**PPD Energy Services Initiatives for 2015**

A campus-wide energy reduction goal of 10% energy consumption from the 2007 baseline. This goal is a smaller step towards our 2025 carbon neutrality goal set by President Machen. Below you will find some of our actions items towards meeting such goals.

**Implemented**

* **Lighting Retrofits:** Integrating long lasting induction and LED technologies with lighting control systems, produce significant energy savings! Depending on the lighting system and design, some systems can be controlled by either occupancy or through daylight harvesting. By integrating these control systems with energy efficient lighting, energy savings varies however it is not unheard of to have energy savings of over 50%.
* **De-lamping Hallways and Common Areas:** In areas that are considered “overlit” by Illuminating Engineers Society (IES), a de-lamping exercise was conducted to reduce energy. Such energy saving strategies can reduce lighting demand by 33%.
* **COGEN Plant:** Uses waste heat from a natural gas fired gas turbine engine to not only generate 46MW of electricity but also the bi-products generate 100% of campus steam. Such a plant reduces UF emissions by avoiding redundant plants to generate steam and electricity
* **Centralized Chilled Water Plants:** There are five interconnected chilled water plants serving the main part of campus through interconnected chilled water loops. In addition, there are three other plants serving distributed loads in the western section of campus and the Law Center. This design allows PPD to serve buildings with chilled water in an efficient manner while maintaining the minimal required redundancy for the entire system. It precludes supplying chilled water from individual building systems thus optimizing kw/ton energy ratios. Additionally, it eliminates the need to build redundancy into individual building HVAC systems and also eliminates inefficient smaller direct exchange (DX) cooling systems.
* **Efficient Electric Motor Replacements:** When replacing motors or pumps, we encourage the purchase of high efficiency premium motors over standard motors. Such a replacement increases motor efficiencies by roughly 5% which equates to an average annual savings of $280 for a 10HP motor.
* **Installing VFDs on motors 5 HP or larger:** Typically for motors 5 HP or greater and with varying or partial loads, it is economically feasible to install a drive that adjusts the motor speed according to the load or demand. While the load varies, the VFD ensures a motor efficiency of over 90%.
* **Building Systems Monitoring and Continuous Commissioning:** Permits optimization practices to enhance occupant comfort and system performance. Such optimization saves electricity, chilled water, and steam energy resources by not over cooling/heating buildings and ensuring that building HVAC equipment is performing as designed. Building system designs include demand control ventilation which increases the amount of air being supplied and exhausted from a large lecture hall based on the number of people present. Other practices include system resets and equipment interlocking. .
* **Air-handling Unit U/V Lighting:** A large portion of AHU’s maintained by PPD have installed UV lighting. The objective is to deter biologics from growing inside the casings and in the coils. AHUs that we have retrofitted with this technology have shown remarkable improvement in keeping the installation clean of growth in addition to improving the air quality delivered, U/V lights have significantly decreased the maintenance required to clean the units, and have increased airflow through the coils thus reducing fan speeds.
* **Renewable Energy:** Currently there are eight solar arrays sites on campus with a total designed production of 330kW. This production equates to approximately 0.1% of our campus consumption.

**2. In Process**

* **Pneumatic to DDC HVAC conversion:** PPD is in the process of changing out older pneumatically controlled dampers and actuators with newer digital controls allowing for more monitoring and added sequences of operation to the mechanical systems to further improve system performance. This is part of our retrocommissioning process.
* **Retrocommissioning:** Is going into a building and looking at all of the current systems, looking at the condition and performance of the equipment, recalibrating and identifying the systems’ sequence of operations, integrating new equipment and controls, and finally making sure the all systems are performing as designed. Retrocommissining in buildings that have high energy consumption have high potential for energy savings.
* **Enterprise Data Management and Reporting:** PPD is committed to integrate building control data with analytic reporting to better identify key performance indicators of various space types. This reporting will better inform PPD on how the various types of buildings on campus can
* **Chilled Water Plant Optimization:** PPD has established a centralized monitoring and control room to more efficiently monitor and optimize campus central chilled water plants. The goal is to meet building cooling demands with the least amount of operating equipment thus reducing the kw/ton of chilled water ratio. Average annual efficiencies range from 0.66 to 0.94 based on the chiller.
* **Steam System Improvement Program:** PPD conducted a steam survey in 2006. In this survey were ways to improve the operation of the overall steam system. Specifically by replacing broken traps and insulating pipe where the insulation has fallen off, approximately 10% of steam energy has been reduced. More potential energy savings can be found once we redeploy the survey.
* **Sustainable Construction Standards:** In effort to expand upon UF’s sustainable construction policies and standards, PPD is looking to update existing buildings to either LEED or Green Globes’ standards. Such standards increases energy and water efficiency as well as improve indoor air quality all while improving the buildings relationship to its surrounding environment.
* **Building Setback Program:** PPD has had a program in place for several years to reduce energy consumption by setting back HVAC systems in select buildings when they are unoccupied either during the weekends or on holidays such as Christmas and Spring Break.
* **Occupied/unoccupied Temperature setpoints:** PPD is in the process of establishing a temperature setpoint policy to ensure optimum occupant comfort while reducing energy consumption during unoccupied times.
* **Lab Occupancy Controls Integration:** Laboratories, by far, consume the most energy here at UF. This is mainly because large amounts of air is recirculated in these spaces to ensure optimum health and safety is met. By tying occupancy based controls to the these spaces, the mechanical system can modulate based on the number of people using the space, hence reducing the amounts of air being supplied and returned to the system.
* **Automated Meter Reporting:**  Our objective is to accurately measure utility consumption for every building connected to UF utility systems. We currently have full measurement capability in over 90% of UF buildings. Due to the quantity and price of steam and chilled water meters this will be a multiple year program.
* **SCADA:** SCADA stands for System Control and Data Acquisition. It provides real time data on our main and sub electrical system, allowing us to remotely observe our load demands, plan for the future expansions, and react to do such things as load balancing, load shifting, switching, obtain outage and alarm notification, etc. By monitoring the operation of our system, we can realize energy savings by correcting those parts not operating efficiently.