

EMA – Energy Management Professional (EMP) – On Demand/Virtual Syllabus

Course Description (On Demand)

This **intensive** four-hour **pre-recorded** seminar helps EMP candidates understand the **energy management process** and how it can be applied. It incorporates instruction based on the Energy Manager “Job Task Analysis” adopted by the DOE’s Better Buildings Workforce. The seminar is also open to non-candidates for education purposes.

Certification, Exam & Fees

The \$550 course fee covers application and exam fees for EMP certification. To see if you qualify for certification, visit page 5 of the [Candidate Handbook](#). Course attendance is not required to pursue certification. All candidates are required to submit an [application](#)

Key Concepts Covered in this Course

- Planning Effective Energy Management
- Managing Budgets and Finances
- Implementing the Energy Management Process
- Managing Energy Information
- Managing Energy Communications
- Implementing Energy Efficient Projects

Course Description (Virtual)

This **two-day, six-hour** course provides an overview and refresher on **energy management and how it can be applied**. Instructors explain EMA’s **commissioning-based approach** to energy management that maximizes energy savings and optimizes building performance. Sample problems and common calculations will be demonstrated throughout the workshop. This course is also open to non-certification candidates at a discounted rate. Handouts and a recording of the seminar will be provided.

Fees

The total cost to attend is **\$550**, which also covers application and exam fees. Companies who have staff member successfully pass the Energy Management Professional exam are invited to join as **EMA Corporate Members**. Corporate Membership dues are \$250-\$500 a year. Those who wish to attend for educational purposes may register for the seminar alone for **\$300** (does not include certification fees).

Exam

After the seminar, candidates with approved applications are sent instructions on how to schedule an exam at one of 900 local testing centers. This seminar is also available to non-candidates for education purposes.

Course Content

- Importance of Energy Management
- Units, Acronyms, Services, and Codes & Standards
- Resiliency / Reliability and Security
- Energy Planning (Team Resources, Coordination, and Managerial Initiatives)
- Establishing an Energy Baseline
- Energy Performance Benchmarks
- Analyzing Utility Invoices
- Forecasting Energy Costs
- Procuring Cost-Effective Energy Source
- Energy Auditing - Procedures
- Identifying Opportunities - ECMs and FIMs
- No Cost / Low-Cost Strategies Identifying / Evaluating Saving For ECMs / FIMs
- Economic Analysis Preparing Budgets
- Implementing Energy Measures
- Project Close-out Activities
- Various Documentation and Training Measures
- Monitoring Project Performance
- Persistence of Savings
- Energy Communication

EMA – Operations and Maintenance (O&M) – Syllabus

Course Description

Operations & Maintenance is the front line of Energy Efficiency. That's why we created this course for ambitious building personnel looking for tools to improve energy efficiency and systems performance. Our certified and experienced instructor will walk you through the basics of energy management strategies, including evaluating energy bills, establishing building energy baselines and other performance metrics, developing facility benchmarks, low cost/no cost techniques for improving efficiency and performance, code compliance and more. Join us to benefit your facility!

Course Content

Module 1: Energy Audits & Building Tune-up Program Requirements

Introduction: An overview of the topics to be covered in the series.

An Audit of Audits: What are the types of audits that are typically performed in facilities (ASHRAE 1-3, investment grade, building or system-specific etc.). What type of audit is appropriate for what purpose, desired outcomes?

Planning Energy Audits: Provides a checklist for pre-audit activities and considerations.

Energy Audit Scope/Methodology: The EMP 7-phase methodology is introduced. (Participants are provided with PDF of 246-page EMA Guideline.)

Development of Audit Plan: Includes introduction of ASHRAE Standard 211 with emphasis on the Level 2 audit requirements relevant to incentive requirements.

Standardized Industry Practices/Minimum Reporting Requirements: Material is presented from ASHRAE 211, EMA Guideline references and other applicable guidance.

Discussion of ECMs and FIMs: Provides context in the desired outcomes and key differences in ECMs and FIMs.

Sample Audit Exercises: Relates to pre-event materials distributed to participants.

Preparation of Audit Report: Samples reports are explained; recommended best practices are provided.

Module 2a: Energy Consumption, Documentation and Analysis; Energy Balance, Baseline and Benchmarking

Introduction: Elements of effective facility documentation and tracking energy use. Units of measurement kWh, therms, gallons, etc. Discussion of metrics, degree days, metering, submetering (including BTU and smart metering).

