Division of Apprenticeship Standards (DAS)

Apprenticeship Program Summary Sheet

To: Adele Burnes, Chief
From: Joe Espiritu
CC: DAS, Program Planning & Review Unit
Date: October 27, 2025

Program Name: City of Glendale Electrical Test Technician Joint Apprenticeship Committee
Industry: Public Sector
DAS File No.: 101477
Grant Awardee: ☒ No ☐ Yes

Action(s):

- ☒ Proposed new apprentice program
- ☐ Existing apprenticeship program adding new occupations
- ☐ Existing apprenticeship program expanding area of operations
- ☐ Existing apprenticeship program changing work processes on approved occupations

Labor Organization(s) Representing Apprentices:

IBEW Local 18 - 4189 W Second Street, Los Angeles, CA 90004

Request for Approval under Labor Code 3075:

City of Glendale Electrical Test Technician Joint Apprenticeship Committee is not intended to train in the building and construction trades and is not eligible to dispatch apprentices to projects with public works, prevailing wage or skilled and trained workforce requirements within the meaning of Labor Code sections 1720 and 3075 and will not train or dispatch apprentices in the building and construction trades or firefighters occupations.

Comments:

It is a great necessity for the City of Glendale to allow consistent and formal training for the Electrical Test Technician to fill their personnel due to retirement and retention issues. It will also add more apprenticeship opportunities for the City of Glendale that currently have 5 California State Approved Apprenticeship Programs in different occupations. The City of Glendale does not compete with any other apprenticeship programs nor participate with external public works projects since their apprentices are trained internally and employed solely to be City of Glendale employees. They are also recognized, supported, and approved by the International Brotherhood of Electrical Workers (IBEW).

City of Glendale Electrical Test Technician Joint Apprenticeship Committee and IBEW Local 18 will oversee the apprenticeship program herein and seeks approval from the Department of Industrial Relations, Division of Apprenticeship Standards for the following:

Proposed Occupation, Wage Rate & O*Net Code:

- Electrical Test Technician O*Net: 17-3023.00
  - Professional Worker Wage: $62.66 per hour
  - Proposed Apprentice Wage: $38.63 per hour
  - Proposed No. of Apprentices: 3

Proposed Employers:

- City of Glendale, 800 Air Way, Glendale CA, 91201
  - Occupation(s): Electrical Test Technician

DAS FILE # 101477

City of Glendale Electrical Test Technician Joint Apprenticeship Committee
Program Standards

800 Air Way, Glendale, CA 91201
(818) 548-2011
pmilroy@glendaleca.gov

Table of Contents

Article I Purpose and Policy

The parties hereto declare it to be their purpose and policy to establish an organized, planned system of apprenticeship, conducted as an education sponsored, employer-based undertaking.

These standards have, therefore, been adopted and agreed upon under the Shelley-Maloney Apprentice Labor Standards Act of 1939, as amended, to govern the employment and training of apprentices in the trade, craft or occupation defined herein, to become effective upon their approval.

Article II Craft, Trade or Occupation, Related and Supplemental Instruction, Term of Apprenticeship, Ratio, Wage Schedule and Work Training

Occupation: Electrical Test Technician
O*Net Code: 17-3023.00
Attachment: B

Article III Jurisdiction

These standards shall apply to the employer signatory hereto and to all apprentice agreements hereunder.

Area Covered by Standards: Los Angeles County

Article IV Responsibilities of Program Sponsor

The responsibilities of the Joint Apprenticeship Committee shall be to:

1) supervise the administration and enforcement of these standards;
2) adopt such rules and regulations as are necessary to govern the program provided that the rules and regulations do not conflict with these standards and provide a copy of said rules and regulations to each apprentice;
3) make periodic evaluations of each apprentices on-the-job training and related and supplemental instruction;
4) provide reasonably continuous employment to all apprentices in its employ;
5) ensure safe work site facilities, skilled workers as trainers at the work site, and safe equipment sufficient to train apprentices;
6) determine the qualifications of apprentice applicants and ensure fair and impartial treatment of applicants for apprenticeship selected through uniform selection procedures;
7) file a signed copy, written or electronic, of each apprentice agreement with the Division of Apprenticeship Standards, within 30 days of execution, with copies to all parties to the agreement;
8) establish and utilize a procedure to record and maintain all records of the apprentice's worksite job progress and progress in related and supplemental instruction;

