



## IMPLEMENTING GUIDELINES (IGs) ON THE RECERTIFICATION OF ENERGY MANAGER AND ENERGY AUDITOR

July 2024

Republic Act (RA) No. 11285 or the Energy Efficiency and Conservation Act (EEC Act) along with its Implementing Rules and Regulations (EEC-IRR) and Department Circulars DC2022-03-0006 or the *Adoption of Training Regulations for the Certification Process for Energy Auditors (EAs)* and DC2022-03-0008 or the *Adoption of Training Regulations and Prescribing Certification Process for Training Institutions and Energy Managers (EMs)*, aims to enhance the skills and recognition of energy and efficiency (EE) Practitioners in the sector through certification. These regulations establish certification processes for EAs and EMs, with certifications for EAs and EMs valid for three years, requiring subsequent recertification.

On 05 June 2020, the Department of Energy (DOE) and the Technical Education and Skills Development Authority (TESDA) signed an agreement to develop Competency Standards (CS) on Energy Efficiency and Conservation (EEC) and conducted public consultations with stakeholders. To ensure the continuous implementation of the certification processes for EAs and EMs, the recertification program shall adhere to the following:

### I. QUALIFICATIONS AND REQUIREMENTS

**Section 1. Recertification Course.** Recertification training for EE Practitioners shall be conducted based on the developed recertification training regulations (TR) for Certified EA (CEA) stated in *Annex A* and Certified EM (CEM) stated in *Annex B*. Recognized Training Institutions (RTIs) shall develop a separate training plan for these courses.

**Section 2. Requirements for Recertification.** The existing EE Practitioners (CEM and CEA) shall satisfy the following before being considered for Recertification by the DOE.

- a. *Certification as an EM or EA from the DOE.* Candidates shall be previously certified by the DOE. The expired certificate shall only be accepted for recertification if the period of expiration has not exceeded two (2) years from the date of validity of the certificate.
- b. *Certificate of Completion of the Recertification Course.* Only a Certificate of Completion issued by a DOE RTI shall be accepted by the DOE as a requirement for the application for recertification.
- c. *Endorsement from the Designated Establishment (DE).* An endorsement letter shall be provided by the DE indicating that the candidate still serves as the facility/property's EE Practitioner.
- d. *Proof of Compliance to DE Obligations.* The endorsing DE shall be able to submit its proof of the latest submission of its Annual Energy Utilization Report (AEUR), Annual Energy Efficiency and Conservation Report (AEECR), and Energy Audit Report (EAR).

### II. RECERTIFICATION PROCESS AND VALIDITY OF CERTIFICATE

**Section 3. Recertification of EE Practitioners.** The submission guidelines and certification procedure shall be based on the provisions stated in Section 9 of DC2022-03-0006 and Section 8 of DC2022-03-0008. The recertification shall follow the procedure stated in *Annex C* and the checklist of requirements in *Annex D*.

**Section 4. Validity of Certificate.** All candidates who will successfully secure recertification shall have their certificate valid for three (3) years. The certification numbers issued to the EE Practitioners will remain and shall be used upon its reissuance. The DOE will issue a new version of the certificate reflecting the updated issuance and expiration date.

### III. APPROVAL OF TRAINING PLAN OF RTIs

**Section 5. Training Plan.** Upon issuance of this IG, RTIs will be given ninety (90) calendar days to submit to the DOE their training plans reflecting the required competencies in the issued TRs. The submission shall be made through e-mail ([doe.epmpd@gmail.com](mailto:doe.epmpd@gmail.com)) and shall include a formal application letter from the head of the RTI. The training plan shall be similar to the initially submitted document of the RTI during their application for recognition to the DOE.


**Section 6. Compliance of RTIs.** Once approved, RTIs shall incorporate the training course into their calendar and shall inform DOE for proper dissemination to all concerned stakeholders. No recertification training shall be conducted without the issuance of a certificate from the DOE.

### IV. OTHER PROVISIONS

**Section 7. Separability Clause.** If for any reason, any section or provision of this IG is declared unconstitutional or contrary to law, IRR, or DCs, such parts not affected shall remain in full force and effect.

**Section 8. Effectivity.** This IG shall take effect in fifteen (15) days following its publication in at least two (2) newspapers of general circulation or the Official Gazette. Copies of this IG shall be filed with the University of the Philippines Law Center - Office of the National Administrative Registrar.

Issued at Energy Center, Bonifacio Global City, Taguig City

  
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Department of Energy



  
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## ANNEX A

### EA RECERTIFICATION COURSE

The **EA Recertification Qualification** consists of competencies that a person must achieve to enable him/her to demonstrate competence, proficiency, and ethical fitness in energy assessment/audit of buildings, industrial facilities, and other similar establishments. Each competency shall be conducted for a minimum of one (1) hour. The entire recertification course shall run for a minimum of sixteen (16) hours but shall not exceed twenty-four (24) hours.

