SUSTAINABLE OPERATIONS WORKSHOP – PROGRESSIVE ENERGY MANAGEMENT

AUSTIN STAHL – MANAGER OF ENERGY AND FACILITIES PROJECTS
SAINT MARY’S COLLEGE
NOTRE DAME, IN
HOW SAINT MARY’S COLLEGE TRACKS ENERGY

• Numerous types of energy tracking throughout our 19 buildings on campus.
  • Electrical energy meters, chilled water and hot water meters, steam condensate meters, domestic hot and cold water meters, flow meters for the different systems as well.

• This gives us the capability to monitor real time energy usage from our Building Automation Systems (BAS).
  • We have two BAS that we utilize on campus, Metasys through Johnson Controls and Tracer SC through Trane Controls.
MCCANDLESS HALL ENERGY METER (KW USAGE)
MCCANDLESS HALL HOT WATER METER (GPM)
CURRENT METERING PROJECTS

• SMC has many older buildings on campus!
  • For all renovations/additions we incorporate metering into the projects when applicable.

• We are in the process of implementing metering to all of our dorm buildings.
  • The hope is to be able to broadcast real time data in each dorm to enable us the power of education via dorm competitions!
  • Some dorm buildings are in shared academic buildings which poses some challenges.

• Working with a demand response company on getting a campus wide real time energy meter installed.
HOW TO DETERMINE WHICH ENERGY PROJECTS TO TACKLE

• Low hanging fruit/Quick payback – Biggest bang for our buck!!
  • Replacing inefficient lights such as T12, incandescent, HID to LED
  • Addressing steam traps that have worn out
  • Insulating piping across campus (reduce thermal transfer in tunnels and buildings)
  • Adding VFD’s and DDC’s to our HVAC systems
  • Adding occupancy/vacancy sensors to non emergency lighting
  • Taking advantage of all incentives to help offset project costs
  • Using our in house maintenance staff to complete projects saving on contractor costs
    • When special equipment is not required, more energy saving materials can be purchased
OTHER FACTORS THAT AFFECT PROJECT SELECTION

• As inefficient equipment/materials fail, we replace with efficient measures.
  • For example, if an old motor has failed, we replace with newer technologies that ultimately improves the life of the overall system.

• Safety and security are always seen as a major deciding factor when choosing certain projects
  • Retrofitting/replacing HID’s to LED across campus is a huge push for us right now.
  • LED lighting offers many great characteristics, such as increased CRI that helps brighten campus while increasing our CCTV capabilities. This takes away the gloomy orange hue and gives us a nice bright white light that increases moral while moving across campus.
  • Long life LED lighting significantly reduces the maintenance required by our staff.
HOW TO TRACK THE IMPACT OF AN ENERGY CONSERVATION PROGRAM

• Before starting to address inefficiency’s, we do building energy audits (typically in house) to get preliminary data.
  • This data can be as simple as how long lights are on in a typical day, which is required for incentive applications anyway, to what is the operations sequence in the controls for a buildings HVAC system. (I.e. Can we increase/decrease the available user set point on their thermostat to increase energy efficiency.)
  • With some of our buildings individual energy meters, we can see how much of an influence these changes make over a period of time.
UTILITY BILL COMPARISONS

• Even with individual meters on our buildings, our overall utility bill is a great resource that helps us look at the big picture.

• Many factors play a big role in utility bill monitoring
  • Construction projects require a lot of energy
    • Defining a dollar amount per square foot for new construction and renovation utility budgeting
    • Increasing campus square footage while decreasing campus energy usage
  • Weather and season length from year to year
    • Comparing like months from previous years using graphs to incorporate variable factors
  • Over the last 4 years, we have increased our campus building footprint by over 100,000 square feet while staying utility bill neutral.
QUESTIONS?

• Thank you!