9) establish and utilize a system for the periodic review and evaluation of the apprentice's progress in job performance and related instruction;
10) discipline apprentices, up to and including termination, for failure to fulfill their obligations on-the-job or in related instruction, including provisions for fair hearings;
11) annually prepare and submit a Self-Assessment Review as well as a Program Improvement Plan to the Chief of the DAS;
12) ensure training and supervision, both on the job and in related instruction, in first aid, safe working practices and the recognition of occupational health and safety hazards;
13) ensure training in the recognition of illegal discrimination and sexual harassment,
14) establish an adequate mechanism to be used for the rotation of the apprentice from work process to work process to assure the apprentice of complete training in the apprenticeable occupation;
15) ensure the program's ability, including financial ability, and commitment to meet and carry out its responsibilities under federal and state law and regulations applicable to the apprenticeable occupation and for the welfare of the apprentice;
16) ensure there is meaningful representation of the apprentice in the management of the program;
17) adopt changes to these standards, as necessary, subject to the approval of the parties hereto and the Chief of the Division of Apprenticeship Standards.
18) abide by any and all relevant California Labor Codes and California Code of Regulations regarding apprenticeship.

Article V Definition of an Apprentice

An apprentice is a person at least 18 years of age, who has met the requirements for selection under the selection procedures of participating employer, who is engaged in learning a designated craft or trade and who has entered into a written apprentice agreement under the provisions of these standards.

Article VI Duties of an Apprentice

Each apprentice shall satisfactorily perform all work and learning assignments both on the job and in related instruction and shall comply with the rules, regulations and decisions of the apprenticeship committee.

Article VII Apprentice Agreement

1) Each apprentice agreement shall conform to the State law governing apprentice agreements, shall be signed by the program sponsor and by the apprentice and shall remain in effect during a lay-off unless cancelled.
2) Each apprentice shall be furnished a copy of or be given an opportunity to study these standards before registration. These standards shall be considered a part of the apprentice agreement as though expressly written therein.

Article VIII Termination

1) During the probationary period, an apprentice agreement shall be terminated by the apprenticeship committee at the request in writing of either party. After such probationary period, an apprentice agreement may be terminated by the Administrator by mutual agreement of all the parties thereto or cancelled by the Administrator for good and sufficient reason.
2) Disciplinary proceedings for apprentices shall be duly noticed in writing to such individuals. The Division of Apprenticeship Standards shall attend all such proceedings.

Article IX Controversies

All controversies or differences concerning apprentice agreements that cannot be adjusted locally by the program sponsor or otherwise shall be submitted to the Administrator for determination.

Article X Certificate of Completion

1) In addition to previous on-the-job training and related school instruction, which is of an approved nature, the Apprentice shall have completed not less than an additional six (6) months as an apprentice under the laws of the State of California and demonstrated mastery of the skills and knowledge of the prescribed program.
2) In recognition of unusual ability and progress, the program sponsor or apprenticeship committee may decrease the term of apprenticeship for an individual apprentice not more than twelve and one-half percent (12½%).
3) Upon evidence of satisfactory completion of apprenticeship, and upon the recommendation of the program sponsor, each apprentice will be issued a Certificate of Completion by the authority of the Chief of the Division of Apprenticeship Standards and the Interagency Advisory Committee on Apprenticeship.

Article XI Equal Opportunity in Apprenticeship

City of Glendale Electrical Test Technician Joint Apprenticeship Committee will not discriminate against apprenticeship applicants or apprentices based on race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age for individuals over forty years of age, military or veteran status, or sexual orientation.

City of Glendale Electrical Test Technician Joint Apprenticeship Committee will take affirmative steps to provide equal opportunity in apprenticeship.

