



## Training Proposal for:

### San Francisco Electrical Industry Apprenticeship and Training Trust Agreement Number: ET16-0903

**Panel Meeting of:** August 28, 2015

**ETP Regional Office:** San Francisco Bay Area

**Analyst:** D. Woodside

### PROJECT PROFILE

Contract Attributes:	Retrainee Apprenticeship Priority Rate	Industry Sector(s):	Construction Green Technology  Priority Industry: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
County Served:	San Francisco	Repeat Contractor:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Union:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No International Brotherhood of Electrical Workers Local 6		
Turnover Rate:	≤20%		
Managers/Supervisors: (% of total trainees)	≤0%		

### FUNDING DETAIL:

<b>Program Costs</b>	+	<b>Support Costs</b>	=	<b>Total ETP Funding</b>
\$627,200		\$43,200 8%		\$670,400

In-Kind Contribution:	50% of Total ETP Funding Required	Inherent
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**TRAINING PLAN TABLE**

Job No.	Job Description	Type of Training	Estimated No. of Trainees	Range of Hours		Average Cost per Trainee	Post-Retention Wage
				Class / Lab	CBT		
1	Retrainee Journeyman Priority Rate	Commercial Skills, Business, Computer Skills, OSHA 10/30	400	8-200	0	\$564	\$61.25
				Weighted Avg: 24			
2	Retrainee Apprentice Priority Rate	Commercial Skills, OSHA 10	160	8-210	0	\$2,780	\$27.56
				Weighted Avg: 200			

**Minimum Wage by County:** \$20.55 per hour for SET Statewide priority industry.

**Health Benefits:** ☒ Yes ☐ No This is employer share of cost for healthcare premiums – medical, dental, vision.

**Used to meet the Post-Retention Wage?:** ☐ Yes ☒ No ☐ Maybe

**Wage Range by Occupation**

Occupation Titles	Wage Range	Estimated # of Trainees
Journeymen Electrician (Inside Wireman)		400
Apprentice Electrician (Inside Wireman)		160

**INTRODUCTION**

Established in 1962, the San Francisco Electrical Industry Joint Apprenticeship and Training Trust (SF Electrical JATC) [www.sfelectricaltraining.org](http://www.sfelectricaltraining.org) is a cooperative effort between the San Francisco Chapter of the National Electrical Contractors Association (NECA) and the International Brotherhood of Electrical Workers (IBEW) Local Union 6. SF Electrical JATC serves approximately 398 Apprentices (twice the number as in 2014) and 1,200 Journeymen. [Note: Apprentice funding is well under the program-sponsor cap of \$450,000. The bulk of ETP funding will be used for Journeyman training, with the overall MEC cap of \$950,000.] 670 employers are signatory to the collective bargaining agreement. Approximately 70% of these employers are small businesses. Participating employers perform specialized construction work related to the design, installation, and maintenance of electrical systems.

SF Electrical JATC is charged with the responsibility of recruiting and training apprentices to meet the ever-growing needs of San Francisco's electrical industry. Additionally, the JATC provides skills update and improvement courses to Journeymen. The JATC's training program keeps Journeymen technologically current in various fields including high-voltage power transmission to low-voltage lighting, a major component of green technology. Training includes new electrical standards set out in the State's Title 24 laws. For electricians, this law mandates the use of automated lighting control devices and automatic plug load circuit controls. This legislation continues to require changes in how lighting and energy is used and documented.

**EMPLOYER DEMAND FOR TRAINING**

The local hiring demands of the City and County of San Francisco have been considered for this funding request. Large and small infrastructure projects continue to generate the need for electricians with the ability to work on more technically advanced construction projects. SF Electrical JATC Journeymen and Apprentices are working on numerous large residential and public commercial projects during the next two years. Examples include Bayview/Hunters Point Shipyard/Candlestick Point, Treasure Island, Pier 70, Park Merced, CPMC Cathedral Hill, and Transbay Terminal.

**Apprenticeship Program**

The Panel is authorized to fund Apprentice training that does not displace any other source of government funds, or replace an existing apprenticeship program approved by the Division of Apprenticeship Standards (DAS). The Panel adopted the Apprenticeship Training Program as a pilot in March 2012. It is designed to supplement cost of delivery for the Related and Supplemental Instruction (RSI) portion of DAS-approved apprenticeship training.

