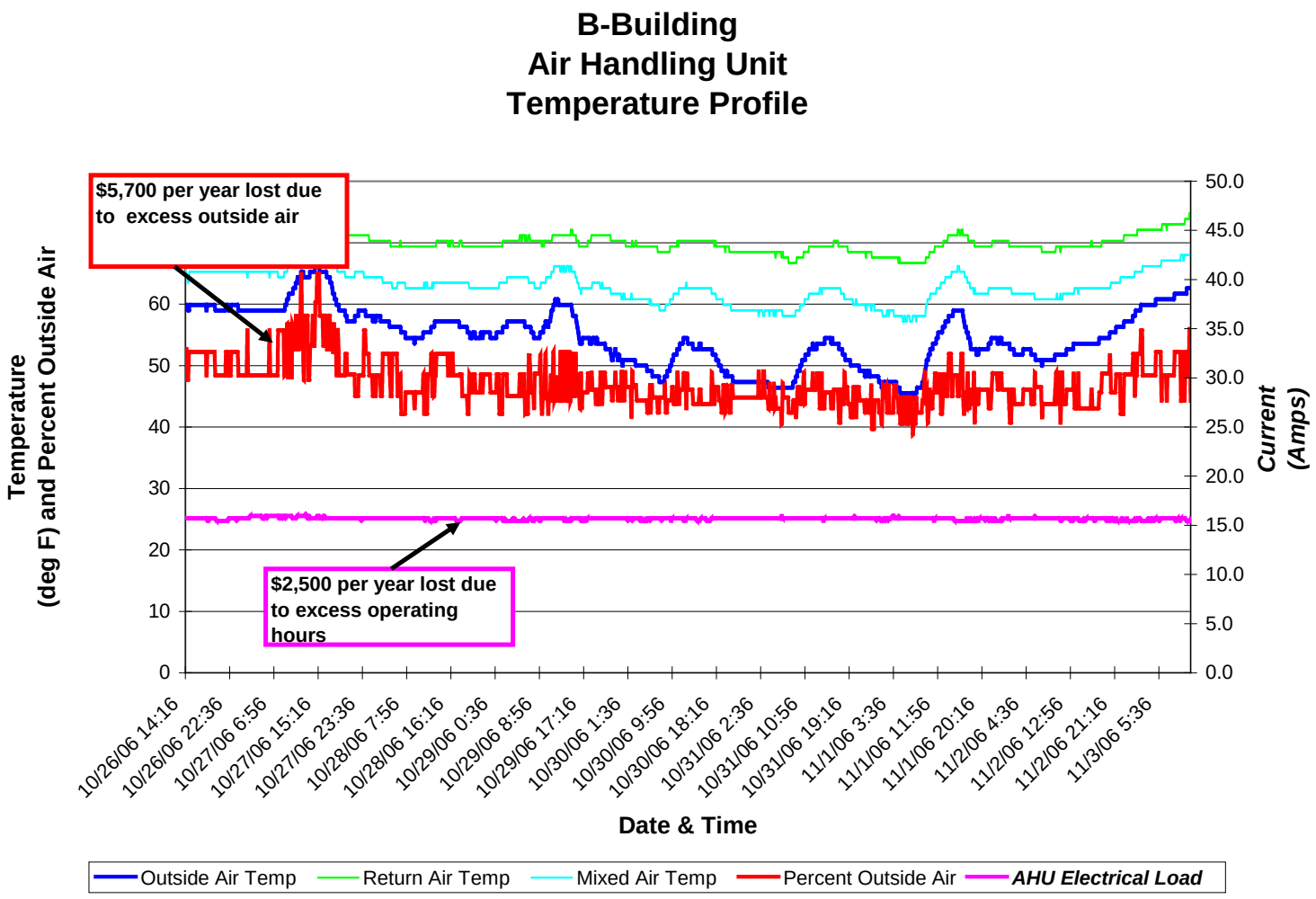
Systems Management

- Metering & verification of individual energy using systems
  - M&V can be set up by an ESCO
  - Ongoing activities can be done by HVAC personnel
  - **Metering** of individual systems is a critical element

Systems Management

- System commissioning for not only capital and ESCO projects, but on an ongoing basis
  - Most systems require commissioning at least every five years
  - It is important that commissioning include field verification by trained personnel, and include system trending (metering)

System Metering



Energy Savings Performance Contracting

- What is ESPC?
  - The most cost-effective process for completing building energy upgrades
  - A means to use utility savings to pay all project costs
  - A partnership of the owner, the ESCO (energy service company) and the GA Energy Team
- The current opportunity regarding ESPC funding
  - OSPI funding
  - Commerce funding

Energy Savings Performance Contracting

- What can be done with ESPC projects through the leveraging of these grant funds
  - "Standard" upgrades
    - Lighting, controls, boilers, chillers, heat pumps, water conservation, irrigation systems
  - "Shell" improvements
    - Windows, doors, roofs?
  - Sustainable systems
    - Solar thermal and PV, ground source heat pumps, even small wind?

Energy Savings Performance Contracting

- What else can be done with ESPC projects through the leveraging of these grant funds
  - Ongoing maintenance of savings
    - Monitoring/Metering & Verification
    - Building sub-metering
    - Ongoing commissioning
    - Maintenance management system setup?

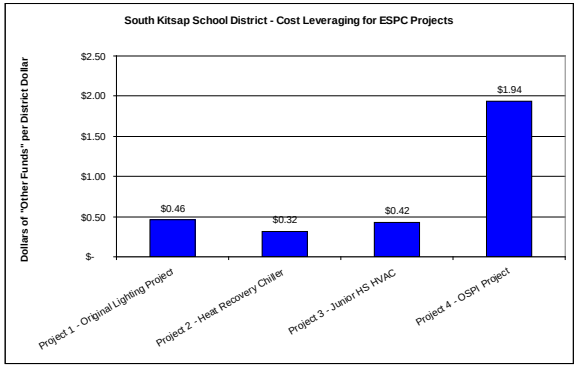
Capital Projects

- Renovations
  - If energy using system are involved, consider using ESPC
    - Capital funding can be leveraged with grant funds to create a larger project with more energy savings and improvements
    - The benefits of ESPC can improve the project
      - Guaranteed costs, savings and performance
      - Use of preselected contractors
      - Use of your choice of equipment
- New construction
  - Standards (codes, efficiency standards, etc) do not create efficient buildings or systems – People do! (or don't…)

Now is the time for action!

- A unique need
  - National security
  - Economic and fiscal tightening
  - Need to retain jobs in public facilities, and create jobs in the economy

- A unique opportunity to use ESPC to leverage yourself into a comprehensive resource plan
  - Save 30% to 40% off your utility bills and keep it off!
  - Receive grant funds and incentives to pay $2 for every $1 you invest



  - Use this as an opportunity to create a long term plan, and start the implementation immediately!