The units of competency comprising this qualification include the following:

Code	COMMON COMPETENCIES
DOE-CEA-RC-01	Updates on the EEC Act and Other Related Issuances
DOE-CEA-RC-02	Level 2 Energy Audit
Code	ADVANCED COMPETENCIES
DOE-CEA-RC-03	Measurement and Verification
DOE-CEA-RC-04	Financial Analysis and Modelling
DOE-CEA-RC-05	Investment Grade Audit (IGA)
DOE-CEA-RC-06	Internet of Things (IoT) and Data Analytics
DOE-CEA-RC-07	Renewable Energy
DOE-CEA-RC-08	Transportation [Internal Combustion Engine (ICE)/Electric Vehicle (EV)]

### RECERTIFICATION REQUIREMENTS

Apart from completing the above-mentioned competencies, the candidate shall also satisfy the following requirements to be recertified as an EA by the DOE:

1. Certificate as an EA duly registered to the DOE.
2. Certificate of Experience/Practice as an EA for the past three (3) years. Certifications should come from the client of the CEA.
3. List of Conducted Energy Audits. At least three (3) energy audit reports where the applicant is the energy auditor shall be submitted to the DOE.
4. Updated CEA Profile and Curriculum Vitae.

### RECERTIFICATION PROCESS

1. The candidates are to undergo training from a DOE RTI.
2. A minimum attendance shall be required by the RTI from the candidates.
3. A test/examination shall be instituted by the RTI after the training.
4. Candidates passing the test (recommended grade of 80% passing) and possessing at least an 80% attendance rate shall be given the recertification.
5. The RTI shall issue the certificates.

**COMPETENCY STANDARDS.** This section gives the details of the contents of the common and core units of competency required for a CEA.

### **COMMON COMPETENCIES**

**UNIT OF COMPETENCY** : **UPDATES ON THE EEC ACT AND OTHER RELATED ISSUANCES**

**UNIT CODE** : **DOE-CEA-RC-01**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills, and attitudes required to lead in the dissemination and discussion of ideas, information, and issues in the workplace.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Understanding the EEC Act, its IRR, and related DOE D 2. C and DO	<ul style="list-style-type: none"> <li>The EEC Act, its IRR, and other related standards, guides, and regulatory compliances are completely identified.</li> <li>Assessment of the rules and regulations, their implications, requirements, risks, and repercussions are identified and communicated to the owner/clients.</li> </ul>	<ul style="list-style-type: none"> <li>RA 11285 EEC Act, IRR, related Department Circulars (DC) and Department Order (DO) from DOE, others</li> <li>Company business processes and operating procedures; Above rules and regulations including penalties, rewards, and incentives</li> </ul>	<ul style="list-style-type: none"> <li>Coordination, team building, organizing, communication, writing and presentation</li> </ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*

**UNIT OF COMPETENCY** : **LEVEL 2 ENERGY AUDIT**

**UNIT CODE** : **DOE-CEA-RC-02**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills, and attitudes to lead small teams including setting, maintaining, and monitoring team and individual performance standards.

ELEMENT	PERFORMANCE CRITERIA	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Understanding Energy Audit (ISO 50002, American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), or similar framework) Requirements and Guidance	<ul style="list-style-type: none"><li>• The audit principles and the different audit processes, types, methods, and steps are identified following ISO 50002, ASHRAE, or similar framework</li><li>• Essential elements for a successful implementation of an energy audit are identified</li></ul>	<ul style="list-style-type: none"><li>• ISO 50002, ASHRAE, or similar framework on Energy Audit Requirements and Guidance</li><li>• Company business processes and operating procedures</li></ul>	<ul style="list-style-type: none"><li>• Coordination, team building, organizing, communication, writing, and presentation</li></ul>

### **ADVANCED COMPETENCIES**

**UNIT OF COMPETENCY** : **MEASUREMENT AND VERIFICATION**

**UNIT CODE** : **DOE-CEA-RC-03**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills, and attitudes required to implement, monitor, and manage energy consumption through the implementation of Energy Management Systems, programs and projects following the ISO 50001, ASHRAE, International Performance Measurement and Verification Protocol (IPMVP) or similar framework principles and standards.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Understanding the process of planning, measuring, collecting, and analyzing data for the purpose of verifying and reporting energy savings within an individual facility resulting from the implementation of energy conservation measures (ECMs) with reference to ISO 50015	<ul style="list-style-type: none"><li>• The different processes and steps in the measurement and verification of energy performance of the process, system, and equipment</li></ul>	<ul style="list-style-type: none"><li>• Measurement and Verification definition, purpose, and principles</li><li>• Company business processes and operating procedures</li><li>• Energy performance analysis, baselining, and solutions evaluation</li></ul>	<ul style="list-style-type: none"><li>• Coordination, team building, organizing, communication, writing, and presentation</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*



