Valley Electric Association, Inc.

Occupation – Meter Technician
(Existing Occupation Title: Electric Meter Repairer)
O-NET Code: 49-9012.00 RAPIDS Code: 0151
Time-Based Apprenticeship Program

- ✓ Form 5910 – Application for Approval On-the-Job Training & Apprenticeship
- ✓ U.S. Department of Labor Apprenticeable Occupation List ONET Code Confirmation
- ✓ Appendix A Checklist
- ✓ Appendix A - Work Process Schedule and RTI Outline

STATE OF NEVADA
Nevada State Apprenticeship Council

APPLICATION FOR APPROVAL ON THE JOB TRAINING & APPRENTICESHIP

Program Name Valley Electric Association Apprenticeship Program # NV001860003

Address 800 East Highway 372 City Pahrump State/Zip NV 89048 Telephone (775) 727-2175

Contact Person James Andresen Title Director Engineering & Ops Type of Program: TB NAICS Code 238210

EIN # 880089964 Email Address: James Andresen <jamesa@vea.coop>

Type of Action: (Check One)	Type of Program: (Check One)	Journey Workers (JW)	Pay Period (Circle One)
A. ☐ Wage Increase	A. ☐ Individual Union	A. No. JW 2	☐ Weekly
B. ☒ Revision of Standards	B. ☒ Individual Non Union	B. No. of Employers 1	☒ Bi-Weekly
C. ☐ New Occupation	C. ☐ Group Union	C. No. of Female 0	☐ Semi Monthly
D. ☐ New Program	D. ☐ Group Non Union	D. No. of Minority 1	Pay Increases (Months)
	E. ☐ If Union Bargaining Unit		3 ☐ 6 ☐ 12 ☐ Other ☒

TRADE INFORMATION

Occupation (use separate form for each occupation)	Term (OJT hours)	RTI (Classroom hours)	# Of Journey workers	# Of Apprentices in Training	Journey worker Hourly Rate	Days per Week
Meter Technician	**8000**	**576**	**2**	**1**	**$50.75**	**5**

HOURLY APPRENTICE WAGES BY PERIOD (Excluding Benefits) Top Line Dollar Amounts Bottom Line Percentages

Occupation	1ST	2ND	3RD	4TH	5TH	6TH	7TH	8TH	9TH	10TH
Meter Technician	**$34.82**	**$36.55**	**$38.27**	**$40.01**	**$41.72**	**$43.41**	**$45.84**	**$48.27**	**N/A**	**N/A**
	68.6%	**72.0%**	**75.4%**	**78.8%**	**82.2%**	**85.5%**	**90.3%**	**95.1%**	**N/A**	**N/A**
Fringe Benefits ($ or %)										

The Sponsor certifies and assures that it will utilize qualified training personnel in the delivery of the related instruction, such as subject matter experts (e.g., journeyworkers) who are recognized within an industry as having expertise in a specific occupation, and who also have training in teaching techniques and adult learning styles, which may occur before or after the apprenticeship instructor has started to provide the related technical instruction.

1-17-2020
Date

Signature of Program Coordinator

DO NOT WRITE BELOW THIS LINE

As of 1-13-2020

Received By:

State Apprenticeship Director Date

FORM 5910

Valley Electric Association, Inc.

Occupation: Meter Technician
(Existing Occupation Title: Electric Meter Repairer)
O-NET Code: 49-9012.00 RAPIDS Code: 0151
Time-Based Apprenticeship Program

U.S. Department of Labor Apprenticeable Occupation List:

ELECTRIC METER REPAIRER	0151	49-9012.00	8000	TB

Link to list: https://www.doleta.gov/oa/occupations.cfm

Standards Placement	29 CFR, NRS 610, and NAC 610 Required Provisions
Appendix A p. 2	2) **Term:** A term of apprenticeship of not less than 2,000 hours of work experience, consistent with training requirements as established by practice in the trade. **NRS 610.144 3 (b)** **Type of Occupation:** The term of apprenticeship, which for an individual apprentice may be measured either through the completion of the industry standard for on-the-job learning (time-based approach), the attainment of competency (competency-based approach), or a blend of the time-based and competency-based approaches (hybrid approach). **29 CFR 29.5 (b)**
Appendix A p. 4	3) **Work Processes:** An outline of the processes in which the apprentice will receive supervised experience and training on the job, and the allocation of the approximate time to be spent in each major process. **NRS 610.144 3 (c)**
Appendix A p. 7-13	4) **Related Instruction**: Provisions for organized, related and supplemental instruction in technical subjects (and the costs thereof) related to the trade with a minimum of 144 hours for each year of apprenticeship, given in a classroom or through trade, industrial or correspondence courses of equivalent value or other forms of study approved by the State Apprenticeship Council. **NRS 610.144 3 (d); NAC 610.433**
Appendix A p. 2	5) **Wages:** A progressively increasing, reasonable and profitable schedule of wages to be paid to the apprentice consistent with the skills acquired, not less than that allowed by federal or state law or regulations or by a collective bargaining agreement. Employers shall pay a beginning wage for apprentices which is at least 35 percent of the rate for journeymen in the same trade, *or* Minimum and Reasonable and profitable wage for apprentice in construction industry. **NRS 610.144 3 (e); NAC 610.480, NAC 610.485**
Appendix A p. 2	6) **Periodic Review and Evaluation:** Provisions for a periodic review and evaluation of the apprentice's progress in performance on the job and related instruction and the maintenance of appropriate records of such progress. **NRS 610.144 3 (f)**
Appendix A p. 2	7) **Ratio**: A numeric ratio of apprentices to journeymen consistent with proper supervision, training, safety, continuity of employment and applicable provisions in collective bargaining agreements, in language that is specific and clear as to its application in terms of job sites, workforces, departments or plants. **NRS 610.144 3 (g)**
	ALL DOCUMENTS HAVE BEEN CHECKED FOR SPELLING, FORMATTING, GRAMMAR, (INCLUDING TABLE OF CONTENTS), ETC.

Appendix A

VALLEY ELECTRIC ASSOCIATION, INC.

WORK PROCESS SCHEDULE

AND

RELATED INSTRUCTION OUTLINE

METER TECHNICIAN

(Existing Occupation Title: Electric Meter Repairer)

O*NET-SOC CODE: 49-9012.00 RAPIDS CODE: 0151

APPROVED BY
OFFICE OF WORKFORCE INNOVATION AND THE NEVADA STATE APPRENTICESHIP COUNCIL

_____
Richard J. Williams, Nevada State Apprenticeship Director

REGISTRATION DATE: _____

REGISTRATION NUMBER: _____

DEVELOPED IN COOPERATION WITH THE
US DEPARTMENT OF LABOR, THE OFFICE OF WORKFORCE INNOVATION, AND THE NEVADA STATE APPRENTICESHIP COUNCIL

Appendix A

WORK PROCESS SCHEDULE
METER TECHNICIAN
O*NET-SOC CODE: 49-9012.00 RAPIDS CODE: 0151

This schedule is attached to and a part of these Standards for the above identified occupation.

1. TYPE OF OCCUPATION

☒ Time-based ☐ Competency-based ☐ Hybrid

2. TERM OF APPRENTICESHIP

The term of the occupation shall be defined by the attainment of all competencies of the position, which would be expected to occur within approximately **8000** hours of OJL, supplemented by the minimum of **144 hours** of related instruction per year of the apprenticeship.

The probationary period for this occupation will be **1000 hours** of OJL.