Apprenticeships are a multi-year training program that results in DAS certification to work as a Journeyman. They are authorized in California under the Shelly-Maloney Apprenticeship Labor Standards Act of 1939. Apprentices commit to training under contract with an apprenticeship program sponsor. They advance through a series of apprenticeship levels as they complete modules of RSI and on-the-job training. Wages are paid for hours worked on the job, in progression with a series of advancements up to the Journeyman level.

Apprentice programs are typically sponsored by a Joint Apprenticeship Training Committee (JATC). A JATC is created through collective bargaining, with an equal number of members appointed by union and management, with employer contributions to a training trust fund.

Depending on the type of trade, apprenticeship programs vary in length, typically from 2-6 years. They also vary in size, ranging from less than 10 to several hundred apprentices at any given point in time. Several types of trainees are eligible under the Apprenticeship Program: Apprentices (second-year), Journeymen and Pre-Apprentices. First-year Apprentices are not eligible due to the higher drop-out rates associated with this entry-level.

ETP funding flows through a Multiple Employer Contract (MEC), in this proposal held by the trust for a JATC. The employers are not "participants" but are signatories to the Collective Bargaining Agreement.

RSI is traditionally delivered as class/lab, and ETP does not reimburse CBT delivery for apprenticeship training. The curriculum is developed with input from DAS and a designated Local Educational Agency; in this proposal the LEA is Foothill College. The Apprenticeship Program allows reimbursement for up to 200 hours of RSI plus OSHA10, per-apprentice.

For the building trades, it is not customary for workers to be employed for a standard retention period of 90 consecutive days with one employer. In that instance, the Panel may substitute non-consecutive hours worked for retention. This modified retention period must be no less than 500 hours within 272 days with more than one employer. Both the standard and modified retention periods will apply to this proposal.

Because ETP funding cannot displace another source of government funds, the fixed fee rate is reduced by \$5.00 to account for adult education funding appropriated each year for Apprentice training through the California Community College Chancellor's Office and Department of

Education. This changes the ETP Priority Industry Rate from \$18.00 to \$13.00 per hour for all Apprentice Job Numbers.

In addition, the Panel adopted a “blended rate” for Journeymen, reflecting the fact that they may be employed by a variety of contractors over the two-year term of contract ranging from large employers, to small ( $\leq 100$  employees). This blended rate is \$22 per hour, midway between the Priority Industry standard rate (\$18) and Small Business rate (\$26).

Under the Apprenticeship Training Program, the post-retention wage has been standardized to a minimum of \$20.55 per hour reflecting the Special Employment Training (SET) wage for a Priority Industry. This wage was chosen for ease of administration, recognizing that most Apprentices and all Journeymen exceed the highest ETP wage requirements. However, the actual wages are shown in the Training Plan Table and contract if they exceed \$20.55.

### **DAS Completion Rates**

The completion rate for this DAS-approved program for 2009-2013 is 78.10% and exceeds the industry completion percentage of 66.13%. This meets ETP standards.

## **PROJECT DETAILS**

### **Training Plan**

All training outlined in this proposal will be center-based, classroom/laboratory training occurring at the JATC's training facility in San Francisco.

#### **Journeyman Training:**

**Commercial Skills** (80%) – Electrician/Inside Wiremen install, maintain and repair various types of electrical and electronic equipment in commercial, industrial and residential establishments. They also learn to install, connect, and test electrical wiring systems for lighting, heating, air conditioning, and communications in any building or structure. In San Francisco, industry is undergoing significant change due to the emergence of green technology. Green training is expected to be the centerpiece of the new program because of the demand for energy efficient construction methods and technologies. The shift from analog to digital equipment also dictates the need for extensive retraining.

**Business Skills** (5%) - Trainees must understand new national building codes and green practices; follow certification guidelines; use more collaborative bidding and project development practices; meet budgets; interact with various types of construction workers; and implement green solutions in traditional work environments. ETP-funded training will give workers the tools to plan, organize, and manage their construction projects more efficiently. Training will also include teambuilding and leadership skills so that electricians can lead teams in an effective and efficient manner.

**Computer Skills** (5%) - Training will include scheduling, planning and modeling software. AutoCAD and Job Tracking applications will provide trainees with the tools to modify blueprints, look up project requirements, build budgets and timelines, design virtual buildings, and adjust computerized control systems.

