# Purpose

The purpose of this micro-credential is to provide a competency-based evaluation. Earning a micro-credential shows mastery of a skill set and supports professionals in their careers in the wind energy industry.

# Scope

This micro-credential sets the minimum requirements for a wind technician to demonstrate proficiency in hazardous energy identification, control, and mitigation using current industry standard lockout tagout (LOTO) procedures for generator.

# MICRO-CREDENTIAL Generator

1. **Terminology**
   1. Authorized employee / individual – An employee who locks or tags machines or equipment in order to perform servicing or maintenance.
   2. Affected employee / individual – An employee who is required to use machines or equipment on which servicing is performed under the Lockout/Tagout standard or who performs other job responsibilities in an area where such servicing is performed.
   3. Other employees – All employees who are or may be in an area where energy control procedures may be utilized.
   4. Capable of being locked out – An energy-isolating device is considered capable of being locked out if it:
      1. Is designed with a hasp or other means of attachment to which a lock can be affixed.
      2. Has a locking mechanism built into it.
      3. Can be locked without dismantling, rebuilding, or replacing the energy-isolating device or permanently altering its energy control capability.
   5. Energized – Machines and equipment are energized when they are connected to an energy source or they contain residual or stored energy.
   6. Energy-isolating device – A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.
   7. Energy source – Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
   8. Group LOTO – One authorized individual performs steps of LOTO while affected individuals will verify de-energization prior to beginning work.
   9. Lockout – The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
   10. Lockout device – Any device that uses positive means, such as a lock, blank flanges and bolted slip blinds, to hold an energy-isolating device in a safe position, thereby preventing the energizing of machinery or equipment.
   11. Normal production operations – Utilization of a machine or equipment to perform its intended production function.
   12. Personal Protective Equipment (PPE) – Equipment designed to protect the wearer's body from injury or infection. (Source – <https://www.google.com/search?client=firefox-b-1-d&q=Personal+Protective+Equipment>)
2. **Acronyms**
   1. LOTO – Lock Out Tag Out
3. **Lockout Tagout of Generator**
   1. To prove competency the candidate MUST:
      1. Perform a hazard assessment for the area in which they are to demonstrate proper LOTO procedures.
         1. Arc Flash
         2. Energized equipment and electric shock
         3. Rotating equipment, specifically high-speed shaft
      2. Select and inspect appropriate PPE for the de-energization of equipment.
      3. Select appropriate LOTO based on manufacturers recommendation and company policy for the de-energization of the Generator. Identify the zone of protection given the energy isolating devices applied.
         1. Generator
      4. Perform the LOTO, using appropriate steps.
         1. ***Prepare*:** Gather paperwork, PPE, and required tooling. Notify affected individuals the LOTO process is about to begin.
         2. ***Shutdown*:** Shutdown the equipment.
         3. ***Isolate*:** Isolate or disconnect the equipment from energy sources
         4. ***Apply*:** Apply Lockout/Tagout Devices to Energy Isolating Devices.
         5. ***Control*:** Control, release, or restrain all potential stored or residual energy.
         6. ***Verify*:** Verify zero volts during a HCH test using a DMM. Verify safe pressure using pressure gauge. Verify no actuation (blade movement?) during a function test.
      5. Upon completion of work and prior to re-energization candidate must verify all individuals, tools, and debris are clear of the area.