Gathering Data: Monthly bills, supplier contract info. Discuss Portfolio Manager and its uses

Organizing Data: By building, operating entity, department, etc. Discuss submetering, BAS trend logs,

dataloggers, other means of stratifying consumption data, interval data.

Energy Balance: Demonstrate the four-part process for calculating.

Energy Baseline: Develop a baseline against which estimated energy consumption can be measured going forward. Baseline metrics (boundaries, year, fuel source, units of output, etc.)

Discussion of Influences on Energy Consumption: weather, occupancy patterns, seasonal activities, behavioral, etc.

Energy Use Intensity: Introduce formula, sample calculations, EUI uses

Principles of Energy Benchmarking: What is energy benchmarking? Tools and resources, developing a benchmarking plan. The Commercial Buildings Energy Consumption Survey (CBECS).

Module 2b: No Cost/Low Cost Strategies for Building Energy Savings

Introduction: Site assessment / investigation techniques – key data collection

techniques; visual observations, measurements, trend logs, etc. Introduction of relevant principles of Facility Condition Assessment.

BAS-related Strategies: No Cost / Low Cost strategies for energy savings – examination of common control strategies, sequences, adjustments, BAS tips

Mechanical Part 1: Energy opportunities – common opportunities associated with building envelopes, lighting systems, filters, and domestic hot water systems

Mechanical Part 2: Energy opportunities – common opportunities associated with boilers, steam systems, and heating water systems

Mechanical Part 3: Energy opportunities – common opportunities associated with refrigeration & cooling systems (chillers, DX and CHW / CW distribution)

Mechanical Part 4: Energy opportunities – common opportunities associated with various HVAC terminal distribution systems (AHUs, various terminal units, etc.)

Office Part 1: Energy opportunities printers, copiers, fax machines, scanners, and multifunction devices

Office 2: Energy opportunities behavioral techniques featuring providing occupants with awareness, feedback, and actionable insight on their own energy usage.

Procurement: Overview of energy procurement with emphasis on auditing skills.

Module 3: Monitoring Building Performance & Ensuring and Maintaining Savings through MBCx

- Describe types of commissioning [including Cx, RCx and MBCx]
- Describe benefits of commissioning
- Introduce MBCx
 - Standard definition [LBNL] is: “Monitoring based commissioning (MBCx) combines ongoing building energy system monitoring with standard retro-commissioning (RCx) practices with the aim of providing substantial, persistent, energy savings.”
 - Other uses, fault detection, predictive maintenance, etc.
 - Applications, enterprise wide, campus, single location, etc.
- Basic MBCx principles: baseline, analysis, actions, etc.
- Case studies.
- Implementing MBCx
- Using MBCx to ensure a persistence of energy savings and prevent building drift.
- Q&A (With time available)

Module 4: Evaluating ECMs, Calculating Return on Investment & Prioritization of Energy Savings Measures

- **Introduction:** This webinar establishes how to evaluate and calculate various measures that are revealed by the audit work. It provides a basis for the decision-making that goes into creating a retrofit plan for the facility. Participants receive advance materials and sample problems relating to the concepts covered.
- **Evaluating energy opportunities (various measures):** Calculating energy and cost savings, examination of payback and ROI. The examples used will be to the extent possible designed to incorporate actual conditions derived from the pre-event survey submitted by participants.
- **Ranking and Prioritizing Various Energy Savings Measures:** Participants will learn methods of creating criteria for rank and prioritization. Issues such as owner goals, regulatory compliance, leveraging incentives, system lifetime expectations, etc. will be discussed.
- **Establishing the Project Evaluation Criteria:** Building on the material in the previous section, candidates will learn how to consider the information collectively and make key recommendations regarding their facility.
- **Preparing the Report of Findings/Recommendations:** Putting it all together. Sample reports will be presented and explained. Participants will be challenged to make the hard decisions that result in their recommendations and provide a rationale for same.
- **Strategies for Ensuring a Persistence of Savings:** The concept of “drift” is discussed. Measures that can prevent drift covered including, Ongoing Cx programs, monitoring strategies (sub-metering, trends, MBCx, etc.), and preventative / predictive maintenance