**UNIT OF COMPETENCY** : **FINANCIAL ANALYSIS AND MODELLING**

**UNIT CODE** : **DOE-CEA-RC-04**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills, and attitudes required to cover the right approaches in evaluating the economic and financial viability of the energy project, financial structuring and modelling, and sensitivity analysis.

ELEMENT	PERFORMANCE CRITERIA	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Understanding the Basic Financial Analysis and Modelling – covering the right approaches in evaluating the economic and financial viability of the energy project, financial structuring and modeling, and sensitivity analysis following ISO 50015	<ul style="list-style-type: none"><li>Understanding Financial Analysis and Modelling will facilitate the proper evaluation of various energy projects using ISO 50015 or a similar framework</li></ul>	<ul style="list-style-type: none"><li>The learnings will be used in assessing and determining the financial impact and benefits of various proposed energy projects as a basis for priority and decision-making</li><li>Understanding the boundary of measurement and types of savings</li></ul>	<ul style="list-style-type: none"><li>Coordination, team building, organizing, communication, writing, and presentation</li></ul>

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**UNIT OF COMPETENCY** : **INVESTMENT GRADE AUDIT (IGA)**

**UNIT CODE** : **DOE-CEA-RC-05**

**UNIT DESCRIPTOR** : This unit provides an understanding of an in-depth analysis of the building's energy usage patterns, systems, and components.

ELEMENT	PERFORMANCE CRITERIA	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Understanding the Investment Grade Audit – comprehensive and detailed assessment of a building's energy performance, or specific Significant Energy Use (SEU) with a focus on identifying and evaluating energy conservation measures.	<ul style="list-style-type: none"> <li>Understanding energy consumption and performance of major SEUs.</li> <li>Identification and analysis of energy-saving opportunities.</li> <li>Preliminary equipment design or process improvement and detailed cost requirements.</li> <li>Assessing a building's energy cost and efficiency by analyzing energy bills and a detailed survey of the building, accompanied by the building operator</li> </ul>	<ul style="list-style-type: none"> <li>ISO 50002, ASHRAE, IPMVP, or similar framework on Energy Audit Requirements and Guidance</li> <li>Measurement and verification process and data analytics</li> </ul>	<ul style="list-style-type: none"> <li>Coordination, team building, organizing, communication, writing, and presentation</li> <li>Holistic and systematic process when undertaking an energy audit.</li> </ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*



**UNIT OF COMPETENCY** : **INTERNET OF THINGS (IoT) AND DATA ANALYTICS**

**UNIT CODE** : **DOE-CEA-RC-06**

**UNIT DESCRIPTOR** : This unit provides the knowledge, skills, and attitude to the operations, maintenance, and application of energy audit tools and equipment. This will involve working in a team environment.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Understanding the data analysis methodology using predictive modeling, and other statistical methods to analyze business information from a variety of data sources 2. Introduction to Data Analytics	<ul style="list-style-type: none"><li>• Data gathered are analyzed and quality checked prior to analysis</li><li>• Use of appropriate methods and analytical tools for data analysis</li><li>• Data presentation</li><li>• Development of insights and foresight from the data</li><li>• Relevant processes, monitoring and measuring <i>tools, equipment, hardware, data capture, storage, and databases</i> are identified and requested in accordance with OEM specifications</li></ul>	<ul style="list-style-type: none"><li>• Statistical tools and computer applications for analysis</li><li>• Data presentation for management</li><li>• Types and usage of statistical tools and equipment</li><li>• Basic statistical process and numerical methods</li><li>• Interpretation of results</li></ul>	<ul style="list-style-type: none"><li>• Data analysis and forecasting</li><li>• Critical thinking, development of insights, and foresight</li><li>• Team collaboration</li><li>• Data quality assurance</li><li>• Writing and communication</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*

