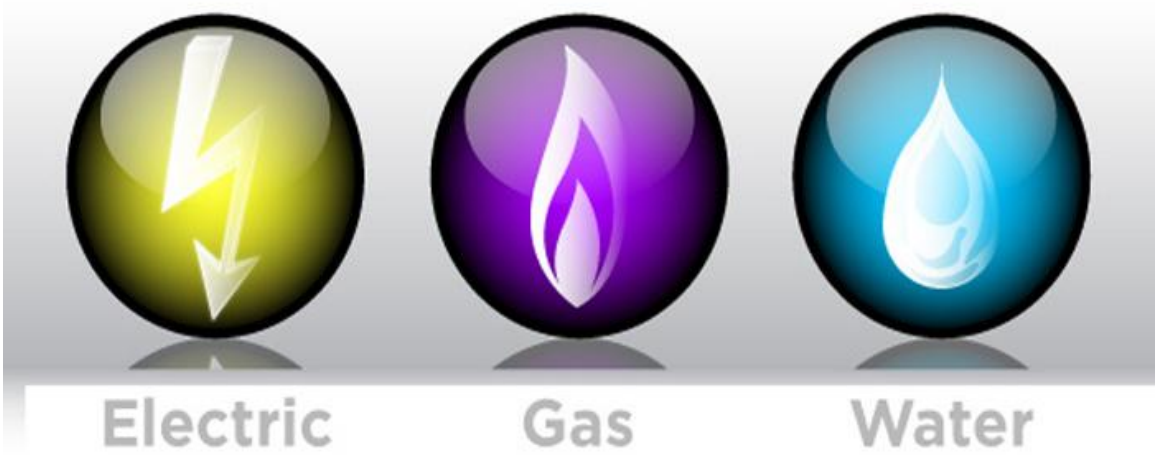

Energy savings

BACK TO BASICS

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About the Author

Allan Watkins started in the medical field at the age of 17 at a high-rise medical office building in the medical center in 1978. During his time there, he was able to work with some amazing people that kick started his career. Over the next several decades, Allan obtained his Bachelor's and Master's degree, Systems Maintenance Administrators Designation, and finally his lifelong goal of obtaining his Certified Healthcare Facility Manager Certification.

During this tenure in the healthcare and the commercial environment, many opportunities arrived that helped Allan understand the importance of proper working mechanical systems and in particular, energy use and how it influences finances and methods to implement savings. Over several years, Allan collaborated with industry experts for a pick your brain session, attended many conferences and academics to help further understand how utility costs plays a role in the organizations bottom line.

Introduction

Facility Department utilities budget is their largest expense.

In the medical field, revenue versus expenses must be a tightly controlled finance. With this in mind, facilities is not a revenue-generating department. Therefore, facilities should collaborate with departments on where to make reductions in expenses and yet, hold a high standard of care to ensure the facilities run efficiently, effectively, and safe for all of our patients, staff, and visitors.

Often during the life of our facility, changes made to the environment without realizing the negative affect it has on the utilities. Facility demands are made that require facilities to implement changes and then facilities suffers budget cuts, which creates other issues for our end user. Additionally, costs for utilities have sky rocketed over the last few years and accounts up to 30% of the facility department annual budget.

I have listed below what I reference as a back-to-basic function that many of our new engineers are not familiar with. They provide an extremely quick cost savings.

One of the most common issues that unnecessarily wastes BTU's sq/ft is common areas. When designing a facility for HVAC controls, one key element is often over looked. This is adjustable sensors where everyone that walks by gets to play "spin the dial of energy loss." Other areas such as electrical room's mechanical rooms, office spaces, and many others that often are a source of wasted energy.

Basic measures

Temperature control (referenced in degrees of Fahrenheit) – All set points include a +2/-2 degree dead band

1. Lock out all private or public corridor, waiting rooms, break rooms, public lobbies thermostats to a predetermined setting 72
2. Office environment range: 70 – 74
3. Patient rooms range: 70 – 74
4. Equipment rooms: 74
5. Electrical rooms: 75
6. IDF Rooms: 68 – 70 depends on infrastructure requirements
7. Storage/shell space: 75

Central Plant Operations

1. Chillers:
    a. Use outside air dew points to control chill water temperature.
        i. Ex: OA is 50 - 80 (degrees Fahrenheit) then your chiller set point should be around 46 – 42 (degrees Fahrenheit)
        ii. Use caution to ensure your cold heads on the MRI are receiving the temperature necessary to run without tripping on safeties.
2. Boilers:
    a. This can be self-regulating. It depends on whether you have condensing boilers or heating boilers (fire or water tube arrangements)
        i. I would suggest no higher than 140 degrees Fahrenheit for heating. If they are not, then you will have to adjust based off humidity level burn off rate.
        ii. If operating rooms use electric strips for humidity control, have you verified operation?
        iii. Invest in condensing boilers.
        iv. Perform combustion analysis on a semi-annual basis.

Electrical

1. Lighting:
    a. LED's.
        i. Lower maintenance cost
        ii. Reduced inventory
        iii. Lower utility usage
        iv. Lower heat load
2. Occupancy and/or motion sensors
    a. Implement where safe and code allows such as conference rooms, meeting rooms, etc. (cannot be used in equipment, electrical, areas where equipment is operated.

b. Can be used to lower air exchange rates and balance temperature in OR's when not in use.
    i. Maintain 70 degrees instead of 68.
c. When the OR is not in use, lower the CFM's to accommodate 6 ACH and lighting is off.
    i. Caveat: check code requirements through AHJ/CMS/TCJ/DNV.

3. TAB Reports:
    a. Check your tab reports and have them balanced for air exchanges based off code requirements. In other words, design may say 30 ACH when the code says 20 ACH. Cautious engineers designing above the requirement often cause this. I would recommend code plus 10 percent (ex: 20 ACH plus 10% = 22 ACH per hour).
    b. Air your outdoor air exchanges excessive?

HVAC

1. Air handlers
    a. Hot/cold deck temperatures - Use dew point
        i. When it is cold outside then rise your supply air temperature up to 58 or 60
        ii. When hot outside lower your temperature to 54
            1. As the temperature rises or lowers adjust your setting. What this does is reduce the amount of reheat necessary to heat a room so you allow equipment and other items to naturally warm the room up.
            2. This also allows a reduction of CFM required to adjust the temperatures, which reduces load on the chiller and or boilers. Results lower gas or electrical use.
2. Preventive Maintenance
    a. Coil cleaning
    b. Filter changes based off magnehelic gauge recommendations
    c. Air side study
        i. Are your units still operating as designed?
        ii. Has the occupancy type changed?
        iii. Modifications to rooms change the square/cubic footage.

Water

1. Handless flush valves and fixtures
    a. Install in all public restrooms
    b. Install in all non-critical staff restrooms
    c. Locker rooms
    d. Low flow shower heads (1.5 - 2.5 gallons per minute)
        i. Savings on average, up to 17% of domestic water use and up to 50% of hot water use.

In conclusion:

Not every organization can implement savings as illustrated; however, every organization should do their part as a good steward of managing their organizations finances. The most important thing to remember is “every BTU, KWH, or MMBTU saved is real money saved.” It may be a big difference in dollar reduction at first and then over time, you will save less but again, you are saving money and that is important to the organizations bottom line. The more money you can save the facility is more money the organization can provide to enhance their services to the public well-being and that is an awesome contribution.