



PROJECTED LIFETIME (20 YEARS)
SAVINGS
AT A GLANCE

Dollars	\$1,995,000
Energy	17,174,000 kWh
GHG Emissions	12,143 MT CO ₂ e
Payback	6.84 years

SC ENERGY
SUCCESS

University of South Carolina BEAUFORT

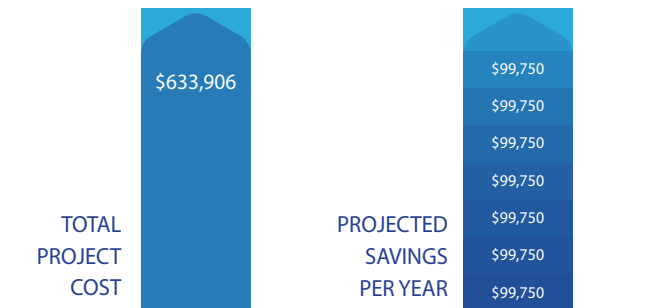
The University of South Carolina Beaufort (USCB) campus was expanding. With the additional planned buildings, future requirements of the increased central plant operations needed to be determined. In 2015, USCB received a ConserFund Plus Loan through the South Carolina Energy Office (Energy Office) to fund an upgrade to the central chiller plant.

The USCB campus was expanding and needed to upgrade and optimize equipment.

// The new chiller replaces the original system that was put in place in 2003 to open the Bluffton campus. It cools the dining hall, which is a huge user due to all that cooking, classroom and administration buildings, and the library. We are saving a tremendous amount of energy. We love it. //



Mike Parrott
USCB
Facility Manager



The total project cost was \$633,906, with \$443,734 provided as a loan and \$190,172 provided as a grant. The project was estimated to pay itself back in 6.84 years with savings from the upgraded and optimized equipment.

ANALYZING THE CURRENT CHILLER

Essex was commissioned by USCB to conduct an engineering analysis of the existing chilled water plant and chilled water distribution system.

The chilled water loop from the central chiller plant provides chilled water to campus buildings: Hargray Building, Science and Technology Building, library, Campus Center, and the maintenance building.

Prior to implementing this project, the USCB central chiller plant had one water-cooled centrifugal chiller with an installed capacity of 750 tons of refrigeration, a cooling tower, and associated chilled water and condenser water pumps. With only the one chiller, chilled water pump, condenser water pump, and cooling tower, there was no redundant or standby capacity in the central chiller plant if any of the components failed.



REPLACING THE CHILLER

To provide redundant chiller capacity and efficiently meet the maximum use of run-time hours for both the existing and future buildings, USCB selected a 450-ton, energy-efficient chiller for the upgrade and modernization of the chiller plant. The new chiller upgrade includes a magnetic-bearing and energy-efficient chiller, new chilled water and condenser water pumps with variable speed drives, and a new cooling tower cell with variable speed drive on the fan motor.

The magnetic bearings in the new chiller allow the compressor to operate without the use of oil for lubrication, which reduces energy losses due to friction and increases the heat transfer efficiency of the chiller because no oil enters the evaporator or the condenser.



Also as part of this upgrade, USCB upgraded the existing chiller plant control system to include dynamic optimization control of the chiller plant. This upgrade allows USCB to efficiently operate the chiller plant during all parameters and cycles.

For more information about funding opportunities available through the Energy Office, visit ENERGY.SC.GOV/Incentives.