3. RATIO OF APPRENTICES TO JOURNEYWORKERS

The apprentice to journeyworker/fully-competent worker ratio is: 1 apprentice(s) to 1 journeyworker/fully-competent worker(s).

4. APPRENTICE WAGE SCHEDULE

An apprentice minimum starting wage will be at least $34.00 per hour. Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage or a dollar amount of the current hourly journeyworker/fully-competent worker wage. A journeyworker/fully-competent worker minimum wage will be at least $49.27. Wages will be based on regional ranges.

4-Year Term:

1st period (1,000 hours) 69%
2nd period (1,000 hours) 72%
3rd period (1,000 hours) 76%
4th period (1,000 hours) 79%
5th period (1,000 hours) 83%
6th period (1,000 hours) 86%
7th period (1,000 hours) 91%
8th period (1,000 hours) 95%

Periodic review and evaluation of the apprentice's on-the-job learning and related technical instruction will be conducted in alignment with the wage schedule established.

5. WORK PROCESS SCHEDULE (See attached Work Process Schedule)

The sponsor may modify the work processes to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

6. RELATED INSTRUCTION OUTLINE (See attached Related Instruction Outline)

The sponsor may modify the related instruction to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

Appendix A

WORK PROCESS SCHEDULE
METER TECHNICIAN
O*NET-SOC CODE: 49-9012.00 RAPIDS CODE: 0151

The term of the occupation shall be defined by the attainment of all competencies, both technical and behavioral, of the position, which would be expected and approximated to occur within 8000 hours of OJL, supplemented by a minimum of 144 hours of related instruction per year of apprenticeship.

Apprenticeship Competencies – Technical

In effort for the apprentice to gain the knowledge and experience necessary to become a journeyman, they should be assigned work and/or given the instruction to the extent possible in the amounts shown below.

WORK SUBJECT	HOURS
Hazard Awareness and Safety Practices	600
Residential Meters: Identification, Application, Testing and Repairing	500
Poly-phase Self Contained Meters: Identification, Application, Testing and Repairing	600
Automatic Meter Reading Systems: Technology, Infra-structure, Processes	300
Installation / Removal of Single and Poly-phase Self Contained Meters	600
Public Relations: Interacting and communicating with Consumers	200
Instrument Transformers: Identification, Application, Installation, Testing	400
Power Theft / Energy Diversion	100
Transformer Rated Meters: Identification, Application, Testing, Repairing	600
Installation / Removal of Single and Poly-phase Transformer Rated Meters	500
Substation Metering	200
Recorders: Multi-measurement, Voltage, Current; Application, Programming	200
Metering Software: Creating Programs, Programming, Down loading / analyzing data	400
Electrical Print Reading: Related to metering	200

Meter Verification / Troubleshooting / Maintenance	800
Primary / High End Multi-function Metering	300
Offsite Meter School / Training	200
Miscellaneous: Any work time spent on job functions not covered in defined subjects	1300
Total Hours	**8000**

The above on-the-job-learning (OJL) work process competencies are intended as a guide. It need not be followed in any particular sequence, and it is understood that some adjustments may be necessary in the hours allotted for different work experience. In all cases, the apprentice is to receive sufficient experience to make them fully competent and use good workmanship in all work processes, which are a part of the industry. In addition, the apprentice shall be fully instructed in safety and OSHA requirements.

Apprenticeship Competencies – Behavioral

In addition to mastering all of the essential technical competencies, an apprentice must consistently demonstrate at an acceptable level the following behavioral competencies in order to complete the apprenticeship.

Item #	Behavioral Competencies
1.	Participation in team discussions/meetings
2.	Focus in team discussions/meetings
3.	Focus during independent work
4.	Openness to new ideas and change
5.	Ability to deal with ambiguity by exploring, asking questions, etc.
6.	Knows when to ask for help
7.	Able to demonstrate effective group presentation skills
8.	Able to demonstrate effective one-on-one communication skills
9.	Maintains an acceptable attendance record
10.	Reports to work on time
11.	Completes assigned tasks on time
12.	Uses appropriate language
13.	Demonstrates respect for patients, co-workers and supervisors
14.	Demonstrates trust, honesty and integrity
15.	Requests and performs work assignments without prompting
16.	Appropriately cares for personal dress, grooming and hygiene
17.	Maintains a positive attitude
18.	Cooperates with and assists co-workers
19.	Follows instructions/directions
20.	Able to work under supervision
21.	Able to accept constructive feedback and criticism
22.	Able to follow safety rules
23.	Able to take care of equipment and work place
24.	Able to keep work area neat and clean
25.	Able to meet supervisor's work standards
26.	Able to not let personal life interfere with work
27.	Adheres to work policies/rules/regulations

RELATED INSTRUCTION OUTLINE
METER TECHNICIAN
O*NET-SOC CODE: 49-9012.00 RAPIDS CODE: 0151

The related instruction has been developed in cooperation with employer-partners as part of the apprenticeship. The following is a set of courses to be delivered by subject matter experts.

Related Technical Instruction (RTI) - This instruction shall include, but not be limited to, at least 144 hours per year for each year of the apprenticeship. The related theoretical education listed below is tightly integrated with real work product. The curriculum is defined as a variety of classes, around which the exams and projects are based. By defining the RTI this way, all competencies required of the students are met, through project work.

Valley Electric Association
Metering Technician Apprenticeship

	Hours
Offsite Meter School (1 week annually)	
Example: Northwest Meter School, Rocky Mt. Meter School, etc.	40
Monthly Safety Meetings	48
In house safety meetings on topics such as First Aid/CPR, Tailboards, Meter safety, etc.	
Utah Valley State College training (monthly)	8
Scheduled training on topics such as Watthour Meter Testing, Instrument Transformers, Transformer Rated Meter Application, etc.	
Utah Valley State College Home Study Course	78
8 modules (2 per year) consisting of reading, workbooks, and videos to educate an apprentice from step 1 to the journeyman level.	
Annual Total	**174**

ELECTRIC METER TECHNICIAN
METER 1A
STUDY OUTLINE

STUDY SUBJECT	RESOURCE
1. Introductions	#118 Introduction to Metering Williams Learning Network Introduction * Handbook for EM-Chapter 1
2. Basic Electrical Principles	#119 Basic Electrical Principles

	Williams Learning Network DELMAR'S *Section 1 Unit I-Atomic Structure *Section 1 Unit 2-Electrical Qualities and Ohm's Law *Section 1 Unit 5-Resistors *Section 2 Unit 6-Series Circuits *Section 2 Unit 7-Parallel Circuits *Handbook for EM-Chapter 4
MID-TERM	**MID-TERM**
3. Principles of Magnetism	#121 Principles of Magnetism Williams Learning Network DELMAR'S * Section 1 Unit 4
4. AC Concepts	#120 AC Concepts Williams Learning Network *Section 5 Unit 14-Basic Trigonometry * Section 5 Unit 15-Alternating Current *Section 5 Unit 16-Induction in Alternating Current Circuits *Section 7 Unit 20-Capacitance in Alternating Current Circuits *Handbook for EM-Chapter 4
FINAL EXAM	**FINAL EXAM**

ELECTRIC METER TECHNICIAN
METER 1B
STUDY OUTLINE

STUDY SUBJECT	RESOURCE
1. General Math Concepts Math for Metering Math for Metering	#122 General Math Concepts Williams Learning Network #123 Math for Metering 1 Williams Learning Network #124 Math for Metering 2 Williams Learning Network * Handbook for EM-Chapter 3
2. Safety in Meter Work	#125 Safety in Meter Work Williams Learning Network *Handbook for EM-Chapter 1 Pages 4-5
3. Measuring Instruments	DELMAR'S * Section 3 Unit 9 * Handbook for EM-Chapter 6

