

AEE – Certified Business Energy Professional (BEP) – Virtual Syllabus

Course Description

The Certified Business Energy Professional Training Program is designed to provide attendees a deep-dive into the financial aspects of energy efficiency and energy management practices. Over five days, our professional instructors will guide you through the principles and practices of the highest relevance and practical value when looking at the “bottom line,” either for your company or your customers.

Who Should Attend

This training program is of greatest value to non-technical business-oriented professionals that manage energy engineers or oversee energy efficiency projects or technically-oriented professionals that need a better understanding of justifying projects and the business side of energy management. Obtaining AEE’s BEP® certification provides international credibility among energy management, sustainable and clean energy communities. Attendees of this program have included existing energy professionals, executives, financial executives, facilities managers, energy consultants, energy engineers, and energy managers.

Objectives

Section 1: Developing an Energy Audit Strategy and Plan

- Awareness of:
 - Understand the goal of Energy Audits
 - The major steps in the Energy Audit process
 - The different audit levels
- Ability to:
 - Plan for a successful audit
 - Communicate the results of the Energy Audit effectively to the client

Section 2: Energy Use Analysis

- Awareness of:
 - Energy forms and energy unit's conversion
 - Energy rate structure and benchmarking
- Ability to:
 - Analyze energy consumption for a facility
 - Establish an energy balance for a facility
 - Establish a consumption baseline and adjusting the baseline

Section 3: Data Collection and Analysis

- Awareness of:
 - The importance of data in energy auditing process
 - The different techniques to measure and analyze data
- Ability to:

- Define the necessary information to collect before and during the field visit
- Analyze the collected data to turn data into information
- Obtain an understanding of what is really driving energy consumption

Section 4: Economic Analysis

- Awareness of:
 - Methodologies and tools to analyze and decide on investment projects regardless of their nature; notwithstanding, the main focus will be on energy efficiency projects
- Ability to:
 - Understand the need for economic analysis and the importance of life cycle costing to assess an energy efficiency project
 - Identify which cash flows (revenue and costs) should be included in the analysis
 - Apply investment decision rules such as: Simple Payback Period (SPP), Simple Return on Investment (SRI), Net Present Value (NPV), Internal Rate of Return (IRR), and Saving to Investment Ratio (SIR)
 - Use Interest Tables and construct formulas in Excel for various financial calculations
 - Conduct Life Cycle Cost (LCC) and Free Cash Flow (FCF) analysis for energy efficiency projects
 - Perform a what-if analysis to understand the potential impact on the key financial indicators

Section 5: Lighting Systems

- Awareness of:
 - Concepts and characteristics of energy-effective lighting design
- Ability to:
 - Identify typical lighting energy conservation opportunities
 - Demonstrate lighting economics calculations and relationships

Section 6 - HVAC Systems

- Awareness of:
 - Types and functions of HVAC systems and equipment: Chillers, Cooling Towers, Adiabatic Fluid Coolers, Pumps, Water Distribution, Condensing Water, Waterside Economizers, VRF, Split and Unitary, AHUs, Heat pipe, Heat recovery, Fans, In-Room Terminal
 - Vapor Compression Cycle and HVAC efficiencies (COP, EER)
 - Piping arrangements for chilled water and or refrigerant systems
 - Psychrometric processes
 - ASHRAE 62, Outdoor Economizers, Demand Control Ventilation, and Filtration Systems and Standards
- Ability to:
 - Identify energy efficiency measures (EEMs)

- Evaluate O&M characteristics and opportunities
- Calculate energy savings
- Investigate the existing system and determine the opportunities to improve performance

Section 7: Domestic Hot Water and Water Conservation

- Awareness of:
 - Understand how DHW/SHW is produced, distributed and utilized
 - Know the efficiency improvement opportunities available in DHW/SHW systems
- Ability to:
 - Identify potential EEMs
 - Compute impacts of the EEMs

Section 8: Motors, VFDs, and Compressors

- Awareness of:
 - Electrical Fundamentals
 - Types of Motors
 - Energy Savings Measures for Motors
 - What is Power Factor and why does it matter?
 - Value of Variable Speed Drives (VFDs)
 - Types of Air Compressors and Energy Savings Opportunities
- Ability to:
 - Determine the appropriate energy strategy for motors and compressors
 - Calculate energy savings amounts

Section 9: Building Envelope

- Awareness of:
 - Building Envelope terminology
 - Heat transfer mechanisms
 - Sources of heat loss/gain that affect buildings heating and cooling loads
- Ability to:
 - Calculate heat loss/gain through walls
 - Find and calculate R and U values
 - Calculate seasonal heat loss/gain through a building

Section 10: Building Automation and Energy Management Systems

- Ability to:
 - Distinguish and classify automation and control systems
 - Investigate the systems operation
 - Recommend performance improvements

Section 11: Alternative Generation and Energy Storage

- Awareness of:
 - Understand the various alternative energy generation technologies available for behind-the-meter applications
 - Be knowledgeable with regards to the various methods to store energy, and where an Energy Auditor may suggest such a system
- Ability to:
 - Determine overall opportunity for alternative methods to generation and storage

Section 12: Energy in Transport

- Awareness of:
 - Types of transport
 - Energy consumption, cost and efficiency
 - Improvements in systems
- Ability to:
 - Evaluate transport system performance and efficiency
 - Discuss and recommend a transport energy strategy