ENERGY to care

Greater efficiency supports patient care.

Improve Facility Compliance and Capacity Shortages to Leverage Future Work

All ECM content was independently developed and reviewed to be vendor, product and service provider-neutral.

Description

Often, health care facility departments mistakenly believe that energy efficiency is an unnecessary distraction from mission critical problems. Many also believe that running a system wide-open will reduce the number of hot and cold calls and increase patient satisfaction. On the contrary, running a system at full capacity wastes energy, money and degrades equipment and performance. An energy-efficient system is a high-performing system with minimal "pain points" that can save money, reduce compliance issues and increase productivity.

Project Talking Points

- Solve reoccurring issues through energy conservation measures without using short-term solutions that prolong inevitable equipment failure.
- Reactive maintenance strategies typically cost two to five times more than a preventive approach. Reducing reactive maintenance and improving energy efficiency will increase fulltime equivalent (FTE) resources for "wish-list" projects and improvements.
- Reoccurring issues often waste energy or create scenarios that lead to wasteful practices to get by in the short-term.
- Operating costs can be reduced significantly by employing energy efficiency strategies.

Triple Bottom Line Benefits

- **Cost benefits:** A proactive, energy efficiency-focused maintenance strategy can cost two to five times less than a reactive strategy. Freeing up additional equipment capacity may negate need for additional infrastructure.

- **Environmental benefits:** Energy efficiency reduces energy use and the emissions associated with that energy use.

- **Societal benefits:** Spending less money on maintenance and reoccurring fixes allows for the redirection of funds to patient care.

Purchasing Considerations

ENERGY to care

Greater efficiency supports patient care.

Perform a cost-benefit analysis when an issue is identified. Consider the time spent on temporary repairs versus a full fix. Ask the following questions:

- Is the unit due for replacement? Reference ASHRAE equipment life tables.
- What is the marginal cost difference between multiple "band-aid" fixes and a comprehensive repair?
- Does this same issue occur elsewhere in the building, or is it an isolated incident?
- What is the maintenance history on this piece of equipment?
- Can bringing the equipment down from peak capacity negate the need for additional equipment?

How-To

1. Assemble a team of stakeholders including the commissioning agent, facility maintenance staff, purchasing and controls technician.

2. Identify the pervasive issues via staff interviews. The following are common issues which may be resolved with energy efficiency measures:

    - Air handling unit (AHU) at capacity
    - Operating room (OR) humidity or temperature not compliant
    - Condensation on walls, windows or diffuser
    - Chiller plant at capacity

3. Evaluate the system in question. Observe the spaces served by the equipment and examine trends on the Building automation system (BAS). Look for easy fixes:

    - AHU at capacity
        - Variable air volume (VAV) box dampers fully open
        - Leaking heat valves
        - Sensor inaccuracy
    - OR humidity too high
        - Humidifier leaks
        - Reheats overridden closed
    - Condensation on walls, windows or diffusers
        - Negative building pressure
        - Humidifiers leaking or locked open

ENERGY to care H

Greater efficiency supports patient care.

4. Use BAS trends to identify when the issue began. Look for spikes in temperatures, pressures, overrides, etc.

5. Compare airflow setpoints to design conditions. Ensure setpoint overrides are released.

6. If the equipment is truly at capacity, look for opportunities to reduce load, including controls strategies.

    - Cut airflow minimum setpoints to non-occupied spaces such as closets and IT rooms
    - Look for opportunity to recalculate minimum airflow requirements of spaces that have been reassigned.

7. Show improvements with building data and the energy savings associated with the reductions. Emphasize the additional savings in man-hours and avoided capital costs.

8. Identify other opportunities and associated savings potentials.

9. Establish a preventive maintenance plan to monitor equipment and avoid reoccurrence of similar issues.

Resources

- The American Society for Health Care Engineers (ASHE): Reducing Operational Costs through Energy Efficiency
- The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE): The Advanced Energy Design Guide- 30% Savings for Small Hospitals and Healthcare Facilities
- ASHRAE: The Advanced Energy Design Guide- 50% Savings for Large Hospitals
- ASHRAE: Equipment Life Expectancy Chart
- ASHRAE: HVAC Design Manual for Hospitals and Clinics, 2nd Edition
- LEED v4. for BD + C: Healthcare
    - Water efficiency
        - Credit: Cooling tower water use
        - Credit: Water metering

    - Energy and atmosphere
        - Prerequisite: Fundamental commissioning and verification
        - Prerequisite: Building level energy metering
        - Credit: Enhanced commissioning
        - Credit: Optimize energy performance
    - Indoor air quality
        - Prerequisite: Minimum indoor air quality performance
        - Credit: Indoor air quality assessment
        - Credit: Thermal comfort
- LEED v4. for Operation and Maintenance: Existing Buildings
    - Water efficiency
        - Credit: Cooling tower water use
        - Credit: Water metering
    - Energy and atmosphere
        - Prerequisite: Energy efficiency best management practices
        - Prerequisite: Minimum energy performance
        - Prerequisite: Building-level energy metering
        - Credit: Existing building commissioning analysis
        - Credit: Existing building commissioning implementation
        - Credit: Ongoing commissioning
        - Credit: Optimize energy performance
    - Materials and resources
        - Prerequisite: Facility maintenance and renovations policy
    - Indoor Environmental Quality
        - Credit: Thermal comfort
        - Credit: Interior lighting

Regulations, Codes and Standards, Policies

- American National Standards Institute (ANSI)/ASHRAE Standard 62.1: Ventilation for Acceptable Indoor Air Quality
- ANSI/ ASHRAE/Air Conditioning Contractors of America (ACCA) Standard 180: Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems
- ANSI/ASHRAE/ASHE Standard 170: Ventilation of Healthcare Facilities
- ANSI/ASHRAE/ASHE Standard 189.3: Design, Construction, and Operation of Sustainable High-Performance Health Care Facilities

- ANSI/ASHRAE/Illuminating Engineering Society (IES) Standard 90.1: Energy Standard for Buildings Except Low-Rise Residential Buildings