

# COMPETENCY STANDARDS

## ENERGY EFFICIENCY AND CONSERVATION LEVEL III



### UTILITIES (ENERGY) SECTOR

**TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY**  
East Service Road, South Luzon Expressway (SLEX), Taguig City, Metro Manila

Technical Education and Skills Development Act of 1994  
(Republic Act No. 7796)

**Section 22, “Establishment and Administration of the National Trade Skills Standards” of the RA 7796 known as the TESDA Act mandates TESDA to establish national occupational skills standards. The Authority shall develop and implement a certification and accreditation program in which private industry group and trade associations are accredited to conduct approved trade tests, and the local government units to promote such trade testing activities in their respective areas in accordance with the guidelines to be set by the Authority.**

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The Competency Standards (CS) serve as basis for the:

- 1 Registration and delivery of training programs;
- 2 Development of curriculum and assessment instruments; and
- 3 Competency assessment and certification

Each CS has two sections:

Section 1 **Definition of Qualification** describes the qualification and defines the competencies that comprise the qualification.

Section 2 **Competency Standards** gives the specifications of competencies required for effective work performance.

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## **COMPETENCY STANDARDS FOR ENERGY EFFICIENCY AND CONSERVATION LEVEL III**

### **Section 1 DEFINITION OF QUALIFICATION**

The **Energy Efficiency and Conservation Level III** Qualification consist of competencies that a person must achieve to enable him/her to demonstrate competence, proficiency and ethical fitness in energy management specifically for the supervision and maintenance of the facilities of Type 1 designated establishments in the proper management of energy consumption of facilities, equipment and devices for efficient and judicious utilization of energy and its continual improvement of energy performance.

The units of competency comprising this qualification include the following:

<b>Code</b>	<b>BASIC COMPETENCIES</b>
400311319	Lead workplace communication
400311320	Lead small teams
400311321	Apply critical thinking and problem solving techniques in the workplace
400311322	Work in a diverse environment
400311323	Propose methods of applying learning and innovation in the organization
400311324	Use information systematically
400311325	Evaluate occupational safety and health work practices
400311326	Evaluate environmental work practices
400311327	Facilitate entrepreneurial skills for micro-small-medium enterprises (MSMEs)
<b>Code</b>	<b>COMMON COMPETENCIES</b>
CS-UTL311201	Apply energy management system (EnMS) standards
UTL311206	Comply with environmental protection and safety procedures
UTL311205	Operate and maintain tools and equipment
UTL311201	Observe procedures, specifications and manuals of instruction
UTL311207	Perform computer operations
<b>Code</b>	<b>CORE COMPETENCIES</b>
CS-UTL311301	Manage energy consumption of facilities, equipment and devices
CS-UTL311302	Plan and support the implementation of regular energy audit
CS-UTL311303	Perform energy consumption monitoring and control
CS-UTL311304	Carry out implementation and improvement of energy efficiency measures
CS-UTL311305	Coordinate inventories and purchasing/sourcing of energy efficient equipment, devices or services

CS-UTL311306 Install, operate and maintain energy-consuming machines, equipment and services in facilities

**A person who has achieved this Qualification is competent to be:**

- Energy Conservation Officer

## SECTION 2: COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common, and core units of competency required for Energy Efficiency and Conservation Level III.

### BASIC COMPETENCIES

#### UNIT OF COMPETENCY : LEAD WORKPLACE COMMUNICATION

UNIT CODE : 400311319

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.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Communicate information about workplace processes	1.1 Relevant <b><i>communication method</i></b> is selected based on workplace procedures 1.2 Multiple operations involving several topics/areas are communicated following enterprise requirements 1.3 Questioning is applied to gain extra information 1.4 Relevant sources of information are identified in accordance with workplace/ client requirements 1.5 Information is selected and organized following enterprise procedures 1.6 Verbal and written reporting is undertaken when required 1.7 Communication and negotiation skills are applied and maintained in all relevant situations	1.1. Organization requirements for written and electronic communication methods 1.2. Effective verbal communication methods 1.3. Business writing 1.4. Workplace etiquette	1.1. Organizing information 1.2. Conveying intended meaning 1.3. Participating in a variety of workplace discussions 1.4. Complying with organization requirements for the use of written and electronic communication methods 1.5. Effective business writing 1.6. Effective clarifying and probing skills 1.7. Effective questioning techniques (clarifying and probing)
2. Lead workplace discussions	2.1 Response to workplace issues are sought following enterprise procedures 2.2 Response to workplace issues are provided immediately	2.1 Organization requirements for written and electronic communication methods	2.1 Organizing information 2.2 Conveying intended meaning 2.3 Participating in variety of

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.3 Constructive contributions are made to <b>workplace discussions</b> on such issues as production, quality and safety 2.4 Goals/objectives and action plans undertaken in the workplace are communicated promptly	2.2 Effective verbal communication methods 2.3 Workplace etiquette	workplace discussions 2.4 Complying with organization requirements for the use of written and electronic communication methods 2.5 Effective clarifying and probing skills
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3 Dialogue is initiated with appropriate personnel 3.4 Communication problems and issues are raised as they arise 3.5 Identify barriers in communication to be addressed appropriately	3.1 Organization requirements for written and electronic communication methods 3.2 Effective verbal communication methods 3.3 Workplace etiquette 3.4 Communication problems and issues 3.5 Barriers in communication	3.1 Organizing information 3.2 Conveying intended meaning 3.3 Participating in a variety of workplace discussions 3.4 Complying with organization requirements for the use of written and electronic communication methods 3.5 Effective clarifying and probing skills 3.6 Identifying issues 3.7 Negotiation and communication skills



## RANGE OF VARIABLES

VARIABLE	RANGE
1. Methods of communication	May include: 1.1. Non-verbal gestures 1.2. Verbal 1.3. Face-to-face 1.4. Two-way radio 1.5. Speaking to groups 1.6. Using telephone 1.7. Written 1.8. Internet
2. Workplace discussions	May include: 2.1. Coordination meetings 2.2. Toolbox discussion 2.3. Peer-to-peer discussion

## EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Dealt with a range of communication/information at one time 1.2. Demonstrated leadership skills in workplace communication 1.3. Made constructive contributions in workplace issues 1.4. Sought workplace issues effectively 1.5. Responded to workplace issues promptly 1.6. Presented information clearly and effectively written form 1.7. Used appropriate sources of information 1.8. Asked appropriate questions 1.9. Provided accurate information
2. Resource Implications	The following resources should be provided: 2.1. Variety of Information 2.2. Communication tools 2.3. Simulated workplace
3. Methods of Assessment	Competency in this unit must be assessed through 3.1. Case problem 3.2. Third-party report 3.3. Portfolio 3.4. Interview 3.5. Demonstration/Role-playing
4. Context for Assessment	4.1. Competency may be assessed in the workplace or in simulated workplace environment

**UNIT OF COMPETENCY : LEAD SMALL TEAMS**

**UNIT CODE : 400311320**

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

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Provide team leadership	1.1. <b>Work requirements</b> are identified and presented to team members based on company policies and procedures 1.2. Reasons for instructions and requirements are communicated to team members based on company policies and procedures 1.3. <b>Team members' queries and concerns</b> are recognized, discussed and dealt with based on company practices	1.1 Facilitation of Team work 1.2 Company policies and procedures relating to work performance 1.3 Performance standards and expectations 1.4 Monitoring individual's and team's performance vis a vis client's and group's expectations	1.1 Communication skills required for leading teams 1.2 Group facilitation skills 1.3 Negotiating skills 1.4 Setting performance expectation
2. Assign responsibilities	2.1. Responsibilities are allocated having regard to the skills, knowledge and aptitude required to undertake the assigned task based on company policies. 2.2. Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible	2.1 Work plan and procedures 2.2 Work requirements and targets 2.2 Individual and group expectations and assignments 2.3 Ways to improve group leadership and membership	2.1 Communication skills 2.2 Management skills 2.3 Negotiating skills 2.4 Evaluation skills 2.5 Identifying team member's strengths and rooms for improvement
3. Set performance expectations for team members	3.1 Performance expectations are established based on client needs 3.2 Performance expectations are based on individual team members knowledge, skills and aptitude 3.3 Performance expectations are	3.1 One's roles and responsibilities in the team 3.2 Feedback giving and receiving 3.3 Performance expectation	3.1 Communication skills 3.2 Accurate empathy 3.3 Congruence 3.4 Unconditional positive regard 3.5 Handling of Feedback

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	discussed and disseminated to individual team members		
4. Supervised team performance	<p>4.1 Performance is <b>monitored</b> based on defined performance criteria and/or assignment instructions</p> <p>4.2 Team members are provided with <b>feedback</b>, positive support and advice on strategies to overcome any deficiencies based on company practices</p> <p>4.3 <b>Performance issues</b> which cannot be rectified or addressed within the team are referenced to appropriate personnel according to employer policy</p> <p>4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs and satisfaction</p> <p>4.5 Team operations are monitored to ensure that employer/client needs and requirements are met</p> <p>4.6 Follow-up communication is provided on all issues affecting the team</p> <p>4.7 All relevant documentation is completed in accordance with company procedures</p>	<p>4.1 Performance Coaching</p> <p>4.2 Performance management</p> <p>4.3 Performance Issues</p>	<p>4.1 Communication skills required for leading teams</p> <p>4.2 Coaching skill</p>

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Work requirements	May include: 1.1. Client Profile 1.2. Assignment instructions
2. Team member's concerns	May include: 2.1. Roster/shift details
3. Monitor performance	May include: 3.1. Formal process 3.2. Informal process
4. Feedback	May include: 4.1. Formal process 4.2. Informal process
5. Performance issues	May include: 5.1. Work output 5.2. Work quality 5.3. Team participation 5.4. Compliance with workplace protocols 5.5. Safety 5.6. Customer service

## EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Maintained or improved individuals and/or team performance given a variety of possible scenario 1.2. Assessed and monitored team and individual performance against set criteria 1.3. Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf 1.4. Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed 1.5. Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members
2. Resource Implications	The following resources should be provided: 2.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2. Materials relevant to the proposed activity or task
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1. Written Examination 3.2. Oral Questioning 3.3. Portfolio
4. Context for Assessment	4.1. Competency may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center

**UNIT OF COMPETENCY: APPLY CRITICAL THINKING AND PROBLEM SOLVING TECHNIQUES IN THE WORKPLACE**

**UNIT CODE : 400311321**

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes required to solve problems in the workplace including the application of problem solving techniques and to determine and resolve the root cause/s of specific problems in the workplace.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Examine specific workplace challenges	1.1. Variances are examined from normal operating <b>parameters</b> ; and product quality. 1.2. Extent, cause and nature of the specific problem are defined through observation, investigation and <b>analytical techniques</b> . 1.3. <b>Problems</b> are clearly stated and specified.	1.1. Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations. 1.2. Competence to include the ability to apply and explain, enough for the identification of fundamental causes of specific workplace challenges. 1.3. Relevant equipment and operational processes. 1.4. Enterprise goals, targets and measures. 1.5. Enterprise quality OHS and environmental requirement. 1.6. Enterprise information systems and data collation 1.7. Industry codes and standards.	1.1. Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 1.2. Identifying extent and causes of specific challenges in the workplace.
2. Analyze the causes of specific workplace challenges.	2.1. Possible causes of specific problems are identified based on experience and the use of problem solving tools / analytical techniques. 2.2. Possible cause statements are	2.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to	2.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	<p>developed based on findings.</p> <p>2.3. Fundamental causes are identified per results of investigation conducted.</p>	<p>recognize non-standard situations.</p> <p>2.2 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations.</p> <p>2.3 Relevant equipment and operational processes.</p> <p>2.4 Enterprise goals, targets and measures.</p> <p>2.5 Enterprise quality OSH and environmental requirement.</p> <p>2.6 Enterprise information systems and data collation.</p> <p>2.7 Industry codes and standards.</p>	<p>information) in examining specific challenges in the workplace.</p> <p>2.2 Identifying extent and causes of specific challenges in the workplace.</p> <p>2.3 Providing clear-cut findings on the nature of each identified workplace challenges.</p>
<p>3. Formulate resolutions to specific workplace challenges</p>	<p>3.1. All possible options are considered for resolution of the problem.</p> <p>3.2. Strengths and weaknesses of possible options are considered.</p> <p>3.3. Corrective actions are determined to resolve the problem and possible future causes.</p> <p>3.4. <b>Action plans</b> are developed identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures</p>	<p>3.1. Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations</p> <p>3.2. Relevant equipment and operational processes</p> <p>3.3. Enterprise goals, targets and measures</p> <p>3.4. Enterprise quality OSH and environmental requirement</p> <p>3.5. Principles of decision making strategies and techniques</p>	<p>3.1. Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace.</p> <p>3.2. Identifying extent and causes of specific challenges in the workplace.</p> <p>3.3. Providing clear-cut findings on the nature of each identified workplace challenges.</p>

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
		3.6. Enterprise information systems and data collation 3.7. Industry codes and standards	3.4. Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.
4. Implement action plans and communicate results	4.1. Action plans are implemented and evaluated. 4.2. Results of plan implementation and recommendations are prepared. 4.3. Recommendations are presented to appropriate personnel. 4.4. Recommendations are followed-up, if required.	4.1 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 4.2. Relevant equipment and operational processes 4.3 Enterprise goals, targets and measures 4.4 Enterprise quality, OSH and environmental requirement 4.5 Principles of decision making strategies and techniques 4.6 Enterprise information systems and data collation 4.7 Industry codes and standards	4.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 4.2 Identifying extent and causes of specific challenges in the workplace. 4.3 Providing clear-cut findings on the nature of each identified workplace challenges. 4.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.