Using Wire Tables and Determining Conductor Sizes	DELMAR'S *Section 3 Unit 10 *Handbook for EM-Chapter 14 Pages 373-379
MID-TERM	**MID-TERM**
4. Watthour Meter Principles	#126 Watthour Meter Principles 1 Williams Learning Network *P&P of EM-The Watthour Meter Chapter 3 *Handbook of EM-Chapter 7 *All in One Page 68
5. Watthour Meter Principles	#127 Watthour Meter Principles 2 Williams Learning Network *P&P of EM-The Watthour Meter Chapter 3 * Handbook of EM-Chapter 7 *All in One Page 68
FINAL EXAM	**FINAL EXAM**

ELECTRICAL METER TECHNICIAN
METER 2A
STUDY OUTLINE

STUDY SUBJECT	RESOURCE
1. Meters Watthour Constants, Registers Register Ratios and Formulas	*P&P of EM-Chapter 5&6 *All in One-Pages 45-46 *Handbook for EM-Chapter 3 Pages 40-4 1
2. Principles of Accuracy Testing Meter Testing and Calibration	#128 Principles of Accuracy Testing Williams Learning Network *P&P of EM-Chapter 15 *Handbook for EM-Chapter 15
MID-TERM	**MID-TERM**
3. Watthour Meter Testing	#129 Watthour Meter Testing 1 Williams Learning Network *Handbook for EM-Chapter 15 *All in One-Pages 48-50
4. Watthour Meter Testing	#130 Watthour Meter Testing 2 Williams Learning Network *P&P of EM-Chapter 15 *Handbook for EM-Chapter 15

	*All in One-Pages 48-5 0
FINAL EXAM	**FINAL EXAM**

ELECTRIC METER TECHNICIAN
METER 2B
STUDY OUTLINE

STUDY SUBJECT	RESOURCE
1. Instrument Transformers	#131 Instrument Transformers Williams Learning Network *P&P of EM-Chapter 8 *Handbook of EM-Chapter 11 *ABB Instrument Transformers *All in One-Pages 61-67
2. Testing Single Phase Transformer Rated Meters Meter Testing and Calibration	#132 Testing Single Phase Transformer Rated Meters Williams Learning Network *P&P of Em-Chapter 15 *Handbook of EM Chapter 15 *All in One-Page 48
MID-TERM	**MID-TERM**
3. Single Phase Meter Application and Installation Blondel's Theorem	*P&P of EM-Chapter 9 Form Numbers *Handbook of EM-Chapter 14 *All in One-Pages 7-14
4. Polyphase Power Systems	#133 Polyphase Systems 1 Williams Learning Network *Handbook for EM-Chapter 4 Page 60-65
5. Polyphase Meter Application & Blondel's Theorem	#134 Polyphase Systems 2 Williams Learning Network *P&P of EM-Chapter 13 and 14 Form Numbers *Handbook of EM-Chapter 7 Page 127-128 *All in One-Page 15-44
FINAL EXAM	**FINAL EXAM**

ELECTRIC METER TECHNICIAN
METER 3A
STUDY OUTLINE

STUDY SUBJECT	RESOURCE
1. Self contained Polyphase Meter Testing	#135 Self contained Polyphase Meter Testing Workbook and Video Williams Learning Network *P & P of EM Chapter 14 *P & P of EM-Chapter 15
2. Polyphase Transformer Rated Application	#136 Polyphase Transformer Rated Application Workbook and Video Williams Learning Network *P & P of EM Chapter 13 & 14 *Handbook of EM Chapter 11 pages 273, 330-346 *Handbook of EM Chapter 13 pages 435-438
MID-TERM	**MID-TERM**
3. Polyphase Transformer Rated Meter Testing	#137 Polyphase Transformer Rated meter Testing Workbook and Video Williams Learning Network *P&P of EM-Chapter 15 *Handbook of EM-Chapter 14
4. Demand Metering Concepts	#138 Demand Metering Concepts Workbook and Video Williams Learning Network *P & P of EM Chapter 4 *Handbook for EM-Chapter 8 Page 175-200
FINAL EXAM	**FINAL EXAM**

ELECTRIC METER TECHNICIAN
METER 3B
STUDY OUTLINE

STUDY SUBJECT	RESOURCE -
1. Testing and Calibrating Demand Meters	#139 Testing and Calibrating Demand Meters Williams Learning Network *P&P of EM-Chapter 12 *Handbook for EM-Chapter 16
2. Meter Mounting Devices and Test Switches	*P&P of EM-Chapter 12 *Handbook for EM-Page 387-397

MID-TERM	MID-TERM
3. Reactive Metering	#140 Reactive Metering Concepts Williams Learning Network *P&P of EM-Chapter 16 Power Factor * Handbook for EM-Chapter 9 *All in One-Page 47
4. Reactive Meter Testing	#141 Reactive Meter Testing Williams Learning Network
FINAL EXAM	**FINAL EXAM**

ELECTRIC METER TECHNICIAN
METER 4A
STUDY OUTLINE

1. Totalizing Meters	#143 Testing Totalizing Meters Williams Learning Network *Handbook for EM-Chapter 10 and Chapter 14-Page 147
2. Installation Checks and Inspections	#144 Installation Checks and Installations Williams Learning Network *P&P of EM-Chapter 14 *Handbook for EM-Chapter 14-Page 398-403 *AU in One-Page 60
MID-TERM	**MID-TERM**
3. Solid State Meters and Associated Devices	#145 Solid State Meters and Associated Devices Williams Learning Network *Handbook for EM-Chapter 5
4. Customer Relations	#146 Customer Relations and High Bill Complaints Williams Learning Network *P&P of EM-Chapter 10 Customer Relations *Handbook for EM-Chapter 14 Page 399-403 *Handbook for EM-Chapter 1 Page 1-2 and Chapter 15 Page 430
FINAL EXAM	**FINAL EXAM**

ELECTRIC METER TECHNICIAN
METER 4B
STUDY OUTLINE

STUDY SUBJECT	RESOURCE
1. Energy Diversion	#147 Energy Diversion Williams Learning Network *Handbook for EM-Chapter 1 Page 3-4
2. Trouble Shooting Techniques	#148 Trouble Shooting Techniques Williams Learning Network *PP of EM-Chapter Lo and 14 *Handbook for EM-Pages 379-386 *AII in One-Page 60
MID-TERM	**MID-TERM**
3. Pulse Initiators and Recorders	*P&P of EM-Chapter 17 *Handbook for EM-Chapter 10 Page 199-2 10
4. Other Local Training and Classes Electronic Metering, Register Programming, Computer Classes, etc.	*Handbook for EM-Chapter 5 Solid State Electronics
FINAL EXAM	**FINAL EXAM**

NOTE: As per the Apprentice Standards Guidelines, the Meter Apprentice will attend meter school each of the 4 years in an approved school such as Rocky Mountain, Northwest, etc., as part of the official training program. Also, classes or seminars held at UVSC on electronic metering or programming will be considered as a part of this training and the student must attend.

Valley Electric Association, Inc.