**UNIT OF COMPETENCY** : **RENEWABLE ENERGY**

**UNIT CODE** : **DOE-CEA-RC-07**

**UNIT DESCRIPTOR** : This unit provides the knowledge, skills, and attitude required to provide an appropriate management of energy consumption in the facility and its corresponding equipment and devices.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms are elaborated in the Range of Variables</i>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Basic Renewable Energy (RE) Systems – covering the basic features and design, installation, operation, and maintenance of RE system, impact on the power system reliability and efficiency, safety and protection	<ul style="list-style-type: none"><li>• Impact of RE Systems, savings contribution, efficiency, and reliability improvement in the facilities.</li><li>• Energy Consumption Analysis</li><li>• Energy System Assessment</li></ul>	<ul style="list-style-type: none"><li>• Solar PV, wind, and other RE technologies</li><li>• Features, functions, and operational characteristics of various RE applications</li><li>• Basic engineering knowledge (electrical, mechanical, safety, etc.)</li></ul>	<ul style="list-style-type: none"><li>• Coordination, team building, organizing, communication, writing, and presentation</li><li>• Analytical writing and presentation</li><li>• Research, coordination, writing, and presentation</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*

**UNIT OF COMPETENCY** : **TRANSPORTATION (ICE-EV)**

**UNIT CODE** : **DOE-CEA-RC-08**

**UNIT DESCRIPTOR** : This unit provides the knowledge, skills, and attitude required to provide appropriate technical competencies in handling the facility and its corresponding equipment and devices.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. EEC, Comprehensive Roadmap for the Electric Vehicle Industry (CREVI) / Vehicle Fuel Economy Labeling Program (VFELP), Department of Environment and Natural Resources (DENR), Policies, rules and regulations	<ul style="list-style-type: none"><li>• Energy efficiency policy direction and standards in the transport sector</li><li>• Efficiency performance measurement, targets, and verification</li><li>• Emission reduction target and Green House Gas (GHG) impact</li><li>• Alternative fuel and technology considerations</li><li>• Energy System Assessment</li></ul>	<ul style="list-style-type: none"><li>• Various technologies on the internal combustion engine, hybrid, and electric vehicles including future technologies</li><li>• Features, functions, and operational characteristics of various propulsion technology and applications</li><li>• Basic engineering knowledge (electrical, mechanical, safety, etc.)</li></ul>	<ul style="list-style-type: none"><li>• Coordination, team building, organizing, communication, writing, and presentation</li><li>• Analytical writing and presentation</li><li>• Research, coordination, writing, and presentation</li></ul>
2. Fuel consumption analysis	<ul style="list-style-type: none"><li>• Fuel calorific value, efficiencies and CO2 emission</li><li>• Energy efficiency performance indicators for various types of technologies</li></ul>	<ul style="list-style-type: none"><li>• Same as above</li></ul>	<ul style="list-style-type: none"><li>• Same as above</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*



## **ASSESSMENT ARRANGEMENT**

*Competency Assessment* is the process of collecting evidence and making judgments whether competency has been achieved. The purpose of assessment is to confirm that an individual can perform to the standards expected at the workplace as expressed in relevant competency standards.

### **1.1 Pre-Assessment Exam**

The pre-assessment exam is accomplished by the candidate prior to actual competency assessment. This pre-assessment tool helps the candidate and the assessor determine what evidence is available and where gaps exist, including readiness for assessment. This document can:

- a1. Identify the candidate's skills and knowledge;
- a2. Highlight gaps in the candidate's skills and knowledge;
- a3. Provide critical guidance to the assessor and candidate on the evidence that still needs to be presented; and
- a4. Assist the candidate in identifying key areas in which practice is needed or additional information or skills that should be gained prior

### **1.2 Post-Assessment Exam**

The post-assessment exam is undertaken by the candidate after the actual competency assessment. This post-assessment tool facilitates the candidate and the assessor in evaluating the available evidence and identifying any existing gaps, including assessing the candidate's readiness for further development. This document can:

- a1. Identify the candidate's skills and knowledge;
- a2. Highlight gaps in the candidate's skills and knowledge;
- a3. Provide critical guidance to the assessor and candidate regarding any additional evidence that needs to be presented; and
- a4. Assist the candidate in recognizing key areas where further practice is needed, or additional information or skills should be gained for future assessments.

The RTI shall provide a copy of the trainee's assessment results to the DOE ten (10) days after the conduct of the recertification course.

## ANNEX B

### EM RECERTIFICATION COURSE

The **EM Recertification Qualification** consists of competencies that a person must achieve to enable him/her to demonstrate competence, proficiency, and ethical fitness in energy management. Each competency shall be conducted for a minimum of one (1) hour. The entire recertification course shall run for a minimum of sixteen (16) hours but shall not exceed twenty-four (24) hours.

