

## State of South Carolina Accredited Commercial Energy Manager Program

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This advanced-level 3½-day training provides a thorough overview of the many factors that affect facilities energy consumption as well as methods for identifying energy-saving investment opportunities. The target audience for this training include:

- State government, local government, schools, and college energy managers
- Energy provider commercial consumer service representatives
- Private 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 for this training will be Jim Herritage, LC, CEM of Energy Auditors, Inc.

### 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
  - Rated average life
  - Candela – Lumen – Foot-candle
  - Correlated color temperature
  - Coloring Rendering Index
  - Light sources
  - Inverse-square Law
  - Cosine Law
  - Ballasts Properties
  - Manufacturers' Catalogs
  - HID Lighting
  - LED Lighting
  - 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) Energy-saving product evaluation protocol
- k) Exam review