## RANGE OF VARIABLES

VARIABLES	RANGE
1. Parameters	May include: <ul style="list-style-type: none"> <li>1.1 Processes</li> <li>1.2 Procedures</li> <li>1.3 Systems</li> </ul>
2. Analytical techniques	May include: <ul style="list-style-type: none"> <li>2.1. Brainstorming</li> <li>2.2. Intuitions/Logic</li> <li>2.3. Cause and effect diagrams</li> <li>2.4. Pareto analysis</li> <li>2.5. SWOT analysis</li> <li>2.6. Gant chart, Pert CPM and graphs</li> <li>2.7. Scattergrams</li> </ul>
3. Problem	May include: <ul style="list-style-type: none"> <li>3.1. Routine, non – routine and complex workplace and quality problems</li> <li>3.2. Equipment selection, availability and failure</li> <li>3.3. Teamwork and work allocation problem</li> <li>3.4. Safety and emergency situations and incidents</li> <li>3.5. Risk assessment and management</li> </ul>
4. Action plans	May include: <ul style="list-style-type: none"> <li>4.1. Priority requirements</li> <li>4.2. Measurable objectives</li> <li>4.3. Resource requirements</li> <li>4.4. Timelines</li> <li>4.5. Co-ordination and feedback requirements</li> <li>4.6. Safety requirements</li> <li>4.7. Risk assessment</li> <li>4.8. Environmental requirements</li> </ul>



## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p><b>Assessment requires evidence that the candidate:</b></p> <ol style="list-style-type: none"> <li>1.1. Examined specific workplace challenges.</li> <li>1.2. Analyzed the causes of specific workplace challenges.</li> <li>1.3. Formulated resolutions to specific workplace challenges.</li> <li>1.4. Implemented action plans and communicated results on specific workplace challenges.</li> </ol>
<p>2. Resource Implications</p>	<p>2.1. Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios / case studies / what ifs will be required as well as bank of questions which will be used to probe the reason behind the observable action.</p>
<p>3. Methods of Assessment</p>	<p><b>Competency in this unit may be assessed through:</b></p> <ol style="list-style-type: none"> <li>3.1. Observation</li> <li>3.2. Case Formulation</li> <li>3.3. Life Narrative Inquiry</li> <li>3.4. Standardized test</li> </ol> <p>The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components.</p> <p>These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened.</p>
<p>4. Context for Assessment</p>	<p>4.1. In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.</p>

**UNIT OF COMPETENCY : WORK IN A DIVERSE ENVIRONMENT**

**UNIT CODE : 400311322**

**UNIT DESCRIPTOR :** This unit covers the outcomes required to work effectively in a workplace characterized by diversity in terms of religions, beliefs, races, ethnicities and other differences.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop an individual's cultural awareness and sensitivity	1.1. Individual differences with clients, customers and fellow workers are recognized and respected in accordance with enterprise policies and core values. 1.2. Differences are responded to in a sensitive and considerate manner 1.3. <b>Diversity</b> is accommodated using appropriate verbal and non-verbal communication.	1.1. Understanding cultural diversity in the workplace 1.2. Norms of behavior for interacting and dialogue with specific groups (e. g., Muslims and other non-Christians, non-Catholics, tribes/ethnic groups, foreigners) 1.3. Different methods of verbal and non-verbal communication in a multicultural setting	1.1. Applying cross-cultural communication skills (i.e. different business customs, beliefs, communication strategies) 1.2. Showing affective skills – establishing rapport and empathy, understanding, etc. 1.3. Demonstrating openness and flexibility in communication 1.4. Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices
2. Work effectively in an environment that acknowledges and values cultural diversity	2.1 Knowledge, skills and experiences of others are recognized and documented in relation to team objectives. 2.2 Fellow workers are encouraged to utilize and share their specific qualities, skills or backgrounds with other team members and clients to enhance work outcomes. 2.3 Relations with customers and clients are	2.1 Value of diversity in the economy and society in terms of Workforce development 2.2 Importance of inclusiveness in a diverse environment 2.3 Shared vision and understanding of and commitment to team, departmental, and organizational goals and objectives	2.1 Demonstrating cross-cultural communication skills and active listening 2.2 Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices 2.3 Demonstrating collaboration skills

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	maintained to show that diversity is valued by the business.	2.4 Strategies for customer service excellence	2.4 Exhibiting customer service excellence
3. Identify common issues in a multicultural and diverse environment	3.1 <b><i>Diversity-related conflicts</i></b> within the workplace are effectively addressed and resolved. 3.2 Discriminatory behaviors towards customers/stakeholders are minimized and addressed accordingly. 3.3 Change management policies are in place within the organization.	3.1 Value, and leverage of cultural diversity 3.2 Inclusivity and conflict resolution 3.3 Workplace harassment 3.4 Change management and ways to overcome resistance to change 3.5 Advanced strategies for customer service excellence	3.1 Addressing diversity-related conflicts in the workplace 3.2 Eliminating discriminatory behavior towards customers and co-workers 3.3 Utilizing change management policies in the workplace

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Diversity	This refers to diversity in both the workplace and the community and may include divergence in : 1.1 Religion 1.2 Ethnicity, race or nationality 1.3 Culture 1.4 Gender, age or personality 1.5 Educational background
2. Diversity-related conflicts	May include conflicts that result from: 2.1 Discriminatory behaviors 2.2 Differences of cultural practices 2.3 Differences of belief and value systems 2.4 Gender-based violence 2.5 Workplace bullying 2.6 Corporate jealousy 2.7 Language barriers 2.8 Individuals being differently-abled persons 2.9 Ageism (negative attitude and behavior towards old people)

## EVIDENCE GUIDE

1. Critical aspects of Competency	<b>Assessment requires evidence that the candidate:</b> 1.1 Adjusted language and behavior as required by interactions with diversity 1.2 Identified and respected individual differences in colleagues, clients and customers 1.3 Applied relevant regulations, standards and codes of practice
2. Resource Implications	<b>The following resources should be provided:</b> 2.1 Access to workplace and resources 2.2 Manuals and policies on Workplace Diversity
3. Methods of Assessment	<b>Competency in this unit may be assessed through:</b> 3.1 Demonstration or simulation with oral questioning 3.2 Group discussions and interactive activities 3.3 Case studies/problems involving workplace diversity issues 3.4 Third-party report 3.5 Written examination 3.6 Role Plays
4. Context for Assessment	Competency assessment may occur in workplace or any appropriately simulated environment

**UNIT OF COMPETENCY: PROPOSE METHODS OF APPLYING LEARNING AND INNOVATION IN THE ORGANIZATION**

**UNIT CODE : 400311323**

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes required to assess general obstacles in the application of learning and innovation in the organization and to propose practical methods of such in addressing organizational challenges.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Assess work procedures, processes and systems in terms of innovative practices	1.1. <b>Reasons</b> for innovation are incorporated to work procedures. 1.2. <b>Models of innovation</b> are researched. 1.3. <b>Gaps or barriers</b> to innovation in one's work area are analyzed. 1.4. Staff who can support and foster innovation in the work procedure are identified.	1.1 Seven habits of highly effective people. 1.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 1.3 Five minds of the future concepts (Gardner, 2007). 1.4 Adaptation concepts in neuroscience (Merzenich, 2013). 1.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	1.1 Demonstrating collaboration and networking skills. 1.2 Applying basic research and evaluation skills 1.3 Generating insights on how to improve organizational procedures, processes and systems through innovation.
2. Generate practical action plans for improving work procedures, processes	2.1 Ideas for innovative work procedure to foster innovation using individual and group techniques are conceptualized 2.2 Range of ideas with other team members and colleagues are evaluated and discussed 2.3 Work procedures and processes subject to change are selected based on <b>workplace requirements</b> (feasible and innovative). 2.4 Practical action plans are proposed to facilitate simple changes in the	2.1 Seven habits of highly effective people. 2.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 2.3 Five minds of the future concepts (Gardner, 2007). 2.4 Adaptation concepts in neuroscience (Merzenich, 2013). 2.5 Transtheoretical model of behavior change (Prochaska,	2.1 Assessing readiness for change on simple work procedures, processes and systems. 2.2 Generating insights on how to improve organizational procedures, processes and systems through innovation. 2.3 Facilitating action plans on how to apply innovative procedures in the organization.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	<p>work procedures, processes and systems.</p> <p>2.5 <b>Critical inquiry</b> is applied and used to facilitate discourse on adjustments in the simple work procedures, processes and systems.</p>	<p>DiClemente, &amp; Norcross, 1992).</p>	
<p>3. Evaluate the effectiveness of the proposed action plans</p>	<p>3.1 Work structure is analyzed to identify the impact of the new work procedures</p> <p>3.2 Co-workers/key personnel is consulted to know who will be involved with or affected by the work procedure</p> <p>3.3 Work instruction operational plan of the new work procedure is developed and evaluated.</p> <p>3.4 Feedback and suggestion are recorded.</p> <p>3.5 Operational plan is updated.</p> <p>3.6 Results and impact on the developed work instructions are reviewed</p> <p>3.7 Results of the new work procedure are evaluated</p> <p>3.8 Adjustments are recommended based on results gathered</p>	<p>3.1 Five minds of the future concepts (Gardner, 2007).</p> <p>3.2 Adaptation concepts in neuroscience (Merzenich, 2013).</p> <p>3.3 Transtheoretical model of behavior change (Prochaska, DiClemente, &amp; Norcross, 1992).</p>	<p>3.1 Generating insights on how to improve organizational procedures, processes and systems through innovation.</p> <p>3.2 Facilitating action plans on how to apply innovative procedures in the organization.</p> <p>3.3 Communicating results of the evaluation of the proposed and implemented changes in the workplace procedures and systems.</p> <p>3.4 Developing action plans for continuous improvement on the basic systems, processes and procedures in the organization.</p>

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Reasons	May include: 1.1. Strengths and weaknesses of the current systems, processes and procedures. 1.2. Opportunities and threats of the current systems, processes and procedures.
2. Models of innovation	May include: 2.1. Seven habits of highly effective people. 2.2. Five minds of the future concepts (Gardner, 2007). 2.3. Neuroplasticity and adaptation strategies.
3. Workplace requirements	May include: 3.1. Feasible 3.2. Innovative
4. Gaps or barriers	May include: 4.1. Machine 4.2. Manpower 4.3. Methods 4.4. Money
5. Critical Inquiry	May include: 5.1. Preparation. 5.2. Discussion. 5.3. Clarification of goals. 5.4. Negotiate towards a Win-Win outcome. 5.5. Agreement. 5.6. Implementation of a course of action. 5.7. Effective verbal communication. See our pages: Verbal Communication and Effective Speaking. 5.8. Listening. 5.9. Reducing misunderstandings is a key part of effective negotiation. 5.10. Rapport Building. 5.11. Problem Solving. 5.12. Decision Making. 5.13. Assertiveness. 5.14. Dealing with Difficult Situations.

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> <li>1.1 Established the reasons why innovative systems are required</li> <li>1.2 Established the goals of a new innovative system</li> <li>1.3 Analyzed current organizational systems to identify gaps and barriers to innovation.</li> <li>1.4 Assessed work procedures, processes and systems in terms of innovative practices.</li> <li>1.5 Generated practical action plans for improving work procedures, and processes.</li> <li>1.6 Reviewed the trial innovative work system and adjusted reflect evaluation feedback, knowledge management systems and future planning.</li> <li>1.7 Evaluated the effectiveness of the proposed action plans.</li> </ol>
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ol style="list-style-type: none"> <li>2.1 Pens, papers and writing implements.</li> <li>2.2 Cartolina.</li> <li>2.3 Manila papers.</li> </ol>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ol style="list-style-type: none"> <li>3.1 Psychological and behavioral Interviews.</li> <li>3.2 Performance Evaluation.</li> <li>3.3 Life Narrative Inquiry.</li> <li>3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance.</li> <li>3.5 Sensitivity analysis.</li> <li>3.6 Organizational analysis.</li> <li>3.7 Standardized assessment of character strengths and virtues applied.</li> </ol>
<p>4. Context for Assessment</p>	<ol style="list-style-type: none"> <li>4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.</li> </ol>



**UNIT OF COMPETENCY: USE INFORMATION SYSTEMATICALLY**

**UNIT CODE : 400311324**

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes required to use technical information systems, apply information technology (IT) systems and edit, format & check information.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Use technical information	1.1. <b>Information</b> are collated and organized into a suitable form for reference and use 1.2. Stored information are classified so that it can be quickly identified and retrieved when needed 1.3. Guidance are advised and offered to people who need to find and use information	1.1. Application in collating information 1.2. Procedures for inputting, maintaining and archiving information 1.3. Guidance to people who need to find and use information 1.4. Organize information 1.5. classify stored information for identification and retrieval 1.6. Operate the technical information system by using agreed procedures	1.1. Collating information 1.2. Operating appropriate and valid procedures for inputting, maintaining and archiving information 1.3. Advising and offering guidance to people who need to find and use information 1.4. Organizing information into a suitable form for reference and use 1.5. Classifying stored information for identification and retrieval 1.6. Operating the technical information system by using agreed procedures
2. Apply information technology (IT)	2.1. <b>Technical information</b> system is operated using agreed procedures 2.2. Appropriate and valid procedures are operated for inputting, maintaining and archiving information 2.3. <b>Software</b> required are utilized to execute the project activities 2.4. Information and data obtained are handled,	2.1. Attributes and limitations of available software tools 2.2. Procedures and work instructions for the use of IT 2.3. Operational requirements for IT systems 2.4. Sources and flow paths of data	2.1. Identifying attributes and limitations of available software tools 2.2. Using procedures and work instructions for the use of IT 2.3. Describing operational requirements for IT systems

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	<p>edited, formatted and checked from a range of internal and external <b>sources</b></p> <p>2.5. Information are extracted, entered, and processed to produce the outputs required by <b>customers</b></p> <p>2.6. Own skills and understanding are shared to help others</p> <p>2.7. Specified <b>security measures</b> are implemented to protect the confidentiality and integrity of project data held in IT systems</p>	<p>2.5. Security systems and measures that can be used</p> <p>2.6. Extract data and format reports</p> <p>2.7. Methods of entering and processing information</p> <p>2.8. WWW enabled applications</p>	<p>2.4. Identifying sources and flow paths of data</p> <p>2.5. Determining security systems and measures that can be used</p> <p>2.6. Extracting data and format reports</p> <p>2.7. Describing methods of entering and processing information</p> <p>2.8. Using WWW applications</p>
3. Edit, format and check information	<p>3.1 Basic editing techniques are used</p> <p>3.2 Accuracy of documents are checked</p> <p>3.3 Editing and formatting tools and techniques are used for more complex documents</p> <p>3.4 Proof reading techniques is used to check that documents look professional</p>	<p>3.1 Basic file-handling techniques</p> <p>3.2 Techniques in checking documents</p> <p>3.3 Techniques in editing and formatting</p> <p>3.4 Proof reading techniques</p>	<p>3.1 Using basic file-handling techniques is used for the software</p> <p>3.2 Using different techniques in checking documents</p> <p>3.3 Applying editing and formatting techniques</p> <p>3.4 Applying proof reading techniques</p>

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Information	May include: 1.1. Property 1.2. Organizational 1.3. Technical reference
2. Technical information	May include: 2.1. paper based 2.2. electronic
3. Software	May include: 3.1. spreadsheets 3.2. databases 3.3. word processing 3.4. presentation
4. Sources	May include: 4.1. other IT systems 4.2. manually created 4.3. within own organization 4.4. outside own organization 4.5. geographically remote
5. Customers	May include: 5.1. colleagues 5.2. company and project management 5.3. clients
6. Security measures	May include: 6.1. access rights to input; 6.2. passwords; 6.3. access rights to outputs; 6.4. data consistency and back-up; 6.5. recovery plans

## EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Used technical information systems and information technology 1.2. Applied information technology (IT) systems 1.3. Edited, formatted and checked information
2. Resource Implications	The following resources should be provided: 2.1. Computers 2.2. Software and IT system
3. Methods of Assessment	Competency in this unit <b><u>MUST</u></b> be assessed through: 3.1. Direct Observation 3.2. Oral interview and written test
4. Context for Assessment	4.1. Competency may be assessed individually in the actual workplace or through accredited institution



