



Certified Energy Manager Training Program Overview

Certified Energy Program

Training Program

The ideal candidate for the Certified Energy Manager (CEM) Training Program is a professional who optimizes the energy performance of a facility, building, campus or industrial plant. If you are a systems integrator for electrical, mechanical, process, and building infrastructure, who analyzes optimal solutions to reduce energy consumption using a cost-effective approach – or, a team leader who helps develop and implement energy management strategies in your organization – you are a good fit for this program! Sustainability, Decarbonization, Electrification and other popular goals can be achieved via CEM training.

About This Program

The Certified Energy Manager (CEM) Training Program is widely recognized across many states and industries. AEE offers energy professionals a holistic “big-picture” perspective of energy management for non-residential buildings and facilities. Over five days, participants advance their knowledge in the energy industry space and enhance their skills in optimizing systems to help reduce costs, improve profits, and increase occupant satisfaction.

Accreditation and Recognition

The Certified Energy Manager (CEM®) accreditation is one of the most globally respected in the field of energy management. Since 1985, professionals from over 100 countries have participated in AEE’s approved CEM® training programs. For a full list of organizations that have recognized or accredited the CEM® program visit www.aeecenter.org/cem

What You Will Learn

After completing the Certified Energy Manager (CEM) Training Program, you will have an advanced understanding of, and be able to apply, the following key principles:

- Energy Management on a Global Scale: codes, standards, and policies.
- Energy Saving Technologies: HVAC, Lighting, Motors, Boilers, Energy Storage, CHP, etc.
- Cost Reduction Strategies: Energy Audits, M&V.
- Economic Sustainability: Procurement, Supply and Project Financing.

At-a-Glance

- » This training program prepares you for the Certified Energy Manager (CEM) exam.
- » This course is held over 5 days.
- » You earn 3.3 CEU | 33 PDH | 6.6 AEE Credits for completing this program.

Key Takeaways

- » **Confidence!** You will participate in activities geared towards applying what you learned using practical examples that demonstrate your understanding of the topics and procedures covered.
- » **Knowledge!** You will receive a high-level overview of the Body of Knowledge associated with AEE’s certification exam.
- » **Application!** You will interact with professionals and subject matter experts who can guide you through discussions on how to apply what you learned.
- » **Resources!** You will receive a course workbook and ready reference materials.

Registration

Candidates should visit the website for more information on available training courses, certification application process, exam registration, and associated fees. Visit www.aeecenter.org/training

Certified Energy Manager Training Program

Who Should Attend

The CEM Training Program is ideal for all Professionals who want to enhance their knowledge in identifying and implementing the best energy management strategies. The targeted audience for this level of training includes energy managers, energy engineers, facility and business managers, sustainability/decarbonization professionals, industrial engineers, supply chain professionals, utility officials, consultants, contractors, financial officers, and energy service company professionals. This mix of professionals and the learning environment provides attendees an excellent opportunity for peer-to-peer learning and networking.

- Global Trends/Policy in Energy & Sustainability
- Why Energy Management is Important
- How to Present Energy Management Projects
- Energy Basics, Fuel Supply and Pricing
- Energy Audits and Instrumentation
- Codes and Standards
- High-Performance Green Buildings
- GHG Emissions Accounting
- Tax Benefits for Energy Projects
- Energy Accounting and Economics
- Electrical Power Systems
- Motors and Drives
- Lighting Systems
- Operations, Maintenance and Commissioning
- HVAC Systems
- Building Envelope
- 3-3 Building Automation + Controls and Artificial Intelligence Systems
- Energy Storage Systems
- Boiler and Steam Systems
- Distributed Generation and Renewable Energy Systems
- Industrial Systems
- Energy Savings Performance Contracting
- Energy Savings Measurement and Verification

Our Instructors

Each member of our team of professional instructors are Subject Matter Experts with decades of experience in the energy industry. CEM Instructors present the latest practices, strategies, and theories while leading discussions in an open, interactive environment. You will also spend time connecting with, and learning from, other program attendees. They provide who will deliver content professionally; provide live examples from their experience and focus on specific areas essential to energy efficiency. Their teaching and industry experience allows them to deliver information that is most relevant and of practical value to attendees.

Certification Eligibility

The prerequisites to qualify for the certification process consider the diverse education and experience applicants may have. To be eligible for certification you must meet the required criteria – to know more visit <https://www.aeecenter.org/cea>

Global Training Partners

For a complete list of AEE training partners visit:
Approved AEE Training Partners Worldwide | AEE®
([aeecenter.org](https://www.aeecenter.org))

Full Agenda

Day 1

Why Energy Management is Important, become aware of:

- Global trends on Energy, Economy, and Our Environment
- Sustainability, Electrification and Decarbonization
- Non-Technical Drivers that Create the Need for Energy Projects
- Selling Points for Energy Projects

Energy Basics

- Energy Fundamentals
- Energy Conversion Factors and Application
- Comparing Energy vs. Power

Fuel Supply and Pricing

- Overview of Utility Rate Components
- Electric and Natural Gas Energy Procurement
- DSM and Demand Response
- Benchmarking Energy Information

Energy Audits and Instrumentation

- Energy Programs (ISO 50001, DOE and EPA Resources)
- Audit Strategies/Approaches
- Benchmarking, Level I, II, and III Audits (ASHRAE Standard 211-2018)
- Investment Grade Audits
- Reports
- Data Collection Technologies and Instruments Related to Energy Systems
- Data logging and Communication Technologies

Codes and Standards

- Scope of Relevant ASHRAE Standards (55.1, 90.1, 135, 189, 62.1)
- How ASHRAE Standards Affect Green Energy and Federal Building Energy Codes
- Ability to Estimate Minimum Air Flow Requirements (Ventilation Rate Procedure)

High-Performance Green Buildings

- Leadership for Energy and Environment Design (LEED) Program and Benefits
- Energy Star Program and Benefits

Day 2

Energy Accounting and Economics:

- Economic Analysis and Terminology
- Time Value of Money (TVM) Tables/Compound Interest Factors
- Calculate Key Financial Metrics: Net Present Value, PV, Life Cycle Cost, IRR, SIR and Simple Payback

Electrical Power Systems

- Electrical Basics (DC/AC, Single and 3-Phase Power)
- Resistive and Inductive Loads, Power Factor
- Voltage Imbalance, Grounding and Harmonics
- Estimating Savings from Power Factor Improvement
- Important 3-phase Motor Equations and Estimating Power Consumption

Motors and Drives

- Savings Considerations: Lifecycle vs. First Cost for Installing Energy Efficient Motors/VSDs
- Motor Terminology and Performance Factors
- Load Factors and Ability to Estimate Motor Loads
- Centrifugal Devices: Fan/Affinity Laws
- Variable Volume Options and Frequency Drives (VFD)

Lighting Systems

- Lighting Retrofits: Evaluate and Identify Opportunities for High Energy Saving Potential
- Lighting Design Basics and Terminology
- How to Avoid Common Mistakes of Lighting Retrofits
- Practical Approaches to Audits and Upgrades

Operations, Maintenance and Commissioning

- Useful Maintenance Technologies
- Basic Terminology and Common Maintenance Strategies
- Behavior Modification
- Estimating Savings from Maintenance Activities
- (Compressed Air and Steam Leaks, Uninsulated Steam Lines, Group Relamping)