Article XII Selection of Apprentice Applicant

Apprenticeship programs may utilize any method or combination of methods for the selection of apprentices, provided that the selection method(s) used meets the following requirements:

1) The selection procedure(s) must be uniformly and consistently applied to all applicants and apprentices within each selection procedure utilized.
2) The selection procedure(s) must comply with title I of the ADA, EEOC's implementing regulations at 29 CFR part 1630, the Fair Employment and Housing Act, and the Civil Rights Council's implementing regulations at sections 11064, et seq. of title 2 of the California Code of Regulations as applicable to apprenticeship program sponsors.
3) The procedure(s) must not screen out or tend to screen out an individual with a disability or a class of individuals with disabilities, on the basis of disability, unless the standard, test or other selection criteria, as used by the apprenticeship program, is shown to be job-related for the position in question and is consistent with business necessity.
4) The selection procedure(s) must be facially neutral in terms of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age for individuals over forty years of age, military or veteran status, or sexual orientation.

City of Glendale Electrical Test Technician Joint Apprenticeship Committee will select apprentices based on the procedures below. All applicants will be notified in writing of acceptance or rejection. If rejected, reasons for rejection will be stated.

1) Minimum age of all applicants: 18 years old
2) Educational prerequisite for entry: Graduation from high school or attainment of GED or CHSPE certificate. Attendance is required for all courses and acceptable grade levels must be achieved.
3) Physical prerequisites: Must have the ability to safely perform the work of the trade/occupation. Ability to pass pre-placement medical examination paid for by COG.
4) Written Test: Electrical Test Technician Apprentice Test. Test shall be administered by City of Glendale Human Resources Department.
5) Oral Interview: Interviewed by Electrical Test Technician Joint Apprenticeship Committee
6) A pool of applicants will be established and maintained for 2 years. This pool will rank applicants by the highest interview score..
7) Applicants will be employed as follows:
    a. Drug Testing: Mandatory testing by Program prior to employment
    b. Potential employers may require applicants to meet additional employment testing and/or procedures as long as the requirements are also required of non-apprenticeship applicants. These activities may include oral interview, aptitude testing, security clearance measures, drug screening, physical examination at no cost to applicant, or other activities pre-approved by the Program.

Article XIII Written Applications

Applications will be accepted in person and by mail at the City of Glendale.

Human Resources Department
613 E. Broadway, Room 100,
Glendale, CA 91206

During the filing dates listed on the employment opportunity bulletin. The City of Glendale Human Resources Department can be reached at (818) 548-2110.

The employment opportunity bulletins for the apprentice position are available at the City of Glendale Human Resources Department and are listed on their website at www.glendaleca.gov

Article XIV Records

All records will be maintained, in written or electronic form, for five years and kept at:

City of Glendale Electrical Test Technician Joint Apprenticeship Committee
Human Resources (Personnel) Division
613 E Broadway, Room 100
Glendale, CA 91206

Article XV Annual Compliance

City of Glendale Electrical Test Technician Joint Apprenticeship Committee will submit an annual compliance report to the Division of Apprenticeship Standards as requested by the Division.

City of Glendale Electrical Test Technician Joint Apprenticeship Committee agrees to accept electronic signatures for these Division of Apprenticeship Standards and all related Division of Apprenticeship Standards documents.

The foregoing standards are hereby agreed to and adopted by City of Glendale Electrical Test Technician Joint Apprenticeship Committee on April 16, 2025 (Committee approval date).

Employer Organization

CITY OF GLENDALE

613 E Broadway, Room 100 Glendale, CA 91206

_____ _____

Scott K. Mellon,P.E., General Manager-GWP Date

_____ _____

Roubik R. Golanian, P.E.City Manager Date

Employee Organization

International Brotherhood of Electrical Workers

4189 W Second Street, Los Angeles, CA 90004

_____ _____

Martin Marrufo, IBEW Business Manager Date

The foregoing apprenticeship standards, being in conformity with the applicable California Labor Code, California Code of Regulations and Federal Regulations, are hereby approved

_____.

(DAS approval date)

_____ _____

Adele Burnes, Chief Date

Division of Apprenticeship Standards

Attachment B

Training Schedule and Working Conditions

City of Glendale Electrical Test Technician Joint Apprenticeship Committee

Occupation

Occupation: Electrical Test Technician
O*Net Code: 17-3023.00

Article I Term of Apprenticeship and Probation

The standard term of apprenticeship shall be a time-based approach, with 8000 on-the-job training (OJT) hours, 144 related and supplemental instruction (RSI) hours, and completed within 48 months.

