



## Proposed Revisions to On-the-Job Learning for Metering Technician

### Final Draft

**TERM OF APPRENTICESHIP:** The term of apprenticeship shall be Time-based, which has been established to be 3 years of 6,240 hours. Hours of labor shall be the same as established for other skilled employees in the trade.

**PROBATIONARY PERIOD:** The probationary period shall be the first 6 months of employment, but in no case shall it exceed twelve calendar months. During the probationary period, this contract may be cancelled by the apprentice or the sponsor upon written notice to the Department, without adverse impact on the sponsor.

**SCHOOL ATTENDANCE:** The apprentice shall attend the Wisconsin Technical College System or other approved training provider, as assigned, for paid related instruction four hours per week or the equivalent and satisfactorily complete the prescribed course material for a minimum of 480 hours, unless otherwise approved by the Department. The employer must pay the apprentice for attended related instruction hours at the same rate per hour as for services performed.

**WORK PROCESS SCHEDULE:** In order to obtain well-rounded training and thereby qualify as a skilled worker in the trade, the apprentice shall have experience and training in the following areas. This instruction and experience shall include the following operations but not necessarily in the sequence given. Time spent on specific operations need not be continuous.

<u>Work Process Description</u>	<u>Approximate Hours</u> (Min - Max)
<p><b>Assure a safe work environment.</b></p> <ul style="list-style-type: none"> <li>A. Adhere to federal and employer safety standards.</li> <li>B. Identify potential hazards.</li> <li>C. Wear required personal protective equipment.</li> <li>D. Establish a safe work site.</li> <li>E. Maintain a clean and organized work environment.</li> <li>F. Maintain a safe vehicle.</li> </ul>	<b>500</b>
<p><b>Maintain test equipment.</b></p> <ul style="list-style-type: none"> <li>A. Visually inspect test equipment and accessories.</li> <li>B. Verify calibration.</li> <li>C. Repair or replace as needed.</li> <li>D. Complete appropriate documentation.</li> </ul>	<b>200</b>
<p><b>Perform meter testing.</b></p> <ul style="list-style-type: none"> <li>A. Set up the test equipment.</li> <li>B. Inspect the meter.</li> <li>C. Verify the meter is programmed appropriately for the service.</li> <li>D. Perform the required tests.</li> <li>E. Calibrate mechanical meters.</li> <li>F. Record and retain the test results.</li> </ul>	<b>500</b>

**Install electrical metering equipment. 600**

- A. Review work order or task.
- B. Verify service entrance meets utility requirements.
- C. Install CT/VTs and associated wiring, if necessary.
- D. Install appropriate electrical meter.
- E. Complete appropriate documentation.

**Verify metering systems. 1200**

- A. Verify meter equipment security.
- B. Verify meter application.
- C. Verify wiring.
- D. Verify metering system measurements.
- E. Verify meter multiplier against billing multiplier.
- F. Complete appropriate documentation.

**Identify and resolve field problems. 1200**

- A. Investigate consumption anomalies.
- B. Identify power quality problems.
- C. Identify metering communication problems.

**Perform administrative functions. 900**

- A. Maintain inventory supplies.
- B. Process meter and data records.
- C. Collaborate with other departments or staff.
- D. Collaborate with customers, contractors and utilities.
- E. Prioritize and schedule work activities efficiently.

**Local Optional Work Processes 560**

- A. Perform disconnect or reconnect or existing metering.
- B. Program metering devices.
- C. Build a meter program.
- D. Test, inspect and maintain substation metering equipment.

**TOTAL 6240**

**SPECIAL PROVISIONS:**

The apprentice will complete standard First Aid and CPR/CRR courses during the first year of the apprenticeship and maintain such certification throughout the apprenticeship.

The apprentice in his/her final year must successfully complete the Transition to Trainer course.

