



Certified Energy Auditor

An Industry Recognized Certification for Energy Auditors

Who are Certified Energy Auditors?

- Do you evaluate and analyze energy use in a facility, identify energy conservation opportunities, and make recommendations where consumption can be reduced or optimized?
- Are you an energy auditor looking to validate your experience and knowledge?
- Are you a consultant that specializes in energy efficiency upgrades to buildings and building systems?
- Do you conduct audits and assessments in government buildings and are required to work to the US Department of Energy's Guide to Energy Audits?

Energy Auditors undertake energy efficiency assessments of large buildings and industrial facilities. Their audits cover building systems, occupancy, operations, maintenance, and code compliance. An auditor aims to provide their client with detailed survey results, risk mitigation analysis, implementation plans, and a final investment-grade analysis. Many auditors work to predefined codes and standards, such as the ASHRAE Standard 211-2018 for Commercial Building Energy Audits.



What does the Certified Energy Auditor (CEA®) Certification Program offer?

This program helps educate and qualify individuals involved in optimizing the use of energy in buildings and systems. By obtaining the CEA certification, candidates gain industry and peer recognition by demonstrating their understanding of energy auditing principles, practices, and technologies. The program raises the professional standards, both technical and ethical, of those engaged in energy efficiency and energy management.

What is the bottom line for me or my company?

Gaining a wide-reaching and industry-recognized certification is always a personal and financial investment. The CEA certification qualifies and auditor to work under the ASHRAE Standard 211-2018 for Commercial Building Energy Audits. Individuals report career improvements in the form of salary and responsibility increases. The certification shows individuals hold a fundamental understanding of the profession and a commitment to the highest standards of quality. Companies, organizations, and consultants with a CEA on-staff often see a higher affinity with their customers because CEAs understand their customer's requirements, speak the language of energy auditing, and are trusted to report and validate energy metrics and potential savings.

aeecenter.org/cea

What functional areas does the CEA® Certification Program cover?

The certification program requires fundamental knowledge across several core principles and practices specific to energy auditing in buildings and facilities. These include:

- Developing an Audit Strategy & Plan
- Utility Analysis, Renewable Opportunities
- Data Collection & Economic Analysis
- Lighting Systems
- HVAC & Heating Systems
- Motors, Drives & Compressed Air
- Ventilation Systems
- Domestic Hot Water Systems
- Building Envelope
- Water Conservation

How do I become eligible for AEE's CEA® certification?

Every certification program offered by AEE is defined by strict standards to ensure the program maintains its industry-wide recognition and credibility. To that end, AEE stipulates three criteria that all CEA candidates must meet. Firstly, applicants must have relevant experience or educational credentials (see below). Secondly, candidates must undergo a defined training program that aligns with the fundamental knowledge base of the program, and the principles and practices of the industry as a whole. Thirdly, candidates must pass the associated exam to demonstrate their technical knowledge, proficiency, and abilities in the area of energy efficiency.

Experience & Education

Applicants must meet one of the following eligibility criteria:

- Hold a related* bachelor's degree OR Professional Engineer (PE) OR Registered Architect (RA) and 3+ years related* work experience.
- Hold a 4-year unrelated Bachelor's degree and 5+ years related* work experience.
- Hold a 2-year associate degree and 5+ years related* work experience.
- Have 10+ years related* work experience
- Be a current Certified Energy Manager (CEM®).

*Related degree in science, engineering, architecture, business, law, finance, or related field and related experience in energy, building or facility management, or measurement and verification.

Who recognizes or accredits the CEA® program?

The Certified Energy Auditor (CEA) is accredited by many organizations worldwide. Visit the AEE website for a complete list.

CEA® is ISO IEC 17024 accredited by Entidad Nacional de Acreditación (ENAC) and American National Standards Institute (ANSI)



CEA® is a US Department of Energy, Better Buildings Workforce Guidelines recognized programs.



The International CEA® program is recognized by the UK's Energy Savings Opportunity Scheme (ESOS).



CEA® is recognized for Ireland's Energy Audit Scheme.



CEA® is required under United Arab Emirates ESCO accreditation scheme.



CEA® is recognized by the Saudi Energy Efficiency Center (SEEC).



Why would I want to take a training program when I believe I already have the knowledge and experience required to pass an exam?

A CEA training program provides more value than only preparing individuals to take the associated exam. It brings all candidates to a base level of understanding across a wide variety of energy management topics.

For those entrenched in their normal daily activities, attending a training program, held away from the office, in a classroom environment can be a catalyst for improvement and change. For many, the chance to network, connect, and learn from other like-minded individuals is incredibly valuable.