The period of probation shall be reasonable in relation to the full apprenticeship term, with full credit given for such period toward completion of the apprenticeship, and in no event shall exceed the shorter of 25 percent of the length of the program or one year. The period of probation shall be 12 months.

Article II Wage Schedule

Professional Worker Wage:

$ 62.66 per hour effective 7/27/2025.

Professional Worker Benefits:

Dues check off, IBEW: $ 0.77 per hour

Health & Welfare, City pays up to: $ 13.81 per hour
(Medical up to $2,053.35; Dental up to $122.64; Vision – up to $24.19; LTD up to $10.50)

Pension, The City pays: 23.77% per hour
(PERS – PEPRA – The City pays 23.77% (not including possible additional costs))

Apprentice Wage and Advancement Schedule:

In no case shall an Apprentice receive a starting wage that is less than the applicable federal, state or local entity (city or county) minimum wage, whichever is higher for the county or city

where the apprentice is working. The applicable minimum wage law shall establish the effective date of the minimum wage.

To advance from one period to the next, the apprentice shall have met the following requirements:

1st period	Min. 1000 hours within 6 months	$ 38.63 /hour
2nd period	Min. 1000 hours within 6 months	$ 40.75 /hour
3rd period	Min. 1000 hours within 6 months	$ 42.99 /hour
4th period	Min. 1000 hours within 6 months	$ 45.36 /hour
5th period	Min. 1000 hours within 6 months	$ 47.85 /hour
6th period	Min. 1000 hours within 6 months	$ 50.48 /hour
7th period	Min. 2000 hours within 12 months	$ 53.26 /hour

* All mention of previous wage periods reference the current appropriate rate for that period and not necessarily the rate reflected in these Standards at the time of approval.

Hours of Work and Working Conditions and Overtime Provision:

Eight hours of labor constitutes a day's work. Employment beyond eight hours in any workday or more than six days in any workweek requires the employee to be compensated for the overtime at not less than one and one-half times the employee's regular rate of pay for all hours worked in excess of eight hours, up to and including 12 hours in any workday, and for the first eight hours worked on the seventh consecutive day of work in a workweek; and double the employee's regular rate of pay for all hours worked in excess of 12 hours in any workday and for all hours worked in excess of eight on the seventh consecutive day of work in a workweek. If employers utilize an alternative workweek schedule in accordance with the California Industrial Welfare Commission Orders, the overtime will be determined and paid in accordance with the applicable alternative workweek provisions.

The workday and workweek and all other conditions of employment for apprentices shall conform to all applicable laws and regulations and shall not be greater than for those of a professional worker.

Overtime shall not be allowed if it will interfere with or impair the training or be detrimental to the health and safety of the apprentice.

ARTICLE III Work-Training

1) The employer shall see that all apprentices are under the supervision of a qualified professional worker or instructor and shall provide the necessary diversified experience and training in order to develop the apprentice into a proficiently skilled worker, as outlined herein.
2) Each apprentice shall be trained in the use of new equipment, materials and processes as they come into use in the occupation.
3) The major categories in which apprentices will be trained (although not necessarily in the order listed) are as follows:

WORK PROCESSES

ELECTRICAL TEST TECHNICIAN	APPROXIMATE HOURS
1. Safety	500
2. Tools, Supplies, and Parts	100
3. Single Phase Meter Testing	500
4. Single Phase Meter Installation	300
5. Polyphase Meter Testing	500
6. Polyphase Meter Installation	400
7. Instrument Transformers	150
8. Power Distribution Transformers	350
9. Service Calls	300
10 Personal Protective Equipment	160
11. Insulation Testing	100
12. Protective Relays	850
13. Station Overall Trip Testing	250
14. Voltage Regulators	200
15. Circuit Breakers	200
16. Capacitors	100
17. Fiber Optic Testing	400
18. Multiplexers	400
19. Switchboard Instruments	500
20 Primary Metering	200

21. Substation Data Management…….....300
22. Miscellaneous Electrical Equipment…….....200
23. Miscellaneous Electronic Equipment…….....200
24. Grounding…….....40
25. Power Plant…….....300
26. Supervisory Control and Data Acquisition System (SCADA)…….....500

