OIL & GAS COMPANY
ENERGY AUDIT CASE STUDY

A UNIQUE CAMPUS FOR LEARNING

The company's training and conference center is situated on 20 private acres and includes 14 different facilities. In addition to classroom and meeting space, the campus includes residential and dining halls, an indoor training pool and a firefighting facility. Originally, the center was intended for our client's employees but has since become an important resource for the global Oil & Gas industry.

EVALUATING ENERGY EFFICIENCY

ESFM's Technical Services and Energy Solutions team performed an assessment of the mechanical, electrical, and plumbing infrastructure at the campus.

Audit reports may include recommendations for safety, operational efficiency, risk management, equipment upgrades or additions, and energy conservation measures. Recommendations implemented bring cost and energy savings, ultimately reducing the carbon footprint of the campus and increasing building reliability.

AUDIT FINDINGS

The age of the center's buildings and associated equipment varies. Our analysis uncovered significant HVAC opportunities, as well as smaller issues including dirty condenser coils, leaking valves, insulation deficiencies, and repair needs to correct conditioned air loss. The HVAC systems offer a great opportunity for improvement in comfort and efficiency.

The HVAC systems run 24/7 and the variable air volume (VAV) reheats are not properly sized, prohibiting an adequate rise to reheat zones under certain ambient temperatures. In addition, the air handling units (AHUs), as well as the VAVs, run on a set schedule, rather than building occupancy.

Most of the building automation system (BAS) controllers are obsolete in two facilities and require specific software for manipulation. Scarcity of replacement parts and technicians trained to work with the legacy system are additional risks for our client. Other challenges include:

- The HVAC system in one building does not function as designed. Unit controls are manually locked in position causing the system to run very inefficiently. The electric reheats run continuously but are unable to maintain space comfort set points. Most of the BAS controllers are out of date, increasing risk of failure, as well as requiring specific software to adjust.
- In two residence halls, the VAV reheats run 24/7 but do not meet space comfort set points.
- At another resident hall, some of the AHUs are overcooling causing comfort and cost issues. Most of the BAS controllers at this facility are outdated as well, creating risk and requiring specific software to make changes.

SUMMARY OF RECOMMENDATIONS

Recommendations included opportunities for improvement in equipment, suggested repairs, and preventative maintenance that would yield water and energy savings, with the HVAC system being the most impactful. Implementing the recommendations outlined below will yield more than 40% in energy savings, while increasing occupant comfort and reducing our client's carbon footprint.

- Add submeters to record, and then trend, data to efficiently manage peak demand.
    - Retrofit projects can then be prioritized by energy use of buildings.
- Condenser coils should be cleaned quarterly to improve efficiency.
- Add night setbacks and space occupancy set points to provide immediate cost reduction in overall energy usage.
- Upgrade and replace malfunctioning and inefficient HVAC equipment.
- Modernize the legacy BAS controllers to provide reliability and improve comfort control.

Our recommendations will yield more than 40% in energy savings, while increasing occupant comfort and reducing our client's carbon footprint.