I obtained my CEA® Certification, where do I go next?

The CEA certification can help define your status as an energy auditor and help progress your career. Once complete, make sure you maintain your account and keep track of your certification on aeecenter.org. You can also keep up to date on energy management practices and technologies by joining your local AEE Chapter. Energy professionals continuously tell us that they stay ahead in the industry by getting involved in their local community.

Find Your Local AEE Chapter

Which companies and industries value the Certified Energy Auditor (CEA®) certification?

You can find CEAs across markets and industry sectors, from utilities, ESCOs, major multi-national corporations, power companies, respected controls contractors, and manufacturers, to federal, state, and local governments, military, universities, and school boards. Many of these organizations require a CEA certification as a condition of hiring or a requirement for advancement. Government organizations request the certification within "Requests for Proposals." The following list is a sample of companies across a wide range of industries that have demonstrated they value Certified Energy Auditors.

- 3M
- 7-Eleven
- Accenture
- AECOM
- AEP - American Electric Power
- AGS Enterprises Inc.
- Ameresco
- American Electric Power
- ARAMCO
- Boeing Company
- Booz Allen Hamilton
- Brady Services
- Cabot
- Caterpillar Inc.
- CBRE
- Clean Technology Centre
- CLEARResult
- Coffman Engineers
- ConEdison Solutions Company
- Constellation Energy
- DAIKIN
- Daimler Chrysler
- Defence Force Ireland
- Department of Defense
- DTE Energy
- Duke Energy
- Eastern Research Group
- Edison Energy
- Eenovators Limited
- Efficiency Nova Scotia Corporation
- EfficiencyOne
- EM3
- Energy Analytics LLC
- Energy Cybernetics
- ENGIE Impact
- Eversource Energy
- Florida Power and Light
- Gannett Fleming Inc
- Georgia Power Co.
- Greater Orlando Aviation Authority
- Harrison Energy Partners
- Hitachi Consulting
- Honda of America Manufacturing
- Honeywell
- Intel Corporation
- Izzat Marji Group
- Johnson Controls Inc
- Jones Lang LaSalle
- Jordan Advanced Alternative Energy And Transport Solutions
- King Fahad University of Petroleum and Minerals
- Kuwait Institute for Scientific Research
- Leidos Engineering
- Lockheed Martin
- London Environmental Network
- Loring Consulting Engineers Inc.
- Massachusetts Port Authority
- Mississippi Power Company
- National Energy Management Institute
- National Grid
- Naval Facilities (NAVFAC) Hawaii
- New York City Dept. of Education
- New York Power Authority
- New York University
- Nissan
- NORESKO
- Oman Electricity Transmission Company
- Parsons Corporation
- Penn State Facilities Engineering Institute
- Pfizer
- Philips Lighting
- Pinnacle Energy Services
- Practical Energy Solutions
- Public Works Department of Malaysia
- Raytheon Co.
- Realpoint Real Estate Consultancy
- REMICA S.A
- RMB Electrical Consultancy
- Rockwell Automation
- Sain Engineering Associates Inc.
- Sanofi
- Saudi Aramco
- Saudi Energy Efficiency Center (SEEC)
- Schneider Electric
- Siemens Building Technologies
- Southern California Edison
- Southern California Gas Company
- Support Services of Alaska
- Sustainable Buildings Solutions
- Tampa Electric Company
- Target Energy
- Telecom S.A.
- Texas A&M University
- Texas Instruments Inc.
- The Home Depot Canada
- Toyota Motor North America
- Trane
- Trinity Consultants
- TVA
- UNESCO
- United States Department of Agriculture
- US Army Corps of Engineers
- US Department of State
- US Dept of Homeland Security
- Utility Management Services Inc.
- Wal-Mart Stores Inc.
- Walt Disney Imagineering
- Washington Real Estate Investment Trust
- WSP USA
- Yardi Systems Inc.
- Yum! Brands Inc.
- ZESCO Limited

Find A CEA Near You
AEE Certified Professionals Directory



Certified Energy Auditor Training Program

Energy Auditors undertake energy efficiency assessments of commercial and industrial facility's energy systems. Their audits cover building occupancy, operations, maintenance, and code compliance. An auditor aims to provide their client with detailed survey results, risk mitigation analysis, implementation plans, and a final investment-grade analysis.