TOTAL HOURS…..…….……8000

Test Technician Apprentice Working Terms & Conditions

Qualified Person

An employee of Glendale Water & Power with one of the following job titles: (Revised Titles)

- Superintendent of Operation- Metering and Substations. (Vacant)
- Electric Test Supervisor (Electrical Test Supervisor II)
- Senior Electrical Test Technician (Electrical Test Technician Supervisor I)
- Electric Test Technician II (Electrical Test Technician- Journeyman)
- Electric Test Technician I (Electric Test Technician Apprentice)

Direct Supervision:

Critical watching and instruction of the apprentice by the qualified person while still being involved in the assigned tasks.

Direct Instruction:

An explicit instruction given by a qualified person to an apprentice. The qualified person must be in the same area (within view or earshot) as the apprentice.

Directed Assignment:

Assigned tasks that an Apprentice has been trained to perform and has demonstrated the ability to perform. The apprentice can perform these tasks independently with Qualified Persons available.

Proximity:

Within reach of the Minimum Approach Distance.

TABLE 7A - Minimum Approach Distances for Voltages of 72.5kV and Less

Nominal System Voltage Range	**Distance:**

Phase to Ground Exposure Phase to Phase		**Distance** Phase-to-phase exposure
0 to50	Not Specified	Not Specified
50 to 300	Avoid Contact	Avoid Contact
301 to 750	1 ft 1 in.	1 ft 1 in.
751 to 5 kV	2 ft 1 in.	2 ft 1 in.
5.1 kV to 15 kV	2 ft 2 in.	2 ft 3 in.
15.1 kV to 36 kV	2 ft 7in.	2 ft 11 in.
36.1 kV to 46 kV	2 ft 10 in.	3 ft 3 in.
46.1kV to 72.5 kV	3 ft 4in.	3 ft 11.5 in.

Qualified Person to Apprentice Ratio:

1 to 1 working within proximity.

1 to 2 working in an energized station but not in proximity.

Note:

Directed Assignments are an exception to the Qualified Person to Apprentice Ratio. The apprentice must not exceed the scope of the directed assignment.

Apprentice Program Outline

48 Months

Step One - 1 to 6 months
Step Two - 7 to 12 months
Step Three - 13 to 18 months
Step Four - 19 to 24 months
Step Five - 25 to 30 months
Step Six - 31 to 36 months
Step Seven - 37 to 48 months

Test Technician Apprentice

Step One - 1 to 6 Months

Work under direct supervision on field and laboratory testing of de-energized electrical, electronic equipment, and materials used in a water and power utility. Under direct supervision use low voltage / low power test equipment and may use a voltmeter on circuits energized at 240V or less phase to phase. Will understand and perform the following tasks:

- Lab Test Single Phase Non-Demand meters
- Ring Out Apartments and Install Meters in De-Energized Sockets
- Customer Complaints
- Test and Inspect Rubber Goods
- Test and Inspect Personal Protective Grounds
- Test and Service Hot Sticks
- Dept. Vehicle Use
- Ladder Care and Use
- Fiber Optic Light Meter Testing
- Fiber Optic OTDR testing
- Install / remove energized residential meters under Direct Supervision after completing the Meter Installation qualification checklist.
- Replace batteries in Electric Meters by de-solder/solder method

Training:

- CPR / First Aid
- Digital Multi-Meters
- Hazardous Materials and Handling Reference Documentation (MSDS)
- Rubber Goods Tester by Hanco
- Care and Use of Rubber Gloves
- Care and Use of Ladders
- Fiber Optic Cable Testing
- Residential meter safety and installation / removal.