## Competency 1: Assure safe work environment.

### A. Adhere to federal and employer safety standards.

*Properly perform the following, if applicable:*

- i. Demonstrate awareness of applicable standards by OSHA.
- ii. Demonstrate awareness of applicable standards in NFPA 70E.
- iii. Demonstrate awareness of applicable standards in APPA Safety Manual.
- iv. Demonstrate awareness of employer's Electric Operating Practices.
- v. Identify the location(s) of all safety documents.
- vi. Participate in employer safety meetings.
- vii. Other (please specify):
- viii. Other (please specify):
- ix. Other (please specify):

### B. Identify potential hazards.

*Identify the five most common examples of the following hazards and the employer's safety procedure:*

- i. Customer tampering (please specify):
- ii. Customer tampering (please specify):
- iii. Customer tampering (please specify):
- iv. Customer tampering (please specify):
- v. Customer tampering (please specify):
- vi. Weather-related hazard to equipment or worksite (please specify):
- vii. Weather-related hazard to equipment or worksite (please specify):
- viii. Weather-related hazard to equipment or worksite(please specify):
- ix. Weather-related hazard to equipment or worksite (please specify):
- x. Weather-related hazard to equipment or worksite(please specify):
- xi. Difficult customer interactions (please specify):
- xii. Difficult customer interactions (please specify):
- xiii. Difficult customer interactions (please specify):
- xiv. Difficult customer interactions (please specify):
- xv. Difficult customer interactions (please specify):
- xvi. Other (please specify):
- xvii. Other (please specify):
- xviii. Other (please specify):
- xix. Other (please specify):
- xx. Other (please specify):

**C. Wear required personal protective equipment.**

*Properly select and inspect the following, if applicable, according to employer procedures.*

- i. Rubber goods
- ii. Safety glasses or face shield
- iii. Safety boots
- iv. Fire retardant clothing
- v. Hardhat
- vi. Other
- vii. Other
- viii. Other

**D. Establish a safe work site.**

*Properly perform the following, if applicable, according to employer procedures.*

- i. Park the vehicle.
- ii. Turn on the vehicle hazard lights.
- iii. Set up traffic cones.
- iv. Set up safety barriers.
- v. Other (please specify):
- vi. Other (please specify):
- vii. Other (please specify):

**E. Maintain a clean and organized work environment.**

*Properly perform the following, if applicable, according to employer's procedures.*

- i. Remove all potential trip-fall hazards.
- ii. Clean and maintain tools as required.
- iii. Organize and replenish stock in truck.
- iv. Report hazards and damage to tools and worksite.
- v. Other (please specify):
- vi. Other (please specify):
- vii. Other (please specify):

**F. Maintain a safe vehicle**

*Properly perform the following, if applicable, according to employer's procedures.*

- i. Change oil.
- ii. Check tire pressure.
- iii. Check lights.
- iv. Check turn signal.
- v. Other (please specify):
- vi. Other (please specify):
- vii. Other (please specify):

## **Competency 2: Maintain test equipment.**

### **A. Visually inspect test equipment and accessories.**

*Properly verify the following, if applicable, according to employer's procedures.*

- i. The test equipment and accessories are not physically damaged.
- ii. The test equipment and accessories are clean and free of debris.
- iii. The test equipment and accessories energize and operate properly.
- iv. Other (please specify):
- v. Other (please specify):
- vi. Other (please specify):

### **B. Verify calibration.**

*Properly perform the following, if applicable, according to Public Service Commission or employer's standards.*

- i. Explain the purpose and function of primary, secondary and working voltmeters.
- ii. Verify the calibration of voltage standards, including primary, secondary and working voltmeters.
- iii. Explain the purpose and function of watt-hour standards.
- iv. Verify the calibration of watt-hour meter standards, including primary, secondary and working standards.
- v. Verify all equipment that tests the integrity of the circuit is calibrated correctly, including burden tester, admittance tester, and circuit analyzer.
- vi. Other (please specify):
- vii. Other (please specify):
- viii. Other (please specify):