**UNIT OF COMPETENCY : EVALUATE OCCUPATIONAL SAFETY AND HEALTH WORK PRACTICES**

**UNIT CODE : 400311325**

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes required to interpret-Occupational Safety and Health practices, set OSH work targets, and evaluate effectiveness of Occupational Safety and Health work instructions

<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. Interpret Occupational Safety and Health practices	1.1 <b>OSH work practices issues</b> are identified relevant to work requirements 1.2 OSH work standards and procedures are determined based on applicability to nature of work 1.3 Gaps in work practices are identified related to relevant OSH work standards	1.1. OSH work practices issues 1.2. OSH work standards 1.3. General OSH principles and legislations 1.4. Company/ workplace policies/ guidelines 1.5. Standards and safety requirements of work process and procedures	1.1. Communication skills 1.2. Interpersonal skills 1.3. Critical thinking skills 1.4. Observation skills
2. Set OSH work targets	2.1 Relevant work information are gathered necessary to determine OSH work targets 2.2 <b>OSH Indicators</b> based on gathered information are agreed upon to measure effectiveness of workplace OSH policies and procedures 2.3 Agreed OSH indicators are endorsed for approval from appropriate personnel 2.4 <b>OSH work instructions</b> are received in accordance with workplace policies and procedures*	2.1. OSH work targets 2.2. OSH Indicators 2.3. OSH work instructions 2.4. Safety and health requirements of tasks 2.5. Workplace guidelines on providing feedback on OSH and security concerns 2.6. OSH regulations Hazard control procedures 2.7. OSH trainings relevant to work	2.1. Communication skills 2.2. Collaborating skills 2.3. Critical thinking skills 2.4. Observation skills
3. Evaluate effectiveness of Occupational Safety and Health work instructions	3.1 OSH Practices are observed based on workplace standards 3.2 Observed OSH practices are measured against approved <b>OSH metrics</b> 3.3 Findings regarding effectiveness are assessed and gaps identified are implemented based on OSH work standards	3.1. OSH Practices 3.2. OSH metrics 3.3. OSH Evaluation Techniques 3.4. OSH work standards	3.1. Critical thinking skills 3.2. Evaluating skills

## RANGE OF VARIABLES

VARIABLE	RANGE
1. OSH Work Practices Issues	May include: 1.1 Workers' experience/observance on presence of work hazards 1.2 Unsafe/unhealthy administrative arrangements (prolonged work hours, no break-time, constant overtime, scheduling of tasks) 1.3 Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/ guidelines
2. OSH Indicators	May include: 2.1 Increased of incidents of accidents, injuries 2.2 Increased occurrence of sickness or health complaints/symptoms 2.3 Common complaints of workers' related to OSH 2.4 High absenteeism for work-related reasons
3. OSH Work Instructions	May include: 3.1 Preventive and control measures, and targets 3.2 Eliminate the hazard (i.e., get rid of the dangerous machine) 3.3 Isolate the hazard (i.e. keep the machine in a closed room and operate it remotely; barricade an unsafe area off) 3.4 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one) 3.5 Use administrative controls to reduce the risk (i.e. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule) 3.6 Use engineering controls to reduce the risk (i.e. use safety guards to machine) 3.7 Use personal protective equipment 3.8 Safety, Health and Work Environment Evaluation 3.9 Periodic and/or special medical examinations of workers
4. OSH metrics	May include: 4.1 Statistics on incidence of accident and injuries 4.2 Morbidity (Type and Number of Sickness) 4.3 Mortality (Cause and Number of Deaths) 4.4 Accident Rate

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p><b>Assessment requires evidence that the candidate:</b></p> <ul style="list-style-type: none"> <li>1.1. Identify OSH work practices issues relevant to work requirements</li> <li>1.2. Identify gaps in work practices related to relevant OSH work standards</li> <li>1.3. Agree upon OSH Indicators based on gathered information to measure effectiveness of workplace OSH policies and procedures</li> <li>1.4. Receive OSH work instructions in accordance with workplace policies and procedures</li> <li>1.5. Compare Observed OSH practices with against approved OSH work instructions</li> <li>1.6. Assess findings regarding effectiveness based on OSH work standards</li> </ul>
<p>2. Resource Implications</p>	<p><b>The following resources should be provided:</b></p> <ul style="list-style-type: none"> <li>2.1 Facilities, materials, tools and equipment necessary for the activity</li> </ul>
<p>3. Methods of Assessment</p>	<p><b>Competency in this unit may be assessed through:</b></p> <ul style="list-style-type: none"> <li>3.1 Observation/Demonstration with oral questioning</li> <li>3.2 Third party report</li> <li>3.3 Written exam</li> </ul>
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> <li>4.1 Competency may be assessed in the work place or in a simulated work place setting</li> </ul>

**UNIT OF COMPETENCY** : **EVALUATE ENVIRONMENTAL WORK PRACTICES**  
**UNIT CODE** : **400311326**  
**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitude to interpret environmental Issues, establish targets to evaluate environmental practices and evaluate effectiveness of environmental practices

<b>ELEMENTS</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. Interpret environmental practices, policies and procedures	1.1 <b><i>Environmental work practices</i></b> issues are identified relevant to work requirements 1.2 Environmental Standards and Procedures nature of work are determined based on Applicability to nature of work 1.3 Gaps in work practices related to Environmental Standards and Procedures are identified	1.1 Environmental Issues 1.2 Environmental Work Procedures 1.3 Environmental Laws 1.4 Environmental Hazardous and Non-Hazardous Materials 1.5 Environmental required license, registration or certification	1.1. Analyzing Environmental Issues and Concerns 1.2. Critical thinking 1.3. Problem Solving 1.4. Observation Skills
2. Establish targets to evaluate environmental practices	2.1. Relevant information are gathered necessary to determine environmental work targets 2.2. <b><i>Environmental Indicators</i></b> based on gathered information are set to measure environmental work targets 2.3. Indicators are verified with appropriate personnel	2.1. Environmental Indicators 2.2. Relevant Environment Personnel or expert 2.3. Relevant Environmental Trainings and Seminars	2.1. Investigative Skills 2.2. Critical thinking 2.3. Problem Solving 2.4. Observation Skills
3. Evaluate effectiveness of environmental practices	3.1. Work environmental practices are recorded based on workplace standards 3.2. Recorded work environmental practices are compared against planned indicators 3.3. Findings regarding effectiveness are assessed and gaps identified are implemented based on environment work standards and procedures 3.4. Results of environmental assessment are conveyed to appropriate personnel	1.1. Environmental Practices 1.2. Environmental Standards and Procedures	3.1 Documentation and Record Keeping Skills 3.2 Critical thinking 3.3 Problem Solving 3.4 Observation Skills



## RANGE OF VARIABLES

VARIABLE	RANGE
1. Environmental Practices Issues	May include: 1.1 Water Quality 1.2 National and Local Government Issues 1.3 Safety 1.4 Endangered Species 1.5 Noise 1.6 Air Quality 1.7 Historic 1.8 Waste 1.9 Cultural
2. Environmental Indicators	May include: 2.1 Noise level 2.2 Lighting (Lumens) 2.3 Air Quality - Toxicity 2.4 Thermal Comfort 2.5 Vibration 2.6 Radiation 2.7 Quantity of the Resources 2.8 Volume

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p><b>Assessment requires evidence that the candidate:</b></p> <ol style="list-style-type: none"> <li>1.1. Identified environmental issues relevant to work requirements</li> <li>1.2. Identified gaps in work practices related to Environmental Standards and Procedures</li> <li>1.3. Gathered relevant information necessary to determine environmental work targets</li> <li>1.4. Set environmental indicators based on gathered information to measure environmental work targets</li> <li>1.5. Recorded work environmental practices are recorded based on workplace standards</li> <li>1.6. Conveyed results of environmental assessment to appropriate personnel</li> </ol>
<p>2. Resource Implications</p>	<p><b>The following resources should be provided:</b></p> <ol style="list-style-type: none"> <li>2.1 Workplace/Assessment location</li> <li>2.2 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection</li> <li>2.3 Case studies/scenarios relating to environmental protection</li> </ol>
<p>3. Methods of Assessment</p>	<p><b>Competency in this unit may be assessed through:</b></p> <ol style="list-style-type: none"> <li>3.1 Written/ Oral Examination</li> <li>3.2 Interview/Third Party Reports</li> <li>3.3 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad)</li> <li>3.4 Simulations and role-plays</li> </ol>
<p>4. Context for Assessment</p>	<p>4.1 Competency may be assessed in actual workplace or at the designated TESDA center.</p>

**UNIT OF COMPETENCY : FACILITATE ENTREPRENEURIAL SKILLS FOR MICRO-SMALL-MEDIUM ENTERPRISES (MSMEs)**

**UNIT CODE : 400311327**

**UNIT DESCRIPTOR :** This unit covers the outcomes required to build, operate and grow a micro/small-scale enterprise.

<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. Develop and maintain micro-small-medium enterprise (MSMEs) skills in the organization	1.1 Appropriate <b>business strategies</b> are determined and set for the enterprise based on current and emerging business environment. 1.2 <b>Business operations</b> are monitored and controlled following established procedures. 1.3 Quality assurance measures are implemented consistently. 1.4 Good relations are maintained with staff/workers. 1.5 Policies and procedures on occupational safety and health and environmental concerns are constantly observed.	1.1 Business models and strategies 1.2 Types and categories of businesses 1.3 Business operation 1.4 Basic Bookkeeping 1.5 Business internal controls 1.6 Basic quality control and assurance concepts 1.7 Government and regulatory processes	1.1 Basic bookkeeping/ accounting skills 1.2 Communication skills 1.3 Building relations with customer and employees 1.4 Building competitive advantage of the enterprise
2. Establish and Maintain client-base/market	2.1 Good customer relations are maintained 2.2 New customers and markets are identified, explored and reached out to. 2.3 Promotions/Incentives are offered to loyal customers 2.4 Additional products and services are evaluated and tried where feasible. 2.5 <b>Promotional/advertising initiatives</b> are carried out where necessary and feasible.	2.1 Public relations concepts 2.2 Basic product promotion strategies 2.3 Basic market and feasibility studies 2.4 Basic business ethics	2.1 Building customer relations 2.2 Individual marketing skills 2.3 Using basic advertising (posters/ tarpaulins, flyers, social media, etc.)
3. Apply budgeting and financial management skills	3.1 Enterprise is built up and sustained through judicious control of cash flows. 3.2 Profitability of enterprise is ensured through appropriate <b>internal controls</b> . 3.3 Unnecessary or lower-priority expenses and purchases are avoided.	3.1 Cash flow management 3.1 Basic financial management 3.2 Basic financial accounting 3.3 Business internal controls	3.1 Setting business priorities and strategies 3.2 Interpreting basic financial statements 3.3 Preparing business plans

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Business strategies	May include: 1.1. Developing/Maintaining niche market 1.2. Use of organic/healthy ingredients 1.3. Environment-friendly and sustainable practices 1.4. Offering both affordable and high-quality products and services 1.5. Promotion and marketing strategies (e. g., on-line marketing)
2. Business operations	May include: 2.1 Purchasing 2.2 Accounting/Administrative work 2.3 Production/Operations/Sales
3. Internal controls	May include: 3.1 Accounting systems 3.2 Financial statements/reports 3.3 Cash management
4. Promotional/ Advertising initiatives	May include: 4.1 Use of tarpaulins, brochures, and/or flyers 4.2 Sales, discounts and easy payment terms 4.3 Use of social media/Internet 4.4 "Service with a smile" 4.5 Extra attention to regular customers

## EVIDENCE GUIDE

1. Critical aspects of competency	<b>Assessment requires evidence that the candidate :</b> 1.1. Demonstrated basic entrepreneurial skills 1.2. Demonstrated ability to conceptualize and plan a micro/small enterprise 1.3. Demonstrated ability to manage/operate a micro/small-scale business
2. Resource Implications	The following resources should be provided: 2.1. Simulated or actual workplace 2.2. Tools, materials and supplies needed to demonstrate the required tasks 2.3. References and manuals
3. Methods of Assessment	<b>Competency in this unit may be assessed through :</b> 3.1. Written examination 3.2. Demonstration/observation with oral questioning 3.3. Portfolio assessment with interview 3.4. Case problems
4. Context of Assessment	4.1. Competency may be assessed in workplace or in a simulated workplace setting 4.2. Assessment shall be observed while tasks are being undertaken whether individually or in-group



## COMMON COMPETENCIES

**UNIT TITLE** : **Apply Energy Management System Standards**

**UNIT CODE** : **CS-UTL311201**

**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 following the ISO 50001 principles and standards. This would entail energy management systems training that include continuous improvement of processes, and documentation which is all geared towards energy efficiency and conservation. It involves data collection and keeping accurate and complete records and documentation.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Access information concerning energy management systems, energy efficiency programs and policies	1.1. Relevant provisions of energy management related regulations and issuances from DOE environmental legislation and codes of practice are accurately followed 1.2. Information on workplace energy management policies, procedures and programs is stored in a readily accessible location and manner 1.3. <b>Information</b> is accurately and clearly explained to the work team 1.4. Information about the outcomes of energy management systems, identification and control procedures is provided to the <b>appropriate personnel</b>	1.1. Relevant Energy Laws and Energy Management and Energy Efficiency related circulars, issuances, and programs 1.2. Company's Energy management system policies, initiatives, process and procedures. 1.3. Energy efficiency standards required in the workplace	1.1. Workplace reporting and recording processes and procedures 1.2. Communication skills 1.3. Accessing information and data 1.4. Ability to recognize potential increase in energy consumption and identifying ways of minimizing them.
2. Implement and monitor procedures concerning energy usage	2.1 Existing and potential <b>areas for energy savings</b> in the workplace are identified and reported 2.2 Identified priority energy consuming devices/ equipment are assessed in relation to relevant energy consumption baseline or standards	2.1 Relevant energy management related laws and regulations & codes of practice in the area of Energy Efficiency and Energy Conservation 2.2 Company's energy policy,	2.1 Workplace reporting and recording processes and procedures 2.2 Communication skills 2.3 Problem solving skills 2.4 Ability to recognize