About This Program

This training program has been fully revised and updated for 2021. It is designed to provide attendees an in-depth and technical review of energy auditing. Over four days (exam on fifth day), our professional instructors will guide you through the essential steps necessary to evaluate facility energy systems from preliminary surveys through ASHRAE® Level 3 Energy Audits, how to analyze the results and deliver them to your client.

What You Will Learn

- Pre-audit requirements to ensure accurate data collection, measurement and verification
- What you need to know when conducting audits of building equipment and systems, such as lighting, pumps, motors, drives, HVAC, water systems, transportation, etc.
- The financial and economic aspects of an energy audit and how they can affect the bottom line for an organization.
- How to analyze utilities, and how energy demand, energy rates, energy accounting and performance contracting all affect an energy audit
- How to identify the “low-hanging fruit” that is ripe for energy conservation opportunities

At-a-Glance

- » This training program prepares attendees to take the Certified Energy Auditor (CEA®) exam.
- » This program is held over five days.
- » You earn 3.2 CEU | 32 PDH | 6.4 AEE Credits for completing this program.

Key Takeaways

- » Work through practical examples to demonstrate the topics and procedures covered.
- » Review the various areas of the Body of Knowledge associated with AEE's certification exam.
- » Discuss how to apply what you have learned to your business and applications.
- » Leave with a course workbook that will become an invaluable desk reference.

Registration

Candidates should contact their local AEE approved training provider for information about available training programs, the certification application process, exam registration, and associated fees. To find your local training provider visit

aeecenter.org/training

Certified Energy Auditor

Training Program

FULLY REVISED AND UPDATED FOR 2021

Who Should Attend

The program is of most significant value to those undertaking or assessing energy auditing projects. Obtaining AEE's CEA® certification provides international credibility among energy management, sustainable and clean energy communities. Attendees of this program have included existing energy professionals, energy engineers, energy managers, facilities managers, and energy consultants.

Course Outline

- Developing an Energy Audit Strategy & Plan
- Energy Use Analysis
- Data Collection & Analysis
- Economic Analysis
- Lighting Systems
- HVAC Part 1 – Systems
- HVAC Part 2 – Boilers
- HVAC Part 3 – Ventilation
- Domestic Hot Water & Water Conservation
- Motors, VFDs, & Compressors
- Building Envelope
- Building Automation & Energy Management Systems
- Alternative Generation & Energy Storage
- Energy in Transport

Our Instructors

Each member of our team of professional instructors provides their own experience and focuses on specific areas essential to energy auditing. Their combined teaching and industry experience allows them to deliver information that is of the most relevance and practical value to attendees.

Certification Eligibility

The prerequisites to qualify for the certification process take into account the diverse education and experience applicants may have. Each candidate must meet the required criteria at

aeecenter.org/cea

Global Training Programs

For a complete list of AEE training programs delivered globally visit

education.aeecenter.org/global

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Full Agenda

Developing an Energy Audit Strategy & Plan

- Energy Audit Goals & Purpose
- Avoiding Common Audit Shortcomings
- Successful Energy Audit Planning (4 Phases)
- QEA Role
- Complete Audit Process
- ASHRAE Audit Levels 1, 2, & 3
- Investment Grade Audits (IGA)
- ISO 50002, ISO 50001
- Communicating Audit Results to Clients
- Audit Project Team
- ASHRAE Standard 211 for Commercial Building Energy Audits
- Industry Specific Energy Requirements (Codes & Regulations)

Energy Use Analysis

- Energy & Power
- Energy Units Conversion (Railroad Track Method)
- Point of Use (POU)
- Energy Rate Structure & Benchmarking (EUI, ECI)
- Rate Components
- Deregulated Service Areas
- Energy Cost Savings
- Facility Energy Consumption Analysis (Load Factor)
- Facility Energy Balancing (Top-Down / Bottom-Up) Degree Days (DD)
- Establishing & Adjusting Consumption Baselines
- Regression Analysis

Economic Analysis

- Financial Decision Making
- Life Cycle Cost Analysis (LCCA)
- Capital Investment Project Components
- Time Value of Money (TVM)
- CFO Decision Rules (IRR, NPV, SPP, SIR)
- Project Uncertainty Assessment

Data Collection & Analysis

- Measurement & Analysis Techniques
- Preparing for Field Visit (Pre-site Data)
 - Preassessment Interview & Preparation Activities
 - PCBEA Forms
 - Data Sources & Audit Level Tools
 - Onsite Data (Field Visit)
 - Operational Characteristics
 - Operating Conditions
 - Key Measurements
 - Instrumentation & Accuracy
 - Onsite Information Collection Summary
 - Safety Considerations
 - Metering & Sub-metering
- Data Analysis (Field Visit Review)
 - Interval Data (Load Profiles)
 - Regression Techniques
 - Whole Building Modeling
 - CUSUM Analysis
 - Energy Simulation (Modeling, Steps, Tools)