### **C. Maintain, repair or replace test equipment.**

*Properly perform the following, if applicable, according to employer's standards.*

- i. If equipment is damaged or out-of-calibration, coordinate its repair or replacement.
- ii. Store the test equipment and accessories.
- iii. Use the test equipment and accessories in the appropriate weather conditions.
- iv. Perform preventative maintenance according to manufacturer's recommendations.
- v. Other (please specify):
- vi. Other (please specify):
- vii. Other (please specify):

### **D. Complete appropriate documentation.**

*Properly perform the following, if applicable, according to employer's procedures.*

- i. Document the inspection and test results.
- ii. Document all damage and discrepancies.
- iii. Document all repairs and replacements.
- iv. Document additional information required by employer.

- v. Other (please specify):
- vi. Other (please specify):
- vii. Other (please specify):

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## Competency 3: Perform meter testing.

### A. Set up the test equipment.

*Properly perform the following, if applicable, according to employer's procedures:*

- i. Review the work order or instructions.
- ii. Determine the appropriate test equipment.
- iii. Determine the appropriate test.
- iv. Explain the employer's and Public Service Commission's minimum requirements for testing.
- v. Demonstrate the employer's procedure for testing in the shop or on premise.
- vi. Other (please specify):
- vii. Other (please specify):
- viii. Other (please specify):

### B. Inspect the meter.

*Verify the following, if applicable, according to employer's procedures:*

- i. The meter is at the appropriate location.
- ii. The meter has not been tampered with.
- iii. The meter is not physically damaged.
- iv. The seals are intact
- v. The potential clips are closed.
- vi. The meter is free of error messages.
- vii. The display is working correctly.
- viii. Other (please specify):
- ix. Other (please specify):
- x. Other (please specify):

### C. Verify the meter is programmed appropriately for the service.

*Verify the following, if applicable, according to employer's procedures:*

- i. Time-of-Use schedule
- ii. Billing multiplier
- iii. Rate class (demand)
- iv. KYZ outputs
- v. Billing channels
- vi. Loss compensated
- vii. Other (please specify):
- viii. Other (please specify):
- ix. Other (please specify):

**D. Perform required tests.**

*Properly perform the following tests and document the results, according to employer procedures:*

- i. Single-phase self-contained meter
- ii. Network meters
- iii. Three-phase self-contained meter
- iv. CT-rated meters
- v. Primary meters
- vi. Other (please specify):
- vii. Other (please specify):
- viii. Other (please specify):

**E. Calibrate mechanical meters.**

*Adjust the following as needed, if applicable, according to PSC and employer standards.*

- i. Full load
- ii. Light load
- iii. Power factor
- iv. Balance
- v. Elements
- vi. Other (please specify):
- vii. Other (please specify):
- viii. Other (please specify):

**F. Record and retain the results.**

*Record and retain results per Public Service Commission and employer standards.*

- i. Other (please specify):
- ii. Other (please specify):
- iii. Other (please specify):
- iv. Other (please specify):
- v. Other (please specify):
- vi. Other (please specify):

## **Competency 4: Install electrical metering equipment.**

### **A. Review work order or task.**

*Properly perform the following, if applicable:*

- i. Explain the different meter forms and their applications.
- ii. Determine the meter application.
- ii. Determine whether CT/VTs are needed.
- iii. Determine the proper size, type, and application of CT/VTs, if not on work order.
- iv. Select all necessary CT/VTs, tools and material.
- v. Other (please specify):
- vi. Other (please specify):
- vii. Other (please specify):

### **B. Verify service entrance meets utility requirements.**

*Properly perform the following, if applicable:*

- i. Locate employer's service manual.
- ii. Review the type of service.
- iii. Check that all equipment specifications match work order.
- iv. Check that equipment is installed correctly according to employer's requirements.
- v. If the equipment is installed correctly, proceed to C.
- vi. If the equipment is installed incorrectly, notify appropriate personnel.
- vii. Once the installation is corrected, review i-iv.
- viii. Other (please specify):
- ix. Other (please specify):
- x. Other (please specify):