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.3 <b>Workplace procedures</b> dealing with energy intensive processes are implemented wherever necessary to ensure that prompt control action is taken to ensure efficiency measures	process, procedures and guidelines for implementing and monitoring EnMS 2.3 Equipment and resources required when implementing and monitoring energy conservation measures. Organizational structure and site layout should be made clear and available.	potential energy savings in the workplace 2.5 counseling, advising and informing others on energy conservation matters 2.6 identifying and correctly using equipment and vehicles in accordance with energy conservation measures (ECM)
3. Implement and monitor energy management procedures following the PDCA cycle	3.1 Existing energy efficiency measures are implemented, monitored and reviewed 3.2 Work procedures to implement energy management systems and energy conservation measures are implemented and adherence to them by the work group is monitored 3.3 Required improvements to existing control measures are identified, including required resources for implementation, and reported to appropriate personnel	3.1 Relevant energy management and energy conservation related regulations & codes of practice are in place. 3.2 Company's energy policy, process and procedures and guidelines for implementing and monitoring EnMS. 3.3 Equipment and resources required when implementing and monitoring Energy Management Systems control procedures 3.4 Organizational structure and site layout	3.1 Workplace reporting and recording processes and procedures 3.2 Communication skills 3.3 Accessing information and data 3.4 Problem solving skills 3.5 Ability to counsel, advise and inform others on environmental control procedures 3.6 identifying and correctly using equipment and vehicles in accordance with environmental control procedures, regulations and guidelines

## RANGE OF VARIABLES

VARIABLE	RANGE
1 Information	Information/documents may include: <ul style="list-style-type: none"> <li>1.1 Workplace procedures and practices related to energy consumption, including all financial, operating and customer service policies and procedures</li> <li>1.2 Occupational Health &amp; Safety</li> <li>1.3 Regulations for Compliance</li> <li>1.4 Workplace housekeeping procedures and policies</li> <li>1.5 Code of practice for energy management system</li> <li>1.6 Policies and procedures for equipment and devices used in the workspace</li> <li>1.7 Manufacturer's instructions concerning the use and servicing of equipment</li> <li>1.8 Plans, Objectives and Targets</li> <li>1.9 Documentation, Review</li> <li>1.10 Monitoring and Control</li> <li>1.11 Checking for Corrective Actions</li> <li>1.12 Management Review</li> </ul>
2 Appropriate personnel	Appropriate personnel may include: <ul style="list-style-type: none"> <li>3.1 Workplace personnel including supervisors and management</li> <li>3.2 Site Engineers</li> <li>3.3 Contractors</li> <li>3.4 Operators and Maintenance personnel</li> </ul>
3 Areas for energy saving (Energy Cost Centers)	Energy Cost Centers may include: <ul style="list-style-type: none"> <li>3.1 Administration Building</li> <li>3.2 Production area</li> <li>3.3 Packaging Area</li> <li>3.4 HVAC Systems</li> <li>3.5 Power Generation</li> </ul>
4 Workplace procedures	Workplace procedures for Energy Intensive Processes may include: <ul style="list-style-type: none"> <li>4.1 Inspection and housekeeping</li> <li>4.2 Maintenance including plant and equipment</li> <li>4.3 Measurement and Monitoring System</li> <li>4.4 Operational instruction on Phantom load detection</li> <li>4.5 Energy Usage Peak and Off-Peak Hours</li> </ul>



## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Accessed information concerning Energy management systems, Energy efficiency programs and policies</li> <li>1.2 Implemented and monitored procedures concerning energy usage</li> <li>1.3 Implemented and monitored energy management procedures following the PDCA cycle</li> </ul>
<p>2. Resource implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>2.1 Energy Management Systems procedural manual and trainings.</li> <li>2.2 Energy Laws and Regulations on Energy Efficiency and Energy Conservation</li> <li>2.3 Appropriate energy measuring equipment</li> <li>2.4 Applicable PPE</li> <li>2.5 Appropriate installation tools (i.e. pliers, screwdrivers, etc.)</li> <li>2.6 Workplace or assessment area</li> </ul>
<p>3. Methods of assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1 Direct evaluation of energy management performance monitoring and control</li> <li>3.2 Demonstration/Observation with oral questioning</li> <li>3.3 Written test</li> <li>3.4 Use of methods of measurements and verification for the implementation of energy efficiency and conservation projects</li> </ul>
<p>4. Context of assessment</p>	<ul style="list-style-type: none"> <li>4.1 Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines</li> <li>4.2 Assessment may be conducted in the workplace.</li> </ul>

**UNIT TITLE : COMPLY WITH ENVIRONMENTAL PROTECTION PROCEDURES**

**UNIT CODE : UTL311206**

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes required to implement and monitor environmental protection policies and procedures including accessing relevant information concerning environmental protection regulations and procedures, and implementing and monitoring procedures concerning environmental hazards, related control procedures, environmental training arrangements, and required records and documentation

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Access information concerning environmental protection regulations and procedures	1.1. Relevant provisions of environmental legislation and codes of practice are accurately followed 1.2. Information on workplace environmental policies, procedures and programs is stored in a readily accessible location and manner 1.3. <b>Information</b> is accurately and clearly explained to the work team and updated according to change in workplace policy 1.4. Information about the outcomes of environmental risk identification and control procedures is provided to the appropriate personnel	1.1. Relevant environmental protection regulations & codes of practice 1.2. Environmental risks associated with workplace operations and related precautions to control the risk 1.3. Environmental protection standards required in the workplace	1.1. Workplace reporting and recording processes and procedures 1.2. Communication skills 1.3. Accessing information and data 1.4. Ability to recognize potential environmental risks and ways of minimizing them
2. Implement and monitor procedures concerning environmental hazards	2.1 Existing and potential <b>environmental hazards</b> in the workplace are identified and reported 2.2 Identified hazards are assessed in relation to relevant environmental protection policies 2.3 <b>Workplace procedures for dealing with hazardous events</b> are implemented wherever necessary to ensure that prompt control action is taken 2.4 <b>Personal protective equipment (PPE)</b> are obtained and used in accordance with job requirements	2.1 Relevant environmental protection regulations & codes of practice 2.2 Workplace procedures and guidelines for implementing and monitoring procedures concerning environmental hazards 2.3 Workplace environmental hazards and related hazard	2.1 ISO 50001 or any similar framework 2.2 Workplace reporting and recording processes and procedures 2.3 Communication skills 2.4 Problem solving skills 2.5 Ability to: 2.6 recognize potential environmental hazards and ways of minimizing them

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.5 Hazardous events are investigated to identify causes, and control measures are implemented to prevent recurrence and minimize risks of such events	control measures 2.4 Equipment and resources required when implementing and monitoring environmental protection procedures 2.5 Organizational structure and site layout	2.7 counsel, advise and inform others on environmental protection matters 2.8 identify and correctly use equipment and vehicles in accordance with environmental protection regulations and guidelines
3. Implement and monitor environmental control procedures	3.1 Existing environmental protection measures are implemented, monitored and reviewed 3.2 Work procedures to protect environment are implemented and adherence to them by the work group is monitored 3.3 Required improvements to existing control measures are identified, including required resources for implementation, and reported to appropriate personnel	3.1 Relevant environmental protection regulations & codes of practice 3.2 Workplace procedures and guidelines for implementing and monitoring environmental control procedures 3.3 Equipment and resources required when implementing and monitoring environmental control procedures 3.4 Organizational structure and site layout	3.1 PDCA cycle or any similar framework 3.2 Workplace reporting and recording processes and procedures 3.3 Communication skills 3.4 Accessing information and data 3.5 Problem solving skills 3.6 Ability to: 3.6.1 counsel, advise and inform others on environmental control procedures 3.6.2 identify and correctly use equipment and vehicles in accordance with environmental control procedures, regulations and guidelines

## RANGE OF VARIABLES

VARIABLE	RANGE
1 environment	Environment may include: 1.1 indoor 1.2 outdoor 1.3 marine 1.4 atmospheric
2 Information	Information/documents may include: 2.1 Workplace procedures and practices related to environmental protection, including all financial, operating and customer service policies and procedures 2.2 OHS and environmental protection regulations 2.3 Workplace housekeeping procedures and policies 2.4 Code of practice for environmental protection 2.5 Material safety data sheets 2.6 Policies and procedures for entry and work in confined spaces 2.7 Manufacturer's instructions concerning the use and servicing of equipment 2.8 Emergency procedures 2.9 Regulations and policies concerning noise, waste disposal/reprocessing, handling of dangerous goods/hazardous substances and other environmental protection issues 2.10 Standards and certification requirements 2.11 Quality assurance procedures
3 Appropriate personnel	Appropriate personnel may include: 3.1 Workplace personnel including supervisors and management 3.2 Site visitors 3.3 Contractors 3.4 Official representatives
4 Environmental hazards	4.1 Oils and lubricants 4.2 Exhaust fumes 4.3 Gas 4.4 Smoke 4.5 Chemicals and detergents 4.6 Rubbish 4.7 Noise 4.8 Wastes
5 Workplace procedures for dealing with hazardous events	Procedures may include: 5.1 Inspection and housekeeping 5.2 Maintenance including plant and equipment 5.3 Purchasing 5.4 Evacuation

VARIABLE	RANGE
	5.5 Hazardous substance containment 5.6 Operational instruction 5.7 Environmental information including incident and management practices 5.8 Specific hazardous materials policies and procedures 5.9 Risk assessment and control 5.10 First aid
6 Personal protective equipment (PPE)	PPE may include: 6.1 Gloves 6.2 Safety headwear and footwear 6.3 Safety glasses 6.4 Two-way radios 6.5 High visibility clothing

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires that the candidate: 1.1 Identified and monitored environmental hazards in the workplace 1.2 Implemented effective procedures for dealing with hazardous events 1.3 Monitored workplace adherence to environmental practices 1.4 Communicated effectively with the team members
2. Resource implications	The following resources should be provided: 2.1 Environmental protection regulations and guidelines 2.2 OHS regulations and hazard prevention policies and procedures 2.3 workplace environmental protection policies, procedures and instructions 2.4 equipment/vehicle manufacturer's operating and servicing instructions
3. Methods of assessment	Competency should be assessed through: 3.1 Direct observation 3.2 Oral or written questioning 3.3 Questions/interview Assessment of underpinning knowledge and practical skills may be combined
4. Context of assessment	4.1 Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 4.2 Assessment may be conducted in the workplace or a simulated environment

**UNIT OF COMPETENCY: OBSERVE PROCEDURES, SPECIFICATIONS AND MANUALS OF INSTRUCTIONS**

**UNIT CODE : UTL311201**

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes on identifying, interpreting, applying services to specifications and manuals and storing manuals.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Identify and access specification/ manuals	1.1 Appropriate manuals are identified and accessed as per job requirements 1.2 Version and date of manual are checked to ensure that correct specification and procedures are identified	1.1 Types of manuals used in energy consumption 1.2 Identification of symbols used in the manuals	1.1 Reading and comprehension skills 1.2 Identifying and interpreting energy consumption manuals and specifications 1.3 Accessing information and data
2. Interpret manuals	2.1 Relevant sections, chapters of specifications/ manuals are located in relation to the work to be conducted 2.2 Information and procedure in the manual are interpreted in accordance with industry practices	2.1 Types of manuals used in energy consumption 2.2 Types of symbols used in manuals 2.3 Identification of units of measurements 2.4 Unit conversion	2.1 Reading and comprehension skills 2.2 Identifying and interpreting energy consumption manuals and specifications 2.3 Accessing information and data 2.4 Applying conversion of units of measurements
3. Apply information in manual	3.1 <i>Manual</i> is interpreted according to job requirements 3.2 Work steps are correctly identified in accordance with manufacturer's specification 3.3 Manual data are applied according to the given task 3.4 All correct sequencing and adjustments are interpreted in accordance with information contained on the manual or specifications	3.1 Types of manuals used in energy consumption 3.2 Types and application of symbols used in the manuals 3.3 Unit conversion	3.1 Reading and comprehension skills 3.2 Applying information from manuals
4. Store manuals	4.1 Manual or specification is stored appropriately to prevent damage, ready access and updating of information when required in accordance with company requirements	4.1 Types of manuals used in energy consumption 4.2 Manual storing and maintaining procedures	4.1 Reading and comprehension skills 4.2 Storing and maintaining manuals

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Procedures, Specifications and Manuals of Instructions	Kinds of Manuals: 1.1 Manufacturer's Specification Manual 1.2 Repair Manual 1.3 Maintenance Procedure Manual 1.4 Periodic Maintenance Manual

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires that the candidate: 1.1 Identified and accessed specification/manuals as per job requirements 1.2 Interpreted manuals in accordance with industry practices 1.3 Applied information in manuals according to the given task 1.4 Stored manuals in accordance with company requirements
2. Resource implications	The following resources should be provided: 2.1 All manuals/catalogues relative to construction sector
3. Methods of assessment	Competency should be assessed through: 3.1 Direct observation 3.2 Questions/interview  Assessment of underpinning knowledge and practical skills may be combined
4. Context of assessment	4.1 Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 4.2 Assessment may be conducted in the workplace or a simulated environment

**UNIT OF COMPETENCY : OPERATE AND MAINTAIN TOOLS AND EQUIPMENT****UNIT CODE : UTL311205****DESCRIPTOR : This unit covers the knowledge, skills and attitude to operate and maintain tools and equipment. This unit will involve working in a team environment.**

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> ( <i>Italicized Bold</i> terms are elaborated in the range of variables)	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Plan and prepare for work	1.1. Work instruction is secured and interpreted according to job requirements 1.2. Relevant <b>occupational health and safety requirements</b> are identified following job specifications 1.3. Relevant transmission line <b>tools, equipment and hardware</b> are identified and requested in accordance with job specifications	1.1. Relevant occupational health and safety standards 1.2. Types and usage of tools and equipment 1.3. Basic preventive maintenance servicing for equipment	1.1. Following and complying occupational health and safety standards 1.2. Following procedures for the safe use of tools and equipment 1.3. Performing basic preventive maintenance servicing for equipment
2. Prepare tools and equipment	2.1. Personal protective equipment (PPE) are obtained following job requirements 2.2. Tools, equipment and hardware are acquired and secured in line with job requirements 2.3. Tools are tested/set following manufacturer's standards or recommendation	2.1. Types and functions of PPEs 2.2. Types and usage of tools and equipment 2.3. Basic preventive maintenance servicing for equipment 2.4. Proper testing of tools	2.1. Following and complying occupational health and safety standards 2.2. Following procedures for the safe use of tools and equipment 2.3. Performing basic preventive maintenance servicing for equipment 2.4. Testing skills
3. Operate tools and equipment	3.1. PPE are used in line with job requirements 3.2. Tools and equipment are used in line with job requirements	3.1. Proper usage of PPEs 3.2. Proper procedure for the use of tools and equipment 3.3. Basic preventive maintenance servicing for equipment	3.1. Using PPEs 3.2. Following procedures for the safe use of tools and equipment 3.3. Performing basic preventive maintenance servicing for equipment