Lighting Systems

- Energy Effective Lighting Design
- Lighting Survey
- Lighting System Types & Characteristics
- Lighting Maintenance Principles
- Recommendations & Calculations
- Energy Savings Potential
- Delivery Efficiency
- Identifying Energy Conservation Opportunities

Motors, VFDs, & Compressors

- Electrical Fundamentals
- Types of Motors & Energy Savings Measures
- Power Factor
- Variable Frequency Drives (VFDs)
- Air Compressors & Energy Savings Opportunities
- Fan Laws & Harmonics
- Energy Savings Calculations

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Building Envelope

- Key Terminology
- Thermal Weight
- Heat Transfer Mechanisms
- Thermal Resistance
- Heat Loss/Gain Calculations
- Insulation
- Seasonal Energy Loss/Gain
- Energy Savings Opportunities

HVAC Part 1 – Systems

- HVAC Systems & Equipment Classification
- Energy Efficiency Measures (EEMs)
- Thermal Environmental Conditions (ASHRAE Standard 55, Comfort Zones)
- Heat & Psychrometrics
- Efficiency Calculations & Indices
- Affinity Laws
- Energy Savings Estimates

HVAC Part 2 – Boilers

- Overview & Boiler Types
- Combustion
- Seasonal vs. Combustion Efficiency
- Pipe Insulation Calculations
- Steam Traps & Leaks
- Boiler Efficiency Optimization Methods

HVAC Part 3 – Ventilation

- ASHRAE Standard 62
- Outdoor Air Economizers
- Ventilation Rate & IAQ Procedure
- Filtration Systems & Standards
- COVID-19 (Ventilation & Filtration)
- Performance Improvement Opportunities
- Filtration Standards
- Minimum Efficiency Reporting Value (MERV)

Building Automation & Energy Management Systems

- Controls & Automation
- Building Management Systems (BMS)
- Building Automation Systems (BAS)
- Building Energy Information Systems (EIS)
- Designated Control/Operations Tasks
- Commissioning Recommendations
- Systems Maintenance
- Domestic Hot Water & Water Conservation
- DHW/SHW Generation
- Calculation Concepts
- Water & Sewer Rates
- Water Auditing Steps
- Water Reduction Measures
- Water Management Planning

Alternative Generation & Energy Storage

- Alternative Energy Generation Technologies
- Wind Turbines & Solar PV Panels
- Biomass, Hydro Power, & Geothermal Power
- Cogeneration (CHP) Opportunities
- Capacity Factor
- Energy Storage Methods

Energy in Transport

- Transportation Energy Use
- Road, Rail, Ship, & Air Transportation
- Transport System Efficiency
- Transport Energy Strategy
- Pipeline
- Idle Reduction Technologies
- Route Management
- Performance Indicators
- Mechanical Transport Systems

Preparatory Courses and Certification Examinations for the Certified Energy Auditor

Locations in India (<https://www.aeecenter.org/certifications/certifications/certified-energy-auditor>) Organized by AEE Kolkata Chapter, IISWBM

REGISTRATION

Updates on Course schedules, eligibility, fees, contact for details and registration information are available at: www.iiswbm.edu and www.aeecenter.org/internationalcertification/CEA. Before submitting fees, you are advised to check your eligibility and availability of seat by submitting the filled-up application form available at following link for enrolment: <https://forms.gle/H9rzWqAkKqs3nHoJ9>

INDICATIVE INFORMATION: DATES, FEES and PROCEDURE

If those who are eligible, in terms of educational qualification, to take the exam but do not meet the experience requirement, on the date of application for CEA, receive a passing score, they can still earn the Energy Auditor In Training (EAIT) certification. Then they have up to six years to gain the number of years of experience needed based on their education level (see eligibility requirements for CEA & EAIT).

Email your queries to aeecourses@iiswbm.edu and aeecourseswithiiswbm@gmail.com and/or WhatsApp/SMS +91 9433719779/9123395598.

Last date of submission of filled-up application form along with fees	August 18, 2022
Email of Admit E-Card to Eligible Candidates	August 29, 2022
Conduction of online CEA International training by IISWBM	September 5-8, 2022
Conduction of online examination by AEE	September 9, 2022
Declaration of Examination Result on or before	December 9, 2022

Prior to sitting for the exam, each candidate must complete an application.