### **C. Install CT/VTs and associated wiring, if necessary.**

*Properly perform the following, if applicable:*

- i. If CT/VTs are unnecessary, proceed to E.
- ii. Ensure service is de-energized.
- iii. Install appropriate grounding, if required by the employer.
- iv. Install CT/VTs and wiring according to employer's specifications and wiring diagrams.
- v. Explain the need for a meter multiplier and its purpose.
- vi. Calculate the meter multiplier.
- vii. If the meter will be installed later, secure the metering equipment.
- viii. Other (please specify):
- ix. Other (please specify):
- x. Other (please specify):

**D. Install appropriate electrical meter.**

*Properly perform the following, if applicable:*

- i. If returning after installing the CT/VTs, re-verify the installation.
- ii. Verify the appropriate meter for the application.
- iv. Install the meter according to employer's procedures.
- v. Seal metering equipment.
- vi. Notify appropriate personnel that the metering equipment is ready to energize.
- vii. Other (please specify):
- viii. Other (please specify):
- ix. Other (please specify):

**E. Complete appropriate documentation.**

*Properly complete all documentation required by employer, including:*

- i. Meter identification number(s)
- ii. Meter location
- iii. CT/VT number
- iv. Wiring standards
- v. Document all additional information required by employer.
- vi. Schedule metering verification.
- vii. Other (please specify):
- viii. Other (please specify):
- ix. Other (please specify):

## **Competency 5: Verify metering system.**

### **A. Verify meter equipment security.**

*Properly perform the following, if applicable:*

- Inspect the locks and seals for tampering.
- Inspect the physical condition of the meter.
- Inspect the physical condition of the meter socket
- Inspect the physical condition of the metering equipment.
- Verify working clearances adhere to employer requirements.
- Correct discrepancies according to employer procedures.
- Other (please specify):
- Other (please specify):
- Other (please specify):

### **B. Verify meter application.**

*Properly perform the following, if applicable:*

- Verify that the meter form matches the service type.
- Verify that the meter form matches the socket type.
- Verify that the metering equipment matches the service load.
- Correct discrepancies according to employer procedures.
- Other (please specify):
- Other (please specify):
- Other (please specify):

### **C. Verify wiring.**

*Properly perform the following, if applicable:*

- All meter wiring adheres to the appropriate wiring diagram.
- All wiring sizes are appropriate for application.
- All connections are secure and undamaged.
- Correct discrepancies according to employer procedures.
- Other (please specify):
- Other (please specify):
- Other (please specify):

### **D. Verify metering system measurements.**

*Properly perform the following, if applicable:*

- Access the meter program and diagnostics.
- Verify the meter contains the appropriate program.
- Verify meter measurements match customer load calculations according to employ procedures.
- Verify the accuracy and functionality of the instrument transformer by performing a ratio, burden or admittance test.

Compare results to the nameplate data on the instrument transformer.

Verify that the vector/phaser diagram is correct.

Correct discrepancies.

Other (please specify):

Other (please specify):

Other (please specify):

**E. Verify meter multiplier against billing multiplier.**

*Properly perform the following, if applicable:*

Verify the meter multiplier is the proper value.

Verify the ke pulse multiplier, if necessary.

Verify the kyz pulse multiplier against customer value, if necessary.

Verify all values in the metering and billing software.

Correct discrepancies.

Other (please specify):

Other (please specify):

Other (please specify):

**F. Complete appropriate documentation.**

*Properly perform the following, if applicable:*

Please specify:

Please specify:

Please specify:

## **Competency 6: Identify and resolve field problems.**

### **A. Investigate consumption anomalies.**

*Properly perform the following, if applicable:*

Review customer account history.

Discuss energy usage with the customer.

Conduct an on-site investigation and collect physical evidence as required.