**OSHA 10/30 (10%)**

OSHA 10/30 training is typically delivered to workers in the building trades. It consists of 10 hours of training for Apprentices, and 10 or 30 hours of training for Journeymen.

This training is not required as a condition of doing business in California. However, the coursework must be approved by, and the instructors must be certified by Cal-OSHA. The vendor must also have a certified instructor present to confirm attendance.

Completion of the training results in a certificate that expands employment opportunities. To ensure that each trainee receives certification, ETP will only consider payment earned upon completion of the full 10-hour course.

**Apprenticeship Training**

**Commercial Skills (95%)** The Inside Wireman Apprenticeship is a 5-year program comprised of school and hands-on training. The apprentice electrician works directly under the supervision of a qualified journeyman electrician and assists with installing and/or maintaining a variety of approved wiring methods for distribution of electrical light, heat, power, radio and signaling utilization systems.

**OSHA 10 (5%)** This training provides a complete overview of occupational safety and health so that construction workers are more knowledgeable about workplace hazards.

**Curriculum Development**

The Apprentice program uses the National Joint Apprenticeship and Training Committee's Curriculum which was developed for the exclusive use of IBEW-NECA. The Journeyman upgrade Curriculum is employer-driven to meet the needs of signatory San Diego and Imperial County employers. The Curriculum was developed and customized with input from both labor and management representatives to address the local needs of union members, participating employers, and the industry as a whole.

**Trainer Qualifications**

SF Electrical JATC employs 4 full and 18 part-time trainers. All trainers are former or current members of the trade and the director of the school has received Master Certification status by the National Joint Apprenticeship and Training Committee. In addition, all instructors meet standards set by the LEA.

**Impact/Outcome**

Upon successful completion of the program, each Apprentice will receive Certificates of Completion from the State of California DAS, the Department of Labor, the National Joint Apprenticeship and Training Committee for the Electrical Industry, and Foothill College. Apprentices may also receive an OSHA 10 certification.

Certifications for Journeymen may include OSHA 10/30, Arc Flash Safety Awareness, Building Automation Systems, Green Audits, California Advanced Lighting Control Program (CALCTP) Installer and Lighting Acceptance Testing, and Title 24 Lighting Installation and Codes.

**Commitment to Training**

Employers will continue to make contributions to the training trust for every hour worked by Apprentices and Journeymen. General safety training is, and will continue to be, provided by participating employers in accordance with all pertinent requirements under state and federal law.

**Marketing and Support Costs**

The JATC is requesting 8% in support costs to fund its staff in recruiting and qualifying additional participating employers for this program. JATC staff also assist with the marketing, recruitment, and needs assessments of trainees and employers.

The JATC will publicize its training through brochures/flyers, personal contacts, the web, public service announcements and presentations at labor-management meetings and industry assemblies. While many participating employers have already been recruited, additional recruitment and assessment activities are still required. The JATC reports that its projected budget costs for personnel alone will exceed the ETP support cost funding. Staff recommends 8% support costs for the SF Electrical JATC.

**Tuition Reimbursement**

SF Electrical JATC represents that students enrolled in the ETP-funded program will not be charged tuition, fees, or any other costs associated with training. The representation will be made a condition of the Agreement.

**RECOMMENDATION**

Staff recommends approval of this proposal.

**CURRENT CONTRACT PERFORMANCE**

The following table summarizes performance by SF Electrical JATC under its current ETP Agreement:

Agreement No.	Approved Amount	Term	No. Trainees Estimated	No. Completed Training	No. Retained
ET14-0914	\$405,376	03/03/2014 – 03/02/2016	Apprentice – 107 Journeymen-102	Apprentice – 59 Journeymen - 122	17

Based on the ETP tracking system, 36,385 reimbursable hours have been entered, sufficient to earn 100% of funding.

**PRIOR PROJECTS**

The following table summarizes performance by the SF Electrical JATC under ETP Agreements completed within the last five years:

Agreement No.	Location (City)	Term	Approved Amount	Payment Earned \$ %
ET13-0916	San Francisco	10/29/12 – 10/28/14	\$340,178	\$340,178 (100%)
ET10-0215	San Francisco	09/28/09 – 09/27/11	\$184,450	\$21,875 (12%)

ET10-0215 was approved by the Panel prior to the establishment of the Apprenticeship Pilot program and thus focused on Journeymen training. Funds earned were lower than anticipated because Journeymen electricians, who often are employed at later stages of construction, were still experiencing less than full-employment.