#CEA Training would be optional for the following candidates:

- Candidate possessing CEA or CEM certification from Bureau of Energy Efficiency (BEE), Government of India
- Candidate completed MBA-PS degree OR Master in Public Systems Management (MPSM) with specialization in Energy Management OR Post-Graduate Diploma in Energy Management (Approved by AICTE) from IISWBM-University of Calcutta.

The CEA exam will be administered at the close of instruction on day four to those, with requisite experience and degree from an (AICTE/UGC/AIU/Such Body) accredited university or college, who has qualified in advance to sit for the exam by submitting a completed CEA application and fee.

Fees for the Training Seminar (in INR)*	50000
Fees for the Examination (in INR)*	40000

*Add GST 18%. Discount of up to 5% applicable to active AEE members recommended by the applicant's AEE Chapter President/Vice-President

SI CEA Study Guide available at <https://www.aeecenter.org/certifications/resources/cea-resources>

Many other sources useful to prepare for CEA are also available in the said link. AEE Book also may be available at cost with the AEE Chapter.

COURSE INSTRUCTORS FOR CEA AND/OR CEM INTERNATIONAL*

	Dr. Binoy K Choudhury, B.E., CEA & CEM (AEE, USA) Trainer, A.E.A.(BEE, Govt. of India) is Professor in Energy Management, IISWBM and Guest Faculty member at IEST and Kalyani University. Earned experience/training in Germany, Japan, United Nations, Thailand, UK, & USA. About 30 years of experience in Energy Field (academics and industry). Email: bkchoudhury@iiswbm.edu		Mr. SomDerashri, BE (Chem)-BITS, Pilani & PG in Industrial Engg. CEM (AEE, USA) Trainer, A.E.A.(BEE, Govt. of India), Certified Lead Auditor for ISO 50001 (BSI, UK), CMVP (AEE & EVO, USA), Over 25 years of industrial experience & completed over 500 Energy Audits in India & Abroad. Launched many innovative energy saving products. Email: som_derashri@rediffmail.com
	Mr. Vinay Gadikaris an accomplished energy professional working in the field of energy efficiency and renewable energy for more than 10 years. He is CEM (AEE, USA) Trainer; CEA (BEE, Govt. of India); Lead Auditor for EnMS ISO 50001 (IRCA). He has worked in Process Industries, DCs, Commercial Establishments. Email: vinaygenenergy@gmail.com		Mr. Benet George V is an internationally experienced energy professional and done hundreds of energy audits, related projects and training in 11 countries. His certifications include CEM (AEE, USA) Trainer, CMVP (AEE & EVO, USA), PMP (PMI, USA), AEA (BEE, Govt. of India), ISO 50001 Lead Auditor and ZED Assessor. Email: benet.george@gmail.com

Persons having institutional queries may contact Prof (Dr) Krishna M Agrawal, the Certification Administrator Email: aeecourseswithiiswbm@gmail.com and kmaiiiswbm@gmail.com

*Trainers would be available based on need and convenience.

The Director of IISWBM & President of AEE Kolkata Chapter : Mr Dipankar Dasgupta (Email: ddg_director@iiswbm.edu);

The Presidents of the supporting AEE Chapters are: Mr Dalip Singh, AEE Delhi Chapter (Email: dschahar@gmail.com) and Mr Milind Rajendra Chittawar, AEE Western India Chapter (Email: milind.chittawar@seetechsolutions.in)

Submission of Application: For enrolment apply through link <https://forms.gle/H9rzWqAkKqs3nHoJ9> or Emails your credentials to aeecourses@iiswbm.edu as well as aeecourseswithiiswbm@gmail.com and copy to fo@iiswbm.edu within stipulated date, and also hard copy may be sent by post at the cost of and responsibility of the interested candidate with Name(s), Qualifications & Experience (enclose supporting document), Address for Communications (with mobile number and Email), and other information as per Application Format with PP size Photo, and proof of online payment made by the stipulated date. Please note the Bank details for NEFT/RTGS Transfer: Beneficiary: IISWBM, Name of Bank: State Bank of India, Surya Sen Street Branch, Kolkata, ACCOUNT NO.: 10252384198, IFS Code: SBIN 0003496; SWIFT Code: SBININBB492, MICR Code: 700002099 and PAN : AAAT13215M, IISWBM'S GSTIN # 19AAAT13215M2ZJ and accounting head 9992 for 18 % GST.

Rise to the Top of the Energy Management Profession: Become AEE Certified