Training Videos:

- Substations and Switchyards
- Intro to T & D Systems
- Safety in T & D Maintenance
- Electrical Safety
- Distribution
- Safety in Substations and Switchyards
- Safety in Electrical Maintenance
- Basic Electrical Principles
- Care and Testing of Tools and Equipment
- General Math Concepts
- Introduction to Metering
- Math for Metering
- Principles of Magnetism
- Safety in Meter Work
- Using Electrical Test Equipment
- Watt Hour Meter Testing 1
- Watt Hour Meter Principles
- Bucket Trucks 1

Issued Equipment:

- Personal Protective Equipment
- Class 0 Gloves
- Lockout Tag-out Kit
- WB Key
- Lock Box Key
- Lock Ring Tool

Books:

- Pocket Guide to Watt-Hour Meters
- Distribution Transformer Handbook
- ASTM F-496; Use and Care of Rubber Gloves
- ASTM F-1236 Visual Inspection of Electric Rubber Products

Total Hours Session 1: 1000hrs

Test Technician Apprentice

Step Two - 7 to 12 Months

Work under direct supervision on construction and maintenance of equipment energized at 240 Volts or less phase to phase.

Work under direct instruction on de-energized electrical, electronic equipment, and materials used in a water and power utility.

Will understand and perform the following tasks in addition to those in Step One:

- Install or Remove Single Phase Commercial Meters
- Test Instrument Transformers
- Wire Instrument Transformer Rated Metering; CTs Only
- TTR Test Transformers
- Insulation Test Transformers Using Meg-Ohmmeter
- Test and Service Over-Current Protective Relays
- Perform Fiber Optic Light Meter Testing
- Acceptance test relays

Directed Assignments that Apprentices May Perform:

- Rubber Goods Testing
- Test and Inspect Personal Protective Grounds
- Test and Service Hot Sticks
- Test Non-Demand Meters in the Shop
- Bench test instrument transformers after completing qualification checklist.
- Retire obsolete meters
- Fiber Optic Light Meter Testing. Must Work with Journeyman Level Person at the Other End.
- Fiber Optic OTDR Testing. Must be in Customer or Non-Electrical Hazard Location.

Training:

- Single Phase Transformers and Use of TTR
- SCADA (ICON) Introduction
- Fiber Optics
- SEL CBT 101

Training Films:

- AC Concepts
- Bucket Trucks 2

- Circuit Breakers 1
- Polyphase Systems 1
- Relays 1
- Transformer Maintenance
- Transformers Unit 1
- Customer Relations and High Bill Complaints
- Instrument Transformers
- Math for Metering 2
- Watt Hour Meter Testing 2
- Watt Hour Meter Principles 2

Issued Equipment:

- Bird Tools ½" and 5/8" Torque Drivers
- Safety socket Bypasses

Total Hours Session 2: 1000hrs

Test Technician Apprentice

Step Three - 13 to 18 Months

With the exception of directed assignments, work under direct supervision of a Qualified Person on field and laboratory testing of equipment energized at 240 Volts or less phase to phase.

Work under Direct Instruction on de-energized electrical, electronic equipment, and materials used in a water and power utility.

Will understand and perform the following tasks in addition to those in Steps One & Two:

- Install or Remove Energized Commercial 3 Phase Meters 240 Volts or Less
- Perform Meter Socket Checks on 3 Phase Safety Sockets 240 Volts or Less
- Field Test Residential Meters
- Wire instrument transformer rated metering; CT's and PT's
- Set and Test Voltage Regulator Controls
- Shall be Assigned to Substation Maintenance Crew for 2 Months
- Bench test relays

Additional Directed Assignments that Apprentices may perform:

- Install and Remove Residential Meters
- Ring Out Multi-Unit Residences
- TTR Test and Insulation Test (using Meg-Ohmmeter) Distribution Transformers Not located in a Substation
- Fiber Optic work in non-electrical hazard or non-confined space locations.
- Acceptance test relays

Training:

- Voltage Regulators, LTC's and their controls
- Introduction to Substation Communication Systems
- Safely using Digital Meg-Ohmmeters
- Use of the Transformer Turns Ratio tester

Training Films:

- AC Fundamentals Review
- Circuit Breakers 2
- Energy Diversion
- New Power Transformer Inspection and Test
- Voltage Regulators
- Self-Contained Polyphase Meter Testing
- Solid State Meters and Associated devices
- Testing and Calibrating Demand Meters

- Testing Single Phase Transformer Rated Meters
- Transformers Unit 2

Issued Equipment:

- Station gate key, after working on the Relay maintenance crew for 1 month

Total Hours Session 3: 1000hrs

Test Technician Apprentice

Step Four - 19 to 24 Months

With the exception of Directed Assignments, work under direct instruction on field and laboratory testing of equipment energized at 240 Volts or less phase to phase.

