REPRESENTATIVE ENERGY AUDIT AND ANALYSIS PROJECTS

Progress Energy Operations Building, Raleigh, NC
Elm provided LEED consulting and LEED commissioning for this energy efficient building. Elm was responsible for monitoring energy performance during design and construction.

Williams Wharf Boathouse, Gloucester, VA
Elm provided energy analysis and mechanical and electrical systems design for this innovative building, which will utilize geothermal heat pumps, solar water heating, radiant floor heating, rainwater collection and a wind turbine. The project will be constructed in 2013.

Haywood Community College Creative Arts Facility, Clyde, NC
Elm provided energy analysis, mechanical, plumbing, and electrical systems design for this LEED Platinum building, now under construction. The building has a solar developer, and uses a solar absorption chiller for cooling, rainwater collection, radiant floor heating, domestic water heating, and photovoltaics.

Wells Fargo (Then Wachovia Corporation) Sustainability Guidelines
Elm created sustainability guidelines, including energy modeling, LEED analysis of then Wachovia's four major building types, with recommendations for achieving triple bottom line accounting goals across this giant corporation's entire real estate portfolio of millions of square feet. The entire guidelines, analysis, and energy modeling recommendations were completed in just three months, and included recommendations for millions of dollars in energy saving opportunities. Elm provided carbon profile studies and greenhouse gas emissions estimates. Also included were surveys of existing buildings, identifying programs and methods to reduce The Bank's environmental footprint outside the traditional LEED certification process.

Ohio Public Schools, OH
Elm and ID provided energy modeling, LEED analysis, and sustainability recommendations for this Public School System of over 800 buildings. The massive study was completed in two months of concentrated effort.

Appalachian State University, Boone, NC and University of North Carolina Charlotte, Charlotte, NC
Elm developed clean fuel and exhaust scrubber standards for both of these universities. The generator exhaust scrubbers and clean fuel requirements will be used on new installations, and may be used to retrofit existing generator sets, thus reducing sulfur dioxide, nitrous oxide, and carbon emissions significantly.

Charlotte City Hall, Charlotte, NC
Elm performed an analysis of GHG and carbon savings possible through lighting retrofit programs. The analysis contained different options and the supporting life cycle cost analysis.

Union County Public School System, NC
Elm developed a program for Union County to retrofit existing schools with new energy saving lighting systems. We performed the life cycle cost analysis (for the economic justification to the School Board and county managers) and GHG calculations (for the students to use as a learning tool).

Metrolina Greenhouses, Charlotte, NC
Elm provided energy modeling for Metrolina Greenhouses, the largest greenhouse in the world. They use non-potable rainwater and recycled water for their greenhouse operations, relying on no potable water for greenhouse operations. Elm modeled a new solar shading system for the Greenhouse, enabling them to qualify for an energy grant. Metrolina will save $665,000 annually using the solar shades.

First Citizens Data Center, Raleigh, NC
Elm provided a computational fluid dynamics analysis to solve equipment overheating issues. A computerized model was built to predict hot spots. The actual Data Center compared closely with the model and the model results contributed to enhanced operation of the Data Center.

REPRESENTATIVE ENERGY AUDIT AND ANALYSIS PROJECTS

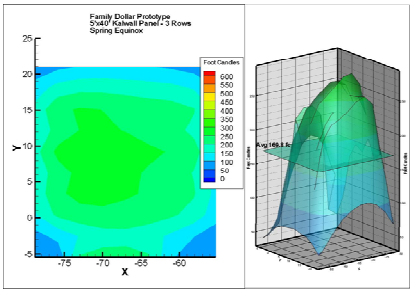
Appalachian State University, College of Education, Boone, NC
Elm performed the energy model for the first LEED registered building on campus. The existing Central Chiller and Boiler Plants were audited to determine if adequate capacity was available to serve a new 120,000 square foot College of Education Building. Elm recommended modifications to the existing chiller plant which created another 100 tons of cooling and saved the University from building another chiller plant. Elm also provided mechanical, electrical, fire protection, and plumbing systems design for this building.

Central Piedmont Community College Owner's Representative Energy Savings Performance Contract, Charlotte, NC
Elm acted as the owner's representative for the ECM's, writing the request for proposal, reviewing the proposed ECM's, and working with the owner during construction and post construction to verify energy savings. Phase 2 is just beginning.

Piedmont Natural Gas Operations Center, Tarboro, NC and Operations Center in Nashville, TN
Elm provided the energy modeling and analysis for these LEED projects.

Time Warner Cable, Morrisville, NC
Elm performed the energy modeling and commissioning for this LEED Silver project.

Family Dollar LEED Prototype Stores, North Carolina
Elm performed energy analysis, including energy audits of the existing stores, and designed energy efficient HVAC and lighting systems for four geographic areas in the United States. Family Dollar builds hundreds of new stores every year. Elm's energy strategies are being incorporated into each new store, resulting in an average energy savings of 42 %.



City of Winston-Salem Energy Audits, North Carolina
Elm provided energy audits of four existing facilities, with recommendations for energy efficiency improvements. Lighting retrofits and a prototypical geothermal heat pump system were studied.

Wake Technical Community College State Energy Office Audit, Raleigh, NC
Elm provided energy audits of two existing buildings, taking measurements with data loggers at four points on two campuses. Elm also provided a tool with which to estimate energy lost through exterior doors without vestibules to prove the energy savings garnered through the addition of entrance vestibules. Now under construction, anticipated lighting energy savings will be close to 50%.

Isothermal Community College Energy Audits, Spindale, North Carolina
Elm provided lighting energy audits of the entire campus' existing facilities, with recommendations for lighting energy efficiency improvements. Implemented lighting retrofits project savings of 40 %.

UNC Pembroke State Energy Office Audit, Pembroke, NC
Elm provided energy audits of two existing buildings, taking measurements with data loggers at four points. Elm also provided the calculations for energy savings for the proposed energy retrofits. Now complete, Elm has performed the post construction measurements and verified that the lighting energy savings were over 50%.

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