<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>(Italicized Bold terms are elaborated in the range of variables)</i>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
4. Check condition of tools and equipment	4.1. Tools and equipment are identified according to classification and job requirements 4.2. Non-functional tools and equipment are segregated and labeled according to classification 4.3. Safety of tools and equipment are observed in accordance with manufacturer's instructions 4.4. Condition of PPE are checked in accordance with manufacturer's instructions	4.1. Classification of tools and equipment 4.2. Proper safety procedure for the use of tools and equipment 4.3. Basic preventive maintenance servicing for equipment	4.1. Classifying tools and equipment 4.2. Following and complying occupational health and safety standards 4.3. Following procedures for the safe use of tools and equipment 4.4. Performing basic preventive maintenance servicing for equipment
5. Perform basic preventive maintenance	5.1. Appropriate lubricants are identified according to types of equipment 5.2. Equipment are lubricated according to preventive maintenance schedule or manufacturer's specifications 5.3. Tools are cleaned and tested according to standard procedures 5.4. Tools and equipment are inspected, and repaired and replaced, if necessary, after use 5.5. Work place is cleaned and kept in safe state in line with OSHA regulations	5.1. Types and usage of lubricants for equipment 5.2. Proper procedure for the use and maintenance of tools and equipment 5.3. Basic preventive maintenance servicing for equipment 5.4. Applicable OSHA regulations in preventive maintenance	5.1. Identifying types and usage of lubricants 5.2. Following procedures for the safe use and maintenance of tools and equipment 5.3. Performing basic preventive maintenance servicing for equipment 5.4. Following OSHA regulations
6. Store tools and equipment	6.1. Inventory of tools and equipment are conducted and recorded as per company practices 6.2. Tools and equipment are stored safely in appropriate locations in accordance with manufacturer's specifications or company procedures	6.1. Proper procedure for the inventory and storage of tools and equipment	6.1. Following procedures for the inventory and storage of tools and equipment 6.2. Inventory skills 6.3. Proper storage and handling skills

## RANGE OF VARIABLES

VARIABLE	RANGE
<p>1. Occupational health and safety requirements</p>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>1.1. Personal protective equipment (PPE)               <ul style="list-style-type: none"> <li>1.1.1 Safety hat</li> <li>1.1.2 Safety goggles</li> <li>1.1.3 Safety gloves</li> <li>1.1.4 Safety shoes</li> <li>1.1.5 Working clothes</li> </ul> </li> <li>1.2. Installation of grounding cluster</li> </ul>
<p>2. Tools, equipment and hardware</p>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>2.1. Hand tools               <ul style="list-style-type: none"> <li>2.1.1. Pliers</li> <li>2.1.2. Screwdrivers</li> <li>2.1.3. Adjustable wrenches</li> <li>2.1.4. Ball peen hammer</li> <li>2.1.5. Auger bit</li> <li>2.1.6. Hacksaw/cutting tools</li> <li>2.1.7. Steel tape</li> </ul> </li> <li>2.2. Equipment               <ul style="list-style-type: none"> <li>2.2.1. Motorized capstan</li> <li>2.2.2. Climbing gears</li> <li>2.2.3. Line truck/Boom truck</li> </ul> </li> <li>2.3. Set of hot line trailer</li> <li>2.4. Hardware               <ul style="list-style-type: none"> <li>2.4.1. Insulator</li> <li>2.4.2. Machine bolts</li> <li>2.4.3. Suspension clamp assembly (ACSR/OHGW)</li> <li>2.4.4. Strain clamp assembly(ACSR/OHGW)</li> <li>2.4.5. Overhead ground wires</li> <li>2.4.6. Cross-arms and braces</li> <li>2.4.7. Conductors and accessories</li> </ul> </li> </ul>

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Demonstrates ability to identify and comply with occupational health and safety standards in operating and maintaining tools and equipment 1.2. Demonstrates ability to identify and safely use tools and equipment 1.3. Demonstrates ability to perform basic preventive maintenance servicing for equipment
2. Resource Implications	The following resources must be available: 2.1. Tools, equipment and PPE 2.2. Work area
3. Method of assessment	3.1. Observation and Oral questioning 3.2. Demonstration with oral questioning 3.3. Written test
4. Context of assessment	4.1. Competency may be assessed in the workplace or in a simulated workplace setting 4.2. Assessment shall be undertaken either individually or part of team under limited supervision

**UNIT TITLE** : **PERFORM COMPUTER OPERATIONS**

**UNIT CODE** : **UTL311207**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills, (and) attitudes and values needed to perform computer operations which include inputting, accessing, producing and transferring data using the appropriate hardware and software

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Plan and prepare for task to be undertaken	1.1. Requirements of task are determined 1.2. Appropriate <b>hardware</b> and <b>software</b> are selected according to task assigned and required outcome 1.3. Task is planned to ensure <b>OH&amp;S guidelines</b> and procedures are followed	1.1. Main types of computers and basic features of different operating systems 1.2. Main parts of a computer 1.3. Information on hardware and software 1.4. Data security guidelines	1.1. Reading and comprehension skills required to interpret work instruction and to interpret basic user manuals. 1.2. Communication skills to identify lines of communication, request advice, follow instructions and receive feedback. 1.3. Interpreting user manuals and security guidelines
2. Input data into computer	2.1. Data are entered into the computer using appropriate program/application in accordance with company procedures 2.2. Accuracy of information is checked and information is saved in accordance with standard operating procedures 2.3. Inputted data are stored in <b>storage media</b> according to requirements 2.4. Work is performed within <b>ergonomic guidelines</b>	2.1. Basic ergonomics of keyboard and computer user 2.2. Storage devices and basic categories of memory 2.3. Relevant types of software	2.1. Technology skills to use equipment safely including keyboard skills. 2.2. Entering data
3. Access information using computer/ smartphone	3.1. Correct program/application is selected based on job requirements 3.2. Program/application containing the information required is accessed according to company procedures 3.3. <b>Desktop icons</b> are correctly selected, opened and closed for navigation purposes	3.1. General security, privacy legislation and copyright 3.2. Productivity Application 3.3. Business Application	3.1. Accessing information 3.2. Searching and browsing files and data

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	3.4. Keyboard techniques are carried out in line with OH&S requirements for safe use of keyboards		
4. Produce/output data using computer system	4.1. Entered data are processed using appropriate software commands 4.2. Data printed out as required using computer hardware/peripheral devices in accordance with standard operating procedures 4.3. Files, data are transferred between compatible systems using computer software, hardware/peripheral devices in accordance with standard operating procedures	4.1. Computer application in printing, scanning and sending facsimile 4.2. Types and function of computer peripheral devices	4.1. Computer data processing 4.2. Printing of data 4.3. Transferring files and data
5. Maintain computer equipment and systems	5.1. Systems for cleaning, minor <b><i>maintenance</i></b> and replacement of consumables are implemented 5.2. Procedures for ensuring security of data, including regular back-ups and virus checks are implemented in accordance with standard operating procedures 5.3. Basic file maintenance procedures are implemented in line with the standard operating procedures	5.1. Basic internet operation 5.1.1. Web address 5.1.2. Types and functions of search engines 5.2. Different web browser security features and maintenance	5.1. Locating information using browser 5.2. Internet browsing

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Hardware and peripheral devices	May include: <ol style="list-style-type: none"> <li>1.1. Personal computers</li> <li>1.2. Networked systems</li> <li>1.3. Communication equipment</li> <li>1.4. Printers</li> <li>1.5. Scanners</li> <li>1.6. Keyboard</li> <li>1.7. Mouse</li> </ol>
2. Software	Software includes the following but not limited to: <ol style="list-style-type: none"> <li>2.1. Word processing packages</li> <li>2.2. Data base packages</li> <li>2.3. Internet</li> <li>2.4. Spreadsheets</li> </ol>
3. OH & S guidelines	<ol style="list-style-type: none"> <li>3.1. OHS guidelines</li> <li>3.2. Enterprise procedures</li> </ol>
4. Storage media	Storage media include the following but not limited to: <ol style="list-style-type: none"> <li>4.1. CDs</li> <li>4.2. zip disks</li> <li>4.3. hard disk drives, local and remote</li> <li>4.4. cloud storage</li> </ol>
5. Ergonomic guidelines	<ol style="list-style-type: none"> <li>5.1. Types of equipment used</li> <li>5.2. Appropriate furniture</li> <li>5.3. Seating posture</li> <li>5.4. Lifting posture</li> <li>5.5. Visual display unit screen brightness</li> </ol>
6. Desktop icons	Icons include the following but not limited to: <ol style="list-style-type: none"> <li>6.1. directories/folders</li> <li>6.2. files</li> <li>6.3. network devices</li> <li>6.4. recycle bin</li> </ol>
7. Maintenance	May include: <ol style="list-style-type: none"> <li>7.1. Creating more space in the hard disk</li> <li>7.2. Reviewing programs</li> <li>7.3. Deleting unwanted files</li> <li>7.4. Backing up files</li> <li>7.5. Checking hard drive for errors</li> <li>7.6. Using up to date anti-virus programs</li> <li>7.7. Cleaning dust from internal and external surfaces</li> </ol>

## EVIDENCE GUIDE

<p>1. Critical aspect of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> <li>1.1. Selected and used hardware components correctly and according to the task requirement</li> <li>1.2. Identified and explain the functions of both hardware and software used, their general features and capabilities</li> <li>1.3. Produced accurate and complete data in accordance with the requirements</li> <li>1.4. Used appropriate devices and procedures to transfer files/data accurately</li> <li>1.5. Maintained computer system</li> </ol>
<p>2. Resource implication</p>	<ol style="list-style-type: none"> <li>2.1. Computer hardware with peripherals</li> <li>2.2. Appropriate software</li> </ol>
<p>3. Method of assessment</p>	<ol style="list-style-type: none"> <li>3.1. The assessor may select two of the following assessment methods to objectively assess the candidate:             <ol style="list-style-type: none"> <li>3.1.1. Observation</li> <li>3.1.2. Questioning</li> <li>3.1.3. Practical demonstration</li> </ol> </li> </ol>
<p>4. Context of Assessment</p>	<ol style="list-style-type: none"> <li>4.1. Assessment may be conducted in the workplace or in a simulated work environment</li> </ol>

## CORE COMPETENCIES

**UNIT OF COMPETENCY: MANAGE ENERGY CONSUMPTION OF FACILITIES, EQUIPMENT AND DEVICES**

**UNIT CODE : CS-UTL311301**

**DESCRIPTOR :** This unit covers the knowledge, skills and attitude required to provide an appropriate management of energy consumption in the facility and its corresponding equipment and devices. This unit includes competencies in checking current energy consumption of facilities, equipment and devices; checking appropriate ways to prevent energy consumption increase; performing modification and improvement of settings, processes and behaviors and conducting management review on energy performance.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> ( <i>Italicized</i> terms are elaborated in the range of variables)	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Check current energy consumption of facilities, equipment and devices	1.1 Energy consuming facilities, equipment and devices are identified based on assets list, electrical, mechanical and as-built plan of the premises 1.2 Energy consumption of the facilities, equipment and devices are measured and properly <b>reported.*</b> 1.3 <b>High energy consumption detection</b> is recorded according to company SOP.*	1.1. Usage of energy measuring devices 1.2. Identification of types of energy consuming equipment and devices and their specifications 1.3. Application and usage of equipment and devices 1.4. Analysis of Electrical and mechanical plans 1.5. Familiarization with Energy Consumption measurement procedures 1.6. Basic Math (MDAS) 1.7. Written and oral communication	1.1. Using energy measuring instruments 1.2. Technical writing skills 1.3. Identifying energy consuming equipment and devices 1.4. Analytical skills 1.5. Communication skills 1.6. Interpretation skills 1.7. Mathematical skills
2. Check appropriate ways to manage energy consumption and improve efficiency	2.1 Specifications of equipment and devices performance are verified and familiarized based on specifications. 2.2 Phantom loads, overheating and building envelope are checked according to <b>technical reference standards.*</b> 2.3 Equipment and devices modification, retrofit, upgrade and similar	2.1 Up-to-date knowledge of energy efficient technologies 2.2 Energy equipment and devices actual performance versus standards or benchmarks 2.3 Procedures in checking phantom loads, overheating and building envelope	2.1 Detecting and managing proper usage of facilities, equipment and devices 2.2 Using instrumentation for measuring energy consumption 2.3 Communication skills



ELEMENT	PERFORMANCE CRITERIA ( <i>Italicized</i> terms are elaborated in the range of variables)	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	<p>action are verified against existing <b><i>energy efficiency reference standards.</i></b>*</p> <p>2.4 Standard usage of facilities, equipment and devices are checked and observed and including the entire processes and control settings.</p>	<p>2.4 Different energy efficiency reference standards in energy consumption Procedures in modification, retrofitting and upgrading energy equipment and devices</p> <p>2.5 Detection and management of proper use of facilities, equipment and devices</p> <p>2.6 Production and operation processes and control settings</p>	<p>2.4 Interpretation skills</p> <p>2.5 Mathematical skills</p>
<p>3. Perform modification and improvement of settings, processes and behaviors</p>	<p>3.1 Safety protocols are observed based on OSHA.*</p> <p>3.2 Analysis and recommendations are made on identified high energy consumption use</p> <p>3.3 Proper modification and improvement of processes/settings and behavior are reviewed and analyzed following standards requirements prior to implementation.*</p> <p>3.4 Implemented changes are monitored versus change objectives and reported regularly</p>	<p>3.1 Safety protocols/ OSHA</p> <p>3.2 Production and operation processes and control settings</p> <p>3.3 Correct and safe modification of energy efficient devices/ equipment</p> <p>3.4 Proper usage of basic electrical and mechanical tools</p>	<p>3.1 Analytical skills</p> <p>3.2 Using basic electrical and mechanical tools properly</p> <p>3.3 Communication skills</p> <p>3.4 Interpretation skills</p>
<p>4. Conduct management review on energy performance</p>	<p>4.1 Energy performance plans versus targets are evaluated according to EnMS.*</p> <p>4.2 Performance review and necessary function testing are conducted based on operational and testing procedures.*</p> <p>4.3 Deviations, non-conformance are identified based on established targets and objectives.*</p> <p>4.4 Action plans to improve performance are</p>	<p>4.1 Familiarity with the operating performance of the installed equipment</p> <p>4.2 Understanding of the systems performance for all related equipment.</p> <p>4.3 Company's energy policy, process and procedures on EnMS</p>	<p>4.1 Interpretation and analysis of data.</p> <p>4.2 Using energy related instrument (e.g. clamp meter)</p>

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> ( <i>Italicized</i> terms are elaborated in the range of variables)	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
	recommended based on EnMS		