Will understand and perform the following tasks in addition to those in Steps One - Three:

- Wire instrument transformer rated metering; CT's and PT's
- Able to Assist in General Station trip testing
- Test solid state voltage and under frequency relays
- Test Feeder relays and trip test feeder positions
- Troubleshoot/Program NTU

Additional Directed Assignments that Apprentices may perform

- Change single phase commercial meters using safety socket
- Change single phase class 20 meters equipped with test switches
- Respond to residential customer complaints
- Bench test relays

Training:

- Transformer gas in oil monitors
- Basic Relay Class by AVO (or equivalent vendor classroom instruction)
- Soldering (In House)

Training Films:

- Demand Meter Concepts
- Transformer Connections 2
- Polyphase Systems 2
- Polyphase Transformer Application
- Reading Electrical Diagrams 1
- Reading Electrical Diagrams 2
- Relays 2
- Testing and calibrating Demand Meters
- Troubleshooting Techniques
- Using Line Test Equipment

Issued Equipment:

Total Hours Session 4: 1000hrs

Test Technician Apprentice

Step Five 25 to 30 Months

May work under Direct Supervision on equipment energized at 480 volts.

Will understand and perform the following tasks in addition to those in Steps One - Four:

- Use High Potential tester
- Assist Journey level qualified worker to test 480 Volt class 20 metering
- Set and test basic microprocessor based relays
- Test line relays and trip test line positions
- Troubleshoot/Program RTAC communication processor

NOTE: When a fifth step Apprentice is required to wear rubber gloves (600 volts or greater) they shall have two journey level qualified observers wearing class 1 gloves.

When a fifth step Apprentice is required to wear rubber gloves (300 - 600 volts) they shall have one journey level observer also wearing class O rubber gloves or greater.

Directed Assignments that Apprentices may perform:

- Test and service microprocessor relays in the shop
- Change 3 phase self-contained or instrument transformer rated meters on services that are 240 volts or less. Important note: they may NOT open 3 phase non-hinged CT compartments, or change class 20 meters that are not equipped with test switches without direct supervision.
- Wire instrument transformer rated metering. Apprentices can check for dead on 240V or less services while using appropriate PPE.

Training:

- Introduction to the JungleMux (ICON)
- SEL CBT Classes (required)
- Computer Based Training for Microprocessor Relays

Training Videos:

- Transformer Connections 2
- High Voltage AC power 1
- Installation Checks and Inspections
- Reactive Metering Concepts
- Reactive Metering Testing
- Storage Batteries and chargers

Total Hours Session 5: 1000hrs

Test Technician Apprentice

Step Six - 31 to 36 Months

May work under Direct Supervision on equipment energized at 480 volts.

Will understand and perform the following tasks in addition to those in Steps One - Five:

- Ratio and saturation test of substation CTs
- Test station breaker contact resistance
- Insulation test station breakers including Hi-Pot test of VCBs
- Hot Stick Practices and Operation
- Test Bus/Transformer relays and trip test position
- Understand RTAC function
- Understand Schweitzer Engineering Lab ICON

Directed Assignments that Apprentices may perform:

All those listed in Steps 2 through 5

Training:

- Computer Based Training for Communication Processors
- Boolean Logic
- Station Permissive Prints

Training Videos:

- New Circuit Breaker Inspection and Test
- Contact Resistance Testing
- High Voltage AC Power Testing

Total Hours Session 6: 1000hrs

Test Technician Apprentice

Step Seven - 37 to 48 Months

Last Year

Step seven apprentices can perform all tasks as set forth in the Test Technician job specifications under direct supervision.

Exceptions:

Step seven Test Technician Apprentices will perform directed assignments defined under Steps 2 through 6 as needed.