The units of competency comprising this qualification include the following:

Code	COMMON COMPETENCIES
DOE-CEM-RC-01	Updates on the EEC Act and Other Related Issuances
DOE-CEM-RC-02	Introduction to Level 2 Energy Audit
Code	ADVANCED COMPETENCIES
DOE-CEM-RC-03	Introduction to the Energy Conserving Design for Buildings
DOE-CEM-RC-04	Advanced Mechanical System
DOE-CEM-RC-05	Advanced Electrical System
DOE-CEM-RC-06	Advanced Building Envelope
DOE-CEM-RC-07	Sustainability, Environmental, and Water Systems Design
DOE-CEM-RC-08	IoT and Data Analytics

### RECERTIFICATION REQUIREMENTS

Apart from completing the abovementioned competencies, the candidate shall also satisfy the following requirements to be recertified as an EM by the DOE:

1. Certificate as an EM duly registered to the DOE.
2. At least three (3) years of experience handling DE.
3. Endorsement from the DE.
4. Endorsing DE's compliance on submitting the AEUR and AEECR of the endorsing DE Compliance. The applicant should be the one who facilitated the compliance of the endorsing DEs with the EEC Act. Should the DE change their EE Practitioner and employ a new one, the DE shall include the said information on their endorsement letter. Additionally, the practitioner's compliance shall be tied up to the compliance of his/her previous DE.
5. Endorsing DE's compliance on submitting the Energy Audit Report (EAR).
6. Updated CEM Profile and Curriculum Vitae.

### RECERTIFICATION PROCESS

1. The candidates are to undergo training from a DOE RTI.
2. A minimum attendance shall be required by the RTI from the candidates.
3. A test/examination shall be instituted by the RTI after the training.
4. Candidates passing the test (recommended grade of 80% passing) and possessing at least an 80% attendance rate shall be given the recertification.
5. The RTI shall issue the certificates.

**COMPETENCY STANDARDS.** This section gives the details of the contents of the common, and core units of competency required for CEM.

### **COMMON COMPETENCIES**

**UNIT OF COMPETENCY** : **UPDATES ON THE EEC ACT AND OTHER RELATED ISSUANCES**

**UNIT CODE** : **DOE-CEM-RC-01**

**UNIT DESCRIPTOR** : This unit provides an understanding of the RA11285 EEC-IRR requirements and relevant environmental and climate change policies. It also provides the latest issuances including advisories and implementing guidelines under the EEC Act.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Understanding the EEC Act, its IRR, and related DOE DC and DO	<ul style="list-style-type: none"> <li>The EEC Act, its IRR, and other related standards, guides, and regulatory compliances are completely identified.</li> <li>Assessment of the rules and regulations, their implications, requirements, risks, and repercussions are identified and communicated to the owner/clients.</li> </ul>	<ul style="list-style-type: none"> <li>RA 11285 EEC Act, IRR, related DCs and DOs from DOE, others</li> <li>Company business processes and operating procedures; Above rules and regulations including penalties, rewards, and incentives</li> </ul>	<ul style="list-style-type: none"> <li>Coordination, team building, organizing, communication, writing and presentation</li> </ul>
2. Understanding other related and complementary rules and regulations related to the EEC Act	<ul style="list-style-type: none"> <li>Other related rules and regulations are identified (RE Act, environmental protection, Energy Regulatory Commission (ERC) rules, etc.)</li> <li>Assessment of the rules and regulations, their implications, requirements, risks, and repercussions are identified and communicated to the owner/clients</li> </ul>	<ul style="list-style-type: none"> <li>RE Act, Environmental Protection, ERC Ruling, and others</li> <li>Company business processes and operating procedures; Above rules and regulations including penalties, rewards, and incentives</li> </ul>	<ul style="list-style-type: none"> <li>Coordination team building, organizing, communication, writing, and presentation</li> </ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*



**UNIT OF COMPETENCY** : **INTRODUCTION TO LEVEL 2 ENERGY AUDIT**

**UNIT CODE** : **DOE-CEM-RC-02**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitudes to lead small teams including setting, maintaining and monitoring team and individual performance standards.

ELEMENT	PERFORMANCE CRITERIA	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Understanding Energy Audit (ISO 50002, ASHRAE, or similar framework) Requirements and Guidance	<ul style="list-style-type: none"><li>The audit principles and the different audit processes, types, methods, and steps are identified following ISO 50002, ASHRAE, or similar framework</li><li>Essential elements for a successful implementation of an energy audit are identified</li></ul>	<ul style="list-style-type: none"><li>ISO 50002, ASHRAE, or similar framework on Energy Audit Requirements and Guidance</li><li>Company business processes and operating procedures</li></ul>	<ul style="list-style-type: none"><li>Coordination, team building, organizing, communication, writing, and presentation</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*