Occupation – Power Line Technician (Lineman)
(Existing Occupation Title: Line Maintainer)
O-NET Code: 49-9051.00 RAPIDS Code: 0283
Time-Based Apprenticeship Program

- ✓ Form 5910 – Application for Approval On-the-Job Training & Apprenticeship
- ✓ U.S. Department of Labor Apprenticeable Occupation List ONET Code Confirmation
- ✓ Appendix A Checklist
- ✓ Appendix A - Work Process Schedule and RTI Outline

STATE OF NEVADA
Nevada State Apprenticeship Council

APPLICATION FOR APPROVAL ON THE JOB TRAINING & APPRENTICESHIP

Program Name Valley Electric Association Apprenticeship Program # NV001860003

Address 800 East Highway 372 City Pahrump State/Zip NV 89048 Telephone (775) 727-2175

Contact Person James Andresen Title Director Engineering & Ops Type of Program: TB NAICS Code 238210

EIN # 880089964 Email Address: James Andresen <jamesa@vea.coop>

Type of Action: (Check One)	Type of Program: (Check One)	Journey Workers (JW)	Pay Period (Circle One)
A. ☐ Wage Increase	A. ☐ Individual Union	A. No. JW 19	☐ Weekly
B. ☒ Revision of Standards	B. ☒ Individual Non Union	B. No. of Employers 1	☒ Bi-Weekly
C. ☐ New Occupation	C. ☐ Group Union	C. No. of Female 0	☐ Semi Monthly
D. ☐ New Program	D. ☐ Group Non Union	D. No. of Minority 8	Pay Increases (Months)
	E. ☐ If Union Bargaining Unit		3 ☐ 6 ☐ 12 ☐ Other ☒

TRADE INFORMATION

Occupation (use separate form for each occupation)	Term (OJT hours)	RTI (Classroom hours)	# Of Journey workers	# Of Apprentices in Training	Journey worker Hourly Rate	Days per Week
Power Line Technician (Lineman)	**8000**	**576**	**19**	**5**	**$50.75**	**5**

HOURLY APPRENTICE WAGES BY PERIOD (Excluding Benefits) Top Line Dollar Amounts Bottom Line Percentages

Occupation	1ST	2ND	3RD	4TH	5TH	6TH	7TH	8TH	9TH	10TH
Power Line Technician (Lineman)	**$34.82**	**$36.55**	**$38.27**	**$40.01**	**$41.72**	**$43.41**	**$45.84**	**$48.27**	**N/A**	**N/A**
	68.6%	**72.0%**	**75.4%**	**78.8%**	**82.2%**	**85.5%**	**90.3%**	**95.1%**	**N/A**	**N/A**
Fringe Benefits ($ or %)										

The Sponsor certifies and assures that it will utilize qualified training personnel in the delivery of the related instruction, such as subject matter experts (e.g., journeyworkers) who are recognized within an industry as having expertise in a specific occupation, and who also have training in teaching techniques and adult learning styles, which may occur before or after the apprenticeship instructor has started to provide the related technical instruction.

1-17-2020
Date

Signature of Program Coordinator

DO NOT WRITE BELOW THIS LINE

As of 1-13-2020

Received By:

State Apprenticeship Director Date

FORM 5910

Valley Electric Association, Inc.

Occupation: Power Line Technician (Lineman)
(Existing Occupation Title: Line Maintainer)
O-NET Code: 49-9051.00 RAPIDS Code: 0283
Time-Based Apprenticeship Program

U.S. Department of Labor Apprenticeable Occupation List:

LINE MAINTAINER (Alternate Title: High Voltage Electrician)	0283	49-9051.00	8000	TB

Link to list: https://www.doleta.gov/oa/occupations.cfm

Standards Placement	29 CFR, NRS 610, and NAC 610 Required Provisions
Appendix A p. 2	2) **Term:** A term of apprenticeship of not less than 2,000 hours of work experience, consistent with training requirements as established by practice in the trade. **NRS 610.144 3 (b)** **Type of Occupation:** The term of apprenticeship, which for an individual apprentice may be measured either through the completion of the industry standard for on-the-job learning (time-based approach), the attainment of competency (competency-based approach), or a blend of the time-based and competency-based approaches (hybrid approach). **29 CFR 29.5 (b)**
Appendix A p. 4-7	3) **Work Processes:** An outline of the processes in which the apprentice will receive supervised experience and training on the job, and the allocation of the approximate time to be spent in each major process. **NRS 610.144 3 (c)**
Appendix A p. 9-10	4) **Related Instruction**: Provisions for organized, related and supplemental instruction in technical subjects (and the costs thereof) related to the trade with a minimum of 144 hours for each year of apprenticeship, given in a classroom or through trade, industrial or correspondence courses of equivalent value or other forms of study approved by the State Apprenticeship Council. **NRS 610.144 3 (d); NAC 610.433**
Appendix A p. 2	5) **Wages:** A progressively increasing, reasonable and profitable schedule of wages to be paid to the apprentice consistent with the skills acquired, not less than that allowed by federal or state law or regulations or by a collective bargaining agreement. Employers shall pay a beginning wage for apprentices which is at least 35 percent of the rate for journeymen in the same trade, *or* Minimum and Reasonable and profitable wage for apprentice in construction industry. **NRS 610.144 3 (e); NAC 610.480, NAC 610.485**
Appendix A p. 2	6) **Periodic Review and Evaluation:** Provisions for a periodic review and evaluation of the apprentice's progress in performance on the job and related instruction and the maintenance of appropriate records of such progress. **NRS 610.144 3 (f)**
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	ALL DOCUMENTS HAVE BEEN CHECKED FOR SPELLING, FORMATTING, GRAMMAR, (INCLUDING TABLE OF CONTENTS), ETC.

Appendix A

VALLEY ELECTRIC ASSOCIATION, INC.

WORK PROCESS SCHEDULE

AND

RELATED INSTRUCTION OUTLINE

POWER LINE TECHNICIAN (LINEMAN)

(Existing Occupation Title: Line Maintainer)

O*NET-SOC CODE: 49-9051.00 RAPIDS CODE: 0283

APPROVED BY
OFFICE OF WORKFORCE INNOVATION AND THE NEVADA STATE APPRENTICESHIP COUNCIL

_____
Richard J. Williams, Nevada State Apprenticeship Director

REGISTRATION DATE: _____

REGISTRATION NUMBER: _____

DEVELOPED IN COOPERATION WITH THE
US DEPARTMENT OF LABOR, THE OFFICE OF WORKFORCE INNOVATION, AND THE NEVADA STATE APPRENTICESHIP COUNCIL

Appendix A

WORK PROCESS SCHEDULE
POWER LINE TECHNICIAN (LINEMAN)
O*NET-SOC CODE: 49-9051.00 RAPIDS CODE: 0283

This schedule is attached to and a part of these Standards for the above identified occupation.

1. TYPE OF OCCUPATION

☒ Time-based ☐ Competency-based ☐ Hybrid

2. TERM OF APPRENTICESHIP

The term of the occupation shall be defined by the attainment of all competencies of the position, which would be expected to occur within approximately **8000** hours of OJL, supplemented by the minimum average of **144 hours** of related instruction per year of the apprenticeship.

The probationary period for this occupation will be **1000 hours** of OJL.

3. RATIO OF APPRENTICES TO JOURNEYWORKERS

The apprentice to journeyworker/fully-competent worker ratio is: 1 apprentice(s) to 1 journeyworker/fully-competent worker(s).

4. APPRENTICE WAGE SCHEDULE

An apprentice minimum starting wage will be at least $34.00 per hour. Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage or a dollar amount of the current hourly journeyworker/fully-competent worker wage. A journeyworker/fully-competent worker minimum wage will be at least $49.27. Wages will be based on regional ranges.