### **DEVELOPMENT SERVICES**

California Labor Federation in Sacramento and Strategy Workplace in Oakland assisted with the development of this proposal at no cost.

### **ADMINISTRATIVE SERVICES**

Strategy Workplace will also perform administrative services in connection with this proposal for a fee not to exceed 13% of payment earned.

### **TRAINING VENDORS**

N/A

**Exhibit B: Menu Curriculum****Class/Lab Hours**

8-200 (Job 1)

**JOURNEYMAN****COMMERCIAL SKILLS**

## Codeology

- National Electrical Code
- Other Recognized Standards (Installation Changes)
- Plan, Build, and Use
- Related Standards (Mandatory and Permissive Rules)
- Special Occupancies and Equipment
- Arc Flash

## Analog/Digital Circuit (AC/DC) Principles

- Math for Electricians
- Ohm's Law
- Generators
- Inductance/Reactance
- Series/Parallel Circuits

## Grounding

- Grounding and Bonding
- National Electrical Code Article 100-Definitions and Provisions
- National Electrical Code Article 110-Requirements
- National Electrical Code Article 90-Introduction
- National Electrical Code Article Chapters 1-4
- Significant Changes to National Electric Code

## Fire Alarm Systems and Installations

- Definitions and Systems
- Initiating Devices and Notification Systems
- National Electrical Code and Installation Requirements
- Start Up and Check Out Procedures
- National Fire Protection Act, 1972 (NFPA 72)

## Fire Life Safety

- National Electrical Code (Relating to Fire Alarms)
- National Electrical Code Article 725
- National Electrical Code Article 760
- NFPA 72
- Principles of Electronics

## Industrial Motor Control

- Control Relays and Timers
- Jogging and Plugging Controls
- Manual Starters and Magnetic Coils
- Push Buttons, Selector Switches, and Mechanical Devices
- Solid State Electronic Devices
- Variable Frequency Drives



### Programmable Logic Control (PLC)

- Developing Ladder Programming
- Introduction to Programmable Equipment
- Programming Programmable Logic Controllers
- Using Timers and Counters in Logic Programs
- Writing a Program

### Electrical Design

- 3 and 4-Way Switching
- Design of Electrical Circuits
- Magnetic Motor Control and the Code
- LonWorks and Building Automation
- Transformers and the Code

### Voice, Data, and Video

- Audio Distribution
- CCTV Security Surveillance
- Computer Networking
- Fiber Optics
- Telephonic Interconnect

### Industry Specific Skills

- Solar Panel Installation
- Solar Photovoltaics
- Building Automation Systems
- Confined Space Entry
- Specialized Tools
- Conduit Bending
- Rigging and Lifting
- Firestop Installation
- Blueprints and Schematics
- Work Flow and Resources
- Proper Installation and Use of Testing and Auditing Materials and Equipment (Green Training)
- Understanding New Technologies and Changes to Industry Standards (Green Training)
- Proper Equipment Set-Up (Green Training)
- Safe Working Practices (Training is capped 10% of a trainee's total hours)
- Advanced Instrumentation and Motor Controls
- Programmable Logic Controllers
- Advanced Welding
- Architecture Designs and Advanced Plan Reading
- Management and Monitoring of Materials
- Testing Materials and Equipment – Proper Set-Up and Use (Green Training)
- Understanding Changes to Industry Standards (Green Training)

**CALCTP (California Advanced Lighting Control Program)**

- Advanced Lighting Control Systems
- Lighting Control Strategies
- Line Voltage Switching Controls
- Low Voltage Switching Control
- Dimming Controls
- Occupancy Sensors
- Photosensors

**CALCTP Acceptance Testing****Electric Vehicle Infrastructure Training Program (EVITP)****BUSINESS SKILLS**

- Teambuilding Skills
- Green Awareness Training and Green Certifications
- Leadership Skills
- Customer Service Skills
- Conflict Resolution
- Problem Solving
- Decision Making Skills
- Inventory Checklist
- Advanced Time Management
- Filling Out Work Documents and Reports Accurately
- Project Management
- Creating Project Bids

**COMPUTER SKILLS**

- Auto Computer-Aided Design (AutoCAD)
- Job Tracking System
- Scheduling & Planning Jobs