\* *Critical Aspects of Competency*

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Energy consumption report	Energy consumption reporting may include: <ol style="list-style-type: none"> <li>1.1. Calculations</li> <li>1.2. Tabulations</li> <li>1.3. Graphs</li> <li>1.4. Data collection</li> </ol>
2. High energy consumption detection	High energy consumption detection may include: <ol style="list-style-type: none"> <li>2.1. Phantom loads detection</li> <li>2.2. Overheating/over-used detection</li> <li>2.3. Energy bill</li> <li>2.4. Consumption data trends</li> </ol>
3. Technical reference standards	Technical reference standards may include: <ol style="list-style-type: none"> <li>3.1. efficient lighting standards</li> <li>3.2. Philippine Electrical Code</li> <li>3.3. Philippine Mechanical Code</li> <li>3.4. Guidelines for Energy Conserving Designs for Buildings</li> <li>3.5. Green Building Code</li> <li>3.6. Energy Efficiency related policies and department circulars of DOE</li> <li>3.7. Fire Code of the Philippines</li> <li>3.8. OSHA</li> <li>3.9. ASHRAE</li> <li>3.10. Environmental Code</li> </ol>
4. Energy efficiency reference standards	Energy efficiency reference standards may include: <ol style="list-style-type: none"> <li>4.1. Guidelines for Energy Conserving Designs for Buildings</li> <li>4.2. Green Building Code</li> <li>4.3. Energy Efficiency related policies and department circulars of DOE</li> <li>4.4. OSHA</li> <li>4.5. ASHRAE</li> <li>4.6. ISO 50001</li> </ol>

## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1. Checked current energy consumption of facilities, equipment and devices               <ul style="list-style-type: none"> <li>1.1.1. Measured and properly reported Energy consumption of the facilities, equipment and devices</li> <li>1.1.2. Recorded high energy consumption detection according to company SOP</li> </ul> </li> <li>1.2. Checked appropriate ways to prevent energy consumption increase               <ul style="list-style-type: none"> <li>1.2.1. Checked phantom loads, overheating and building envelope according to reference standards</li> <li>1.2.2. Verified equipment and devices modification, retrofit, upgrade and similar action against existing energy efficiency reference standards</li> </ul> </li> <li>1.3. Performed modification and improvement of settings, processes and behaviors               <ul style="list-style-type: none"> <li>1.3.1. Observed safety protocols based on OSHA</li> <li>1.3.2. Reviewed and analyzed proper modification and improvement of processes/settings and behavior following standards requirements</li> </ul> </li> <li>1.4. Conducted management review on energy performance               <ul style="list-style-type: none"> <li>1.4.1. Evaluated energy performance plans versus targets according to EnMS</li> <li>1.4.2. Conducted performance review and necessary function testing based on Energy Management System (EnMS)</li> <li>1.4.3. identified deviations, non-conformance based on established targets and objectives</li> </ul> </li> </ul>
<p>2. Resource implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>2.1. Appropriate energy measuring equipment and tools</li> <li>2.2. Applicable PPE</li> <li>2.3. Appropriate assessment resources</li> <li>2.4. Workplace or assessment area</li> <li>2.5. Legislation, policies, procedures, protocol and local ordinances relating to energy utilization</li> </ul>
<p>3. Method of assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1. Demonstration/Observation with oral questioning</li> <li>3.2. Written test</li> <li>3.3. Portfolio</li> </ul>
<p>4. Context of assessment</p>	<p>4.1. Competency maybe assessed in actual workplace or at the designated TESDA Accredited Assessment Center.</p>

**UNIT OF COMPETENCY : PLAN AND SUPPORT THE IMPLEMENTATION OF REGULAR ENERGY AUDIT**

**UNIT CODE : CS-UTL311302**

**DESCRIPTOR :** This unit covers the knowledge, skills and attitude required to conduct regular energy audit. This unit also includes planning & scheduling and implementing energy audit including developing and recommending strategies for improving energy audit.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>(Italicized Bold terms are elaborated in the range of variables)</i>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Plan and schedule energy audit	1.1. Audit team is developed through <b>capability building methods</b> . 1.2. Audit plan is prepared based on coordination with different divisions/plants.* 1.3. Final schedule for <b>resource requirements</b> is approved and communicated.*	1.1. Energy audit methodology, principles, process, guidelines and procedures 1.2. Facilities production and operation processes and boundaries 1.3. Energy equipment devices specifications 1.4. Scope of an Energy Audit 1.5. Knowledge of Resources requirement 1.6. Selection of Audit method based on recognized need	1.1. Analytical skills 1.2. Communication skills 1.3. Writing/reporting skills 1.4. Coordination and team management skills 1.5. Identifying list of data to be collected. 1.6. Operate metering equipment 1.7. Identifying area to be audited
2. Implement energy audit	2.1. Meeting is conducted in accordance with the energy audit plan.* 2.2. Data collection and <b>measurement</b> plan are implemented based on the energy audit plan.* 2.3. Site inspection is conducted based on energy audit plan 2.4. Data are <b>analyzed</b> using simple statistical tools and energy auditing techniques.* 2.5. Reporting and closing are done based on energy audit plan 2.6. Conduct of audit are monitored up to closing meeting and made sure audit plan is followed within the time frame	2.1. Energy audit methodology, principles, process, guidelines and procedures 2.2. Facilities production and operation processes and boundaries 2.3. Energy equipment devices specifications 2.4. Knowledge about setting of Energy Target and Plan 2.5. Analysis of result 2.6. Estimates of manpower and budget required	2.1. Analytical skills 2.2. Communication skills 2.3. Writing/reporting skills 2.4. Coordination and team management skills 2.5. Identifying area or equipment to be included in the Audit 2.6. Ensuring complete metering and instrumentation needed

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> ( <i>Italicized Bold</i> terms are elaborated in the range of variables)	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
		2.7. External auditors' proper credentials and track record.	
3. Develop and recommend strategies for improving energy efficiency	3.1. <b>Strategies</b> are developed based on the outcome of the audit findings.* 3.2. <b>Recommendation</b> for energy use reduction or energy efficiency improvement strategy is prepared based on the results of the audit.* 3.3. Recommendation for opportunities for improvement is proposed based on the results of the audit.*	3.1. Energy audit methodology, principles, process, guidelines and procedures 3.2. Facilities production and operation processes and boundaries 3.3. Energy equipment devices specifications 3.4. target energy reduction check audit recommendations 3.5. Assessment on identified opportunities for improvement	3.1. Analytical skills 3.2. Communication skills 3.3. Writing/ reporting skills 3.4. Coordination and team management 3.5. Presentation skills 3.6. Assisting Audit team and provide needed metering equipment and instrumentation

\* *Critical Aspects of Competency*

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Capability building methods	May include: 1.1. training and seminars 1.2. mentoring 1.3. consulting or hiring third party 1.4. outsourcing
2. Resource requirements	May include: 2.1. manpower 2.2. equipment 2.3. budgets
3. Analyzed	May include: 3.1. data analysis and presentation outputs: 3.2. identify energy performance trends, 3.3. issues and performance gaps, 3.4. opportunities for improvement
4. Measure actual use of energy	May include: 4.1. Specific energy consumption (kWh or equivalent) 4.2. Operating Hours 4.3. Energy Baseline Consumption 4.4. Energy baseload 4.5. Energy Efficiency Index (EEI) 4.6. Seasonal variability
5. Strategies	Development of strategies may include: 5.1. Conduct of Level 1 Energy Audit to establish baseline 5.2. Determine actual energy use for the overall process 5.3. Identification of Energy Conserving Measures (ECM) 5.4. Applying fuel substitution when applicable 5.5. Analysis of process, operation and control setpoints 5.6. Policies and behavioral analysis 5.7. Identification of energy efficient technologies
6. Recommendation	Recommendation for an energy efficiency improvement strategy may include: 6.1. Process and operation control analysis 6.2. Cost-benefit analysis 6.3. Life Cycle Analysis 6.4. Consideration for downtime

## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1. Plan and schedule energy audit               <ul style="list-style-type: none"> <li>1.1.1. Prepared audit plan based on coordination with different divisions/plants</li> <li>1.1.2. Approved and communicated final schedule for resource requirements</li> </ul> </li> <li>1.2. Implement energy audit               <ul style="list-style-type: none"> <li>1.2.1. Conducted meeting is conducted in accordance with the energy audit plan</li> <li>1.2.2. Implemented data collection and measurement plan based on the energy audit plan</li> <li>1.2.3. Analyzed data using statistical tools and techniques</li> </ul> </li> <li>1.3. Develop and recommend strategies for improving energy efficiency               <ul style="list-style-type: none"> <li>1.3.1. Developed strategies based on the outcome of the audit findings</li> <li>1.3.2. Prepared recommendation for energy use reduction strategy based on the results of the audit</li> <li>1.3.3. Proposed recommendation for opportunities for improvement based on the results of the audit</li> </ul> </li> </ul>
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>2.1. Appropriate energy measuring equipment</li> <li>2.2. Applicable PPE</li> <li>2.3. Appropriate energy audit tools</li> <li>2.4. Workplace or assessment area: actual place of audit</li> </ul>
<p>3. Method of assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1. Demonstration/Observation with oral questioning</li> <li>3.2. Written test</li> <li>3.3. Portfolio</li> </ul>
<p>4. Context of assessment</p>	<p>4.1. Competency maybe assessed in actual workplace or at the designated TESDA Accredited Assessment Center.</p>



**UNIT OF COMPETENCY : PERFORM ENERGY CONSUMPTION MONITORING AND CONTROL**

**UNIT CODE : CS-UTL311303**

**DESCRIPTOR :** This unit covers the outcomes required for performing energy monitoring and control. This unit includes competencies in conducting data gathering, using measuring tools and instrument panel for monitoring and analyzing the energy consumption data.

<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. Conduct data gathering	1.1. Checklists and forms are prepared based on required/needed information 1.2. Data for energy consumption are gathered based on checklist and forms.* 1.3. Data are properly recorded, documented and stored for future analysis.*	1.1. Understanding of set points parameter 1.2. Understanding on the use of test and measuring equipment and devices 1.3. Facilities electrical and mechanical plans 1.4. Basic Statistics	1.1. Reading and understanding of units of measurements 1.2. data gathering skills 1.3. documentation skills 1.4. communication skills
2. Use measuring tools and Instrument Panel for monitoring	2.1 Measuring tools and instrument panel are prepared for energy consumption monitoring 2.2 Measuring tools and instrument panel are used to compared standards versus actual parameters.*	2.1 Understanding of analog and digital instrumentation panels 2.2 Facilities electrical and mechanical plans	2.1 Reading and understanding of units of measurements 2.2 Data gathering skills 2.3 documentation skills 2.4 Communication skills
3. Analyze the energy consumption data	3.1. <b>Collected data</b> are normalized, analyzed and issues and trends identified 3.2. Calibration and adjustment are made based on results of the analysis versus standards and requirements.* 3.3. Settings are adjusted based on results of the analysis versus standards and requirements.* 3.4. Other action plans are recommended based on the result of the analysis	3.1. Basics of electrical controls 3.2. Facilities electrical and mechanical plans 3.3. Process, operation and control settings	3.1. Problem solving 3.2. Analytical skills 3.3. Skill in reading meters and use of instruments 3.1. Prepare periodic energy consumption and energy conservation program reports,

\* *Critical Aspects of Competency*

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Collected data	May include: 1.1 Data based on Key Performance Index 1.2 KPI may include capacity 1.3 Other energy data and statistics

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Conducted data gathering 1.1.1. Gathered data for energy consumption based on checklist and forms 1.1.2. Recorded, documented and stored data properly for future analysis 1.2. Used measuring tools and instrument panel for monitoring 1.2.1. Used measuring tools and instrument panel to compared standards versus actual parameters 1.3. Analyzed the energy consumption data 1.3.1. Made calibration or adjustment based on results of the analysis 1.3.2. Adjusted settings based on the results of the analysis
2. Resource implications	The following resources should be provided: 2.1. Appropriate energy measuring equipment and tools 2.2. Applicable PPE 2.3. Appropriate assessment resources 2.4. Workplace / assessment location 2.5. Legislation, policies, procedures, protocol and local ordinances relating to energy utilization.
3. Method of assessment	Competency in this unit may be assessed through: 3.1. Demonstration/Observation with oral questioning 3.2. Written test 3.3. Portfolio
4. Context of assessment	4.1. Competency maybe assessed in actual workplace or at the designated TESDA Accredited Assessment Center.

**UNIT OF COMPETENCY : CARRY OUT IMPLEMENTATION AND IMPROVEMENT OF ENERGY EFFICIENCY MEASURES**

**UNIT CODE : CS-UTL311304**

**DESCRIPTOR :** This unit covers the outcomes required to carry out implementation and improvement of energy efficiency measures. This unit includes competencies in studying/ selecting appropriate process, systems and technology, applying appropriate process, systems and technology including operating and maintaining energy production and operation process, system and technology and including applicable EnMS management systems.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>(Italicized Bold terms are elaborated in the range of variables)</i>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Study/select appropriate process, systems and technology	1.1. Use of different <b>processes, systems and technology</b> are evaluated and assessed based on facilities energy performance requirement.* 1.2. Appropriate process systems and technology are selected as per evaluation and assessment energy efficiency performance requirements.*	1.1. Understanding of the current process, systems and technology used. 1.2. Awareness of new process, system and technology and its functions 1.3. Communication techniques 1.4. Health and safety procedures 1.5. Company policy in relation to relevant technology 1.6. Machineries /equipment and their application	1.5. Analytical skills 1.6. Writing skills 1.7. Communication skills 1.8. Market research skills 1.9. Identifying relevant energy technology on job 1.10. Setting up appropriate energy performance baselines and energy performance indicators 1.11. Preparing periodic energy consumption and energy conservation program

ELEMENT	PERFORMANCE CRITERIA ( <i>Italicized Bold</i> terms are elaborated in the range of variables)	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Apply appropriate process, systems and technology	2.1 Appropriate and approved process, systems and technology are effectively used in carrying the objectives set.* 2.2 Applicable software and hardware are used as per task requirement.* 2.3 <b>Energy management concepts</b> are observed and practiced following best practices on energy efficiency and conservation (EEC) which may pertain to ISO 50001.	2.1 Communication techniques 2.2 Knowledge on operating instructions 2.3 Understanding software and hardware system 2.4 Health and safety procedure 2.5 Company policy in relation to relevant EEC technology 2.6 Different management concepts 2.7 Technology adaptability	2.1 Applying relevant technology 2.2 Communication skills 2.3 Using software application as needed 2.4 Conducting assessment evaluation and post implementation audit
3. Operate and maintain energy production and operation process, system and technology and including applicable EnMS management systems	3.1. Energy production and operation process, and technology support are operated and maintained in accordance with industry <b>standard operating procedures</b> , <b>manufacturer's operating guidelines</b> , and occupational health and safety procedures to ensure reliability and safety.* 3.2. Energy production and operation process, systems and technology support are updated through continuing education or training in accordance with job requirements 3.3. Failures/defects/variations and non-compliance are immediately reported to the concerned/responsible person or section for <b>appropriate action</b>	3.1. Awareness on EEC technology and its function 3.2. Understanding of the company's energy production and operation process, systems and technology support 3.3. Repair and maintenance procedure 3.4. Health and safety procedure 3.5. Upgrading of technology 3.6. Organizational set-up/work flow	3.1. Basic troubleshooting skills 3.2. Identifying failures or defects 3.3. Communication skills 3.4. Applying corrective and preventive maintenance. 3.5. Analytical skills 3.6. Using of software application as needed 3.7. Conducting assessment, evaluation and post implementation audit