4-Year Term:

1st period (1,000 hours) 69%
2nd period (1,000 hours) 72%
3rd period (1,000 hours) 76%
4th period (1,000 hours) 79%
5th period (1,000 hours) 83%
6th period (1,000 hours) 86%
7th period (1,000 hours) 91%
8th period (1,000 hours) 95%

Periodic review and evaluation of the apprentice's on-the-job learning and related technical instruction will be conducted in alignment with the wage schedule established.

5. WORK PROCESS SCHEDULE (See attached Work Process Schedule)

The sponsor may modify the work processes to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

6. RELATED INSTRUCTION OUTLINE (See attached Related Instruction Outline)

The sponsor may modify the related instruction to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

Appendix A

WORK PROCESS SCHEDULE
POWER LINE TECHNICIAN (LINEMAN)
O*NET-SOC CODE: 49-9051.00 RAPIDS CODE: 0283

The term of the occupation shall be defined by the attainment of all competencies, both technical and behavioral, of the position, which would be expected and approximated to occur within 8000 hours of OJL, supplemented by a minimum average of 144 hours of related instruction per year of apprenticeship.

Apprenticeship Competencies – Technical

		Recommended Hours:
A.	**Safety Training** Attending safety meetings and learning pole top and bucket rescue techniques, CPR and first aid training, use of personal protective equipment and safety equipment training.	**150**
B.	**Framing, Erecting and Construction Overhead lines**: **Framing**- reading and understanding the staking sheets and REA framing spec's, installing cross arms, insulators, braces, guy wires, transformer locations, service and secondary locations. **Erecting**- proper hole depths, slinging and rigging, safe pole setting procedures, plumbing and backfill, **Construction**-pole placements, anchor installation and line construction equipment operation. Apprentices must know the safety regulations and safe work procedures for line construction.	**2600**
C.	**Stringing Conductors (Overhead)** Installation of travelers, pee-lines, sagging, clipping and Deadending conductors, safe use of wire tensioners and wire pulling equipment. Apprentice must be familiar with the safe work practices for installing conductors on new construction. Apprentices must be competent at climbing and working on wood poles	**400**
D.	**Rubber Gloving (Overhead)** Changing insulators, retying conductors moving conductors, replacing damaged equipment, installing hot jumpers, etc. Apprentice must be competent with the proper procedures and clearances when working from insulated platforms on energized distribution lines and equipment with rubber gloves and sleeves. Apprentices must be familiar with the proper care and inspection of their rubber gloves and sleeves.	**200**

E.	**Rubber and Fiber Application** Proper application of insulated rubber hose or fiber line covers over energized conductors, jumpers, insulators and equipment. Safe placement procedures for rubber blankets and hoods. Apprentices must be familiar with the safety procedures and proper inspection and storage of cover up materials.	50
F.	**Hot Sticking Distribution (Overhead)** Replacing insulators, crossarms, poles, moving conductors, retying conductors, replacing damaged equipment, opening or closing switches and cutouts. Apprentices must be competent with the proper procedures and safety rules for working energized distribution lines and equipment using insulated hot line tools. Apprentices must know the proper use, care, inspection and storage of insulated hot line tools. Apprentices must be competent at climbing and working on wood poles.	200
G.	**Hot Sticking Transmission (Overhead)** Replacing insulators, crossarms, replacing poles, repairing damaged conductors. etc. Apprentice must be competent in climbing and working on wood or steel structures. Apprentices must know safe work procedures and clearances while working on energized transmission lines using insulated hot line tools.	200
H.	**Street Lighting** Installing, repairing and replacing street light fixtures. Apprentice must be familiar with the difference between multiple and series lighting and the safety regulations for both.	100
I.	**Underground Distribution** Installation of underground cable systems, in conduit and direct burial systems. Installation of junction boxes, padmount transformers, underground secondaries and services. Apprentices must be competent in reading underground staking sheets and the REA underground spec book. Apprentices must be familiar with the NESC rules for underground installations. Apprentices must know the safety regulations and safe operating procedures for an underground electric distribution system.	1300
J.	**Substations** Working on or installing OCB's, voltage regulators, OCR's, and other station equipment. Apprentices must be familiar and competent in working in substations and on substation equipment. Apprentices must be familiar with the clearances and procedures to safely energize or dc-energize substations and substation equipment.	100

K	**Transformers** Installing and connecting single and three phase transformers and trouble shoot transformer problems. Apprentices must be able Install and connect all types of transformer configurations to provide the voltages required by the customer. Apprentices must be familiar with the correct fuse sizing, grounding and specific voltage applications. Apprentices must be familiar with the safe work practices used to install or retire transformers.	**400**
L	**Waiting on Linemen** Perform ground man tasks, hoisting materials and tools to the linemen. Pull materials for projects, check materials into and out of the warehouses, driving equipment to the projects and cleaning up the vehicles and yards. Apprentices must be familiar with the REA spec book, staking sheets, and the tools and materials required to do a project.	**1000**
M.	**Switching** Opening and closing single switches and gang operated switches. Apprentices must be competent with safe and proper switching procedures, locking and tagging switches open or closed and the safe work procedures for opening or closing switches on energized circuits.	**50**
N.	**Secondary and Service Work** Installing and retiring of overhead and underground secondaries or services. Installing and removing meters on new or existing services and relocating secondary or service cables. Apprentices must be able to locate and repair problems on services and secondaries. Apprentices must know the safe work practices for working with secondary voltages.	**650**
O.	**Hot Tension Stringing** Change out conductors using hot tension stringing methods. Apprentices must be familiar with proper clearances, safe work practices, use of hot arms and stringing sheeves, proper grounding of the stringing equipment, traveling grounds, and use of insulated covers and blankets.	**100**
P.	**Lead Man or Acting Foreman** Directing the work activities and supervision of other apprentices or linemen. Apprentices must be familiar with taking charge of all work performed on overhead and underground projects. Apprentices must be familiar with the additional responsibilities of the foreman for the safe work practices of the employees being supervised.	**100**
Q.	**Line Clearance Tree Trimming** Trim trees away from energized power lines in accordance with	**350**

company standards in a manner acceptable to the property owners. Apprentices must be familiar with and competent in the use of chain saws, pruners, and other tree trimming equipment. Apprentices must be able to operate aerial devices used to trim trees. Apprentices must be familiar with accepted industry standards for directional pruning. Apprentices must be familiar with the required clearances and work procedures used to safely trim or remove trees from around lines.

R.	**Grounding** Apprentices must be familiar with grounding methods on all types of line construction and structures that they will work with. Apprentices will be able to safely test for voltage, apply and remove line grounds, and use equipotential grounding for personal protection while working on de-energized lines.	**50**
	TOTAL HOURS	**8,000**

The above on-the-job-learning (OJL) work process competencies are intended as a guide. It need not be followed in any particular sequence, and it is understood that some adjustments may be necessary in the hours allotted for different work experience. In all cases, the apprentice is to receive sufficient experience to make them fully competent and use good workmanship in all work processes, which are a part of the industry. In addition, the apprentice shall be fully instructed in safety and OSHA requirements.

Apprenticeship Competencies – Behavioral

In addition to mastering all of the essential technical competencies, an apprentice must consistently demonstrate at an acceptable level the following behavioral competencies in order to complete the apprenticeship.