### **ADVANCED COMPETENCIES**

**UNIT OF COMPETENCY** : **INTRODUCTION TO THE ENERGY CONSERVING DESIGN FOR BUILDINGS**

**UNIT CODE** : **DOE-CEM-RC-03**

**UNIT DESCRIPTOR** : This unit provides an in-depth understanding of lighting, electrical, mechanical systems, and building envelopes used in various sectors of the economy including, Commercial, Industrial, and Transport Sectors. It provides practical knowledge and experience in the design, application, and financial considerations in implementing projects related to lighting, electrical, mechanical systems, and building envelope.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Awareness of lighting, electrical, mechanical systems, and building envelope operations and best practices to attain energy savings	<ul style="list-style-type: none"><li>• In-depth knowledge of lighting, electrical, mechanical systems, and building envelope operation</li><li>• Identification of energy drivers/ factors</li><li>• Identification of Critical Operating Parameters and Critical Maintenance Procedures</li></ul>	<ul style="list-style-type: none"><li>• Basic to advanced lighting, electrical, mechanical systems, and building envelope operation</li><li>• Control of energy drivers/ factors</li><li>• Control of Critical Operating Parameters and Critical Maintenance Procedures</li></ul>	<ul style="list-style-type: none"><li>• Data analysis</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*

**UNIT OF COMPETENCY** : **ADVANCED MECHANICAL SYSTEMS**

**UNIT CODE** : **DOE-CEM-RC-04**

**UNIT DESCRIPTOR** : This unit provides an in-depth understanding of mechanical systems used in various sectors of the economy including, Commercial, Industrial, and Transport Sectors. It provides practical knowledge and experience in the design, application, and financial considerations in implementing projects related to mechanical systems.

ELEMENT	PERFORMANCE CRITERIA	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Awareness of mechanical system operations and best practices to attain energy savings	<ul style="list-style-type: none"><li>• In-depth knowledge of mechanical system operation</li><li>• Identification of energy drivers/ factors</li><li>• Identification of Critical Operating Parameters and Critical Maintenance Procedures</li></ul>	<ul style="list-style-type: none"><li>• Basic to advanced mechanical system operation</li><li>• Control of energy drivers/ factors</li><li>• Control of Critical Operating Parameters and Critical Maintenance Procedures</li></ul>	<ul style="list-style-type: none"><li>• Data analysis</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*



**UNIT OF COMPETENCY** : **ADVANCED ELECTRICAL SYSTEMS**

**UNIT CODE** : **DOE-CEM-RC-05**

**UNIT DESCRIPTOR** : This unit provides an in-depth understanding of electrical systems used in various sectors of the economy including, commercial, industrial, and transport sectors. It provides practical knowledge and experience in the design, application, and financial considerations in implementing projects related to electrical systems.

ELEMENT	PERFORMANCE CRITERIA	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Awareness of advanced electrical system and its components	<ul style="list-style-type: none"><li>• Identification of electrical system components</li><li>• Electricity consumption monitoring</li><li>• Significant energy use</li><li>• Motor survey</li><li>• Motor maintenance</li></ul>	<ul style="list-style-type: none"><li>• Best practices in electrical system control (power factor, load factor, system loss)</li><li>• Best practices in motor operation</li></ul>	<ul style="list-style-type: none"><li>• Data analysis</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*

**UNIT OF COMPETENCY** : **ADVANCED BUILDING ENVELOPE**

**UNIT CODE** : **DOE-CEM-RC-06**

**UNIT DESCRIPTOR** : This unit provides an in-depth understanding of concepts in building envelopes used in various sectors of the economy including commercial, industrial, and transport sectors. It provides practical knowledge and experience in the design, application, and financial considerations in implementing projects related to the building envelope.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> Italicized terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Awareness of the building envelope and best practices on energy management	<ul style="list-style-type: none"><li>• Building envelope</li><li>• Heat island</li><li>• Best practices to control heat through the building envelope</li></ul>	<ul style="list-style-type: none"><li>• Heat transfer through surfaces</li><li>• Best practices to control heat transfer</li><li>• Cooling Degree Day</li></ul>	<ul style="list-style-type: none"><li>• Data analysis</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*

**UNIT OF COMPETENCY** : **SUSTAINABILITY, ENVIRONMENTAL, AND WATER SYSTEMS DESIGN**

**UNIT CODE** : **DOE-CEM-RC-07**

**UNIT DESCRIPTOR** : This unit provides an in-depth understanding of concepts of sustainability, environmental and water design systems implemented in various sectors of the economy including commercial, industrial, and transport sectors. It provides practical knowledge and experience in the design, application, and financial considerations in implementing projects related to sustainability, environmental, and water design systems.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> Italicized terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Awareness of energy management and its role in sustainability	<ul style="list-style-type: none"><li>• Energy use and its effect on greenhouse gas</li><li>• Water use and its effect on energy consumption</li></ul>	<ul style="list-style-type: none"><li>• Laws and/or issuances related to environment and sustainable goals</li></ul>	<ul style="list-style-type: none"><li>• Program/Project Management</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*