\* Critical Aspects of Competency

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Processes, systems and technology	Energy production and operation process, systems and technology support may include: <ul style="list-style-type: none"> <li>1.1 Office technology</li> <li>1.2 Production &amp; operation process</li> <li>1.3 Industrial technology</li> <li>1.4 System technology</li> <li>1.5 Information technology</li> <li>1.6 Training technology</li> </ul>
2. Management Concepts	May include: <ul style="list-style-type: none"> <li>2.1 EnMS (ISO 50001)</li> <li>2.2 Real time or Just in time (JIT)</li> <li>2.3 PDCA</li> <li>2.4 5S</li> <li>2.5 TQM (ISO 9001, ISO 9002)</li> <li>2.6 ISO 14001</li> <li>2.7 Other Management Productivity Tools</li> </ul>
3. Standard Operating Procedures	EEC Standard Operating Procedures may include: <ul style="list-style-type: none"> <li>3.1 Written guidelines relative to the usage of energy equipment/devices and control systems</li> <li>3.2 Verbal advise / instruction from the co-worker</li> <li>3.3 Equipment manual of operation</li> <li>3.4 Materials Safety data Sheet</li> <li>3.5 Manufacturer's or Engineering recommended settings</li> </ul>
4. Manufacture's operating guidelines / instruction	May include: <ul style="list-style-type: none"> <li>4.1 Written instruction / manual of specific EEC technology / equipment</li> <li>4.2 General instruction manual</li> <li>4.3 Recommendation from manufacturer relative to the operation of the EEC equipment (documented)</li> </ul>
5. Appropriate action	May include: <ul style="list-style-type: none"> <li>5.1 Implementing preventive maintenance schedule.</li> <li>5.2 Coordinating with manufacturer's technician</li> </ul>

## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> <li>1.1. Studied/Selected appropriate process, systems and technology               <ol style="list-style-type: none"> <li>1.1.1. Evaluated and assessed use of different processes, systems and technology based on facilities energy performance requirement</li> <li>1.1.2. Selected appropriate process systems and technology as per evaluation and assessment energy efficiency performance requirements</li> </ol> </li> <li>1.2. Applied appropriate process, systems and technology               <ol style="list-style-type: none"> <li>1.2.1. Used appropriate and approved process, systems and technology effectively in carrying the objectives set</li> <li>1.2.2. Used applicable software and hardware as per task requirement</li> </ol> </li> <li>1.3. Operated and maintained energy production and operation process, system and technology and including applicable EnMS management systems               <ol style="list-style-type: none"> <li>1.3.1. Operated and maintained energy production and operation process, and technology support in accordance with industry standard operating procedures, manufacturer’s operating guidelines, and occupational health and safety procedures to ensure reliability and safety</li> </ol> </li> </ol>
<p>2. Resource implications</p>	<p>The following resources should be provided:</p> <ol style="list-style-type: none"> <li>2.1. Appropriate equipment and tools</li> <li>2.2. Applicable PPE</li> <li>2.3. Appropriate assessment resources</li> <li>2.4. Workplace/ assessment location</li> <li>2.5. Relevant energy production and operation process, systems and technology support</li> </ol>
<p>3. Method of assessment</p>	<p>Competency in this unit may be assessed through:</p> <ol style="list-style-type: none"> <li>3.1. Demonstration/observation with questioning</li> <li>3.2. Written test</li> <li>3.3. Portfolio</li> </ol>
<p>4. Context of assessment</p>	<p>4.1. Competency maybe assessed in actual workplace or at the designated TESDA Accredited Assessment Center.</p>

**UNIT OF COMPETENCY : COORDINATE INVENTORIES AND PURCHASING/  
SOURCING OF ENERGY EFFICIENT EQUIPMENT,  
DEVICES OR SERVICES**

**UNIT CODE : CS-UTL311305**

**DESCRIPTOR :** This unit covers the outcomes required to carry out inventories and purchasing/sourcing of energy efficient equipment, devices or services. The unit includes competencies in maintaining inventory records of energy equipment/devices, preparing purchase requisition/orders and performing delivery acceptance of orders.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> ( <i>Italicized</i> terms are elaborated in the range of variables)	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Maintain inventory records of energy equipment/ devices	1.1. Relevant <i>inventory system</i> is used effectively in carrying out inventory function.* 1.2. Applicable software or system is used as per task requirement 1.3. Inventory records are matched with the actual physical count.*	1.1. Communication techniques 1.2. Knowledge on operating instructions 1.3. Knowledge on software and hardware system 1.4. Inventory management, tracking and record monitoring systems/ techniques 1.5. Record of machineries/ equipment supplier information	1.1. Applying relevant technology 1.2. Communicating skills 1.3. Using software application skills 1.4. Maintaining complete records 1.5. Tracking expiry dates of products (chemicals) and warranty coverage
2. Prepare purchase requisition/ orders	2.1. Specifications and terms of reference are checked for completeness and appropriateness for end use or purpose.* 2.2. Proposals are evaluated based on life cycle cost and equipment efficiency.*	2.1. Specification for items being purchased 2.2. Conduct of technical evaluation of vendor proposal 2.3. Lifecycle costing 2.4. Recording or Log in Techniques 2.5. Tracking and Record Monitoring Systems/ techniques 2.6. Record of machineries/ equipment supplier information	2.1. Ability to coordinate with suppliers 2.2. Analytical skills 2.3. Familiarity with Tracking Systems 2.4. Ability to coordinate with suppliers
3. Perform delivery acceptance of orders	3.1. Delivered item are tested and evaluated based on specifications and standards and terms of	3.1. Specifications and terms of reference of the items	3.1. Reading and writing skills 3.2. Skill in recognizing and



<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>
	<p>reference of the purchase order.*</p> <p>3.2. All purchases are tracked against warranty and expiry dates.*</p>	<p>3.2. Familiarity of purchase order and contract conditions</p> <p>3.3. Identification and labeling of the equipment</p> <p>3.4. Preparation of Records</p> <p>3.5. Identification and labeling of the equipment</p> <p>3.6. Records and log ins of Purchases</p> <p>3.7. Warranty cards and information</p>	<p>detecting defects of units delivered</p> <p>3.3. Attention to details</p> <p>3.4. Familiarity of the areas where energy consuming devices are located</p> <p>3.5. Familiarity of Users and Suppliers</p>

\* *Critical Aspects of Competency*

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Inventory System	Inventory system may include: <ol style="list-style-type: none"> <li>1.1. Records and log ins of Purchases, installations, and warehouse inventory count</li> <li>1.2. Warranty and guarantee cards and information</li> <li>1.3. Materials safety and data sheet</li> <li>1.4. Contact Persons of the supplier</li> </ol>

## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: <ol style="list-style-type: none"> <li>1.1. Maintained inventory records of energy equipment/ devices               <ol style="list-style-type: none"> <li>1.1.1. Used relevant inventory system effectively in carrying out inventory function</li> <li>1.1.2. Matched inventory records with the actual physical count</li> </ol> </li> <li>1.2. Prepared purchase requisition/ Orders               <ol style="list-style-type: none"> <li>1.2.1. Checked specifications and terms of reference for completeness and appropriateness for end use or purpose</li> <li>1.2.2. Evaluated proposals based on life cycle cost and equipment efficiency</li> </ol> </li> <li>1.3. Performed delivery acceptance of orders               <ol style="list-style-type: none"> <li>1.3.1. Tested and evaluated delivered item based on specifications and standards and terms of reference of the purchase order</li> <li>1.3.2. Tracked all purchases against warranty and expiry dates</li> </ol> </li> </ol>
2. Resource implications	The following resources should be provided: <ol style="list-style-type: none"> <li>2.1. Appropriate energy measuring equipment, or any similar framework</li> <li>2.2. Applicable PPE</li> <li>2.3. Appropriate resources</li> <li>2.4. Workplace / assessment location</li> <li>2.5. Legislation, policies, procedures, protocol and local ordinances relating to energy utilization.</li> </ol>
3. Method of assessment	Competency in this unit may be assessed through: <ol style="list-style-type: none"> <li>3.1. Demonstration/Observation with oral questioning</li> <li>3.2. Written test</li> <li>3.3. Portfolio</li> </ol>

4. Context of assessment	4.1. Competency may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center.
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**UNIT OF COMPETENCY : INSTALL, OPERATE AND MAINTAIN ENERGY-CONSUMING MACHINES, EQUIPMENT AND SERVICES IN FACILITIES.**

**UNIT CODE : CS-UTL311306**

**DESCRIPTOR :** This unit covers the outcomes required to carry out installation, operation and maintenance of energy-consuming machines and equipment in facilities. This involves working with a team. The scope of this unit covers taking into account all equipment and devices used.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> ( <i>Italicized Bold</i> terms are elaborated in the range of variables)	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Plan and prepare for installation work	1.1. Instructions for the installation and work activities are communicated and confirmed to ensure clear understanding based on manufacturers and engineering requirements 1.2. Tools, equipment and PPE needed in specific work are identified and checked to ensure the work correctly as intended and are safe to use in accordance with established procedures.* 1.3. Materials and work methodology needed for installation work are obtained in accordance with established procedures.* 1.4. installation team are identified for actual installation	1.1. Awareness on energy equipment and devices and its functions and specifications 1.2. Communication techniques 1.3. Health and safety procedures on transport, handling, installation of equipment 1.4. Installation manual 1.5. Company policy in relation to relevant technology 1.6. Machineries/ equipment and their application 1.7. Other related documents and information needed for installation	1.1. Planning skills 1.2. Coordination and teamwork 1.3. Communication skills 1.4. Identifying relevant energy technology on job 1.5. Skill in using hand tools and power tools to do assembly. 1.6. Skill in determining if all electrical connections are within standards and regulations requirements
2. Install energy-consuming machines and equipment in facilities.	2.1. Energy consuming machines and equipment are installed following standard installation guides and <b>reference materials</b> .* 2.2. Relevant process, systems and technology needed in the installation is used effectively in carrying out the installation function.* 2.3. Software and hardware are used as applicable	2.1. Communication techniques 2.2. Health and safety procedures on transport, handling, installation of equipment 2.3. Installation manual 2.4. Other related documents and information needed for installation	2.1 Applying relevant technology 2.2 Communicating skills 2.3 Using software application skills 2.4 Technical skills for installation work (electrical, mechanical, civil, etc) 2.5 Use of Installation Manuals

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> ( <i>Italicized Bold</i> terms are elaborated in the range of variables)	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
	2.4. Energy consuming machines and equipment are tested and commissioned following standards.* 2.5. Management concepts are observed and practiced per established energy efficiency and conservation (EEC) practices	2.5. Knowledge on Operating instructions 2.6. Understanding software and hardware system	2.6 Interpretation skills of drawings on manuals
3. Notify completion of installation work	3.1. Final checks are made to ensure the installation work conforms to instructions and requirements.* 3.2. Supervisor is notified upon completion of work.* 3.3. All <b>relevant documents</b> are turned over to concerned parties 3.4. Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures 3.5. Work area is cleaned and made safe	3.1. Use of turnover Checklists 3.2. Health and safety procedures on transport, handling, installation of equipment including storage and disposal 3.3. Installation manual 3.4. Familiarity with required tools 3.5. Preparation of a logsheet for all equipment users. 3.6. Documentation of all necessary procedures and steps to guide users 3.7. Other related documents and information needed for installation, operation, maintenance and troubleshooting	3.1. Use of Installation Manuals 3.2. Coordination skills 3.3. Inventory of equipment, tools and parts on and off job sites. 3.4. Maintain a clean, organized environment at the job site
4. Operate and maintain energy-consuming machines and equipment in facilities	4.1. Safety policies and procedures are followed in accordance with OSH and enterprise procedures.* 4.2. Materials, tools, equipment, testing devices and PPE needed are prepared for the maintenance work requirements.* 4.3. Potential hazards are identified for prevention and control measures are selected in accordance with the work plan and site procedures 4.4. Operation and maintenance of energy consuming	4.1. Awareness on EEC technology and its function 4.2. Operation and maintenance procedures 4.3. Repair and maintenance procedure 4.4. Health and safety procedure 4.5. Upgrading of technology 4.6. Organizational set-up/work flow 4.7. Incident management and	4.1. Performing basic troubleshooting and repair skills 4.2. Performing preventive maintenance 4.3. Identifying failures or defects 4.4. Communication skills 4.5. Applying corrective maintenance.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> ( <i>Italicized Bold</i> terms are elaborated in the range of variables)	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
	<p>equipment is performed in accordance to applicable standards and policies on operation and maintenance.*</p> <p>4.5. Work instructions are prepared according to machine's manual and established enterprise procedures</p> <p>4.6. Concerned department/ personnel are informed on the schedule of work according to standard operating procedure</p> <p>4.7. Availability of maintenance records are prepared in accordance with established procedure.*</p>	<p>disaster management</p>	

\* *Critical Aspects of Competency*

## RANGE OF VARIABLES

VARIABLE	RANGE
1. relevant documents	May include: 1.1. MSDS, 1.2. installation guide, 1.3. operating manual, 1.4. warranty, 1.5. guarantee, 1.6. contact information of suppliers
2. Reference materials	May include: 2.1. Operation Manual 2.2. Equipment Manual 2.3. Installation Procedures 2.4. Preventive Maintenance Manual 2.5. Safety and handling procedures of equipment

## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> <li>1.1. Planned and prepared for installation work               <ol style="list-style-type: none"> <li>1.1.1. Identified and checked tools, equipment and PPE needed in specific work to ensure the work correctly as intended and are safe to use in accordance with established procedures</li> <li>1.1.2. Obtained materials and work methodology needed for installation work in accordance with established procedures</li> </ol> </li> <li>1.2. Installed energy-consuming machines and equipment in facilities are tested and operates properly               <ol style="list-style-type: none"> <li>1.2.1. Installed energy consuming machines and equipment following standard installation guides and reference materials</li> <li>1.2.2. Used relevant process, systems and technology needed in the installation effectively in carrying out the installation function</li> <li>1.2.3. Tested and commissioned energy consuming machines and equipment following standards</li> </ol> </li> <li>1.3. Notified completion of installation work               <ol style="list-style-type: none"> <li>1.3.1. Made final checks to ensure the installation work conforms to instructions and requirements</li> <li>1.3.2. Notified supervisor upon completion of work</li> </ol> </li> <li>1.4. Operated and maintained energy-consuming machines and equipment in facilities               <ol style="list-style-type: none"> <li>1.4.1. Safety policies and procedures are followed in accordance with OSH and enterprise procedures</li> <li>1.4.2. Prepared materials, tools, equipment, testing devices and PPE needed for the maintenance work requirements</li> <li>1.4.3. Performed operation and maintenance of energy consuming equipment in accordance to applicable standards and policies on operation and maintenance</li> <li>1.4.4. Prepared availability of maintenance records in accordance with established procedure</li> </ol> </li> </ol>
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ol style="list-style-type: none"> <li>2.1. Appropriate energy measuring equipment</li> <li>2.2. Applicable PPE</li> <li>2.3. Appropriate installation, operation and maintenance tools</li> <li>2.4. Workplace or assessment area</li> </ol>
<p>3. Method of assessment</p>	<p>Competency in this unit may be assessed through:</p> <ol style="list-style-type: none"> <li>3.1. Demonstration/Observation with oral questioning</li> <li>3.2. Written test</li> <li>3.3. Portfolio</li> </ol>
<p>4. Context of assessment</p>	<p>4.1. Competency maybe assessed in actual workplace or at the designated TESDA Accredited Assessment Center.</p>