Item #	Behavioral Competencies
1.	Participation in team discussions/meetings
2.	Focus in team discussions/meetings
3.	Focus during independent work
4.	Openness to new ideas and change
5.	Ability to deal with ambiguity by exploring, asking questions, etc.
6.	Knows when to ask for help
7.	Able to demonstrate effective group presentation skills
8.	Able to demonstrate effective one-on-one communication skills
9.	Maintains an acceptable attendance record
10.	Reports to work on time
11.	Completes assigned tasks on time
12.	Uses appropriate language
13.	Demonstrates respect for patients, co-workers and supervisors
14.	Demonstrates trust, honesty and integrity
15.	Requests and performs work assignments without prompting
16.	Appropriately cares for personal dress, grooming and hygiene
17.	Maintains a positive attitude
18.	Cooperates with and assists co-workers
19.	Follows instructions/directions
20.	Able to work under supervision
21.	Able to accept constructive feedback and criticism
22.	Able to follow safety rules
23.	Able to take care of equipment and work place
24.	Able to keep work area neat and clean
25.	Able to meet supervisor's work standards
26.	Able to not let personal life interfere with work
27.	Adheres to work policies/rules/regulations

RELATED INSTRUCTION OUTLINE
POWER LINE TECHNICIAN (LINEMAN)
O*NET-SOC CODE: 49-9051.00 RAPIDS CODE: 0283

The related instruction has been developed in cooperation with employer-partners as part of the apprenticeship. The following is a set of courses to be delivered by subject matter experts.

Related Technical Instruction (RTI) - This instruction shall include, but not be limited to, at least an average of 144 hours per year for each year of the apprenticeship. The related theoretical education listed below is tightly integrated with real work product. The curriculum is defined as a variety of classes, around which the exams and projects are based. By defining the RTI this way, all competencies required of the students are met, through project work.

This RTI works in conjunction with a set of standards and a work process schedule for Lineman. The courses will be taught through the California / Nevada JATC apprentice Related Technical Instruction (RTI) as both online and stand up instruction, all being reinforced through on-the-job learning (OJL) of what had been taught.

Below is a summary of the California / Nevada JATC Apprentice Related Technical Instruction

Contact hours	498
On-Line hours	129
Total RTI hours	**627**

Below is a breakdown per year (see also attached RTI schedule by year):

Year 1

Hours	Class
8	Orientation
40	Week Long Climbing Class
8	First Aid/CPR for those who don't have current cards
12	OSHA ET&D for those who don't have current cards
8	Intro to Rigging 1
8	Unit 1-1 & 1-2 review and test
8	Unit 1-3 & 1-4 review and test
3	2nd Step test
40	Week Long Work Methods Class
8	Rigging 2
8	Unit 1-5 & 1-6 review and test
8	First year Final & Transformer A
3	3rd Step test
162	Contact hours
43	On-Line lessons (avg. 7.2 hrs. per unit)
205	**Year 1 total time.**

Year 2

Hours	Class
40	Week Long Underground Class
8	Personal Protective Grounding Class
8	Unit 2-1 & 2-2 review and test
8	Unit 2-3 & 2-4 review and test
3	4th Step test
40	Week Long Rubber Gloving Class
8	Transformer B
8	Unit 2-5 & 2-6 review and test
8	Second year Final & COMET Class
4	CPR Class
3	5th Step test
138	Contact hours
43	On-Line lessons (avg. 7.2 hrs. per unit)
181	**Year 2 total time.**

Year 3

Hours	Class
40	Week Long Hot Stick Class
8	Intro to Crane 1
8	Unit 3-1 & 3-2 review and test
8	Unit 3-3 & 3-4 review and test
3	6th Step test
40	Week Long Crane Cert.
8	Crane 2
8	Unit 3-5 & 3-6 review and test
8	Third year Final & Transformer C
4	CPR Class
3	7th Step test
138	Contact hours
43	On-Line lessons (avg. 7.2 hrs. per unit)
181	**Year 3 total time.**

Year 4

Hours	Class
40	Week Long Continuing Education Class
8	Transformer D
8	Foreman Class
4	Completion Test
60	Contact hours
0	On-Line lessons (none)
60	**Year 4 total time**

Valley Electric Association, Inc.

Occupation – Substation Technician
(Existing Occupation Title: Substation Operator)
O-NET Code: 51-8012.00 RAPIDS Code: 0553
Time-Based Apprenticeship Program

- ✓ Form 5910 – Application for Approval On-the-Job Training & Apprenticeship
- ✓ U.S. Department of Labor Apprenticeable Occupation List ONET Code Confirmation
- ✓ Appendix A Checklist
- ✓ Appendix A - Work Process Schedule and RTI Outline

STATE OF NEVADA
Nevada State Apprenticeship Council

APPLICATION FOR APPROVAL
ON THE JOB TRAINING & APPRENTICESHIP

Program Name Valley Electric Association Apprenticeship Program # NV001860003

Address 800 East Highway 372 City Pahrump State/Zip NV 89048 Telephone (775) 727-2175

Contact Person James Andresen Title Director Engineering & Ops Type of Program: TB NAICS Code 238210

EIN # 880089964 Email Address: James Andresen <jamesa@vea.coop>

Type of Action: (Check One)	Type of Program: (Check One)	Journey Workers (JW)	Pay Period (Circle One)
A. ☐ Wage Increase	A. ☐ Individual Union	A. No. JW 2	☐ Weekly
B. ☒ Revision of Standards	B. ☒ Individual Non Union	B. No. of Employers 1	☒ Bi-Weekly
C. ☐ New Occupation	C. ☐ Group Union	C. No. of Female 0	☐ Semi Monthly
D. ☐ New Program	D. ☐ Group Non Union	D. No. of Minority 1	Pay Increases (Months)
	E. ☐ If Union Bargaining Unit		3 ☐ 6 ☐ 12 ☐ Other ☒

TRADE INFORMATION

Occupation (use separate form for each occupation)	Term (OJT hours)	RTI (Classroom hours)	# Of Journey workers	# Of Apprentices in Training	Journey worker Hourly Rate	Days per Week
Substation Technician	**8000**	**576**	**2**	**1**	**$50.75**	**5**

HOURLY APPRENTICE WAGES BY PERIOD (Excluding Benefits) Top Line Dollar Amounts Bottom Line Percentages

Occupation	1ST	2ND	3RD	4TH	5TH	6TH	7TH	8TH	9TH	10TH
Substation Technician	**$34.82**	**$36.55**	**$38.27**	**$40.01**	**$41.72**	**$43.41**	**$45.84**	**$48.27**	**N/A**	**N/A**
	68.6%	**72.0%**	**75.4%**	**78.8%**	**82.2%**	**85.5%**	**90.3%**	**95.1%**	**N/A**	**N/A**
Fringe Benefits ($ or %)										

The Sponsor certifies and assures that it will utilize qualified training personnel in the delivery of the related instruction, such as subject matter experts (e.g., journeyworkers) who are recognized within an industry as having expertise in a specific occupation, and who also have training in teaching techniques and adult learning styles, which may occur before or after the apprenticeship instructor has started to provide the related technical instruction.

1-17-2020
Date

Signature of Program Coordinator

DO NOT WRITE BELOW THIS LINE

As of 1-13-2020

Received By:

State Apprenticeship Director Date

FORM 5910

Valley Electric Association, Inc.