**UNIT OF COMPETENCY** : **INTERNET OF THINGS (IOT) AND DATA ANALYTICS**

**UNIT CODE** : **DOE-CEM-RC-08**

**UNIT DESCRIPTOR** : This unit provides the knowledge, skills, and attitude to the operations, maintenance, and application of energy audit tools and equipment. This will involve working in a team environment.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> Italicized terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Understanding the data analysis methodology using predictive modeling, and other statistical methods to analyze business information from a variety of data sources 2. Introduction to Data Analytics	<ul style="list-style-type: none"><li>• Data gathered are analyzed and quality checked prior to analysis</li><li>• Use of appropriate methods and analytical tools for data analysis</li><li>• Data presentation</li><li>• Development of insights and foresight from the data</li><li>• Relevant processes, monitoring and measuring <i>tools, equipment, hardware, data capture, storage, and databases</i> are identified and requested in accordance with OEM specifications</li></ul>	<ul style="list-style-type: none"><li>• Statistical tools and computer applications for analysis</li><li>• Data presentation for management</li><li>• Types and usage of statistical tools and equipment</li><li>• Basic statistical process and numerical methods</li><li>• Interpretation of results</li></ul>	<ul style="list-style-type: none"><li>• Data analysis and forecasting</li><li>• Critical thinking, development of insights, and foresight</li><li>• Team collaboration</li><li>• Data quality assurance</li><li>• Writing and communication</li></ul>

*\*Range of Variables and Evidence Guide shall be developed by the RTI and presented on their proposed training plan.*

## ASSESSMENT ARRANGEMENT

*Competency Assessment* is the process of collecting evidence and making judgments whether competency has been achieved. The purpose of assessment is to confirm that an individual can perform to the standards expected at the workplace as expressed in relevant competency standards.

### 1.1 Pre-Assessment Exam

The pre-assessment exam is accomplished by the candidate prior to actual competency assessment. This pre-assessment tool helps the candidate and the assessor determine what evidence is available and where gaps exist, including readiness for assessment. This document can:

- a1. Identify the candidate's skills and knowledge;
- a2. Highlight gaps in the candidate's skills and knowledge;
- a3. Provide critical guidance to the assessor and candidate on the evidence that still needs to be presented; and
- a4. Assist the candidate in identifying key areas in which practice is needed or additional information or skills that should be gained prior