Check for energy diversions according to employer procedures.

Test the meter and metering equipment, if needed.

Replace faulty meter or metering equipment, if needed.

Inform customer of findings according to employer policy.

Complete appropriation documentation.

Other (please specify):

Other (please specify):

Other (please specify):

### **B. Identify power quality problems.**

*Properly perform the following, if applicable:*

Review the customer complaint.

Compare the complaint to the history profile of the location.

Determine whether a site visit is necessary.

Schedule a site visit with the customer, if necessary.

Verify the site equipment and service connections are functioning properly.

Install power quality recording equipment, if necessary.

Analyze the results of the recording equipment.

Ensure the service equipment is sized adequately.

Determine whether a problem exists and, if so, its source.

Complete appropriate documentation.

Inform customer or appropriate personnel to resolve any problem.

Other (please specify):

Other (please specify):

Other (please specify):

### **C. Identify metering communication problems.**

*Properly perform the following, if applicable:*

Review work order or notification.

Verify the meter is responding by pinging, probing, etc.

Physically inspect the location, meter and components for anomaly.

Interrogate the meter for error codes, diagnostics, and meter configuration.

Verify the error codes, diagnostics, and meter configuration according to employer's procedures.

If the meter does not respond, replace the meter according to employer procedures.

Complete appropriate documentation.

Other (please specify):

Other (please specify):

Other (please specify):

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## **Competency 7: Perform administrative functions.**

### **A. Maintain inventory supplies.**

*Properly perform the following, if applicable, according to employer procedures*

Take inventory on a weekly or as-needed basis.

Explain the employer's process for ordering supplies.

Order supplies through appropriate department or vendor to maintain adequate inventory.

Other (please specify):

Other (please specify):

Other (please specify):

### **B. Process and retain meter data and records.**

*Properly perform the following, if applicable, according to Public Service Commission and employer procedures:*

Please specify:

Please specify:

Please specify:

Please specify:

Please specify:

### **C. Collaborate with other departments or staff.**

*Properly perform the following, if applicable, according to employer procedures.*

Identify key departments or staff.

Explain the key duties of each department or staff.

Explain how the duties of the Meter Technician affect other departments or staff.

Explain and adhere to employer's protocols for communicating between department or staff.

Participate in department or staff meetings.

Other (please specify):

Other (please specify):

Other (please specify):

### **D. Collaborate with customers, contractors and utilities.**

*Properly perform the following, if applicable, according to employer procedures.*

*The apprentice must perform the following properly, according to employer's ....*

Explain how the duties of the Meter Technician affect customers, contractors and utilities.

Identify and explain sensitive information for customers, contractors and utilities.

Explain and adhere to the employer's protocol for communicating with customers.

Explain and adhere to the employer's protocol for communicating with contractors.

Explain and adhere to the employer's protocols for communicating with other utilities and stakeholders.

Other (please specify):

Other (please specify):

Other (please specify):

**E. Prioritize and schedule and work activities efficiently.**

*Properly perform the following, if applicable, according to employer procedures*

Obtain service or work orders.

Obtain schedule for special projects from appropriate department or staff.

Obtain schedule for annual testing from appropriate department or staff.

Obtain schedule for new customer work from appropriate department or staff.

Obtain deadlines from supervisor.

Schedule customer-requested test or according to employer procedure.

Schedule investigation for power quality.

Schedule response to high-bill complaints according to employer procedure.

Schedule outage or re-work with customer and other departments or staff according to employer procedure.

Schedule yearly safety training according to employer procedures.

Schedule test equipment calibration.

Schedule appropriate installation verifications.

Other (please specify):

Other (please specify):

Other (please specify):

## Competency 8: Local Optional Work Processes

1. Perform *disconnect or reconnect of existing metering*.
2. Program metering devices.
3. Build a meter program
4. Test, inspect and maintain substation metering equipment.
6. Other (please specify):
7. Other (please specify):
8. Other (please specify):

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