Occupation: Substation Technician
(Existing Occupation Title: Substation Operator)
O-NET Code: 51-8012.00 RAPIDS Code: 0553
Time-Based Apprenticeship Program

U.S. Department of Labor Apprenticeable Occupation List:

SUBSTATION OPERATOR	0553	51-8012.00	8000	TB

Link to list: https://www.doleta.gov/oa/occupations.cfm

Standards Placement	29 CFR, NRS 610, and NAC 610 Required Provisions
Appendix A p. 2	2) **Term:** A term of apprenticeship of not less than 2,000 hours of work experience, consistent with training requirements as established by practice in the trade. **NRS 610.144 3 (b)** **Type of Occupation:** The term of apprenticeship, which for an individual apprentice may be measured either through the completion of the industry standard for on-the-job learning (time-based approach), the attainment of competency (competency-based approach), or a blend of the time-based and competency-based approaches (hybrid approach). **29 CFR 29.5 (b)**
Appendix A p. 4-5	3) **Work Processes:** An outline of the processes in which the apprentice will receive supervised experience and training on the job, and the allocation of the approximate time to be spent in each major process. **NRS 610.144 3 (c)**
Appendix A p. 7-11	4) **Related Instruction**: Provisions for organized, related and supplemental instruction in technical subjects (and the costs thereof) related to the trade with a minimum of 144 hours for each year of apprenticeship, given in a classroom or through trade, industrial or correspondence courses of equivalent value or other forms of study approved by the State Apprenticeship Council. **NRS 610.144 3 (d); NAC 610.433**
Appendix A p. 2	5) **Wages:** A progressively increasing, reasonable and profitable schedule of wages to be paid to the apprentice consistent with the skills acquired, not less than that allowed by federal or state law or regulations or by a collective bargaining agreement. Employers shall pay a beginning wage for apprentices which is at least 35 percent of the rate for journeymen in the same trade, *or* Minimum and Reasonable and profitable wage for apprentice in construction industry. **NRS 610.144 3 (e); NAC 610.480, NAC 610.485**
Appendix A p. 2	6) **Periodic Review and Evaluation:** Provisions for a periodic review and evaluation of the apprentice's progress in performance on the job and related instruction and the maintenance of appropriate records of such progress. **NRS 610.144 3 (f)**
Appendix A p. 2	7) **Ratio**: A numeric ratio of apprentices to journeymen consistent with proper supervision, training, safety, continuity of employment and applicable provisions in collective bargaining agreements, in language that is specific and clear as to its application in terms of job sites, workforces, departments or plants. **NRS 610.144 3 (g)**
	ALL DOCUMENTS HAVE BEEN CHECKED FOR SPELLING, FORMATTING, GRAMMAR, (INCLUDING TABLE OF CONTENTS), ETC.

Appendix A

VALLEY ELECTRIC ASSOCIATION, INC.

WORK PROCESS SCHEDULE

AND

RELATED INSTRUCTION OUTLINE

SUBSTATION TECHNICIAN

(Existing Occupation Title: Substation Operator)

O*NET-SOC CODE: 51-8012.00 RAPIDS CODE: 0553

APPROVED BY
OFFICE OF WORKFORCE INNOVATION AND THE NEVADA STATE APPRENTICESHIP COUNCIL

_____
Richard J. Williams, Nevada State Apprenticeship Director

REGISTRATION DATE: _____

REGISTRATION NUMBER: _____

DEVELOPED IN COOPERATION WITH THE
US DEPARTMENT OF LABOR, THE OFFICE OF WORKFORCE INNOVATION, AND THE NEVADA STATE APPRENTICESHIP COUNCIL

Appendix A

WORK PROCESS SCHEDULE
SUBSTATION TECHNICIAN
O*NET-SOC CODE: 51-8012.00 RAPIDS CODE: 0553

This schedule is attached to and a part of these Standards for the above identified occupation.

1. TYPE OF OCCUPATION

☒ Time-based ☐ Competency-based ☐ Hybrid

2. TERM OF APPRENTICESHIP

The term of the occupation shall be defined by the attainment of all competencies of the position, which would be expected to occur within approximately **8000** hours of OJL, supplemented by the minimum of **144 hours** of related instruction per year of the apprenticeship.

The probationary period for this occupation will be **1000 hours** of OJL.

3. RATIO OF APPRENTICES TO JOURNEYWORKERS

The apprentice to journeyworker/fully-competent worker ratio is: 1 apprentice(s) to 1 journeyworker/fully-competent worker(s).

4. APPRENTICE WAGE SCHEDULE

An apprentice minimum starting wage will be at least $34.00 per hour. Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage or a dollar amount of the current hourly journeyworker/fully-competent worker wage. A journeyworker/fully-competent worker minimum wage will be at least $49.27. Wages will be based on regional ranges.

4-Year Term:

1st period (1,000 hours) 69%
2nd period (1,000 hours) 72%
3rd period (1,000 hours) 76%
4th period (1,000 hours) 79%
5th period (1,000 hours) 83%
6th period (1,000 hours) 86%
7th period (1,000 hours) 91%
8th period (1,000 hours) 95%

Periodic review and evaluation of the apprentice's on-the-job learning and related technical instruction will be conducted in alignment with the wage schedule established.

5. WORK PROCESS SCHEDULE (See attached Work Process Schedule)

The sponsor may modify the work processes to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

6. RELATED INSTRUCTION OUTLINE (See attached Related Instruction Outline)

The sponsor may modify the related instruction to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

Appendix A

WORK PROCESS SCHEDULE
SUBSTATION TECHNICIAN
O*NET-SOC CODE: 51-8012.00 RAPIDS CODE: 0553

The term of the occupation shall be defined by the attainment of all competencies, both technical and behavioral, of the position, which would be expected and approximated to occur within 8000 hours of OJL, supplemented by a minimum of 144 hours of related instruction per year of apprenticeship.

Apprenticeship Competencies – Technical

Valley Electric Association
Work Processes for Substation Technician

In effort for the apprentice to gain the knowledge and experience necessary to become a journeyman, they should be assigned work and/or given the instruction to the extent possible in the amounts shown below.

WORK SUBJECT	HOURS
Hazard Awareness and Safety Practices	600
Substation Inspection / Equipment Familiarity	400
Battery Banks: Installation, Testing, Maintenance	300
Battery Chargers: Installation, Testing, Maintenance	100
Power Transformers: Inspection, Testing, Maintenance	800
SF-6 Breakers: Installation, Testing, Maintenance, Handling SF-6 Gas	600
Vacuum Breakers: Installation, Testing, Maintenance	600
Reclosers: Oil filled, Vacuum or Solid Dielectric type, assoc. Controls; Testing & Maint.	400
Instrument Transformers: Identification, Application, Testing	200
Equipment Grounding Practices	100
LTC's/Voltage Regulators: Maintenance, Testing, Repairs, Associated Controls	400
Capacitor Banks: Maintenance, Testing, Associated Controls	100
Medium / High Voltage Switches: Operation, Maintenance, Adjustments	100
Distribution/Transmission Switching: Operation of all associated equipment & controls	400

Print Reading: Substation Diagrams, Control Circuits, Protection Schemes, etc.	400
Metering: Digital Panel Meters, Watt-hour Meters, etc.	200
Protective Relays: Operation, Application, Testing, Programming, etc.	600
Substation Operation / Equipment Troubleshooting: General operation and troubleshooting of everything in a substation.	1000
Offsite School / Training	200
Miscellaneous: Any work time spent on job functions not covered in defined subjects	500
Total Hours	**8000**

The above on-the-job-learning (OJL) work process competencies are intended as a guide. It need not be followed in any particular sequence, and it is understood that some adjustments may be necessary in the hours allotted for different work experience. In all cases, the apprentice is to receive sufficient experience to make them fully competent and use good workmanship in all work processes, which are a part of the industry. In addition, the apprentice shall be fully instructed in safety and OSHA requirements.