Training:

- 480 volt self-contained meter checks and safety
- Review as needed

Issued Equipment

- Substation Control Room Key

Additional Directed Assignments that Apprentices may perform;

- Drop off and pick up equipment, materials, and tools in substations
- Install fiber optic jumpers, test fiber cables
- TTR test and insulation test distribution transformers stored in substations
- May change all 240 Volt 3 phase instrument transformer rated meters.
- Download event files from relays and RTU's with a notebook computer
- Troubleshoot communication processors and RTU's with a notebook computer
- Make minor relay setting changes on de-energized positions, if no testing required
- Test transformer monitors at Grayson and GIS substations

NOTE: Work on energized equipment or circuits in Substations require Qualified Person to Apprentice ratio as stated on page 1 of this document.

May not serve as standby for another unqualified employee or visitor.

Training Videos:

- Review as needed

Total Hours Session 7: 2000hrs

ARTICLE IV Related Instruction

Apprentices shall satisfactorily complete prescribed courses of related and supplemental instruction, which will not be less than 144 hours per year. Related and supplemental instruction will be provided by LATTC.

Time spent in related and supplemental instruction may not be compensated.

GWP ELECTRICAL TEST TECHNICIAN LATTC CLASSES BY SEMESTER

	REQUIRED COURSES	NUMBER	UNITS	HOURS
SEMESTER 1	ELECTRICAL MATH 1	ECON 173	3	54
	BASIC WIRING PRACTICES	ECON 181	3	54
SEMESTER 2	FUNDAMENTALS OF DC	ECON 115	3	54
	ELECTRICAL MATH 2	ECON 174	3	54
SEMESTER 3	FUNDAMENTALS OF AC	ECON 129	3	54
	ELECTRIC MOTOR CONTROL	ECON 177	3	54
SEMESTER 4	INDUSTRIAL ELECTRICAL PRINCIPALS	ECON 186	3	54
SEMESTER 5	INDUSTRIAL CONTROL SYSTEMS	ECON 120	3	54
	INDUSTRIAL CONTROL SYSTEMS LAB	ECON 128A	1	54
SEMESTER 6	FUNDAMENTALS OF SOLAR	ECON 105	3	54
	ELECTRICAL CODES AND ORDINANCES 1	ECON 171	3	54
SEMESTER 7	PROGRAMMABLE LOGIC CONTROLLERS	ECON 159	4	54
SEMESTER 8	ADVANCED PLC	ECON 187	4	54
TOTAL PROGRAM HOURS			**41**	**702**

ELECTIVE

NUMBER		UNITS	HOURS
ECON 128B	INDUSTRIAL CONTROL SYSTEMS LAB	1	54
ELRCTRN002	BASIC ELECTRONICS	3	54
ECON 193	CONDUIT BENDING AND CALCULATIONS	3	108
ECON 116	HAND TOOLS AND WIRING	2	108
ECON 172	ELECTRICAL CODE AND ORDINANCES 2	3	54
ECON 177	ELECTRIC MOTOR CONTROL	3	54
ECON 178	ELECTRIC MOTOR CONTROL 2	3	54
ECON 182	BASIC DIAGRAM AND CIRCUIT PRACTICES	3	54
ECON 184	MOTOR CONTROL PRINCIPALS AND PRACTICES	3	108
ECON 205	SOLAR ENERGY CONSTRUCTION	2	108

ETNTLGY 253	FIBER OPTICS	3	90
CO INFO 787	NETWORK ESSENTIALS	3	72

RELATED SUPPLEMENTAL CLASSES

Complete SEL Computer Based Training	**HOURS**
CBT 101: Introduction to SEL Relays	4
CBT 102: Retrieving Event Reports	2
CBT 104: Understanding SEL Relay Logic	4
CBT 105: Math Fundamentals	3
CBT 351 Introduction to SEL351 Relays	4
CBT 751 Introduction to SEL751 Relays	3

Recognized Formal Meter School Training (WEI or equivalent)

Vendor Relay Training Class (AVO,SEL,or equivilant)

Once the above classes have been completed arrangements will be made to register for the classes below or equivalent in-person training.

TST 101: SEL Relay Testing Basics	3 Days
TST 103: SEL Feeder Relay Testing	2 Days

ARTICLE V Ratio

The ratio of apprentices to journeypersons shall be:

1) Ratio #1: Each professional worker may supervise 1 apprentice(s)
2) Ratio #2: Where working in an energized station but not in proximity, each 1 professional worker(s) may supervise up to 2 apprentice(s)