**OSHA 10/30 (OSHA CERTIFIED INSTRUCTOR)**

- OSHA 10 (requires completion of 10 hours)
- OSHA 30 (requires completion of 30 hours)

**APPRENTICE****Class/Lab Hours**

8-210 (Job Number 2) Trainees may receive any of the following:

**COMMERCIAL SKILLS****Safety**

- General job-site safety awareness
- First Aid/CPR Certification
- Emergency Procedures
- Compliance with OSHA, NFPA and EPA Regulations
- Substance Abuse Awareness

**Tools, Materials and Handling**

- Proper care and use of hand and power tools
- Proper rigging methods
- Proper digging techniques
- Proper use of motorized equipment; platform lifts, fork-lifts and bucket trucks
- Proper material lifting and handling

#### Math

- Appropriate mathematical calculations to solve for related problems.

#### Electrical Theory

- Basic electro -magnetic principals
- Ohm's Law
- AC/DC Theory
- Series, Parallel and Combination Circuits
- Characteristics of circuits; voltage, current, power, resistance, impedance, capacitance and reactance.
- Theory of superposition and solving for multiple voltage-sourced circuits
- Operation and characteristics of three-wire systems
- Operation and characteristics of three-phase systems
- Use of electronics in the electrical industry
- Code Requirements
- National Electrical Code and Local Codes

#### Conductors

- General characteristics
- Conductor installation codes and techniques
- Methods for selecting proper size and type of conductors

#### Conduit and Raceways

- Terms associated with conduits and raceways
- Procedures for laying out various types of bends
- Procedures for making proper bends when fabricating conduits
- Conduit support systems recognized by Code

#### First Aid/CPR

#### Lighting Systems

- Function, operation and characteristics of various lighting systems
- Lighting distribution and layout

#### Installation and connection of fixtures

- Over-current Devices
- Function, operation and characteristics of over-current protection devices
- NEC requirements for over-current protection devices

- NEC requirements for ground-fault and arc-fault protection

#### Grounding Systems

- Functions, operation and characteristics of grounding systems
- Sizing, layout and installation of grounding systems
- Insulation and isolation
- Proper grounding and bonding techniques
- Special circumstances

#### Services and Distribution Systems

- Function, operation and requirements for various panel boards and switch gear
- Grounding requirements
- Code requirements

#### Prints and Specifications

- Creation of blueprints plans and specification
- Use of blueprints, plans and specification
- Recognizing information contained within blueprints

#### Motors, Motor Controllers and Process Controllers

- Function, operation and characteristics of motors (AC, DC, Dual-Voltage)
- Proper motor installations
- Motor controllers, control circuits and control devices
- Control Transformers, switches and relays
- Instrumentation, process control systems and devices

#### Generation and Power Supplies

- Principles of generating electricity
- Principles of Alternative Energy Generating Systems
- Installation and maintenance of uninterruptible power supplies (UPS)
- Installation and maintenance of emergency battery systems

#### Transformers

- Function, operation, and characteristics of transformers
- Selection and installation of transformer types
- Transformer grounding techniques
- Harmonics and power quality

#### Workplace Development

- Orientation to organization and structures
- Working well with others
- Financial Skills

#### Electrical Testing

- Steps used for various testing processes
- Proper selection and use of test meters

- Utilizing the results of testing procedures

#### Specialty Systems

- Fire Alarms
- Security Systems

#### CALCTP

- Advanced Lighting Control Systems
- Lighting Control Strategies
- Line Voltage Switching Controls
- Low Voltage Switching Control
- Dimming Controls
- Occupancy Sensors
- Photosensors

#### Electric Vehicle Infrastructure Training Program (EVITP)

#### **OSHA 10 (OSHA CERTIFIED INSTRUCTOR)**

- OSHA 10 (requires completion of 10 hours)

Note: Reimbursement for Job Number 1 Journeymen retraining is capped at 200 total training hours per trainee regardless of the method of training delivery. Reimbursement for Job Number 2 Apprenticeship training is capped at 200 total training hours per trainee in Commercial Skills and 10 hours of OSHA10 for a total of 210 hours regardless of the method of training delivery. Safety training cannot exceed 10% of total training hours for any individual trainee. This 10% safety training cap does not apply to Hazardous Materials or OSHA 10/30 training.