



ENERGY OFFICE



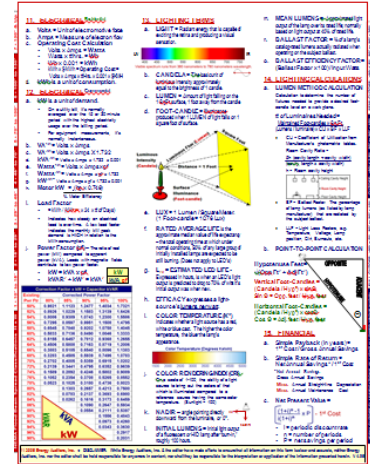
State of South Carolina Accredited Commercial Energy Manager Program

This advanced-level 3½-day training provides the following professionals a thorough overview of the many factors that affect facilities energy consumption as well as a foundation for identifying energy-saving investment opportunities:

- State government, local government, schools, and college employees
- Energy provider commercial consumer service employees
- Provide sector energy managers and vendors

This is an advanced class that will be taught at a college level. It assumes attendees have completed residential energy auditing training and/or have a solid foundation in energy management science. It also assumes that attendees are proficient in Algebra 1 and plane geometry.

Attendees will be completing between two and three hours of homework each night. There is a stringent examination on the morning of the fourth day. Persons scoring a passing grade will earn the State of South Carolina Accredited Commercial Energy Manager designation. The instructor will be Jim Heritage, LC, CEM.



Program Outline

- a) Energy Audit Objectives
- b) Purposes of the Energy Audit
- c) Energy Science Fundamentals
 - Basic energy units and terms
 - HVAC efficiency terms
 - Calculating net cost per MMBtu
 - Calculating equivalent fuel costs
 - Calculating conductive heat transfer
 - i) K, C & U values
 - ii) R value
 - Insulation
 - Climate metrics
 - i) Degree days
 - ii) Heating & cooling hours
 - Seasonal savings calculations
 - Calculating convective heat transfer
 - Sensible vs. latent heat changes
 - Psychrometric Equations
- d) HVAC
 - The Vapor Compression Circuit
 - Measuring CFM w/ Strip Heat
 - HVAC Equipment Upgrade Savings
 - Fan Laws
 - Why Air Flow is important
 - How Air Flow is measured
 - Importance of HVAC Maintenance
 - Ventilation
- e) Electricity
 - Electrical terms
 - Motors & pumps

- Testing, adjusting & balancing
 - Concept of load factor
 - Power factor calculations
 - Clocking electric meters
- f) Lighting
 - B50 vs L70 life
 - Candela – Lumen – Foot-candle
 - Correlated color temperature
 - Coloring Rendering Index
 - Light sources
 - Inverse-square Law
 - Cosine Law
 - Ballasts/Driver Properties
 - Manufacturers' Catalogs
 - LED Lighting Retrofits
 - Scotopic vs. Photopic Ratio
 - g) Water heating Calculations
 - h) Financial Calculations
 - Simple rate of return
 - Net present value
 - i) Energy audit "Do's and Don'ts"
 - j) Exam Review

Sample Exam Question

A fully loaded 208 volt, three-phase, ten horsepower motor is operating at 88% power factor and pulling an average of 23.6 amps.

Running continuously, how many kWh will it consume annually?