## GLOSSARY OF TERMS

### GENERAL

- 1) **Basic Competencies** - are the skills and knowledge that everyone needs for work
- 2) **Certification** - is the process of verifying and validating the competencies of a person through assessment
- 3) **Certificate of Competency (COC)** – is a certification issued to individuals who pass the assessment for a single unit or cluster of units of competency
- 4) **Common Competencies** - are the skills and knowledge needed by all people working in a particular industry
- 5) **Competency** - is the possession and application of knowledge, skills and attitudes to perform work activities to the standard expected in the workplace
- 6) **Competency Assessment** - is the process of collecting evidence and making judgments on whether competency has been achieved
- 7) **Competency Standard (CS)** - is the industry-determined specification of competencies required for effective work performance
- 8) **Context of Assessment** - refers to the place where assessment is to be conducted or carried out
- 9) **Core Competencies** - are the specific skills and knowledge needed in a particular area of work - industry sector/occupation/job role
- 10) **Critical aspects of competency** - refers to the evidence that is essential for successful performance of the unit of competency
- 11) **Energy Performance Improvement:** Improvement in measurable results related to energy efficiency, energy use, or energy consumption compared to energy baseline. (lifted from ISO 50001:2018)
- 12) **Energy Baseline** - quantitative reference providing a basis for comparison of energy performance.
- 13) **Energy efficiency** - ratio or other quantitative relationship between an output of performance, service, goods, commodities, or energy, and an input of energy. (lifted from ISO 50001:2018)
- 14) **Energy Performance Indicator (EnPI)** - measure or unit of energy performance as defined by the organization. (lifted from ISO 50001:2018)
- 15) **Elective Competencies** - are the additional skills and knowledge required by the individual or enterprise for work

- 16) **Elements** - are the building blocks of a unit of competency. They describe in outcome terms the functions that a person performs in the workplace.
- 17) **Energy review** - analysis of energy efficiency, energy use and energy consumption based on data and other information, leading to identification of SEUs and opportunities for energy performance improvement. (lifted from ISO 50001:2018)
- 18) **EPIA** - Energy performance improvement action.
- 19) **Evidence Guide** - is a component of the unit of competency that defines or identifies the evidences required to determine the competence of the individual. It provides information on critical aspects of competency, underpinning knowledge, underpinning skills, resource implications, assessment method and context of assessment
- 20) **Level** - refers to the category of skills and knowledge required to do a job
- 21) **Measurement and Verification M&V** - process of planning, measuring, collecting data, analysing, verifying, and reporting energy performance or energy performance improve for defined M & V boundaries.
- 22) **M & V Boundary** - organizational, physical, site, facility, equipment systems, processes or activity limits within energy performance or energy performance improvement is measured and verified.
- 23) **Method of Assessment** - refers to the ways of collecting evidence and when, evidence should be collected
- 24) **National Certificate (NC)** – is a certification issued to individuals who achieve all the required units of competency for a national qualification defined under the Training Regulations. NCs are aligned to specific levels within the PTQF
- 25) **Performance Criteria** - are evaluative statements that specify what is to be assessed and the required level of performance
- 26) **Qualification** - is a cluster of units of competencies that meets job roles and is significant in the workplace. It is also a certification awarded to a person on successful completion of a course in recognition of having demonstrated competencies in an industry sector
- 27) **Range of Variables** - describes the circumstances or context in which the work is to be performed
- 19) **Recognition of Prior Learning (RPL)** – is the acknowledgement of an individual’s skills, knowledge and attitudes gained from life and work experiences outside registered training programs
- 28) **Resource Implication** - refer to the resources needed for the successful performance of the work activity described in the unit of competency. It includes work environment and conditions, materials, tools and equipment

- 29) **Significant Energy Use (SEU)** - energy use accounting for substantial energy consumption and/or offering considerable potential for energy performance improvement. (lifted from ISO 50001:2018)
- 30) **Underpinning Knowledge** - refers to the competency that involves in applying knowledge to perform work activities. It includes specific knowledge that is essential to the performance of the competency
- 31) **Underpinning Skills** - refers to the list of the skills needed to achieve the elements and performance criteria in the unit of competency. It includes generic and industry specific skills
- 32) **Unit of Competency** – is a component of the competency standards stating a specific key function or role in a particular job or occupation; it is the smallest component of achievement that can be assessed and certified under the PTQF

## SECTOR SPECIFIC

1. **Analog instruments** are mechanical devices that indicate the magnitude of the quantity in the form of the pointer movement, and the value is read according to markings on a scale and gives an output that varies continuously as the quantity being measured changes.
2. **ASHRAE** - American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE ASH-ray) is an American professional association seeking to advance heating, ventilation, air conditioning and refrigeration (HVAC&R) systems design and construction. ASHRAE has more than 57,000 members in more than 132 countries worldwide.
3. **Calibration** is the comparison of measurement values delivered by a device under test with those of a calibration standard of known accuracy.
4. **Certified Energy Conservation Officer (CECO)** refers to a professional who obtains a certification as a CECO after demonstrating high levels of experience, competence, proficiency, and ethical fitness in the energy management profession, and who shall be responsible for the supervision and maintenance of the facilities of Type 1 designated establishments for the proper management of energy consumption and such other functions deemed necessary for the efficient and judicious utilization of energy under the Act;
5. **Certified Energy Manager (CEM)** refers to a licensed engineer who obtains a certification as a CEM after demonstrating high levels of experience, competence, proficiency, and ethical fitness in the energy management profession, and who shall be chosen by Type 2 designated establishments to plan, lead, manage, coordinate, monitor, and evaluate the implementation of sustainable energy management within their organizations;
6. **Designated Establishment** refers to a private or public entity in the commercial, industrial, transport, power, agriculture, public works, and other sectors identified by the DOE as energy intensive industries based on their annual energy consumption in

the previous year or an equivalent annual index; the amount of consumption is indicated in the Act and subject to adjustment by the DOE as it deems necessary;

7. **Digital instrument** has an output that varies in discrete steps and so can have only a finite number of values;
8. **Distribution Utility** refers to any electric cooperative, private corporation, government-owned utility, or existing local government unit which has an exclusive franchise to operate a distribution system including those whose franchise covers economic zones;
9. **Energy** refers to all types of energy available commercially including natural gas (liquid natural gas and liquid oil gas), all heating and cooling fuels (including district heating and district cooling), coal, transport fuels, and renewable energy sources;
10. **Energy Accounting Center (EAC)** refers to an identified separate and distinct area of the organization for effective control and monitoring of energy consumption;
11. **Energy Audit** refers to the evaluation of energy consumption and review of current energy cost to determine appropriate intervention measures and efficiency projects in which energy can be judiciously and efficiently used to achieve savings;
12. **Energy audit report** – documents the results of an energy audit where it identifies energy consumed by a facility and locates energy conservation measures;
13. **Energy Baseline** - quantitative reference providing a basis for comparison of energy performance.
14. **Energy Conservation** refers to the reduction of losses or wastage in various energy stages from energy production to energy consumption through the adoption of appropriate measures which may, among others be, technologically feasible, economically sound, environmentally-friendly, or socially affordable;
15. **Energy Conservation Measures (ECM)** refers to the upgrades, retrofits, repairs and replacements that businesses can implement to become more energy efficient;
16. **Energy Consumption** is the amount of energy or power used and refers to energy used to perform an action, manufacture something or simply inhabit a building;
17. **Energy efficiency** - ratio or other quantitative relationship between an output of performance, service, goods, commodities, or energy, and an input of energy. (lifted from ISO 50001:2018)
18. **Energy Efficiency** refers to the way of managing or restraining the growth in energy consumption resulting in the delivery of more services for the same energy input or the same services for less energy input;
19. **Energy Efficiency and Conservation Officer (EEC Officer)** refers to the head of the EECO responsible for overseeing the implementation of the Local EE&C Plan at the local government level, who may be designated from the existing personnel of the LGU;
20. **Energy Efficiency Index** - refers to an efficiency performance measure or indicator expressed as a ratio or index of energy utilization;
21. **Energy Efficiency Standards** - refers for the energy performance measurement used as an industry reference guide following extensive studies, benchmarking, best practices and regulatory requirements;

22. **Energy Efficient Technologies** refers to technologies that use Energy efficiency as a means of measuring the energy-expenditure required to achieve a certain benefit. The lower the losses in energy in achieving a specific purpose, the higher are the degree of energy efficiency;
23. **Energy End User** refers to all individuals and entities, which consume energy to include households, industrial and commercial customers, power plants, distribution utilities, and transmission utilities;
24. **Energy Intensive Industries** are industries that use large amounts of energy such as iron and steel, cement, and pulp and paper;
25. **Energy Management** refers to the process of designing and/or implementing an optimal program of purchasing, generating, and consuming various types of energy based on the end user's overall short-term and long-term management program, with due consideration of factors including costs, availability, economics, and environmental impact;
26. **Energy Management System (EnMS)** - refers to a management system or process to manage the energy in the establishment following ISO 50001 requirements and guidance;
27. **Energy Performance Improvement:** Improvement in measurable results related to energy efficiency, energy use, or energy consumption compared to energy baseline. (lifted from ISO 50001:2018)
28. **Energy Performance Indicator (EnPI)** - measure or unit of energy performance as defined by the organization. (lifted from ISO 50001:2018)
29. **Energy Performance Requirement** - refers to the standard or goal for energy performance required to be achieved for a period of time following regulatory requirements and/or business plans;
30. **Full Body Harness** - form of protective equipment designed to protect a person from injury due to falling;
31. **Hazard Control Measures** refer to measures that eliminate the hazards from the workplace to protect the workers and include wearing of appropriate Personal Protective Equipment (PPEs);
32. **Hazard Prevention** refers to effective controls to protect workers from workplace hazards; help avoid injuries, illnesses, and incidents; minimize or eliminate safety and health risks; and help employers provide workers with safe and healthful working conditions;
33. **Hazardous** - an atmosphere that may expose employees to the risk of death, atmosphere incapacitation, impaired ability to self-rescue unaided, injury, or acute illness;
34. **Hygrometer** is an instrument used to measure the amount of water vapor in air, in soil, or in confined spaces;
35. **Installation** is the act or process of making a machine, a service, etc., ready to be used in a certain place : the act of installing something (such as a piece of equipment end made ready for use);
36. **Inventory management system** (or inventory system) is the process by which you track your goods throughout your entire supply chain, from purchasing to production to end sales. It governs how you approach inventory management for your business;

37. **Minimum Energy Performance (MEP)** refers to a performance standard, which prescribes a minimum level of energy performance for energy-consuming products including appliances, lighting, electrical equipment, machinery, and transport vehicles that must be met or exceeded before they can be offered for sale or used for residential, commercial, transport, and industrial purposes;
38. **OHSAS 18001** – is a framework for an Occupational Health and Safety (OHS) Management Systems and is part of the OHSAS 18000 series of standards, along with OHSAS 18002;
39. **Operation and Maintenance (O&M)** means the functions, duties and labor associated with the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to preserve an asset so that it continues to provide acceptable services and achieves its expected life;
40. **Personal Protective Equipment (PPE)** - refers to protective clothing, helmets, goggles, or other garment or equipment designed to protect line personnel from job-related occupational hazards;
41. **Philippine Qualifications Framework (PQF)** refers to a national policy describing the levels of educational qualifications and sets of standards for qualification outcomes. It is a quality assured national system for the development, recognition, and award of qualifications based on the standards of knowledge, skills, and values acquired in different ways and methods by learners and workers. It is an assessment-based qualification recognition which is competency-based and labor market driven;
42. **Record Monitoring System** involves collecting energy consumption data for each Energy Accounting Center (EAC);
43. **Repair and Maintenance** refers to those activities associated with the routine care and upkeep of a structure or an asset to keep it operating at its present condition;
44. **Risks** - a probability or threat of damage, injury, liability, loss or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided through preemptive action;
45. **Safety protocols** refers to workplace safety protocols, often called safety procedures, are step-by-step safety plans guiding employees through the safe performance of a given workplace procedure;
46. **Specific Energy Consumption** refers to the energy consumption volume required per unit, such as production volume, sales amount, transportation kilometer, transportation tonne-kilometer, floor space, and such other indicators relevant to energy consumption;
47. **Technology Adaptability** is the ability to learn technology quickly and with confidence;
48. **Transmission Utility** refers to any private corporation or government-owned utility which has an exclusive franchise to operate the system of wires for the conveyance of electricity through a high voltage backbone line;
49. **Transport Vehicle** refers to land, air, or sea vehicles conveying cargo or passengers, regardless of size or weight classification;
50. **Voltage Detector**- is a sensor used to detect presence of electricity in a wire.

## REFERENCES:

- Republic Act 11285, Energy Efficiency and Conservation Act (EECA)
- Republic Act. No. 9136 or EPIRA
- EPIRA IRR
- Administrative Order No. 110 – Directing the Institutionalization of a Government Energy Management Program (GEMP) (from OP)
- DOE DC No. 2019-11-0014 Implementing Rules and Regulations of RA 11285, EEC-IRR
- DOE DC2014-08-0014 – Enjoining all Electricity-Consuming Sectors to Implement Demand-Side Management Program and other Conservation Measures
- DOE MC2020-05-0001 – Compliance of Designated Establishments
- DOE DC2020-09-0018 – ESCO Guidelines
- DOE DC2020-12-0026 – Guidelines on Energy Conserving Design on Buildings
- ASHRAE Standards for Ventilation System Design and Acceptable Indoor Air Quality (IAQ)
- Philippine Green Building Code
- Philippine Electrical Code
- Philippine Mechanical Code
- ISO 50001 (2018) Energy Management System (EnMS) - Requirements with Guidance for Use
- ISO 50002 (2014) Energy Audits - Requirements with Guidance for Use
- ISO 14000 Environmental Management Standards
- ISO 18000 Occupational Health and Safety Standards
- ISO 50006 (2014) provides guidance to organizations on how to establish, use and maintain energy performance indicators (EnPIs) and energy baselines (EnBs) as part of the process of measuring energy performance.
- ISO 50015 (2014) establishes general principles and guidelines for the process of measurement and verification (M&V) of energy performance of an organization or its components. ISO 50015:2014 can be used independently, or in conjunction with other standards or protocols, and can be applied to all types of energy.

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