



CMTA LEXINGTON OFFICE LEXINGTON, KENTUCKY

1st LEED Platinum Office Building in Kentucky

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Provides **17%** of annual power usage

LEED® Facts

CMTA Lexington Office
Lexington, Kentucky

LEED for New Construction v2009
Certification awarded April 16, 2015

Platinum 81 points*

Sustainable Sites	14/26
Water Efficiency	8/10
Energy & Atmosphere	35/35
Materials & Resources	4/14
Indoor Environmental Quality	10/15
Innovation & Design	6/6
Regional Priority Credits	4/4

*Out of a possible 110 points



The information provided is based on that stated in the LEED® project certification submittals. USGBC and Chapters do not warrant or represent the accuracy of this information. Each building's actual performance is based on its unique design, construction, operation, and maintenance. Energy efficiency and sustainable results will vary.

CMTA Lexington Office

Real world data demonstrates system effectiveness

PROJECT BACKGROUND

CMTA, a top 60 MEP consulting engineering firm, known nationally for high performance sustainable design, put its core values to work in the design of its new Lexington office. The office showcases engineering techniques for an energy efficient office building and serves as a successful example of renewable energy usage. 'Real world' operating data for its high performance systems is enabling CMTA engineers to demonstrate the effectiveness of the systems to clients.

ENERGY SAVING FEATURES

The building's energy saving features include insulated concrete form walls, geothermal heating and cooling, custom variable speed geothermal heat pumps, geothermal energy recovery water heating, distributed pumping with adjustable ECM motors, daylighting, LED lighting in offices and lobby area, solar photovoltaics, solar powered internally actuated diffusers, and individually metered building systems including HVAC, receptacles, and lighting.

STRATEGIES AND RESULTS

Insulated concrete form walls serve as the structure and insulating system for the exterior walls. The brick building has R-40 cellulose insulation throughout the attic space and utilizes window glazing with SHGC¹ 0.27 and 0.32 U-factor². The HVAC system is a variable speed geothermal custom heat pump with a decentralized one-pipe pumping system. Ten vertical wells, each 350 feet deep and with 1-1/4" piping, provide 17 tons of heating capacity to accommodate the heat sink for this 11,750-square-foot building. Certain heat pumps were intentionally oversized to allow selected zones to maximize runtime at partial load conditions. This means these units can be operated at the most efficient operating condition the majority of the year while still providing dehumidification, with the use of custom programming of variable-speed heat pump controllers. One of the custom, variable speed geothermal heat pumps provides domestic water heat for the building by utilizing waste heat in the summer and geothermal heating in the winter. Offices are equipped with solar-powered, internally actuated diffusers that adjust the air flow pattern depending on the need for heating or cooling.

Lighting systems in the building are designed to support the energy goals of the project while improving the work environment, and consume only .56 watts per square foot. Renewable energy comes from an 8.58 kW monocrystalline solar photovoltaic system installed on the southeast-facing sloped roof. The system was modeled to provide 16 to 20 percent of the annual power usage: during the first year of operation it provided 17 percent.

ABOUT CMTA LEXINGTON OFFICE

CMTA's Lexington office is designed to provide real world operating data to CMTA engineers about the building's high performance systems. What is learned from this data over time and through the seasons will impact future project designs for CMTA clients. Useful measurements include actual building system energy consumption for the entire building, individual system consumption utilizing the multiple meters, energy tracking for the photovoltaic system, pump horsepower used by the decentralized one-pipe pumping system, and trending airflow requirements for offices with solar powered diffusers versus those with traditional diffusers. In addition, the effect of building mass on building temperature loss during unoccupied periods will be measured, and real-time demand reduction strategies will be derived using the real time energy monitoring systems.

¹ SHGC (Solar Heat Gain Coefficient) - tells you how much heat enters a building through the window when the sun is shining.

² U-Factor measures the rate of heat transfer and indicates how well the window insulates.



Architect: Sherman-Carter-Barnhart Architects
Civil Engineer: CARMAN
Commissioning Agent: CMTA
General Contractor: Buzick Construction, Inc.
LEED Consultant: CMTA
Lighting Designer & MEP Engineer: CMTA
Structural Engineer: Sherman-Carter-Barnhart Architects
Project Size: 11,750 SF
Total Project Cost: \$2,990,000

Photographs Courtesy of: WMB Photography and CMTA

ABOUT KENTUCKY USGBC

As a non-profit, volunteer organization comprised of organizational and individual members, our goal is to improve the health and welfare of all Kentucky citizens through a sustainable and responsible built environment. Through education and awareness we encourage the use of sustainable practices that provide our residents with a healthy environment in which to live, work and learn.



www.usgbckentucky.org
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