### 1.2 Post-Assessment Exam

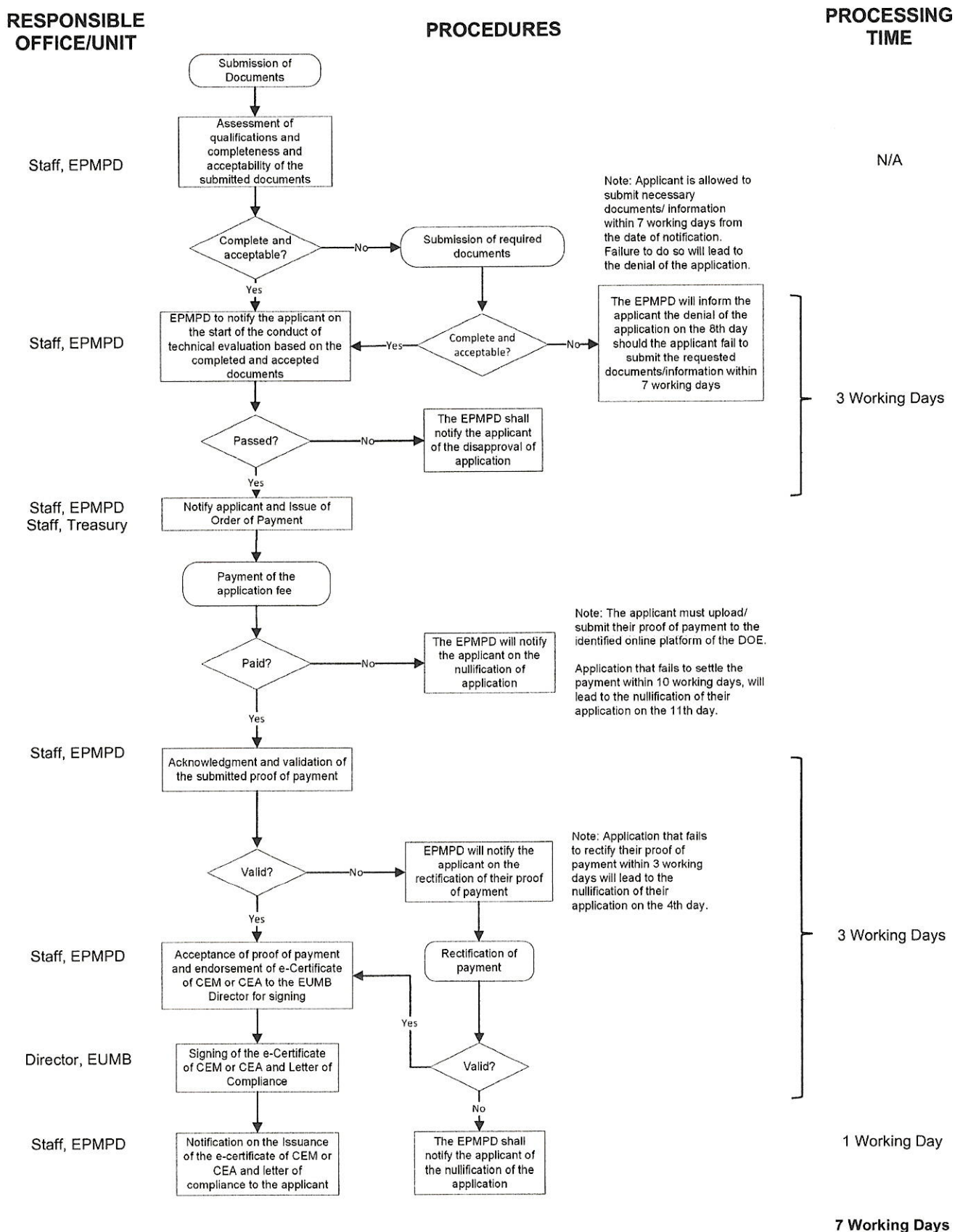
The post-assessment exam is undertaken by the candidate after the actual competency assessment. This post-assessment tool facilitates the candidate and the assessor in evaluating the available evidence and identifying any existing gaps, including assessing the candidate's readiness for further development. This document can:

- a1. Identify the candidate's skills and knowledge;
- a2. Highlight gaps in the candidate's skills and knowledge;
- a3. Provide critical guidance to the assessor and candidate regarding any additional evidence that needs to be presented; and
- a4. Assist the candidate in recognizing key areas where further practice is needed, or additional information or skills should be gained for future assessments.

The RTI shall provide a copy of the trainee's assessment results to the DOE ten (10) days after the conduct of the recertification course.

## ANNEX C

### APPLICATION PROCESS FOR THE RECERTIFICATION OF CEM AND CEA





## ANNEX D

### CHECKLIST OF REQUIREMENTS FOR CEA

CHECKLIST OF REQUIREMENTS	WHERE TO SECURE
1. One (1) updated CEA Application Form (Annex B)	Form can be secured from the DOE website or through this link: <a href="https://bit.ly/DOE_DConCEA">https://bit.ly/DOE_DConCEA</a>
2. One (1) copy of license from the Professional Regulatory Commission (if applicable)	Client/Applicant
3. One (1) copy of updated Proof of Experience duly certified by the human resource management head or similar office	
4. One (1) copy of Recertification Training Certificate from a DOE - Recognized Training Institution (DOE-RTI)	
5. One (1) Copy of proof of payment for the processing fee.	Order of payment can be secured from EPMPD

### CHECKLIST OF REQUIREMENTS FOR CEM

CHECKLIST OF REQUIREMENTS	WHERE TO SECURE
1. One (1) updated CEM Application Form (Annex E)	Form can be secured from the DOE website or through this link: <a href="https://bit.ly/DOE_DConCEM">https://bit.ly/DOE_DConCEM</a>
2. One (1) copy of Sworn Statement of the applicant in discharging functions of Energy Manager (Annex F)	Client/Applicant
3. One (1) copy of license from the Professional Regulatory Commission (if applicable)	
4. One (1) copy of Endorsement Letter from the head of the Designated Establishment with the following information:  a. Company Header b. Complete name of applicant c. Position/Designation of applicant Signed by company head/president or any delegated official that has the authority to sign on behalf of the company head/president	
5. One (1) copy of updated Proof of Experience duly certified by the human resource management head or similar office.	
6. One (1) copy of Recertification Training Certificate from a DOE - Recognized Training Institution (DOE-RTI)	Order of payment can be secured from EPMPD
7. One (1) Copy of proof of payment for the processing fee.	