Apprenticeship Competencies – Behavioral

In addition to mastering all of the essential technical competencies, an apprentice must consistently demonstrate at an acceptable level the following behavioral competencies in order to complete the apprenticeship.

Item #	Behavioral Competencies
1.	Participation in team discussions/meetings
2.	Focus in team discussions/meetings
3.	Focus during independent work
4.	Openness to new ideas and change
5.	Ability to deal with ambiguity by exploring, asking questions, etc.
6.	Knows when to ask for help
7.	Able to demonstrate effective group presentation skills
8.	Able to demonstrate effective one-on-one communication skills
9.	Maintains an acceptable attendance record
10.	Reports to work on time
11.	Completes assigned tasks on time
12.	Uses appropriate language
13.	Demonstrates respect for patients, co-workers and supervisors
14.	Demonstrates trust, honesty and integrity
15.	Requests and performs work assignments without prompting
16.	Appropriately cares for personal dress, grooming and hygiene
17.	Maintains a positive attitude
18.	Cooperates with and assists co-workers
19.	Follows instructions/directions
20.	Able to work under supervision
21.	Able to accept constructive feedback and criticism
22.	Able to follow safety rules
23.	Able to take care of equipment and work place
24.	Able to keep work area neat and clean
25.	Able to meet supervisor's work standards
26.	Able to not let personal life interfere with work
27.	Adheres to work policies/rules/regulations

RELATED INSTRUCTION OUTLINE
SUBSTATION TECHNICIAN
O*NET-SOC CODE: 51-8012.00 RAPIDS CODE: 0553

The related instruction has been developed in cooperation with employer-partners as part of the apprenticeship. The following is a set of courses to be delivered by subject matter experts.

Related Technical Instruction (RTI) - This instruction shall include, but not be limited to, at least 144 hours per year for each year of the apprenticeship. The related theoretical education listed below is tightly integrated with real work product. The curriculum is defined as a variety of classes, around which the exams and projects are based. By defining the RTI this way, all competencies required of the students are met, through project work.

Valley Electric Association
Substation Technician Apprenticeship

	Hours
Offsite Relay / Substation school (1 week annually) Example: WSU Hands On Relay School, AVO Intl. Training Institute	40
Monthly Safety Meetings In house safety meetings; topics such as First Aid/CPR, Grounding, Tailboards, etc.	48
Utah Valley State College training (monthly) Scheduled training on a substation specific topic such as Rigging, Relays, Circuit Breakers, as well as periodic testing.	8
Utah Valley State College Home Study Course 8 modules (2 per year) consisting of reading, workbooks, and videos to educate an apprentice from step 1 to the journeyman level.	78
Annual Total	**174**

LINE TECHNOLOGY
SUBSTATION
First Year
1A

Week 1	Introduction to Transmission and Distribution Systems
Week 2	Using Tools
Week 3	Rigging 1
Week 4	Transmission
Week 5	Electrical Safety
Week 6	Substations and Switchyards
Week 7	**MIDTERM**

Week 8	Care and Testing of Tools and Equipment
Week 9	Safety in Transmission and Distribution Maintenance
Week 10	Distribution
Week 11	Compressors and Pneumatic Tools
Week 12	Mobile Hydraulic Systems
Week 13	**FINAL**

LINE TECHNOLOGY
SUBSTATION
First Year
1B

Week 1	Overhead Distribution Systems
Week 2	Hydraulic Hand tools
Week 3	Safety in Overhead Line Maintenance
Week 4	Hydraulic Hand Tools 2
Week 5	Climbing Steel Poles and Towers
Week 6	Multimeter Operation and Use
Week 7	**MIDTERM**
Week 8	Hydraulic Derricks and Digging Equipment
Week 9	Bucket Trucks 1
Week 10	Bucket Trucks 2
Week 11	Material Handling Bucket Trucks
Week 12	Using Line test Equipment
Week 13	**FINAL**

LINE TECHNOLOGY
SUBSTATION
Second Year
2A

Week 1	Basic Electricity Review
Week 2	System Protection and Monitoring
Week 3	DC Fundamentals Review
Week 4	DC Fundamentals Review
Week 5	Using Electrical Test Equipment
Week 6	**MIDTERM**
Week 7	AC Fundamentals Review
Week 8	AC Fundamentals Review
Week 9	Series Street Lighting Systems
Week 10	Multiple Street Lighting Systems
Week 11	Underground Residential Distribution Systems

Week 12	Safety in Underground Line Maintenance
Week 13	**FINAL**

LINE TECHNOLOGY
SUBSTATION
Second Year
2B

Week 1	Transformer Connections 1
Week 2	Transformer Connections 1
Week 3	Transformer Connections 2
Week 4	Transformer Connections 2
Week 5	Safety in Substations and Switchyards
Week 6	Transformers
Week 7	**MIDTERM**
Week 8	Circuit Breakers 1
Week 9	Underground Cable Installation
Week 10	Pad Mounted Transformers and Switchgear
Week 11	Transformer Trouble Shooting
Week 12	Cable Terminations
Week 13	**FINAL**

LINE TECHNOLOGY
SUBSTATION
Third Year
3A

Week 1	Distribution Line Safety (Equipotential Grounding)
Week 2	High Voltage AC Power Unit 1
Week 3	Transformers Unit 2
Week 4	Cable Splicing 1
Week 5	Relays 1
Week 6	High Voltage AC Power 2
Week 7	**MIDTERM**
Week 8	Circuit Breakers 2
Week 9	Cable Fault Locating (Radar)
Week 10	Relays 2
Week 11	New Power Transformer Inspections and Tests
Week 12	Cable Fault Locating 2 (Radar)
Week 13	**FINAL**

LINE TECHNOLOGY
SUBSTATION
Third Year
3B

Week 1	Control Equipment
Week 2	New Circuit Breaker Inspections and Tests
Week 3	High Voltage Terminations
Week 4	Substation Batteries
Week 5	Substation Battery Chargers
Week 6	Substation Battery Testing
Week 7	**MIDTERM**
Week 8	Substation Battery, Cell, and Charger Replacement
Week 9	Transmission Line Safety
Week 10	Oil Reconditioning
Week 11	Infrared Condition Monitoring
Week 12	Current Transformer testing 1
Week 13	**FINAL**

LINE TECHNOLOGY
SUBSTATION
Fourth Year
4A

Week 1	Current Transformer Testing 2
Week 2	Circuit Breaker Time Travel Characteristics
Week 3	Circuit Breaker Time Travel Testing
Week 4	Circuit Breaker Time Travel Analysis
Week 5	Vacuum Bottle Hi-Pot Testing
Week 6	Power transformer Insulation resistance Testing
Week 7	**MIDTERM**
Week 8	Contact Resistance testing
Week 9	SF6 Gas Properties and Handling
Week 10	Power Transformer Turns Ration testing
Week 11	Power Transformer Oil Testing
Week 12	Power Transformer Pressure Relay Testing
Week 13	**FINAL**

LINE TECHNOLOGY
SUBSTATION
Fourth Year
4B

Week 1	Power transformer Temperature Indicator Testing
Week 2	Corona Discharge Testing
Week 3	Power Transformer Vacuum Dry-Out
Week 4	Power Transformer Vacuum Filling
Week 5	Safety in Substations and Switchyards
Week 6	Capacitors and Reactors
Week 7	**MIDTERM**
Week 8	Voltage Regulators
Week 9	Corona Discharge Testing
Week 10	New Power Transformer Inspections and Tests
Week 11	Reading Electrical System Diagrams 1
Week 12	APPA Safety Manual Review
Week 13	**FINAL**