

LUC Health Sciences Campus

Project Background

- 11 healthcare buildings; 4 educational buildings (LUC), including new construction of Translational Research Education Building.
- Intermingled CHW, steam, and electrical power networks between healthcare and educational buildings (under separate ownership).
- Multiple chiller plants in individual buildings.

Project Opportunities and Objectives

- For educational buildings: separate chilled water production/distribution; normal/emergency power distribution/metering; and steam system, and convert to hot water.
- Improve operation and efficiency of pumping, distribution and controls.

Project Results and Innovation

- **NEW DISTRIBUTED BOILER PLANTS**
 - Designed/Installed 3 new Condensing Hot Water Boiler Plants
 - Replaced steam heating coils with new hot water coils (AHUs)
 - Eliminated the use of high pressure steam from the central plant for primary space heating
 - \$2.3MM Construction Cost
 - \$74,445 Obtained in Utility Incentives
- **NEW CHILLED WATER PLANT**
 - Achieved \$177,200 in utility incentive funding and installed cost of approximately \$850/ton by reusing existing infrastructure.
 - Avoided >\$1MM in construction cost for new translational research building.
 - Installed new 2,200-ton series counter flow electric chilled water plant in place of existing absorption chiller.
 - New cooling tower (replacement of existing oversized cooling tower).
 - CHW pumping, distribution and controls optimized.
 - Separation of 34kV electric power from the hospital.
- **ELECTRICAL SEPARATION**
 - Maintained campus aesthetics through unique working approach with utility (e.g., outdoor metal clad switchgear [non-typical to utility and purchased by University] and pad mounted transformers).
 - Implemented with minimal disruption to existing facilities.
 - Established ability for separate utility billing for hospital.
 - Two separate redundant 34.5 Kv underground feeders installed with automatic throw over and remote operability.
 - First installation of this system by utility.
 - Existing underground raceway reused.
- **ENERGY CONSERVATION MEASURES (3 BUILDINGS)**
 - Energy Project Summary
 - \$1,869,000 Installation Cost • \$694,053 Incentives Awarded • \$506,831 Total Estimated Annual Energy Cost Savings • 2.32 Years – Simple Payback Term
 - Installed VFDs on pumps
 - Converted constant volume AHUs/Boxes to VAV; retrofitted existing VAV and Laboratory Box Controls; enhanced atrium ventilation controls; recommissioned and enhanced air handling units
 - Recommissioned laboratory control systems and sequences
 - Installed lighting controls and replaced light fixtures.

