ELECTRICAL UTILITY OPERATOR
(Time-Based)

APPENDIX A
D.O.T. CODE 952.362-018
O*NET CODE 51-8013.00

This training outline is the current standard for Work Processes and Related Instruction. Changes in technology, regulations, and safety/health issues may result in the need for additional On-the-Job Training or classroom learning.

WORK PROCESSES

	Approximate Hours
A. Safety & Workplace Orientation	80

1. Demonstrate understanding of workplace structure.
2. Practice working safely around machinery, equipment, and throughout shopfloor.
3. Demonstrate an understanding of electrical power.
4. understand safety needs particular to electricity, especially at high voltages.

B. Bulk Electrical System (BES) Substations and Distribution	2000-5000

1. Demonstrate satisfactory knowledge of monitored/interconnected systems and how to obtain equipment readings as required per site policies and procedures.
2. Safely perform electrical switching of plant/yard Power Circuit Breakers (PCBs), switchgear, auxiliary and support equipment, disconnects and switchers, load-break switches, and all associated equipment per policy and procedures.
3. Recognize and diagnose abnormal operating conditions of the BES and determine the proper corrective actions per appropriate policies and procedures.

B. Relaying and Metering 200

1. Recognize and accurately record protection and control relay diagnostic information.
2. Demonstrate knowledge and ability to correctly reset tripped transmission And distribution system protection relays
3. Accurately identify and record the appropriate readings from revenue metering (if applicable).

C. Generating Units and Facility Auxiliaries 300-3000

1. Independently operate and monitor plant generation unit(s) in accordance with policies and procedures.
2. Independently operate and monitor high voltage (HV) cable system during normal and abnormal operating conditions at the power plant.
3. Independently operate generator auxiliary pumps/plant pumps during normal and abnormal operating conditions in accordance with policies and procedures.
4. Operate all air systems' air compressors during all modes of plant operations.
5. Demonstrate knowledge and ability to operate all plant emergency generators during abnormal operating conditions.
6. Demonstrate knowledge of proper function and identify when filters require flushing or cleaning.
7. Perform unit inspections for running, shutdown, or standby of units and ensure auxiliary equipment functions as designed.
8. Safely perform switching of units/auxiliary equipment.
9. Properly diagnose alarms when they sound; describe consequences of failure to respond.
10. Inspect day-to-day lighting in facility, and inspect emergency lighting; Perform preventative maintenance (PM) and ensure reliability of lighting.
11. Identify and locate essential Motor Control Centers (MCCs) and switchgear equipment.

D. Control Room 500-2000

1. Perform all general administrative functions during normal and abnormal operations.
2. Demonstrate the knowledge and ability to monitor and perform all reactive power monitoring and control as directed by the Transmission Owner/Generator Operator.
3. Demonstrate knowledge and ability to independently monitor the plant generating units and essential auxiliary support systems using Supervisory Control and

Data Acquisition (SCADA) system, generator control system, and Automatic Generator Control (AGC) system.

4. Demonstrate an understanding of water/fuel management at respective site(s). Perform calculations and communicate results to appropriate personnel. Demonstrate an understanding of upper and lower water/fuel levels, and understand the consequences of operating outside limits at respective site(s).
5. Schedule outages to minimize downtime for power availability, and to maximize efficiency.
6. Demonstrate an understanding of transmission line contingencies and Transmission line limits per site policies and procedures.

E. Contingency Protocol/Safety Procedures 300

1. Perform plant operator's duties per Lock Out/Tag Out (LO/TO) procedure.
2. Demonstrate knowledge and proficiency to perform operator actions during blackout conditions; perform "Black Start" operations.
3. Demonstrate knowledge of emergency action plan. Independently perform emergency action plan (if necessary).
4. Demonstrate knowledge of proper response to environmental emergency. Respond using formal communication protocol (3-part communication), proper spill or emergency containment according to policies and procedures (if applicable).
5. Demonstrate knowledge of proper response to a fire condition. Respond to a fire condition (if necessary).
6. Demonstrate knowledge of terrorist threat identification, and procedure for contacting proper authorities.

F. Life Safety Systems 100

1. Demonstrate ability to identify proper use of life safety system during emergency and normal/standby plant operations.
2. Demonstrate proper response to/identification of all applicable plant Evacuation alarms.

G. Communication 100

1. Use all communication devices; employ proper 3-part communication to relay information to all entities.
2. Communicate all pertinent information to relief personnel at shift's end.
3. Use current North American Electric Reliability Corporation (NERC) Standard for 3-part communication.

Approximate Total Hours 8000

Note: OJT ranges reflect site-dependent differences to accommodate varied workplace emphases. Regardless of the distribution, each apprentice must complete 8000 hours of OJT.

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to http://www.labor.state.ny.us/workerprotection/publicwork/PDFs/Article8FAQS.pdf

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APPENDIX B

Safety & Health

Basic Industrial Safety *or* OSHA 10-Hour General Industry course
Trade Safety, including the following:
- Personal Protective Equipment (PPE)
- Lock-Out/Tag-Out (LO/TO)
- National Fire Prevention Association (NFPA) Arc Flash Training
- Fall Prevention
- Proper Lifting Techniques
- Confined Space Safety
- Right-to-Know/Safety Data Sheets (SDS)

First Aid – minimum 6.5 hours every 3 years
Sexual Harassment Prevention Training – minimum 3 hours

Trade Theory and Science

Elementary Blueprint Reading and Sketching
Blueprint Reading and Sketching for Electricians
Electrical Circuit Diagrams
Reading Specifications and Technical Manuals
Fundamentals of Electricity, Basic and Advanced
The Role of Hydroelectric in the Power System
Hydro Power Stations
Water Management
Hydro Turbines
Turbine Monitoring & Control
Hydro Generators
Generator Monitoring & Control
Plant Auxiliaries
Electrical Equipment Operation
Hydroelectric Plant Operation & Maintenance
Standard Switching Procedures and Practices
Power Plant Science
Rotating Plant Equipment (Pumps, Compressors, and Fans)
Non-Rotating Equipment (Valves, Heat Exchangers, and Filters & Strainers)
Troubleshooting Techniques
Motor Control Centers (MCCs) & Switchgear (15Kv and below)
Cooling & Lubrication
Generator Operations & Control
Line Grounding Methods
Mechanical Plant Systems
Monitoring & Control Communications

Instrumentation & Control
DC Motors & Generators
Transformer Theory
AC Generators
Supervisory Control and Data Acquisition (SCADA) Theory & Operation
Western Area Power Administration (WAPA) Power Plant Operations Course
Power Transmission (Transmission & Distribution Breakers and Switches, System Voltage Control, and System Frequency & Tie Line Control)
System Security
Unit Start and Stop
New York State Independent System Operator (NYISO) and Transmission System Operator/Generator Operator Policies and Procedures
Abnormal Condition Operation
Power System Protection, Beginner and Advanced

Other Workplace Skillls

Data Splice Software for Recording Plant Parameters During Rounds
Writing and Communication Skills
Formal Communication Protocol, such as 3-part Communication

Other Related Courses as Necessary

A Minimum of 150 hours of Related Instruction is Required for Each Apprentice for Each of Four Years.